

**The Bathing Water Directive and Beach Management at
Silversands, Scotland, and La Herradura, Spain: Constructing
Bathing Areas and Rationalising Management Practices**

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Declaration of Originality

This thesis has been composed by me and contains work that is entirely my own. The work presented in this thesis has not been submitted for any other degree or professional qualification.

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Edinburgh, 28th September 2006

Abstract

This thesis examines the production of bathing beaches with reference to the 1976 European Bathing Water Directive and contemporary trends in environmental policy discourse. The Directive, although currently under revision, seeks to protect bathers by setting mandatory seawater quality standards for designated bathing areas. In contrast to studies in environmental policy, which tend to assess the extent or effectiveness of implementation, the thesis seeks to understand beach management by investigating how bathing areas in Scotland and Spain are connected to the Bathing Water Directive by practices of bathing area usage and management.

The thesis argues that practices of bathing area management – such as beach flags and litter collections – and practices of bathing area usage – such as kayaking and dog-walking – are important in producing what has become known as a ‘bathing area’. Engaging with current debates on constructivism, the thesis demonstrates how different social constructions of a bathing area are created and coexist. Beach management is shown to be rationalised according to particular ideas of beach cleanliness, order and best practice.

Empirical research concentrates upon two fieldstudy sites: Silversands in Scotland and La Herradura in Spain. Particular attention is paid to beach awards, marine litter collections, and scientific processes of bathing water measurement. The thesis is methodologically based on interviews with beach users, beach managers, environmental regulators, politicians and representatives of coastal conservation charities. Ethnographic notes, participatory research methods and discursive analysis of policy documents are all used to contribute to the empirical evidence.

The thesis investigates the materiality of beach flags to show how different interpretations of cleanliness are promoted and represented. It explores how knowledge of bathing areas is created through water quality measurement, litter surveying and personal experience. This knowledge of bathing areas is shown to be dependent on traditional science-based expertise. The thesis claims that expertise is currently used to distance many beach users from expressing their knowledge of potential bathing risks. While revisions to the Bathing Water Directive emphasise public inclusion, the thesis concludes that current practices of bathing area management are not participatory. Findings contribute to a body of work interested in critical evaluation of environmental policy.

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List of Abbreviations

ADEAC:	Asociación de Educación Ambiental y del Consumidor
BBC:	British Broadcasting Corporation
BSE:	Bovine Spongiform Encephalopathy
CCS:	Clean Coast Scotland
CEC:	Commission of the European Communities
DoE:	Department of the Environment
EESC:	European Economic and Social Committee
ENCAMS:	Environmental Campaigns
EU:	European Union
FEE:	Foundation for Environmental Education
FEF:	Forth Estuary Forum
GLM:	General Litter Monitoring
ICZM:	Integrated Coastal Zone Management
KSB:	Keep Scotland Beautiful
MCS:	Marine Conservation Society
MEP:	Member of the European Parliament
MPN:	Most Probable Number
NALG:	National Aquatic Litter Group
NRA:	National Rivers Authority
PA:	Partido Andalucista
PP:	Partido Popular
PSOE:	Partido Socialista Obrero Español
SEPA:	Scottish Environmental Protection Agency
SRD:	Sewage Related Debris
SSK:	Sociology of Scientific Knowledge
UN:	United Nations
WHO:	World Health Organisation
WWTP:	Waste Water Treatment Plant

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Introduction and Thesis Outline

Beginnings

In a news report of September 2003, the BBC announced that the quality of bathing waters in Scotland was of its highest since records began (BBC 2003). With reference to the results of water quality sampling conducted by the Scottish Environmental Protection Agency (SEPA), the report suggested that bathers could be assured of minimal health risks at Scotland's most popular beaches. While this was undoubtedly positive news for many hundreds of bathers, it raised, for me, several important issues that can be related closely to recent debates in geography. This thesis adopts a broadly constructivist theoretical perspective to investigate the social and material interactions that produce high quality bathing waters. My aim is to uncover the practices of beach use and management that enable coastal waters to become, in everyday discourse, bathing waters. In addition, I want to know how 'quality' is produced as a term of bathing water management, and to link these questions to issues in geography, science studies and work in environmental policy.

The origins of this thesis lie further back than the news report of 2003. For many years, I lived by the coast of Belfast Lough and regularly bathed in seawater while practising water sports. From these experiences, I developed an interest in environmental policies related to seawater quality and waste water treatment. One policy, in particular, that I became interested in was the European Bathing Water Directive, which established mandatory standards for seawater quality (CEC 1976). This Directive, which now applies to over 13,000 European beaches, is used as the basis of several commonly-recognised beach awards, including the Blue Flag campaign. When visiting beaches in many different locations I noted how Blue Flags were used to signify the presence of 'excellent' quality seawater. More recently, I have considered how seawater quality might relate to theoretical debates concerning the social construction of pollution and cleanliness, citizen participation in environmental science, the construction of expertise and the rationalisation of environmental management. These are the central questions of this thesis.

In this first chapter, I identify how my interest in seawater quality relates to the debates listed above. By doing so, I want to describe in greater detail the broad research questions addressed in the thesis, and outline the limits to my analysis. The chapter is divided into four sections. In the first, I describe the significance of bathing in the context of European environmental law and I identify the coastal policies researched in this thesis. Here, I introduce the Bathing Water Directive and explain why this policy, in particular, can be considered as a starting point to my research. Secondly, I discuss how research questions in this thesis are addressed with reference to two fieldstudy sites: Silversands in Fife and La Herradura in southern Spain. The fieldstudy sites are introduced here in order to contextualise environmental policies relating to seawater and to highlight how the issues addressed by this thesis cut across different scales. In this respect, the thesis is simultaneously about European bathing water policy and about practices of bathing and beach management at regional and local scales. The precise division between chapters is the subject of section three. Here, I outline the context and purpose of Chapters 2-8, and describe how individual chapters contribute to a broader narrative in which common themes can be traced. Finally, I conclude this introductory chapter by describing how I might refine research questions by engaging with current debates in geography and other related literatures.

As will become clear, individual chapters in this thesis speak to particular debates and to specific research questions. These include, for example, debates concerning the importance of materiality and the links between environmental risk and public participation. While individual chapters can be read as discreet arguments, they are ordered in this thesis to construct a narrative that addresses broader issues. My aim has been to present the thesis as a textured and multi-layered understanding of bathing waters based on policy document analysis, interviews and participant observation. This multi-method approach, I suggest, enriches analysis of bathing waters and has allowed me to engage with a variety of academic debates.

Bathing, Health and Environmental Regulation

In Britain, seawater bathing has long been linked to issues of health and wellbeing. Among those credited for making sea bathing fashionable during the eighteenth century is King George III, who was influential in promoting the salubrious qualities of seawater (Hassan 2003). At around the same time, the physician founder of Strathclyde University, John Anderson, wrote a treatise entitled *The Good and Bad*

Effects of Sea-Water and Sea-Bathing. Anderson identifies the ‘very extensive powers’ of seawater, stating that physicians should be ‘cautious and correct on whom we recommend to it, lest we become guilty, unintentionally, of a breach of the sixth command’ (Anderson 1795: 63). Despite the fact that seawater is often cold and opaque in Britain, bathing continues as a popular recreational activity. While bathing practices have changed according to social and cultural trends over many years, seawater continues to be intimately linked to issues of health and wellbeing. The influential coastal conservation group Surfers Against Sewage, for example, was formed in 1990 to highlight problems of seawater quality in Britain, and to lobby for changes in sewage disposal practice.

This thesis argues, as a starting point, that the 1976 Bathing Water Directive legitimises sea bathing at particular sites throughout Europe by establishing minimum standards in seawater quality. The Directive, which has been in place for over thirty years, requires statutory sampling of seawater at regular intervals by respective environmental regulators in each European member state. In Britain, the Bathing Water Directive has caused significant changes in practices of water treatment and sewage disposal, costing water companies many billions of pounds (Ward *et al* 1997; Wynne and Waterton 1998). While much of the cost of improving waste water treatment has been passed to consumers in the form of water charges, seawater quality in Britain – and throughout Europe – has arguably improved as a result (Ward 1998). In the past, Britain has commonly been labelled the ‘dirty man of Europe’, largely because of waste water treatment practices that commonly employed outflow pipes to dispose of raw sewage at sea (Jordan *et al* 1998). As I demonstrate in this thesis, however, increasing adherence to the Bathing Water Directive can be linked to further changes in the use and management of bathing beaches.

In Chapter 2, I examine writings that are often characterised by their concern for ‘human/environment interactions’. I am interested, broadly, in how humans interact physically with seawater and how social relations influence environmental policy concerning seawater. As noted above, the Bathing Water Directive requires environmental regulators to sample seawater and to publish results of such measurements. This means that social relations are important during measurement procedures and the interpretation of results. Social issues concerning trust, expertise, personal testimony and public participation are all addressed in this thesis with reference to bathing waters. Generating knowledge of seawater – knowledge then

used to inform beach usage and management – is shown to be an integral component in the production of bathing waters.

The thesis describes different practices of beach management at Silversands and La Herradura that can be linked to, or derive from the Bathing Water Directive. In this sense, the Bathing Water Directive provides both a convenient starting point to discuss and examine issues of seawater quality and a reference point that links all aspects of beach management. Environmental policy relating to seawater is, for example, intimately connected to dog exclusion zones at beaches considered in this thesis. To examine the Bathing Water Directive without considering how it influences practices of beach usage and management would be to ignore some of the most important and pervasive aspects of the Directive. The thesis goes further than studies that seek only to assess adherence to environmental policy or its implementation. The Bathing Water Directive is examined using a perspective that uncovers relational links between different beach management policies. While Chapter 4 considers rationalising trends associated directly with the Bathing Water Directive and contemporary trends in environmentalism, Chapters 5-8 examine how implementation is additionally framed by specific social and cultural trends at fieldstudy sites.

Although the thesis takes as its starting point the 1976 Bathing Water Directive, proposals to revise the Directive were approved in January 2006 by the European Parliament (CEC 2006). Chapter 4 discusses the revision process in greater detail and suggests that agreed changes will result in a Directive that is increasingly managerial rather than legalistic. Environmental regulators in each member state have been given until 2010 to implement changes in statutory seawater monitoring and reporting. This, in turn, might lead to future changes in practices of beach management and usage. Such changes will not, however, render outdated the research presented in this thesis. Chapters 4-8 discuss how environmental regulators have anticipated revisions to the Bathing Water Directive, meaning that the new Directive has largely been implemented through existing practices of beach management. In this sense, practices of beach management have, arguably, instigated legislative change – a point discussed in Chapter 9.

Bathing Waters, Fieldsites and Issues of Scale

In my original research proposal, I identified two fieldsites that would allow me to investigate how science-based legislation is put into practice locally with regards to

seawater cleanliness and associated beach management. I claimed that two fieldsites would help me to capture the breadth and diversity of science-based discourses of beach management by interviewing coastal scientists, conservation activists, local authorities and bathers in different cultural, environmental and institutional contexts. The purpose of choosing bathing waters in Scotland and Spain was not, therefore, to conduct a comparison. Instead, I wanted to investigate the tensions between European environmental discourse and beach management practices that superficially appeared to be 'local'. I first visited La Herradura's Blue Flag award beach in 2002, prior to selecting it as a fieldsite, and this gave me the opportunity to develop a small number of contacts. I wanted to find out more about how science-based environmental discourses are linked to practices of seawater and beach management such as the Blue Flag campaign. I thus chose Silversands in Fife as my second fieldsite because, like La Herradura, it was a designated bathing area that had, in 2003, a Blue Flag award.

While the Bathing Water Directive applies to Silversands and La Herradura, the issues referred to in this thesis are specific to the contexts in which they are described. That is not to say that the Bathing Water Directive, on the one hand, is necessarily European, while practices of beach management, on the other hand, are inherently 'local'. The issues I explore in this thesis cut across different scales, rendering any European/local dichotomy unhelpful. The Bathing Water Directive, I want to argue, is implemented precisely through practices of beach management specific to fieldsites described herein. Chapter 3 discusses the methodological questions concerning the utility of two fieldsites in addressing research questions pursued in the thesis. Here, I present a short description of both fieldsites, and discuss briefly qualities of scale.

Silversands is located in Fife, close to the small commuter town of Aberdour on the Firth of Forth (Figure 1.1). Aberdour, and in particular its beaches, became popular in the nineteenth century. Recent publicity and information boards describe Silversands as part of 'Scotland's Riviera', one of the main attractions on the Fife coastal path. The beach itself is sandy, but relatively small – only 250m in length. Behind the beach are a car park and a large grassy area that contains playing fields for a local primary school. Until April 2005, Silversands had a small café, open year round to beach visitors, located in a central position behind the beach. Due to an electrical fire, however, the café was destroyed, leaving only a toilet block and the beach warden's office.



Figure 1.1: Map of Silversands (Crown Copyright)

Water quality is routinely measured at Silversands by the Scottish Environmental Protection Agency (SEPA), based in Edinburgh. Results of these measurements have, in recent years, passed both the ‘mandatory’ and ‘guideline’ standards set by the Bathing Water Directive. This has enabled the local authority – Fife Council – to apply for annual beach awards. At the time of my research, Silversands held a ‘Seaside Award’, administered by Keep Scotland Beautiful (KSB), and a Blue Flag, administered by KSB on behalf of the international Foundation for Environmental Education (FEE). These awards are discussed further in Chapters 4 and 6, and can be seen as examples of beach management practice that transcend scale. While each award is linked to the Bathing Water Directive, I hope to show that awards are dependent on practices that operate on national, regional and local scales.

La Herradura is a small town in the municipality of Almuñécar on the Granada coast (Figure 1.2). Originally a small fishing community in a strategically important part of southern Spain, the old town is now dwarfed by newer building developments strung out along the coast road. The horseshoe-shaped beach, of small pebbles, extends over 3km east-west. Behind the beach, a paved promenade forms what is now the town’s main street, containing shops, restaurants and apartment buildings. Several small restaurants, *chiringuitos*, are located on the beach itself, which also contains sports pitches and freshwater showers.

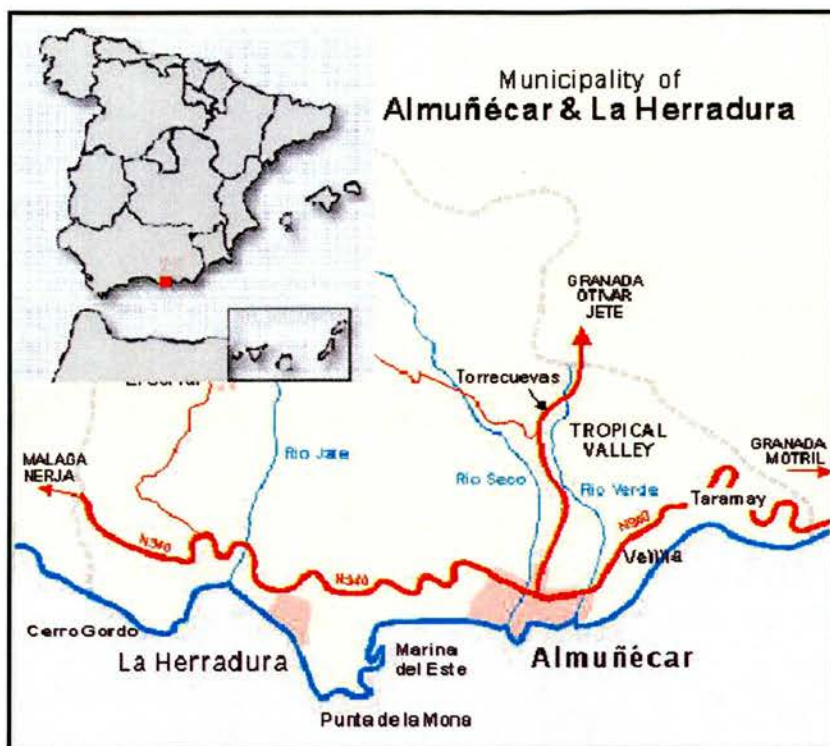


Figure 1.2: Map of La Herradura

La Herradura had, until 2004, a Blue Flag awarded by the *Asociación de Educación Ambiental y del Consumidor* (ADEAC) on behalf of FEE. Recent results of water quality sampling have shown that La Herradura regularly passes the more stringent ‘guideline’ pass set by the Bathing Water Directive. In addition to the microbiological composition of seawater, however, the municipal authority, based in Almuñécar, annually organises a team of seawater cleaners who patrol the coast in small boats to remove small items of litter. Chapter 8 discusses how aesthetic purity is created at La Herradura through seawater cleaning. Here, the practice of water cleaning is cited to demonstrate how ‘local’ beach management is linked relationally to other beach management practices. At La Herradura, items collected during seawater clean-up operations are used by beach managers to create an overview of pollution sources and distribution. This information is used, in turn, to inform practices of beach management in relation to international awards such as the Blue Flag.

While I hope to show that scale is largely unhelpful when considering practices of beach management, this thesis adopts an ontological approach that can broadly be described as ‘relational’ (Castree 2003). This means that physical objects and environmental policies, such as beach awards and dog exclusion zones, are

examined by considering their relation to those other objects and processes that give them meaning. From this perspective, direct comparisons between Silversands and La Herradura, like the European/local dichotomy, become largely meaningless because practices of beach management and usage are interconnected. In this thesis, I have sought to avoid comparison between fieldsites, despite the temptation, for example, to compare similarities and differences concerning approaches to the Blue Flag campaign. Chapters 4-8, which consider specific research questions, are written with reference to both fieldsites and in relation to the respective contexts in which empirical material is gathered.

Thesis Outline

The thesis is framed by academic literature primarily in geography, science studies and environmental policy. Chapter 2 examines these literatures in some detail. Recent studies of environmental discourse, for example, are reviewed to uncover how environmental policy is determined by discursive structures that define what can meaningfully be said about social issues. While many authors identify 'ecological modernisation' as a dominant discourse of environmental management, I find that geographical difference has been often overlooked by studies seeking to idealise the policy process. This, then, leads me to question whether a rationalisation of environmental discourses necessarily leads to a rationalisation of environmental management: an issue largely unaddressed in the current literature. This thesis provides one response in exploring how the Bathing Water Directive is not only implemented, but also linked to practices of beach use and management.

Chapter 2 also considers recent literature in geography concerned with the social construction of nature. Reviewing this literature, I argue that while geographers have sought to overcome dualistic structures that separate nature and society, relatively little work has engaged with the social construction of dirt, litter and pollution. Geographers have used Actor-Network Theory to insist that relationships between nature and society, human and nonhuman, can be conceptualised as complex networks (Demeritt 1996; Murdoch 1997a, 1997b; Whatmore 1997, 1999, 2002). Although this literature is inherently rich, I ask whether the social construction of dirt, and the associated dirt/cleanliness dualism, can be best studied by considering how, in practice, dirt and cleanliness influence beach management. The thesis thus investigates the construction of cleanliness from several different perspectives and

considers how management practices construct both dirt/cleanliness and a particular social order. While geographers have investigated waste disposal and recycling, much of this work considers waste as a spatial category. Drawing upon anthropological studies of dirt, the thesis explores how aesthetic purity is created and asks if waste need necessarily be either absent *or* present.

Within science studies, an emerging literature considers how scientific expertise is increasingly remote from many citizens whose lives are affected by science-based environmental policy. For some, a democratization of expertise would offer a more just way of deciding which experts should advise in situations of environmental uncertainty. Different methods have been explored to enable a broader group of citizens to participate in scientific decision making, often to increase the legitimacy of new knowledge or environmental policies. The idea of 'socially-robust knowledge' has been used to characterise situations in which scientific knowledge is context sensitive (Nowotny 2001; Wynne 2001). This thesis considers the creation of legitimacy relating to knowledge of bathing waters and beaches. Engaging with science studies literature, I investigate further how 'robustness' is constructed and maintained in relation to knowledge of Silversands and La Herradura. The thesis in addition considers how citizen participation in knowledge production can be linked to issues concerning environmental risk.

The broad research questions described above run through several chapters of this thesis and construct a narrative around which more specific questions are addressed. Chapter 3 describes how my research was produced through iterative engagements with academic literature and empirical material. These engagements, and other methodological issues, are discussed to emphasise how the knowledge produced in this thesis is both situated and partial. The chapter insists that bathing waters cannot be studied to the exclusion of beach management policies, coastal environmental initiatives or beach users. For this reason, theoretical debates outlined in Chapter 2 are addressed by analysing several beach award schemes, anti-pollution campaigns and visitor interactions with bathing areas, among other examples. Chapter 3 describes how, in terms of methods, my research became increasingly dependent on participant observation in addition to semi-structured interviews and policy document analysis. Reflecting on methodological issues that arose on several occasions during my research, I describe how I engaged with ethical problems concerning access and 'informed' consent. Chapter 3, finally, examines how geographers and other social

scientists have worked with unfamiliar languages in different contexts. I discuss my own attempts to communicate with research participants, and I suggest that a reflexive analysis of language in qualitative research can be used to decentre meanings that otherwise might be taken for granted.

Chapter 4 commences analysis of empirical material by considering the emergence of the Bathing Water Directive during the 1970s in the context of contemporary trends in environmental policy. Using an archaeological investigation of policy documents, I describe how a particular social construction of water pollution became rationalised in the Bathing Water Directive. In addition to establishing statutory scientific measurement of seawater, the Directive seeks to define what constitutes bathing water and formalises certain epistemological and methodological assumptions concerning how bathing waters can be understood. Engaging with environmental policy literature, Chapter 4 discusses how the Bathing Water Directive can be linked to both rationalising trends of ecological modernisation and to a particular form of governmentality. It asks whether such rationalising discourses of environmental policy can be linked to scientific practices of bathing water measurement. With reference to beach management practices at Silversands and La Herradura, Chapter 4 introduces links between different ideas of beach cleanliness and supposedly rationalised environmental discourse.

Chapter 5 suggests that different social constructions of Silversands and La Herradura coexist. It asks how cleanliness can be understood, and it considers how different people assess the cleanliness of beaches and bathing waters. More specifically, it considers whether cleanliness can be thought of as a spatial category and asks if interpretations of beach cleanliness, rather than broad environmental discourses, determine beach usage and management. Using data gathered from interviews and participant observation, Chapter 5 considers five examples of beach management to uncover different ways in which bathing areas are differently constructed. Each example, although specific to one bathing area, is linked in some way to the Bathing Water Directive. As stated above, the idea of scale, at least as it is understood in relation to practices of beach management described in the thesis, is problematic. Yet as scale becomes less important, further questions regarding geographical difference must be addressed (Marston 2000; Marston *et al* 2005; Jonas 2006). More specifically, questions are raised concerning the coexistence of contesting constructions of beaches and bathing waters.

Chapter 6 considers what happens when results of bathing water tests are ambiguous, and when beach cleanliness is interpreted differently by different community groups, coastal conservation charities and beach management officials. Social relations between different groups are shown to be complex because issues of beach cleanliness, which determine many management decisions, cut across different scales. Engaging with literature in geography that explores materiality, Chapter 6 uncovers social relations with respect to beach flags that are strategically placed at both Silversands and La Herradura. Flags are awarded annually by different groups, based on different assessment criteria. These flags can be read as signifiers that relate and support ideas of dirt and cleanliness. Furthermore, beach flags are materials capable of influencing lived experiences, and are important as technologies of government. By framing my discussion of beach flags with reference to materiality, I ask whether 'flagging' can be considered as the simultaneous deployment of physicality and symbolism. Flags investigated include the international Blue Flag campaign, and a Black Flag awarded in Spain by a conservationist group that aims to highlight badly managed or polluted beaches. Chapter 6 investigates the criteria upon which different flags are awarded and asks how legitimacy and trust are linked to assessments of seawater cleanliness that result in beach flags.

Chapter 7 draws upon literature that examines the creation of a 'risk society' (Beck 1992, 1995; Giddens 1994). The chapter asks whether scientific uncertainty of health risks associated with sea-bathing can lead to a more open system of risk measurement and communication. In Scotland, predictive electronic signs are used by the environmental regulator at many beaches to express health risks associated with bathing. These signs, although not yet present at Silversands, are considered in Chapter 7 because they frame discussions of bathing risk in Scotland. In addition to electronic signs, I ask whether there exist other, more participatory, methods of assessing potential health risks that might better reflect how bathers interact with beaches. One such method, used by coastal conservationists, might be to compile a database of incidences of ill health reported by bathers. By considering different campaigns used by coastal conservationists, Chapter 7 calls into question the structures that separate expert knowledge from lay understanding. These campaigns, which establish coastal conservationists as watchdogs of seawater quality, are investigated to assess whether they engender greater public participation.

In science studies, recent literature examines the production of 'socially-robust' knowledge that is sensitive to social context while gathering support from a broad range of citizens (Nowotny 1999, 2001; Wynne 2001). By considering how different 'expert' groups contribute to knowledge of Silversands and La Herradura, Chapter 8 investigates further the production of 'socially-robust' knowledge. Beach litter surveys undertaken by coastal conservationist groups and local authorities, for example, are examined to uncover how expertise is created and used in litter sampling strategies. Some litter surveys and beach clean-ups involve the support of both professional beach wardens and volunteers. Chapter 8 asks whether greater volunteer participation leads to more robust knowledge of beach litter and bathing waters. In addition, it interrogates the idea of 'robustness' and asks what constitutes participation in the case of bathing beaches.

Conclusion: Refining Research Questions

European bathing waters and beach management practices constitute a broad object of study. As stated above, the Bathing Water Directive applies to over 13,000 beaches in different social, institutional and environmental contexts. To account for this diversity in one thesis is impossible. Similarly, because beach management practices exist only in spatial and temporal context, no single bathing water can be considered representative of any other. While based on many interviews, ethnographic notes and policy document analysis, this thesis presents a situated and partial account of only two bathing beaches. Although my descriptions of Silversands and La Herradura are thus limited, the practices of beach use and management that are uncovered speak to broader debates in geography, in other academic disciplines and to questions of future environmental policy and management.

Given that bathing waters are a complex topic of investigation, there are many different theoretical or methodological perspectives that could be employed to understand them. Furthermore, the issues of beach management I explore could easily be used to engage with debates in environmental management, health research or tourism studies. While such debates are beyond the scope of the thesis, I mention them here to emphasise that my analysis has engaged with those academic literatures that, for me, are most important with respect to research material generated during fieldwork. This chapter has therefore identified broad questions that begin to structure my research of bathing waters and set out clearly the limits of the thesis.

Chapter 2 further defines research questions addressed in this thesis by reviewing recent literature in geography, science studies and environmental policy. Broad research themes introduced in this chapter are discussed to explore how an investigation of two bathing waters might contribute to current academic debates. In particular, ideas of 'ecological modernisation', 'governmentality' and the 'robustness' of scientific knowledge, mentioned above, are reviewed in Chapter 2 with reference to the Bathing Water Directive. In this way, I begin to demonstrate how research questions addressed in this thesis are refined by iterative engagements with academic literature.

2

Understanding the Bathing Water Directive: a Summary Review of Literature

Introduction and Chapter Outline

The 1976 Bathing Water Directive has been used by many researchers as an early example of European pollution prevention legislation and internationalist environmental discourse (Kiss and Shelton 1993; Jordan *et al* 1998; Ward 1998; Knill and Lenschow 2000; Jordan 2002a; Hildebrand 2005). These studies highlight how, over time, water companies in European member states were increasingly obliged to install expensive sewage treatment facilities to comply with scientifically monitored seawater quality standards at designated bathing areas. With reference to the UK, researchers have demonstrated how initial government reluctance to apply the Bathing Water Directive has been transformed by pressure from the European Court of Justice and by lobbying from environmental charities (Ward 1996; Wynne and Waterton 1998). In this chapter, I discuss how such studies can be situated alongside research undertaken by geographers and other social scientists. In reviewing this literature, I present five themes that correspond with the empirical research explored in Chapters 4-8.

First, the chapter considers recent literature that investigates environmental discourse in policy and practice. For many authors, geographical scale is important when researching environmental discourse and associated policies. The concept of ecological modernisation is additionally used by researchers to describe and critically account for dominant environmental discourses that emerged during the 1970s. Some geographers have argued, however, that analysis of environmental discourse often neglects local resistance to policy goals within a framework that idealises the policy process. In this respect, I argue that bathing water discourse should be studied with reference to contemporary environmental discourses and beach management practices.

Secondly, the chapter discusses some of the extensive literature within geography and science studies concerning the relationships between nature and society. Such literature is important for current debates that consider who should have

the authority to speak on behalf of nature. In this section, I briefly describe realist-relativist arguments with respect to environmental policy. For some geographers, Actor-Network Theory can be used to overcome dualistic structures of nature/culture that pervade debates on social constructivism. Instead of providing an analytic tool to uncover the agency of objects, critics argue that Actor-Network Theory fails in describing culturally contoured networks. Responding to these criticisms, I argue that a performative historiography of science and technology that focuses on 'practice' is more useful in describing the social production of bathing areas. I claim that practices of beach management can thus be studied to uncover how different social constructions of 'bathing waters' coexist.

Thirdly, the chapter describes how geographers have sought to highlight the materiality of water and waste in studies that uncover how objects influence social relations in urban environments. Water, as a hybrid commodity, links dirt and cleanliness because it is often used as a cleansing agent. I discuss geographies of disposal and, in particular, highlight how geographers have studied sewage disposal to uncover social relations in cities such as London and Paris (Gandy 1999; Allen 2002). Although many objects have been studied by geographers interested in materiality, Anderson and Tolia-Kelly (2004) claim that more work needs to be done to uncover links between 'matter' and 'culture'. At bathing areas, flags are used to signify bathing water quality. I argue, therefore, that a study of beach flags offers a unique chance to investigate how bathing water, cleanliness and materiality are linked by practices of flagging.

Fourthly, the chapter describes how studies of environmental risk have identified the emergence of 'manufactured' risk associated with scientific and technological developments (Beck 1992, 1994, 1998). Within a 'risk society', science is increasingly unable to account for environmental risks, and this leads to greater public mistrust in scientists. For some, publics should have greater role in identifying and accounting for environmental risk. This 'democracy' model is seen as a means to encourage greater public participation in situations of scientific uncertainty. In this section, I argue that the Bathing Water Directive can be used as a starting point to uncover scientific uncertainties in bathing water quality, and hence to assess whether new possibilities of public participation are viable.

Finally, the chapter discusses recent literature that uncovers the construction of scientific expertise and the production of 'robust' knowledge. Many researchers

have identified a 'democracy deficit' in environmental policy due to the technoscientific information upon which many policy decisions are based (Irwin 1995, 2001; Latour 1987; CEC 2001a). To improve environmental policy, geographers and other social scientists have argued that new modes of engagement must be considered to enable citizens to be more involved in decisions that have traditionally been based solely on scientific reasoning. I here consider different modes of participation and discuss how, in some cases, 'boundary organisations' emerge to facilitate engagements between scientists, policy-makers and 'stakeholders'. For many, 'robustness' is increasingly important to legitimise environmental policy, yet, I conclude, this term needs further interrogation.

Environmental Policy Discourse: Constructing Storylines

In recent years, studies of environmental discourse have featured as part of a broader 'discursive turn' within geography (Smith 1996b; Rydin 2005). These studies, which contribute to a more textured understanding of the relationships between humans and environment, have examined 'global' discourses of climate change (Demeritt 2001a), and acid-rain (Sundqvist 2003), 'European' discourses of air quality (Sundqvist and Letell 2005), and waste disposal (Bowler 1999), UK discourses of recycling (Barr 2004) and the sub-national discursive interpretation of international environmental policies (Brown 2001). Identifying geographical scales is thus important in many studies of environmental discourse (Dryzek 1997; Demeritt 2001b; Linnros and Hallin 2001; Fischer 2003; Rydin 2003; Murdock 2004). Benton and Short (1999), for example, describe how different discursive scales are used in environmental policy to shape environments within the United States. The authors argue that environmental policy is put into practice on the basis of particular discourses that differ in scale.

While many authors seek to ground their studies by selecting particular scales, it is a simplification to say that scale is the only determining factor for authors interested in the emergence of environmental discourse and related policies (Murdock 2004). Environmental discourses often do not lend themselves conveniently to any particular scale, and the breadth of research in this area suggests that analysis is being carried out across different scales. Jordan (2002a), for example, examines the complex interaction of national and international environmental discourses that has led to the 'Europeanization' of environmental policy within EU member states.

The work of Michel Foucault has been influential for geographers interested in the governmental rationality of environmental discourse on different scales (Demeritt 2001b; Merriman 2005a). Foucault first described governmentality in a lecture in February 1978 where he argued that governance relies on the government of personal conduct – the modern ‘art of governance’ (Ó Tuathail 1996). Governmentality is used by Foucault as an organizing concept of the ‘government of self’ by the self and by others, and to describe the emergence of a particular form of government rationality in early modern Europe (Gordon 1991; Rose 1996; Lemke 2001). By thus using ‘governmentality’ to study environmental discourse, we can understand government not by the imposition of environmental laws, but rather by the elimination of laws and the introduction of tactics that instil practices of self-government in citizens (Darier 1999).

Foucault developed ideas of governmentality on two different scales: the microphysical art of governance aims to rule the body and soul, and the macrophysical art of governance is concerned with state knowledge building and the governance of ‘things’ – for example territories and populations (Burchell *et al* 2000). The work of Foucault has been further developed by sociologists who claim that these new forms of government reach every individual through channels of power (such as the media) that solicit compliance (Dean 1999). Geographers have engaged with Foucault’s work by considering the role of statistical and graphical inscriptions in programmes of government (Murdoch 1995; Murdoch and Ward 1997; Hannah 2000; Demeritt 2001b; Bryant 2002; Kirsch 2002). Braun (2000), for example, considers the work of Canadian geologist George Mercer Dawson on his mapping expedition to British Columbia in 1878. Braun argues that the maps produced by Dawson constitute part of a governmental practice that constructs ‘territory’ through new economic and political calculation – a bringing together of state and its territory. The perspective of governmentality has thus helped to understand the spatiality of environmental discourse (Murdoch and Ward 1997; Hannah 2000; Barnett 2001; Larner and Walters 2004).

While some geographers have focused on large-scale studies of environmental governance, others argue that relatively little work has examined the everyday technologies and media which help maintain governmental programmes (Simons 2002; Merriman 2005a). According to Merriman, studies that reveal how subjects may be shaped in relation to programmes of government can be used to highlight the

heterogeneity and materiality of governmental networks (Merriman 2005a, 2005b). A similar 'microphysical' approach to the arts of governance is adopted by Blake (1999) in her study of two opposing visions of governance in nineteenth-century British Columbia – one based on the 'pastoral power' of confession and correction, and the other based on British criminal law. By considering governmentality through analyses of the material technologies and microphysical processes of governance, geographers have contributed to its spatialization (Mol 1996; Barnett 1999).

The use of governmentality as a tool to understand the technologies that create environmental subjects has led to the introduction of terms such as 'environmental governmentality' (Darier 1996), 'ecological governmentality' (Rutherford 1999) and 'environmentality' (Luke 1999; Agrawal 2005a, 2005b). 'Environmentality' is used by Agrawal (2005a) to describe how participation in community decision-making and institutional regimes of environmental governance in India has led to new ways of understanding the environment. In this way, participation leads to the cultivation of new environmental subjects. Within discussions of environmentality (and governmentality), there has, however, been comparatively little written about how the production of 'the environmental self' is related to changes in environmental policy and to associated changes in management practice. What is missing from existing debates is a discussion of human and non-human agency that can resist or change arts of government. In this sense, discussions of environmentality sit alongside debates concerning the social construction of nature, without much direct engagement (Demeritt 2001b). Where governmentality offers a managerial account of environmental realities, debates concerning the social construction of nature highlight possibilities for change in line with social conditions.

Related to Foucault's identification of macrophysical discursive governance, Benton and Short (1999: 3) argue that global 'metadiscourses' exist to describe and shape representations of the physical world. The two most dominant are the 'ecological metadiscourse' and the 'technological metadiscourse'. According to Benton and Short, these 'metadiscourses' provide a structure to understand multiple and competing discourses that exist in a state of flux. The 'ecological metadiscourse' encourages stewardship of environment, respect for natural processes and a sustainable approach to environmental cycles. In contrast, the 'technological metadiscourse' has emerged alongside scientific reasoning to represent environments

as resources for human use, through which advances in economic and social wellbeing can be made.

Studies of environmental policy have demonstrated that within Britain, environmental metadiscourses are increasingly used to implement European directives (Mol 2000; Jordan 2002a). Prior to 1972, environmental legislation in the six EEC member states is described as 'incidental' (Barnes and Barnes 1999; Hildebrand 2002). The 'watershed' in international environmental law, according to Kiss and Shelton (1993: 11), was the 1972 Stockholm Conference on the Human Environment. It was at this conference that pollution was discussed as an international 'problem', and it was agreed there that measures to tackle pollution should be based on common principals to be coordinated in environmental law. The Stockholm Conference produced a declaration signed by representatives of the 114 countries present. In response to this declaration, leaders of EEC member states adopted an Environmental Action Plan to inform subsequent environmental policy (Kiss and Shelton 1993). Central to the Action Plan was a desire to balance economic growth with the creation and preservation of healthy environments (Jordan 2002b). These combined principles mark the emergence of what is considered to be an internationalist discourse of environmental management and protection (Kiss and Shelton 1993; Vogler and Jordan 2003). With reference to the First Environmental Action Plan, for example, Jordan (2002b) argues that at least three landmark environmental principles became formalised across European member states: the commitment to preventative action; the idea that polluters pay for damage caused; and the idea that some measures are best enacted at regional or local scales.

The First Environmental Action Plan also identified 'bathing waters' for the first time (see Chapter 4). This Action Plan, which marked the commencement of a European environmental discourse, balanced ecological and technological metadiscourses in a way that was unique at that time (Osborne 1997; Barnes and Barnes 1999; Jordan 2002a). The document did not, however, have a strong legal framework within which it could be implemented (Warren 2002). Accordingly, the environmental directives produced between 1972 and the signing of the Single European Act in 1987 were based upon a flimsy provision in the 1957 treaty of Rome that simply committed countries to closer harmonization (Jordan 2002a). It was, therefore, difficult for the European Commission (EC) to encourage member states to implement the agreed principles set out in environmental directives – like the Bathing

Water Directive. Indeed, it has been argued that the 'implementation deficit' in European environmental policy continued to grow, even after the signing of the Single European Act (Knill and Lenschow 2000).

While geographical scale is important in the study of European environmental discourse, many studies seek to highlight dominant environmental discourses that normalise policy outcomes (Fischer 2000). These studies, more theoretical in nature, investigate the processes that produce dominant discourses, and the practices that result from a dominant technoscientific environmental discourse (Redclift and Sage 1998; Braun and Wainwright 2001; Bickerstaff and Walker 2003; Watts 2003; Carvalho and Burgess 2005). Many argue that a dominant discourse serves to neglect particular voices and 'local knowledge' (Mol 1996; Fischer 2000). By highlighting how dominant discourses are produced, these studies have explored how alternative processes might include previously neglected voices (Blowers 1997; Bloomfield *et al* 2001; Munton 2003). One way of describing how dominant discourses emerge is by investigating the formation of 'discourse coalitions' using the theory of ecological modernisation (Hajer 1995).

As noted, the idea that environmental and economic interests could be met simultaneously stems from the early 1970s. Despite the emergence of this 'compromise' approach, some studies have traced an increased polarisation during the 1980s between environmental activists (seen as 'anti-growth') and governments, which viewed environmental problems as distinct issues that should be dealt with in reductionist, rather than holistic, terms (Blowers 1997; Toke 2002). Ecological modernisation theory developed at this time to describe the discourses that sought to bridge the divide by emphasising the mutually positive relationship that could be built by incorporating opposing discourses – environmental and technoscientific. It is argued that discourses of ecological modernisation have become dominant in Europe and North America, and have been associated with broader trends in neo-liberalism (Hajer 1995; Pepper 1999; Buttel 2000; Murphy 2000). Toke (2002) identifies six characteristics of ecological modernisation discourse (Figure 2.1). According to Jordan (2002b), some of these characteristics entered into (European) environmental discourse as a result of the 1972 Stockholm Conference on the Human Environment, and subsequent Environmental Action Plans adopted by EEC member states.

Key Characteristics of Ecological Modernisation (adapted from Toke 2002)

- The idea that economic and environmental objectives can be met simultaneously.
- The idea that economic development and environmental protection are both desirable for the welfare for present and future generations.
- The principal of 'polluter pays'.
- The idea that a holistic approach must be made to problem solving, so that environmental problems should not be tackled in isolation.
- The principal that environmental protection policies must operate alongside the market context, while some limited government intervention is also required.
- The idea that nations need to adopt environmentally friendly policies so that they can compete effectively with other countries.

Figure 2.1: Key Characteristics of Ecological Modernisation (Toke 2002)

Hajer (1995) discusses the historical roots of ecological modernisation by considering the institutional processes out of which the discourse of ecological modernisation emerged from the 1970s. The institutional processes that Hajer cites include the emergence of environmentalism as a social and institutional movement, and the associated dynamics of political institutions that sought to utilise scientific reductionism to tackle environmental problems (Inglehart 1990, O'Riordan 1994). Hajer (1995) argues that while institutions had specific interests, they came together through a common discourse and a common way of framing environmental problems. Using the example of air pollution in the United Kingdom, Hajer (1995) argues that ecological modernisation became the dominant discourse used both by activists and governments – the principal that 'polluters pay' for the damage they cause was commonly agreed by the dominant 'discourse coalition'. The theory of ecological modernisation is, in this sense, descriptive because it seeks to account for a number of different trends that occurred between the 1970s and 1990s.

Hajer (1995), however, seeks to go further than merely identifying ecological modernisation. He does this by criticising the efficiency-orientated technoscientific approach that appears as the rational solution to environmental problems. The emerging environmental movement of the 1960s and 1970s, according to Hajer (1995), was based on a reflexive counter-culture that sought to both politicise environmental debates and open a discussion on the direction of modernisation within

society. While the discourse of ecological modernisation is appealing in allowing environmental activists to engage in politicised debates, Hajer and others argue that the ability of activists to pursue reflexive discussions is actually curtailed (Davies and Harre 1990; Revell 2005). The new discursive order within environmental debates has, for Hajer, imposed new limits on what can be said meaningfully – this is the ‘discursive paradox of the new environmentalism’ (Hajer 1996: 251).

In response to Hajer’s call for a more reflexive ecological modernisation, Toke (2002) supports a change to a more broad-based social approach rather than an elitist managerialist system. For him, the type of ecological modernisation adopted should be specific to the environmental issue under consideration. According to Christoff (1996), weak forms of ecological modernisation are based on a technical cost minimization strategy that fails to reflect many public and political values in relation to environmental problems. Weak environmentalism is subsumed into, and guided by, the normative dimensions of ecological modernisation. For Christoff – whose argument is based on a poststructural analysis of GM food crops in the UK – ecological modernisation needs to be stronger in posing a challenge to modern environmental practices. By strengthening ecological modernisation, a cultural transformation can be brought about that will sustain reductions in material consumption, and contribute to the redistribution of technology and wealth. Mol (1996: 317) argues that ecological modernisation needs to be more responsive to the influence of ‘lay actors’, particularly with reference to issues like the greenhouse effect that require cultural change alongside environmental management strategies (see also Andersen and Massa 2000; Fischer 2003).

In addition to ecological modernisation, studies of environmental policy have used concepts, such as ‘advocacy coalitions’ and ‘policy frames’ to represent and criticise dominant environmental discourses (Sabatier 1999; Griggs and Howarth 2002). According to Sabatier (1999), advocacy coalitions are networks that are brought together to facilitate the common aims of a coalition. Using the example of forestry in the USA, Sabatier argues that advocacy coalitions occur when individuals with differing beliefs create new cognitions through discursive storylines that highlight shared goals. In response to the advocacy coalition framework, Hajer (1995) argues that Sabatier’s work emphasises a rationalist conception of discursive change that occurs within a supposedly apolitical forum – and that this leads to very different ideas about how environmental issues like air pollution are framed discursively.

Fischer (2003) adds that consensus on environmental policy is not normally brought about through rational debate of objective facts. An alternative perspective is the idea of 'policy frames' (Griggs and Howarth 2002). These are interpretative frameworks which comprise 'a hierarchy of norms and codes for interpreting problems and guiding behaviour within the policy process' (Griggs and Howarth 2002: 106). Policy frames determine how particular environmental problems are defined discursively, and guide actors in a way that solves problems in a policy arena.

Using theoretical concepts described above, researchers have been able to uncover policy narratives that create different environmental realities for the benefit of particular people. Studies of environmental policy, for example, cite 'sustainable development' to show how environmental discourse has changed since the Brundtland Report of 1987 (Brundtland 1987; Blowers 1997; Huber 2000; Seippel 2000; O'Riordan 2004). Toke (2002) argues, however, that while sustainable development may appear similar to ecological modernisation, the latter is more commonly associated with technoscientific strategies to manage environmental problems (see also Scott and Oelofse 2005). Langhelle (2000) argues that ecological modernisation should be seen as a necessary component of sustainable development, but not as an alternative. According to Massa and Andersen (2000), the pragmatic use of such terms among environmental agencies and political actors has threatened to empty such phrases of all meaning within modern 'greenspeak'.

While ecological modernisation has been described as a 'global' discourse (Harvey 1996; Giddens 1998; Scott and Oelofse 2005), and a 'paradigm' within environmental management (Blowers 1997), geographers have been prominent in demonstrating the local process and politics of this dominant discourse coalition (Mol and Sonnenfeld 2000a, 2000b; Gibbs 2000; Murdoch 2004). Murdoch (2004), for example, identifies three ways in which discursive studies of environmental policy are divorced from geography. First, Murdoch claims that discourse analysis is often seen to idealize the policy process so that the material and structural conditions that bring out particular discourses are lost from view. This trend has led to calls for a 'rematerialization' within geography (Jackson 2000; Philo 2000; Lees 2002). Secondly, the discourse analysis approach, for Murdoch, often neglects the complex ways in which discourses interact with local processes and local patterns of political activity. Thirdly, by looking at the discursive construction of environmental policy, many studies assume that policy 'repertoires' are evenly spread over political space,

therefore neglecting the local resistance to policy goals and their implementation. In Murdoch's view, the agency of humans (and non-humans) is erased by many studies that use discourse analysis of environmental policy (Murdoch 2004).

There is, as yet, little research investigating the role of human and non-human agency in the production of 'discourse coalitions'. In this thesis I begin to address this gap by considering how different types of agency interact with dominant environmental discourses. Chapter 4 considers the Bathing Water Directive in the context of contemporary environmental discourses at a national and European scale. By identifying dominant discourses, Chapter 4 considers whether a rationalisation of environmental discourse has led to an associated rationalisation of bathing area management. Practices of bathing area management are thus shown to be associated with, but not determined by, dominant environmental discourses. Debates concerning the social construction of nature are used in Chapters 4 and 5 to demonstrate how practices of bathing area management can be best understood with reference to processes and politics (with or without scale) that engage with dominant environmental discourses.

Social Constructivism and the Importance of Practice

Discussions concerning the precise nature of the relationship between nature and society have provided the basis for much geographical work in recent years (for example Barnes 2000; Castree and Braun 2001). Central to such research has been the insistence that nature is something that does not pre-exist outside of its construction. In this section, I outline how different social constructivist positions have become important within geography, and how these have been used to describe and explain the 'production' of nature. Different constructivist positions have led to problems regarding the ontological status of nature, the epistemological authority to speak on behalf of nature, and the role of non-human agency. Here, I outline the various positions that geographers and others have taken with regard to these problems. At stake in debates on the social construction of nature is the 'authority' to represent nature within policy discussions and environmental management. In addition to different types of 'constructivism', I describe how geographers have used Actor-Network Theory to overcome dualistic structures of nature/culture. In response to criticisms of Actor-Network Theory, I argue that practices of beach management can

be investigated to uncover how bathing areas are produced with respect to aesthetic value and cleanliness.

Debates in the social construction of nature can be broadly divided into those which concern the social construction of ideas of nature and wilderness (for example Cronon 1995), and those that make claims regarding the material construction of what constitutes nature (Demeritt 2001a). This separation mirrors current debates within geography regarding the epistemological and ontological status of nature. Castree (1995) illustrates how the ontological status of the 'real world' provides the basis for differences in constructivist thinking. For some constructivists, aspects of nature exist in the real world, but it is only through our socially-conditioned perceptions that we gain knowledge of the world. From this perspective, it is accepted that ideas of nature change depending on the standpoint of the observer. Environmental phenomena do not simply exist in nature waiting to be 'read' by an ever-improving science. Instead, epistemological reasoning is relative to social and cultural positioning, which means that multiple interpretations of the environment are valid (Jones 2002). Constructivists adopting this position have described themselves as 'moderate' because they maintain that aspects of nature exist outside human interpretation (Jones 2002: 248).

In contrast to a moderate constructivism described above, some geographers maintain that what is referred to as the 'real world' is created through interpretations of nature that are based on personal perceptions. Reality, for these constructivists, is a product of human discourse such that changes in discourse lead to changes in physical reality (Eden 1998; Braun and Wainwright 2001). From this perspective, 'strong' or 'hyper' constructivists have argued that nature can only be produced through human discourse (Woodgate and Redclift 1998: 6). Similarly, the relationship between nature and society can be understood by examining how both sides of this dichotomy are produced simultaneously through environmental discourse – a process of 'heterogeneous construction' (Haraway 1991: 149; Sismondo 1993, 1996; Latour 1999; Demeritt 2001a; Bickerstaff and Walker 2003).

The positions outlined above are important when it comes to deciding whose knowledge and interpretation of nature is most valid, and thus, whose knowledge should be incorporated into environmental decision-making. It has, for example, been argued that accepting ontological relativism leads to a political and practical vacuum, whereby the existence of an environmental problem can be refuted as a mere social construction (Demeritt 2001a). 'Nature' from this realist perspective has been

oversocialised (Benton 1994; Dunlap and Catton 1994; Murphy 1994; Dickens 1996; Gandy 1996; Soule and Lease 1995). In addition, the possibility of multiple and equally valid representations of reality has led to criticisms that no one interpretation of nature can be privileged over another. It is argued that if we cannot access a nature uncontaminated by our ideas, then we lose the stable ground from which to argue a defence of the natural world (Cronon 1995). Environmental problems can simply be brushed aside as another construction which, in turn, leads to a political quietism that refuses action to preserve environmental quality (Proctor 1998a, 1998b).

To counter criticisms that constructivism is associated with a 'poststructural quagmire', Jones (2002: 247) urges the rejection of ontological relativism. This, she claims, would allow normative decisions to be made regarding which claims to knowledge should be applied and under what circumstances, while retaining a 'weak' constructivism. Environmental sociologists have claimed that a rejection of ontological relativism can enable diverse accounts of the world to be negotiated, thus providing feasible paths for action (Wynne 1994; Castree 1995; Hayles 1995; Yearley 1995; Blaikie 1996). Burningham and Cooper (1999), for example, claim that constructivism does not necessarily lead to a political and practical vacuum because political intervention does not depend on objectivism. The approach that should be adopted ascribes value to knowledge that corresponds to what occurs in the real world, whether from scientist or from non-expert. By doing so, Wynne (1994: 187) argues that a realist stance can be retained 'from which the radical critique of dominant versions of global environmental science can be mounted'. This approach maintains that criticisms of constructivism are irrelevant to 'weak' constructivists who recognise that natural things – like trees and oceans – do exist, but it is only through a situated understanding that we can enact environmental policy (Eden 2001).

Sayer (1993, 1997) responds to realist criticisms of constructivism by proposing a moderate approach that allows the separation of discourses that provide a successful guide to action from those which do not. This separation, according to Sayer (1997: 482) need not be made purely for the purposes of political expedience, as is the case with 'strategic essentialism' (Spivak 1988, 1995). For Sayer (1997), constructivists do not need to mirror positivists by selecting opposing representations of reality. Such an approach is based on an epistemic fallacy in which social constructs are confused with their material products or referents. Similarly, Soper (1995, 1996) envisions a moderate constructivism that balances the 'real' and the

'social', and avoids both realist assumptions of pure knowledge and relativist assertions that all knowledge claims are equally valid.

To overcome realist-relativist arguments that are embedded in debates about constructivism, exponents of Actor-Network Theory have sought to dissolve dualistic structures such as nature/culture (Latour and Woolgar 1979; Callon 1986; Latour 1987, 1988a, 1993, 1999; Law 1991, 1994). Actor-Network Theory seeks to uncover *a priori* distinctions between the social and the natural that form the basis of many constructivist understandings of science. These distinctions are abandoned because social constructivism is too heavily dependent on representations of nature that reproduce the dualistic structure between object and knowledge, nature and society (Demeritt 1994; Eden 2001). Actor-Network Theory suggests that constructivist understanding should be extended to consider how materials and actors – both human and non-human – are mobilised to influence the production of scientific knowledge. These materials provide a means to overcome the dualistic structure of nature and society by rendering such terms unnecessary in a network that refuses to separate the world into binary categories. The heterogeneous materials that comprise actor-networks can, for example, include scallops – in respect of their agency in the network of local fishing industries in St Brieuc Bay (Callon 1986). In a similar way to Haraway's (1991) cyborg metaphor, Actor-Network Theory seeks to bridge the separation between the human and nonhuman by demonstrating how material 'things' interact prior to their classification as human or nonhuman, natural or social.

Within geography, Actor-Network Theory insists that we think about the relationship between nature and society as a network that renders distinctions between, for example, 'urban' and 'countryside' meaningless (Braun 2005). There is, according to Braun, no point in which we can say the urban network begins and ends. Similarly, Gandy (2002) uses a relational ontology to argue that today all nature is 'metropolitan nature'; networks and media allow urban trends and lifestyles to travel around the globe and networks of commodity production globalize the ecology of every city. Harvey (1996) argues that there is nothing unnatural about New York, or indeed, any other city. In light of relational ontology, urban geographers have discussed the possibility of reconceptualizing what was formally seen as a boundary between city and countryside as an infinitely complex network (Green 1990; Cronon 1991; Wilson 1992; Davis 1999, 2002). Geographers have used Actor-Network Theory to structure the relational ontology of human and nonhuman worlds (Demeritt

1996; Thrift 1996; Woods 1997; Holloway 1998; Wolch and Emel 1998; Murdoch 1997a, 1997b, 1998; Whatmore 1997, 1999, 2002; Whatmore and Thorne 1997).

There are, however, many criticisms of Actor-Network Theory (Collins and Yearley 1992; Miettinen 1998; Bloor 1999; Castree 2001; Sismondo 2004). Miettinen (1998), for example, argues that despite the supposed symmetry that Actor-Network Theory brings to the study of human and nonhuman actors, most work that draws on this approach continues to be focused on human agency. Despite a continued focus on the 'social', Pickering (1995) claims that cultural networks are not adequately accounted for by Actor-Network Theory because practice does not exist in a culturally flat world. Similarly, Sismondo (2004) argues that Actor-Network Theory characterises science as based on the relative rigidity of objects' translations and objectivity in the ability to capture the essence of objects. Yet this supposed rigidity of translation may hide many layers of social construction under the finish of relational materialism. When reflecting on the relative stability of objects and actions, Latour (1993: 71) states that 'a little bit of constructivism takes you far from realism; a complete constructivism brings you back to it'. In response to these criticisms, Actor-Network Theory has been reworked, and continues to inform many debates within geography and science studies (Law 1999; Hetherington and Law 2000).

One of the consequences of highlighting the importance of material objects is that agency becomes a key concern (Collins and Yearley 1992). Pickering (1995) argues that there are two pervasive 'idioms' that characterise the relationship between objects and knowledge (or subjects). First, there is the representational idiom in which science is characterised as an activity that seeks to represent objects within nature, to produce knowledge that corresponds exactly to how the world really is. Pickering argues, however, that it is both possible and necessary to escape the representational idiom if we are to understand scientific practice and the way environments are constructed. According to Pickering (1995), a second idiom can start from the idea that the world, instead of being filled with observable facts, is filled rather with agency. A performative idiom regards science as a field of practices, powers and performances which exist alongside, and help capture, material agency.

Studies in the sociology of scientific knowledge (SSK) have insisted on the importance of human agency in science. It is, therefore, not surprising that within SSK there exists some scepticism that studies highlighting material agency represent a huge leap backwards (this is exemplified by the 'epistemological chicken' debate

between Collins and Yearley (1992a, 1992b) and Callon and Latour (1992)). As outlined above, Pickering (1995) argues that material agency is important, but insists that this does not negate work that highlights human agency. Yet the solution proposed by Callon and Latour (Actor-Network Theory) is, according to Pickering, recourse to semiotics: Actor-Network Theory is based on signs and texts, which is a return to the representational idiom, and a move away from material agency. In this way, Actor-Network Theory falls short of providing an analytic tool to uncover the agency of things – getting to grip with the ontological status of objects. To fully grasp material agency, Pickering suggests social scientists should study ‘practice’, defined as ‘the generic sense around which all that follows is organised’ (1992: 8). Practice emerges only temporarily, and demonstrates how human and non-human agencies intertwine. It is, in the words of Pickering, the ‘mangle of practice’ – a performative historiography of science and technology – that offers a way to understanding material agency.

While geographers have contributed to debates concerning the social construction of nature, and have sought to overcome the dualistic structure that separates nature and society, relatively little work has engaged with an associated dualism – dirt and purity. Few geographers, for example, have considered how waste and pollution are discursively constructed and how spatial distributions of waste create normalised and ordered space. At present, many geographies of dirt express ideas of ‘dirt’, ‘litter’, ‘pollution’, ‘disposal’ and ‘waste’ as uncontested terms that have common meanings enduring over time (see for example Bowen *et al* 1995; Low and Gleeson 1997). Within social anthropology and environmental philosophy, studies of dirt and aesthetic appreciation have gone further in considering the importance of social and spatial order in the discursive construction of environmental and aesthetic purity (Douglas 1966; Brady 2002, 2003). Brady (2003), for example, explores the possibility of an ‘integrated aesthetic’ that balances different approaches to aesthetic appreciation. Environmental value is constructed here by combining aesthetic judgements based on inter-subjectivities that extend beyond scientific measurement and private expressions of taste.

For Douglas (1966), dirt is a spatial category that can be approached through questions of order and disorder; the dualistic structure of dirt and cleanliness is maintained in this analysis to reflect the importance that dirt has in our understandings of the world. Similarly, Thompson (1979) describes what he calls ‘rubbish theory’ to

account for the restless transformations of objects over time – a biography of objects. Thompson argues that over time, objects become rubbish when they are no longer considered to be worth keeping. It is this transformation – from value to worthless – that marks the point in which we seek disposal of the object. This geographical separation between person and object might involve placing an object in an attic or a bin. But any separation does not mark the end of an object. For Thompson (1979: 120), ‘durables’ such as collectors’ items, emerge out of rubbish in further transformations (see also Clark 1997; Gregson and Crewe 1997; Crewe 2000).

More recently, Jarvela and Rinne-Koistinen (2005) study the social construction of purity and dirt in the context of urban shanty-towns in Lagos. They argue that dirt and cleanliness are particular to local cultures and that cultural perceptions and tradition are linked to hygiene practices, particularly when it comes to the supply of household water. The authors examine how existing cultural understandings of dirt are combined with new knowledge to create a kind of hybrid approach in the domain of urban hygiene. Similarly in studies of geography, health and environmental justice, concepts of purity and dirt are often considered as spatial categories that can be mapped and analysed (Bullard 2000; Walker *et al* 2005). Bullard (2000) documents ‘environmental racism’ in the United States by considering how toxic waste disposal commonly takes place in poor, African-American neighbourhoods. This and other work has demonstrated how powerful and wealthy groups dislocate themselves from what is perceived to be dirt, waste and risk (Heiman 1990; Escobar 1992).

In contrast to studies mentioned above, Hetherington (2004) argues that the dualistic structure used by both Douglas and Thompson is too rigid in its structuralist account of dirt and rubbish. By seeking to go beyond the ‘dirt/clean’ or ‘either/or’ analysis used in many earlier studies, Hetherington argues that non-representational analysis of dirt describes better how dirt is produced and offers a revised understanding of the relationships between humans and disposal. Hetherington’s approach is to set aside the spatialization of dirt through questions of order and disorder. Hetherington instead argues that the management of objects – be they absent or present – constructs both waste and a particular social order.

Hawkins (2001) similarly calls into question the idea that disposal marks the end of our connection to an object. For Hawkins, ‘disposal’ is a problematic term because it invokes a permanent separation between person and object – a separation

that, through her analysis of plastic bags, she considers unfounded. For Hawkins, 'separation' incorporates a particular type of relationship and is not the opposite of connection. Both Hetherington and Hawkins owe much to the earlier writings of Foucault (1977) and Laporte (1978), both of whom consider the management of objects (water and sewage respectively) central to the construction and organisation of our identities and social relations. For these theorists, disposal and the construction of cleanliness link humans to objects whose 'absent presence' is managed for particular purposes.

The links between beach management practices and ideas of bathing area cleanliness are investigated in Chapter 5. Practices of beach management at Silversands and La Herradura are identified to uncover how bathing areas are socially constructed in different ways according to different ideas of beach cleanliness and aesthetic value. In this way, Chapter 5 argues that instead of describing *the* social construction of bathing areas, it is in fact more appropriate to discuss many coexisting social constructions. Practices of beach management thus reveal how ongoing debates concerning the relative merits of constructivism and Actor-Network Theory can be set aside when analysing how aesthetic interpretations of cleanliness, dirt and disposal produce bathing areas.

Water, Materiality and Beach Management

Within geography, studies of materiality have investigated the 'more than spatial' qualities of socially-constructed categories, such as cleanliness and dirt (Hetherington 1997). In this section, I consider how geographers, and others, have studied the materiality of water and sewage to understand better how these objects influence social relations in urban environments. Water, I argue, has been studied as both a 'cleansing agent' that bridges the dirt/purity dualism, and as a central component of environmental and political discourse in the creation of societal and personal identity. In my research, water, sewage and seaweed are important materials that interact with beach users and managers to create particular ideas of dirt and cleanliness and, hence, beach management policy. In addition to these materials, I identify beach flags as objects that play an important role in the technologies of government and the separation of clean and dirty bathing waters. Although geographers have yet to investigate the materiality of flags, I claim that a study of 'flagging' offers a unique way to understand the relationship between bathing water and social interactions.

The materiality of sewage is investigated by Goddard (1996) to uncover how socially-constructed categories of dirt and order change over time. Through an analysis of different disposal strategies in Victorian Britain, Goddard describes how proposals made by sanitarians to construct sewage disposal systems were hampered by a longstanding belief that sewage was a valuable agricultural commodity. It was only in the last quarter of the nineteenth century that extravagant estimates of the worth of sewage became replaced by a growing consensus that the 'problem' of sewage was its cheap and efficient disposal, avoiding damage to human health. Allen (2002) also considers Victorian resistance to sewers during the mid-nineteenth century and suggests that the urge to sanitize and reform disposal systems was met, in some cases, by resistance because reform was seen as a bringer of social chaos rather than a rationalising enterprise. The rhetoric of resistance reflects a perception of sanitization as disruptive and dangerous. As has been noted, 'although the sewer, as the embodiment and exemplar of sanitary progress, was intended to order the environment and cleanse the atmosphere, it is frequently represented as an instrument of social chaos, threatening the ideals of spatial division and social hierarchy in the Victorian urban context' (Allen 2002: 383).

While the above authors use sewage disposal to highlight how cultural values are related to disposal practice, other writers have studied sewage disposal to transcend dualistic metaphors of dirt and cleanliness. Gandy (1999) examines how the construction of sewers in nineteenth-century Paris was linked to the rationalization of urban space – linking the rationalising trend to questions of cleanliness. Gandy (1999: 36) argues that the flow of water through the 'urban alimentary system' is a study in how we can discern many tensions and contradictions in the modern city. Water, he argues, provides a powerful link between the body and its surroundings and in considering how public health and spatial order have become intertwined. Gandy goes beyond the dualistic structure of dirt and cleanliness by claiming that the 'uncanny' provides a connection between the psychological and the spatial in modern societies. The 'uncanny' is interpreted as the manifestation of one's own alienation within one's familiar space (Sibley 1992; Gandy 1996; Kaika 2005). Gandy states that 'in order to understand the enduring association of the subterranean city with the 'urban uncanny', we need to transcend these dualistic metaphors (dirt and cleanliness) and develop a richer appreciation of how human bodies and urban form interact' (Gandy 1996: 36). Similarly, Kaika (2004: 276), uncovers the 'domestic uncanny' – times of crises when

a leakage or burst pipe forces us to reconsider the normalised character of commoditised water.

In art history, Schama (1995) considers the longstanding metaphor of rivers as arterial bloodstreams that nourish and enliven both people and landscape. According to Schama, 'hydro-geography' has long been used by artists, architects and politicians for a particular type of nationalist propaganda. Similarly, geographers have argued that water management serves to shape both landscape and the identity of cities (Cosgrove 1990; Daniels 1993). These accounts demonstrate the complex role that water has played in the creation and representation of modern societies. Studies of urban water in particular illustrate how control and access to clean water became a key component of political discourse linked to the rapid expansion of many cities in the early decades of the nineteenth-century.

Gandy (1999, 2002, 2004), and others have argued that practices of social exclusion and political hegemony occur in the name of keeping natural processes under control (Boyer 1983; Latour and Hermant 1998). Gandy (2004), for example, considers the process of burying urban rivers in the name of keeping 'bad' nature away. This process, he argues, is invariably connected to the clearance of socially undesirable slums, while being hailed as an 'inevitable' side effect of the necessary sanitization of space. By tracing the diffusion of water technologies within cities, Gandy (2004) demonstrates that tensions underlie the political and economic impetus behind capitalist urbanisation as a geographically uneven and historically episodic process of social and cultural transformation – what he calls the 'bacteriological city'. At the start of the twentieth century, the bacteriological city became the end point of many decades of spatial rationalisation, driven by the hygienist emphasis on purification and ordering of space to produce new modes of socio-technical urban governance. The emerging interface of water, society and space extended from the bacteriological city to encompass regional and national dimensions to water resources planning and wider strategic goals such as rural development, power generation and fiscal policy (see also Swyngedouw 1996, 1999; Swyngedouw *et al* 2002). Geographers have argued that the control of water is not just a process of forgetting what a 'natural' water-body looks like: it is also a process that changes perceptions of what the socio-urban landscape should look like (Cosgrove 1990; Gandy 2002; Swyngedouw 2004).

The relational ontology associated with the 'bacteriological city' is used by Bowler (1999) to study sewage disposal using an Actor-Network perspective. Bowler describes how attitudes to disposal changed during the twentieth century, and how this is reflected in the European Union Urban Waste Water Treatment Directive (CEC 1991a). This directive, which bans member states from disposing of sewage sludge at sea, was enforced in the UK at the end of 1998 at great expense to water companies. Because attitudes to sewage disposal view offshore dumping as unacceptable, Bowler argues that disposal on farmland has become increasingly attractive. By using an Actor-Network interpretation, Bowler describes how science-based environmental regulation and pricing have become the 'modes of ordering' that determine what is now called the 'recycling' of sewage.

Geographers have, for some time, been at the forefront of research on recycling (Bell and Valentine 1997; Bowler 1999; Barr 2004). This form of disposal is often studied by examining the gap identified between attitudes towards recycling and behaviour (Barr 2004). According to Barr (2004), this value-action gap is a major concern for policy makers who have tried to adopt various techniques to encourage people to act in ways consistent with dominant environmental rhetoric. To understand and help increase recycling, Barr argues that geographers should investigate how particular discursive antecedents have become important to disposal behaviour.

While some geographers have studied recycling and disposal from an Actor-Network perspective, others have investigated practices of food production, retail and consumption to uncover the production of purity (Goodman and Redclift 1991; Bell and Valentine 1997; Whatmore and Thorne 1997; Crewe 2000; Murdoch *et al* 2000; Friedberg 2003; Winter 2003; Watts *et al* 2005). By presenting sanitized fresh vegetables in vacuum-packed containers, Winter argues that consumers are dislocated from the dirt of vegetable growth (Winter 2003). Friedberg (2003) considers how supermarkets are moving towards 'ethical' production in African horticulture. She argues that to ensure producers are not subjected to exploitation, ethical standards have themselves become fetishized as a marketable asset. Friedberg (2003) compares the current fetish for clean, ethical food with colonial concerns to 'cleanse' both physically and morally the lives of southern Africans. Modern horticultural practices are termed 'neocolonial cleansing'. Similarly urban geographers have examined how the domestication of water has produced new practices of cleaning and changing attitudes to purity (Pratt 1990; Sibley 1992; Grosz 1995; Pile 1996; Kaika 2004).

While some studies have investigated the production of clean water and the disposal of dirty water, others have suggested that, as a cleansing agent, water provides a vital link between dirt and cleanliness (Gandy 1999; Kaika 2004; Jarvela and Rinne-Koistinen 2005). Kaika notes that the availability of 'good' drinking water in the public sphere has become a thing of the past in many western parts of the world – public fountains are replaced by vending machines that turn water into a commodity. Kaika (2004) states that during the nineteenth and early twentieth century, water became increasingly part of urban life – and at the same time became associated both with cleansing and illness epidemics. It was during this time that the practice of treating and purifying water developed so that the material production of purified drinking water as a modern hybrid began. This, Kaika argues, coincides with the discursive construction of two distinct 'types' of water: *good* water (clean, processed, controlled, commodified) and *bad* water (dirty, grey, metabolized, non-processed). Water must now be mastered, controlled, and produced like any other commodity before it can be allowed to make contact with the human body. The material and discursive production of two different types of water mean that access to water is mediated by complex social and material interactions. This has resulted in the creation of specific spaces for the use of good and bad water; bathing where good water has been produced is considered to be a safe activity, whereas swimming in rivers, lakes or drinking untreated water is potentially harmful.

The idea of a hybridized metabolism is used by Gandy (2004) to illustrate the processes that underpin the transformation of nature into essential commodities. Gandy (2004) argues that relational or hybridized conceptions of urban metabolism – with the emphasis on phenomena such as commodity chains and the fluidity of urban form – are different from models of urban metabolism rooted in a homeostatic conception of the city as a self-regulatory system. These new conceptions of urban hybridity highlight the role of water as an active agent in the production of space, both in their constitutive role in the production of urban culture and through reflexive interactions with processes of socio-technical evolution (Latour and Hermat 1998; Swyngedouw 2004). Beyond twentieth-century discourses of scientific urbanism, there is comparatively little written about the role of water in non-urban environments. The 'bacteriological city' has undoubtedly spread its influence beyond rationalist conceptions of urban space – prompted by political and economic elites – but the networks that spread such rationalist discourse are not well documented.

Geographers have, in summary, investigated how sewage management is bound together with fluvial processes that have historically led to disposal at sea. More recently, the rationalising discourse of purity has spread from the 'bacteriological city', and has caused a rethink of disposal in light of concern for river and coastal purity. In recent years, the European Union has extended these rationalising and sanitizing discourses within a broad trend of multi-national environmental agreements. The Urban Waste Water Directive both reflects and enforces a changing attitude to disposal which extends beyond cities to include coastal waters (CEC 1991a; Bowler 1999; see also Chapter 4: 94). In domestic and public life, water is an important material of study – not least because water itself is a cleansing agent that bridges dirt and purity. The dualistic structure that exists between dirt and cleanliness is an emerging area of study for geographers. Discursive structures, such as clean/dirty, pure/impure, are often difficult to overcome; these are the terms commonly used in policy discourse and society to structure both ourselves and our environments. Studies of water, however, offer a fresh perspective on these debates (Kaika 2004; Gandy 2004; Swyngedouw 2004).

While geographers have begun to explore the materiality of many different objects including water (Strang 2005) and waste (Edensor 2005), they have yet to examine the materiality of flags. For Anderson and Tolia-Kelly (2004), studies of materiality should focus on more than the signification of particular objects. This should be done to insist on greater links between 'matter' and 'culture', and to uncover how objects relate to social significance. In this thesis, Chapter 6 argues that 'flagging' is a practice that involves the simultaneous deployment of materiality and social significance. It suggests that a study of 'flagging' offers a unique way to understand the production of good and bad bathing waters in relation to management practices.

Environmental Risk and Participation

Beach flags considered in this thesis are important as indicators of health risks associated with seawater bathing. In recent literature, similar environmental risks have been considered to uncover how questions asked of science cannot often be answered solely by science (Jasanoff 1987; 1990; Stirling 2003; Ravetz 2005). To successfully negotiate environmental risk, the public contributes its knowledge of what constitutes risk and how mitigation strategies might operate (Wynne 2005). This 'democratic'

model of public engagement is discussed below to demonstrate how dominant discourses of environmental risk have increasingly sought to highlight the importance of public participation, moving away from a 'deficit model'. For Beck (1992, 1995, 1998), environmental risk is increasingly 'manufactured' by scientific and technological developments within society. Because of these industrially produced risks, science is increasingly unable to account for environmental risk, leading to a break-down of trust between scientific authorities and society. This section describes how, for some, an emerging 'risk society' provides new opportunities for public participation in scientific risk assessment (Stirling 2003; Yearley 2005). With respect to health risks associated with seawater bathing, this section sets out how new research can provide a fresh perspective on debates concerning environmental risk and participation.

Until recently, the 'problem' of environmental risk has been the public's deficit of scientific understanding (Yearley 2005). The 'solution' has been more education to enable rational decision-making and increase support for scientific experts. But this 'deficit model' has increasingly been called into question by those using qualitative methods to investigate the production and use of scientific knowledge (see for example Pinch 1981; Wynne 1991). Critics of the deficit model have demonstrated that because of ambiguity over what is considered to be science, the study of scientists' understanding of science is equally important to studies of 'public' understanding (Wynne 1994; Irwin *et al* 1996). It is argued that the deficit model rejects the possibility that lay individuals gain knowledge from alternative sources and maintains that only those possessing scientific understanding can be experts. Social studies of science have demonstrated, for example, that local knowledge and judgement are required to understand science that was previously seen as objective and universal (Wynne 1992; Shapin 1998; Livingstone 2003). These studies represent a change from focussing on how publics learn and accept science to how they might engage with the formation and use of scientific knowledge.

The cultural shift – from public education to public engagement in science – can be traced in Britain by considering the fortunes of the Royal Society Committee for the Public Understanding of Science (CoPUS). Until recently, CoPUS has provided funding for projects that facilitate public education in science. In 2004, however, CoPUS was replaced by a new 'Sciencewise Grant Scheme' supported by the Government to support two-way engagements between publics and science and

technology. The demise of CoPUS shows how academic debates over the deficit model have, in part, caused a rethink about the aims and objectives in so-called 'public understanding of science'. In some cases, the realm of 'expertise' is opened to include different interpretations and non-scientific understandings of real-world phenomenon (Munton 2003; Chilvers 2005). In this respect, 'expertise' is no longer limited to scientific knowledge. 'Lay' people need not rely entirely on scientific experts and understanding. While such criticism has contributed to a re-examination of expertise, in many cases it continues to be the knowledge and expertness of scientists that are used to make sense of everyday life (Shapin 1994; Wynne 1994; Cook *et al* 2004).

The democratic ability of publics to have a say in the funding and use of scientific research represents the central concern within the 'democracy model' (Durant *et al* 1989; Munton 2003). This concern is shared both by those who maintain that greater public understanding enables rational decision-making, and by those who seek to explore how science can engage with people more effectively. The importance of 'the public' within these debates is not at question – publics provide funding to carry out scientific research and often find themselves enlisted in support of implementing research. Thus the issue at stake is the type of involvement offered to 'non-scientific experts' (Collins and Evans 2002). For traditionalists, public involvement should be limited to education initiatives. Increasingly, however, lay individuals are being sought to engage with and contribute to scientific knowledge. In this respect, publics are sometimes seen to provide a valuable source of additional understanding in assessing environmental risk (Wynne 2001; Hagendijk and Kallerud 2003; Davis and Burgess 2004; Sundqvist and Letell 2005).

While the democracy model increasingly calls for broader public participation within scientific research, the rationale to justify greater citizen engagement needs stated (Perhac 1998). Arguments for expanded public participation are often based on different reasoning (Campbell 2003). One rationale, described by Sundqvist and Letell (2005), is the argument that public involvement strengthens the stability of science-based decisions and the efficiency of implementation. By involving citizens, accountability is widened to offer greater legitimacy to a particular policy. According to some writers, governments are often quick to rely on scientific advice in order to relinquish responsibility for decisions that should be based on political argumentation, particularly in cases of environmental risk (Nelkin 1975; Fischer 1990; Demeritt

2001a). Hinchliffe (2001), for example, examines the Bovine Spongiform Encephalopathy (BSE) crises in Britain during the 1980s and 1990s to demonstrate how the British Government deferred to technocratic advice in a situation of wide uncertainty. The Government sought to achieve technical closure to a problem that should have been dealt with, according to Hinchliffe, as a political problem. The pursuit of scientific closure is described as anti-democratic because it hides the political decisions that always occur when choosing a scientific viewpoint to support policy decisions.

In some cases, the rationale for greater public involvement is based on the argument that non-experts possess knowledge that can be of crucial importance to science-based policy decisions (Sundqvist and Letell 2005). Using the example of the 1986 Chernobyl nuclear disaster, Wynne (1992) describes how the fallout of radiation in upland areas of north-west England was assessed by both government scientists and local farmers. Had the scientists listened to the views of farmers, Wynne argues that they would have been able to piece together a more accurate picture of the spread of contamination. Within development studies, the rationale for incorporating publics in technical decision-making is often based on concerns for social and environmental justice (Agrawal 1995; Geertz 2000; Watts 2003). A premium is often placed upon the value of local knowledge which goes beyond the previous use of subordinate, expedient, outsider knowledge (Bravo 1999). Using local knowledge can help to achieve social and environmental justice, and avoid 'environmental colonialism' and 'environmental racism' (Bullard 1990; Yearley 1996; Redclift and Sage 1998).

In situations where 'manufactured' risks are increasingly created by scientific and technological developments, the rationale for greater public participation is to overcome the break-down of public trust in scientific experts unable to fully account for environmental risks (Beck 1994, 1998; Szerszynski 1999; Wynne 1996a, 2001). Greater democratic involvement in environmental risk assessment is, for some, a positive outcome of scientific uncertainty (Stirling 2003; Yearley 2005). The creation of legitimacy is thus closely linked to discursive accounts of public participation that do not always represent the diversity of public knowledge and experience.

Health risks associated with bathing are supposedly mitigated by the Bathing Water Directive that requires environmental regulators in member states to measure microbiological pollutants at designated bathing areas (CEC 1976). With increasing knowledge of seawater pollutants, however, comes increasing uncertainty concerning

the immediate health risks to bathers. Chapter 7 assesses whether the inability of governmental authorities to account for risk has led to new possibilities for public participation in environmental risk management. Developing earlier ideas concerning bathing water assessment and beach flags (Chapter 6), Chapter 7 uncovers how environmental risk is based on particular types of expertise and public participation.

Expertise, Democracy and Environmental Management

In relation to European water quality, environmental management is always based on scientific assessment and technical analysis. In this respect, the European Union can be considered an apparatus of science-based regulation (Barry 2001; Sundqvist 2005). This raises the issue of what Irwin (1995, 2001) terms 'scientific citizenship' – which attends to expert based policy-making that often serves to exclude those for whom technical analysis is difficult to follow (Petts 1997; Burgess *et al* 1998a, 1998b; Burgess and Harrison 1998; Bulkeley and Mol 2003). Aware that a 'democratic deficit' is emerging in science-based policy, the European Commission has highlighted a growing gap between policy-making institutions and citizens uninitiated in science-based discussions (CEC 2001a). According to the Commission for the European Communities, citizens want experts to find solutions to problems considered urgent, while, at the same time, there is a growing mistrust among European citizens of the work carried out by expert advisors and politicians (CEC 2001b). In addition, detailed environmental regulation imposed by the European Union is found to be both too intrusive for many citizens yet too remote because the impact on everyday life is considered marginal (CEC 2001b). The solution to these paradoxes, according to the CEC, is to make transparent the use and diffusion of expertise through the 'democratization of expertise'. For some, however, this type of democratization is not enough to enable a more reflexive understanding of scientific knowledge (Latour 1987; Collins and Pinch 1998). Not only must scientific results be disseminated among citizens, the process of scientific activity must also be itself shared, what Latour (1987) terms 'science in action'. Public engagement is thus required to produce 'socially robust knowledge' through consensual agreement between different groups of experts and social actors (Nowotny 1999, 2003; Nowotny *et al* 2001; Wynne 2001).

While many have welcomed new engagements between science and society, some have questioned what this more relativistic perspective on expertise might mean

for decision making (Wynne 1994, 1996a; Jones 2002; Munton 2003). These authors argue that decision making based on the advice of experts would become more difficult if each individual were considered to be a potential expert. With this in mind, Collins and Evans (2002) set out to probe the problem of expertise further and assess whether different values can be ascribed to different forms of expertise. This, they claim, would allow a new model of expertise to emerge, not necessarily based upon scientific competence. A new, more open ordering of expertise would offer a more democratic way of deciding which experts should advise in decision making scenarios. Collins and Evans (2002) envision that decision making could be based upon scientific knowledge, while allowing some scope for alternative understandings and knowledge claims.

The model proposed by Collins and Evans (2002) has been criticised for placing too much emphasis on expertise associated with what they term the 'hard' sciences, such as physics (Rip 2003). This new division between 'public' sciences – such as planning – and non-public sciences – like astrophysics – does not, according to Rip (2003), provide an adequate way to define and order expertise. The reason for this is because any division that seeks to preserve science in a realm devoid of public involvement ignores the large body of work demonstrating the social dependency of all knowledge production (Collins 1985; Pickering 1992; Hacking 1992, 1999). Despite the limitations of this model, many feel that a normative understanding of expertise is required to sift through knowledge claims professed by non-scientists. This, they claim, might uncover some valuable non-scientific expertise and convince sceptical scientists that engagement with society does not entail floundering in what has been termed a 'relativist quagmire' (Sayer 1993; Jones 2002).

Geographers and social scientists have studied different methods that seek to increase public participation in environmental decision-making. Focus groups and citizens juries have been used to allow 'the public' to discuss the uses and applications of scientific knowledge (Finnie 2000; Irwin 1995). In this format, publics are often allowed only two possible outcomes which presume that participants are informed about relevant scientific research. Wynne (2001), for example, claims that there is a big difference between the GM research that scientists do in a laboratory, and how such knowledge is applied in different aspects of society.

More open-ended methods of citizen engagement have additionally been explored by geographers (Burgess 2000; Chilvers 2005). Participatory Rural

Appraisal, for example, encompasses a set of methods that derive from development studies and the work of NGOs (Chambers 1983; Nelson and Wright 1995). Prior to the 1980s, many development initiatives failed because they did not take into account the knowledge and aspirations of local people in less economically developed countries. To address these failures, participatory appraisal methods are designed to be community-led – they hand control to local people so that their knowledge can be used as a central component of planning, agriculture and other development projects. The aim of these engagements is to promote the expertise of local people and non-scientists. Instead of relying on supposedly objective scientific experts, participatory methods make full use of the knowledge gathered during engagements with local people. The desired outcome is that newly-empowered local people can take over community development projects and can successfully use their own expertise to promote solutions that best suit their needs (Kesby 2005).

Participatory methods go further than other types of engagement in acknowledging other types of ‘non-scientific’ expertise. In cases where such engagement is used, the boundaries between expert and lay are no longer defined by scientific competence. To make decisions based on sound knowledge involves engagement with a multitude of ‘experts’ who possess equally valid, yet different forms of expertise. For some, however, participatory methods are wrought with imbalances of power that are often ill thought-out (Cooke and Kothari 2001; Kapoor 2002). By comparing Habermas’ work on deliberative democracy with Chambers’ writings on participatory appraisal, Kapoor (2002) argues that participatory methods are too focused on empiricist concerns of practise. Kapoor (2002) claims that questions of legitimacy, power, justice, and the politics of gender and difference are all embedded yet largely unaddressed in Chambers’ writings.

By theorising participatory methods Kapoor and others have shown how poststructural notions of power call into question at least two assumptions of participatory practice (Cooke and Kothari 2001). First, participatory appraisal assumes that the outcome of engagement will be consensus. The methods used appear, on the surface, to be consistent with a postmodern celebration of multiple realities and local difference. But by focusing on consensus building, critics claim that participatory methods do not think through how difference can be respected in the drive to achieve consensus. The focus on community groups reconciling differences might, in some cases, amount to an erasure or repression of difference in ways that

favour more powerful groups. A second criticism of the participatory process is that facilitators not only open up an empowering public domain where a multitude of voices can be represented, the participatory space created is also replete with surveillance and discipline associated with constraint. The panopticism of the participatory process might, according to Kapoor (2002), beget disciplining mechanisms whereby participants normalise and monitor each others' behaviour. Utilising Foucauldian ideas on the micro-physics of power, Kapoor argues that participatory methods ignore the more complex ways in which power operates (see also Kesby 2005).

As a result of work that highlights the importance of non-expert knowledge, social scientists have reconsidered the dualistic structure that divides expert knowledge from 'lay' understanding (Petts 1997; Collins and Evans 2002; Wynne 2003). Maranta *et al* (2003) claim that discourses and actions of experts rely upon notions of the 'imagined lay person'. This imagined group is vital in the production of socially robust knowledge because scientists devote their work to people with a less privileged ability to interpret the world. The acquisition of new knowledge is driven by a public confronted with 'a world of learning about which they would like to know more' (Durant *et al* 1989: 11).

This construction of 'the public' is, however, nonreflexive (Maranta *et al* 2003). It suggests that a one-way flow of knowledge can transform ignorance to scientific understanding. It also presumes that 'lay people' are interested in and willing to accept knowledge considered appropriate by scientists in precisely the form it is administered. According to this interpretation, the place of people is outside knowledge producing sites such as laboratories and peer reviewed scientific journals. People – or the imagined lay public – are encouraged to visit science centres, read popular accounts of science and accept the knowledge produced by scientists. When educated, the imagined lay person is in a position to have a say in how scientific knowledge is manifest in society by participating in, for example, a citizens' jury. But for many, the imagined lay public exists only in the minds of those who believe in the ability of science to produce 'pure' knowledge. Studies have demonstrated that 'real' non-scientists behave very differently to the imagined lay people described above (Matless 2003; Roth and Riecken 2004). 'Real' non-scientists are not ignorant of either scientific knowledge or the real world entities being described by that

knowledge. Understanding and knowledge are built up through interactions with science, the real world and a multitude of other experiences.

The stark distinction between scientific experts and lay-public is simply not borne out in studies uncovering the contradictory relationships between scientists, scientific knowledge and society (Yearley 2005). What is often termed the 'lay-public' actually turns out to be an extremely heterogeneous group, each of whom is equipped with what Thevenot (2002) terms 'furniture'. This furniture outlines the abilities and constraints of all actors including the material items at their disposal and the beliefs and attitudes that enable people to make sense of their surroundings. In this sense, the place of people in the formation of scientific knowledge becomes complex. People, whether they define themselves as scientist or not, are constantly involved in the production, negotiation and application of scientific knowledge. Expertise – the knowledge possessed by experts – is not solely defined by what constitutes scientific practice (Pickering 1995). The places of all people in the production of scientific knowledge are tied up with the contexts in which science is produced, negotiated and applied.

While the places of people in the production of scientific knowledge resist definition, science relies upon the notion that lay publics are loyal to scientific knowledge. Woolgar (1991) examines how a computer company constructed potential users in an effort to design machines that would attract customers. 'Configuring the user' is a term used to define and constrain the agency of the imagined user (Woolgar 1991: 69). In this process, it is not just the imagined user that is configured, but also the machine and the computer company. Similarly, Latour (1999) describes how the Kodak camera was invented at the same time as an imagined mass market of amateur photographers. The configuration of technicians, camera, and users is bound together in an actor-network where different interests converge into a coherent network of 'allies' (Latour 1999: 313). It is thus argued that the places of people in the production of knowledge are materially affected by discourses that 'configure' the lay person.

The idea that scientists (and scientific knowledge) create an imagined or real society is not new. There exists an extensive literature on science and civil society, particularly among historians of science (see for example Khilnani 2001; Naylor 2002; Finnegan 2005). This literature includes studies of how scientific competence became a marker of reliability among those charged with decision-making in civil society. The idea of a civil society created by scientific competence has recently been

used to describe a realm of social life that exists between the home and the state (Broman 2002). Although the places of scientists and the 'lay public' are ambiguous, it has been shown that those who claim dominion over science receive increased social status and cultural capital (Habermas 1989).

In addition to gaining social status, it has been further argued that imagined lay publics are used by scientists to support their research interests and to add value to scientific expertise (Cooke and Kothari 2001; Kapoor 2004; Sundqvist and Letell 2005). This has been illustrated in the case of scientific disagreements where opposing groups of scientists vie for political and popular support by asserting ever-more proof of their scientific integrity. In these circumstances, the winner is invariably judged to be the more scientific by publics and politicians who are enlisted for their support. Science is still non-negotiable – what must be decided is which of differing opinions can be believed more (Yearley 1996). Here, the messiness of scientific knowledge, or its utility, is not questioned. Scientists produce 'pure' knowledge: 'citizens' decide how it might best be used.

Within science and public policy literature, researchers have identified organizations that facilitate interaction between scientists, 'stakeholders' and decision-makers. These organizations, which straddle the shifting divide between science and politics, have been termed 'boundary organizations' (Guston 1999: 87). The term and the concept derive from earlier work in the sociology of scientific knowledge, and in particular the 'boundary work' described by Thomas Gieryn (1983, 1995). Gieryn's definition of boundary work encompassed all the practical and rhetorical processes that scientists engage in to demarcate their work – science – from non-science. As a result of such boundary work, scientists ascribe their work with epistemic authority, and can thus claim privileged access to truth.

Jasanoff (1987, 1990) also uses the concept of boundary work to study the strategic demarcation between scientific and political tasks. This, she argues, is important in areas such as environmental risk management, where questions asked of science cannot be answered solely by science. The cognitive authority in such problems is 'trans-scientific' in that answers must be based upon 'extra-scientific' values (Weinberg 1972: 209). In environmental management, the action of boundary work seeks to divide the social worlds of science and politics, and to inscribe the different tasks performed by each. Studies of boundary work are, thus, used to

demonstrate the contested social processes that operate to maintain a division in social worlds.

Guston (1999, 2000) argues that in recent years organizations have emerged to take up the burden of boundary work on behalf of both scientists and political institutions. The 'logic' of such boundary organizations is demonstrated first by sociological studies of science and, secondly, by the contractual relationship that exists between financial support and scientific research (Guston 2000: 2 original emphasis). Defining common characteristics of scientific research has been a task undertaken by both sociologists and philosophers of science (Wynne 1994; Gieryn 1995, 1999; Jasanoff 1996). For sociologists of science, there is no single way in which science can be defined. Karl Popper's definition of science, for example, is based on the falsifiability of scientific conjectures. Yet Collins (1985) shows how this definition depends on the original empirical claim being replicated and reproduced for it to be testable. Collins demonstrates there is no unambiguous way of deciding whether a replication is competent, thus leaving open the possibility that scientists judge competence on the ability to be consistent with their original assumptions (Collins 1985). From a sociological prospective, boundary organizations exist as a result of scientists requiring a strategy to ensure that their work is maintained within the realm of scientific research.

Boundary organizations are just one way in which scientists and policy makers can meet and engage from either side of a social divide. The sociology of scientific knowledge has uncovered other ways in which scientists participate in policy relevant debates without compromising their position as objective providers of pure knowledge. The concept of the 'boundary object' highlights how some concepts or physical objects maintain one single meaning across different social worlds and thus allow a recognizable means of translation between heterogeneous groups of actors (Star and Griesemer 1989; Sundqvist *et al* 2002). Sundqvist *et al* (2002) employ the concept of a boundary object to describe how scientists and politicians cooperate to produce international strategies to combat air pollution. Fujimura (1992) combines the concept of boundary objects with Latour's (1987) description of 'fact-stabilization' to examine how a collection of boundary objects are used in practice to restrict and define each other. The shared meaning of objects and processes can narrow the range of possible interpretations made of a phenomenon, thus allowing a greater degree of 'fact-stabilization'. For Fujimura (1992), the use of boundary objects allows scientists

to define their expertise, thus allowing them to describe and constrain representations of nature and reality.

The space of engagement facilitated by a boundary organization enables both scientists and political institutions to benefit from communication (Carr and Wilkinson 2005). For Guston, this is a two-way mutually-beneficial process that accounts for the success of many boundary organizations (Guston 2001). The relationship between scientific and political institutions is described as a series of contracts specifying the tasks and obligations of each party. Boundary organizations provide an effective way of monitoring the integrity and productivity of scientific research institutions, ensuring that results contribute to intended goals within a given period of time. Such organizations create and use boundary objects to ensure effective communication between relatively distinct social worlds. For Guston (2001), boundary organizations are accountable and responsive to opposing authorities, rather than forging an image of independence. This, in turn, provides a space in which diverse groups can engage and negotiate – outside of which, separate identities are maintained.

In my research, different groups of scientific ‘experts’ and other actors produced new knowledge of bathing areas at Silversands and La Herradura. Chapter 8 describes how new knowledge is used to support particular policy decisions and considers how legitimacy is attached to different knowledge claims. Local authorities and ‘boundary organizations’ seek to create ‘socially robust’ knowledge by involving many different social actors in the production of scientific knowledge. Chapter 8 uncovers how legitimacy is created by investigating further the idea of ‘robustness’. Furthermore, attempts to engage social actors in the production of scientific knowledge require a reconfiguration of the ‘place of people’. By investigating recent attempts to make beach management more participatory, Chapter 8 asks how expertise is constructed and maintained at Silversands and La Herradura.

Conclusion

This chapter argues that an investigation of the Bathing Water Directive and associated beach management practices offers a fresh perspective on theoretical debates in geography and social studies of science. In reviewing recent literature concerning environmental discourse, social constructivism, materiality, environmental risk and participation in environmental decision-making, this chapter outlines five

themes that situate the empirical research presented in Chapters 4-8. To summarize the links between the themes identified above and the empirical material that follows, this concluding section expresses each theme as a research question.

Question 1 asks 'how can the EU Bathing Water Directive, a top-down policy, be situated alongside bottom-up practices of beach management at each fieldsite?' I began this chapter by reviewing literature that identifies broad trends of environmental policy from the 1970s onwards. In Chapter 4, I explore how the Bathing Water Directive provides a starting point to consider the tension between a top-down science-based policy and bottom-up practices of beach management. While bathing water legislation has remained unchanged, beach management practices have responded to changing environmental concerns.

Question 2 asks 'what are the bottom-up practices of beach management that can be identified at Silversands and La Herradura?' Recent debates in geography concerning dualistic structures of nature/culture were reviewed in this chapter. These debates have resulted in theoretical perspectives, such as Actor-Network Theory, that structure our understanding of the relationships between nature and culture. To identify bottom-up practices of beach management, Chapter 5 describes how different people and environments interact in the specific contexts encountered by me at Silversands and La Herradura.

Question 3 asks 'how is high quality bathing water created, maintained and represented at each fieldsite?' Water, as a material object, has been studied by those interested in highlighting its role as a cleansing agent and as an object that influences social relations in urban environments. Bathing water thus provides a new opportunity to examine how the production of 'good' water links 'matter' to 'culture'. Chapter 6 uncovers the relationship between people and bathing water by examining how flags are used both to represent water quality and to influence the actions of beach users.

Question 4 asks 'what happens when different interpretations of water quality exist?' Above, I described how geographers are increasingly interested in exploring how expertise is used to influence environmental policy and to identify environmental risks. In the case of bathing water, experts measure levels of sewage-related pollutants to construct an account of water quality at bathing beaches. Chapter 7 investigates how different groups of experts collect water quality information and how this information is collated and interpreted. In the case of both Silversands and La Herradura, different groups interpret water quality differently. Resulting tensions are

explored to assess how environmental risk is managed in situations of scientific uncertainty.

Question 5 asks ‘is there socially robust knowledge of water quality produced at Silversands or La Herradura?’ The concept of robustness was described above as a context-specific method of knowledge production that incorporates the views of different people – including scientists, policy-makers and ‘stakeholders’. The literature reviewed in this chapter discusses different modes of public participation and describes how participation is regularly used to co-opt what might otherwise be dissenting voices. Chapter 8 investigates how volunteer groups and coastal conservation charities become involved in beach management practices. In the case of Silversands and La Herradura, Chapter 8 explores the modes of participation used to create robust knowledge of water quality and asks whether there is anything other than cooptation.

Before I set out to address the above five questions, I turn my attention in Chapter 3 to issues of methodology. While my research was initially interested in geographies of environmental discourse and social constructivism, Chapter 3 describes how I became increasingly engaged with literatures concerning materiality and environmental risk. It outlines how the above research questions were refined as a result of iterative engagements with empirical material and theoretical debates described above. These and other methodological concerns are discussed in Chapter 3 to highlight links between the literature that influenced me and empirical research material in Chapters 4-8.

3

Scientific Knowledge and Clean Bathing Waters: Matters of Methodology

Introduction and Chapter Outline

Chapter 2 introduced several important themes in recent academic literature that frame my research of the Bathing Water Directive and associated beach management practices. These included the production of environmental discourse, social constructivism, the making of expertise and geographies of environmental risk. While my interests derive, in part, from recent academic debates, research questions addressed in this thesis are additionally developed through engagement with empirical material resulting from field investigations. In this chapter, I describe how issues addressed by my research were developed through iterative engagements with academic debates and empirical findings – a process that has been termed ‘epistemic iteration’ (Chang 2004). Furthermore, I explain how methodological concerns influenced my choice of research methods, and how these changed during the course of fieldwork.

Like many human geographers, methodological concerns within my research can not simply be addressed with reference to standard research design textbooks (Flowerdew and Martin 1997; Dwyer and Limb 2001; Valentine 2001). According to traditional models of linear research, theoretical knowledge accumulated from the literature can be used to derive hypotheses which are then tested against empirical conditions (Flick 2002; Mason 2002). The role of a methodology chapter within linear research is to describe why certain methods are most appropriate in studying a particular topic and why such methods can be used to address particular questions. In what follows, I reflect on how I went about investigating the production and management of bathing water. I describe in detail how my approach changed while of carrying out research and I argue that because of the methodological concerns presented here, my research practice does not ‘fit’ idealised models. Instead of imposing rigid methodological stages which simply did not occur, I present a narrative that seeks to open up how my research was iteratively formed – often in disjointed and messy ways (Butler 2001).

The narrative presented in this chapter addresses methodological questions of why I chose to use particular methods to explore certain issues in the contexts described. As stated above, the links between theoretical grounding and practice are explored not to rationalise the methodological process, but rather to highlight and reflect upon the changes in approach and the 'dead ends' that shaped my research project. To say, therefore, that my research 'developed' towards some *ex ante* endpoint would be misleading because it implies that I made inevitable progress. Following Haraway (1991), I emphasise in this chapter how knowledge produced by me, in this research project, is both situated and partial. To exemplify methodological concerns, this chapter makes use of my initial research proposal and annual research reports presented to the funding body, progress reports submitted to supervisors, letters to potential respondents and methodological reflections made in fieldnotes. Expressed within these materials are numerous methodological statements that are used to construct a story of my research project.

What the chapter describes is how this research project happened for me. Some of the issues I raise speak to broader methodological debates concerning access, research ethics and foreign language research, but the experiences described are not used as exemplars of good practice in qualitative research. My contribution to methodological debates is therefore to add my experiences to a growing body of reflexive research, and to argue that the narrative presented here is the most appropriate way for me to present methodological concerns within this thesis. Precisely because this is just one means of recounting my research, this narrative does not claim to capture and account for the influence of every conversation or text that I encountered. Research reports, letters and fieldnotes are quoted in this chapter to render 'visible' the situated nature of my research practice.

What follows is divided into five sections with, additionally, a short conclusion that traces a roughly chronological account of my research project. I describe, first, the proposal I submitted to the funding body which required me to outline suggested research questions and appropriate methods. While the proposal document caused me to think carefully about the focus of my research, I describe how my original research questions, and the use of an 'archaeology' of discourse analysis, caused me to think about further questions and issues that, over time, became increasingly important. I explain how my initial research questions changed as a result

of semi-formal interviews with beach managers and representatives of coastal charities.

In sections two and three, I describe the sometimes difficult process of negotiating access with potential respondents, and the ethical problems of obtaining 'informed' consent. I suggest that access became an increasingly important issue as I sought to become a participant observer in Fife Council's consultation exercise for a new beach management plan. While access could be negotiated with interviewees using written correspondence, I found that as an ethnographic researcher, access was increasingly about developing trust through good working relationships with respondents. I describe how, on one occasion, access to respondents and potentially valuable research material was blocked because I was unable to develop a relationship with a Spanish environmental regulatory organisation. In addition, I suggest that informed consent was obtained in my research through a process of negotiation, rather than a one-off event. The process of negotiation itself contributed to this thesis because my research questions were shaped, in part, by conversations that took place with respondents.

Fourthly, I outline the difficulties I encountered in relation to communication, language and shared meaning in my research. I describe the limitations and possibilities of working with a 'foreign' language, and I suggest that many of the issues encountered apply equally when working with a 'first' language in unfamiliar contexts. In this section, I discuss how language can be closely linked to issues of positionality, and how a closer consideration of how shared meaning is constructed can lead to a heightened awareness of research practice. In this way, I agree with Smith (1996a) that language in qualitative research can be investigated to uncover a 'space of hybrids' in which assumptions about how meaning is constructed become decentred.

Fifthly, I describe how new ideas were developed in my research by returning to earlier empirical material, a process of epistemic iteration (Chang 2004). To exemplify this process, I discuss how the concept of materiality became increasingly important to my research, particularly in relation to litter, seaweed and beach flags. In terms of methodology, a focus on materiality highlights the importance of artefacts in linking beach management practices and lived experiences of bathing areas. In this way, section five returns to the idea of a Foucauldian archaeology introduced in section one. But instead of referring to an archaeology of environmental discourse, I

describe how, through epistemic iteration, I eventually came to think about an archaeological interpretation of how particular objects connect environmental discourse and social interactions.

Beginnings: Research Design and Early Interviews

My research focus did not originate from a single point. I began with an interest in coastal water and a broadly constructivist theoretical perspective from which I based my initial research proposal to the funding body. Given that qualitative research is characteristically exploratory, fluid and context-sensitive, social scientists have questioned whether it is necessary or even possible to ‘design’ a qualitative project (Hoggart *et al* 2001; Cloke *et al* 2002; Mason 2002). Qualitative thinking is about rejecting the idea that a single document can encompass an entire advance blueprint for strategic and design decisions that can only be made during the grounded process of research. Similarly, grounded theory research gives preference to data as opposed to theoretical assumptions (Flick 2002). Here, the researcher should suspend *a priori* theoretical assumptions so that hypotheses and research questions are not restricted to previous knowledge, but, instead, emerge from the data. Although many decisions regarding strategy are ongoing, the initial research design was, for me, important because it encouraged me to start thinking about design issues that were later reassessed during the course of research (Shurmer-Smith 2001).

In my initial proposal, the funding body asked for a two-page summary of ‘the hypotheses or questions to be used and the research methods you intend to use’ (Progress Report 1: 07/10/03). In response, I described an interest in European coastal management strategies based upon scientific directives and the associated Blue Flag campaign. I stated that I wanted to ‘understand how scientific categorisation of coastal areas has been undertaken through Europe-wide initiatives that have built upon each other over time’ (Progress Report 1: 07/10/03). In this context, I proposed to investigate how scientific knowledge of coastal water is used to manage coastal environments by designating ‘clean’ areas. Furthermore, I described five questions that focused on the discursive production of bathing water through science-based environmental legislation. The first question, for example, asked ‘what can a Foucauldian ‘archaeology’ of coastal management tell us about modern day management strategies?’ (Progress Report 1: 07/10/03).

My initial research was thus based on environmental science discourses in policy documents produced by different governmental organisations and environmental regulators. The ‘archaeology’ of environmental directives I proposed was a methodological statement that structured some of the early research I did on policy documents with particular reference to the Bathing Water Directive (CEC 1976). Here, my methodology was Foucauldian in inspiration and focused on discourse analysis in method. Discourse analysis, however, can be done in many different ways depending on the theoretical preference of the researcher as well as the type of data available and the question to be addressed (Weinberg 2002; Hannam and Knox 2005).

Foucault’s project in *The Order of Things* (1974), which is described in *The Archaeology of Knowledge* (1972), is to suspend the role of the human subject in analysing the emergence of human sciences. His historical investigations do not, therefore, analyse documents, thoughts or representations with the aim of treating them as signs of something else, nor do they attempt to restore thoughts or experiences (Barker 1993). Rather, the aim of the archaeological method is to construct a systematic description of objects and discourses by looking at the rules being obeyed by a particular discourse. Foucault disrupts the idea that a transparent subject can be known by suspending the categories of unity and continuity that are the subject of other historical studies of ideas. So, for example, by highlighting the specific differences in meaning that occur over time with concepts such as ‘wealth’, Foucault seeks to show that *discontinuity* is the norm. What was a ‘total history’ in which the historian smoothed over discontinuity becomes a methodological approach that seeks to highlight the temporal elements of discursive meaning – what Foucault terms ‘discursive formations’.

Foucault uses the archaeological method in his early studies, including *Madness and Civilisation* (1967) and *The Birth of the Clinic* (1973). In his later work, Foucault develops his approach to discourse by looking at the relationship between discourse and knowledge. This multi-perspective method – used to uncover history as a struggle for domination – Foucault terms ‘genealogy’ (Matless 1992). The genealogical method uses the principles of ‘strategy’ and ‘tactic’ to expose the struggle for competing methods and the associated struggle for power. This means that knowledge is not the quest for ‘truth’, but rather a struggle over authored discourse, what Foucault calls ‘power/knowledge’ (Barker 1993). Thus, discourses

are caught-up in a contest over power. Foucault's earlier works – which examine the relation between words and things – are significant because they illustrate how discourses become contests over truth as well as power.

In my original research proposal, I suggested using the archaeological method for two reasons. First, the documents I sought to investigate did not often have a 'known' author. In contrast to the genealogical method, in which the authored text is an instrument of power, the archaeological method demonstrates how texts are linked to 'things' – for example bathing water – as a matter of utility. Secondly, I considered sociolinguistics to be too fine-grained for a study that encompasses different sorts of policy documents relating to beach management practice. I was, therefore, attracted to the archaeological analysis of discourses using an interpretive approach (Tonkiss 1988; Potter and Wetherell 1994; Dryzek 1997; Hall 1997). The interpretive approach to discourse is a method of conceptualising societal change and the relations between power, knowledge and practice. The analysis of 'discourse' provides a language and a set of rules to talk about a particular topic in a particular context (Hall 1997). In this way, my original proposal encouraged me to think about how discourses were linked to bathing water, and how social relations were structured in practice according to stratified power relations.

The archaeological approach was appealing because it offered resources to understand how scientific discourses of bathing water are linked to both bathing water and to social relations at chosen fieldsites. Bathing water, for example, is constructed by organised social representations through which people understand and act towards seawater. It is through the discursive formations that refer to and define objects of discussion that seawater becomes bathing water. In this analysis, discourse can be taken to mean all types of written text – including policy documents – in addition to spoken interaction (Myerson and Rydin 1996; Billig 1999a, 1999b). Potter and Wetherell (1994) supplement this approach by identifying 'interpretive repertoires' which are linguistic terms and descriptions often linked to metaphorical or grammatical expressions. By identifying rhetorical structures rather than broad social discourses, interpretive repertoires can be used to identify concepts – like 'cleanliness' – that argue for certain forms of action.

As I began my initial analysis of policy documents, it was the archaeological method that I sought to use. I found that my analysis of the Bathing Water Directive could be situated alongside studies of environmental discourse that used the concept

of 'ecological modernisation' to describe discursive change during the 1970s (Hajer 1995; Christoff 1996; Mol 1996; Toke 2002). By investigating the rationalisation of coastal management through discourses of scientific measurement and management, I initially hoped to identify a broad social trend for which the archaeological method is best suited. In one progress report, I sought to link proposed revisions to the Bathing Water Directive to recent discourses of Integrated Coastal Zone Management (ICZM). I argued that discourses of ecological modernisation contributed to new proposals for a revised Bathing Water Directive:

Integrated Coastal Zone Management is conceived as a design, a control and an evaluation process. It explicitly aims to deliver sustainable use of coastal environments by focusing upon local partnerships and the participation of multiple groups of interested parties in constructing management strategies (Vallega 2001). It is something that has been strongly promoted by the European Union since the 1990s, and is now being used in proposals for a revised Bathing Water Directive (Progress Report 2: 11/11/03).

In my initial analysis I found that proposed revisions to the Bathing Water Directive, first published in 2002, urged for a reduction in the number of scientific bathing water measurements from nineteen to two (CEC 2002a). This, I argued, was a strong indication of the discursive and therefore practical changes that might emerge from a rationalised 'integrated' approach.

While the archaeological method drew me towards broad discourses of ecological modernisation, I simultaneously began to think about how policy discourses might link to specific bathing areas. In particular, I considered how I might bring together broad discursive changes that happened within European bathing water legislature and specific discursive repertoires that structure how particular bathing waters are managed. I found that the problem was more than simply working with discourses that refer to different scales. As the research continued, I discovered that scale did not have much significance in determining which discursive structures were most important to the 'thing' under investigation – bathing water.

I initially intended to use interviews in addition to policy document analysis because I wanted to record, transcribe and analyse the collected data using discourse analysis. At this time, I stressed the importance of interview data in a one-page

summary of research posted to twelve potential respondents in Scotland. These respondents were chosen by me because each interacted with bathing waters and beaches as part of their work or during recreational time:

To carry out this research, I hope to conduct interviews with representatives of groups and organisations interested in the management of coastal waters at each site. I would hope to discuss the interactions participants have with bathing water and coastal areas as well as their opinion of how these are managed and how they might be differently managed. I would also like to discuss the importance of having a system that labels coastal waters according to their cleanliness, and how this information should be best displayed. Finally I would like to ask participants about the importance of coastal forums, community action groups and other initiatives that bring together different user groups (Personal Correspondence 1: 03/04/04).

As I began my first round of interviews, I thought more about how my work on policy documents could be related to the issues that I discussed with interview respondents. My interviews related to real fieldsites, so that many of the issues discussed were specific to respective bathing areas. Instead of doing text-based discourse analysis of policy documents written by unknown authors and with reference to over 13,000 European bathing sites, I interviewed many different people from different institutions in the summer of 2004, each with their own views and personal experiences of Silversands. Semi-formal interviews were transcribed and coded by me according to emerging research interests (see Appendix I for an example of an anonymised interview transcript).

At this point, two strategic issues arose that caused me to reconsider my initial research questions. First, I could not find many supporting links between my 'archaeological' work on policy discourses and the local matters that were brought up in interviews and other conversations recorded in fieldnotes. While I sought to maintain a broad discursive approach to analyse the rationalisation of bathing water, I wanted also to explore more fully how the Bathing Water Directive and Blue Flag were linked to Silversands. I began to see that my critique of broad rationalising trends in bathing water discourse could be directly contradicted by interpretive repertoires that I identified in interview transcripts. Secondly, I increasingly used

fieldnotes not only as supplementary notes to recorded interviews, but also to record details of informal conversations and observations that I made during visits to Silversands. Before this, fieldnotes had been largely supplemental.

My methodological difficulties – trying to juggle two contrasting approaches to discourse analysis and my increased use of fieldnotes – were not solved immediately. I continued my research and set aside difficult strategic issues in preference of a closer examination of more tangible topics – expertise, litter and bathing area cleanliness. My avoidance of confronting strategic research issues was, I think, due to a feeling that I had yet to comprehend fully the broader significance of issues discussed in earlier interviews. Later, theoretical and methodological changes in my research caused me to think again about research strategy. I found that what I wanted to learn about could best be addressed by making more use of fieldnotes in both participant observation and ethnography – as discussed below.

At the time of my initial interviews (April 2004), I had the opportunity to attend a conference organised by the Forth Estuary Forum (FEF) on the topic of coastal litter (Fieldnote 1: 21/04/04). At this conference, the need for an ‘integrated’ approach to coastal issues was advocated by speakers from local government, coastal charities and local beach litter collection groups. Coastal litter, according to the speakers, circulates around the Forth estuary and is then deposited on beaches like Silversands. In addition, the issue of coastal litter is bound up with the aesthetic quality of beaches, and to visitor numbers and bathing usage. Beach awards are awarded on the basis of both bathing water quality and the facilities that beach operators provide, including litter collection and disposal. After I spoke informally to delegates at this conference, I considered how my methodological approach to bathing water could incorporate the relational discourses that connected beach litter to seawater.

In addition to the coastal litter conference, my analysis of interview transcripts caused me to think about how beach litter and water cleanliness linked Silversands’ bathing water to the adjacent beach. In a report to my supervisors, I claimed that the discursive and physical interactions between bathing water and beach meant that to study seawater alone would be to follow the same technocentric discourses as those identified from an archaeological investigation of the 1976 Bathing Water Directive:

The separation between water 'quality' and beach 'quality' is one that is defined solely by the [1976] Bathing Water Directive. While the standards for water quality are carefully set out in the directive, it has little to say about the presence of litter on coastlines. This, I presume, is because the [1976] Bathing Water Directive was intended as a health protection measure to reduce the incidence of illness associated with bathing. What I have found, however, is that the Directive provides a way in which the 'illness' of the coast can be measured. For those that use and manage the coast at Aberdour, water quality is bound together with the 'quality' of sand, the beach, service provision, the town and even Fife. The separation made by the directive between bathing water and the rest is one that appears only in the tables of water quality measurements produced by SEPA. In all other discourses, water quality is bound to the quality of its surroundings (Progress Report 3: 06/07/04).

My argument that the beach and bathing water at Silversands are physically and discursively linked was an important methodological statement that led me to think more about beach litter and the construction of cleanliness. I was, in effect, arguing for an understanding of bathing water informed by a relational ontology that insisted on a network of links between objects and environmental discourse (Castree 2003; see also Chapter 2: p27). I also examined and eventually adopted new 'holistic' discourses of coastal management – as opposed to the original Bathing Water Directive, which is limited to the regulation of water alone. As I discuss below, the relationality of seawater became increasingly important in my research.

In a post-interview report to supervisors, I highlighted some of the issues that emerged from my discourse analysis of interpretative repertoires in interview transcripts. I claimed that the discursive construction of beach and seawater cleanliness provided the impetus for many different beach and bathing water management strategies. I also stressed the importance of expertise in the assessment of litter, cleanliness and aesthetic quality. In contrast to scientific measurements of bathing water quality, I found that aesthetic quality was assessed by different beach user groups and was closely related to concerns over litter and cleanliness. In reporting to my supervisors, I expressed my interest in how expertise was constructed and used:

Volunteers and those involved in the Coastal Litter Campaign have been encouraged to compile information on beach litter. This involves some rudimentary training to 'standardise' the measurements across different beaches, but is not deemed to require specialist expertise. In my research, the question of how expertise is attached to knowledge is a crucial part of looking at how 'clean' water is created. My initial findings are that communities, local beach advisors and volunteers are being encouraged to get involved in the process of creating new knowledge of aesthetic quality at Aberdour. But this involvement appears to be coordinated in certain ways that will be investigated further. (Progress Report 3: 06/07/04)

Expertise was, therefore, a topic that emerged from discourse analysis of early interview transcripts. I investigated this topic in greater detail in the following months, and produced reports to my supervisors that claimed further investigation of 'expertise' would be required. In writing such reports, I began to think back to my earlier difficulties combining 'archaeological' study of policy documents and interpretative discourse analysis of interview transcripts. While I attributed identification of the above topics to my interpretative analysis of interview material, it became clear to me that my earlier analysis of policy documents was crucial to the way in which I structured my arguments concerning expertise, cleanliness and beach litter. In effect, my reports on each of these topics illustrated one way in which I might combine two very different approaches to discourse analysis.

I looked to re-examine my earlier dilemma regarding discourse analysis in light of the research reports I had written for supervisors. One of the main criticisms of Foucault's 'archaeological' method is that the identification of discursive formations often spreads to encompass broader social relations involving cultural knowledge, but without making significant connections back to the text. Discursive formations thus allow the researcher to make claims without empirical substantiation from the text. Schegolff (2002), for example, claims that the discursive formations can be chosen by researchers to describe and explain social relations and things without allowing for research participants to identify discursive formations most important to them. In my case, 'archaeological' investigation of policy documents could, for example, be contradicted by discursive repertoires used by interview participants. This concern, however, is based on the assumption that researchers adopt

an apolitical analysis that seeks to ascribe objectivity to discursive interpretation. In contrast, Foucault's politicised method seeks to denaturalise the scientific, technical and legal terms that structure social relations.

Hajer (1995) uses the 'archaeological' method to study the discursive production of environmental policy making by identifying storylines that combine text and object to suggest a common understanding. For Hajer, discourses are constructed as the product of institutional practice and activities that reflect particular types of knowledge. Through the adoption of storylines, policy makers and other actors create social order and collective understanding of environmental 'problems' – like rainforest destruction or air pollution. Similarly, Dryzek (1997) utilises the idea of storylines to characterise environmental discourses. In Dryzek's case, discursive storylines can only highlight connections between discourse and power; for Hajer, storylines are the discursive structures that comprise the operation of power.

Fairclough (1992, 1995; see also Fairclough and Wodak 1997) discusses the three-stage method of critical discourse analysis as a means to overcome the difficulty of scale when analysing particular texts. At the micro-scale, texts are analysed using linguistic methods that pick up on the use of metaphor, thematic structures and other issues that relate language to social structure. Macro-scale analysis of texts is conducted to uncover how texts are produced, distributed and consumed. Fairclough argues that readers are invited to partake in an 'ideological framework' within texts that constructs an account of nature or reality. Critical discourse analysis investigates the macro-scale social practices in which institutions both construct and constrain discourse. At this third level, Fairclough identifies 'orders of discourse' that refer to the conditions that create discourse and the social relations that might result from a particular discourse.

Although Fairclough's critical discourse analysis is broadly analogous to the structure of language that Foucault identifies in *The Order of Things*, there is one important difference. For Fairclough, discourse must be analysed in the context of the pre-constructed reality in which it is produced. For Foucault, the relationship between language and power is recursive; discourses are not only shaped by, but also shape the social processes and human agency that frame them (Rydin 1999).

Fairclough's and Hajer's work offer similar methodological frameworks that I attempted to use to conduct discourse analysis. With reference to beach litter surveys, for example, I identified discursive storylines that are used to structure knowledge

claims, and hence to attribute blame for littering (see Chapter 8). It would, however, be misleading to suggest that I adopted either technique fully in my analysis of different policy documents and interview transcripts. In studying different texts, I found that I was guided to some extent by the material collected. It was a process in which I was simultaneously learning how 'to do' discourse analysis and developing theoretical understandings of how to use the material. In retrospect, any attempt to rationalise my methodological approach to studying bathing waters would conceal the importance of working with discursive repertoires in many different texts.

Negotiating Access: From Discourse to Participation

As noted, semi-structured interviews were a key component of my early research. These allowed me to investigate my original research questions by speaking to individuals from coastal conservation charities, local authorities and beach user groups. I was encouraged by the positive response I received from potential respondents to my initial letters. Semi-formal interviews do not usually require respondents to give-up much of their time, and there is often no further commitment to the research project (Flowerdew and Martin 2001). I suspect it is for this reason, and because some respondents felt it was part of their job responsibility, that people were willing to meet me and take part in interviews. Access, however, can be difficult to negotiate in qualitative research, particularly if the researcher seeks more extended involvement (Herbert 2000). In my research, I found that negotiating access became more difficult as I sought to become a participant observer of beach consultations and scientific water quality measurement. Increasingly, access became a process to be negotiated rather than a single event to be overcome at the outset.

In qualitative research, it is common that a 'gatekeeper' must be approached to gain access to people or information (Dwyer and Limb 2001). I discovered in my first round of interviews that Fife Council planned to create beach management plans for eleven award-winning beaches. Council employees would first be trained in the use of participatory methods for the project. While I had the opportunity to ask people at the Community Services division in Fife Council about these management plans during interviews, it was through a chance conversation with the course organiser that I was granted the opportunity to train with council employees. Aware of my research, a Chief Officer in Community Services allowed me to take part in a week-long course to prepare council employees to undertake participatory methods for beach

management plans as well as other green-space projects. At the end of the course, the group of sixteen was divided into two, with each group given the task of planning and carrying out participatory research at different coastal sites. The Community Services manager responsible for beaches assigned me to a group working at Aberdour – knowing, as she did, that my research concerned Silversands’ bathing water.

I sought to take part in the training course because I wanted to find out more about beach management plans that the council planned to produce. My involvement, however, meant that I needed to reassess my research strategy, which had previously been based on discourse analysis and semi-formal interviews. I decided that to find out more about beach management plans I would need to become a participant observer. I would, therefore, need to make more extensive use of fieldnotes because it was not possible to record audio or video during the training course and subsequent participatory fieldwork. In qualitative research, there are different ways in thinking about what fieldnotes represent, and how they should be compiled (Coffey and Atkinson 1996; Mason 2002). For some, fieldnotes are used to incorporate the experiences, perceptions and everyday interpretations of the researcher; while for others, the thoughts of the researcher are kept separate. I chose to record my personal experiences within fieldnotes because from my constructivist theoretical position, the ‘field’ is constructed through my observational presence and practices (Emerson *et al* 2001; see Appendix II for an example of a transcribed fieldnote).

The training course, and subsequent project work, involved multiple days at Silversands and in the community centre at Aberdour. During this time, I was neither an insider nor an outsider; most of the council workers knew each other reasonably well and had worked together before. Developing relationships in ethnographic work is likely to have significant implications on the kind of access that the researcher achieves (Mason 2002). Having been granted access to take part in the training course, I was keen to develop a good working relationship with the members of my team working at Aberdour. It also occurred to me that I became ever more closely involved in the process that I sought to study – as a group we created a plan for participatory research at Silversands.

During the fieldwork component of the training course, I helped collect data to be used for the council’s beach management plan whilst I collected information for my own project. The method that we, as a group, chose to use to explore beach and bathing water issues was the ‘H’ diagram (Kesby 2000; see Chapter 8). Fife Council

wanted to use participatory methods because of the limited success it had previously had with more traditional methods such as questionnaires and public meetings. The Community Services manager thought that participatory research would not only describe public perceptions of award beaches, but also help bring about greater partnership between residents and the council, and, thus, shared responsibility over beach management. While using 'H' diagrams as a facilitator, I found that I was collecting information that was both helpful in meeting the council's aims, but also relevant to my research. At the same time, I found that some discussions I had with beach users, on 'behalf' of the Council, were different to the discussions I had as a geography researcher from the University of Edinburgh. People were, on the whole, more critical of beach and bathing water management if they thought the information would go to the Council.

I was aware, however, that the questions I asked and the issues I discussed were tailored to my research as much as to the research aims of the Council. In part, this occurred because I helped during the research design process, and because the gap between my research and that which was being done by the council was – at times – narrow. Both Council staff and I, for example, wanted to learn more about how beach users perceived seaweed, and whether they thought it should be lifted from the beach.

Although the Council granted me access to participate in, and observe, the beach research at Silversands, I was not involved in the project write-up. The final report was compiled and written by a single member of my group, someone who held responsibility for award beaches in Fife. During my involvement in the project, the task of 'getting-in' did not end with the Council's consent for me to take part in the project. My position as neither insider nor outsider meant that Council workers sometimes shared with me confidential stories about people and places. At other times, I felt that I was looked upon as an assessor who was monitoring their actions. Reflecting on the duality of being both participant and researcher, geographers have identified the importance of acknowledging uncertainty in accounting for interactions with research participants (Rose 1997; Cloke 2000; Crang 2003a).

The time I spent working with the Council encouraged me to think more about the topics I identified during analysis of interview transcripts and policy documents – cleanliness, litter and expertise. In January 2005, near the time of my departure for fieldwork in Spain, I wrote a progress report for my supervisors in which I

highlighted the importance of these topics to my research. The construction of bathing water, I argued, was dependent upon how issues concerning litter and cleanliness are dealt with by different people in different institutional contexts that structure expertise. I took these research interests with me on my fieldwork to investigate bathing water at La Herradura.

In Spain, I learnt that an environmental charity in Granada province organised a campaign to award *Banderas Negras*, black flags, to beaches that it felt did not attain necessary standards for water cleanliness or beach management. I wanted to find out more about this campaign and I wrote to the Director to ask whether I could interview him. He agreed, and suggested that I visit the charity's office during their next weekly meeting. Having been granted 'access' however, the Director confessed to me, when I visited, that he himself did not know enough about the campaign to take part in an interview. He suggested that I sit in on their meeting and return the following week when his colleague would be present and could speak to me. While I was able to speak with this colleague the following week, the context in which I was introduced to her made it difficult for me to treat the conversation as an interview. I thought about whether I should ask for a more formal recorded interview, but I decided, instead, that I would take up the invitation to continue attending informal weekly meetings. The impression researchers try to create of themselves is something that, according to Mason (2002), should be thought through both in advance of fieldwork and reflected upon continually during research. In my case, I felt that the best way to find out more about the Black Flag campaign would be to become a participant observer.

My experiences of participatory research in Aberdour and with the environmental charity in Granada led me to think more about human agency in the production of clean bathing water and clean beaches. Prior to these experiences, I studied beach management in a very technocentric way – I presumed that management was based on the collection of prior knowledge. What I later discovered, particularly from my work in Spain, was that action – or practice – is not dependent of structured management procedures enacted by the local authority. In terms of bathing water and beach management, human visitors and dogs are equally important in bringing about changes as people employed formally to manage the coast. I began to think more broadly about the relational connections of agency involving the local authority and other actors. This, an important methodological insight, was developed

further as I spent more time with environmental activists, canoeists, diving companies and other beach users.

The importance of ethnographic work in my research increased greatly over time, and I found that the material I generated was intrinsically rich and useful in reviewing my research focus. I wanted to find out more about the collection and assessment of bathing water samples in SEPA laboratories, and so sought to do an ethnographic study of scientific practice (Latour and Woolgar 1986; Law 1994; Herbert 2000). My initial letter to SEPA in August 2004 did not, however, receive an immediate response. It took several further emails before I received consent from the microbiologists to accompany them when they collected and analysed seawater. Negotiating access for this ethnographic research took time because it involved a commitment from the microbiologists to accommodate me within their normal working practice. In addition to fitting me in with their schedule of sample collection and analysis, one reason why it took a long time to negotiate access was because they were (I think) suspicious towards my research. In one of my emails, I tried to assert my trustworthy credentials as a researcher by naming other organisations that had previously agreed to be part of my research:

As part of my project, I have been discussing issues to do with bathing water and coastal management with representatives from Fife Council, user groups and coastal conservation charities. Through these contacts, it was suggested that I contact you to find out more about the process of sampling and recording bathing water measurements. I have read SEPA's reports on bathing water, and I have obtained a full list of results for Silversands for previous years. What I would like, is to find out more about the actual process of obtaining a sample and the scientific tests carried out on the water. If convenient, I would be happy to discuss my research with you in greater detail (Personal Correspondence 3: 24/08/04).

Again, access was something that had to be worked out over time and was often based on developing a relationship of trust. Assertions of credibility on headed paper carried 'weight', but initial access often depended on further telephone calls, emails and 'contacts'. Even after I gained initial consent, access remained an issue that was negotiated differently in different contexts.

In some cases, potential respondents did not want to talk to me, and letters I sent out went unanswered. In one case, the organisation that awards Blue Flags in Spain refused my request to speak to a representative about the assessment of beaches in the Almuñécar area, claiming that the information I requested was confidential: 'Thank you for your enquiry Mr Campbell. I'm sorry to say that individual issues are an operational matter for the association' (Personal Correspondence 4: 26/05/05 – see Appendix IIIa). Qualitative research design textbooks often presume that access necessary to the research can be achieved (Valentine 2001; Flowerdew and Martin 2001). For Kusch (2002a, 2002b), personal testimony is more likely to be offered in cases where 'epistemological communitarianism' is established between individuals. This means that a tacit understanding of common interests or goals is made between researcher and respondent. During my research, I found that in most cases I shared broad concerns about coastal environmental quality with respondents. Nevertheless, access, methodology and method were bound together and needed, continually, to be reassessed.

Informed Consent, Informal Interviews and Issues of Beach Cleanliness

According to traditional ethical research design, the researcher should seek informed consent to proceed with their work in an ethical way. This type of ethics has been termed the 'positivist' or 'traditional ethical model' (Punch 1994; de Laine 2000). Ethical research can therefore only proceed once participants have been fully informed how their information will contribute to the research and the use to which the findings will be put. Contrary to this model of ethical conduct, informed consent in my research was rarely fully achieved. Like access, informed consent was a process rather than a one-off event. I found it extremely difficult to inform participants fully about my research at the outset precisely because the project changed over time and its key questions changed. From an initial concern with European legislation and the discourses of scientific measurement, I increasingly considered how cleanliness and litter were constructed by beach visitors, coastal charities and local authorities. I broadened what I considered to be the management of bathing water, and I started to think about the agency of humans and non-humans in management practices. In order to address these changing research matters, I used ethnographic methods that I had not originally planned to employ.

Reflecting on an early research summary I posted to potential interview respondents, it is clear to me that consent granted on the basis of this document does not constitute informed consent to participate in what the research actually became (Personal Correspondence 1: 03/04/04). The questions that I sought to address were constantly reworked as I learnt what questions to ask. It also was apparent that research participants did not fully understand what I was doing, despite signalling their consent to be involved. Informed consent, like access, was based on trust rather than comprehension.

When writing letters, I tended to express my research using phrases from my original proposal to the funding body. I found it easiest to mention environmental regulation and Blue Flags, rather than cultural interactions with bathing water and the construction of cleanliness. Even when I later used ethnographic methods and my research interests focussed on bathing water and beach management practices, the letters and emails I wrote continued to describe my research in terms of bathing water regulation. In some cases, I explained my research to interview respondents at the start of an interview, after access had been granted and 'consent' given. In my explanation, I often described what I had done already, rather than discussing how I would use the words of respondents in my research.

I was reluctant to describe in greater detail the more theoretical aspects of my research not only because of change in my research questions but also because I wanted to highlight what I thought *they* would see as the 'relevance' of *my* research. I legitimized my study, for example, by mentioning revisions to the Bathing Water Directive and how my research might contribute to new understandings of bathing water. My theoretical grounding was not explicitly stated, therefore, in letters and research summary documents because I thought to omit issues which would most likely generate a positive response. It was only later in my research that I was more comfortable in describing theoretical aspects when writing to potential respondents.

What I found from interviews and participant observation, however, was that respondents did engage with theoretical issues, and often enthusiastically discussed them. Important information, for example, resulted from discussions with interview participants on the role of environmental discourse. On a number of occasions, I discussed with participants the 'social construction' of litter and how various forms of litter become more or less socially acceptable. Participants spoke conceptually about the perceived risks of bathing and the types of warning information that should be

issued at bathing sites. A representative of one coastal conservation charity explained in detail the social construction of seaweed and how common perceptions of its potential value can be changed. These discussions were useful because they allowed me to explain my theoretical grounding more fully to participants. But such discussions normally occurred long after 'informed consent' had been given, often when I had developed a relationship with the respondent after several meetings.

My ethnographic work at fieldsites included informal conversations with beach visitors and wardens, dog-walkers, lifeguards and café owners. About fifty unstructured informal interviews supplemented my participant observation and varied in length from short exchanges to long conversations lasting sometimes nearly an hour. In this thesis, short informal interviews are referenced using a fieldnote index. People were, in general, prepared to talk about nearby beaches and bathing waters. For Anderson (2004), such 'conversations in place' can generate understanding of the knowledge and lives of individuals because geographical context is an active trigger to prompt knowledge recollection. Others have likewise noted that the place of interview is important in ensuring all parties feel at ease (Elwood and Martin 2000; Longhurst 2003). Using the example of 'talking whilst walking', Anderson (2004) argues that the role of place can influence the information produced and add new layers of understanding to social science research.

Approaching people on beaches, in diving centres, lifeguard huts or beachside cafés to discuss issues concerning bathing water required a different kind of consent. Often I did not have the chance to explain in any detail what my research was about or how the information would be used. While conducting participatory research on behalf of Fife Council, I introduced the research project, but made it clear that I was a student from the University of Edinburgh. On other occasions, I tried to explain briefly who I was and what I was doing, but often I had little opportunity to give anything more than a brief explanation of my research. When I mentioned that I was interested in perceptions of bathing water, people were normally happy to talk at length about the beach and its surroundings.

It was partly through unstructured interviews at Silversands that the issue of cleanliness emerged as a topic of study. Early in my research, I sought to look at how the science of beach management created cleanliness. From later unstructured interviews, however, I began to think about perceptions of cleanliness in a less technocratic way. I became interested in the different ways that people talked about

cleanliness because it was a term much used in the discussions at Silversands. I considered how dogs were banned from the beach, for example, and I spoke with dog-walkers to find out their opinions of dog exclusion zones. I also sought to investigate how cleanliness was mobilised and spatialized in different ways and how it was often linked to 'naturalness'. Using cleanliness as an example, I began to adopt a poststructural theoretical stance to investigate the presence, absence and memory of dirt.

The unstructured interviews I did at both Silversands and La Herradura did not adhere to traditional research ethics because participants were not fully informed about my research at the outset. I did develop a relationship with some beach users during unstructured interviews because I spoke to them on a number of occasions, but with most, I spoke only once. The names of all respondents have been omitted from this thesis to protect the identity of those who requested confidentiality and those who offered only cursory consent for their involvement. While I offered to send a summary of my research to all interview respondents, only a small number gave me contact details. In this way, I sought to be open and honest about my research while acknowledging that 'informed' consent was not fully obtained from each of my respondents.

My approach towards semi-formal interviews was, in contrast, shaped by what I thought respondents were expecting. During early research, I arrived at agreed interview locations with a notebook and voice recorder in preparation for an extended conversation about the topics highlighted in advance. My semi-formal interviews were functional and I approached them instrumentally. I was, therefore, somewhat surprised when I arrived for one interview, ready to commence a discussion of bathing water, when the respondent suggested that we go for lunch and then return to speak more formally later. This experience caused me to rethink earlier interviews in which I had merely arrived at the designated time, recorded the words of each respondent, and then left so that the respondent could get on with their normal work. In this functional context, respondents were content that they had performed their duty in speaking to me and clearly saw their involvement in my research project as completed. They were willing to help, but not to be co-opted into the research. For many such respondents, the interview with me was seen as a one-off encounter.

Later in my research, when working with Fife Council on its participatory research project or conducting ethnography of SEPA lab procedures, I had extended

engagements with research participants. This reinforced the practice of taking notes rather than recording interviews. Yet such ethnographic research prompts different ethical questions (Herbert 2000). Working on behalf of Fife Council, for example, I jointly facilitated a participatory mapping exercise with primary school children at Silversands beach. Although I made no indication in my initial research proposal that I wanted to carry out research with children, I helped to facilitate the project because it was part of the research Fife Council wanted to incorporate into its beach management plan. Fife Council had its own ethical guidelines for researchers working in the community, and on this occasion consent was arranged according to such rules.

Reflecting on my research practice and the different ways that I negotiated access and (un)informed consent, I suggest that traditional models of ethical norms do not apply to my research practice. I am now confident that the research I did *was* ethically sound because I sought to work out appropriate ways to address issues in context. Yet I was then (and am now more) aware that ethical guidelines that suggest idealised models of good practice do not automatically produce ethical research. Ethical norms written from a detached position enable researchers to claim their work stands up to ethical scrutiny. In my research, however, I found that situated ethics in which appropriate decisions are made in context provided a more productive way of thinking about ethical concerns rather than predetermining decisions and procedures in advance (Proctor 1998c; Vivat 2002).

Language, Representation and Fieldwork

Many debates exist in recent human geography literature concerning the significance of language in academic research (Withers 2000; Smith 2003; 2006; Desbiens and Ruddick 2006). These debates have, for example, encouraged researchers to engage in the practice of 'polyphony' in which voice is given to research subjects instead of simply writing for them (Spivak 1990; Crang 1992; Pile 1996). For some, language is a site of struggle in which the subaltern subject seeks to affirm identity in a context of domination (hooks 1991). The position of speaking has important implications in respect of power relations, issues central to situating knowledge within feminist methodologies (Haraway 1989; Gibson-Graham 1997; Rose 1997). In methodological textbooks, for example, geographers are encouraged to think carefully about phrasing questions the 'right' way (Valentine 1997; Hoggart *et al* 2001). From a different perspective, geographers have criticised the dominance of English as the *lingua*

franca of 'international geography' (Minca 2000; Kitchin 2003). While English offers a shared medium of exchange, it has been argued that its dominance raises questions of power in terms of language competence and hegemony (Short *et al* 2001; Desbiens and Ruddick 2006).

In addition to the researchers' use of language to represent research subjects, geographers have – only recently – started to pay attention to the effects that the process of translation has on the workings of language (Helms *et al* 2005; Watson 2004). All researchers work with translated texts some of the time, yet translation rarely captures linguistic complexity (Deleuze and Guattari 1987; Eco 2003). In the context of foreign-language research, Smith (1996a: 162) argues that 'any translation seems always to be a reduced and distorted representation of other social texts and practices'. Yet these problems of translation do not mean that researchers should abandon attempts to translate into, or work with a different language. Smith argues that new forms of understanding may be developed that denaturalize researchers' assumptions about their own language being clear and defined. By conducting research using a foreign language, Smith believes that positive engagements can occur in a 'space of hybrids' (1996a: 161).

Geographies of languages, as well as those of linguistic inclusion and exclusion, have only recently been investigated (Helms *et. al.* 2005). Working and writing in a foreign language has theoretical, methodological and practical consequences for research. Helms *et al.* (2005) argue, for example, that research practices both employ and constitute linguistic techniques and are, therefore, bound to a particular language. Here, I reflect on these questions in regard the problems and possibilities of knowing 'foreign' institutional contexts (Herod 1999), and reflect on my research practice – in Scotland and Spain. Throughout this thesis, quotes from interviews conducted in Spanish are translated by me, and original transcripts are included as Appendix III.

In my original proposal to the funding body, I signalled my intention to conduct fieldwork within the municipality of Almuñécar, at La Herradura. Before I started fieldwork in January 2005, however, I felt that my Spanish was not adequate to conduct the interview and participant observation research that my fieldwork would entail. I therefore spent twelve weeks at the nearby University of Granada to increase my fluency by taking language and conversation classes. During this time, I sent letters and emails to potential interview respondents in municipal authorities and

beach user groups, and I began participant observation with a coastal conservation charity.

One reason why I chose La Herradura as a study site was because it, like my fieldsite in Scotland, had a Blue Flag. Soon after arriving in Spain on fieldwork, however, I discovered that La Herradura had since lost its Blue Flag and that the local municipality had withdrawn its application for Blue Flag awards in 2005. On finding this out, I reconsidered whether I could address my research questions by speaking to beach users and representatives of the municipal authority in this area. At the time, I wanted to uncover how cleanliness and litter were constructed at bathing sites, and how the Blue Flag fitted in as a marker of cleanliness based on scientific measurement. Because it had no Blue Flag and no information board to display the results of scientific measurement, however, I questioned whether I would be able to investigate scientific discourses of cleanliness at La Herradura.

Reflecting on my research practice and strategy, La Herradura would have been less suitable as a fieldsite had my research interests had not changed during the course of my Scottish fieldwork. Addressing my original aim – to analyse discourses of scientific coastal management, and the understandings they create – would have been difficult at a site where the results of scientific measurement were only published annually and received relatively little press coverage. Because my research interests changed and I wanted to investigate different constructions of bathing water cleanliness, I decided that I would continue with my research at La Herradura. This decision led me to a different understanding of how clean bathing water is constructed in a process that involves human and non-human agency. Interviewing the local beach manager, for example, I found that the municipality boycotted the Blue Flag campaign because local beaches did not get the recognition he, and others, felt they deserved for maintaining high quality beach services and clean bathing water. By claiming that assessments used were ‘unscientific’, the local beach manager asserted that quality could be measured by the numbers of people visiting the municipality and swimming in the bathing water. This observation caused me to think more about the presence/absence of bathers and litter, and the agency these actors have in constructing cleanliness.

After completing language classes, I continued my research by conducting unstructured group and individual interviews with beach users, lifeguards, water-sports instructors, beach cleaners, tourism officials, and people working on, or

adjacent to, the beach. The municipality of Almuñécar has long been popular with visitors from many different places, some of whom have bought holiday homes in the area or settled permanently. It was, therefore, an area in which multiple (European) languages could commonly be heard on beaches like La Herradura. When preparing to do unstructured interviews I found it difficult to decide whether to introduce myself and explain what I was doing in Spanish, or whether to try and guess if potential interviewees might be more comfortable speaking English. Prior to approaching potential interviewees, I found that I was trying to eavesdrop so that I could determine whether English or Spanish was most appropriate. The problem was greatest when potential interviewees spoke neither Spanish nor English. After reflecting on this problem, I decided to do my introductions in Spanish and let the respondent choose – on hearing that I was from Scotland – whether or not to speak English.

This language ‘uncertainty’ prompted me to think more about my position as a white, male, English-speaking research student addressing respondents in often mispronounced Spanish. Johnston (2005) argues that when interviewing people on beaches, tanned colour and racial colour are open to confusion and displacement. Skin, as a marker of fixed subjectivity, is unstable and opens the possibility of ‘seeping between one and an-Other’ (Ahmed 1998: 60). As a researcher trying to establish the most appropriate language for communication, I decided that I would address all potential respondents in Spanish so that interviewees could speak for their own identity. Problematizing language-based interactions caused me to question my positionality within the context of beach-based interviews. As I discuss below, language was not only a marker of positionality, but also a topic of discussion that demanded I reflect further on my position.

Helms *et al* (2005) consider what it means to a researcher’s positionality within a different cultural context when the starting point for each interview invariably establishes the researcher as from ‘somewhere else’. This not only applies to foreign language research, but resonates also with feminist arguments concerning the transparency of positioned qualitative research (Gibson-Graham 1997). While feminist research has sought to discuss and destabilise ‘rational’ societal norms, the methodologies adopted have been criticised because they often mimic the functionality of dominant productions of knowledge (Haraway 1991; McDowell 1992). The practice of seeking to render positionality transparent by detailing

relationships between researcher and subject has been termed a 'God trick' because it asserts that all research motives and interests can be fully accounted for. Rose (1997) questions the degree to which (any) language can achieve the transparency and clarity demanded by some methodological textbooks. Rendering transparent language interactions, like other social relations, is equally about trying to pull off a 'God trick' and contradicts the very aims of reflexive practice: situated feminisms are about 'interpretation, translation, stuttering and the partly understood' (Haraway 1991: 195).

Although transparent positionality goes against the reflexive narrative of this methodology, there is still a need to acknowledge the incomplete understandings and gaps in research practice. Herod (1999) reflects on interviews with 'foreign elites' to discuss how the dualism of 'insider' and 'outsider' is largely meaningless in processes involving the construction of social meaning. In the context of planning and carrying out interview research, Herod argues that the complexity of 'insider' and 'outsider' relations is confused further by language differences. Similarly, Mullings (1999) argues that uncertain moments during interviews – when meaning may not have been shared – are important to acknowledge because they have the ability to displace the authority of the author and the credibility of the interviewed subject (see also Geertz 2000). Attempts to control interpretation, like attempts at understanding the self, are therefore revealed as partial (Rose 1997).

During my research, I visited a number of diving schools in the village of La Herradura to ask diving instructors about their perceptions of bathing water quality in the area. At one school, I arrived as an instructor was lining up some diving equipment. After introducing myself to her and explaining that I was doing a research project on seawater, I asked about a recent newspaper story that criticised bathing water quality in a nearby area. The instructor responded sternly that there was 'absolutely no problem with water quality', and then turned away to arrange more diving equipment (Fieldnote 19: 30/05/05). I felt, at the time, like an environmental inspector investigating the flouting of regulation. Demonstrating my local knowledge, I tried to 'fit-in' by asking another question about the underwater marine park being built in the area. I received an equally short response. Reflecting on this exchange, it became clear to me that my initial question must have sounded very blunt in Spanish. I had chosen to mention the newspaper article as a starting point for discussion, but my question was structured in a way that undoubtedly sounded like I was accusing

the diving company of taking paying customers into potentially dangerous seawater. The bluntness of my question and the misunderstanding that it generated illustrated how, in methodological terms, language can disrupt positionality.

Improper terminology and bluntness are difficult issues in foreign language research, but they can also be issues for researchers in different social groups speaking the same language (Helms *et al* 2005). During my ethnographic study of the collection and analysis of water samples, I spent time in a microbiology laboratory near Edinburgh. I knew something about the bathing water bacteria tests from the Bathing Water Directive, but I had little idea about measurement practices. Soon after I arrived in the laboratory, I watched one of the scientists preparing to collect samples from incubation boxes on the worktop. The scientist pointed to one incubation box and said to me: 'that's the strep' (Fieldnote 28: 25/07/05). He then walked off to the store cupboard to retrieve some chemicals. When he returned, I asked what he meant by 'strep'. He explained that the Petri dishes in the incubation box he pointed to contained samples of water which were being used to grow colonies of faecal streptococci. While I knew that bathing water tests measured coliforms, faecal coliforms and faecal streptococci, I had no idea how these bacteria were grown and analysed. I commented to the microbiologist that I had never seen faecal streptococci before. My naivety of lab terminology and procedures raised further questions concerning positionality, and at the time, highlighted my own situated and partial understanding of research material.

Herod (1999) argues that simply gaining access to 'foreign' institutions and individuals can be a difficult and frustrating process. Understanding those institutions can be even more challenging. In the course of two interviews I conducted in La Herradura, respondents tried explaining to me structures of coastal governance with respect to changes in funding. From what I could gather, the changes meant the municipal authority would be obliged to pay for a greater proportion for bathing water clean-ups and other facilities, because the *Junta*, based in Seville, was reducing its support. At the time, I did not follow the complexity of the descriptions given by either interviewee. Even after further conversations, there are issues – concerning the role of various politicians – which I do not fully understand.

The interviews and research experiences described above demonstrate the importance of language within qualitative research. My stuttering attempts to engage with unfamiliar language and terminology led, I feel, to a reduced and distorted

representation. At the same time, engagement in this 'space of hybrids' led to heightened awareness about my research method, not least because it 'decentred' assumptions about how meaning was simply conveyed (Smith 1996a). In this sense, new meanings are created through a reflexive consideration of issues concerning language and translation.

Epistemic Iterations and Material Culture

The interpretation of written and spoken discourses was, during early stages of my research, the key source of data. The meaning of texts, according to Derrida (1978), can only be uncovered by considering the context in which they are written and produced. Because meaning does not reside in the text, readings are often contradictory. For researchers interested in material culture, words in the form of a written text are also artefacts that can be transmitted, manipulated, discarded, reused and recycled (Hodder 2002). As artefacts, written texts can transcend context and can, over time, incorporate extended symbolic connotations which leads to a continual tension between text and context (Matless 1995). In a similar way to written texts, other material artefacts have been studied by geographers to investigate the tensions between artefact and context (Murdoch 1997c; Crang 2003b).

Material artefacts are often studied in qualitative research to supplement and disrupt written texts and social 'norms', exposing areas of experience that are sometimes hidden from language (Hodder 1992). Rathje and Murphy (1992), for example, study the items put in domestic rubbish disposal bags to uncover differences between actual volumes of rubbish and the estimates collected during a series of interviews. In this example, sociological analysis cannot be restricted to interview data, and must also consider material traces. While rubbish might be seen as the by-product of everyday life, Hodder (1992) argues that material culture is 'active'. This means that the exchange of artefacts actually constructs social relationships, and the study of material culture is necessary to research that seeks to understand the social construction of artefacts and relationships.

Methodological issues that are raised in studies of material culture are not, however, unique (Latour and Hermant 1998; Latour 1999; Hodder 1992). Like other types of qualitative research, the analyst must decide how to evaluate and interpret artefacts within a more general contextual understanding. Evidence, 'read' from artefacts must be evaluated alongside different aspects of evidence taken from other

available sources (Weinberg 2002). Artefacts have the potential to be 'patterned' in unexpected ways that can be used as an 'other' against which a researcher's experience of the world can be re-evaluated. Hodder (2002) suggests three areas of evaluation to help researchers identify both attributes and high-level social processes associated with material culture. The researcher must be sensitive to the contexts which give artefacts meaning. Similarities and differences must be identified in the ways that artefacts are used in different contexts. And the researcher should evaluate material culture with reference to participants' intentions and social goals.

Within my research, the importance of artefacts grew considerably, particularly as I started to think more about the role of objects within networks of practice. In August 2005 I returned to earlier interview transcripts and fieldnotes in light of my research in Spain. By iteratively going through previous research material, I thought more about how prior knowledge and experience structured the way I collected information and carried out initial analysis. In a report to my supervisors, I detailed topics then emergent: one was the importance of beach signage and classification at Silversands (Progress Report 4: 29/11/05).

The Black Flag campaign used by an environmental charity in Granada, for example, is a counter-publicity measure to disrupt 'official' Blue Flags that are awarded to a large number of supposedly clean and well managed beaches. By considering how flags were used as tools to forward particular social and political goals, I began to think about networks of material culture. It was this experience that caused me to think again about the importance of materials – such as flags – in constructing clean bathing water. At Silversands, there are many signs and flags that are closely related to beach classification and awards given by different organisations. These material artefacts include flags of differing colours and meanings as well as notice-boards that display information relating to the bathing water and beach. Despite the existing number of signs, many interview respondents discussed the need for new 'electronic' signs, and changes to existing notice-boards and flagging regimes. Different environmental charities wanted to place notices at beaches to both disseminate bathing water and beach knowledge and also raise the profile of the charity concerned. While in the early stages of my research I kept notes of beach 'signage', it was an iterative analysis of this early information that caused me to think differently about signage and about material culture.

Artefacts such as beach litter and seaweed were also important topics of discussions throughout my research. As I began to think more about materiality, I started to trace biographies of these objects in my fieldnotes – their arrival, presence and removal from bathing waters and beaches. Each of these materials was, at some point, held responsible for damaging beach aesthetics and ‘dirtying’ the bathing area. Biographies of materials are useful in highlighting the agency of such materials (Anderson and Tolia-Kelly 2004). Yet as I thought more about litter and seaweed, I started to link these objects within networks of practice connecting beach visitors, lifeguards, coastal charities and local authorities. I also connected the materiality of seaweed and litter to existing research themes – such as expertise. Beach litter, for example, was monitored at Silversands by local groups of non-expert volunteers trained to use scientific methods to construct information that was later used in beach management.

My interest in material artefacts increased during my research because of epistemic iteration of earlier data (Chang 2004). The methodology that I used to study material culture did not follow any set structure, such as that suggested by Hodder (2002). My interpretations of artefacts such as beach flags, litter and seaweed was contextualised with respect to the interview and participant observation data I gathered throughout my research. The interpretations of material culture I offer in this thesis are no less situated and partial as other data sources. But as I demonstrate in Chapter 6, material culture is, for me, a key component in understanding the production of bathing waters.

Conclusion

Reflecting on how knowledge is produced, and for whom, is vital in situating knowledge claims. Within social studies of science, researchers have examined scientific methodologies to expose claims to supposed scientific objectivity, whilst making claims as to the validity of their own knowledge (Latour 1988a; Hacking 1992; Yearley 2005). In this thesis, I use a constructivist understanding of bathing water to argue that scientific and beach management discourses produce bathing areas at Silversands and La Herradura. But to make any such claim requires I examine the theoretical and methodological discourses that underpin my own research. As noted here, my research did not follow a linear path from design to data collection and analysis. The iterative nature of my research meant that assumptions and

methodologies were, in practice, constantly revisited and adjusted in the course of doing.

Research questions expressed in my original proposal changed considerably as a result of iterative engagements with academic literature and empirical material. These engagements enabled me to learn what questions to ask and caused me to change my methodological strategy. Originally, I wanted to conduct an archaeological investigation of bathing water legislation to uncover how bathing areas are managed in particular ways. I was interested in how beach users contribute to and incorporate scientific discourses, and I wanted to find out how bathing water legislation was, while European, also specific to particular bathing sites. To meet my original research aims, I used discourse analysis of policy documents and interviews with beach users and managers. In the process of doing research, however, I found that as I gathered more information, the conceptual and theoretical issues I considered important changed. While I maintained an interest in the construction of bathing water, my research increasingly employed a relational ontology that links bathing waters to other networks of actors, materials and practices (see Figure 3.1).

	Sept 03 – May 04	June 04 – Jan 05	Feb 05 – July 05	Aug 05 – Jan 06
Research Questions & Topics of Interest	Archaeological investigation of bathing water legislation and discourses of environmental management	The construction of bathing area cleanliness. Blue Flags, beach litter and expertise	Materiality of beach flags. Human and non-human agency related to bathing area cleanliness	Materiality of beach flags, the agency of beach visitors, and environmental risks linked to bathing area cleanliness
Methods	Policy document analysis and semi-structured interviews	Participant observation, semi-structured and un-structured interviews	Participant observation, semi-structured and un-structured interviews	Re-examination of earlier research findings and additional semi-formal interviews

Figure 3.1: Approximate Chronology of Research Interests and Methods

In this chapter I have traced a roughly chronological account of my research practice and described some important methodological issues. Figure 3.1 illustrates how, during initial field investigations, I employed semi-structured interviews with beach managers in Scotland and policy document analysis to address questions relating to environmental discourse. As a result of these investigations, I encountered a tension between European discourses of coastal management and accounts of local

beach management practices at Silversands. I put aside these concerns between June 2004 and January 2005, to investigate more closely issues concerning beach litter, and expertise. At this time, I learnt of Fife Council's plans to conduct participatory research at Silversands to inform new beach management plans. It was the opportunity to be a participant observer in this project that increased the ethnographic component of my field investigations.

I began my fieldwork in Spain in February 2005 in order to discover how cleanliness at bathing areas is dealt with by people in different institutional contexts using different expertise. I found, however, that I was unable to investigate the Blue Flag campaign at La Herradura because the municipal authority had withdrawn its support. Initially I thought that the absence of a Blue Flag would be detrimental to a research project that sought to analyse science-based beach management practices. But my interest in beach litter, developed at Silversands, led me to think again about the relational ways in which bathing water is linked to beach cleanliness. I went ahead with research at La Herradura and became a participant observer at a coastal conservation charity. During an interview with a representative of the municipal authority, I found that bathing area cleanliness is routinely judged by the presence or absence of bathers and litter. This caused me to rethink the importance of human and non-human agency, and contributed to my emerging interest in materiality.

On returning to Scotland, I re-examined earlier interview transcripts in light of changing research interests. I decided to arrange an additional round of semi-formal interviews with previous respondents to discuss issues relating to the materiality of beach flags and the agency of beach visitors. It was, therefore, an iterative process that brought me back to my initial research questions, and my earlier interest in archaeological discourse analysis. I found the problem I encountered with discursive repertoires on different scales could be closely linked – and partially addressed by – an archaeological investigation of materials that link bathing areas with social and cultural interactions. The iterative reassessment of an earlier problem is not highlighted here to conclude that research presented in Chapters 4-8 can be rationalised in discreet stages. Instead, I use a reflexive narrative to highlight the convoluted way in which my research questions and methodology changed as a result of iterative engagements with interview transcripts, fieldnotes and academic literature.

4

Bathing Water, Rationalisation and Scientific Practice

Introduction and Chapter Outline

This chapter begins analysis of empirical research material by considering how bathing waters are produced, in part, by environmental legislation. Important discursive trends in the rationalisation of bathing waters can be identified and explored by analysing contemporary discourses of environmental legislation. I identify broad 'discursive formations' in environmental policy documents relating to bathing waters from the 1970s to the present, highlighting changes in environmental discourse that might, in turn, lead to changes in the production of bathing waters. In recent literature, discursive formations have been used to demonstrate how ecological modernisation and government rationality operate in many different contexts (Murdoch 1995; Dryzek 1997; Benton and Short 1999; Darier 1999; Rydin 1999; Braun 2000; see also Chapter 2: 20). This chapter uses similar techniques to uncover rationalising trends in the case of bathing water legislation and associated beach management.

In what follows, I show how implementation of environmental legislation is a contested process. By describing different cultural interpretations of bathing water cleanliness, for example, I demonstrate how legislative narratives do not directly produce bathing areas. Instead, rationalising trends in environmental policy must be contextualised by considering specific practices of beach management. In this chapter, I argue that 'practices' of beach management are closely linked to scientific measurement of seawater and bathing area aesthetics at Silversands and La Herradura. Notions of ecological modernisation and governmentality are useful in situating my findings in relation to work that identifies rationalisation within other areas of environmental policy. This chapter argues, however, that greater understanding of bathing waters can be achieved by highlighting how scientific practices and interpretations of cleanliness are linked to discourses of environmental policy.

The chapter is divided into three main sections. First, I investigate the origins of the Bathing Water Directive in order to identify discursive formations in relevant policy documents. This section argues that archaeological 'layers' of bathing water

legislation must be understood in spatial and temporal context. The original Bathing Water Directive – now thirty years old – must be read alongside contemporary trends in environmental policy. While the Bathing Water Directive has survived in its original form, the European Commission has made two attempts to revise it. Policy documents relating to the second proposed revision are used to uncover changing environmental discourses relating to bathing waters. I consider why discursive formations in the most recent proposed revisions have changed from being legalistic to mostly managerial.

The second section contextualises environmental discourse by considering practices of scientific measurement in relation to Silversands. Using fieldnotes from participant observation, I discuss how scientific knowledge of bathing water is generated through the collection and analysis of water samples, and by the subsequent collation and publication of results. I describe how scientific practices are linked both to broader culturally-determined notions of cleanliness and to a rationalisation of bathing water at Silversands. This rationalisation, however, is not completely determined by discursive formations within bathing water legislation. An analysis of scientific bathing water tests reveals how alternative interpretations of cleanliness must be investigated further to uncover how bathing waters are rationalised.

Thirdly, I investigate how additional interpretations of cleanliness inform, and are informed by, rationalising trends described above. I argue that a greater understanding of cleanliness offers a means to understand more fully the production of bathing waters and associated bathing areas. Interpretations of cleanliness in this chapter are exemplified using issues concerned with water aesthetics at La Herradura and the presence of seaweed at Silversands. These issues link interpretations of cleanliness to practices of beach management and deepen my analysis of bathing water rationalisation.

The chapter concludes that ‘practices’ of bathing area management are influenced by environmental discourse and cultural interpretations of bathing area cleanliness. Pickering (1995: 8) describes practice as ‘the generic sense around which all that follows is organised’. Using the idea of ‘practice’, I suggest how, in this chapter, the separation of dirt and cleanliness becomes important. This chapter thus contributes to subsequent debates that investigate how the production of bathing waters can be based on the relative presence and absence of dirt – qualities that are more than spatial.

Bathing Water Legislation: A Chronology of Rationalisation

The 1976 Bathing Water Directive was one of the earliest European environmental and public health policies (Hildebrand 2005). To understand discursive formations created by this Directive requires a close examination of the context in which environmental regulation operated at the time. In particular, archaeological layers that brought about an agreed bathing water policy must be linked to contemporary social, political and environmental processes. This section considers how, in terms of discursive formations, the Bathing Water Directive limits what can be said about seawater, and thus rationalises beach management practices. Figure 4.1 illustrates a common conceptualisation of the relationship between discourse and practice in studies of ecological modernisation – a conceptualisation that is interrogated in what follows.

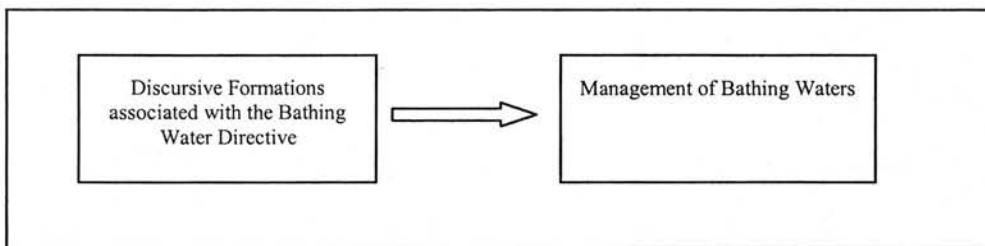


Figure 4.1: Diagram Illustrating Bathing Water Rationalisation

European water quality policy has been dominated by the ‘directive’ – which is legally binding for member states in terms of the results to be achieved, but the choice of methods used to ensure compliance is not normally stipulated (Ward 1998). Initial moves to create a directive relating to bathing waters are closely linked to the First European Environmental Action Programme (CEC 1973). Before 1973, environmental policies at both a national and European level were ‘incidental’ (Hildebrand 2002: 14; Kiss and Shelton 1993; Barnes and Barnes 1999; Knill and Lenschow 2000). The 1973 Action Programme suggested a new ideological cohesion and the emergence of a coherent European environmental policy. Analysis of the first Action Programme provides a useful method of contextualising the 1976 Bathing Water Directive in order to connect broad directions in environmental policy to bathing water management. According to Foucault (1969), the archaeological method uncovers the rules of formation for statements, not simply by identifying everything that went before, but by identifying common references and systems of thought.

Policy documents like the first Action Programme and the Bathing Water Directive are therefore key components in an archaeology that describes the rules that govern the discursive construction of bathing water.

The 1973 Action Programme suggested that 'seawater intended for bathing' should be assessed using 'a common methodology for determining the quality objectives based on the sets of reference parameters and expressed as pollutant concentrations or nuisance intensities, in that particular environment or part thereof' (CEC 1973: 3). The Action Programme also set out eleven important principles to structure future environmental legislation (Hildebrand 2005). Three of these principles are particularly important in respect of the 1976 Bathing Water Directive. The Action Programme recognised the importance of 'preventing the creation of pollution or nuisances at source, rather than subsequently trying to counteract their effects' (CEC 1973: 1). It stated that 'the cost of preventing and eliminating nuisances must in principle be borne by the polluter (CEC 1973: 1). The Action Programme also claimed that 'for each different type of pollution, it is necessary to establish the level of action' most appropriate to the type of pollution and the geographical zone to be protected (CEC 1973: 7).

The above principles, although not fully adopted in the 1976 Bathing Water Directive, are key discursive formations that frame pollution as a 'problem' and a 'nuisance'. While specific pollutants are not mentioned, the Action Programme highlights seawater used for bathing as a problem area requiring regular monitoring to ensure pollutants remain below concentrations proven to cause ill health. The Action Programme expressed the need for environmental policy to act pre-emptively so that pollutants are stemmed before they reach 'nuisance intensities'. Those that cause pollution should be held responsible for paying mitigation costs, and where appropriate, environmental directives should be applied across the whole Community. The first Action Programme, which linked technoscientific and environmental discourses, has been linked to the emergence of ecological modernisation in the early 1970s (Hajer 1995; Blowers 1997; Pepper 1999; Toke 2002). As noted, ecological modernisation is a conceptual tool that describes the emergence of a new discursive order that imposes limits on what can be said meaningfully in environmental policy circles (Chapter 2, p22). The links between ecological modernisation and bathing water policy are discussed below.

Two years after the first Action Programme, the European Commission put forward a proposal for a Bathing Water Directive. The purposes of this directive, according to the Commission, were the 'protection of environment and public health' and to 'facilitate ongoing harmonious development of economic activities and improvements of living conditions' in member states (CEC 1975: 1). The harmonisation of economic conditions is coupled with environmental concerns in the Bathing Water Directive because of the relatively weak legal requirement of member states to adopt European directives prior to the Single European Act in 1987 (CEC 1987: 169). Neither Britain nor Spain was among the original member states of the European Community. When the bathing water proposal was being discussed in 1975, it has been claimed that Britain was still struggling to come to terms with the European policy process (Ward 1998). British officials tended to see the Bathing Water Directive as a broad statement of intent, rather than a binding piece of legislation. They agreed to environmental quality standards that would come to pose significant and expensive problems for British practices of sewage disposal (Ward 1998).

While the First Environmental Action Programme established the 'environment' as an area of concern for European member states, resulting legislation was based on the relationship between economic cohesion and environment. Combined with increasing public concern with environmental 'problems', it has been claimed that European environmental legislation in the 1970s was led by a concern in France and Germany that 'dirty' states were doing better economically (Hildebrand 2002). In this respect, environmental directives connect economic issues relating to trade distortions with environmental 'problems' that often cross the boundaries of nation states (Barnes and Barnes 1999; Jordan 2002a).

In 1975, bathing waters were defined as 'all running or still fresh waters or parts thereof and seawater, in which: bathing is explicitly authorised by the competent authorities of each member state; or bathing is not prohibited and is traditionally practised by large numbers of bathers' (CEC 1975a). Because there were no statutory provisions in Britain that allowed public bodies to authorise or prohibit bathing, the government in 1979 asked local authorities to identify waters where bathing was 'traditionally practised by a large number of people' (Ward 1998). In an advice note, the government suggested that waters with fewer than 750 bathers should not be designated, and stretches of water with between 750 and 1500 bathers per mile should

be open to negotiation, with the local authority and regional water authority making a designation decision (NRA 1991). This 'narrow interpretation' of what constitutes bathing water resulted in the identification of only twenty-seven bathing waters in the whole of Britain – fewer than landlocked Luxembourg (Ward 1998: 253; Hildebrand 2002). In addition, many well-known beach holiday destinations were not included in the 1979 list of waters where bathing is 'traditionally practiced' (Warren 1997; Wynne and Waterton 1998; Barnes and Barnes 1999).

While the European Parliament endorsed the Bathing Water Directive, it expressed concern that bathing would not immediately be prohibited at bathing areas that 'failed' relevant scientific tests (CEC 1975b). Parliament was also worried that swimming pools would not be included in the directive and that improvement funds would not be provided from relevant European sources. The Parliament – commonly considered the most environmentally-concerned European institution – pushed for tighter scientific standards than those proposed by the Commission (Barnes and Barnes 1999; Burnes 2005). In scrutinising the proposed legislation the Economic and Social Committee (EESC) also expressed concern that swimming pools would be excluded, and that bathing could continue at failing sites (CEC 1975c). The EESC suggested that pollution sources should be tackled prior to disposal, and that measurement should assess pollution discharges rather than bathing water. In questioning both the theoretical and methodological assumptions of the proposed Directive, the EESC asked whether 'cause and effect' are necessarily linked (CEC 1975c: 5). The EESC was concerned over ambiguities in the classification of bathing waters and in the legal status of those who may fall ill after bathing at an 'authorised' bathing area. While supporting much of the Directive, the EESC concluded that the protection of public health might, in many cases, be 'illusionary' (CEC 1975c: 7).

Policy documents discussed above demonstrate some of the concerns expressed in debates to establish a Bathing Water Directive. One of the greatest ambiguities in the proposed Directive was the designation criteria that determine whether seawater is, in fact, bathing water. In the proposed Directive swimming pools, therapeutic waters and bathing areas with small numbers of visitors were not included – to the concern of both Parliament and the EESC. Between the First Environmental Action Programme in 1973 and the agreed text of the Directive in 1976, bathing waters were only loosely defined. In practice, bathing waters only came

into existence after 1976, when member states were given the task of interpreting the Directive and designating bathing areas.

Within the Bathing Water Directive, there was a methodological assumption that pollution is best measured by taking samples of seawater. The comments made by the EESC suggest that the link between cause and effect (pollution discharge and ill health) might not be adequately represented by measurements of seawater – pollution discharges could instead be measured at source (CEC 1975c: 5). Although these comments are not reflected in the Directive, they demonstrate how a particular discursive formation became established. In addition, freshwater bathing areas were included in the Directive, but swimming pools were not, and measurements to determine good water quality were based on assessments of sewage-related pollutants in bathing water samples. To highlight how policy documents establish bathing waters and the appropriate measurements for pollutants is to emphasise the impact of these particular discursive formations. By highlighting contradictions and spaces of dissension, an archaeological analysis of policy documents demonstrates that there is nothing inevitable about how the Directive was constructed and interpreted. Common systems of thought became established according to rules within discursive formations (Foucault 1969).

As stated above, the first environmental Action Programme has been associated with both the emergence of ecological modernisation and the Bathing Water Directive. The Action Programme encouraged member states to be preventative in tackling pollution. In contrast, the Bathing Water Directive sought to measure the consequences of pollution events. By sampling coastal waters, the Directive made it difficult for competent authorities in member states to identify ‘polluters’ that might be held to account for environmental damage. The causal links were sufficiently ambiguous to make any connection between polluter and an ill bather impossible to prove. The 1973 Action Programme suggested that common action at a Community level might be appropriate for some types of environmental damage. The Bathing Water Directive is one policy that did require standardised measurements and quality standards across member states. Yet it has been argued that standardisation in the case of bathing water has diminished accountability and transparency because relevant information is often ‘black-boxed’ (Wynne and Waterton 1998: 134). Wynne and Waterton (1998) argue that the partiality of the

bathing water designation employed by the UK Government was rendered invisible by standardisation of methods and quality targets.

The 1976 Bathing Water Directive did not fit with some principles of the First Environmental Action Programme. Yet, paradoxically, it was a key policy ambition of the Programme. In its original form, the Bathing Water Directive was precautionary but not preventative – it did not seek to ban access to bathing areas that did not pass relevant tests. The Directive was based on judicial procedures and prescribed standards that, while not originally considered obligatory by British officials, became increasingly more binding as compliance was strengthened in successive European treaties (Ward 1998). The legalistic style of the 1976 Directive is therefore dissimilar to both ecological modernisation and what has been called the ‘British style’ of administrative environmental policy based on self-regulation and an avoidance of legislatively-prescribed standards (Ward 1998: 245; see also Vogel 1986; Lowe and Flynn 1989; Lowe and Ward 1998). Ecological modernisation is more commonly associated with an evolved accumulation of procedures that is accommodative, persuasive and largely invisible despite being pervasive (Hajer 1995; Harvey 1996; Giddens 1998; Toke 2002; Scott and Oelofse 2005). As noted below, however, proposed revisions to the Bathing Water Directive suggest a move away from legalistic procedures and a closer alignment with ecological modernisation.

The 1976 Directive required that member states apply administrative provisions necessary to comply within two years, and that all bathing waters should meet mandatory guidelines within ten years (the Directive was applied to Spain only after 1986). The main cause of ill health linked to bathing was considered to be the presence of microbiological coliforms associated with untreated sewage. The directive required, therefore, regular measurement of coliform concentrations during the ‘bathing season’ – meaning ‘the period during which a large number of bathers can be expected, in the light of local custom, and any local rules which may exist concerning bathing and weather conditions’ (CEC 1976: 12). During this time, concentrations of sewage related pollutants should remain below mandatory standards of 2,000/100ml for faecal coliforms and 10,000/100ml for total coliforms. In addition to microbiological pollutants, bathing waters are also tested for salmonella, enteroviruses, abnormal colour, abnormal pH, the presence of mineral oils, phenols, transparency, dissolved oxygen, floating materials or residues, ammonia, pesticides, heavy metals, cyanides, nitrates and phosphates. Some of these parameters are

assessed by visual inspection and others require a scientific test. Only microbiological parameters determine a 'pass' or a 'fail'. Most of the nineteen tests are conducted fortnightly during the bathing season at each designated bathing area.

The definition of a bathing season can be seen as a further case of 'black-boxing' relevant information to put standardisation ahead of accountability (Wynne and Waterton 1998). A 'bathing season' is linked in the Directive to 'local custom' and any rules that exist with regards to weather conditions. Expressed in this way, bathing areas exist only temporarily for a portion of the year during which time large numbers of bathers might be expected. Bathing seasons, which are determined by national governments, mark the annual start and end of bathing waters – normally between the months of May and September. An archaeological analysis of bathing water policy demonstrates how scientific measurements and the idea of a 'bathing season' became normalised, highlighting the discursive formations that define what can be said about bathing waters.

Despite the judicial style of the 1976 Directive, there remained a certain degree of flexibility to allow member states adequate opportunity to comply. Member states were invited to submit a list of troublesome bathing waters to the Commission within six years, so that appropriate action could be discussed. If bathing areas straddled national boundaries, the relevant authorities in each member state were asked to agree on a monitoring procedure. And if water measurements failed because of flooding, natural disasters or abnormal weather, some individual measurements could be discarded when assessing annual compliance. Measurements could thus be ignored in cases of 'natural enrichment', but the reason for waiving measurements must be investigated and explained (CEC 1976). Bathing waters could, therefore, adhere to the Directive if 95% of samples taken each year were within mandatory standards, and if consecutive water samples did not deviate from those standards.

The Directive outlines appropriate measurement techniques when collecting water samples. It states that water should be collected where the density of bathers is likely to be greatest, at a depth of 30cm below the surface. And measurement should begin two weeks before the designated start of the bathing season. Public interest in the results of scientific measurement is noted in the 1976 Directive, stating that 'objective information' on the quality of bathing water should be available – although it does not specify the most appropriate means of publication (CEC 1976). The legalistic style of the Directive, therefore, includes prescriptive definitions of

scientific techniques that are normalised yet adaptable to ‘technical progress’ (CEC 1976). The commitment to publishing results of scientific measurement for the benefit of public information can be related to trends in ecological modernisation that highlight the emergence of self-regulation with respect to individuals’ behaviour (Darier 1996). In addition, the decision to make available scientific results predates a later European directive on the Freedom of Information on the Environment (CEC 1990a; see below).

The relationship between the 1976 Bathing Water Directive and ecological modernisation can, in summary, be described as partial. Ecological modernisation has been described as a theoretical tool that describes how limits are imposed on what could be said meaningfully in policy circles (see Chapter 2). Ecological modernisation is also associated with ‘storylines’ and ‘advocacy coalition frameworks’ which invoke particular – supposedly rational – actions (Hajer 1995; Fischer 2003). The Bathing Water Directive is similarly based on the idea that economic and environmental objectives can be met simultaneously and that the adoption of environmental policies is required so that European member states can compete effectively with each other without causing environmental damage. By ‘othering’ the directive, my argument is that a number of discursive formations have normalised what can be said about bathing water – for example the idea that water samples should be measured serves to normalise a series of assumptions about water pollution and knowledge production. While there are good scientific reasons for using seawater samples to link pollution to ill health, my ‘archaeology’ of bathing water policy reveals that these assumptions became established through particular discursive formations. By investigating the production of the Directive, it is possible to uncover rules that invoke particular ways of speaking about bathing water and, as I demonstrate below, managing beaches.

Associated Environmental Directives and Governmentality

While the 1976 Bathing Water Directive can be linked partially to ecological modernisation, it can also be linked to governmentality. The Bathing Water Directive is about the statistical and graphical knowledge that brings new ‘territory’ under the control of economic and political calculation – a bringing together of a state and its territory. The territory in question is the bathing area associated with bathing water during the relevant bathing season. Arts of governance include the production of water quality knowledge through the collection and analysis of seawater. In this way,

bathing areas can be controlled and managed in accordance with the results of seawater testing (see below). The Directive creates new territory for ‘macro-physical’ arts of governance. Similarly, the Directive serves to control subjects who are educated in the results of seawater testing and can self-regulate their bathing according to new information associated with ‘micro-physical’ arts of governance. The statistical information produced as a result of water measurement includes information tables that are used in the management of bathing areas and are published in reports and newspapers, and distributed on notice boards at bathing sites (Figure 4.2).

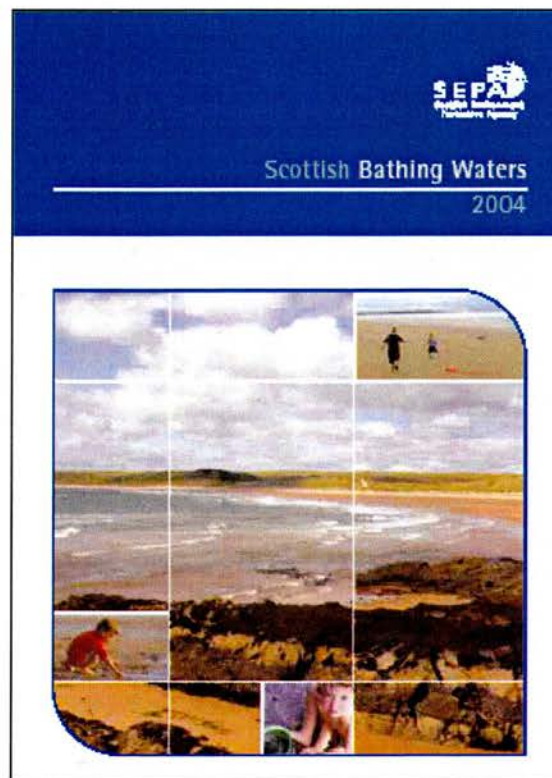


Figure 4.2: SEPA Bathing Water Report 2004

Geographers have argued that little has been done to examine the everyday technologies and media that help to maintain governmental programmes (Barnett 1999; Blake 1999; Simons 2002; Merriman 2005a, 2005b). The materials of governmental networks in the case of bathing water include information notices, flags, brochures and signs that structure micro-physical arts of governance (see also Chapter 6). Information notices displaying results of water samples are placed at beaches to inform bathers, and to advise how certain activities should be properly

practiced. These notices ensure the self-regulation of bathers, dog walkers, cyclists and other visitors to bathing areas (see Chapter 7)

In the ways described above, the 1976 Bathing Water Directive, and associated technologies of governance can be situated alongside similar trends in government rationality. The discursive formations that define what can be said in relation to bathing water are established in policy documents. Similarly, technologies of government used in the application of the Directive govern bathing areas and the behaviour of people at those territories. The Directive was not, however, applied without opposition. In addition to a surreptitious interpretation of 'bathing area' adopted by the British Government, there were amendments and new environmental policies that need to be considered to contextualise shifts in governmental rationality towards bathing.

The 1987 Single European Act made important changes to the legal obligation of member states to adhere to agreed environmental directives. The Act contained a specific chapter on the environment (CEC 1987). While this did much to strengthen environmental policy, it contained a clause that enabled member states to opt out of some environmental legislation if, by doing so, greater harmonisation between states could be demonstrated (Kiss and Shelton 1993). Also in 1987, the UN Commission on Environment and Development published the Brundtland Report that stressed the need to find a strategy of combining economic development without detriment to the environment (UN 1987). The report encouraged all countries to apply the principles of 'sustainable development', combined with shared responsibility and active participation in environmental matters. These principles were included both in the fifth European environmental Action Programme (CEC 1993a), and in the 1991 Maastricht Treaty, which replaced the Single European Act (CEC 1992).

In addition to the broad changes described above, two further environmental directives help to explain changes in the implementation of the Bathing Water Directive. First, the 1990 Directive on the Freedom of Information on the Environment, which required member states to make available information on the 'state of water, air, soil, fauna, flora, land and natural sites' (CEC 1990a: 56). This Directive has been described as a 'milestone development' because it ends a tradition in many member states to keep such information secret (Hallo 1996: 3). While it has been applied with differing degrees of enthusiasm among member states, the Freedom of Information on the Environment Directive has given environmental pressure

groups and NGOs the information they need to lobby on behalf of certain causes (Ward 1996). The second Directive concerns the Standardisation and Rationalisation of Reports on Implementing of Certain Directives (CEC 1991b) This Directive requires the European Commission to publish annual reports on certain environmental issues, including bathing waters. Annual reports are thus based on information that is standardised across member states, such that comparisons can easily be made.

Taken together, the above two Directives give NGOs the opportunity to acquire information concerning bathing waters to pressure governments and industry to tighten the 'implementation deficit' that has been associated with the Bathing Water Directive (Börzel 2005). The Marine Conservation Society (MCS), for example, started publishing its own annual '*Good Beach Guide*' in 1988, using the results of bathing water measurements. By drawing attention to Britain's reluctant implementation of the Bathing Water Directive, the MCS and other NGOs – notably Surfers Against Sewage – have arguably shamed relevant authorities into action (Ward 1996; Barnes and Barnes 1999). In the 1970s few local authorities saw any benefit from designating bathing areas; indeed the potential cost of remedial action was a strong reason behind initial reluctance to designate in Britain (Warren 1997). Over time, however, municipal authorities in coastal areas popular with tourists have increasingly realised the benefit of publicity associated with designated bathing areas. The inception of the Blue Flag campaign in 1985, which from 1992 became based on results of bathing water measurements, formalised the link between tourism and bathing water (Blue Flag 2006). Beaches that win Blue Flags must have bathing water that complies 'with the requirements and standards for excellent bathing water quality' (Blue Flag 2006).

One of the tenets of ecological modernisation is that polluters pay for environmental damage. In the case of bathing areas, the cost of remedial action has largely been met by water companies, resulting in higher water charges in most member states (Haigh 1994). In Britain, some of the cost of upgrading sewage disposal facilities has been met by central government to adhere to both the Bathing Water Directive and the Urban Waste Water Directive (CEC 1991a). Previous preferences for sewage disposal were based on cost efficiency. In 1975, the Department of the Environment published a report that stated 'the sea provides cost free and efficient sewage purification (DoE 1975: 3). But adherence to the Bathing Water Directive has ended up costing the British government tens of billions of

pounds (Ward 1998). In recent years, local municipal authorities with designated bathing areas have exchanged relatively little money for both better sewage disposal facilities and positive tourist publicity. But as I demonstrate in Chapters 6 and 8, the connection between municipal authorities and bathing water quality awards is, in practice, both complex and contested.

Revisions to the Bathing Water Directive 1994-2006

First attempts to revise the Bathing Water Directive failed in 2000, for reasons described by the European Commission as 'scientific and technical, as well as political' (CEC 1997, 1998). Later in 2000, the Commission published a report that described how a new bathing water policy might be formed (CEC 2000). This document intended to launch a consultation exercise to gather recommendations on how to improve bathing water legislation and implementation. Importantly, the term 'bathing water' is maintained throughout the consultation process as a central discursive formation. The report describes how the 1976 Directive became outdated, both in the methods of measurement and in the overall approach to environmental protection: 'building on the experience and results of implementing existing legislation, we can incorporate more sophisticated tools and reinforce the emphasis on the use of information and public participation' (CEC 2000: 2). In line with 'integrated' approaches to environmental policy, consultation on bathing water was based on environmental 'management' rather than 'protection'. The Commission stated that 'it has become clear that the issue of bathing water quality was not just a matter of 'product control' but of real quality management and quality assurance' (CEC 2000: 3). Policies such as the 1996 Integrated Directive on Pollution Prevention and Control, and the 2000 Water Framework Directive mark broader shifts away from judicial approaches, in preference of a self-regulatory approach with few prescribed standards. Instead of measuring bathing waters for compliance, proposals for a new Directive sought to make base it on 'effort and results', rather than solely focusing on results (CEC 2000).

New proposals for a Bathing Water Directive in 2002 were based on three central principles (CEC 2002a). First, it stated that scientific water quality standards must be both ambitious and legally binding. The Commission noted that the existing directive has led to year-on-year improvements in bathing water quality. The second principle claimed that management should not be solely a matter of measuring water

samples. The Commission believed that the Bathing Water Directive could involve beach management plans, in the same way as the Water Framework Directive requires river basin management plans. Thirdly, the 2002 proposal suggested that up-to-date information on the quality of bathing waters should be provided at bathing areas. Traditionally, member states were required to publish an annual report on the quality of bathing waters, which then determined bathing area classification during the subsequent bathing season. Under commission proposals, information should be 'near-real-time' so that publics can make an informed decision on whether to bathe.

New proposals for a Bathing Water Directive were not finally adopted until 2006, at the end of my research (see Chapter 9). Despite this, consultations between different institutions are relevant to my research because many local authorities and environmental regulators try to anticipate forthcoming legislation, and adjust their practices accordingly. Revisions suggested that 'management measures' at bathing areas should include an annually maintained 'bathing water profile' that identifies possible sources of pollution, and outlines emergency plans and surveillance systems. Information should be provided to the public on the history of bathing water quality at each site, and up-to-date information should be provided using 'appropriate technologies', such as the internet. The Commission proposed a reduction in the number of scientific measurements from nineteen to two – intestinal enterococci and *Escherichia coli*. According to the Commission, most measurements should be dropped because they relate to the aesthetic quality of water rather than the potential to harm human health. The proposed measurement of intestinal enterococci follows from a report by the World Health Organisation on the best procedures to monitor water quality (WHO 2000; Bartram *et al* 2001). Finally, the 2002 proposed Directive reflected changing attitudes regarding collective environmental responsibility and public participation; it suggested that publics should be involved in the creation of bathing water profiles.

Many MEPs who spoke in the 2003 Parliament debate were sceptical of the benefits that new revisions to the Bathing Water Directive might bring. Torben Lund, a Danish MEP, criticised an amendment that sought to clarify the definition of bathing area by counting the number of bathers: 'who on Earth would count the bathers every day out on the beaches of Europe. I would say that, if this proposal is adopted, we shall simply be a laughing stock throughout Europe' (CEC 2003a). Other MEPs

offered qualified support for amendments. Catherine Stilher spoke of the importance to Scotland of having flexibility in the new Directive:

In south-west Scotland, the Irvine and Aire [sic] river valleys are particularly susceptible during times of heavy rainfall – in flash floods during the summer months, for example – to failing to meet the micro-biological standards for good quality during those few, rare days. This does not mean that beaches in Britain are hotbeds of pollution. It means that we need flexibility in measuring and sampling to deal with these natural occurrences (CEC 2003b).

Lobbyists on both sides petitioned the Parliament. Surfers Against Sewage wanted ‘bathing’ to include recreational activities such as windsurfing and kite surfing, while WaterVoice warned that the new Directive would lead to an increase in water prices (Ward 1996; European Council 2005). Parliament eventually agreed to the amendments in November 2005 and repealed the 1976 Bathing Water Directive (see Chapter 9).

Revisions to the Bathing Water Directive can be linked to increased rationalisation associated with ecological modernisation (Toke 2002). Principles of sustainable development – which are integral to ecological modernisation (Langhelle 2000) – can be identified. According to Toke (2002: 148) one of the tenets of ecological modernisation is the ‘idea that a holistic approach must be made to problems solving, so that environmental problems should not be tackled in isolation’. Revisions to the Bathing Water Directive suggest that managing bathing water is just as important as scientific measurement – problems of water pollution should not be tackled in isolation. In this way, the recently-agreed 2006 Directive, adheres more closely to the characteristics of ecological modernisation. Bathing water is a well-established discursive formation that responds to changing contexts within environmental policy. The 1976 Bathing Water Directive has lasted for thirty years because it has led to ‘year on year’ improvements in water quality (CEC 2000), and because it is seen to work. As I was told by one MEP:

so perhaps the bathing water has persisted because through other means it’s been more visible. It’s always in the newspaper, and each year when those statistics come out about water quality and about the cleanliness of beaches or

whatever, even if people are not particularly using those beaches all the time, people do look out for it and recognise it (Interview 18: 08/12/05).

Archaeological analysis of bathing water policy reveals how ‘arts of governance’ can be linked to governmentality. Management of bathing areas is less based on legalistic adherence, and more on self-regulation. Bathing areas are brought under governmental control through the scientific measurement of water samples and the publication of statistical results – a process that is, however, contested (see below). Public participation in bathing water management, and the display of near-real-time water quality results at beaches are microphysical arts of governance that help bring about self-regulation among individuals.

An archaeological analysis is, in summary, useful in disrupting taken-for-granted categories. By investigating how rules governing what can be said about bathing water are established, I show that categories like ‘bathing area’ and ‘good quality water’ are provisional. The meaning attached to such terms, and the storylines they invoke, are linked to broader trends in environmental policy. My research suggests that bathing water policies fit rationalising trends of ecological modernisation and governmentality to a certain extent. Yet, as I discuss below, the practice of bathing water policy must also be examined to understand more fully the rationalisation of bathing waters. In the next section I look at practice – beyond the text – to understand how contextualised scientific practices contribute to a normalisation of both bathing waters and beach management.

Scientific Rationalisation: The Performance of Measurement

Recent work in the sociology of science has highlighted the role of human agency within all aspects of science (Edge 2002). There has been, therefore, some scepticism that studies highlighting non-human agency in science represent anything other than a leap back to the representational idiom, in which the world can be represented by observable facts (Collins and Yearley 1992a, 1992b; see also Chapter 2: 28). Pickering (1995) argues that studies of non-human agency in science need not contradict earlier work in SSK. Contrary to much recent work, Pickering claims that Actor-Network Theory falls short in providing an analytical tool to uncover the agency to things. For him, Actor-Network Theory is based on signs and texts, which means a semiotic return to the representational idiom that accounts for ‘reality’

systematically, without considering underlying structures and processes. To fully grasp the ontological status of objects, Pickering claims that ‘practices’ of science should be investigated. Practice emerges only temporarily, and demonstrates how human and non-human agencies intertwine (Pickering 1995: 8). It is the ‘mangle of practice’ – a performative historiography of science and technology – that offers a way to understand agency in sociological studies of science.

In this section, I consider practices associated with the scientific measurement of bathing water. I draw upon fieldnotes from participant observation to uncover the complex links between discursive formations of bathing water in the Bathing Water Directive, and bathing area management. I want to argue that rationalisation of bathing waters occurs through both normalising policy discourses (described above) and practices of scientific measurement. Figure 4.3 illustrates how analysis of scientific measurement might contribute to a better understanding of beach management.

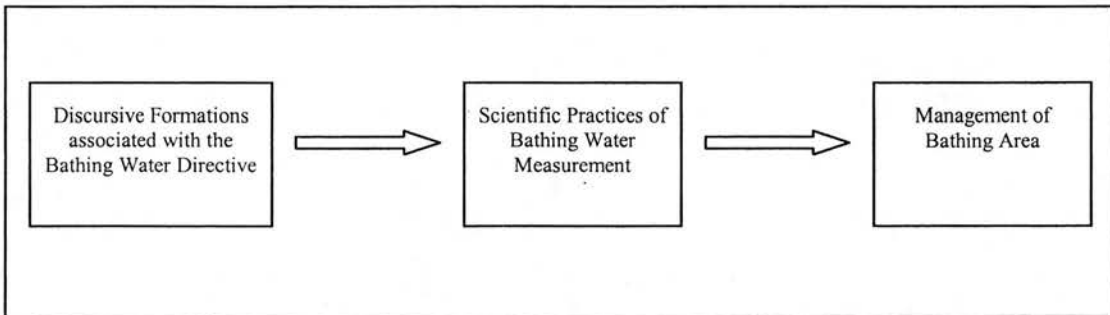


Figure 4.3: Scientific Discourses, Measurement and Beach Management

Article six of the 1976 Bathing Water Directive states that ‘competent authorities’ in each member state should conduct routine water quality tests according to a sampling regime during the bathing season (CEC 1976). Additionally, it states that point measurements should be taken at places where the average density of bathers is lightly to be highest. Point samples are used to collect a small volume of seawater that can then be taken to a laboratory for bacteriological tests. Other measurements are conducted at the bathing area – for example a visual inspection of seawater transparency. The Directive states that measurements should be carried out ‘scrupulously and repeated periodically to obtain geographical and topographical data to determine the volume and nature of all polluting discharges and their effects

according to the distance from the bathing area' (CEC 1976: 14). According to the Directive, bathing water data can be used to infer broader process of pollution and the movements of pollutants over space. Bathing water is, therefore, an entity that is representative of real-world processes and things. The Directive states that if, as a result of measurement, it is found that the discharge of pollutants is likely to lower the quality of bathing water, the competent authority in each member state must conduct additional sampling. This should occur if there is any suspicion that water quality is decreasing. Point measurements are used here to infer a bigger picture of discharge and effluent runoff at bathing areas.

Discourses of scientific measurement in the Bathing Water Directive are both positivist and concordant with Pickering's 'representational idiom'. This means that observable facts are used to infer broader processes and events. Measurements of bathing water, for example, are used to infer how polluting discharges can be characterised and mapped. Additionally, the role of scientists is largely written out of instructions for measurement. Annex 1 of the Bathing Water Directive, for example, describes measurement procedures for each of the nineteen scientific tests. The count for faecal streptococci, for example, is based on the 'Litsky method'. This means that cultures are incubated, grown and counted according to 'Most Probable Number' (MPN) on an 'appropriate medium' (CEC 1976: 15). The Directive states that 'laboratories which employ other methods must ensure that the results obtained are equivalent and comparable to those specified in the Annex' (CEC 1976: 15). It is assumed, therefore, that measurement is standard and objective, that anybody – trained in the appropriate method – would get the same results. Measurements across Europe can be compared on the basis that results represent accurately the reality of water quality and pollution processes to which they refer.

In Scotland, bathing water tests are conducted by SEPA microbiologists at laboratories in Glasgow, Edinburgh and Aberdeen. As a participant observer in the Edinburgh laboratory, I took part in the process of collecting samples and conducting analysis. My analysis of fieldnotes does not test whether scientific practices are uniform at different laboratories, or whether practices accord to descriptions outlined in the Bathing Water Directive. What I describe are the practices and performances that suggest why the 'representational' idiom of bathing water measurement should be rejected.

In July 2005 I accompanied a SEPA microbiologist when collecting seawater samples from each bathing area in the west of Fife, from Pathhead Sands to Dalgety Bay. This included three EU-designated bathing areas and six other 'waters' that are measured by SEPA, but do not need to adhere to the same standards. The reason SEPA collects samples these extra bathing areas is to conduct microbiological tests that are used to build-up a more complete picture of pollution discharges and water quality. The results of these tests are not sent to the European Commission, but are used by other awarding bodies like Keep Scotland Beautiful, to offer awards to 'rural' beaches that do not have the amenities normally expected at bathing areas.

Before leaving the SEPA laboratory, the microbiologist placed a cool-box full of empty glass jars in the back of the van. The collection of samples from west Fife is one of four routes between Arbroath and Eyemouth that can be covered in a day-trip from Edinburgh. Sample collection is divided up in this way because the laboratory testing process must begin within six hours of water being collected. In fieldnotes, I described how the microbiologist went about collecting a sample at Silversands:

We stop, and [the microbiologist] puts on wellies which cover the whole leg. He brings out the white testing pole from the back of the van which has a metal cage on the end into which a glass sampling bottle is fixed. The metal cage is also fixed by duct-tape to a secondary glass collection tube, which [the microbiologist] tells me is used to sample water temperature. He has an electronic thermometer with a probe that fits into the secondary collection tube. We walk to the water's edge, and [the microbiologist] continues into the waves until the water is about three-quarters of a metre deep. He tells me that each beach has a sampling point that they [the microbiologists] try to return to every time to keep the measurements consistent; but this becomes difficult where the tide has a huge range and the sampling point at low-tide might be 300-400m from the high-tide sampling point (Fieldnote 28: 25/07/05).

The practice of water sampling involves standard tools that are used at every bathing area. The pole with glass bottles attached to the end, and the electronic thermometer, are used to collect water and to record temperatures of water samples. Objectivity is maintained in the measurement process by collecting water samples from roughly the same sampling point. A problem for microbiologists is that the sampling site changes according to tidal level. The shallow gradient of Silversands and neighbouring

beaches means that at low tide, microbiologists must walk a considerable distance across sand and mud-flats before the seawater is deep enough to collect a sample. This makes it impossible to collect water from the same exact point at every visit.

A map, placed on a notice board at Silversands, illustrates approximate SEPA sampling point, and is one way in which scientific measurement is rationalised. By marking out the approximate location of samples, the map affirms authority in sampling by informing visitors that measurements are replicable and objective. The map demonstrates that no matter who collects a seawater sample, it will be done from approximately the same point each time, and can be repeated if necessary. The performance of collecting a sample is repeatable, and is supported by the authority associated with scientific objectivity. In fieldnotes, I described the technique used to collect samples and conduct measurements:

He [the microbiologist] stands in the water and swings out the black pole to collect a bottle full of water. While he caps the bottle, he places the thermometer in the secondary tube for a few moments, reads off the temperature, and then discards the secondary sample. Back at the van, he puts the full bottle in the cool-box and puts an empty bottle at the end of the cage ready for the next measurement. Each of the bottles is carefully labelled. [the microbiologist] then fills out a sampling record that requires him to note a number of water characteristics – which he notes quickly from memory:

- Transparency – This is assessed using a pole with white markings.
- Mineral oil – present or not
- Sub-surface substances – present or not
- Wind direction – estimated
- Conditions – cold/ warm/ raining/ sunny/ overcast
- Number of people in the water – none at Silversands
- Number of people on the beach – about a dozen
- Date/ time and other remarks

(Fieldnote 28: 25/07/05)

Scientific practice associated with bathing water sampling requires that several characteristics are recorded at each beach. Transparency of seawater is measured using the sampling pole that has white markers at evenly spaced intervals. By dipping the pole into the water, the microbiologist was able to assess which category of

transparency should be assigned to each bathing water, although this was sometimes difficult if waves broke around the pole (Fieldnote 28: 25/07/05). The other measurements do not require any special instruments, just a trained eye. The microbiologist was able to record these measurements fairly quickly at the van. The count of bathers and people on the beach became important in 2005 because the Scottish Executive decided to reassess the designation of bathing areas according to the number of bathers present (Scottish Executive 2005a). It was decided, after consultation, that bathing areas in Scotland would be EU-designated if more than 150 people could be counted on the beach or in the sea at any one time. This decision was made on the basis of counts conducted by microbiologists at bathing areas and other waters around Scotland. The Review Panel reassessed 10% of existing bathing areas with the lowest numbers of recorded visitors; the count conducted while I was present helped to determine if Silversands should be re-designated as a bathing area (see Chapter 9: 263).

The microbiologist told me a visitor count is usually easy because it merely requires a quick observation to sum-up the total number of people. It is, however, more difficult at larger beaches where the whole beach cannot be observed from one point. On some occasions, the number of people on beaches can be so large that accurate counts become impossible because people constantly move:

Later in the day, he [the microbiologist] told me that at the start of July, during a hot-spell, he had to step over people on the beach because it was so busy. He counted over 100 people in the water and perhaps 5 times as many on the sand. He recounted how a young girl had paddled round him on a lilo while he was trying to collect a water sample (Fieldnote 28: 25/07/05).

The performance of measurement is an important part of scientific practice associated with bathing waters. People that get in the way of seawater sampling form part of the scientific practice at Silversands. With his scientific instruments and protective clothing, the microbiologist appears very conspicuous on beaches, and often attracts the curiosity of visitors. At Dalgety Bay, while preparing to collect another water sample, I was asked by an onlooker what we were doing. When I described SEPA water measurements, the onlooker told me he sometimes checks bathing water results on the SEPA website. At Kinghorn, while counting people on the beach, we met

several residents standing beside the seawall that knew the microbiologist from his repeated sampling visits (Fieldnote 28: 25/07/05). We spoke for several minutes, and the microbiologist later told me that he regularly stops to speak to the same group of residents at the same location when he visits Kinghorn to collect samples. The collection process at regular intervals is an important part of the performance of scientific practice. The authority of bathing water measurement is affirmed by people who see the microbiologist collecting samples, and speak to him about the process.

Water samples collected at each bathing area in west Fife were taken to the laboratory in Edinburgh for analysis on the same day as collection. Measurements in all laboratories in Scotland are regularly corroborated to ensure that water is assessed to the same standard. Each bathing water sample was divided between six different Petri dishes – two for faecal coliforms, two for total coliforms, and two for faecal streptococci. Measurements for each of these bacteria types were carried out twice using different volumes of seawater to ensure precision. A suction pump was used to draw seawater through a small circle of filter paper, which was then placed on a Petri dish.

[The microbiologist] printed out labels and stuck them all on the dishes before lining them up at the suction-pump. He boiled the measuring containers and filter-heads and used a Bunsen burner to sterilise the tongs used to lift filter-paper circles onto each of the filter heads. Then he used a pipette – sterilised using distilled water – to measure out each volume of bathing water and used the pump to draw water through filter-paper (Fieldnote 28: 25/07/05).

The sterilisation of instruments forms part of the performance of scientific practice within a laboratory (Knorr-Cetina 2002). By repeating the same processes for each sample, and by sterilising certain instruments after contact with seawater, the laboratory provides a sterilised place for objective, repeatable measurement. The transformations that occur in the laboratory – from seawater to red dots on a Petri dish, to a series of numbers that indicate the relative concentrations of certain sewage related pollutants – are the practices that ensure a traceable link between object and abstraction. These practices, known to Latour as ‘circulating references’, have been shown to be social processes that, in normal circumstances, are erased (Latour 1999).

Thus, while the Bathing Water Directive describes measurement according to the representational idiom, analysis of scientific practices demonstrates the importance of performance. At Silversands, the sampling of bathing water did not occur at the same place throughout the bathing season because of tidal variation. By analysing the collection of a water sample as a performance, I argue that authority in bathing water results is increased by the act of collection in which onlookers are enlisted. And in the laboratory, the repeated performance of sterilisation techniques ensures an unproblematic series of translations from seawater sample to results that infer broader pollution processes. Scientific practices of sampling and measurement, construct seawater pollution at Silversands in a positivistic way. In the next section, I consider how different interpretations of cleanliness can be linked to the rationalisation of bathing waters.

Practice and the Importance of Cleanliness

In this section, I argue that particular notions of cleanliness are central to the rationalisation of bathing water. Figure 4.4 illustrates how management of bathing waters is dependent on different interpretations of cleanliness, in addition to scientific water quality measurement. I claim, using two examples, that cleanliness is an important notion that shapes environmental discourse and scientific practice.

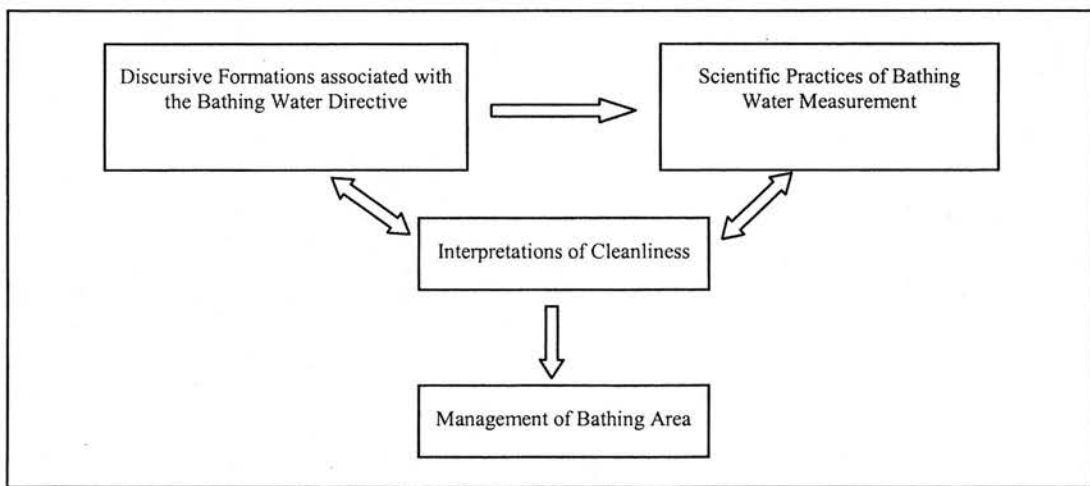


Figure 4.4: Links between Cleanliness and Rationalisation of Bathing Areas

The examples I use in this section relate to two prominent issues at Silversands and La Herradura – water aesthetics and seaweed. I use data from interviews and fieldnotes to uncover how cleanliness is linked to scientific

assessments of bathing water and discourses of environmental policy. I suggest that cleanliness is more than a concept that simply frames environmental policy discourse and scientific practices. Cleanliness is a term incorporated in all aspects of beach management, so that the links between environmental policy, scientific practice and beach management cannot be characterised in a straightforward linear way. I conclude, therefore, that networks of practice incorporating different notions of cleanliness are a better theoretical framework to describe the production and management of bathing areas.

Beaches in the municipality of Almuñécar are visited throughout the year, but from April to September they are visited regularly by large numbers of people every weekend. At the end of May 2005, visitors noticed an orange substance on the surface of bathing water at a number of beaches including La Herradura (Figure 4.5). The bathing area most affected was El Pozuelo, about four kilometres east of La Herradura. The presence of the orange substance attracted onlookers and journalists, and was the cause of some disquiet. This was a difficult time for the municipal authority because only two days previously the annual results of European bathing water tests were published. The tests, which were carried out some nine months previously in the summer of 2004, found that El Pozuelo failed the mandatory standard set by the Bathing Water Directive.



Figure 4.5: Orange Fish Eggs at Playa El Pozuelo, 27/05/05

As a result of bad publicity associated with the failed European bathing water test, and the orange substance, beach users were critical of the municipal council. I spoke to a local newspaper editor about water quality issues at this time, and he described the growing feeling among many people that the Mayor was neglecting environmental issues concerning both bathing water and beach quality (Interview 12: 06/07/05). In a report on the unknown orange substance, local newspaper *Ideal* described how different theories on the origins of the pollutant were based on different political allegiances and opinions of the Mayor (*Ideal* 28/05/2005). The paper claims that among those who 'detest' the Mayor, the blame for the orange substance was quickly attributed to the municipal council. One beach visitor told me that the Mayor was too preoccupied with his own career while ignoring the 'excrement in seawater' (Fieldnote 17: 28/05/05). The local beach manager later told me in an interview how experts from the Department of the Environment and Health resolved the origins of the orange substance by establishing that it was, in fact, fish eggs (Interview 13: 06/07/05).

Although fish eggs at El Pozuelo and other bathing areas became a light-hearted topic for beach visitors and journalists, the episode raises important issues concerning how water cleanliness is constructed by different groups of people. For some, the eggs were a sign that confirmed their perception of declining water standards. Even after the origin of the substance was established by seawater experts, there were some – for example one beach visitor I spoke to – that continued to blame the municipal authority for discharging pesticides at a small fish farm five kilometres east of Almuñécar. Details of this informal interview were recorded in fieldnotes:

A new development in this area [between Almuñécar and Salobreña] is the fish farming installation, which [the beach visitor] told me now has planning permission for expansion. Whereas the sugar refining plant just produced a green cloud of floating debris, which could be pushed aside by bathers, the fish-farms produce nasty fish excrement. All the pesticides that are pumped into the water are potentially a lot more damaging. These, according to him, are not tested for, and are worse (Fieldnote 18: 28/05/05).

Given widespread suspicion of declining water quality standards in Almuñécar, a scientific expert was required to reaffirm the authority of scientific

assessment. But there are also broader cultural interpretations of bathing waters that are based on different ideas of cleanliness, and even political allegiances. Sometimes scientific assessment is inconclusive (see Chapter 7). And it is important to note that accounts of cleanliness are not always framed by scientific practice alone – the scientific interpretation of cleanliness is just one measure of cleanliness that my research uncovered. The link between seawater aesthetics and cleanliness was not, in this case, resolved entirely by recourse to scientific measurement. The creation of a clean bathing area, for some, is based as much on aesthetic purity as it is on scientific measurement of bathing water quality. This debate is not cited here to compare which construction of beach cleanliness is most valid. Instead, the example of fish eggs illustrates how what follows from bathing water policy and scientific practice is not always rationalised in ways one might expect.

As a further example of how cleanliness is linked to the rationalisation of bathing water, I consider the example of seaweed at Silversands. There are up to 100 different species of Seaweed present at Silversands, washed in by the sea and growing among the rocks and mud exposed at low-tide (Newton 1931; Hardy and Guiry 2003). For some, seaweed is an important part of the natural beach environment because it provides a habitat for insects, which are fed on by birds. During an interview with a representative of the MCS, I discussed how seaweed removal became an issue among coastal conservation groups. Like other organisations, the MCS is aware that daily beach cleaning in the summer using mechanical beach cleaners, removes not only litter but also seaweed (Figure 4.6):



Figure 4.6: Mechanical Beach Cleaning Machine, Silversands 19/08/05

Both the MCS and CCS consider mechanical methods of seaweed removal as too indiscriminate and campaign to change both collection practices and popular perceptions of seaweed. It is felt that increased tolerance of seaweed, particularly among those who do not live near the coast, would enable a change of policy. Public perceptions of seaweed were explained to me in an interview with a coastal conservationist working at Clean Coast Scotland:

There is a perception issue with seaweed, which people do not like. The general public do not like seaweed; they want to go to a beach that has sand and the occasional strandline – fine – but not kind-of a couple of metres of deep seaweed you have to wade through with all the flies on them, which is fine in your wellies but not bare-footed. The people that don't visit the beach very often, that is a huge issue. For people who live round the coast, it's not. And we've definitely seen that in the surveys that have been done. So it's not about removing seaweed, what we'd like to do, at Clean Coast Scotland, is encourage people to understand why seaweed is important to be there (Interview 17: 06/12/05).

Beach awards, including the Blue Flag campaign, have traditionally required seaweed to be lifted from beaches. The criteria for winning awards construct (rotting) seaweed as a problem. But pressure from environmental charities such as Clean Coast Scotland has caused the Blue Flag Awarding body to reconsider its award criteria:

[Seaweed is] something that the international FEE [Foundation for Environmental Education, the body that oversees Blue Flag awards] inspector said this year when inspecting beaches, and that was one of the things they commented about the amount of seaweed on our beaches, and how we should be removing more of it. So basically we fed-back to them and said, well, our policy is really not to do that. And they've now changed the criteria, the Blue Flag criteria has been reworded. So now when it talks about litter removal, it actually states that seaweed should be left. So that's really positive, because it used to say you've to remove the seaweed, which caused a lot of problems with SNH. (Interview 17: 06/12/05)

As a result of pressure from organisations like CCS, Blue Flag award guidelines now state that 'algae or other vegetation should be left to decay on the beach unless it constitutes a nuisance' (Blue Flag 2006). Although this marks an important discursive shift in the construction of seaweed in environmental policy and associated practice, it remains to be seen whether the cleanliness of a bathing area can be disassociated from seaweed. The explanatory notes attached to Blue Flag criteria state that 'the management of seaweed on the beach should be sensitive to both visitor needs and littoral biodiversity' (Blue Flag 2006). Natural disposal by tides and waves at the beach should be accepted, as long as it does not present a nuisance, which means that it should not be allowed to accumulate to the point where it becomes a hazard or 'distasteful to the public' (Blue Flag 2006). The point at which seaweed becomes distasteful is, however, closely related to popular interpretations of bathing area cleanliness. On a new beach information board at Silversands, the effects of seaweed removal were explained to encourage beach users to think about seaweed differently (Figure 4.7).



Figure 4.7: Information Board at Silversands with Seaweed Notice 14/04/06

In Fife Council's community beach consultation exercise, seaweed came out as one of the main dislikes associated with beach visits (Fife Council 2005b). During informal interviews with beach users as part of this consultation, I found that people often link seaweed with bad smells, dead birds, rubbish and waste (Fieldnote 9: 26/09/04). Although perceived as unpleasant, small amounts of seaweed were not considered to be a significant health risk. Clean Coast Scotland would like to see seaweed reclassified so that it is no longer a 'hazardous material'. But 'health risks' are just as difficult to define as the distastefulness of seaweed:

Clean Coast Scotland generally, from the meetings I've had, encourages beach operators to leave seaweed where it is – unless there is a public health risk associated with it. Now the definition of what a public health risk is, is very difficult. We would say that accumulations [of seaweed] waist high, and full of litter and dead birds and things, that is a health risk. But seaweed is an integral part of the beach, and I would hate to see it removed just because some people don't like it (Interview 17: 06/12/05).

Seaweed, when rotting or infused with litter, is classified as hazardous waste and must, in Scotland, be disposed in landfill. Fife Council had thought of pushing it back into the seawater, but this would be seen as a 'polluting discharge' (Fieldnote 5: 27/08/04). In addition, the council representative told me that as hazardous waste, seaweed is subject to landfill tax and cannot be used as fertiliser.

The MCS prefers seaweed to be left on beaches, unless it poses a health risk to visitors. A representative of MCS described the complexity of the issues involved, and the need to assess health risks associated with seaweed on a beach-by-beach basis:

sometimes decisions have to be taken locally. An example is Helensburgh, where a local council employee was actually discouraging mechanical cleaning to leave the seaweed as natural habitat, but also to reduce the amount of landfill, which avoids the payment of landfill tax by local authorities. So there's a complex range of issues there. And one of the things that we recommend is to provide much, much clearer guidance to local authorities in terms of what means of cleaning their beach is most appropriate. Somewhere like Helensburgh, where seaweed can really accumulate on a stretch of foreshore and can be matted with dead animals and sanitary products, under those circumstances, you'd be better off mechanically cleaning. So you've got to have a certain place-by-place approach (Interview 6: 01/06/04).

In this quote, the MCS representative explained how links between seaweed and health risk should not be based on universal assumptions that construct seaweed as either safe or hazardous. He, on behalf of the MCS, advocates an approach that looks at each beach individually to assess whether seaweed poses a health risk. The beach manager for Silversands told me that Fife Council tries to balance aesthetic quality for beach users, while meeting the wishes of those who think that the natural look of the beach should be preserved (Fieldnote 4: 26/08/04). Her view of seaweed constructs the debate around beach user perceptions of aesthetic and natural purity – a topic returned to Chapter 5.

At Silversands, I found a marked difference in the volume of seaweed between September, when the beach is cleaned daily, and November, when the beach is cleaned only sporadically (Fieldnote 7: 02/09/04; Fieldnote 11: 04/11/04). The

presence of seaweed depends, of course, on the tides and whether there have been recent storms, but in general seaweed increases noticeably during the winter (Figure 4.8). During an informal interview with a residents' environmental group, a local activist told me that she wants to see more mechanical beach cleaning throughout the year to remove more rotting seaweed from beaches in east Fife (Interview 1: 21/04/04). Seaweed management is a contested issue that brings out contrasting opinions based on what is considered natural and what is considered clean. While the Council tries to balance the wishes of different groups, it is also motivated by keeping costs down, and a determination not to deter visitors.



Figure 4.8: Seaweed at Silversands, 08/11/04

The examples used in this section – bathing water aesthetics and seaweed – have been used to highlight how cleanliness is both important and contested. A close examination of debates concerning bathing area cleanliness uncovers how the rationalisation of bathing waters does not immediately follow from environmental policy discourse and scientific measurement. Cleanliness is produced through interactions between bathing water, people and things – such as fish eggs and seaweed. While Pickering claims that ‘practice’ structures what can be said about particular phenomena, my research suggests that in the case of bathing water, the linear relationship between practice and beach management does not exist. By studying the presence of fish eggs and seaweed, I find that there is nothing inevitable about what follows from the rationalisation of bathing waters. What follows – beach

management – is closely associated with specific interpretations of cleanliness, which suggest a reflexive relationship between different, mangled, practices.

Conclusion

This chapter began by considering discursive formations in relation to environmental policy and the Bathing Water Directive. I found that elements of ecological modernisation and governmentality can be detected from an archaeological investigation of relevant policy documents. More specifically, the 1976 directive facilitates ‘arts of governance’ that bring new territory under control, and cause the self-regulation of bathers and beach visitors. The Directive establishes discursive formations relating to ‘bathing area’, ‘bathing season’ and appropriate techniques of measuring and monitoring bathing water. Rules are thus set concerning what can be said meaningfully about bathing water and coastal policy. I found, however, that the original Directive adheres only partially to tenets of ecological modernisation because it is based on legalistic discourse that requires compliance to specific standards.

Recent revisions to the 1976 Directive were discussed in context of changing European environmental policy and changes in the legal requirement of member states to comply with directives. From 2000-2006, a review was conducted to discuss how a new Bathing Water Directive might best contribute to better management practices and healthier bathing areas. This review resulted in a directive that focuses less on scientific measurement and more on overall management. In this way, discursive formations have changed from being legalistic to managerial. In accordance with changes in environmental policy, beach managers are now encouraged to think how scientific measurement can contribute to management procedures (see Chapter 9). Using an archaeology of policy documents I uncovered how environmental policy in the new Bathing Water Directive adheres more closely to managerial discourses of ecological modernisation.

Discourses of environmental policy are shown to be linked to scientific practices of bathing water measurement at Silversands. While the 1976 Bathing Water Directive established tight rules concerning scientific assessment, the practice of measurement is found to be more complex. The regime of water sampling at Silversands, for example, was found to be important in helping to establish scientific authority. In this way, the performance of scientific water quality measurement produces an authoritative assessment of bathing water cleanliness. I concluded,

however, that bathing water measurement at Silversands cannot be linked directly to the Bathing Water Directive. In addition, bathing waters are understood based on different interpretations of cleanliness that are not always scientific.

I argued that different interpretations of beach cleanliness could be uncovered at both Silversands and La Herradura by considering two issues, namely water aesthetics and seaweed. Without seeking to compare the relative validity of different interpretations of water and beach cleanliness, I found that beach management is based on more than scientific assessments of bathing water quality. This, I suggested, demonstrates the limitations in thinking about bathing water rationalisation from solely an analysis of discursive formations and related scientific practices. I conclude that the linear relationship between environmental discourse and practice – which is characteristic of many studies of ecological modernisation – is not enough when thinking about the rationalisation of bathing waters. Interpretations of cleanliness shape, and are shaped by, beach management practices. In chapter 5, I investigate further how different interpretations of cleanliness are spatialised in beach management practices at Silversands and La Herradura.

5

Social Construction of Bathing Waters: Managing Cleanliness

Introduction and Chapter Outline

Chapter 4 described an archaeology of bathing water legislation, and illustrated how interpretations of cleanliness are important in structuring bathing area management. It was shown that the relationship between the Bathing Water Directive and bathing area management cannot be characterised simply through linear application of scientific measurement practices. It was suggested, instead, that different interpretations of cleanliness provide the basis for beach management practices, which include scientific measurement of water quality. At Silversands and La Herradura, cleanliness is central in determining different social constructions of ‘bathing area’. This chapter describes five examples of how bathing areas examined in this thesis are socially constructed through layers of beach management with respect to cleanliness.

By considering five examples of beach management – in addition to scientific practices described in the previous chapter – this chapter claims that social constructions of bathing areas are numerous. In this sense, scientific practice exists alongside other human-led practices in establishing and rationalising the management of bathing areas. Practices – such as a beach award ceremony – are used to demonstrate how, for example, ‘bathing season’ becomes established at Silversands in a way that is both provisional and situated. This chapter further claims that interpretations of cleanliness are central to social constructions of bathing area. The spatiality of cleanliness is shown to be more complex than a binary distinction between clean spaces and dirty spaces. Instead, dirt and cleanliness can simultaneously be both present and absent, as described below.

What follows is divided into five further sections and a short conclusion. First, I consider beach awards based on scientific water quality, beach cleanliness and the provision of facilities for visitors. To do this, I examine the UK-based Seaside Awards campaign at Silversands. Analysis of this award is based on interviews, participant observation and discursive analysis of press coverage. The award is important because it provides a template for bathing area management that has become established as best practice for beach operators. Additionally, beach awards

mark the annual start of the bathing season, and are often performed ceremonially at bathing areas such as Silversands.

Section two considers how policies concerning dog access are established at bathing areas. The Bathing Water Directive contains no recommendations regarding dog access. But at designated bathing areas examined in this thesis, issues of dog access are important in rationalising broader management decisions. Dog access will be shown to be closely linked to concerns of cleanliness and safety. Dirt associated with dogs is spatialised in particular ways, and I examine how this is reflected in the organisation of bathing areas at Silversands and La Herradura.

Thirdly, I discuss a festival that occurs annually at bathing areas in Spain – the festival of San Juan. This festival is arguably the most important event in the calendar of beach management at La Herradura and involves many thousands of people lighting fires and bathing. During the festival, normal rules of beach management are suspended. In this section, I use participant observation and interviews to argue that issues of dirt and cleanliness are important with respect to the festival, but are not easily spatialised. For festival participants, clean bathing areas are important in celebrating a cleansing ritual, while for the municipal authority, festival goers are sources of dirt and waste, requiring a different type of cleaning. Dirt, in this respect, is shown to be more than a spatial category.

Fourthly, I consider an initiative at Silversands to encourage more people to visit award winning beaches such as Silversands. The Fife Beach Passport – used for the first time in 2005 – offers beach visitors a small gift for each ‘stamp’ collected from lifeguards at participating beaches. The initiative, which operated only during the bathing season, is used both to promote beaches and survey beach usage. The passports also encouraged visitors to engage with lifeguards and beach wardens, further establishing the ‘bathing season’ at Silversands.

Fifthly, I consider how human presence at beaches contributes to the management of bathing areas. I use interviews and participant observation to argue that visitors have agency by being absent from bathing areas. In Chapter 4, I discussed how SEPA conducts regular counts of beach visitors in Scotland (Chapter 4: 103). Here, I argue that through both presence and absence, visitors are compliant in the rationalisation of bathing areas. In this respect, the ‘imagined lay public’ is important in justifying certain management decisions (Maranta *et al* 2003; Roth and Riecken

2004). This being the case, I conclude that human agency and expertise must be reconsidered if we are to take seriously diverse practices that rationalise bathing areas.

The Seaside Award and Associated Award Ceremonies

The Seaside Awards campaign is organised in Scotland by Keep Scotland Beautiful – part of the ENCAMS group (KSB 2006a). Like the Blue Flag campaign, Seaside Awards are based on water quality tests associated with the Bathing Water Directive. Winning beaches must comply with mandatory standards for seawater microbiological tests conducted by SEPA during the previous bathing season (Chapter 4: 104). In addition to water quality testing, beaches are assessed for overall cleanliness and facilities provided by beach operators – normally local authorities. Two levels of seaside award exist depending on the location of beach, numbers of visitors and the facilities provided; ‘resort’ beaches, and ‘rural’ beaches. Currently in Scotland, forty beaches have been recognised by the Seaside Awards campaign, and seven of these, including Silversands, are ‘resort’ award winners (ENCAMS 2004). Results of Seaside Awards are announced annually to coincide with the start of the bathing season in early summer. In this section, the normalising effects of Seaside Awards are considered in relation to bathing area management at Silversands. I argue that the establishment of beach awards serves to formalise a particular social construction of the bathing area.

Seaside Awards and Bathing Area Management

Seaside Awards are designed to recognise ‘well-managed beaches which are clean and relatively safe’ (ENCAMS 2006). They are valid for one year and are based on annual assessment of 29 different criteria at resort beaches. In Scotland, the inspections are conducted by Keep Scotland Beautiful (KSB), as was described to me by a representative from Fife Council:

so you’re looking at Keep Scotland Beautiful in Scotland sending out an inspection team; and they’ll inspect it to see if you meet the standard with regards to the facilities included on the beach, and things. If you do, you do; and if you don’t you don’t. It tends to be an interactive process in that they do tend to talk to you about it and try to give you a chance to improve it. If they came down on a bad day – you

know – if someone has stolen the sign, they give you a chance to come-up to the standard (Interview 4: 19/05/04).

Fife Council is responsible for providing and maintaining facilities at Silversands and other award winning beaches on the Fife coast. Working alongside Keep Scotland Beautiful, beach assessment is an ‘interactive process’ that enables the Council to rectify problems with facilities uncovered by inspectors. There is a desire on both sides to ensure awards are issued to well-managed, clean and safe beaches. A beach inspector from Keep Scotland Beautiful discussed with me how Seaside Awards are tailored to both local authorities – like Fife Council – and KSB:

the last operating review we had was just the Scottish Councils. They discussed a complete revamp of the Seaside Award, in line with the water quality changing, and demands of usage changing as well. Because we’re looking there at complete year-round use rather than just seasonal. So we’ve been in discussion with [beach awarding bodies from] England and Ireland, Wales and Northern Ireland. And [Keep] Wales [Tidy] are keeping the Seaside Award in line with demand [from local authorities]. [ENCAMS in] England are completely dropping it next year and introducing a coastal recognition system about the management of the entire coastal area, including the parks, streets and the area around. That’s a computer-based management tool that identifies what the beach is used for, and the computer and it gives you a management plan at the end. I know our operators [in Scotland] don’t like that idea because they say they can’t categorise the beach into a user group. They can’t say ‘this beach is only used by locals’, or ‘only used by families’, looking for picnics and sandcastles. So they’re not going to go with that, so it looks like we’ll have Seaside Awards (Interview 17: 06/12/05).

In addition to beach assessments, the format of Seaside Awards is decided through consultation between KSB and local authorities – including Fife Council. In Scotland, beach operators want an award that recognises the provision of some facilities throughout the year. Unlike some beach operators and local authorities in England, local authorities in Scotland want to maintain Seaside Awards based on the distinction between ‘resort’ and ‘rural’ beaches, rather than using a computer model to generate specific management tasks for each beach.

Seaside Awards assure standardisation of beach facilities and cleanliness across award winning beaches. 'Resort' beaches, for example, should have 'clearly sign-posted First Aid facilities' that are 'available between 10.00 a.m. and 6.00 p.m.' (ENCAMS 2006). Additionally, beaches must have 'public telephones, which must be checked daily, within easy access (5 minutes walk) from any point of the award beach', and 'adequate toilet facilities, cleaned and maintained, including facilities for disabled people' (ENCAMS 2006). Award beaches must be cleansed regularly so that 'litter should not be allowed to accumulate or become unsightly'. Bins should be placed at 25m intervals along the beach, 'although numbers [of receptacles] may vary according to the bin capacity, numbers of users and the effect of the tide on the area of the beach' (ENCAMS 2006). Because of this standardisation, similar facilities can therefore be expected at all 'resort' award beaches throughout Scotland. Provision of a litter receptacle at 25m intervals along beaches, for example, becomes normal practice associated with rationalised beach management.

Beach inspections are an important part of Seaside Award practice. In a similar way to the collection of water quality samples (discussed in Chapter 4: 104), beach inspections are performances that enlist beach visitors as spectators of the assessment process. Water quality, however, is measured twenty times during the bathing season, while inspections for Seaside Awards occur annually. Unlike the other 28 criteria for 'resort' awards, water quality is not easily rectified by local authorities. Indeed, responsibility for maintaining good water quality is normally associated with Scottish Water, which treats sewage and manages discharges. For a local authority like Fife Council, receipt of a Seaside Award is dependent on water quality compliance outside its direct control. A beach manager at Silversands told me that the prospect of failing to achieve an award, despite significant effort from the Council, was frustrating:

I think what is frustrating sometimes about the Bathing Water Directive, and in some cases the awards, is that if you fail on one thing that is actually out of your control, there's nothing you can do. And obviously there's a public health issue in that the water does have to be of a standard, but I think what frustrates local authorities, or as I see it being a local authority, is that – you know – the thing that stops you having a designated site is the

one thing that you have no control over as a local authority. So I think it's a bit, it can be a little bit frustrating (Interview 9: 06/07/04).

Water quality is the one criterion of Seaside Awards that cannot be addressed during the interactive assessment process involving KSB and Fife Council. The provision of adequate beach facilities and the management of services can all be adjusted to comply with Seaside Awards. Local authorities are, therefore, reluctant to rationalise beach management in accordance with Seaside Awards unless they are confident that water quality measurements are likely to be favourable. In the network of bathing area practice, Seaside Awards are linked to the Bathing Water Directive, but do not necessarily follow from it. Seaside Awards are based on particular ideas of cleanliness that normalise beach management at award winners such as Silversands.

Seaside Awards normalise beaches further by making two distinctions; between award winners and non-award winners, and between resort beaches and rural beaches. By winning an award for good management and cleanliness, Silversands is discursively and materially separated from badly managed and dirty beaches. During the bathing season, Silversands flies a yellow Seaside Award flag to highlight its success, which is also widely publicised in the local press. This award is a rhetorical device that sets Silversands apart from the mundane, the average and the dirty. As a result of detailed inspection, and scientific measurement, Silversands is adjudged a paradigm of cleanliness and good management. Other beaches without such an accolade can therefore be compared unfavourably if management and cleanliness are not normalised to emulate Silversands.

Within Seaside Awards, the separation between 'resort' and 'rural' is important in normalising two different types of management and cleanliness. During participant observation with a KSB beach inspector, I asked why the distinction between resort and rural had been made (Fieldnote 2: 04/05/04). She explained to me three reasons for the division; first, the separation is a practical decision that enables beaches with diverse characteristics to be compared and awarded on their merits. She explained also that resort beaches are expected to have a large number of visitor facilities such as car-parking, lifeguards, disabled access, public telephones and provision of drinking water. These, she said, require a significant outlay from local authorities to supply and maintain, and are only therefore provided at certain busy beaches. The two-tier Seaside Awards scheme is designed to reward local authorities

for providing good quality services at Scotland's busiest beaches while simultaneously recognising good work and cleanliness at quiet beaches with few facilities.

The beach inspector told me, secondly, that two types of Seaside Award allow quieter beaches to be maintained in their 'natural' rural state. According to ENCAMS (2006), the rural seaside award is designed for beaches that are not actively promoted, but are enjoyed for their 'intrinsic qualities'. There is a desire to maintain a separation between beaches that are allowed to remain natural, and those which are heavily managed by local authorities, and cleaned according to specified standards. Seaweed, for example, is not lifted from beaches in the rural award scheme, but is removed from resort beaches where it becomes a nuisance.

The third reason why beaches are rewarded in different ways is due to the claim that different people use beaches in different ways. According to the beach inspector, different types of management reflect public expectations of beaches in Scotland. Some beaches are used for recreation, fun and family days out, others are used to 'get away from it all' in natural surroundings (Fieldnote 2: 04/05/04). With respect to the normalising effects of Seaside Awards, I argue below that the separation between resort and rural both reflects and creates differences in expectations of beach cleanliness.

To investigate further the idea that beach users expect either heavily managed or 'natural' beaches, I interviewed a representative from the Tourism and Environment Forum for Scotland – which supports environmental awards for tourist facilities (Interview 8: 09/06/04). The representative explained, using his personal experience, how he thinks about differences between resort and rural beaches. For him, rural beaches on the west coast of Scotland can be explored to find interesting items such as driftwood, lobsterpots, and shells. Many of these items, which would otherwise be waste, can be used as decorative household ornaments. He added that beaches like Silversands are 'fine for taking your family for an ice-cream', but cannot be used for beachcombing because of the possibility of finding potentially dangerous waste, or finding no waste at all because it has all been removed. This paradoxical view – in which beaches can be both clean and potentially dirty at the same time – is one that was repeated to me during ethnographic research at Silversands. A father told me that he was happy for his two young children to play on the sand or in rock-pools, but he wanted to take them to the west coast to learn windsurfing, because the water

at Silversands is dirty (Fieldnote 6: 28/08/04). While Silversands is juxtaposed with beaches in the west of Scotland, the reasons for such a comparison are based on specific conceptualisations of dirt. Certain activities, like beachcombing and windsurfing are most suitable at 'natural' beaches, despite assurances of cleanliness at the resort beach of Silversands.

Dirt is sometimes linked to high numbers of beach users and proximity to towns and industrial ports. Even though resort beaches – like Silversands – are cleaned to stricter criteria than rural beaches in the Seaside Awards scheme. Cleanliness is often more closely associated with rural naturalness. In following the links between cleanliness and different types of beach usage, I interviewed a representative from the Wester Ross Marine Reserve Partnership, which is leading a campaign against pesticide use in fish-farming (Interview 2: 21/04/04). In the remote Scoraig peninsula in Wester Ross, salmon farmers use pesticides that can be seen as a glossy, oily residue on the sea surface. The Marine Reserve Partnership was formed, in part, to put pressure on SEPA and the Scottish Executive to conduct adequate scientific studies on the extent and effects of pesticides. For the Marine Reserve Partnership, 'rural' beaches and seawater in the Scoraig peninsula are just as likely to be polluted as bathing areas in the Firth of Forth and should, therefore, be actively managed. By simultaneously questioning the naturalness and cleanliness of seawater in the northwest, the representative I interviewed suggested one way in which 'rural' beaches might not be easily separated from 'resort' beaches.

While claiming that the separation between resort and rural is one based on user expectations, a KSB beach inspector later told me that there had been discussions with beach operators to abandon the resort beach award. This, she claimed, would avoid confusion caused by having both resort awards and Blue Flag awards at some beaches:

we discussed getting rid of the resort criteria because, of the resort beaches we have, six of them have the Blue Flag. So we discussed getting rid of it, and just having the rural award, because it would reduce the confusion. We weren't going to call it a rural award, we'd just have a Blue Flag, which is resort, and Seaside Award beaches for rural. But [the beach operators] said no. They wanted to keep the rural category and they wanted more definition between the

two because currently we have Aberdour, Saltcoates and Ardrossan as rural beaches, and they're not (Interview 17: 06/12/05).

The beach inspector mentioned Aberdour because Silversands' neighbouring beach, Blacksands, currently has a rural Seaside Award despite being located close to the town centre. Because of differences in categorisation, the two adjacent beaches are managed differently. Blacksands has only a small car park and no functioning toilets, fewer litter bins, no lifeguards, more seaweed (during the bathing season), and it offers access to dogs throughout the year (Fieldnote 5: 27/08/04). During my time as a participant observer of Fife Council's beach consultation, many respondents at Blacksands described how the beach is used predominately by local people, whereas Silversands is used by visitors to the area (Fieldnote 5: 27/08/04; Fife Council 2005). From my research, the separation of 'resort' category and 'rural' category is marked materially by different management practices at Silversands and Blacksands. This has, in effect, rationalised management procedures at each beach, so that the provision of bins at Silversands, for example, is normalised. In this respect, separating 'resort' from 'rural' not only reflects differences in beach usage, but also serves to create, formalise and rationalise further differences in beach management – not least with regards to awards ceremonies.

Performing Beach Awards

Beach awards like the Seaside Award and Blue Flag are normally presented during a short annual ceremony with invited guests, councillors and the local press. This ceremony normally coincides with the start of the bathing season in late May or early June, and generates a significant number of newspaper articles, radio and sometimes television reports. At Silversands, it is normal for all annual beach awards to be presented at the same ceremony, which was attended in 2005 by the Fife coastal path mascot – 'Coastie' (Figure 5.1). As an annual ceremony, the performance of presenting awards is important in both endorsing Silversands as a clean resort, and formally opening the bathing season (Fieldnote 3: 01/06/04). While the Bathing Water Directive defines 'bathing season' in legalistic terms (Chapter 4: 84), the season is put into practice by the annual beach award ceremony. Additionally, the start of the bathing season is established by lifeguards being present at bathing areas,

and dogs banned – neither these measures are directly related to the Bathing Water Directive.



Figure 5.1: Beach Award Ceremony with 'Coastie', Silversands 04/06/04

At Silversands, the annual award ceremony is an established event that has become essential in rationalising bathing area management. During an interview with a representative of Fife Council, I asked about the possibility of failing to win Seaside Awards during any given year, and the likely consequences this might have:

we lost an award and re-gained an award a couple of years ago at Petticuir – or was it Kingsbarns – and I think there certainly is stigma attached to being de-listed because the press just jump on it, and it's something that's very serious. In Fife we have a lot of press coverage for our awards. While I've been working at Fife Council we haven't had that award being taken away if anything it has just been gaining awards and retaining awards. I think it's something that probably does put local councils off and certainly from my knowledge, the Scottish Beach Managers forum, the stigma attached to losing an award is quite great because then people think you can't visit because it's dirty, but its not. So I think it's certainly something that people consider when they're thinking about having awards. I suppose, that again comes into water quality. A lot of the beaches that have been de-listed have lost it because of their water quality, and I guess that's something that's out of their control so, the thing that probably worries a local authority is that actually, they have very little control over the one thing that governs whether they get an award or not. I think we're lucky because we've got

quite strong political backing which isn't necessarily the case with other local authorities, especially the west-coast ones (Interview 9: 06/07/04).

The prospect of being 'de-listed' for beach awards is something that beach managers at Fife Council want to avoid because of the 'stigma' created by bad publicity. Indeed, the above quote suggests that some local authorities avoid entering beaches for certain awards because of apprehension that the awards might be difficult to retain after the initial year. Again, the representative from Fife Council states that many beaches have been 'de-listed' in recent years because of failed water quality tests, rather than problems with facilities or beach cleanliness.

Adverse publicity associated with the loss of beach awards is seen by many as problematic because of fears that visitor and tourist numbers will drop. From the perspective of community services in Fife, a representative from the local authority explained how beach awards are justified economically in terms of visitor numbers, public health and recreation:

there is a lot of competition for limited resources, and that's increasingly the case as budgets are getting cut-back. And I think the local authorities have wrestled with this one, that's why we're the only local authority [in Scotland] with Blue Flags. We're not the only local authority who could have Blue Flags, there's lots of others trying, but it's not cheap. It's a very small season if you think about it – summer months – and it's difficult to prove. The economic study we had carried out has given Fife some indication of the leverage it can bring in terms of the economic benefit. But I'll also say that local people are getting more vociferous about them, they do see beaches as a local recreational facility, and their expectations are increasing, so that's another group of pressures. If it's okay to have a leisure centre, or parks, or a museum, why is it not okay to have a beach? And a lot of people, local people, do use beaches for recreation. So, you've got the economic argument and you've got the recreation argument as well (Interview 4: 19/05/04).

While the Environment Protection Act (2003) in Scotland obliges local authorities to clear hazardous waste from beaches, the facilities and services provided at award-winning beaches like Silversands go well beyond any legal obligation. Beach awards are optional for local authorities. But electing to participate in a beach award

campaign requires that certain facilities and services be provided within tight schedules that would be difficult to meet without the incentive of an award. As noted above, demand for beaches to be managed as a recreation resource does not solely originate from lists of beach award criterion set out by KSB or other environmental charities. According to a representative from Community Services, local people increasingly expect more of beaches and the local authority is meeting these demands by taking part in beach award schemes, and providing services associated with those awards.

In terms of tourism, beach awards enable the local authority to calculate a 'leverage factor' that constructs the provision of beach services as an investment that is eventually rewarded with visitor-related income. While the Kingdom of Fife Tourist Board (2006) uses beach awards in its marketing literature, a representative from KSB iterated to me that beach awards are intended as an environmental education tool, rather than a tool for tourism marketing:

It's funny how people use [beach awards, in particular Blue Flags] as a kind of tourism symbol. Because at the international operators' meeting we [the national awarding bodies like KSB] all sit there and say it's an environmental education tool, it's not about tourism. They [the local authorities] wouldn't put any money into it unless it was about tourism. They don't pay money so that they can fly a flag and do an environmental initiative; they do environmental initiatives because they want the flag because they want an increase in tourism. And all the countries there are agreed on that. That although we sell it an environmental tool – it is an environmental management tool, you can measure your improvement and you can bench-mark against other people and you know it does have a role to play in that – but that's not why the operators sign up for it. You only have to look at Fife to see that. They do it as a marketing tool for the economy in Fife (Interview 17: 06/12/05).

This quote suggests that a major difference in thinking exists between the body that issues beach awards, KSB, and local authorities that apply for awards. Beach awards are used both for establishing good practice in bathing area management, and tourism marketing – the dual purpose reflected in the differing emphasis expressed by representatives of different organisations. As an environmental management tool, however, beach awards normalise particular practices on a 'bench-mark' scale that

allows rationalised comparison between beach operators. ‘Improvements’ in bathing area management can therefore be measured by increasing adherence to beach awards.

The practice of beach awards incorporates numerous tasks to put Silversands ‘into shape’ for the start of the bathing season (KSB 2006). These include lifting seaweed, placing additional bins, enforcing a ban on dogs and employing lifeguards to be stationed at beaches full-time. Additionally, practice includes the performances of beach inspection and the annual awards ceremony. What follows is the formal establishment of the ‘bathing season’, which is linked to an annually published list of award-winning beaches produced by ENCAMS and other charities on the basis of criteria that include bathing water quality. The practice of beach awards establishes and normalises bathing area management at the ‘resort’ beach of Silversands. Bathing area management is rationalised such that people can expect similar facilities and cleanliness at each resort beach.

Yet cleanliness associated with a resort award is based on specific interpretations of award criteria that require, for example, the daily removal of seaweed and litter. These interpretations are based, in part, on beach award criteria that separate ‘resort’ and ‘rural’ beaches. The awarding body – KSB – maintains this separation because it reflects public expectations of ‘natural’ rural beaches and highly-managed resort beaches. Different recreational activities are then associated with each type of beach. From my research, this reasoning is supported, in some cases, by those who maintain that certain activities are more appropriate at Silversands, or at rural beaches in the west of Scotland. But the separation between resort and rural beaches is not clearly identified by both those who think rural bathing areas should be more managed, and those who think that ‘natural’ seaweed should be left at resort beaches. Similarly, I demonstrate how Silversands can, for some, be both clean and dirty at the same time. The links between beach award practice and cleanliness therefore reveal a complex set of issues that contribute to bathing water management.

Dog Access at Silversands and La Herradura

Dog access is important at bathing areas in both Scotland and Spain. The 1976 Bathing Water Directive contains no guidance concerning dog access, yet local authorities at both Silversands and La Herradura have restricted dog access to bathing

areas. In this section, I describe the reasoning behind such practices at both bathing areas under investigation. I explore how dog policy can be linked to particular social constructions of cleanliness, and suggest that bathing area management decisions are normalised by dog access policy. Finally, I consider how dirt is spatialised at bathing areas with respect to dog policy, and how dogs' absent-presence can be analysed by considering material traces such as paw-prints and dog-dirt.

At La Herradura, dogs are officially banned from the beach throughout the year, and this is communicated to dog owners by several notices placed at regular intervals along the beach (Figure 5.2). Enforcing the ban, however, is difficult for the municipal authority because the beach is approximately 3km in length, and backs with no barrier directly onto a busy street. During an interview with a local beach manager, I discussed the origins of the dog ban, and several issues concerning its enforcement. He told me that the dogs are banned at all local authority beaches because it is what beach visitors want:

well, we need to listen to the opinions of visitors, the tourists. In Almuñécar, what is most important is tourism because the majority of jobs are in tourism. In recent years, we have asked what tourists want, and they say that dogs shouldn't be on the beaches. And as a result of this, dogs are prohibited (Interview 13: 06/07/05 – Appendix IIIb).



Figure 5.2: Permanent Restriction of Dog and Horse Access, La Herradura 08/05/05

Without any legal requirement to impose a ban on dogs, the municipal authority chooses to apply its own measures because this reflects the wishes of beach visitors.

To ensure that visitors enjoy their time at La Herradura, and hence to ensure return visits, the municipal authority conducts surveys with beach users, and applies certain measures – like the dog ban – that appeal to most people. This view is echoed by another survey conducted on behalf of local newspaper *Ideal*. The newspaper claimed that dog-dirt is the single factor that troubles beach visitors most:

It is not the stones on the beach, or the cold water or personal security. What bothers tourists in Almuñécar most is the presence of dog-dirt on beaches, streets and promenades. According to satisfaction surveys in the municipality's hotels, canine excrement tops the list of annoyances. But dog-dirt does not only bother visitors, residents are tired of the town's image being harmed by the thoughtlessness of some. For this reason, the municipal authority has put in motion plans to raise awareness among dog owners that their beloved animals are restricted from certain areas. From this month, according to the Councillor for the Environment – Jesús García Alabarce – three inspectors will be employed to find and intercept citizens who demonstrate thoughtlessness towards other citizens by allowing their dogs to defecate in public thoroughfares (*Ideal* 06/07/2005 – Appendix IIIc).

In the case of La Herradura, dogs are banned from the beach because this reflects the findings of visitor surveys. The local councillor, quoted in the above article, proposes new measures to enforce the existing dog ban on beaches, and to combat the problem of dog-dirt on streets and promenades. Dog inspectors employed by the municipal authority are given the authority to issue on-the-spot fines to dog owners found breaking the rules. The increased enforcement will, it is hoped, lead to new normalisation of dog-owner conduct and an end to the 'thoughtlessness' of those who allow dogs on bathing areas.

The dog ban at La Herradura is not solely the result of pressure from visitor surveys – until 2004 La Herradura possessed a Blue Flag award. As part of the Blue Flag award campaign, one environmental management criterion states that 'regulation concerning dogs and other domestic animals on the beach must be strictly enforced' (Blue Flag 2006). Because beaches in the municipality of Almuñécar had previously been part of the Blue Flag campaign, bans on dogs at each beach were well established. Signs placed at regular intervals at La Herradura date from when the beach was part of the Blue Flag campaign (Fieldnote 26: 06/07/05).

After withdrawing from the Blue Flag campaign in 2004, the municipal authority maintained dog bans, in part because this is now what is expected by residents and beach visitors. The origins of the dog ban are therefore linked to both beach user expectations and the criterion for Blue Flag awards – which are also based on certain expectations of bathing area management.

While the municipal authority in Almuñécar has withdrawn from the Blue Flag campaign, Blue Flags have been maintained in the neighbouring municipality of Motril (Chapter 7: 235). During the bathing season, therefore, beaches in Motril – such as Playa Poniente and Playa Calahonda – are required to have lifeguards and beach wardens stationed full-time. The presence of beach officials at bathing areas in Motril allows greater opportunity for dog bans to be enforced. In contrast, the only official presence at La Herradura during the bathing season is a small team of beach cleaners who work for a contracted cleaning agency – *Limpiezas Inés*. This team of four arrives at La Herradura at about 7.30am every morning and walks from west to east along the beach to hand-pick items of waste and to empty bins. At 9am, the team is collected in a pick-up truck and taken to another beach. I joined the beach cleaning team one morning to find out more about the types of waste being collected, and about policing of dog access (Fieldnote 23: 01/07/05). As we passed a dog, with its owner, a member of the beach cleaning team told me that they have no responsibility to ask dog owners to remove their pets from the beach – and he seemed surprised that I asked the question.

Newly-announced dog inspectors might impose stricter enforcement of the dog ban at La Herradura, but at the time of my research, dogs were regularly walked at the beach. The banning policy is established, if not tightly enforced, throughout the year at La Herradura. To a certain extent, therefore, banning dogs has been normalised as good beach management practice, while allowing a pet to leave excrement on the beach is labelled both ‘impolite’ and ‘thoughtless’ by the beach manager. Below I explore more fully beach user perceptions of dog bans, and how this relates to beach cleanliness.

At Silversands, the dog ban is closely linked to beach awards that apply during the bathing season. During these months, the beach warden places a series of temporary notices along the foreshore every morning to remind visitors that dogs are forbidden from entering the bathing area (Figure 5.3). This is a measure required both by the Blue Flag campaign and, as stated above, the resort Seaside Award. To comply

with both awards, Fife Council has a seasonal dog ban that applies only from May until September. By coinciding the start of the annual dog ban with the beach award ceremony, and the full-time presence of lifeguards, the local authority has established a regular annual routine of bathing area management. This routine – and particularly the dog ban – normalises the ‘bathing season’ by transforming Silversands into a dog-free bathing area for several months.



Figure 5.3: Dog Access Restrictions at Silversands, 04/08/04

Enforcement of the dog ban at Silversands is performed by the beach warden and by lifeguards. During participation with Fife Council’s beach consultation team, I spoke with the beach warden about enforcement of the dog ban. Earlier in the day I had seen the warden intercept a dog-walking couple as they walked on the west of the beach (Fieldnote 7: 02/09/04). He told me that some people allow their dogs to breach the exclusion, and that it was sometimes difficult to enforce the ban on days when the beach is otherwise deserted. On that particular day in September, it was cold and overcast. With very few people on the beach who might be bothered by the presence of a dog, the ban at Silversands was enforced to ensure compliance with beach awards rather than the expectations of users. The beach warden sympathised with dog-walkers on such occasions, but enforced the ban regardless of visitor numbers.

Dog Access and Cleanliness

In terms of cleanliness, dogs are banned from beaches for both aesthetic purity and to maintain a safe and cleansed recreation space. These concerns mean that both Silversands and La Herradura are managed in particular ways as a result of rationalised and normalised interpretations of cleanliness. While some awards require a ban on dog access to prize winning beaches during the bathing season, this criteria derives from what awarding bodies perceive to be beach user expectations. During an interview with a beach manager from Fife Council, I asked to what extent criteria expressed by beach awards match the expectations of beach users at Silversands, and whether the local authority has been asked to clean what might otherwise be the responsibility of dog-owning beach users. She told me that while the council cleans only the areas over which it has jurisdiction, she wishes to see more beach categories so that management can be tailored for local people and beach users with diverse expectations:

no, I think people still think [beach cleaning] is the council's responsibility. The problem I guess with beaches that maybe doesn't exist so much with other [public] areas is that people just think the council own everything. And we don't. We don't have a duty to clean something that's privately owned. And obviously our resources are stretched enough as it is without cleaning something that the council doesn't own. And I think there is a big problem with that in local communities. I guess the only way to get over it is to speak to them a lot more and to explain to them the situation. Hopefully with the code of conduct on litter and refuse being reviewed and updated, then there'll be a lot more categories in the beach side of things, because at the minute there's resort beaches and there's other beaches and its very, very open, to interpretation, and it can be interpreted however you like. Hopefully when they [KSB] review that and update it, it will become a lot tighter, and there'll be different categories of beach. I was involved in the consultation, but I don't know how it will pan out because obviously there's the logistical thing to it too. If you say it has to be *this* clean, and dogs removed, then obviously there's a duty to do that. And whether or not people actually do that it makes it difficult to enforce, and people can't actually agree (Interview 9: 06/07/04).

The local authority here clearly wants to balance the wishes of local people with nationally-agreed criterion for Seaside Awards, including a ban on dogs at resort beaches during the bathing season. The testimony of the beach manager suggests that it becomes increasingly difficult to enforce dog bans and other beach management initiatives if they are not supported by all beach users.

Bathing area aesthetics are important because different aesthetic values have been normalised in beach awards to separate resort beaches from rural beaches. At Silversands, for example, the aesthetic experience is one of regulated and well-managed recreation in a safe and family-friendly environment. At neighbouring Blacksands, a rural beach, dogs are granted access throughout the year, and the aesthetic experience is one of low-key management and fewer regulations. These contrasting aesthetic experiences are not entirely supported by the beach manager, who would like to see more categories that reflect beach user expectations. Enforcing a particular aesthetic can be difficult for the Council and the beach warden – for example when a dog ban was perceived as overly bureaucratic at the fringes of the bathing season, when few people were on the beach.

Bans on dogs can also be linked to broader rationalising trends at each of my study-sites. In the case of Silversands, the seasonal enforcement of a dog ban serves to establish further a commonly-recognised bathing season, despite above suggestions that interpretation should be less bureaucratic. At La Herradura, the response of the local authority to beach user surveys has been to employ three full-time dog inspectors to enforce dog bans at beaches and to fine owners who allow their dogs to leave dirt in public spaces. A municipal councillor responsible for beaches told me that beach inspectors would provide the type of enforcement required to maintain clean beaches:

To maintain the cleanliness of the sand and the stones, the three inspectors have instructions to spy on and to persecute the violators [of the dog ban] and to apply on the spot fines of between 100 and 600 euros. We are going to be inflexible in the policy of infractions to see if we can enforce all citizens with dogs to comply with the rules (Interview 13: 06/07/05 – Appendix IIIId).

The councillor explains here that support for dog inspectors derives entirely from beach users. In this sense, the rationale being put forward is one based on the idea that

the municipal authority listens carefully and responds to the expectations of beach users with regards aesthetic cleanliness and health. The dog ban is used, therefore, as a tool to justify a particular approach to beach management. This approach, which is normalised around what are perceived to be user expectations, is explored further in relation to environmental risk in Chapter 7.

Dogs and the Spatialisation of Dirt

By excluding dogs from bathing areas, dirt is spatialised in particular ways, and can be studied by examining the traces – paw prints and dog dirt – left behind by dogs at certain places and at certain times. Early morning dog-walkers, for example, can be detected at Silversands by finding traces of earlier presence. In this section, I suggest that the separation between clean and dirty at Silversands is spatially bound by restrictions on dog access.

Silversands is located on the Fife coastal path, which is popular with walkers who often bring dogs to exercise. While it wants to win beach awards, Fife Council is also keen to maximize usage of the coastal path throughout the year (Fife Council 2004). To avoid deterring visitors accompanied by dogs, the council has constructed a dog exercise area at Silversands adjacent to the former café. This grassy area measures approximately twenty metres by fifteen, and is bounded by a chest-high wire fence concealed, in part, behind hedgerows (Figure 5.4). The dog exercise area means that Silversands is ‘zoned’ for different user groups – another of the criteria associated with Seaside Awards and Blue Flags (ENCAMS 2006). Dogs that arrive at Silversands are therefore encouraged to use the rear of the beach where they can be placed in the fenced exercise area or taken on the coastal path beyond the bathing area exclusion zone.



Figure 5.4: Dog Exercise Area, Silversands, 04/08/04

In terms of bathing area aesthetics at Silversands, the dog exercise zone maintains a neat separation of space for different user groups. By concealing the wire fence behind hedgerows, the exclusion of dogs appears natural. Additionally, the provision of an alternative space for dogs facilitates the enforcement of the bathing area exclusion zone and normalises this particular policy. Dirt and danger are associated with dogs; by separating dogs from bathing areas, the policy of dog exclusion is designed to ensure that physical and aesthetic cleanliness are maintained. Rules governing access and behaviour at bathing areas are not, however, adhered to without resistance. In the next section, I develop this theme by considering one example of how rules are waived because of widespread resistance, and how this relates to a social construction of the bathing area at La Herradura.

The Festival of San Juan and Issues of Beach Cleanliness

Each year on 24 June, the festival of San Juan is celebrated by large numbers of people in southern Spain by visiting a beach, lighting fires and barbeques and ritually bathing in the sea at midnight. In Granada province, large numbers of people travel from inland towns to beaches like La Herradura where the festival can continue for many hours and normally involves ‘*botellón*’ – outdoor drinking in public spaces (Bosch 2002; Chatterton 2002; Calafat *et al* 2005). The annual event is perhaps the most important in terms of beach management at La Herradura, and causes significant logistical problems for the beach manager and beach cleaning agencies (Fieldnote 20: 24/06/05). Before considering these problems in greater detail, I describe the rituals

that have become established during the festival at La Herradura and how these relate to normal rules of conduct and the management of the bathing area.

At La Herradura, camping on the beach and lighting fires are explicitly banned throughout the year (Figure 5.5). During the festival of San Juan on 24 June 2005, these rules were suspended for one evening to allow over (what was estimated to be) 8000 people to erect tents and other shelters and to light fires (*Ideal* 25/06/05). At midnight, it is customary for festival goers to bathe in the sea to wash the face in seawater. The customs associated with the festival derive from both pagan and religious rituals. Fire signifies the burning of malignant spirits and face-washing marks the erasure of negativity and a clean start in the forthcoming year. In 2005, festival-goers at La Herradura encompassed all age groups, and many fires were organised by large family groups, or groups of friends (Fieldnote 20: 24/06/05). The municipal authority organises very few additional visitor facilities, but does prepare by removing some of the wooden walk-ways that provide access to the beach. This is because in previous years the wood has been used as fuel on some bonfires (Fieldnote 21: 25/06/05).



Figure 5.5: Normal Restrictions at La Herradura, 08/05/05

On 25 June 2005, after people vacated La Herradura's bathing area, the municipal authority began its largest annual beach clean in combination with the contracted cleaning agency *Limpiezas Inés*. In the municipality of Almuñécar, news reports stated that over 100,000 kilos of waste were lifted from eighteen different beaches – La Herradura being one of the biggest (*Ideal* 26/06/05). The clean-up operation is also the most expensive of the year: it was described to me by the local beach manager:

[the clean-up] is the second part of the San Juan tradition. At night, the party, and then there follows the filthiest morning for Almuñécar beaches. The beaches are left in a lamentable state of dirtiness, which obliges the cleaning services to triple their efforts to return them to their previous state. More than 30 000 kilos were lifted during the first cleaning patrol in the morning. Later, they returned and conducted two more cleaning patrols. It was not an easy task because the workers and cleaning machines had to work around the hundreds of bathers still camped on the beaches. Also, there were acts of vandalism. The wooden walkways were turned into fuel for the bonfires by some people. They do not understand that each section costs about 140 euros to replace, and that the walkways are a fundamental part of what is needed to guarantee access to the coast for people with disabilities (Interview 13: 06/07/05 – Appendix IIIe).

The Festival of San Juan is important in highlighting how dirt and cleanliness are socially constructed in particular ways. For those participating in the Festival, La Herradura is a popular bathing area because it is well maintained with daily beach cleans and seawater cleans. Bathing water is also regularly monitored in accordance with the Bathing Water Directive, and results are widely publicised in May each year (FEE 2005). Although it is a ritual to wash in seawater during the San Juan festival, for many it is also customary to rinse under fresh-water showers after emerging from the sea (Fieldnote 21: 25/06/05). For the municipal authority, festival goers are the source of huge quantities of waste and dirt. Removal and disposal of dirt are costly, but the bathing area is quickly returned to its previous appearance – albeit with some wooden walkways removed (Figure 5.6).



Figure 5.6: Removed Wooden Walkways – La Herradura 25/06/05

Bathing areas such as La Herradura are public spaces, but are also managed in particular ways with specific rules that govern access and enjoyment. During the Festival of San Juan, some of these rules are suspended because of popular traditions and rituals. While the Festival disrupts ‘normal’ beach management, it has now become established at La Herradura, with many thousands of visitors and town residents participating. To some extent it has indeed become normalised within bathing area management; the municipal authority, for example, has annual practices to mitigate dirt and waste. ‘Management’ in this sense is based upon what is most appropriate in terms of traditional practices and performances, and what can be said about those practices. During the San Juan Festival, practices such as ritual bathing and lighting fires highlight particular interpretations of cleanliness, and hence social constructions of the bathing area.

Normal rules may be suspended during the Festival, but some management policies during this event are still associated with ‘best practice’. Facilities provided at the beach, for example, are part of broader beach management strategies that include water quality measurement and the Bathing Water Directive. Fresh-water showers, wooden walkways and regularly spaced bins are all ‘best practice’ beach management techniques associated with beach awards such as the Blue Flag. Similarly, good water quality results are still important in contributing to the

rationalisation of bathing area management. In the next section I consider how beach passports became ‘best practice’ at Silversands

Beach Passports: Monitoring Bathers at Silversands

During June 2005, Fife Council launched a new beach passport scheme to attract visitors to five Blue Flag award-winning beaches: Silversands, Elie, Burntisland and St. Andrews (East Sands and West Sands). The scheme is operated by lifeguards who give out small, A6 sized imitation passports to beach visitors (Figure 5.7). The passports can then be taken to any participating beach to collect a ‘stamp’ and a free gift – normally ‘Fife Council’ branded stationery. All of the gifts are made from recycled materials, and those who complete five stamps are entitled to claim a free back-pack by submitting a completed passport by post. Lifeguards keep a record of the numbered passports, and record how many people have visited each of the participating beaches during the bathing season.

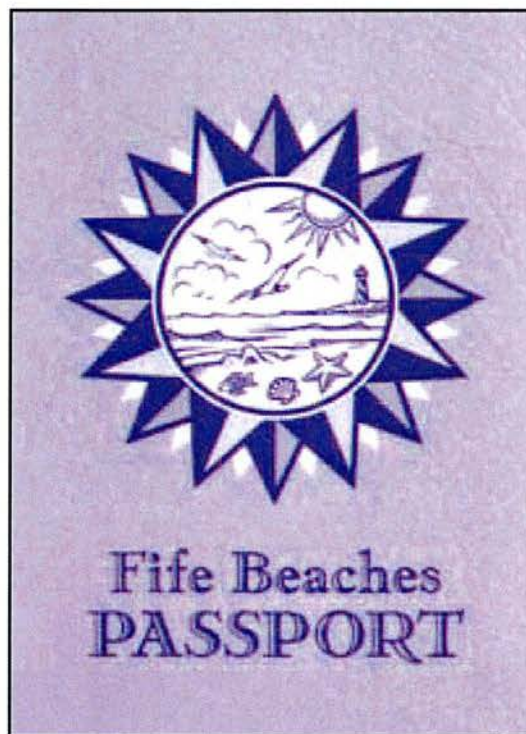


Figure 5.7: Beach Passport 2005

The passport scheme is one of five environmental initiatives that must be organised at Blue Flag winning beaches each year (Blue Flag 2006). This criterion – set out by the international Blue Flag coordinating body, the Foundation for

Environmental Education – is designed to promote environmental education at beaches. Other initiatives organised at Silversands include community life-saving courses and a series of nature walks conducted by countryside rangers. Each of these initiatives requires organisation and investment from Fife Council, and is linked by the Blue Flag campaign to bathing water quality. The beach manager at Silversands told me that the idea for beach passports derives from a similar scheme she witnessed on a holiday. She decided to launch the scheme in Fife, and it has since been adopted by the Foundation for Environmental Education as an example of ‘best practice’ (Interview 16: 19/10/05; Blue Flag 2006). In a press release from the Blue Flag awarding body in Scotland, the KSB Chief Executive endorsed the beach passport scheme:

People visiting Fife for the first time will no doubt find the beach passport a useful tool to help them discover some of the best beaches while those of us who know the area well will hopefully rediscover some real gems. Either way, this new initiative, teamed with new information boards, shows how dedicated Fife Council is to ensuring the beaches remain among the best in the world (KSB 2005).

The beach passport scheme encourages visitors to explore certain bathing areas on Fife’s coast and has been similarly endorsed by the Fife Coast and Countryside Trust, which maintains the coastal path. The scheme is aimed primarily at children, and the coastal path mascot – Coastie – is present at beaches during weekends in the bathing season to stamp passports. During an informal interview, the beach manager informed me that she had gathered passport data from lifeguards to help with beach management plans for the forthcoming bathing season (Interview 16: 19/10/05). She said that over 400 passports were given out, and about 6% were completed with five stamps. She claimed that after initial ‘teething problems’ during the 2005 bathing season, the scheme proved to be successful, and would be expanded in 2006 with greater publicity and ‘beach-related’ gifts.

While the passport scheme is launched as an environmental education tool that encourages beach visitors to explore certain parts of the coast, it is, in reality, a means of beach promotion and management. Passport data is collected by the beach manager, and this is used to facilitate the management and surveillance of beach

visitors in Fife. To participate in the scheme, beach visitors are required to visit lifeguard stations, which are only open during the summer bathing season. The local authority thus normalises the bathing season further by coinciding promotion of beach passports with beach awards and dog bans. Passports suggest that visitors are on holiday when they enter a bathing area, and the link to lifeguards suggests that bathing is officially sanctioned and safe. Passports thus promote a particular interpretation of bathing area cleanliness that is based on beach award criteria and scientific measurement associated with the Bathing Water Directive.

As a tool to promote a particular social construction of bathing area cleanliness, beach passports form part of a broader network of beach management practice. Passports contribute to the establishment of terms such as ‘bathing season’ and ‘bathing water’, terms which structure what can be said meaningfully with regards bathing area management. Beach awards and other beach management tools are introduced by local authorities and beach managers from ‘above’. But these management tools, like the Festival of San Juan, enlist the support of beach visitors to make them work in particular ways. In discussing beach management tools, I highlighted some examples of resistance, which in La Herradura is tolerated by bathing area managers. Additionally I described how beach managers sometimes base policy decisions on perceived expectations of beach users. These examples illustrate that beach users have agency in the management of bathing areas. In the next section I consider the importance of people absent from bathing areas.

Beach Visitors: Issues of Presence and Absence

Human visitors to bathing areas have considerable influence over how those bathing areas are managed. In beach user surveys, for example, dog-dirt has been highlighted as a key concern that causes new bathing area policy initiatives to be introduced by the municipal authority. By being present at bathing areas, partaking in certain activities at ‘resort’ beaches, using dog exercise zones and enlisting in the beach passport scheme, beach users have agency in bathing area management. Yet people need not be present at a bathing area to exert influence on how it is managed. In this section, I investigate the absence of visitors to bathing areas. Absence of visitors is, I argue, just as important as presence at my field-sites. Using the example of beach visitor counts and a proposed subaquatic park, I illustrate how ‘imagined’ and ‘real’ absence influences bathing area management.

Chapter 4 discussed how SEPA bathing water scientists conduct regular counts of beach visitors in Scotland. These counts became significant in 2005 because of a proposed review of bathing water classification throughout Scotland based to a large extent on counts of visitor numbers. At present, 60 coastal areas are designated as bathing waters – a decision that was made by the Scottish Office in 1997 (SEPA 2004). Current attempts to revise this list began in 2003 with a consultation document published by the Scottish Executive (Scottish Executive 2003). This consultation asked ‘stakeholder’ representatives whether bathing waters should be designated on the basis of a count that could establish 200 visitors on a beach at any one time (with no differentiation between those on the beach and those bathing). After consultation, the Environment Minister decided that the most appropriate number of visitor numbers would be 150, and established a Bathing Waters Review Panel to offer advice on how this figure could be used to identify bathing waters. I asked the Chair of the Review Panel to explain how this decision was made:

it was [the Minister’s decision]; but that was based on the responses to the consultation, because I think they ranged from people saying twenty to 500. With 500 we probably wouldn’t have any [bathing waters]! We might – there was a count at Broughty Ferry this year that was about 1300. So I mean there are days when you can get that on the beaches, but not many. Whereas twenty, you’d have every beach, which again isn’t practical. I think the Executive originally in their consultation proposed 200, so it was brought down on the back of the responses, so that is quite positive (Interview 17: 06/12/05).

This panel, chaired by a representative of Clean Coast Scotland, suggested that in addition to 150 visitors, there would also be some kind of management procedure in place at each designated bathing area: ‘there’s no point to have designation if there’s nobody there to put up information on the water quality. And also support either from the community if it was a local authority application, or vice versa’ (Interview 17: 06/12/05). Designation as a bathing area therefore requires the presence of 150 people on the beach at any one time, and cooperation between the local authority and nearby communities.

At Silversands, the criteria for bathing water designation are easily met. During participant observation with a SEPA scientist, for example, I discovered that

numbers of beach visitors can sometimes exceed many hundreds. At neighbouring Blacksands, however, the failure to achieve 150 visitors threatens its designation as bathing area. Here, the absence of beach visitors might lead to significantly different beach management practices, as described to me by a beach manager:

if [Blacksands is] not designated, then it will not automatically be measured for water quality. And if its water quality isn't measured, then Blacksands and other beaches like it will not be able to apply for a Seaside Award. We can pay to have it measured, but that brings with it a whole lot of issues, and whether we should pay to measure water quality at lots of smaller beaches (Interview 16: 19/10/05).

It is possible that a recursive relationship exists in which visitors at Silversands attract beach awards, which in turn attract more people. While absence of people at Blacksands leads to a de-designation of the bathing area and this may lead to a further decline in beach visitor numbers. By remaining absent in significant numbers from Blacksands, potential beach visitors influence future management strategies.

In terms of human agency, absence of beach visitors is equally important as presence. Bathing area managers regularly claim that management initiatives are enacted to meet the needs and expectations of beach visitors. If numbers of people visiting a beach are low, management practices are adjusted. Silversands meets all the requirements to continue being a designated bathing area because it regularly attracts large numbers of people. Interpretations of bathing area cleanliness are therefore based on water quality measurements, beach awards and other social constructions of cleanliness described above. A change in beach management practice, however, creates, and is created by, different constructions of cleanliness. Only designated bathing areas, for example, must comply with the highest guideline standard of bathing water.

It is not just the actual presence or absence of visitors that influences bathing area management; imagined visitors are equally important in management practice at La Herradura. The municipal authority in Almuñécar was, at the time of my research, supporting plans to build Spain's first subaquatic park on the coast between La Herradura and Almuñécar. According to estimates, the park will cost approximately 1.7 million euros and will take three years to complete – if the plan is fully

implemented (*Ayuntamiento de Almuñécar* 2004). The plans had, in 2005, received approval from the Ministry of the Environment, and had survived local opposition from the fishing lobby in neighbouring Motril (*Ideal* 16/12/04). The main remaining obstacle was to establish sources of funding from municipal, provincial, regional and national government. This funding, I was told by a representative from a diving company, is likely to accumulate slowly, so that the park itself will be constructed 'little-by-little' (Fieldnote 19: 30/05/05). Plans for the subaquatic park involve the creation of nine diving zones with up to 400 artificial reefs submerged to create interesting underwater surfaces. The artificial reefs – including boat wreckage – are designed to encourage the growth of reef flora, and to provide a habitat for fish and other underwater fauna.

The municipality of Almuñécar had, in 2005, six diving companies that offered excursions and courses for divers with all levels of experience. On meeting with representatives from these companies, I was able to ask what the proposed subaquatic park would mean for their businesses and the area in general. At *Scubasur* in Almuñécar, a diving instructor stated that the company plans to expand to new premises as a result of the proposed park. She expected that more divers would visit the area, but was sceptical that the proposed time-scale for the park's development would be met (Fieldnote 19: 30/05/05). At *Buceo La Herradura* – another diving company – I spoke with some experienced divers who had travelled from France for a two-week holiday (Fieldnote 22: 25/06/05). It was their sixth time visiting La Herradura, and they thought new reefs would provide 'excellent opportunities' for divers.

During an interview with the beach manager I asked about the changes that might occur as a result of the proposed park. He told me that the park would provide diving facilities for up to 300 people per day during the summer – three times the current number – and would encourage more year-round visits to the municipality. The expectation of more visitors outside the normal bathing season was important for the municipal authority because empty apartments were described as a 'problem', particularly around Playa Velilla, where about eighty percent of apartments are vacant. The beach manager told me parts of the coast are like 'a ghost town!' (Interview 13: 06/07/05 – Appendix IIIf).

In an interview with a local newspaper editor I asked what changes could be expected as a result of the new park (Interview 12: 06/07/05). He claimed that, in

part, the park is an attempt to develop 'high quality' tourism for the region by encouraging more wealthy people to visit and spend more on local services. People who sun-bathe on the beach, he said, only tend to spend money in bars and restaurants; the underwater park would create more year-round jobs with the possibility of diving shops and other associated services. It is the absence of visitors that the municipal authority wants to address, by attracting potential divers.

Proposals to build a subaquatic park mark a significant change in bathing area management practice throughout the municipality of Almuñécar. This change is based on the expectation that divers will visit the area in larger numbers throughout the year – an 'imagined' presence. Even in their absence, potential divers have agency in bathing area management because it is the promise of more visits that justifies the creation of a subaquatic park at La Herradura. This proposed park includes the submersion of artificial reefs and boat wreckage at nine specific sites in coastal bathing waters. In terms of cleanliness, new management practices associated with the subaquatic park indicate a specific construction of cleanliness with regards boat wreckage. On land, wreckage is aesthetically unpleasant and has little value. When submerged offshore, however, the same wreckage becomes a valuable site of interest that attracts divers. Instead of dirtying La Herradura's bathing area, wreckage enhances natural flora and fauna.

Visitors to bathing areas – even in their absence – influence management practices that are related to particular constructions of cleanliness. While clean bathing areas are normally considered attractive places to visit, the relationship between cleanliness and visitors is more complex. In the cases described above, absent beach visitors are both real and imagined. Despite complex relationships between visitors and cleanliness described above, 'dirt' at bathing areas is most commonly attributed to visitors who are present at beaches. Yet the examples in this section demonstrate that absence as well as presence needs to be explored to understand how cleanliness is related to management practices at bathing areas.

Conclusion

This chapter investigated five issues that highlighted different social constructions of bathing waters at field-study sites in Scotland and Spain. In different ways, each example tells a story of how cleanliness is important in terms of rationalising and spatialising bathing area management. As a result of studying these different social

constructions, I conclude that beach management does not simply extend from bathing water legislation, nor is it directly linked to scientific measurements of cleanliness. The above examples demonstrate that interpretations of cleanliness lead to different social constructions of bathing area. Thinking closely about cleanliness provides an entry point to think about practices of bathing area management. This chapter explores human agency in the construction of bathing areas, and I note that even when absent, human actors have agency in bathing area management.

This chapter began with an analysis of Seaside Awards, and associated award ceremonies. I claimed that awards standardise certain practices, and that the ceremonial performance associated with the process serves to rationalise beach management by, for example, establishing the start of the bathing season. Beach awards were closely linked to scientific bathing water measurements and legislative interpretations of cleanliness. The Directive, in this sense, was put into practice and legitimized through a Seaside Award. Beach awards also distinguished ‘resort’ and ‘rural’ beaches by stipulating what facilities are most appropriate at each. Visitors could thus expect a standardisation of beach management in which ‘bench-mark’ practice was closely associated with Seaside Award criteria.

The importance of policy toward dog management was discussed in relation to rationalisation of bathing area management. I noted that the Bathing Water Directive does not have a dog policy, but that – in association with beach awards – dog bans have become commonplace at the bathing areas under investigation. At the ‘resort’ beach of Silversands, the dog ban operated only during the bathing season, establishing further the difference between resort and rural as well as formalising an interpretation of ‘bathing season’. At La Herradura, a ban on dogs operated year-round, but as I found, enforcement was not maintained at consistent levels at all beaches, even those in close proximity to each other. The dog ban is a pragmatic policy enacted in response to consultations with beach users – although I found it derived in part from La Herradura’s former Blue Flag status.

The festival of San Juan was described as the most important annual event at La Herradura. Although the start of the bathing season is marked only by the commencement of scientific water quality measurement, San Juan is traditionally celebrated by thousands of people visiting the bathing area. At this time, normal rules of beach management are suspended to allow people to camp at the beach and light fires. At midnight, bathers follow tradition by washing in seawater. Cleanliness was

linked to different aspects of this festival in June 2005, and the clean-up operation that followed. During the festival, a unique construction of bathing area resulted in management practices that were different from those during the rest of the year. Human presence during the festival of San Juan was shown to be important in establishing a tradition that contradicts 'best practice' guidelines for bathing area management.

Beach passports at Silversands were discussed as an environmental education and beach promotion tool that constructed the bathing area in a particular way. The passport scheme applied only to Blue Flag winning beaches in Fife during the bathing season. It was claimed that passports serve to further normalise the bathing season and establish formal links to 'resort' sites where cleanliness and bathing have been sanctioned. Participation in the passport scheme required collaboration with lifeguards that were present at Silversands during the bathing season – in adherence with the Blue Flag campaign. It was found that passports are a 'best practice' scheme that normalised particular approaches to bathing area management. More specifically, passports constructed bathing areas in a way that rationalised lifeguard presence and sanctioned the use of bathing water.

Finally, absence of visitors was discussed to uncover how bathing areas were constructed with regards imagined or potential users. It was argued that in terms of human agency, absence was just as important as presence in rationalising bathing area management. In Fife, there exists a minimum threshold of 150 people on the beach at any one time. Failure to register this number may lead to significant changes in beach management practices because designation as a bathing area requires this number. At La Herradura, the relative absence of visitors – particularly in winter – has led to the planned construction of a subaquatic park to attract potential divers that were, at the time of my research, absent. By placing boat wreckage in bathing areas, the municipal authority hoped to create an attractive 'natural' diving environment. It was noted, however, that any increase in visitor numbers was commonly associated with the arrival of dirt. The municipal authority was faced with the paradoxical situation of using waste to create an attraction that will be dirtied by as-yet absent visitors.

Through these examples, the chapter identified several different layers of social construction that produce bathing areas and rationalise management practices. In Chapter 6, I investigate how contrasting social constructions of bathing area cleanliness are mobilised materially through the use of beach flags. 'Flagging', I

argue, is intimately linked to the production and representation of Silversands and La Herradura.

6

Flagging: Symbolism and Material Culture

Introduction and Chapter Outline

Beach flags are important in the use and management of bathing waters at Silversands and at La Herradura. Chapter 5 discussed the annual Blue Flag award ceremony at Silversands. This chapter investigates the symbolic and material properties of flags in greater detail at both study sites. I here consider the international Blue Flag campaign, and a national campaign at La Herradura that uses black flags. By examining these campaigns, and the flags raised at respective beaches, I explore links between bathing area cleanliness and practices of beach use and management. In particular, the criteria upon which flags are awarded, and the annual cycles of assessment procedure are examined to uncover how flags become signifiers of bathing water and beach cleanliness. Additionally, the act of flagging is discussed to explore how flags act to construct appropriate beach management and bathing practices.

Recent academic literature has explored both the symbolic importance and the materiality of objects such as waste (Edensor 2005), gardens (Hitchings 2003), water (Strang 2005) and wall murals (McCormick and Jarman 2005). In terms of symbolism, flags are intimately bound up with political iconography, nationalism and the social construction of identities (Passi 1995; Jarman 1997; Storey 2001). Recent debates concerning the politics of display have highlighted the importance of flag symbolism in territorializing space and creating identity for places and bodies (Webster and Leib 2001; Borden 2005).

From a semiotic perspective, flags are read as signifiers that relate to particular objects, ideas or identities, such that the act of flagging is a symbolic performance. Literature concerning the importance of material objects within everyday life demonstrates how such objects shape our lived experiences. Unlike semioticians, those interested in material culture do not study inscribed symbols as signifiers of hidden processes, ideas or objects. Instead, material objects are actors that are capable of influencing lived experiences. Reviewing recent work on materiality within geography, Anderson and Tolia-Kelly (2004) argue that in some cases, matter has been characterised as static in studies that have simply focused on

the physicality of objects. To avoid the exclusion of 'culture' (figured as 'representation' or 'signification') in studies of materiality, Anderson and Tolia-Kelly (2004) urge for the greater use of relational ontologies to insist on links between 'matter' and 'culture'. This has been done by employing different traditions of thought, such as cultural materialism (Hinchliffe 2003) and Actor-Network Theory (Featherstone 2004) to uncover links between materiality and social significance.

This chapter explores both the symbolism and the materiality of flags at Silversands and La Herradura. This dual approach is used to demonstrate how links between bathing water cleanliness and practices of beach management can be characterised in different ways. Furthermore, the act of flagging is, I argue, a process that involves the simultaneous deployment of materiality and social significance. As I hope to demonstrate, flags act to influence bathing area usage and management in ways that are closely linked to different interpretations of bathing beach cleanliness and best management practices.

The chapter is divided into three further sections and a conclusion. The first section explores the Blue Flag campaign at Silversands. I consider the scientific assessment procedures that measure and categorise bathing waters, thus enabling bathing areas to qualify for a Blue Flag award in the subsequent year. I additionally discuss how the Blue Flag campaign has become symbolic of the Bathing Water Directive, despite having no official link to institutions of the European Union. Beyond its symbolism, I explore how the Blue Flag at Silversands acts to influence bathing area usage.

In section two, I consider the Black Flag campaign organised by a Spanish conservationist group – *Ecologistas en Acción*. This campaign, organised nationally and administered provincially, seeks to highlight bathing areas that are badly managed by municipal authorities. At Almuñécar, a Black Flag was awarded in 2005 to all beaches within the municipality, including La Herradura. In this section, I consider the assessment procedure used by conservationists to grade bathing areas and assign Black Flags. This procedure, which is largely qualitative, assesses bathing areas according to particular ideas of cleanliness and good management practice. Using participant observation and interviews, I am able to explore the symbolism of the Black Flag to uncover how flagging is used to signify dirt and bad practice. Unlike Blue Flags, the Black Flag is raised only once at the start of each bathing season. The Black Flag – as material object and symbol – acts to attract interest from

local media and beach visitors. The agency of this flag is explored to uncover further links between ideas of cleanliness and practices of bathing area usage and management.

In the third section, I consider the circumstances that led to a boycott of the Blue Flag campaign in the municipality of Almuñécar starting in 2004. Having previously won five Blue Flags at bathing areas including La Herradura, the municipal authority decided in 2004 that it would no longer put forward bathing areas for consideration by the Asociación de Educación Ambiental y del Consumidor (ADEAC), the Blue Flag awarding body in Spain. With reference to interviews, personal correspondence and participant observation, I explore the reasons behind this boycott, and discuss what it means for beach visitors. My argument is that the absence of a Blue Flag at La Herradura is symbolically just as important as its presence. For the municipal authority, absence of a Blue Flag is symbolic of a distrust associated with the award campaign's assessment procedures. In addition to its symbolic importance, absence of a Blue Flag at La Herradura acts in particular ways to cause changes in beach usage and management. In this way, the Blue Flag, while materially absent, is nevertheless important as an actor at La Herradura.

Blue Flag Award at Silversands: Flagging as Best Practice

Blue Flag and Assessment Practices

The Blue Flag campaign began as a European initiative in 1987 to reward clean and well-managed beaches with a commonly recognised symbol (FEE 2005). The campaign is coordinated internationally by the Foundation for Environmental Education (FEE), and is administered nationally by environmental charities such as Keep Scotland Beautiful and ADEAC. Although FEE does not have any formal links with institutions of the European Union, the Blue Flag campaign is based, in part, on results obtained through scientific measurement of seawater undertaken in accordance with the Bathing Water Directive (see Chapter 4: 104). Environmental regulators in participating countries outside the European Union – for example South Africa, Norway, Morocco, Iceland, Montenegro and Turkey – must undertake similar scientific tests at any bathing area submitted to the campaign. To qualify for a Blue Flag award, water quality measurements in the previous bathing season must comply with the strictest 'guideline' standard described in the Bathing Water Directive. This means that concentrations of faecal coliforms must be twenty times less than the

'mandatory' standard required to pass the Bathing Water Directive (CEC 1976). In 2005, international inspection teams working on behalf of FEE awarded 2472 Blue Flags to beaches in thirty-one different countries (FEE 2005).

In Scotland, thirty-nine bathing areas returned 'guideline' water quality measurements in 2003, but only six were awarded with Blue Flags in the subsequent 2004 bathing season. Beach operators – in most cases the local authority – must submit an annual application to Keep Scotland Beautiful to participate in the campaign. Most operators in Scotland do not wish to participate because the Blue Flag campaign can require costly changes in beach management, as discussed below. Silversands has, however, been awarded with an annual Blue Flag since 2001, and was one of five beaches in Fife to receive the award in 2004 (Figure 6.1).



Figure 6.1: Blue Flag at Silversands (With Orange Lifeguard Flag), 18/07/04

To achieve guideline status, twenty bathing water samples must be collected at Silversands during the preceding bathing season. Sixteen of these samples must comply with the guideline value for total coliforms (500/100ml seawater), and eighteen must comply with the guideline value for faecal streptococci (100/100ml seawater), with no two consecutive measurements being below these guideline values. In any year, one sample can fail to meet mandatory water quality standards

and yet the water can still maintain an overall 'guideline' pass. The Blue Flag campaign also offers special dispensation for candidate beaches that might be affected by extreme weather conditions. Under these circumstances, results of water quality collected during extreme events can be discarded when assessing compliance with Blue Flag criteria. For bathing areas in Scotland, dispensation can only be awarded by the scientific monitoring body, SEPA, in accordance with guidelines set out in the Bathing Water Directive (SEPA 2005). The circumstances in which dispensation might apply are explained by the international Blue Flag awarding body, FEE:

Dispensation cases may arise when a location has had high-level readings because of a known and documented incident during the bathing season. Dispensation cases argued on the basis of incidents that can be considered unusual but not atypical of the location are not considered. The most frequent request for dispensation is caused by exceptional/extreme weather conditions. A National Jury [for example Keep Scotland Beautiful] can in such cases give a dispensation to omit a sample, if the national authorities controlling bathing water regulation [for example SEPA] have officially approved such a dispensation. Furthermore, an official statement from national weather authorities stating that the weather was exceptional must follow the request for dispensation (FEE 2006).

Abnormal weather dispensation is particularly important in areas where unusually high runoff can lead to increases in agricultural pollutants. In these areas, high rainfall can wash sewage-related pollutants from agricultural land and storm-sewer overflows into rivers and streams – a process commonly referred to as 'diffuse pollution' (SEPA 2005). In Scotland, diffuse pollution is considered to be the main factor that influences bathing water quality (SEPA 2004). To obtain dispensation, however, the 'documented incident' that causes diffuse pollution must be due to exceptional or extreme weather conditions. SEPA, the authority that controls bathing water regulation in Scotland, defines exceptional events as weather conditions that can be expected less than once every five years (Fieldnote 28: 25/07/05).

During participant observation at SEPA's Edinburgh laboratory, I asked a senior microbiologist about the circumstances in which exceptional weather dispensation could be awarded (Fieldnote 28: 25/07/05). He told me that most

dispensations awarded in 2004 were a result of short heavy bursts of rainfall at times when underlying soil was already saturated. SEPA, he explained, is working on a system that can predict reduced water quality, based on documented trends of diffuse pollution at several bathing areas. Although this system is now operating at bathing areas particularly susceptible to diffuse pollution (see Chapter 7), a prediction model has yet to be calculated for Silversands.

During the 2004 bathing season, forty-one dispensations were awarded in Scotland because of extreme weather conditions (SEPA 2004). This unusually high number was adjudged by SEPA to be 'entirely consistent with national rainfall patterns recorded in 2004, when June was the wettest on record in parts of the east coast, and August rainfall was more than double the normal average for this month over large areas of southern Scotland' (SEPA 2004: 35). After every dispensation, bathing water must be re-sampled to ensure that each bathing area has a complete set of twenty results for each bathing season. SEPA notes that results of re-sampled bathing water are normally better than waived results, but it adds that 'most of the re-samples were not in respect of samples which failed to meet mandatory standards, but of results which were of merely 'good' quality, when SEPA expected them to be of 'excellent' quality' (SEPA 2004: 35). This suggests that dispensation does not normally cause failing bathing areas to 'pass'. Rather, dispensation enables bathing areas that normally have Blue Flag 'excellent' quality water to maintain this categorisation despite exceptional incidences when seawater is merely recorded as 'good'. SEPA states that in 2004 six bathing areas in Scotland maintained excellent water quality because of dispensations granted (SEPA 2004). One of these was Silversands.

On 11th August 2004, Silversands and other bathing areas in west Fife were sampled, as normal, in compliance with the Bathing Water Directive. Heavy rainfall at this time, however, was adjudged to be exceptional, and the results generated from these samples were discarded in place of re-samples collected one week later (Appendix IV). At Silversands, the re-sample produced a 'good' quality result, and was included in the annual Blue Flag assessment. SEPA explains the exceptional rainfall at Silversands in its annual bathing water report:

[the] abnormal event, on the 11/12 of August [2004], received most media attention because of the domestic flooding caused and the blockage of major

arterial trunk routes, including the A9, many for the first time ever. The worst affected area was broadly the whole of southern Scotland, extending up to Glasgow on the western side, and Arbroath on the eastern side. Unfortunately, a particularly large number of bathing waters samples were scheduled to be taken during this period, and it was subsequently decided that 31 of them should be re-sampled (SEPA 2004: 35).

Although the results of water quality tests on 11th August were not published, the beach manager for Silversands explained to me that if dispensation was not awarded, at least two Blue Flags would be in danger of being lost (Fieldnote 8: 02/09/04). One 'fail', she explained, could prevent Silversands from obtaining an overall 'excellent' quality result as required by the Blue Flag campaign. Keen to ensure that all Blue Flags were maintained in Fife, the beach manager was glad that SEPA adjudged heavy rainfall on 11th August 2004 to be exceptional. Because of this dispensation, Silversands maintained excellent water quality results that enabled it to receive a Blue Flag award during the 2005 bathing season.

As a symbol of bathing area cleanliness, the 2005 Blue Flag at Silversands represented 'excellent' quality water throughout the preceding bathing season. The Flag signified a particular interpretation of bathing area cleanliness based on twenty water quality measurements. Test results were based on an analysis of specific sewage related pollutants in samples of seawater collected between June and September at roughly the same sampling point on Silversands. As a result, the 2005 Blue Flag both reflected these results, and legitimized the link between the preceding assessment practice and current bathing area cleanliness. Excellent quality bathing water can be maintained, according to the 2005 Blue Flag, despite water quality tests that indicate otherwise during abnormal weather conditions. The Flag symbolises tolerance of diffuse pollution, and strengthens the epistemic authority of water quality measurement.

Blue Flag and Bathing Water Directive

As noted, the Blue Flag campaign is not formally linked to any European Union institution, although it is based, in part, on the published results of bathing water tests. Less than one quarter of designated bathing areas throughout Europe are awarded with Blue Flags (EU 2005). Nevertheless, the Blue Flag campaign has, in recent years, come to represent and legitimise the Bathing Water Directive. As I demonstrate

below, the perceived success of the Directive is now closely associated with the Blue Flag campaign.

Although the Bathing Water Directive has applied to Scottish bathing areas for thirty years, implementation only commenced when the Scottish Office identified 23 bathing waters – including Silversands – in 1987 (see Chapter 4). At the same time as Silversands became a designated bathing area, FEE proposed a Europe-wide Blue Flag campaign that was initially sponsored by the European Commission as part of the 1987 ‘European Year of the Environment’ (Blue Flag 2006). Concern for seawater quality was mounting at this time due, in part, to lobbying from coastal conservation charities (Ward 1996, 1998; Jordan *et al* 1998). Because of mounting pressure, and the tightening of European environmental legislation, the simultaneous commencement of the Blue Flag campaign and Silversands’ designation as a bathing area are closely related events. Indeed, the initial support offered by the European Commission for the Blue Flag campaign demonstrates a renewed concern among member states to implement environmental legislation (Warren 1997; Börzel 2005).

The Blue Flag award criteria were changed and standardised across participating countries in 1992 (Blue Flag 2006). This meant that all future Blue Flags could only be awarded to beaches that passed the Bathing Water Directive’s ‘guideline’ standard for water quality. Prior to this date, there was no specific incentive, or legal obligation, for beach operators to obtain anything more than a pass of ‘mandatory’ standards. Changes to Blue Flag award criteria in 1992 therefore made the tighter ‘guideline’ standard increasingly important. Evidence of this trend can be seen in changes to SEPA’s annual Bathing Water Reports during the 1990s. Until 1998, results of annual bathing water tests were expressed simply in terms of ‘pass’ or ‘fail’ (SEPA 1996, 1997). When the Blue Flag campaign and other beach awards became more important, however, results were expressed in a three-tier system that included ‘mandatory pass’ and ‘guideline pass’ (SEPA 1999, 2000).

By linking the Blue Flag campaign to bathing water results, fresh impetus was given to the Bathing Water Directive. This was explained to me during an interview with a Scottish MEP. During this interview, I asked about the ongoing popularity of the Directive among both MEPs and member states of the EU:

the Blue Flag isn’t actually an EU scheme – as you know – and sometimes that’s quite confusing for people. But I think it’s important that the Blue Flag –

and I know that's not exactly to do with the Bathing Water Directive – but it has actually helped, in some ways, to say that this is a standard, that this beach has met the standard, and therefore the competition is around to get a Blue Flag. So perhaps the Bathing Water [Directive] has persisted because through other means it's been more visible, where people would say 'Blue Flag is the Bathing Waters Directive' and vice versa. So I would agree with your question that [the Directive] has been popular and it has been visible, even though it's a round-about way that it has been visible (Interview 18: 08/12/05).

In attributing some of the success of the Bathing Water Directive to the Blue Flag campaign, the MEP stresses the importance of having a visible symbol of the Directive. This symbol, although derived in a 'round-about way', not only conveys a message regarding water quality, but also supports EU environmental policy. Any confusion that might exist among beach users regarding responsibility for the Blue Flag does not matter greatly for either FEE or the institutions of the European Union. This is because the Blue Flag campaign and Bathing Water Directive are understood to be supportive of each other. Furthermore, the annual publication of bathing water quality results now coincides with the announcement of Blue Flag awards. This, according to the same Scottish MEP, has helped overcome initial reservations about the Blue Flag campaign:

in the EU, [Blue Flag publicity] always comes-up now, it's discussed by the environment committee. And it's seen to be – even though I know [MEPs] used to have reservations about the Blue Flag scheme – each year when those statistics come out about the cleanliness of beaches or whatever, people do look out for it and do recognise the importance of it. So maybe that's something that people would be more interested in, if information was more readily available to them in a more accessible way (Interview 18: 08/12/05).

Here, the MEP notes that publicity generated by the Blue Flag campaign has increased support among MEPs for Blue Flags. Among people in general, Blue Flag publicity has helped to increase awareness of bathing water quality and European bathing water legislation. The Blue Flag campaign, and associated publicity, is important, according to the MEP, because very little European legislation receives positive publicity, even if it is 'good' legislation:

no legislation is made at a European level without government approval. So when [legislation] is good, it's never recognised as coming from the European Union. It can be any government across the European Union. And we're bad for it to a certain extent in the UK. You never hear when it's a piece of legislation that's come through the European Process, when it's been put into UK law – whether that's English or Scots law. You rarely hear when it's a good piece of legislation, like the Bathing Water Directive, that [it has come through the] EU process (Interview 18: 08/12/05).

The Blue Flag – which resembles the EU flag – is thus considered an important symbol of successful European environmental policy. This symbol, which appears both in publicity documents and at certain beaches, represents and supports the European policy process and the Bathing Water Directive in particular. At Silversands, however, no Blue Flag was awarded until 2001 – fourteen years after the designation of Silversands as a bathing area and the commencement of the Blue Flag campaign. Between 1987 and 1997, Silversands only twice passed guideline water quality standards required by the Blue Flag campaign (SEPA 1996, 1998). Since then, Silversands has achieved the required standard every year. In addition to meeting water quality standards, beach operators must comply with several criteria associated with beach management practice to achieve Blue Flag status. For this reason, Fife Council did not put Silversands forward for an award until 2000.

Blue Flag award criteria define best management practices associated with beach facilities, cleaning practices and environmental education. These measures were enacted at Silversands in 2000 in anticipation of the Blue Flag that would be awarded in the following bathing season. An international inspectorate was organised by FEE in coordination with a beach inspection from the national awarding body Keep Scotland Beautiful. This now annual process was explained to me by a representative of Keep Scotland Beautiful, who compared the results of beach inspection conducted by FEE and Keep Scotland Beautiful:

I would say that most of our [award winning beaches] in Scotland are of a similar standard [to those found elsewhere in Europe]. The international FEE person said that Fife's beaches were amongst the best she'd seen, which I was really surprised at because when our KSB assessors came back, the list of

faults was pages long! They were probably being pernickety, but they were really detailed – ‘there was no soap in the toilets’, kind of thing. And we use both assessments, in coordination with FEE to decide on [Blue Flag] awards (Interview 17: 06/12/05).

The Blue Flag at Silversands represents all aspects of good beach management, including the practice of putting soap in public toilets. In addition to the Bathing Water Directive, Silversands’ Blue Flag represents best practice and helps to legitimise those practices at other bathing areas. Such practices of bathing area management are therefore signified and normalised by a Blue Flag.

Materiality and the Blue Flag

In addition to its symbolism, the 2004 Blue Flag at Silversands was, I suggest, also a material object and an actor within bathing area management. This section considers how the agency of this Blue Flag can be analysed using interviews and participant observation. I also explore how this agency interacts with beach users and other beach management practices to produce a particular type of bathing beach.

As noted above, Blue Flags are used by beach operators to attract visitors and generate tourist income (see Chapter 5: 126). This is somewhat different to the aims of the Blue Flag campaign, which focuses on environmental education (FEE 2005). A representative of Keep Scotland Beautiful explained to me that that the Blue Flag is intended to be an ‘environmental management tool’, rather than a ‘marketing tool’ to promote particular bathing areas (Interview 3: 04/05/04). Evidence presented in Chapter 5 suggests, however, that as a tool, the Blue Flag acts both as the focus of environment management initiatives and to attract visitors. Beach operators, for example, must organise five ‘environmental education’ initiatives each bathing season to be awarded a Blue Flag. At Silversands, these initiatives have included Beach Passports and guided nature walks (Chapter 5: 140). The Blue Flag raised at Silversands acts to influence bathing area management because it *commits* the local authority to further management practices.

In terms of beach visitors, Silversands’ Blue Flag acted in particular ways to construct the bathing area as an attractive visitor destination. During an interview with a representative of the Scottish Canoe Association (SCA), I asked whether a Blue Flag influenced how paddlers use bathing areas:

I think Blue Flags probably do [influence paddlers]. I think if they were going to go out with a group of beginners, or whatever, and planning to get wet, that would probably be quite reassuring to them. I think if they were going touring or sea canoeing, they would probably say 'well, I'm not getting wet', so it wouldn't make any odds to them. I'm sure it is an issue, and I'm sure it is something that is reassuring for some (Interview 5: 27/05/04).

Paddlers using bathing areas awarded with a Blue Flag would, according to this interviewee, be reassured if they planned to have contact with seawater. For those touring the coast, however, the Blue Flag would have less influence because paddlers do not plan to get wet, and cover sometimes large distances. Later in the same interview, the SCA representative explained further how the Blue Flag might influence paddlers:

one of the last things [paddlers] often do is some capsizing, or some Eskimo rolling or whatever, because they know they're going to get changed soon. And a Blue Flag might influence their decision to take part in that kind of activity. They'll say 'It's fine to get wet because there's a flag that says' – and it would influence them in that way (Interview 5: 27/05/04).

Again, the Blue Flag is described in a way that demonstrates its agency at a bathing area like Silversands – as a symbol of reassurance. In terms of practice, canoeing at Silversands was important to my research although it does not officially count as a 'bathing' activity in the Bathing Water Directive (EU 1976). This means that while paddlers are affected by a Blue Flag, there is no provision for popular canoeing sites to be designated as bathing areas and put forward for Blue Flag awards. At Silversands, the Blue Flag represents safety for bathers *not* including canoeists. This is something that the SCA tried to change by lobbying to ensure canoeing (and other water sports) are classified as 'bathing' activities in proposed revisions to the Directive (*Scottish Paddler* 2001). At Silversands, the Fife Sea Kayak Club uses the bathing area to regularly launch up to 20 boats. A representative of this group explained to me that despite the presence of the Blue Flag, paddlers at Silversands were sometimes reluctant to get wet because of fears about seawater quality

(Interview 10: 05/08/04). This, he claimed, is different from paddling in the west of Scotland where the water is perceived to be cleaner.

Other beach users and bathers claim that Silversands' Blue Flag is a factor that attracts them to the area. During participant observation with Fife Council's beach consultation exercise, I spoke with beach users who claimed that the Blue Flag did influence their visit (Fieldnote 9: 26/09/04). One lady stated that she visits Silversands more regularly since the Blue Flag was awarded in 2001. This, she explained, coincided with work done on a nearby sewage outflow pipe that has reduced unpleasant smells. Another lady in the beach café claimed that she visits Silversands with her children because of clean sand and facilities, such as toilets, that are found at Blue Flag award beaches. Although the Blue Flag acts to draw people to Silversands, one man suggested that the presence of fresh-water showering facilities would encourage more people to bathe and practice water sports (Fieldnote 9: 26/09/04).

Fife Council recently conducted a survey to explore what motivates people to visit particular award winning beaches. The beach manager for Silversands explained to me that although the Blue Flag was found to be important, results of the survey indicated that 70% of people returned to a beach they had visited in the recent past or when they were young (Interview 16: 19/10/05). She stated that the survey found a strong connection between family links, locality and the choice of beach: 'it wasn't that they made a conscious decision to go to that beach; it was just, [the beach] they knew, and it was good' (Interview 16: 19/10/05). This survey, which was done internally and not published by Fife Council, suggests that the influence of a Blue Flag at Silversands might be more complex than simply attracting visitors. In addition to personal connections to particular beaches, the survey illustrated how a Blue Flag might influence beach management practices, which in turn attract more beach visitors. Additionally, by conducting a survey of visitor attitudes towards award winning beaches, Fife Council's research was conducted as a direct result of Blue Flags on beaches such as Silversands.

With regards to beach visitors, the Blue Flag at Silversands acted to construct the bathing area in particular ways that influence paddlers and other beach users. The practice of paddling at Silversands is influenced by the presence of a Blue Flag that is taken to represent cleanliness. But for some paddlers, who chose to avoid getting wet, the Blue Flag does not affect them in this way. Other beach users are attracted either

by the Blue Flag, or by beach management practices that are influenced by the Blue Flag. But equally important to attracting visitors to Silversands are past experience and personal connections to the beach. These motivations, explored in a Fife Council survey, are important because they contribute to future beach management plans and other council initiatives.

In recent years, Blue Flags have been used not only to attract visitors, but also as a method of instigating regeneration in coastal neighbourhoods. This was explained to me by a representative of Keep Scotland Beautiful who described how local authorities have started to improve beaches with the broader aim of regeneration:

the idea of regeneration is interesting because it's definitely something that's happening on the west coast [of Scotland] a lot. It's being driven by water quality theoretically, but north and south Ayrshire [councils] are both beginning to think about what they need to do to improve their beaches, and just give them a bit more life again. In Fife, what is really needed is to extend the Blue Flag out of the rich parts to poorer areas of Leven and Kirkcaldy, where people would really benefit from it. They've got some great beaches. I know that's the plan eventually, but it comes down to money (Interview 3: 04/05/04).

The representative of Keep Scotland Beautiful suggests that Fife Council has yet to use Blue Flags to benefit some disadvantaged coastal towns and villages. Although the existing Blue Flag at Silversands is considered beneficial for the area around Aberdour, the above quote suggests how a representative of Keep Scotland Beautiful thinks Blue Flags could be used more in areas of greater need of regeneration. In this way, Blue Flags are closely linked to politicised debates concerning council resources and regeneration. The Flag is considered an artefact that both represents beach improvement and acts as a catalyst for neighbourhood regeneration.

Other interviewees spoke of 'civic pride' associated with winning a Blue Flag (Interview 4: 19/05/04). A representative from Fife Council, for example, explained to me the shared responsibility that the local authority aims to have with community beach management groups at Silversands:

[the local community] are usually very quick if things are not going right. But instead of making a complaint, they know they're in a process where if they phoned up and asked to speak to so-and-so, somebody will try and get something done about it. So it's in everyone's interest to do that. So instead of the local communities feeling angry about it, you're in a situation where you can say 'okay, we've had a bad year' – it could be storms, it could just be grotty weather when we've not had enough sunshine, or whatever else. We know why those things are, let's move on and try and tackle that. There are good examples where beach cleaning, in particular, is done by the local community with some support from the local authority in terms of providing skips and bags and whatever else. But it's the community who go out and do it. But if we have a bad year with sunlight, and the water quality is lost, then there's nothing we can do about that (Interview 4: 19/05/04).

Here, the representative from Fife Council discusses how the Blue Flag award can lead to a sense of shared responsibility between the local authority and 'communities' close to award beaches. This, he claims, is good because shared responsibility leads to greater understanding of the award process and a willingness to partake in voluntary litter collections supported by the Council. Instead of communities 'feeling angry', there is recognition that some factors – like water quality – can be influenced by forces, including lack of sunshine, that are beyond the control of the local authority. In this sense, the Blue Flag at Silversands acts to create a sense of shared responsibility to ensure that the award is maintained. Communities work with the local authority to maintain the existing Blue Flag.

Exploring both the symbolism of the Blue Flag at Silversands, and its materiality, offers a new understanding of flagging at beaches. As a signifier of the Bathing Water Directive, and a particular interpretation of water quality measurements, the Blue Flag represents bathing area cleanliness and good management practices. These properties are important as the Blue Flag acts to influence the activities of beach visitors and create a sense of shared bathing area responsibility. The next section explores flagging further by considering the case of a Black Flag campaign at La Herradura.

Black Flag at La Herradura: Flagging as Resistance

The Black Flag campaign, organised by Spanish conservation group *Ecologistas en Acción*, began in Andalusia in 1999 and has since spread throughout Spain (*Ecologistas en Acción* 2005a). Operating in a similar way to the Blue Flag campaign, Black Flags are awarded to bathing areas annually. The assessment procedure takes account of water quality, beach management practices and other environmental indicators described below. Instead of issuing awards to clean, well managed bathing areas, however, the Black Flag campaign highlights beaches that *Ecologistas en Acción* consider unacceptable. The 'primary objective' of the campaign is 'to make a contrasting report on the state of our coast' (*Ecologistas en Acción* 2005a – Appendix IIIg). To this end, the campaign seeks to raise awareness of particular issues that relate to environmental degradation at bathing areas.

The campaign uses two categories of award depending on the seriousness of pollution and environmental damage measured during the assessment procedure. Black Flags are awarded to bathing areas where there is significant pollution, and Black Marks are awarded if the negative impacts are significant, but less serious (*Ecologistas en Acción* 2005b). In 2004, Black Flags were awarded to ninety-six bathing areas throughout Spain, and Black Marks were awarded to a further sixty-nine. The campaign is administered provincially by small conservation groups that have responsibility for assessing bathing areas within that province. In Granada city, *Ecologistas en Acción* meets on a weekly basis, and draws a large proportion of its volunteers from the local university campus. The group had, in 2005, one full-time employee and approximately twenty-five members who regularly attended meetings. In this year, the group awarded three Black Flags to beaches in Granada province including La Herradura, and issued six further Black Marks (Figure 6.2).

The Black Flag at La Herradura is important in terms of its symbolism and its agency. This section explains why Black Flags are awarded and raised at bathing areas by *Ecologistas en Acción* at the start of each bathing season. Although the flag is raised only temporarily, its symbolism and agency are nevertheless shown to be important. Using participant observation and interviews, I describe how the Flag symbolises and legitimizes a particular type of assessment procedure. In addition, I describe how the Black Flag at La Herradura symbolizes opposition to the Blue Flag campaign. Finally, I uncover how the Black Flag at La Herradura has legitimized a different interpretation of bathing area cleanliness in opposition to the municipal authority.

Banderas y puntos negros en el litoral español 2005

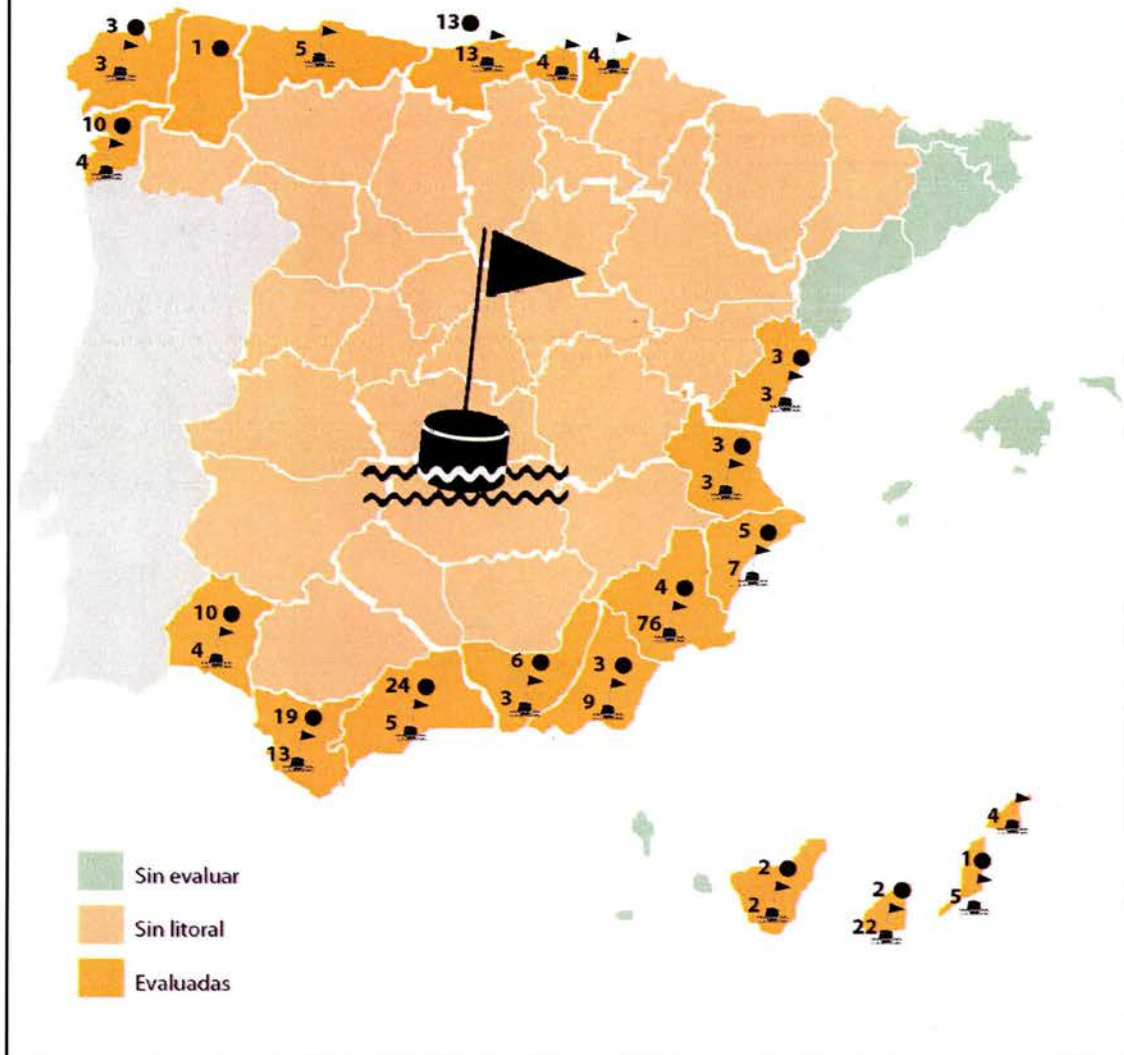


Figure 6.2: Black Flags and Black Marks in Spanish Regions Assessed – ‘Evaluadas’ – by Ecologistas en Acción (courtesy of Ecologistas en Acción).

Black Flag Aims

Ecologistas en Acción claim that the Black Flag campaign is not intended to harm tourism. Rather, Black Flags are raised to both give information to citizens and put pressure on municipal authorities. These aims are expressed in campaign literature. For Ecologistas en Acción, Black Flags act in a positive way by helping to bring about improvements at badly-managed beaches:

the purpose is not to drive away tourism, nor to punish the municipal authorities that maintain bad quality beaches or allow aggressive urbanisation; the maintenance of good waters and beaches is something that we continuously see unfulfilled. The greatest tourist attraction is to offer a coast in a perfect state environmental health. In addition, this is one of the commitments required of 'sustainable development', according to the Earth Summit of Rio de Janeiro. We hope that municipal authorities consider the Black Flag as both an insult and a requirement to improve their beaches and end the environmental degradation of the coast (Ecologistas en Acción 2005a – Appendix IIIh).

Although Ecologistas en Acción admits that the Black Flag is intended as an 'insult', it maintains that municipal authorities can be shamed into action. The Black Flag therefore acts to shame municipal authorities and individuals such as the beach manager in La Herradura. This, it is argued, will lead to a cleaner and more attractive beach (Figure 6.3).

- The objectives of 'Black Flags' are:
- To give rigorous information to citizens, and to all beach users, of the ecological state of beaches and bathing areas.
 - To require action from municipal authorities, and companies, so that they contribute to the cleaning of beaches and end the environmental degradation of the coast.

Figure 6.3: Objectives of Black Flags (Ecologistas en Acción 2005a – Appendix IIIi)

The conservationist claim that a Black Flag does not drive away tourists was supported by informal interviews conducted at La Herradura (Fieldnote 24: 01/07/05). Few visitors were aware of the Black Flag campaign, or the fact that La Herradura had merited such an award. Because the Flag was only present at La Herradura on 3rd June 2005, visitors present at the beach on any other day missed the ceremonial raising of a Black Flag. One of those present, the local librarian, told me that the Black Flag would do little to deter visitors. She stated that people who saw the Flag, or read about it in a newspaper, would be interested in the campaign, but nobody would cancel a visit to the beach as a result (Fieldnote 24: 01/07/05). The

conservationist group, she added, was noted for its opposition to urbanisation in La Herradura, but this does not mean that the beach is necessarily bad.

Black Flag: Symbolism and Assessment

As part of the Black Flag campaign, beaches are inspected using an assessment form that asks volunteers to describe each bathing area under several headings (Appendix V). First, the assessment form asks some general questions regarding the date and time of observation as well as the prevailing weather conditions. Volunteers are asked to describe the foreshore, including the presence or absence of a promenade and whether this affects the beach. In addition, volunteers record whether the foreshore is subject to any planning restrictions and are asked to specify if any illegal urbanisation has taken place (Appendix V). The information gathered in this section is mainly factual, although volunteers are asked to comment on the consequences of any structures built on, or adjacent to, bathing areas.

Secondly, under a heading entitled 'Waste', volunteers are asked to consider the discharge of waste water at bathing areas. This consists of twelve qualitative questions in which volunteers locate waste emissaries, record the seriousness of discharge and identify the presence of solids floating in discharged water (Appendix V). The extent of waste water problems is assessed on a three-point scale using the categories 'light', 'serious' and 'very serious'. In addition, volunteers are asked to describe both the ecological and sanitary consequences of waste water pollution. Seven further questions on issues concerning waste require some knowledge of official bathing water measurements and previous administrative sanctions that have applied at each bathing area. In these questions, familiarity with the bathing area is important because volunteers are asked to specify whether there have been past sanitary problems, and whether the bathing area has been closed temporarily because of such problems.

Thirdly, under the heading 'Rubbish and Contamination', volunteers are asked to identify items of litter, and assess the overall cleanliness of the bathing area (Figure 6.4). The only quantitative question in the assessment form asks volunteers to measure the frequency of litter bins provided by the municipal authority. Types of bathing area litter are recorded only by presence or absence, without measuring the concentration of litter items encountered. Litter types are divided into two main categories: first, large items of contamination such as furniture, tyres and animal

corpses, and secondly, smaller items of litter such as glass, cans, cartons, oil and excrement. The creation of two categories illustrates how a hierarchy of rubbish waste is created, in which large items are considered most serious. In addition, the assessment of rubbish makes no distinction between items found on beaches and items found in seawater. In this respect, each bathing area is considered in its entirety, and the categorisation of rubbish is recorded by volunteers based on their interpretation of presence and absence.

<p>Mark the degree of dirt using the following categories:</p> <ul style="list-style-type: none"><input type="checkbox"/> very dirty (impossible to walk without stepping on litter)<input type="checkbox"/> moderately dirty<input type="checkbox"/> clean (without litter, or with less than 10 objects)
--

Figure 6.4: Grades of Beach Litter (Ecologistas en Acción 2003 – Appendix IIIj)

Under the final two headings of the assessment sheet, volunteers are asked to consider the ‘Environmental Quality’ of each bathing area, and to record any ‘Other Information’ based on a risk assessment. Questions relating to environmental quality are subdivided into flora and fauna. Volunteers record the dominant vegetation type, and describe qualitatively its density and other characteristics. The presence of fauna is similarly recorded by subdividing, once more, into categories that consist of invertebrates, vertebrates and birds. In terms of risk assessment, volunteers are asked to indicate whether there is a serious or a less imminent risk of environmental degradation (Figure 6.5). The categories used include ‘littering’ and ‘aquiculture’, which are considered as possible risks to the overall environmental quality of each assessed bathing area.

If you have evidence that a serious risk (R), or an imminent threat (I), exists at the coast, indicate with either 'R' or 'I':

- Erosion
- Extraction of sands or gravel
- Construction
- Littering
- Contamination of the water by:
 - sewage*
 - radioactivity*
 - oils, petroleum*
 - industry*
 - agriculture or farms*
- Abuse of recreational activities
- Aquiculture
- Others:

Figure 6.5: Assessing Risk at Potential Black Flag Beaches (Ecologistas en Acción 2003 – Appendix IIIk)

Once the assessment form has been completed, volunteers decide on the basis of evidence collected whether a bathing area merits a Black Flag or a Black Mark. At La Herradura, the 2004 assessment form revealed that significant urbanisation was occurring along the foreshore and that beach cleaning was inadequate (Fieldnote 25: 01/07/05). The volunteer responsible for deciding annual allocations of Black Flags told me that the beach at La Herradura is being over-used by property developers and restaurant owners. This, she explained, has led to increases in visitor numbers that cannot be accommodated by the local infrastructure:

[the municipal authority] thinks it can convert [La Herradura] into another Torremolinos, with the argument that what is good for Malaga is not going to be bad for us. The municipal authority has gone mad, and wants to fill all open space with cement and bricks. But they don't worry about waste and a water treatment plant until it's too late (Interview 14: 07/07/05 – Appendix III).

Concern expressed in the above quote is that environmental damage will ensue as a result of more buildings and increased visitor numbers. This argument, based on knowledge generated during the assessment procedure, warranted La Herradura a Black Flag. Guidance issued by Ecologistas en Acción encourages volunteers to

award Black Flags only to beaches it considers particularly bad. This, it claims, maintains the effectiveness of the award:

it is more effective to give Black Flags only to those beaches that have much negative evidence, or one very significant problem. For waste that is not too important, or one little problem, it is more appropriate to classify them as 'Black Marks'. With this, the weight of Black Flags will continue to have most effectiveness (Ecologistas en Acción 2003 – Appendix IIIm).

Volunteers with the responsibility for assigning Black Flag awards must therefore consider qualitative evidence gathered during the assessment procedure to decide whether a beach is particularly bad. In the case of La Herradura, recorded observations were used by a volunteer to create a story of potential environmental degradation. This story, described above, was linked to a risk assessment that found significant danger to the bathing area at La Herradura (Figure 6.6).



Figure 6.6: Black Flags in Andalusia 2005 (courtesy of Ecologistas en Acción)

The Black Flag signifies that La Herradura has been assessed by conservationists. The flag represents a particular construction of bathing area cleanliness that is based largely on a qualitative account of waste, litter and environmental risk. To this end, the Black Flag is a sign that the assessment procedure used is legitimate, and that it has been conducted by activists independent

of the municipal authority and the Blue Flag awarding organisation ADEAC. Furthermore, the flag is a sign that management practices pose a risk to environmental quality. As I demonstrate below, the Black Flag is symbolically important because it is in direct opposition to the Blue Flag campaign, and draws meaning as a 'contrasting report' on the state of La Herradura (Ecologistas en Acción 2005b).

Black Flag and Blue Flag

In addition to representing and legitimizing a particular interpretation of bathing area cleanliness, the Black Flag also symbolises opposition to the Blue Flag campaign. Although La Herradura had not been awarded a Blue Flag since 2003, Ecologistas en Acción claim that twenty-seven beaches were awarded with both Blue and Black Flags in 2004 (Ecologistas en Acción 2005a). The apparent contradiction caused by simultaneously receiving awards for good and bad bathing area management is explained by Ecologistas en Acción by pointing to irregularities in the Blue Flag assessment procedure:

this [contradiction in beach awards] is explained by the fact that Spanish beaches have attracted Blue Flags in spite of having serious irregularities in aspects such as the quality of the water, the uncontrolled urban development, the destruction of natural spaces, etc. Ecologistas en Acción have denounced Blue Flags on many occasions because the award does not represent a guarantee of the environmental quality of beaches. This symbol is granted mainly in function of tourist interests (Ecologistas en Acción 2005a – Appendix IIIIn).

By highlighting irregularities in ADEAC's assessment of beaches, Ecologistas en Acción seek to discredit the Blue Flag campaign. It argues that conservationists should be consistent when measuring environmental quality, and that they should not turn a blind eye to factors that might damage the bathing area. Furthermore, it suggests that the Blue Flag is used as a means to promote tourist interests, rather than the interests of bathers or the bathing area.

During an interview with a representative of Ecologistas en Acción, I asked whether the Blue Flag campaign did anything to highlight environmental issues at

beaches in Granada province. She stated that Blue Flags 'pull the wool over peoples' eyes' by ignoring environmental damage at beaches, and that the campaign should be abandoned (Interview 14: 07/07/05):

we ask that municipal authorities opt out of the Blue Flag campaign, because [the Flags] increasingly contribute to a loss of prestige of municipal beaches. If the beaches are to be assessed with rigor and transparency they must reject the Blue Flag trade. This is the only way to recognize the efforts of municipal authorities to identify and to face the environmental impacts of their operations. By doing so, the municipal authority would gain credibility by demonstrating a genuine compromise with the community in respect of environmental protection (Interview 14: 07/07/05 – Appendix IIIo).

Here, the representative of *Ecologistas en Acción* claims that Blue Flags awarded to badly-managed beaches devalue the award's symbolism as a guarantor of environmental quality. Beaches, she argues, must be assessed in a way that is more rigorous and transparent than the Blue Flag campaign. By rejecting Blue Flags, municipal authorities would be able to both face environmental problems and attract more credibility from the community. This argument explains, in part, why *Ecologistas en Acción* has chosen to adopt Black Flags in direct opposition to the Blue Flag campaign. The representative of *Ecologistas en Acción* added that Black Flags act as a 'counter-publicity' measure that is designed to criticise the Blue Flag campaign (Interview 14: 07/07/05). Journalists from local newspapers, such as *Ideal* (04/06/05) and *Granada Hoy* (04/06/05) were invited to attend the Black Flag raising ceremony.

By responding to what it perceives as an award designed only to promote tourism, *Ecologistas en Acción* has adopted a campaign that mirrors, and directly opposes, the Blue Flag. Both campaigns are based on annual assessments of environmental quality, and both publish their results at the start of each bathing season. While the Blue Flag symbolises good beach management and a clean beach, the Black Flag symbolises both bad beach management and opposition to the Blue Flag campaign. At La Herradura, the Black Flag is, however, more than a symbol of opposition. Although it is only present briefly at the beach, the Black Flag acts to

counter the publicity normally devoted to the Blue Flag campaign. This agency is explored further below.

The Agency of the Black Flag

To understand the practice of flagging in relation to La Herradura, it is necessary to consider the materiality of the Black Flag (Figure 6.7). In addition to acting as a counter publicity measure, the Black Flag acts in particular ways to influence both the municipal authority and bathers. This agency can be identified by exploring how different individuals and groups respond to the Black Flag, which is present at La Herradura and represented in local newspapers.



Figure 6.7: Black Flag at La Herradura (courtesy of Ecologistas en Acción).

One individual opposed to the Black Flag at La Herradura was the beach manager. I asked him whether he thought the Black Flag campaign raised any important issues concerning bathing area management at La Herradura. He told me

that while *Ecologistas en Acción* had some legitimate concerns, he found their methods to be negative and confrontational (Fieldnote 26: 06/07/05). He stated that the Black Flag did not do anything positive for either the beach or the municipality, and that conservation volunteers should express their concerns in a way that might help find viable solutions. I asked him about the assessment procedure conducted by volunteers, and whether this enabled *Ecologistas en Acción* to identify problems with the bathing area. He stated that the evaluation used was 'not very scientific' and that *Ecologistas en Acción* used the Black Flag to forward its agenda, rather than finding out what issues concern beach users (Fieldnote 26: 06/07/05).

By causing opposition within the municipal authority, the Black Flag has acted to raise the profile of *Ecologistas en Acción*, and has drawn attention to concerns over urbanisation in La Herradura. The beach manager felt that the Black Flag did not represent the views of the majority of beach users – who find the beach well managed. The Black Flag acts, therefore, to highlight a particular interpretation of bathing area cleanliness. If Blue Flags contribute to a rhetorical and material cleaning of bathing areas, Black Flags do the opposite. By constructing a story that links increased urbanisation to reduced environmental quality, the Black Flag contributes to a dirtying of La Herradura. Cleanliness is not simply judged on water quality, but also on the amount of new buildings being constructed nearby, and sometimes even on the beach itself.

In summary, the Black Flag at La Herradura acts in different ways according to different people. For the beach manager, it forwards the agenda of *Ecologistas en Acción*, and is a negative influence on the bathing area and the municipality. According to conservationists, the Black Flag acts to shame the municipal authority into changing management practices. For beach users, the Black Flag is rarely encountered, and is a matter of curiosity rather than a deterrent. Despite being present at La Herradura for only one day each year, the Black Flag has unequal agency among different groups of people. The next section explores flagging further by considering the absence of a Blue Flag.

Blue Flag Boycott at La Herradura: Flagging as Absence

In this chapter I have investigated flagging with reference to a Blue Flag at Silversands, and a Black Flag at La Herradura. These flags, both present at respective beaches during the bathing season, have been shown to have important symbolic

properties and material agency. This section considers, thirdly, the importance of an absent Blue Flag at La Herradura. Absence, I argue, is equally important as presence when considering flagging from the perspective of both symbolism and material agency.

In the municipality of Almuñécar, Blue Flags were awarded regularly to five beaches, including La Herradura, until the summer of 2003. But in 2004, the national awarding agency ADEAC awarded only one Blue Flag to the municipality, at Playa Velilla (FEE 2004). In written correspondence with ADEAC, I asked why four awards were lost between 2003 and 2004. A representative of this organisation explained to me that certain criteria of the Blue Flag award were not met at La Herradura, but she could not elaborate on these criteria because they are kept as confidential, operational matters:

In [respect of results relating to Granada's beaches], I can tell you that in 2004, in the municipality of Almuñécar, the beach of Velilla obtained Blue Flag (it was the only award in this municipality). Also, I can inform you that this Flag was awarded by the inspectors of ADEAC based on their in situ inspection of this beach on the 4th of August [2003]. Other beaches did not fulfil all the criteria demanded by the Blue Flag campaign. Detailed information on the inspection is a confidential internal matter (Personal Correspondence 4: 26/05/05 – Appendix IIIp).

After losing all but one of its Blue Flag awards, the municipal authority decided in 2004 to withdraw all its beaches from the campaign in future bathing seasons. The beach manager explained to me that the boycott of Blue Flags was due to the subjective assessment procedure and burdensome paperwork. He added that inspectors from ADEAC failed to recognise the continued investment that the municipal authority had spent on developing beach services:

in previous years, Almuñécar received several Blue Flags, this year, however, we have decided not to apply for them. We are in disagreement with the criteria that are followed to grant awards. In 2004, the municipality obtained only one Blue Flag – the only one in the province of Granada that year. We are in disagreement with the evaluation criteria of the Foundation [for Environmental Education] that grants the award, which are not, in our opinion, very objective.

Last February, we announced our decision to abandon Blue Flags. By not aspiring for the award, we do not require the municipal authority to prepare documentation and we do not have the negative repercussions if awards are not granted (Interview 13: 06/07/05 – Appendix IIIq).

The beach manager at La Herradura considered the loss of four Blue Flag awards in 2004 to be unjustified. In his opinion, the municipal authority maintained beaches in the area to a high standard, and this was not recognised by Blue Flag inspectors. Withdrawing from the Blue Flag campaign avoids the ‘negative repercussions’ that ensue when beaches are put forward, but then fail to win a Blue Flag. These repercussions include negative publicity in local newspapers and enforced changes to promotional literature that can no longer boast Blue Flag status at five beaches (Ayuntamiento de Almuñécar 2003). The beach manager therefore preferred to have no Blue Flag awards than entering the campaign every year not knowing whether beaches can pass all the criteria. I asked a press spokesperson from the municipal authority whether the campaign might, at some point in the future, be rejoined. He stated that this was unlikely, and added that Blue Flags do not reflect the issues most important to beach users at La Herradura and other beaches in the municipality:

the Council is not in agreement with the criteria to grant this award, which requires a large amount of verifiable documentation. The criteria for [Blue Flag] awards were not, in our opinion, most suitable according to information available. The assessment process has not recognised the continued and ample investment we have put in to improving the condition and services at beaches. With little justification, increased spending has led to fewer awards. We invested in the cleaning of sand and seawater using a beach cleaning machine at particular beaches. We have also installed more showers and installed first-aid facilities and information boards. If [FEE] change the award criteria in future, it is possible we will participate in the campaign again. But what matters to us most is the reaction of beach users (Personal Correspondence 5: 23/06/05 – Appendix IIIr).

Blue Flags, in the opinion of the municipal authority spokesperson, were far less important than the opinions of beach users, and the numbers of people holidaying in the area. For him, and the municipal authority, Blue Flags do not represent good

beach management practices. By boycotting the campaign, the municipal authority demonstrates that it is putting the interests of beach users first. Absence of the Blue Flag at La Herradura signifies a distrust of officialdom, and an assertion that the municipal authority – guided by local people – knows best how to manage the beach and bathing water.

Distrust of the Blue Flag campaign is shared by the municipal authority and *Ecologistas en Acción*. Both consider the assessment procedure associated with Blue Flags to be inappropriate in reflecting the most important issues at bathing areas like La Herradura. For *Ecologistas en Acción*, Blue Flags are tourist symbols that do nothing to guarantee the environmental quality of bathing areas. For the municipal authority, Blue Flags are not based on objective assessment and fail to represent the issues that matter to beach users. In this way, both groups support a boycott of the Blue Flag campaign, but for different reasons.

I enquired of a representative of *Ecologistas en Acción* what they thought about the municipal authority's decision to withdraw all beaches from the campaign. She told me that while she objected to Blue Flags, the municipal authority must still address environmental issues affecting bathing areas:

obviously the Blue Flag is meaningless. But it is inadmissible that the city council praises the good sanitary state of waters when each summer we witness hundreds of cases of dermatitis and other affections attributable to bad bathing waters. It is necessary to establish a new inventory of marine polluting agents. And the city council needs to do something to oppose negative environmental impacts (Interview 14: 07/07/05 – Appendix IIIs).

The absence of a Blue Flag at La Herradura represents, for *Ecologistas en Acción*, a distrust of the municipal authority's beach management plans. No Blue Flag symbolises that the interests of the municipal authority can be pursued, and spending on bathing areas can be reduced. For *Ecologistas en Acción*, absence of a flag represents, somewhat paradoxically, declining environmental quality.

At La Herradura, many beach users were aware of the Blue Flag campaign, and some, like the owner of a windsurfing business, knew about the Blue Flag boycott (Fieldnote 15: 28/05/05). I asked whether, in his opinion, the absence of a Blue Flag was noticed by beach visitors, and whether it affected his business. He told

me that people, in general, can see for themselves the quality of the beach. A Blue Flag, he suggested, might attract a few more people, but he didn't think anyone who had visited La Herradura before would be deterred from returning. Absence of a Blue Flag did not, for him, signal a distrust of environmental quality among beach users.

In terms of symbolism, absence of a Blue Flag at Silversands was interpreted in different ways by different people. For the beach manager, absence signalled a distrust of ADEAC beach inspections, and a determination to use local knowledge in beach management plans. For *Ecologistas en Acción*, the absence of a Blue Flag at La Herradura represented distrust in the municipal authority and fears that environmental damage will continue at bathing areas. Other beach users, while aware of the Blue Flag campaign, did not think the absence of a flag represented a threat to visitor numbers.

Exploring further the beach management policies at La Herradura, agency can be attributed to the absence of a Blue Flag. At all award-winning beaches, for example, lifeguards must be stationed full-time throughout the bathing season (FEE 2006). In addition, dogs must be banned, and litterbins must be placed at regular intervals according to the factors listed below (Figure 6.8). These are some of the criteria that were taken into account by the municipal authority in Motril – east of La Herradura – when it decided to put forward four beaches for Blue Flag awards in 2005. Despite an annual beach budget which was only one quarter of that in Almuñécar – 100,000 euros – the municipal authority in Motril focused its efforts on attaining Blue Flags at a small number of bathing areas (Ayuntamiento de Motril 2004). The agency of an absent Blue Flag at La Herradura can therefore be revealed by considering how certain beach management practices differ from those at a nearby beach awarded with a Blue Flag – Playa Calahonda.

When choosing and locating bins, the following factors should be considered:

- Bin capacity
- Environmentally sound products
- Type and source of litter
- Selective collection of waste
- Volume of pedestrian traffic
- Servicing methods and intervals including peak times
- Local environment e.g. winds, high tides, scavenging seagulls
- Accessibility e.g. height, surface

Figure 6.8: Blue Flag Beach Criteria (FEE 2006)

At La Herradura, beach wardens were present to hand-pick litter from the beach only during one hour each morning, and lifeguards were not normally present during the bathing season (although a Civil Guard building on the beach was occasionally staffed). Dogs were tolerated on the beach, and although regularly spaced at about 50m intervals, litter bins were sometimes full to overflowing (Fieldnote 27: 10/07/05; see Chapter 5). In contrast, beach wardens and lifeguards were present full-time at Playa Calahonda during the bathing season in accordance with Blue Flag criteria. Furthermore, dog owners were asked to remove their dogs from the beach, and bins – spaced at 15m intervals – were so numerous as to become a source of humour in one local newspaper (*Ideal* 27/06/05; Figure 6.9). Provision of bins was something that the beach manager at La Herradura claimed was very expensive (Interview 13: 06/07/05). He stated that instead of filling the beach with litterbins, the municipal authority preferred to clean the beach when it needed to be cleaned – for example during the festival of San Juan (Figure 6.10 and Chapter 5: 136): ‘we do not need to clean the beach in the same way every day. The company collects rubbish in the mornings, but if the beach needs a special clean, it is them who organise that’ (Interview 13: 06/07/05 – Appendix III).



Figure 6.9: Blue Flag and Litterbins at Playa Calahonda, 10/07/05



Figure 6.10: Litterbin at La Herradura, 28/05/05

Management practices concerning wardens, lifeguards, dog access and litterbin provision changed at La Herradura given the absence of a Blue Flag. Unlike a nearby Blue Flag award beach, management practices were pragmatic, rather than following Blue Flag award criteria. Beach cleaning, for example, did not adhere to any guideline, and the beach was cleaned only when the municipal authority thought necessary.

Absence of a Blue Flag at La Herradura acted to enable the municipal authority to conduct beach management as it considered most appropriate. By not 'flagging', there was no requirement to employ full-time beach wardens and lifeguards. As a result of this, beaches were not regularly monitored and dogs were tolerated. But as described in Chapter 5, pressure from beach visitors has caused the municipal authority to employ three dog wardens to patrol beaches, promenades and streets throughout Almuñécar. In this sense, absence of a Blue Flag has acted to give greater influence to a different type of beach assessment. Instead of being required to limit dog access to award winning beaches, the local authority has enforced a dog ban because of pressure from beach users.

Conclusion

This chapter investigated the act of flagging by focusing on the symbolism and materiality of beach flags at Silversands and La Herradura. At both bathing areas, flagging has become an important strategy for beach management and coastal conservation. Different types of flag are used to signify particular storylines concerning bathing area cleanliness and beach management practice. By considering how meaning is attached to beach flags, it has been possible to uncover storylines that are granted epistemic authority using the material presence of a coloured flag placed on a beach. I hope to have suggested flagging can be best understood by investigating the interaction of symbolic meaning and material agency. Flagging, from this perspective, is not simply about representing the results of water quality tests. Rather, beach flags both represent particular storylines of bathing area cleanliness and act to produce bathing areas found at Silversands and La Herradura.

The Blue Flag campaign, organised internationally by FEE, is based on an assessment procedure that utilises the results of seawater quality tests undertaken as part of the Bathing Water Directive. At Silversands, the Blue Flag not only signified results of seawater testing, but also legitimized an assessment procedure that was

based on tolerance of diffuse pollution. The flag was considered a visual representation of the Bathing Water Directive that contributed to the successful implementation of European environmental legislation in Scotland. As an artefact, the Blue Flag at Silversands invoked the above storylines to influence bathing area management and usage. Symbolism and materiality were inseparable as the Blue Flag acted to influence practices of canoeing, provision of facilities and visitor motivations. In addition, the Blue Flag has acted to influence Fife Council's beach surveys and has been identified as an artefact that generates civic pride.

At La Herradura, a Black Flag has been used by conservationists to highlight what they perceive to be unacceptable beach management practices. The flag, awarded on the basis of results from annual beach assessment, signified that the municipal authority must do more to preserve environmental quality. Furthermore, the Black Flag represented opposition to the Blue Flag campaign, and an attempt to discredit the award criteria upon which the latter campaign is based. For the municipal authority, the Black Flag represented negativity on the part of conservationists, who did not contribute to possible solutions. Although the Black Flag was only present at La Herradura temporarily, its materiality interacted with different storylines to cause tension between the beach manager and conservationists. For *Ecologistas en Acción*, flagging has acted to shame the municipal authority and to generate awareness of the damaging environmental effects of urbanisation near La Herradura.

Although the materiality of flags has been shown to be important aspect of flagging, absence of a flag, I argue, can be equally important. At La Herradura, the municipal authority has recently boycotted the Blue Flag campaign, causing the material absence of a Blue Flag. This absence was, however, symbolically important because it represented, for the municipal authority, opposition to award criterion and the bureaucratization of assessment procedures. In addition, absence symbolised the preference for local, beach user, assessments of bathing area quality, rather than relying on standardised procedures. For conservationists and other beach users, the absence of a Blue Flag caused distrust of the municipal authority, but did not represent a threat to visitor numbers. Beach management practices were changed as a result of Blue Flag absence. Provision of litterbins and beach cleaning regimes, for example, were different from a nearby Blue Flag award-winning beach.

Where existing studies of flagging have tended to focus on the symbolic importance of flags in political iconography, nationalism and the social construction of identities, this chapter insists that the materiality of flags interacts with their symbolic properties. The approach used to examine flagging at beaches has, therefore, drawn upon two relatively distinct literatures concerning semiotics and material culture. By doing so, flagging can be understood as a process that employs storylines to enable flags to act in particular ways. Flagging is thus important in legitimizing ideas of best practice even if the flag in question is materially absent. In the next chapter, I consider how health risks associated with seawater bathing are assessed by different 'expert' groups. Like beach flags, health risks are interpreted and presented to beach users according to different constructions of bathing water quality.

7

Risk, Conservation and Participation

Introduction and Chapter Outline

Bathing water quality is tested, according to the Commission of the European Communities (2002a: 12), to 'protect bathers from health risks and to preserve the environment from pollution'. By providing information on water quality to bathers, health risks associated with bathing are, I want to argue, simultaneously produced and calculated. This type of health risk has been termed 'manufactured risk' because it is created by scientific and technological developments within society (Beck 1998: 12). As a result of these developments, Beck (1992, 1995, 1998) claims that industrially-produced risks, accumulated over many years, have made risk difficult to assess. Within a 'risk society', authorities that monitor water pollution, for example, are increasingly unable either to guarantee personal safety or to hold individual polluters to account. As a result of this, scientific and governmental authorities are unable accurately to account for risks that they themselves have produced. Societal trust in such authorities is, therefore, eroded. Yet the outcome of this process need not be negative: for some, a break down of trust can open up new possibilities to establish a more participatory society that can overcome existing 'technocracies' (Giddens 1990; Beck 1992; Wynne 1996; see also Chapter 2: 36).

The assertion that problematising 'expert' knowledge might lead to a more democratised society has been criticised by those who find no new mutual responsibility within environmental management in a 'risk society' (Bennett 1999; Bulkeley 2001). This chapter considers how health risks associated with bathing are constructed with respect to seawater measurement and conservationist discourse at Silversands and La Herradura. I describe how risk is manufactured and calculated, and assess whether the inability to account for risk has led to public distrust of scientific and governmental authorities. In addition, the chapter considers whether more participatory processes of beach management have resulted from the emergence of uncertain risks. In Chapters 5 and 6, participation was defined more broadly than in other studies. This broader definition is used in this chapter to demonstrate the limitations of characterising distinct 'expert' or 'lay' perspectives of risk.

The chapter is divided into three further sections and a conclusion. The first considers how risk is calculated using seawater quality measurements associated with the Bathing Water Directive. Results of these measurements are displayed on information boards at Silversands and on the internet using 'smiley' face logos that convey user-friendly accounts of risk. These logos, and other attempts to predict and display real-time information, are used at Silversands to improve accuracy of risk assessment. In Almuñécar, the failure of one beach to pass annual bathing water quality tests led to a perceived increase in health risk at beaches throughout the municipality. The production of risk by association is examined in this section by considering how the failure of water quality at one site affected La Herradura. I consider attempts by coastal conservation charities to collect and record reported incidences of ill-health associated with bathing at Silversands and La Herradura and I argue that self-reporting is one way that 'lay' bathers participate in risk assessment, but that personal testimony is not, on the whole, trusted in a technocratic society.

The second section considers how risk at bathing areas is manufactured by conservationist discourse at Silversands and La Herradura. In its annual *Good Beach Guide*, the Marine Conservation Society (MCS) asserts that sewage processing and disposal are linked to health risks for bathers at Silversands. In 2003, this guide judged bathing at Silversands a health risk, despite official water quality recorded as 'excellent' (MCS 2003). Calculating risk using different criteria, the *Good Beach Guide* suggests how risk is manufactured differently by different groups of 'experts'. According to *Ecologistas en Acción*, urbanisation and intensive agriculture near La Herradura have caused increased health risks for bathers. This is because existing waste water facilities are said to be incapable of coping with additional demand associated with urban development.

The third section considers how participation has changed as a result of the manufactured risks associated with bathing water measurement and conservation discourse. The section argues that despite scepticism towards official bathing water results, the practice of water quality measurement is supported by coastal conservation charities and individuals at both fieldsites. In this sense, uncertain risk does not contribute to new, more participatory, engagements concerning beach management. Instead, greater accuracy is sought from scientific measurement to make risk more calculable. Expertise is here required to provide beach users with the most immediate and accurate information possible. Paradoxically, local authorities at both

Silversands and La Herradura seek to avoid risk assessments that are based on expert judgements of either 'pass' or 'fail'. In contrast to studies that associate governmental authorities with technoscientific assessments of risk, I describe how both local authorities sought more participatory forms of risk assessment that take into account 'lay' experiences of each bathing area. I discuss the different reasons for this, and suggest that instead of leading to more participatory forms of beach governance, individuals continue to manage increasing uncertainty despite the provision of 'better' information.

Analysis of environmental risk is commonly based on expert knowledge that is then communicated to a wider society previously unaware of risk. This 'deficit' model, in which publics are seen to require greater understanding of science, is largely closed to participation from 'lay' actors (Wynne 1991, 1992, 1994; Pinch 1981; see also Chapter 2: 37). This chapter describes the involvement of so-called 'lay' actors in the assessment of bathing risk.

Health Risks and Water Quality Measurement

On the Possibility of Real-Time Information

Results of European Union bathing water quality tests have not, on the whole, been made available until several months after the collection of samples. The annual publication of the EU's Bathing Waters Report, for example, occurs after all results from every beach in each member state throughout the entire bathing season have been collated, normally in February or March (EU 2003, 2004, 2005). Similarly, beach awards and flags are awarded annually based on results of water quality measurement conducted during the previous bathing season (Chapter 6). In recent years, however, changes in European environmental legislation have required scientific authorities in each member state to make results of environmental testing more available. Combined with the Directive on the Freedom of Information on the Environment has been a desire to make results of water quality tests available more quickly (CEC 1990a, 2002a). Article 12 of the revised Bathing Water Directive states that water quality information should be actively disseminated through 'appropriate media and technologies, including the internet' (CEC 2006: 38). In addition, relevant information should be 'promptly made available in the near vicinity of each bathing water' and this information should, where appropriate, 'be made available in several languages' (CEC 2006: 38). In preparation for implementing the revised Bathing

Water Directive, some local authorities, like Fife Council, have sought to make water quality results available more promptly than has been done in the past.

A representative of Fife Council explained during an interview why water quality results should be made available promptly. He stated that the present system, which relies on results of water quality measurements for the previous year, is of little use to bathers visiting a beach one year after samples were collected. Information should, he claimed, be made as close to real-time as is possible, given the limitations of the sampling regime and the time taken to conduct accurate laboratory analysis:

if you think about it, what's the point in knowing what the quality of the water was last year? I mean effectively, all the guides [for example beach awards and the *Good Beach Guide*] you're talking about, that's what they're saying: 'last year – twelve months ago – these were the water quality factors'. Now, what use is that to you today? Does that mean it will be like that today, like that tomorrow, who knows? So it's much better to have a real-time process of water quality. The difficulty is that the sampling regime we're dealing with, it's always running slightly behind with the analysis. If somebody somewhere could come up with a very simple monitoring system, where you could almost sample the water on a daily basis, then you could, with any given beach, put up real-time information on the water quality (Interview 4: 19/05/04).

In the above quote, the representative from Fife Council recognises that beach awards and flags currently used are not enough to convey an accurate risk assessment to bathers. The regime of laboratory testing means that results of water quality testing are quickly out of date and become irrelevant to beach users. The beach manager at Silversands agreed, stating that work needs to be done to make risk assessment more accurate:

I think what people would prefer is to actually know there-and-then. They want to know that day, when they get there, what the water is like. The Blue Flag doesn't tell them that, so that's something we need to work on, so that people get more accurate and up-to-date information (Interview 9: 06/07/04).

According to the beach manager, bathers want real-time water quality information. Above, she explains that existing beach awards do not provide the information required for bathers to assess health risks and make informed decisions on whether or not to bathe. Only twenty water samples are collected by SEPA each bathing season, and results can take twenty-four hours to calculate. Keeping bathers updated with the most recent water quality result is, for the beach manager, one way in which health risks can be expressed more accurately. This would give bathers information that better reflects the quality of water encountered at Silversands and would facilitate the ability to make an informed choice.

Instead of being more calculable, scientific assessments of bathing water quality highlight the difficulty in accounting for health risk. Changes to the Bathing Water Directive aim to reduce the time between sample collection and publication of water quality results. This can be done by regularly updating information boards and websites and even by transmitting water quality results using a text-message facility (SEPA 2006; see also Chapter 4: 104). But because of limitations in measurement procedures, these developments do not enable the availability of real-time water quality information.

Prior to 2003, water quality information for Silversands was only published after the summer bathing season finished. Since then, results of individual water samples are updated on the beach information boards and the website within one week. Expressing these results, and communicating health risk, is something that both SEPA and the local authority have tried to improve. A representative of Fife Council explained to me that, for bathers, detailed analysis of water quality is less important than an overall indication of whether bathing poses a significant health risk:

the trouble with [bathing water] information is that people switch-off from it fairly quickly. We put up the information at beaches as the samples are coming through, during the [bathing] season. Probably on any given day, the majority of people on any given beach don't even bother looking at the notice boards with the information on. They take it as read that because you've got a [Blue] Flag up, therefore it must be okay. I think that people put it at a very simplistic level. Without sitting down and reminding myself what all the readings mean, I've got great difficulty understanding what the samples come back at! They're great for scientists and people who are interested in that, but they mean very

little to the general public. All they [the public] are concerned with is, if they go into the water, will they get ill or not. And with improvements with general water quality, then the incidence of people getting ill from a day on the beach has probably dropped dramatically. How on earth we put that over without being technical, that's the question (Interview 4: 19/05/04).

Communicating risk to potential bathers is difficult because the risk itself is uncertain, and results of scientific testing mean very little to those unfamiliar with microbiology. Above, a representative of Fife Council admitted that, even for him, water quality information was understandable only if studied carefully. According to him, people on beaches like Silversands do not tend to read water quality information placed on notice boards, even though this information is the most up-to-date available. People are instead assured of safety by the presence of a Blue Flag, which is based on water samples collected twelve months previously (Chapter 6: 152). The representative of Fife Council notes that water quality has, on the whole, improved in recent years, and that the risk to bathers has fallen correspondingly. But he recognises that the problem for the local authority and SEPA is communicating this interpretation of health risk to a broader audience.

Despite limitations in being able to provide real-time seawater quality information, SEPA, in consultation with the European Commission, has sought to find a better way to express results of existing measurements to bathers (CEC 2003a). One way of doing this has been to employ 'smiley-face' logos to communicate water quality results, and hence health risks associated with bathing (Figure 7.1). These logos have been used since 2003 at beach information boards and on the SEPA website. They consist of three differently coloured smiley-faces corresponding to three water quality categories identified by the Bathing Water Directive: 'fail', 'mandatory pass' and 'guideline pass' (CEC 1976). These logos, according to one Scottish MEP, are popular with the European Environment Committee because they can be used in any member state:

the smiley-faces work well. I think it's a really good idea to have commonality. That's what we tried to do, and I think that we *should* have a common symbol that we can all recognise, and that's to be commended. I like the idea that wherever you go, you have a good sign, and a bad sign,

there's no confusion because they're universal. You don't need a [foreign] language to understand a symbol (Interview 18: 08/12/05).

Using common, easily recognisable, symbols to indicate health risk is, according to this MEP, a positive move. Not only do smiley-faces reduce confusion associated with water quality results, they can also be used anywhere within Europe, regardless of language differences. This means that people holidaying to other European countries are informed of health risks by symbols that they are likely to have encountered closer to home.

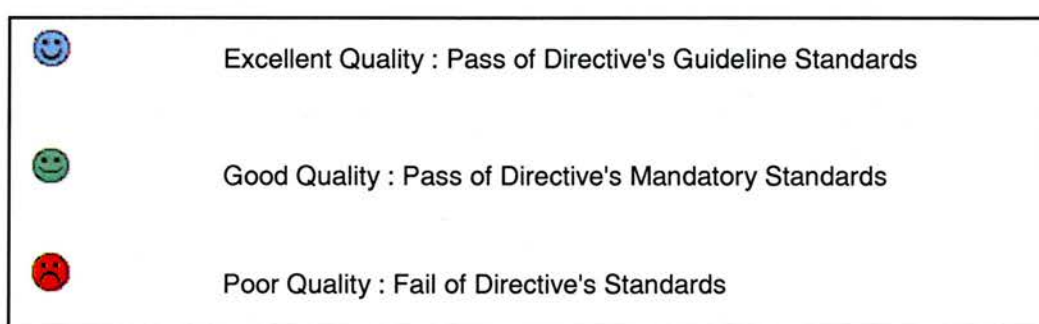


Figure 7.1: SEPA 'Smiley Face' Logos Used at Silversands

While smiley-faces have facilitated communication of water quality results, SEPA has sought to increase the accuracy of risk assessment using predictive models of diffuse pollution at ten beaches in Scotland. These models are based on rainfall measurement, and diffuse pollution discharge expected in bathing water after periods of heavy or prolonged rain. This method of prediction, according to SEPA, allows real-time information on water quality to be displayed at beaches using electronic information boards connected to a central monitoring station (SEPA 2006; Figure 7.2). Although each notice board is calibrated using seawater samples collected during different weather conditions, predictive models enable water quality information to be updated daily without scientists needing to sample seawater, or even visit participating beaches. In this way, health risks associated with bathing are made calculable.



Figure 7.2: Electronic Bathing Water Sign at Portobello, 01/06/06

At Silversands, the beach manager explained to me why predictive models of diffuse pollution were developed in the west of Scotland (see for example Wyer *et al* 2001; Kashefipour *et al* 2006). This, according to her, meant that Silversands was unlikely to get an electronic notice board for several years:

I think real-time information [on water quality] would be a lot more useful from a public health point of view [than a Blue Flag]. The problem, I guess, and the reason it was trialled on the west coast, not the east, is because all of the information about agricultural runoff and river basin runoff is in the west. And I think it would be a lot better having an electronic board [to display real-time information] because it's a lot more interactive, and people are more likely to look at it. I mean, as soon as we get the results from SEPA we put them up [on existing notice boards], but they're not the results of water right then. So I think prediction is definitely more useful. Whether or not it will be taken-up at Silversands, I don't know, because all of the modelling

that has been associated with it has been in the west. We [in the east] don't have a massive problem with agricultural runoff. But I would like to see it here (Interview 9: 06/07/04).

From the beach manager's perspective, electronic notice boards that display information of predicted water quality would be useful in protecting public health. Although the polluting effects of agricultural runoff have been more commonly associated with the west coast, the beach manager thinks that attempts should be made to model diffuse pollution and calculate health risk at Silversands and other beaches in the east.

Since the above interview took place, the Scottish Executive has carried out research on the accuracy of electronic information boards, and on public responses to the messages displayed (Scottish Executive 2005b). This research found that electronic notice boards have an accuracy rate of 98%, and that over half of beach users at any given beach were aware of the sign, and the message displayed. Of those who saw the sign, 80% thought it had increased their awareness of water quality issues. According to the Scottish Executive, these results point to the success of electronic notice boards and predictive modelling. The scheme has since spread to more beaches, including Portobello and Aberdeen on the east coast, and SEPA hopes, eventually, to include all bathing waters in the scheme (SEPA 2006).

Messages displayed by electronic notice boards express risk in one of two ways. If water quality is predicted to pass mandatory standards, the signs read: 'good water quality is predicted today'. If water quality is predicted to fail mandatory standards, the signs read: 'bathing is not advised: risk of poor water quality today'. This two-level risk assessment does not enable *the prediction* of 'excellent' water quality results associated with a guideline pass of the Bathing Water Directive. As stated above by a representative of Fife Council, beach users are primarily interested in whether they will get ill or not; technical information is not seen as relevant. Displaying one of two messages on an electronic notice board offers a simple means of communicating risk in language that is simple yet not overly prescriptive.

A representative of Clean Coast Scotland explained to me her reservations about predictive modelling and about electronic signage. At Aberdeen, she stated, SEPA has tried to model three levels of risk assessment, in accordance with the

Bathing Water Directive. This has not been fully developed, and can be linked to broader problems with using electronic signs at beaches like Silversands:

the problem I think they [SEPA] are [sic] going to have, is that the models are really looking at places between poor and good [quality bathing water]. And these award beaches, like Silversands, usually have excellent quality, and occasionally they drop below that to the 'good'. And predicting [the difference between 'good' and 'excellent'] is much, much more difficult than predicting the 'fail'. So I think that's what SEPA were doing at Aberdeen, with trying to model the difference between 'excellent' and 'good'. They've got a bit of work on it, but I don't think they'd be confident running it next year (Interview 17: 06/12/05).

Modelling water quality to display real-time predictions of bathing risk does not easily allow the prediction of 'excellent' quality water. This, according to a representative of Clean Coast Scotland, means that electronic signs would have limited use at Silversands, where the water quality is normally recorded as either 'excellent' or 'good'. Furthermore, electronic signs have become linked with beaches where water quality has, in the past, been recorded as 'fail':

the only issue [with electronic signage], and we brought this up with SEPA, from Clean Coast Scotland's point of view is that [the signs], in effect, inadvertently promote poor water quality sites. The signs are only located at sites which have had poor water quality, and they're getting a lot more publicity because of the signage. This is very positive, in a way, because people now know what the water quality is like before they go in. But sites where the water quality is good are not getting that sort of publicity, and the water quality there is actually better. So we've raised concern that we would like to see the information system trialled at award winning beaches (Interview 17: 06/12/05).

Here, electronic signs promote beaches in Scotland where health risks associated with bathing are potentially greater than at award winning beaches. In contrast, beaches like Silversands are not promoted despite having better seawater quality.

A further problem with a predictive electronic sign at Silversands is the possibility that the message displayed might be perceived to contradict the Blue Flag or other beach awards. This would occur, for example, if the electronic sign predicted 'poor' water quality, while beach awards based on the previous season's results assure visitors of 'excellent' water quality. I discussed the issue of contradicting beach signs with the beach manager. She explained to me her preference for providing beach users with as much information as possible, to increase understanding of water quality issues:

I think what people would prefer is to actually know there-and-then what the water quality is like. Obviously with the beach awards there has to be some sort of instructions to explain, you know, 'last year 95 percent of the time, the water was safe to be in'. And you give people a probability rather than saying 'yes it is recommended by us, but if you go down and it's a bad rainy day, then'. Because giving people as much information as possible is the best thing because they get a better understanding of [water quality] hopefully. There's a lot more information out there, so maybe if we did have the real-time information, it might make us all work in partnership (Interview 9: 06/07/04).

For the beach manager, visitors should be presented with explanatory notes to enable greater understanding of electronic signs and beach awards. For her, there would be no contradiction between signs displaying different messages on any given day because risk is calculated differently for each sign. The possibility of having a predictive model for seawater quality might, according to the beach manager, lead to greater collaboration in coordinating beach signage between local authorities, Clean Coast Scotland and SEPA.

Risk by Association and Self-Reported Data

Conflicting interpretations of risk occurred in 2005 at La Herradura when a neighbouring beach failed mandatory water quality tests undertaken as part of the Bathing Water Directive. Playa Pozuelo, located in the municipality of Almuñécar five kilometres east of La Herradura, was one of only two beaches in Granada province, and one of only seventeen in the whole of Spain to fail water quality tests

conducted in the 2004 bathing season. During an interview with the beach manager, I asked how seawater samples taken in the previous bathing season at Pozuelo might affect the image of the whole municipality, even though La Herradura passed 'guideline' standards. He told me that while they had a problem at Pozuelo in 2004, the water quality there, and at La Herradura was fine, and that beach users understand efforts to preserve water quality:

I am surprised by the 2004 [European Union] bathing water quality report. The local council of health carries out its own analysis on the state of the waters, which always gives very favourable results. For this reason, I do not consider the EU report to reflect the veracity of the present state of this beach. The health council confirmed only yesterday that this year, as in 2004, the [pollution] levels were described as 'very acceptable' at Pozuelo. And, as in the case of Pozuelo, water quality at all beaches in Almuñécar was very acceptable. So that information gives me tranquillity (Interview 13: 06/07/05 – Appendix IIIu).

Here, the beach manager sets out why he thinks the assessment of bathing risk issued by the EU – as a result of measurements undertaken by ADEAC – is both outdated and misleading. For him, bathing water quality results can give visitors a false impression of the coast. For this reason, they should accept results that reflect the true situation, and the low health risks that existed at all beaches in the municipality.

The delay between measuring water samples and publishing results is a problem for the beach manager at La Herradura. It means that results are inaccurate compared to the municipal authority's own measurement, which was carried out more recently. Shortly after the publication of EU results, I spoke with beach users at La Herradura who were concerned that water quality along the whole coast might be poor (Fieldnote 16: 28/05/05). One man explained to me that water moves about the coast, so that unhealthy water at Pozuelo could easily travel to La Herradura. Often respondents of informal interviews who were aware of the failing beach at Pozuelo spoke about their fears with reference to personal experiences at La Herradura. One lady, for example, stated that she found the water at La Herradura to be full of suspended materials that she worried was linked to the nearby failing beach (Fieldnote 16: 28/05/05).

Health risks associated with bathing at La Herradura are, for some, linked to bathing water quality in the whole municipality. Some beach users felt that proximity to failing sites would increase risks of ill-health at La Herradura, and these fears could not be disproved. Often, respondents pointed to the experiences of bathers as either proof that the health risk existed at La Herradura, or that no significant health risk existed. The beach manager, for example, spoke about the number of healthy beach visitors and how they were not put off by poor results at Pozuelo:

I do not worry about the official information on the quality of bathing waters, which are outdated. Pozuelo, like the rest of the coast [of Almuñécar], is in a perfect state. There is no reason to create social alarm since the beaches fulfil salubrity requirements. Every day thousands of swimmers use beaches to enjoy the sun and bathing waters, and they know that the beaches are very acceptable (Interview 13: 06/07/05 – Appendix IIIv).

In contrast, a representative of Ecologistas en Acción explained to me that the numbers of people experiencing gastroenteritis and other infections as a result of bathing pointed to the poor quality of seawater. This, she claimed, indicated the high risk of bathing in coastal waters where significant urbanisation has led to increases in the amount of water pollution:

uncontrolled urbanisation has increased the amount of waste water that is discharged into the sea. And every summer we see hundreds of cases of dermatitis as result of contamination in bathing waters (Interview 14: 07/07/05 – Appendix IIIw).

Ecologistas en Acción, like the MCS in Scotland and other coastal charities, encourages beach visitors to report incidences of ill health that have resulted from sea bathing. Calculating risk in this way, however, has been discredited by studies that have sought to demonstrate the unreliability of using data based on self-reported symptoms (Fleisher and Kay 2006).

Health risks associated with bathing are normally gastrointestinal infections, ear infections or epidemiological illnesses (Walker 1992; Kay *et al* 1994; Frost and

Parker 2000; Preto *et al* 2001; Bradley and Hancock 2003). In the UK, coastal conservation group Surfers Against Sewage maintains a database of self-reported symptoms resulting from bathing in coastal waters (SAS 2006; Ward 1996). Similarly, the MCS asks beach users to report bathing-related illness, and states that 'at present, swimmers have a 1 in 7 chance of contracting a sewage related illness if they bathe in water complying with the mandatory EU bathing water quality standard' (MCS 2005a). This risk is reduced to 1 in 20 if water complies with the tighter 'guideline' water quality standard (MCS 2005a). During an interview with a representative of the MCS in Scotland, I asked how self-reported incidences of illness can be used by the charity to meet its campaigning goals. He told me that data collected by the MCS uncovers the true quality of seawater, and can be used to lobby institutions of the European Union:

we are a charity dedicated to protecting the marine environment, and water quality is part of that. And we have quite strong evidence that existing awards and criteria don't work. There is a big, big disparity between the true standard of water quality and what it is being portrayed as having, for example, with a Blue Flag. So it's a public service I think, but it also serves as a lobbying tool to revise and strengthen the Bathing Water Directive. In that, I think, it's been partially successful because the Bathing Water Directive is being revised at the moment (Interview 6: 01/06/04).

Uncovering the true quality of seawater is, according to this representative of the MCS, a public service that helps to highlight the risks associated with bathing in coastal waters. Existing beach awards, such as the Blue Flag, are not trusted to provide an accurate assessment of health risk. Similarly, conservationist volunteers in Spain ask bathers to report symptoms of ill health, again because official assurances of water quality are not trusted (Ecologistas en Acción 2004; see Chapter 6: 165). For these conservationist groups, risk assessment is based on personal testimony associated with 'experienced truth'. This type of risk assessment is used to oppose 'instrumentally based truth' employed by environmental regulators and local authorities (Shapin 1994). In the case of bathing waters, conservationist groups in both Scotland and Spain distrust official assurances of *low* health risk based on

scientific assessments of bathing water. According to these groups, personal testimony is better at giving a more accurate indication of the *real* risks associated with bathing.

Scientists who have sought to understand self-reporting, however, question the validity of personal testimony. Fleisher and Kay (2006), for example, identify a 'perception bias' in self-reported symptoms of bathing-related epidemiologic illness. This bias is characterised as the bather's 'perceived perceptions of the risk of exposure' – meaning that those aware of bathing risks are 4.78 times more likely to report skin ailments than those 'without any pre-conceived notion of risk' (Fleisher and Kay 2006: 265). 'Perception bias' is accounted for by bathers being exposed to media reports of health risk, which are often 'inadequately or inappropriately reported by the news media' (Fleisher and Kay 2006: 266). For Kusch (2002), however, personal testimony should be seen as a generative source of knowledge, rather than a means of transmitting existing knowledge. This means that self-reporting should not be set against what is considered to be *the* 'true' account of health risk. To do this would be to compare knowledge claims that originate from distinct epistemological communities (Lipton 1988; Kusch and Lipton 2002).

By separating personal testimony and scientific measurement, Fleisher and Kay (2006) question the veracity of self-reported data gathered by coastal conservationist groups. The authors suggest that conservationist groups over-estimate health risks associated with bathing, and that this leads to a certain degree of public hysteria, which can be quantified as risk perception bias. Bathers exposed to media hype are therefore more likely to report epidemiological illnesses after exposure to bathing water. Furthermore, if self-reporting is inaccurate, scientists are required to assess the extent to which data can be trusted. Although research on 'risk perception bias' has not yet been conducted at Silversands or La Herradura, the arguments made by Fleisher and Kay (2006) are relevant to my research. Conservationist groups such as the Marine Conservation Society work with many different partner organisations to promote personal testimony of bathing related illnesses (MCS 2005b). Criticisms of self-reported data may strip conservationist groups of epistemic authority, and hence lobbying power. At the same time, however, conservationist groups have over many years established themselves as independent 'watchdogs' of bathing water quality, as discussed in the next section.

In the case of bathing water, 'experts' have maintained a distinct boundary between 'expert' and 'lay' by discrediting personal testimony of bathing related illnesses and marginalising conservationist groups. This 'boundary work' has caused participants, such as coastal conservation charities, to employ increasingly more scientific methodologies to offer alternative assessments of health risks associated with bathing (Gieryn 1983, 1999). The next section describes how both the MCS and Ecologistas en Acción have sought to accumulate greater epistemic authority through campaigns that bridge the divide between 'expert' and 'lay'. While these campaigns have had some success, I show that conservationist groups are in danger of writing themselves out of participatory risk assessment by supporting greater use of 'expertise'.

Health Risks, Conservationists and Bathing Areas

The Good Beach Guide

Official tests of bathing water quality measure particular sewage-related pollutants, and calculate risk based on these measurements. Some conservationist groups, however, distrust official water quality measurement and have sought alternative methods of assessing health risks at bathing areas. One of these methods, described above, has been to use data generated through personal testimony of illness. In addition, the MCS has its own system of beach recommendation, based on a different type of risk assessment. Results of this assessment are published annually as the *Good Beach Guide* (Figure 7.3).

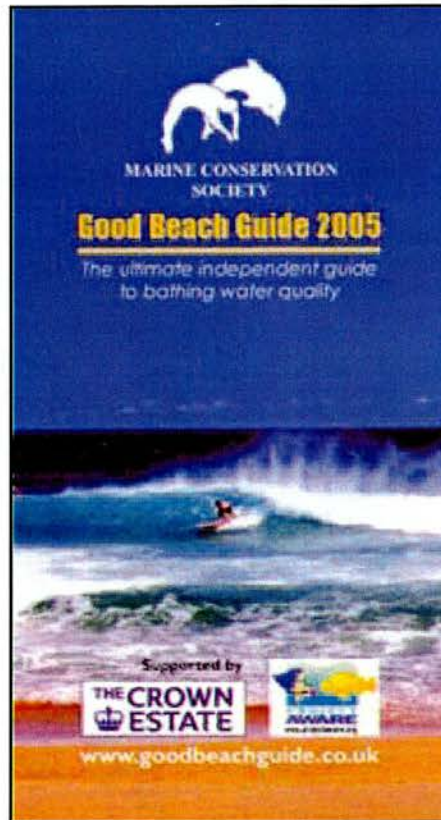


Figure 7.3: MCS *Good Beach Guide* 2005

Like other beach awards, the *Good Beach Guide* attracts a lot of publicity, and is usually released at the end of May each year (for example *The Herald* 2006; BBC 2006). It is based on the same water quality tests, carried out by SEPA, as other awards, including the Blue Flag campaign. Beaches must, therefore, pass 'guideline' standards set out in the Bathing Water Directive to be included in the *Good Beach Guide* (MCS 2003, 2004, 2005). Where the *Good Beach Guide* differs from the Blue Flag campaign, however, is in its analysis of sewage outfall pipes. This analysis is considered alongside results for water quality when deciding whether to award a recommendation. If a sewage outflow pipe carrying only primary treated sewage exists near a beach, then, regardless of water quality results, the beach can not appear in the *Guide*. A representative of the MCS told me that Bathing Water Directive measurements are not strict enough for his organisation, and that bad beaches often achieve a mandatory pass simply because measurements are taken on certain days, or at certain times when the winds and the tides direct sewage from outflow pipes away from the beach in question:

one of the lobbying functions of the *Good Beach Guide* has been to raise the need for better [water quality] information for bathers. That's the reason that we don't recognise, for example, wet weather waivers, and why we require one-hundred percent passes on the minimum standard and don't allow sewage outflows. There has been research done to assess the effects of faecal coliform contamination on health, and the *Good Beach Guide* is in response to that – because it has been shown that existing EU standards don't necessarily guarantee, or greatly minimise the risk of certain infections (Interview 6: 01/06/04).

In addition to highlighting the unreliability of EU water quality tests, the MCS representative told me that the *Good Beach Guide* is designed to keep pressure on governmental authorities and Scottish Water – to 'raise the bar' of water quality around the coast of Scotland (Interview 6: 01/06/04). While SEPA 'passed' 105 of the 113 beaches measured in 2003, the *Good Beach Guide* only recommended thirty-three in the same year. The MCS seeks to gain authority from being the only 'independent' organisation providing guidance on seawater quality, not directly related to SEPA, Scottish Water or local authorities. Unlike other beach awards, the *Good Beach Guide* is produced solely in relation to water quality rather than including recommendations for beach facilities such as information boards and dog access. Another representative of the MCS explained to me that the *Guide* highlights risks that still exist at many beaches yet to be recommended:

there has been a year-on-year improvement in coastal water quality, partly because the Guide turns an annual spotlight on good and bad beaches; fifty-six percent of all sampled bathing waters are recommended this year, which shows both how far we have come and the distance left to run (Personal Correspondence 2: 28/05/04).

Until 2004, Silversands was not recommended in the *Good Beach Guide*. This was because of a sewage outfall pipe that discharged primary treated sewage three-quarters of a mile out to sea (Personal Correspondence 2: 28/05/04). Silversands could not win a recommendation while primary treated sewage continued to be discharged in this way. A representative of Clean Coast Scotland later told me that the omission of Silversands in the *Good Beach Guide* caused some debate between

the MCS, Scottish Water and Fife Council over whether the outflow pipe had any discernable effect on Silversands. A Fife Council representative explained that he had been aware of this issue for some years and claimed that the conflicting message being presented to the public only served to confuse matters. Some press stories based on the *Good Beach Guide*, for example, reported the beach as 'dirty', and others based on Blue Flag and Seaside Awards announced Silversands to be 'clean' (Interview 4: 19/05/04). Somewhat contrary to his support for the beach awards, the Fife Council representative told me that beach users should decide on the cleanliness of a beach for themselves:

you have to be very careful, obviously, what you're saying is good or not, because that's a quality judgement you're making on behalf of other people, which you shouldn't do. People decide if it's good or not. What you can do is describe the beach, and describe its environmental factors. So water quality, facilities available, management plans, whatever. Give that information to them and they can decide whether that's the beach for them or not (Interview 4: 19/05/04).

Fife Council did not want coastal conservation charities producing guides that contradict official assurances of seawater safety, made explicit through beach awards. For the Council, the awards process could be improved immeasurably if there was a way of offering facts to beach users, avoiding the confusion that exists when conflicting interpretations are applied to information – as further explained by a representative of Fife Council:

I mean the interesting irony is that everyone is arguing over the same information; nobody's got a totally separate set of information, they [the MCS] are using SEPA figures. It's the interpretation of where you decide the boundary is between the good and the not-so-good beach, and that's where the argument is going to end (Interview 4: 19/05/04).

Silversands, although not recommended before the 2004 *Good Beach Guide*, met 'guideline' standards for water quality set out by the European Union's Bathing Water Directive. This, as the interviewee above notes, is the definitive standard, and the one to be communicated to the public as 'fact'. By questioning the cleanliness of

Silversands, the *Good Beach Guide* has highlighted the possibility of increased risk associated with sewage outflow pipes. While both the MCS and local authority want Silversands and other beaches to be clean, safe and healthy places to visit, the criteria and methods used to assess risk differ.

In the 2004 *Good Beach Guide*, the number of beaches recommended in Scotland had risen from thirty-three in 2003 to fifty-six, and one of the new winners was Silversands. The reason why Silversands was, in 2004, deemed worthy of a recommendation was because of a change in the disposal of sewage in the area. According to SEPA, 'the diversion of Dalgety Bay sewage by means of a pumping station and rising main to Dunfermline WWTP [Waste Water Treatment Plant] was completed in spring 2003, removing this distant potential risk to bathing water quality' (SEPA 2004). With the distant, potential risk now removed, the MCS has, from 2004, included Silversands in its list of recommended beaches.

Greenhouses, Urbanisation and Bathing Risk

At La Herradura, Ecologistas en Acción identified both sewage disposal associated with urbanisation and intensive agriculture as potential risks to water quality. These risks, largely ignored by tests conducted in accordance with the Bathing Water Directive, can be used to produce a different risk assessment for the area. As described in Chapter 6, Ecologistas en Acción campaigns against urbanisation in the municipality of Almuñécar because it fears more buildings will lead to increased use of sewage disposal facilities that are already overused. The link is made between health risk and construction of coastal apartments and golf courses. Similarly, the beach manager linked coastal development to water quality, but instead of urbanisation and golf courses, the danger for him was represented by large industrial greenhouses, which are used extensively in coastal areas in the east of Granada province. For him, intensive agriculture is incompatible with continued provision of tourist facilities – including a clean beach. He explained to me the importance of separating agriculture and tourism:

Greenhouses are not the prettiest tourist image for the municipality!
And we need to delimit the tourist zones from the zones dedicated to agriculture so that they do not interfere with each other. We zone land use so that it is separated – industry and beach – to maintain the

quality of beaches and bathing waters (Interview 13: 06/07/05 – Appendix IIIx).

Intensive agriculture uses chemicals that can be washed into coastal waters making bathing more risky. Because of this, the municipal authority in Almuñécar has, unlike neighbouring municipalities, banned the use of greenhouses both from aesthetic and public health perspectives (Figure 7.4). Beach tourism and intensive agriculture are seen as incompatible, and the Councils has chosen to develop facilities for visitors rather than sanctioning the use of large greenhouses.

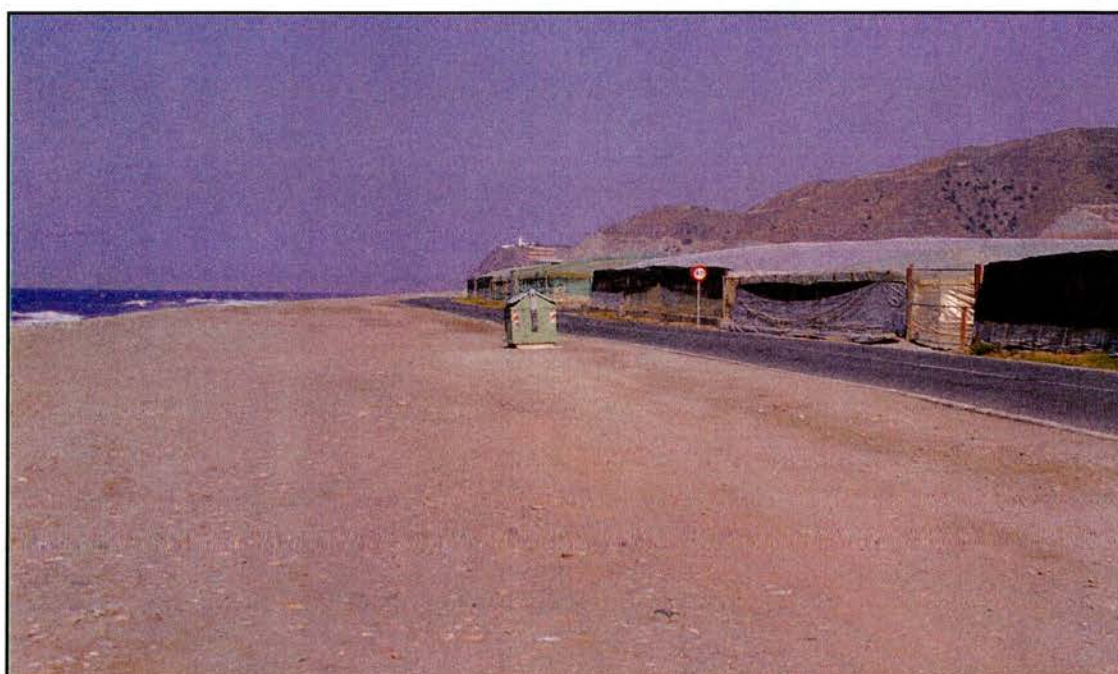


Figure 7.4: Industrial Greenhouses in Motril – Banned in Almuñécar, 10/07/05

Although the main risk at La Herradura is, according to Ecologistas en Acción, urbanisation and golf courses, the charity does campaign against the construction of greenhouses in other municipalities. As part of this campaign work, Ecologistas en Acción is seeking to conduct its own epidemiological tests of seawater throughout the Granada coastline. During an interview with a representative of Ecologistas en Acción, I was told that these tests are needed because existing water quality tests only record sewage-related pollutants, and do not measure for pesticides or other chemicals used in agriculture:

Greenhouses are placed on the Granada coast right up to the sea. They discharge agricultural waste, which then enters nearby waters. There are agricultural spills of waste and packages of toxic and dangerous pesticides. We need a standard test [of water quality] that incorporates new microbiological and chemical parameters (Interview 14: 07/07/05 – Appendix IIIy).

According to this respondent, pesticides and other chemicals pose a health risk to bathers using Granada's coastal waters. She pointed out that environmental regulators and the local authority do not measure seawater for these pollutants. So the charity must assess this health risk itself. Using volunteers from a local university, *Ecologistas en Acción* seeks in future to provide an authoritative account of health risk (Fieldnote 12: 07/04/05).

The recourse to scientific methodology, rather than relying on self-reporting, demonstrates how uncertainty in relation to water quality does not lead to a new democratic participatory process. Both environmental regulators and coastal charities want to provide accounts of health risk that are authoritative, and the best means to do that is through a scientific methodology. I asked a representative of *Ecologistas en Acción* whether their account of health risk would be seen as authoritative. She claimed it would, because nobody else is studying the risks associated with agricultural chemicals, and that this is something that conservationists can use in their campaigning work (Fieldnote 12: 07/04/05).

I spoke to a number of people in La Herradura about their perceptions of greenhouses at some beaches in Granada province. One respondent, who worked for *Protección Civil*, told me that facilities for visitors in the municipality of Almuñécar were excellent, and the beaches well prepared for tourists (Fieldnote 10: 01/05/05). She contrasted this with beaches in Almería province where greenhouses are situated alongside many beaches. Greenhouses, she claimed, are ugly, dirty and incompatible with tourist bathing areas. The councils in Almuñécar and Salobreña created new legislation in 2003 that banned any new greenhouse construction; the only large greenhouse that now exists in Almuñécar was given planning permission before the law came into effect. In an interview with a café owner, I was told that the greenhouse ban has protected the tourism industry in the municipalities of Almuñécar and Salobreña, each of which has historical monuments located on hills which rely on

aesthetically pleasing views across bathing beaches: ‘we all eat off the beach’ (Fieldnote 24: 01/07/05; Figure 7.5). Here, again, beach tourism and intensive agriculture are seen as incompatible, and the municipal authorities have chosen to develop facilities for visitors rather than sanctioning the use of large greenhouses.

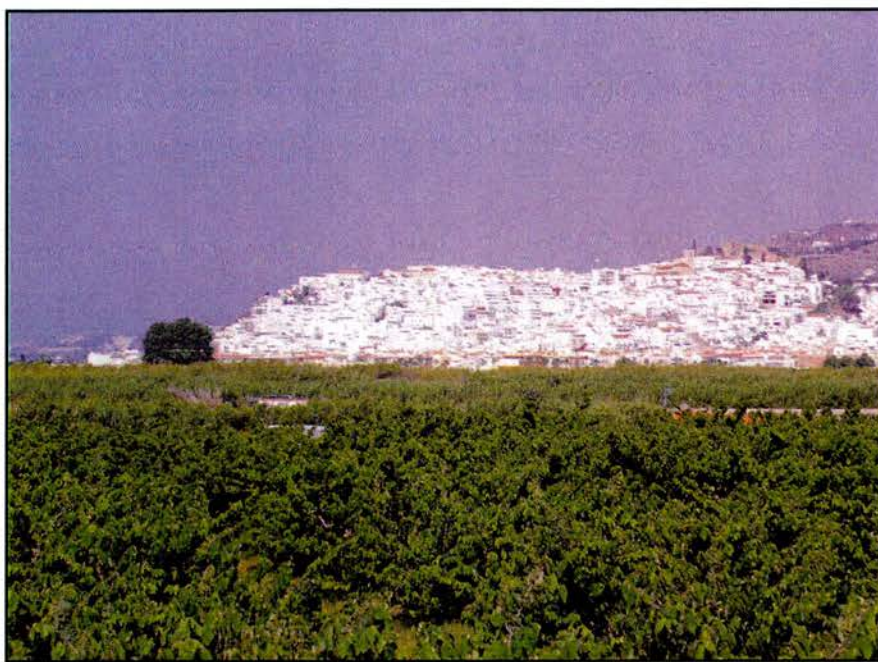


Figure 7.5: Salobreña Castle and Old Town without Greenhouses, 27/06/05

Not everyone was in agreement that industrial greenhouses detract from the cleanliness of bathing beaches. In the municipality of Motril, where greenhouses and bathing water exist side-by-side, the local councillor argued that there was no incompatibility between tourism and agricultural interests. When I asked about industrial greenhouses, the local councillor admitted that while they are not ‘pretty’, they can coexist ‘without interference’ alongside bathing beaches (Fieldnote 27: 10/07/05). While conservationist groups legitimise their opposition to greenhouses on the grounds of scientific water quality tests, my research reveals that for many beach users aesthetic concerns are equally important. Local legislation that prohibits future construction of greenhouses was supported by those who rely on tourism-related income. In the next section, I consider the extent to which conservationists and other beach users participate in official assessments of bathing risk.

Local Authorities, Beach Users and Participation in Risk Assessment

The above sections described some ways in which risk is assessed at both Silversands and La Herradura. In the case of electronic signage and beach awards, risk is normally assessed using two categories that either 'pass' or 'fail' beaches – although modellers are attempting to predict a third category 'guideline' pass. According to beach managers, this binary approach to risk assessment is most useful because bathers want a simple indication on whether they are likely to get ill as a result of bathing. Risk, in this sense, is made calculable in such a way that a division can be made between the risky and the non-risky. But as discussed above, risk associated with bathing is uncertain and environmental regulators and local authorities have difficulty in claiming risk is fully accountable. Responding to this uncertainty, Fife Council and the municipal authority in Almuñécar were in a contradictory position by simultaneously wanting risk to be calculable, and wanting uncertainty to be acknowledged. This section explores this apparent contradiction.

Unlike beaches in the west of Scotland, Silversands has regularly passed the highest 'guideline' water quality standard set out in the Bathing Water Directive. Despite this, and regular Blue Flag awards, a representative of Fife Council explained to me how expressing health risks is, itself, a risky business for the local authority:

the awards system for a local authority does have two sides to it, and it can be politically divisive if things don't work out. I'd prefer to move away from a system where 'here's a hurdle, jump it, and if you get over, fine, if you don't, you lose your reward'. Whereas if you have a proper management model, you can say 'we're in this system, it's a quality assurance system and, like everything else, we have good years and bad years'. You don't – 'disaster' – suddenly lose the award or anything else, you just recognise that you have good times and bad times. When the water quality is bad, then you have to be seen to be putting steps in place to ensure that that's corrected (Interview 4: 19/05/04).

This local authority representative explains how beach awards cause difficulties unless they are won consistently. The current system in which a strict division is made between 'pass' and 'fail' should, according to him, be replaced with a system that acknowledges the variability of water quality, and the unpredictability of health risks.

Under such a system, local authorities would avoid the 'disaster' of losing an award while efforts are put in place to ensure continued improvement in water quality. The local authority representative went on to explain why a revised management system would also enable a more accurate assessment of health risk to be communicated to beach visitors:

Fife did lose a Blue Flag five or six years ago at [St Andrews] West Sands, and we got it back the following year. But the penalty was that we lost the award because of water quality the previous year, not the year we were unable to fly the flag. So not only does it create a bit of political unrest, but it's also a confused picture to be putting across to the public (Interview 4: 19/05/04).

Because beach awards are based on results of water samples collected the previous bathing season, the loss of a Blue Flag, according to this respondent, results in a confused account of health risk. For him, bathers should be made aware of the uncertainty in being able to assess health risks on any given day.

The Marine Conservation society in Scotland has campaigned for results of water quality measurement to be made available more promptly. An MCS representative explained to me that historical data might be useful at beaches to inform bathers of the background to water quality measurement. This, he stated, would mean that Blue Flags could be placed alongside beach information boards displaying more recent results:

I think the idea of a flag above a beach is very beguiling, and it's uncomplicated. And I don't think, you know, that lobbying for real-time signage of water quality necessarily negates the need for flags. But it might be that the flag indicates a certain degree of facilities, and historically very good water quality, but for the real information, you need to look at the beach signage (Interview 15: 13/10/05).

Here, measurement is important in communicating risk to potential bathers. Existing awards and flags go some way in providing historic information that might help people to assess health risk. But better information made available more quickly to bathers would improve their decision making ability.

Recent attempts to provide more up-to-date assessments of health risk cause potential liability problems for Fife Council. The beach manager of Silversands explained to me how the local authority might become increasingly liable for bathing-related illnesses if more sophisticated predictions of water quality were used:

if you put up a system that was supposed to show, on a daily basis, what the water quality was, and then you didn't keep that up, you'd probably have a problem on your hands. The argument would be 'I came down to the beach and the thing [electronic sign] wasn't working properly, so the information wasn't available, and I got ill'. The more sophisticated you get with the information provision, the more vulnerable I think you're leaving yourself. Whereas if you've just got very, very basic information, that operates on that level, then, providing you've done what is reasonable, that's okay (Interview 16: 19/10/05).

The beach manager explained how attempts to present more 'accurate' predictions of water quality might actually lead to increased liability for the local authority. As stated above, electronic notice boards express health risks in probabilistic language so that choices on whether or not to bathe are still based on personal responsibility. But if a notice board malfunctions, local authorities could be held accountable by those who develop symptoms of illness as a result of bathing.

This increased dependence on functioning technology forms the basis of Beck's 'risk society' (Beck 1992). While the beach manager at Silversands welcomes the possibility of electronic signs displaying predictive water quality information, she is wary that such information can itself be responsible for creating further risk. In this respect, she supports the provision of 'basic' information that leaves room for uncertainty. Environmental regulators, and Fife Council, want to improve the reporting of seawater measurements to reflect the water quality that bathers actually encounter at Silversands. Yet despite increasingly 'accurate' models of diffuse pollution, calculating health risks associated with bathing will always contain an element of uncertainty. Fife Council can avoid liability by ensuring that this uncertainty is communicated to bathers on notice boards that do not malfunction.

For bathers, risk associated with sea-bathing is, to a certain degree, expected. A representative of the Scottish Canoe Association explained to me that people using

Silversands would probably welcome better water quality information if it was given in 'good faith' (Interview 5: 27/05/04). This, according to him, would allow authorities to warn of hazards – such as water pollution – that are created in industrialised societies:

I think that people are aware that a lot of information provided for them is a liability thing – wrapping them up in cotton-wool. And I think people are quite good at tuning-out that kind of information. We see it all the time in public places – a water body, and a sign saying 'danger of drowning'. And I don't think they [the authorities] should provide information that gets caught in that kind of trap. If it was a way of communicating with people – 'no actually, you *are* more likely of getting ill today than another day' – and people knew it was given in good faith, they would probably respond. We [paddlers] are keen to keep in people's minds the idea that the outdoor environment is not a risk free environment, and we shouldn't strive to make it a risk-free environment. Where hazards are created, rather than naturally occurring, it's harder for people to tune-in and detect them, and they [the authorities] should flag them up more (Interview 5: 27/05/04).

Here, the representative of the Scottish Canoe Association separated risks that occurred naturally as a result of being in an outdoor environment, and those that people might be unaware of. For him, people 'tune-out' if the information provided to them is seen as mollycoddling. Normal outdoor risks are to be expected, and authorities can assume a certain degree of risk awareness and common sense. Industrial risks, on the other hand, are more difficult for people to detect, and these should, according to this respondent, be presented in a way that offers authoritative advice without being overly prescriptive.

There is some agreement, therefore, between representatives of Fife Council and the Scottish Canoe Association as to what type of water quality information would be most appropriate for Silversands. Health risks should be communicated to potential bathers, but both respondents agreed that such information should be presented in a way that admits to uncertainty. For the local authority this avoids being held liable for illnesses resulting from bathing, and for paddlers, previously undetectable risks are 'flagged'. Each respondent recognised that technological developments both create and help to detect health risks associated with bathing. But

dealing with uncertainty remains the responsibility of the individual bather, who is informed both of health risks, and the uncertainty of calculating such health risks. This, for the above respondents, is how people must react to uncertainty.

At La Herradura, the beach manager distrusted both official measurements of seawater quality undertaken by ADEAC, and the Blue Flag campaign (see Chapter 6: 165). This distrust was based, in part, on apprehension that beaches are classified as either 'pass' or 'fail'. The beach manager at La Herradura decided to boycott the Blue Flag campaign because he was fed up with the uncertainty involved in applying for an annual award. This was not because beaches in the municipality were hazardous and likely to fail mandatory award criteria. For him, ADEAC gave beach users the wrong impression of beaches in the municipality because information was outdated and failed to reflect the quality of services and cleanliness of seawater.

For the beach manager, risk could not be expressed using annual beach awards or results from water quality measurement. For him, feedback from existing beach users can be used to assure other potential visitors that the beach does not pose any significant health risk. In this way, the beach manager supported greater public participation in risk assessment to counter information presented by environmental regulators and coastal conservation charities. The message being communicated by these groups was that bathing at La Herradura does pose a health risk (see Chapter 6). The beach manager could thus point to many thousands of healthy bathers as proof of low risk – removing, to a large part, any uncertainty that existed.

Health risk at La Herradura is again assessed by the individual, based on information provided by environmental regulators and the municipal authority. For the beach manager, the presence of numerous healthy bathers on the beach is proof, if any were needed, that bathing is healthy. Nevertheless, concerns over health risk were the focus of controversial stories in local newspapers (see also Chapter 4: 106). Within the municipality of Almuñécar, for example, bathing water was a party political issue, and was used to discredit politicians controlling the municipal authority. In June 2005, the municipal authority was controlled by the Partido Andalucista (PA). Reports of floating debris in seawater and possible health risks were enough for opposition parties – including the Partido Socialista Obrero Español (PSOE) and the Partido Popular (PP) – to issue statements accusing the municipal authority of negligence with regards public health:

The Popular Party in Almuñécar has denounced uncontrolled spills that have affected several beaches from Pozuelo to La Herradura. According to a spokesperson of the PP, spills can cause unpleasant smells and contamination. In addition, he stated that the 'spilt material can be found in a number of areas where bathing is now impossible'. The PP indicated that 'we do not want to be alarmist, but we have received complaints from many swimmers of the existence of great discharges of dirt, which apparently contain untreated waste water and organic matter. This sewage waste is highly polluting, and is increasingly present at our beaches'. On its part, the PSOE has requested that 'in light of the gravity of facts available' the municipal government should report to citizens what is happening (Granada Hoy 25/06/05 – Appendix IIIz).

Beach users in La Herradura explained to me that water quality is politically important because many jobs in the town are dependent on tourist income, and many residents themselves bathe in the sea (Fieldnote 24: 01/07/05). Commenting on the newspaper stories, a representative of the municipal authority told me that laboratory tests on the supposed spills revealed the material to be seaweed. In addition, he accused other political parties of being opportunist:

The PP and Socialists have used this with a high degree of opportunism and irresponsibility. After a meticulous analysis of samples gathered in the sea, the [local health] laboratory has concluded that residue in the sea was material of natural origin – composed of seaweed mainly. All the PP want to do is create social alarm among potential visitors and tourists, which is totally unjustified. This irresponsibility puts in danger the social, economic, and environmental future of all citizens [in the municipality] (Interview 13: 06/07/05 – Appendix IIIaa).

The beach manager used visitor experiences as a guarantor of safe bathing. In the case of a reported pollution spill, however, the beach manager was quick to use scientific testing to back up its claims to safety. These tests found that supposed pollutants were, in fact, 'natural in origin'. While the beach manager distrusted official EU water quality measurements, in this case, scientific assurance was seen as more epistemologically sound than reports of visitor experiences.

Conclusion

This chapter has considered risks associated with sea bathing at Silversands and La Herradura. Health risks, I argue, are intimately linked to scientific water quality measurements conducted as part of the Bathing Water Directive, and to campaigns organised by coastal conservation charities. Some have argued that, within a 'risk society', new possibilities for participatory democracy are created by societal distrust in scientific risk assessment. In the case of bathing waters, however, a continued divide between 'expert' and 'lay' accounts of risk prevents conservationist groups and individuals from greater participation in bathing area management.

The first section described how authorities at Silversands sought to provide real-time water quality information. Because of limitations in the sampling regime, however, such information could not be generated quickly enough to reflect water quality that bathers encounter. Scientific models of diffuse pollution were increasingly used to predict water quality at some Scottish beaches. These models allowed the use of electronic information boards that conveyed daily updated assessments of risk. There were difficulties, however, in providing such information at Silversands. In addition, predictive models did not eliminate uncertainty, and reliance on technology led to further potential risks for both bathers and Fife Council. According to the beach manager, contradictions between beach awards and real-time information could be overcome by providing beach users with more explanatory information regarding health risk – supplementing existing smiley-face logos.

At La Herradura, water quality tests indicated that a nearby beach failed mandatory standards. For some beach users, this signified an increased health risk when bathing there. But for the beach manager, official water quality tests did not reflect the true state of beaches in the municipality, which he claimed was good. Both the beach manager and conservationists argued that data relating to health risks can be gathered by asking people to report symptoms of ill health. But self-reporting schemes have been criticised by scientists who claim that perception bias is caused by, and leads to, an over-reporting of health risk. More accurate assessment should, according to some scientists, be based on data that avoids artificial bias.

The second section considered how conservationist groups assess health risks associated with bathing. In addition to attempts to gather data on self-reported illness, conservationist groups have been active in promoting alternatives to statutory bathing water measurement. The *Good Beach Guide*, for example, is published annually by

the MCS to highlight limitations of the Bathing Water Directive and the Blue Flag campaign. Similarly, a conservationist group at La Herradura has campaigned for improvements to official bathing water quality measurements, which do not currently take into account agricultural pollutants associated with large greenhouses. For the beach manager at La Herradura, many thousands of healthy and happy bathers provided evidence that sea water quality in the municipality was fine. If participation is considered more broadly, beach users at La Herradura contributed to risk assessment simply by not getting ill.

Risks associated with sea bathing are not fully accountable. Despite attempts to make bathing water tests more accurate, uncertainty continued to exist. This could, according to some, allow conservationist groups and others to contribute to less technocratic assessments of risk (Giddens 1990; Beck 1992; Wynne 1996; see also Chapter 2: 36). The third section described how local authorities in both Fife and Almuñécar were interested in beach management systems that acknowledged the uncertainties of health risk. This, according to them, would avoid annual tests that crudely described beaches as either 'pass' or 'fail'. In addition to wanting greater acknowledgement of uncertainty, local authorities in both Fife and Almuñécar supported official scientific tests to express health risks more accurately. These goals were shown to be incommensurable because local authorities sought to present results of scientific tests as an accurate assessment of health risk only when those results were favourable.

This chapter suggested that non-technocratic means of accounting for risk can emerge from scientific uncertainty. In the case of bathing water, for example, conservationist groups have sought to use personal testimony to construct an alternative perspective of bathing risks. This data was, however, distrusted by microbiology experts who have demonstrated that self-reporting can lead to an over-estimation of risk. In this way, experts use boundary work to discredit participatory methods and to maintain a boundary between 'expert' and 'lay' knowledge. Given the uncertainty associated with scientific risk assessment, conservationist groups have the opportunity to act only as 'watchdogs' of official bathing water quality measurements.

This chapter has demonstrated, however, that conservationist groups in both Fife and Almuñécar campaign for more accurate scientific water quality testing. At Silversands, the MCS used the *Good Beach Guide* to campaign for stricter mandatory bathing water standards. At La Herradura, Ecologistas en Acción sought to conduct its

own tests on the epidemiological effects of agricultural pollutants, and to have similar tests included in statutory bathing water measurements. In this way, uncertainty does not lead to more democratic alternatives to existing scientific assessments. Instead, the inability of scientific and governmental authorities to account for health risk has led to conservationist groups demonstrating the importance of further scientific tests using either stricter standards, or testing for additional agricultural pollutants. While participating in risk assessment, conservationist groups at both Silversands and La Herradura supported greater use of scientific expertise, thus reinforcing the divide between 'expert' and 'lay'.

Debates concerning health risk are important to bathers at both beaches. At La Herradura, a representative of the Scottish Canoe Association described the need to have information, presented in good faith, relating specifically to non-natural hazards. Similarly at La Herradura, beach users were aware of industrially-produced risks, and pointed to newspaper stories to suggest the importance of water quality information to both visitors and residents. Because health risks associated with sea bathing were never fully accountable, decisions on whether or not to bathe were made, ultimately, by individuals.

In this chapter, I have thus shown that individuals were only offered limited participation in risk assessments conducted by scientists, government authorities and conservation charities. To overcome existing technocratic management practices, individuals should play a greater part in assessing health risks. One way in which this could occur is through the use of personal testimony gathered by conservation charities. This boundary-spanning has the potential to be more participatory because it avoids the recreation of a divide between 'expert' and 'lay'. Knowledge produced in this way has the potential to be more 'robust' because it is sensitive to particular social and environmental contexts – as discussed in the next chapter.

Expertise, Robust Knowledge and Bathing Water Quality

Introduction and Chapter Outline

This chapter considers the production of ‘socially robust knowledge’ of bathing areas at Silversands and La Herradura, and how this knowledge is used to support management decisions. ‘Socially robust knowledge’, according to Nowotny *et al* (2001), differs from traditional knowledge claims because it is not defined in a universalistic sense, but is tied instead to a particular context. The production of robust knowledge is increasingly required by policy makers because scientific claims to objectivity become vulnerable if socially contested (Nowotny 1999, 2003; Nowotny *et al* 2001; Wynne 2001). Although socially robust knowledge is inherently incomplete, it is better suited to ‘the particularities of specific locations, instances, and conditions in which it is produced, applied, contested or negotiated’ (Nowotny 1999: 252). Such knowledge must be produced by consensual agreement between experts and other social actors for it to be more reliable and context-sensitive. The relative autonomy of scientific expertise is called into question, as the place of people – expert and lay – is reconfigured in the production of robust knowledge.

Where Chapter 7 discussed different social constructions of bathing waters and how these relate to perceptions of health risk, this chapter investigates how knowledge of bathing areas is produced. Analysis of this knowledge demonstrates how it both reflects and creates dominant social constructions of bathing area cleanliness. By showing how knowledge of bathing areas is created, I uncover a topography of expertise and human agency in which different claims are incorporated to produce – in some cases – socially robust knowledge. Bathing area management is therefore shown to be closely related to issues concerning participation and expertise that have been discussed in recent academic literature (Collins and Evans 2002; Wynne 2003; see also Chapter 2: 40). An investigation of the ‘robustness’ of knowledge produced at Silversands and La Herradura is important because it uncovers how legitimacy is incorporated into bathing area management through both expertise and broader participation.

In creating socially robust knowledge of bathing areas, expertise possessed by different actors is, I suggest, brought together to support particular management decisions. This process of facilitation is performed, in some cases, by organisations that function as knowledge brokers. Such boundary organisations have been discussed in the academic literature to uncover how different epistemic groups interact in support of common policy outcomes (Guston 2000, 2001; see also Chapter 2: 45). Knowledge produced through the boundary organisation process is commonly considered ‘robust’ because it enlists the support of a broad range of actors while allowing scientific knowledge to maintain epistemic authority (Campbell forthcoming). In this chapter, I identify one organisation – the Forth Estuary Forum – that facilitates the interaction and negotiation of knowledge claims and argue that knowledge produced through this process is both socially robust and serves to rationalise bathing area management.

The chapter is divided into three main sections and a short conclusion. In each section, I discuss how knowledge claims are ordered in particular ways to construct both expertise and rational policy responses. First, I consider coastal litter surveys conducted at Silversands. During my research, surveys have been completed by local residents’ groups under the guidance of the Forth Estuary Forum, and by Fife Council. These surveys used different methodologies to count and categorise items of litter at Silversands over periods of months. In each case, the methodology employed carries with it implicit support for particular types of expertise, and constructions of litter. I focus on the Forth Estuary Forum as an organisation that facilitates boundary interactions between stakeholder participants, litter experts and local authorities. Furthermore, I suggest that one beach litter survey produces knowledge that could be described as socially robust, while the other survey employs scientific-based assumptions of aesthetic purity.

Secondly, I consider how organised litter pick-ups create socially robust knowledge concerning appropriate levels of cleanliness at La Herradura and Silversands. Litter pick-ups are conducted by individuals trained to collect certain items of waste and dirt considered inappropriate at bathing areas. At La Herradura, training is provided by the municipal authority, which issues specific guidelines to a contracted seawater cleaning agency. The aesthetic quality of bathing water is not measured scientifically by the municipal authority in Almuñécar, but certain standards are created and maintained through policy-based practices. By collecting floating

debris during the bathing season, the municipal authority creates aesthetic value in bathing water. Here, the appropriate standard of aesthetic purity is based on interpretations of beach users, and a reflexive relationship to practices of bathing and seawater cleaning. At Silversands, volunteers participating in the 'Adopt-a-Beach' campaign are trained using guidance issued by the Marine Conservation Society to collect and record items of waste according to nationally-agreed criteria.

Thirdly, I consider how beach users at Silversands were invited by Fife Council to participate in a consultation to inform future beach management plans. As a facilitator in this consultation, I was included in all stages of the planning, fieldwork and feedback of this project. Participants were asked to offer their views of Silversands and its neighbouring beach, Blacksands, using participatory appraisal techniques. By seeking to incorporate the views of different actors, this process created socially robust knowledge that has since been used to create a management plan for each bathing area. Although the consultation was participative, certain constructions of expertise can be identified that illustrate how knowledge claims are prioritised. In this sense, the bathing area is constructed with respect to dominant interpretations of what knowledge matters in bathing water and beach management.

In this chapter, I examine the production of socially robust knowledge in order to uncover how legitimacy is attached to management decisions. The issues explored include beach litter and aesthetic quality, which are measured and analysed in particular ways by different actors to produce new knowledge. It is not simply the case that beach management practices follow from socially robust knowledge. Instead, the relationship between socially robust knowledge and practice is shown to be mutually constitutive. Beach management is shown to be dependent on knowledge claims that attract support from a broad range of social actors. While legitimacy is a concern for many at Silversands and La Herradura, the concept of 'robustness' is discussed further in Chapter 9 to speculate on the linguistic limits of environmental policy discourse.

Beach Litter Surveys: Socially Robust Knowledge

Within the Forth Estuary, coastal and marine litter has been identified by 'stakeholder' groups as a serious problem (FEF 2004). Control of coastal litter constitutes best practice in bathing area management and is also a requirement for several beach awards – including Seaside Awards and the Blue Flag campaign

(ENCAMS 2006; Blue Flag 2006). To manage coastal litter, Fife Council and the Forth Estuary Forum have both commissioned studies that seek to understand the extent of the problem at several popular sites including Silversands. The knowledge created by these studies is taken forward to inform future management initiatives, clean-up operations and litter awareness campaigns discussed below. In this section I describe, first, the litter survey undertaken by the Coastal Litter Campaign between 2001 and 2004, and I relate this survey to the production of socially robust knowledge. Secondly, I describe Fife Council's beach litter survey for award-winning beaches, conducted between June 2004 and June 2005. Each of these litter surveys constructs expertise in a particular way to legitimize specific claims to knowledge and support certain bathing area management policies.

Coastal Litter Campaign: May 2001 – May 2004

The Forth Estuary Forum (FEF) is a voluntary partnership of member organisations established in 1993 to support sustainable use of resources in the Firth of Forth (FEF 2004). Subscribing organisations pay an annual subscription fee to participate in projects that support Integrated Coastal Zone Management (ICZM). Corporate members include Fife Council, Edinburgh City Council, SEPA, Scottish Water, BP, Forth Ports PLC and the Royal Yachting Association. Other community groups, individuals and charities – such as the Marine Conservation Society – are invited to attend board meetings for a nominal fee. In May 2001, the FEF launched a flagship project concerning coastal litter, which involved the largest ever litter survey undertaken in the Firth of Forth, at thirty-four different beaches (FEF 2004). This project, and other work conducted by FEF, is steered by a management group that consists of representatives from member organisations. During an interview, I asked the project manager of the coastal litter project if companies and local authorities were obliged to take part in the Forum. She stated that there is no requirement to participate, but indicated that peer pressure was an important factor: 'there's not [an obligation], but I think we have most of the big players around the Firth of Forth, because I think if one opts in, then it doesn't look good if another doesn't' (Interview 7: 07/06/04).

The Coastal Litter Campaign consisted of three initiatives that ran in parallel between May 2001 and April 2004. First, a programme of education and awareness building was undertaken to raise the profile of beach litter at schools and community

events around the Forth. In a report on this phase of the campaign, Storrier (2004) claims that the travelling display was potentially seen by half a million people, including many children who took part in activities to learn about beach litter. Secondly, four coordinated beach clean-up weekends were organised at forty-one beaches, including Silversands. Volunteers were recruited for these clean-ups through interest generated from the travelling display, and through an existing network of beach volunteers coordinated by the Marine Conservation Society. Thirdly, the Coastal Litter Campaign incorporated a programme of monthly litter surveys which took place between July 2001 and December 2003. The project manager told me that volunteers were recruited for this initiative as a cost effective way of generating a large dataset:

the reason we used volunteers was to try and get a wide geographic coverage of the Firth of Forth. There was no way that I could have managed to have got around all the logistics and to get the dataset each month. So we decided to use volunteers. Whether this was to be something long-term using volunteers – I don't know if that's something that I would recommend. What we wanted to do here was use this methodology, and use this as a pilot to highlight the problem, and to show that you can see trends in litter deposition and you can use that data to maybe argue the case for running a certain campaign in a certain area (Interview 7: 07/06/04).

Volunteers recruited to conduct monthly litter surveys were issued with survey sheets to record twelve categories of litter and an identification guide for less common litter items (FEF 2004). Surveys were conducted on the first Friday or Saturday of every month, and took approximately thirty minutes to complete. The project manager told me that some volunteers were very thorough, and could sometimes spend two hours on each litter survey (Interview 7: 07/06/04). Volunteers were often the same people that took part in clean-up weekends, and were trained by the project manager to use a standardised beach litter survey method (see Velandar and Mocogni 1999). This method required a single volunteer to identify a 100m transect along the top strandline of each beach. The same transect was surveyed in each subsequent month, and volunteers were asked to record visible items of litter on 50cm either side of the transect line.

At Silversands, the project manager conducted monthly beach surveys because volunteers were not always available at each of the thirty-four beaches. During an interview with a volunteer from nearby Kinghorn, I asked whether the surveying technique was easy to learn (Interview 1: 21/04/04). The volunteer told me that the identification guide provided made it relatively easy for her to classify and record litter. On the detailed identification guide, twelve categories of litter are subdivided into specific items (Appendix VI). The survey sought to identify broad categories of litter based upon constituent materials, rather than ordering them according to their likely origins. In this way, fishing-line is categorised alongside razors as 'plastics', and surgical gloves alongside balloons as 'rubber'. Almost half (46%) of the litter recorded at all beaches during the survey was 'plastic', followed by 'sanitary litter' (11%) and 'glass' (9%) (FEF 2004).

Volunteers were instructed not to collect items of litter during surveys, but the project manager told me that some volunteers did take the opportunity to collect litter while surveying. This goes against the methodology outlined by Velandar and Mocogni (1999), but the project manager stressed that the aim of the litter campaign was to support local volunteers rather than alienating them by being overly bureaucratic in adherence to sampling rules:

we were really wanting the volunteers to go out every month, and we thought it would be very time-consuming to do the clean-up as well. So we just wanted a quick – I mean it would take me half an hour. Obviously I had experience. I know some of my volunteers would take two hours just to do the recording. Some of them would just do a beach-clean at that stage, because their focus was 'get this litter off the beach'. I am not slating anyone who did that, because at the end of the day, everyone's goal is to just not have any litter anywhere, and it's up to each volunteer how they go about doing that. And I can only offer them information and encourage them to do things. I certainly didn't want any of this to alienate anybody (Interview 7: 07/06/04).

Results of litter surveys were collated and analysed by the project manager. This analysis involved a transformation of data gathered from discreet observations of litter materials to interpretative accounts concerning the origins and causes of litter. A method of General Linear Modelling (GLM) was used to determine links between

accumulations of specific types of litter to 'discreet' variables, such as beach cleaning operations, proximity to takeaway outlets, and proximity to sewage outflows (FEF 2004). Findings indicated that beach cleaning operations at Silversands (undertaken by Fife Council) significantly reduced the amount of litter found, as compared to nearby beaches with fewer, or no, beach cleaning operations. Sanitary items of litter counted by volunteers are classed as Sewage Related Debris (SRD) in the report produced by the project manager (FEF 2004). Causes of SRD are attributed to sewage outflow pipes because periodic increases in storm discharge lead to corresponding increases in SRD. Plastic litter items – particularly those recorded as 'plastic pieces <5cm' – are described in data analysis as 'plastic pellets'. This is significant because plastic pellets discharged into the Firth of Forth have been previously attributed to one particular company (Miller *et al* 2003). By classifying small pieces of plastic in this way, the project manager invokes a storyline in which blame is again attributed to this company and Forth Ports PLC.

The project manager noted that the majority of litter recorded at Silversands was tourist and recreational litter (FEF 2004). By reclassifying the data collected by volunteers, she was able to identify plastics deposited by tourists – for example 'confectionary wrappers' – and plastics associated with fishing. This meta-analysis of litter adds a layer of interpretation to the survey that attaches varying degrees of seriousness to particular items of litter. The project manager explained to me a topography of litter tolerance, and how she sought to raise awareness of plastic pellets and cotton-buds:

litter is different things to different people. So you have some people who wouldn't be offended by seeing crisp packets and small pieces of litter on a beach, but they would be horrified if there was a burnt-out fridge, or a car or a mattress or something. Other people are specifically annoyed about cigarettes or dangerous litter, but they're not overly concerned about, again, sweetie papers. They just expect that, you know, it's the way society is. So it's quite good having the plastic pellets and cotton-buds to home-in on, and to be able to show that it's not just the big litter items that make the beach look horrible, but it's also these smaller things (Interview 7: 07/06/04).

By highlighting the importance of small litter items, the project manager in the above quote seeks to counter popular perception of litter that tends to focus on large or dangerous items of waste. Indeed, by tabulating the total numbers of each category of litter, plastic pellets and cotton-buds are placed at the top of the list because they are the most numerous. The ‘problem’ of beach litter is therefore even more serious than commonly thought. As explained to me by the project manager, an objective survey of beach litter using the technique described above, uncovers the extent of the problem and the importance of accuracy:

I could go and assess a beach and find a lot more, or a lot less litter than someone else surveying it. Because my idea of litter – I know I’m looking for tiny, tiny things. Whereas somebody who hadn’t surveyed a beach before would, like the plastic pellets, completely miss. I can guarantee I’ll find litter on a beach, even at Silversands! I’ll find some piece of litter on a beach that isn’t there when you look at it. So again, the training procedures in place for people to do that objectively, or to do it accurately, rather than just thinking ‘oh that looks clean’, and you’re standing from away back. So one person might think, well that’s actually bad, and somebody else might class it as moderate (Interview 7: 07/06/04).

By training volunteers to identify small items of waste, the litter survey is intimately linked to a particular construction of beach cleanliness that focuses on plastic pellets and cotton-buds. In a review of marine litter survey methods, Rees and Pond (1995: 103) claim that volunteers are suitable for survey work because they have no ‘political, economic or personal motives’ for influencing the data collected. Also, by using volunteers, litter surveys are able to capitalise on local knowledge of the beach (Rees and Pond 1995). Similarly, Tudor and Williams (2001) suggest that results from litter surveys in the Severn Estuary show that trained volunteers produce almost identical results to ‘experienced surveyors’. These studies are used by the project manager of the Forth Coastal Litter Campaign to argue that observations recorded by volunteers can be considered equally accurate to those made by her, or other coastal litter experts (FEF 2004). Indeed, the final report states that by interpreting data collected by volunteers carefully, ‘potential errors associated with searching

efficiency and the incorrect recording of litter items can be overcome' (FEF 2004: 29).

As discussed above, interpretation of observational data adds a layer of meaning that links observations to larger stories concerning the origins of litter. In addition to suggesting causes, the analysis of observational data also points to measures that have the potential to mitigate the problem. Because most litter recorded at Silversands was interpreted as 'recreational', measures suggested include a renewed effort to promote anti-littering campaigns, which in the past have been initiated in Scotland by Keep Scotland Beautiful and the Marine Conservation Society (FEF 2004). The report notes, however, that beaches, like Silversands, with high usage did not record the largest amounts of litter. This, it was suggested, is because the busiest beaches also have the most bins and are cleaned regularly by the local authority (FEF 2004). With regards to cotton-buds, analysis of observations is supplemented with knowledge of Scottish Water's sewerage screening facilities. The project manager suggests that a reduction of cotton-buds on beaches can be expected because of improvements in sewerage structures. But because the problem is best tackled at source, the final report states that individuals, rather than Scottish Water should be held to account. The project manager therefore suggests that better labelling of sanitary products would encourage more people to 'Bag It and Bin It', rather than using toilets to dispose of cotton-buds (FEF 2004).

The Forth Estuary Forum acted as a knowledge broker during the Coastal Litter Campaign. By interpreting observations of litter and making policy-relevant recommendations, the Forth Estuary Forum combined scientific knowledge and the policy interests of member organisations. In recent literature, as noted (see Chapter 2: 45), similar organisations that facilitate interaction between actors from two relatively distinct social worlds – scientific and policy – have been termed 'boundary organisations' (Guston 1999, 2000, 2001). It is claimed that boundary organisations work by attaching shared meaning to physical objects that then allows them to be used as a recognizable means of translation between different social worlds (Star and Griesemer 1989; Sundqvist *et al* 2002). During the Coastal Litter Campaign, cotton-buds are examples of such 'boundary objects'. As discussed above, cotton-buds and plastic pellets are used by the Forth Estuary Forum to invoke particular storylines regarding the causes of such pollutants and appropriate mitigation strategies.

Boundary organisations normally act as intermediaries between scientific experts and representatives of policy-making organisations (Guston 2001). In the case of the Coastal Litter Campaign, however, volunteers were trained by the project manager to record litter measurements in accordance with an appropriate scientific methodology. Scientific observations did not, therefore, originate from a distinct social world of experts. Instead, the Forth Estuary Forum provided resources to train volunteers; the project manager then used the results of scientific observation to create knowledge relevant for bathing area management. Unlike previous studies of boundary organisations, there was no pre-existing social world made up of beach litter experts. Expertise was created through volunteer training, and knowledge of beach litter was managed by the Forth Estuary Forum.

By reconsidering the place of people in the production of beach litter knowledge, the above discussion suggests that socially robust knowledge was created through the Coastal Litter Campaign. This knowledge was context-sensitive because it enlisted the support of many different actors familiar with beaches such as Silversands. Scientific expertise was not autonomous from the knowledge possessed by lay individuals. Instead, volunteers become litter experts during the course of the campaign. This, according to the project manager, engendered a sense of 'achievement, ownership and empowerment for local communities' (Interview 7: 07/06/04). Yet although results were produced in a way that was context-sensitive, the project manager played a central role in both training volunteers to identify particular items and interpreting results within a broader framework of bathing area management. The Coastal Litter Campaign produced a particular type of socially robust knowledge. One volunteer commenting on litter mitigation strategies, for example, explained to me that: 'we need to improve sewage works to prevent cotton-buds – something like a big sieve?' (Interview 1: 21/04/04). In this way, volunteers are enlisted both in litter surveys and specific interpretations of the litter problem at Silversands.

Fife Council Litter Survey: June 2004 – June 2005

Fife Council surveyed litter at Silversands again in June 2004, despite the recent publication of a final report on the Coastal Litter Campaign (Fife Council 2005a). The purpose of this survey was to assess litter at Fife's eleven award-winning beaches

with a view to revising beach cleaning practices. The beach manager explained to me why the Council required proven evidence of litter:

the reason that I'm doing these litter surveys this year is to find out if we have problem beaches. Because I think we know what our problem beaches are, but we don't have it documented, so it's very difficult to say: 'we need more money to do [beach] cleaning because we have this [litter] problem'. Whereas if it's not proven, then it's difficult to say: 'can we have this amount of resources?' So that's the reason why I'm doing these litter surveys, and trying to think about how, for next year, we're going to tackle beach cleaning (Interview 9: 06/07/04).

Each award-winning beach in Fife is cleaned regularly during the bathing season, in accordance with award criteria. To make this cleaning most effective, the beach manager wanted to target resources on problem beaches, and justify her approach using a documented litter survey. The method chosen to record litter was developed by the National Aquatic Litter Group (NALG), and was different from that used by the Coastal Litter Campaign. NALG is a lobbying group supported by several charitable organisations in the United Kingdom with the aim of achieving 'a quantifiable reduction in the amount of litter in rivers and the sea around the United Kingdom from domestic and international sources' (NALG 2006). The litter protocol developed by NALG grades beaches on their aesthetic quality – based on the size and severity of litter – using seven parameters listed below (Figure 8.1):

- | NALG Beach Litter Classification Guide |
|--|
| 1. Sewage Related Debris |
| 2. Potentially Harmful Litter |
| 3. Gross Litter |
| 4. General Litter |
| 5. Oil and Oil-like Substances |
| 6. Faeces |
| 7. Accumulations |

Figure 8.1: Litter Categories Identified by NALG Litter Survey (see also Appendix VII)

During the survey, each beach was assessed monthly by the beach manager using an assessment form (Appendix VII). Results generated in this way did not specify the component material of each piece of litter, but did quantify amounts of litter within each category. Additionally, the NALG protocol requires beach surveyors to make general comments regarding specific accumulations of litter. Like the survey method used in the Coastal Litter Campaign, the NALG protocol involves the selection of a 100m transect roughly at the high water strandline (Fife Council 2005a). Litter is then identified and recorded up to 5m on either side of this line. Next, the surveyor assesses the area between the high water strandline, and the current strandline – up to 50m. At regular 10m intervals along the beach transect, the surveyor walks between strandlines recording litter on 5m either side, so that the whole area between strandlines is surveyed. The project manager of the Coastal Litter Campaign explained to me why the NALG protocol would be unsuitable as a methodology for volunteers to conduct:

the National Aquatic Litter Group do a [litter] survey. It's more time consuming than the survey we use, but it produces very public friendly results, and you can basically grade your beach A, B, C, D, according to how clean or not it is. And that's certainly very easy for the public to understand. But anyone who is using it needs to be trained in this protocol just to get around the objectiveness of the whole litter issue. It could be volunteers, but again it comes down to money because it's going to be quite costly. But if it could reduce beach management costs in the future, then it would be worth it (Interview 7: 07/06/04).

Although a NALG litter survey can be conducted by volunteers, the project manager of the Coastal Litter Campaign maintains that training required would have been too costly for her project. Surveying beaches using the NALG method is more time consuming than the method outlined by Velandar and Mocogni (1999). But the results produced can be interpreted to establish a grading system that is easily understood by non-experts. Indeed, Fife Council's report of the litter survey states that the A to D grading system 'generally means a lot more than complicated figures regarding litter items per m²' (Fife Council 2005a: 3).

At Silversands, the litter recorded during monthly NALG litter surveys was predominately ‘General Litter’, although the survey that took place in January 2005 recorded cotton buds, sewage related debris and dog faeces (Fife Council 2005a). To conduct statistical analysis of this data, the council selected two methods; first, a beach grade scoring system, and secondly, a Chi-square test. The grade scoring system was based on NALG classification parameters in which the total number of observed litter items in each category determines the overall grade (Figure 8.2). A beach is then graded according to the lowest overall parameter – even if all other parameters are graded ‘A’.

Category of Litter	Grade A (Very Good)	Grade B (Good)	Grade C (Fair)	Grade D (Poor)
SRD (General)	0	1-5	6-14	15+
SRD (Cotton Buds)	0-9	10-49	50-99	100+
Gross Litter	0	1-5	6-14	15+
General Litter	0-49	50-499	500-999	1000+
Potentially Harmful Litter (Broken Glass)	0	1-5	6-24	25+
Potentially Harmful Litter (Other)	0	1-4	5-9	10+
No. of Accumulations	0	1-4	5-9	10+
Continuous Strip of Accumulations	-	-	-	Present
Oil	Absent	Trace	Nuisance	Objectionable
Faeces	0	1-5	6-24	25+

Figure 8.2: NALG Classification Parameters

Of twelve monthly surveys conducted at Silversands, seven resulted in ‘A’ grades, and 5 in ‘B’ grades. These results were then assigned a weighting – in accordance with the NALG protocol – such that grades were converted back into numbers (Figure 8.3). This weighting system converted data on a linear A-D scale to a ‘points’ system that assigned almost exponential values. Each ‘A’, for example, was awarded ten points, while each ‘D’ was awarded only one point. The effect of combining mismatched scales in this way is to exaggerate the upper end of the scale, thus imposing an ‘expert’ interpretation of beach categorisation. A weighted average calculated for Silversands awarded it eight out of ten for aesthetic quality – behind only Blacksands and Burntisland.

Scores Used to Calculate Weighted Average from NALG Beach Grading	
A	10 points
B	6 points
C	2 points
D	1 point

Figure 8.3: Converting NALG Grade into a Weighted Average (Fife Council 2005a)

Scores for aesthetic quality were then used to conduct Chi-square tests measuring the correspondence between aesthetic quality and award status. The beach manager responsible for data analysis found no significant difference between the aesthetic quality of Blue Flag beaches and that of Rural Seaside Award beaches. She did, however, conclude that there exists a significant relationship between aesthetic quality and beach situation (East Fife, Central Fife and West Fife). This relationship is characterised by decreasing aesthetic quality in eastern beaches.

Results obtained from statistical analysis were used to make recommendations concerning future bathing area management at award winning beaches. The beach manager, for example, identifies several ways in which aesthetic value could be improved based on the above findings (Fife Council 2005a). She states that a combination of mechanical and manual cleaning is ‘proven to give the highest standard of cleanliness on beaches’ (Fife Council 2005a: 10). Manual cleaning, she suggests, is more useful during winter, when a lot of litter accumulates on beaches like Silversands. Because most litter at Silversands is categorised as ‘General Litter’ associated with recreational visitors, the beach manager suggests that visitor education is required to encourage greater use of bins provided. General comments recorded on the NALG survey form were used not only to identify specific problems – such as cigarette butts at Burntisland – but also to identify likely origins of litter. In this way, qualitative commenting contributed to a meta-analysis of quantitative observations of litter frequency.

At Silversands, the litter survey highlighted that aesthetic quality does not necessarily improve during the bathing season, when the beach is regularly cleaned manually and mechanically. The beach manager explained this apparent paradox by

suggesting that an increase in visitor numbers during the bathing season results in larger amounts of recreational litter, despite regular cleaning. Outside the bathing season, results indicate that aesthetic quality at Silversands is slightly higher, although the beach manager explained to me that popular perception is not based on the same criterion as the litter survey:

we have a very rigid timetable of how the beaches are cleaned, because obviously of the cost of the machinery and the labour costs of the machinery. The machines start-out at one place and drive round the coast. And it might, I don't think this is the case all the time, but it might-well be that beaches are being cleaned and they don't have to be. And it could easily be cleaned by having a hand-pick. But there's also that public perception, that if there's anything on a beach, it's not clean. Which is something, especially that a lot of our beaches have huge seaweed inputs, as far as the awards go, as long as the seaweed isn't rotting, then it's fine to be there. But I think the public perception is that it shouldn't be there, which is something that we struggle with (Interview 9: 06/07/04).

Seaweed was not recorded in the Fife Council litter survey, and was therefore not considered in the assessment of aesthetic quality. The beach manager acknowledged that the council has a problem with public perceptions of seaweed, rather than with the seaweed itself. By measuring aesthetic quality without taking into account seaweed, the litter survey constructs a particular story of aesthetic value. Recommendations for future bathing area management are linked to this construction of aesthetic value, and the interpretations made by the beach manager.

Knowledge produced by Fife Council's litter survey cannot easily be described as socially robust in the terms outlined by Nowotny *et al* (2001). There was, for example, no consensual agreement between different groups of experts and other social actors. Observations of beach litter were recorded by the beach manager, and she was responsible for their interpretation and analysis. Qualitative commenting was used to highlight particular context-specific issues regarding beach litter at individual beaches, but this data was left out from statistical analysis to determine aesthetic quality. The beach manager employed context-specific data to make recommendations regarding future bathing area management. In the case of seaweed,

however, this data was not used to represent popular perceptions of aesthetic quality, but was instead used to create a particular construction of aesthetic value.

Nowotny *et al* (2001) claim that socially robust knowledge is increasingly required by policy makers to ensure that policies stand up to the scrutiny of social contestation. Robustness requires that scientific knowledge is produced with the support of different social groups – including non-experts. In this way, the place of people is reconfigured in the production of robust knowledge. Fife Council's litter survey was considered to be better than the survey conducted by the Coastal Litter Campaign, because the methods used were more comprehensive and results could be expressed in a user-friendly way. In this section, however, I suggest that knowledge produced during the Coastal Litter Campaign can be characterised as more socially robust. This is because a diverse group of social actors were involved in the collection of beach litter information during the Coastal Litter Campaign.

Generating Knowledge of Bathing Areas: Beach Clean-ups

I here consider how knowledge of both Silversands and La Herradura is created through beach clean-ups. Unlike litter surveys discussed above, clean-ups do not simply record observations of litter and waste along a pre-given transect. Instead, the purpose of clean-ups is to remove undesirable items of waste, recording what has been collected throughout the entire beach or bathing area. Those involved in clean-ups are not normally issued with identification guides to help classify items of litter commonly found. Clean-ups, as I demonstrate below, are open-ended processes in which participants are responsible for identifying items considered to be litter. Knowledge created by counting items of waste collected is used in beach and bathing water management, and informs how future aesthetic quality can be increased. Such knowledge is socially robust in the sense that diverse actors use their expertise to identify and collect litter. Yet as I discuss below, knowledge is used in particular ways by those in institutional authority to establish their own epistemic authority, and support particular types of bathing area management.

Seawater Aesthetics at La Herradura

At La Herradura, aesthetics of seawater are important, especially during the bathing season when hundreds of people regularly swim in the sea. Floating debris and other residue is quickly noticed, and often are reported in local newspapers (see Chapter 7:

213). Despite its importance, aesthetic quality of seawater is not a key criterion of the Bathing Water Directive, nor does it form part of the assessment procedure for beach awards – such as the Blue Flag. Presence of oil or large pieces of debris are sometimes recorded where seawater samples are collected, but these observations do not cause bathing areas to fail mandatory standards set by the Bathing Water Directive. For the municipal authority in Almuñécar, however, knowledge of aesthetic quality is required to put into practice a particular type of bathing area management. This knowledge is generated by collecting and analysing floating debris during the bathing season in an on-going clean-up operation (Figure 8.4). As discussed below, the simultaneous collection and analysis of floating debris enables the beach manager to assert his interpretation of aesthetic quality and to create a storyline for floating litter.



Figure 8.4: Seawater Cleaning Boat at La Herradura 01/07/05

In 2005, the municipal authority in Almuñécar awarded a contract, worth €30,000 to a local company called *Bagelsa Costa Tropical S.L.*, to collect and analyse floating debris. A representative from this company explained to me how two small boats are used to patrol three zones closest to the municipality's most popular beaches. He stated that both boats are equipped with nets, which are used to scoop-up floating items of litter, waste and discarded dead fish:

the boats measure six metres in length, and are two metres wide. They have two inboard 10 horsepower motors, and one reserve motor, as well as life-saving equipment and nets to drag through, and sweep, the water. The nets collect anything from plastic bags and litter to dead fish, which are discarded into the sea by fishermen because they cannot be taken to market. We have divided the coast into three sectors: One that includes the zone around La Herradura, Cantarriján and Marina del Este; the second from Playa de El Muerto to Velilla, and the third from Velilla to the municipal limit near Salobreña (Interview 11: 01/07/05 – Appendix IIIbb).

Although the 2005 bathing season in La Herradura officially began in May, the water cleaning boats operated only during the two busiest months – July and August. Items of floating debris collected by each boat were taken ashore and analysed by employees of *Bagelsa Costa Tropical S.L.*, and results communicated to the municipal authority beach manager. There is no identification guide to help classify items of litter, and collectors are not issued with instructions regarding a clean-up schedule for each of the three zones. Results are not published, but the beach manager listed for me the most common items collected:

[the boat operators] have indicated that much of the debris is wood and plastics, with some disposable metals and drinks cans, among other items. The amount of dirt increases or diminishes according to the state of the sea, the wind and the direction of drifts. That is to say, with an easterly wind, dirt increases mainly because it brings debris from parts of Motril. Marina del Este acts as a barrier and collects a lot of this waste (Interview 13: 06/07/05 – Appendix IIIcc).

The beach manager here classified litter collected into its constituent materials of wood, plastic and metal, the materials that have been collected at different bathing areas throughout the municipality. He also used his knowledge of local environmental factors to interpret observations and identify the likely source of dirt. He explained that the Marina del Este – 1km east from La Herradura – acts as a barrier for debris floating from the neighbouring municipality, Motril. The amount of dirt found at bathing areas like La Herradura depends on the direction of prevailing winds which bring debris from outside Almuñécar. A separation is thus made between beaches

littered by visitors, and bathing waters littered by outsiders. By accounting for litter in this way, the beach manager constructs a story that attributes blame to the municipality of Motril. Later, the beach manager tells me that beach visitors might be responsible for some floating debris, but he maintains that the majority is brought in by water currents – citing the large accumulations at Marina del Este as evidence (Fieldnote 26: 06/07/05).

Results produced by analysing collected debris are used by the beach manager to support his view that industries in Motril should be more closely monitored to prevent discharges of debris. In his opinion, the municipal authority in Almuñécar is battling to mitigate a problem caused by outsiders. Seawater cleaning boats are used, therefore, to both gather information about the littering problem, and reduce its impact on bathers. In an interview, I asked the beach manager why he thought it necessary for seawater cleaning boats to operate in Almuñécar, while in Motril the municipal authority did not provide a similar service. He stated that the decision to employ cleaning boats was made to ensure the safety and enjoyment of beach visitors in Almuñécar, adding that the economy of Motril is based on agriculture and industry (Fieldnote 26: 06/07/05). By making a separation between the industrial economy of Motril and the tourist economy of Almuñécar, the beach manager justified provision of seawater cleaning operations.

Seawater clean-ups provide valuable information regarding the aesthetic quality of bathing water in La Herradura. Without such information, the link between floating debris and industries in Motril could not be made. Those who collect and analyse debris contribute to the production of a story that attributes blame to outside industries rather than beach visitors. It should also be noted that seawater cleaning is itself a performance witnessed by many thousands of bathers during July and August 2005. During informal interviews with beach visitors, I found that some were unsure what exactly the purpose of the seawater cleaning boats was; others, like a gentleman from Granada, stated that the boats were a good idea to prevent people from ‘bathing in rubbish’ (Fieldnote 24: 01/07/05). Seawater cleaning boats, like other clean-ups, are a highly visible performance. The collection of floating debris contributes to the epistemic authority of the litter story constructed by the beach manager.

Knowledge produced by seawater clean-ups at La Herradura is socially robust in the sense that it enlists the support of a diverse group of social actors, and is context sensitive. Contractors working for *Bagelsa Costa Tropical S.L.*, for example,

are responsible for identifying and analysing litter collections. Yet this knowledge is used by the beach manager to construct a particular story of floating debris that supports his views concerning beach and bathing water management. In addition, the performance of seawater clean-ups gives the municipal authority added credibility among beach visitors – particularly when compared to a neighbouring municipality that is not only the source of floating debris, but which also fails to offer a similar seawater cleaning service. Socially robust knowledge, in the case of seawater clean-ups, emerged from the collection process and helped to justify continued boat patrols.

Adopt-a-Beach

Knowledge of aesthetic quality is created at Silversands through a national beach clean-up campaign known as ‘Adopt-a-Beach’. This campaign, which began in 1995, is coordinated by the Marine Conservation Society and involves approximately fifty beaches in Scotland (MCS 2006). Volunteers are enlisted to ‘adopt’ a local beach by either organising or taking part in a quarterly clean-up. Collected items of litter are categorised by volunteers, and results are sent to the MCS to be incorporated into an annual litter report. Silversands has, until recently, been part of the Adopt-a-Beach campaign. The MCS coordinator in Scotland, however, has struggled to enlist a volunteer able to organise regular clean-ups since June 2003. In an interview, he told me some of the reasons why it can be difficult to keep volunteers involved in the campaign:

a lot of my work is promoting the project, but that’s part of the ultimate ends of bringing about statutory monitoring of litter. Because currently we’re relying on volunteers to do it. So it’s a pragmatic approach. As a small charity, you’ve got to be thinking how you make your mark in terms of being able to say what you’ve achieved on a particular issue – be it beach litter. Last year [2004] we had forty-six beaches taking part in Scotland, and that was really good. The number varies each year, for all sorts of reasons – the weather is bad, volunteers can’t make it, or they drop out, like at Silversands. It just depends. But on the whole, the trend is upwards. And obviously you never lose sight of the long-term goal, which is stamping-out marine litter (Interview 15: 13/10/05).

The MCS coordinator in Scotland states the importance of remaining pragmatic with regards beach clean-ups organised by volunteers. The Adopt-a-Beach campaign is an initiative organised by a small charity, and the coordinator is quick to point out that it must find the best way to bring about change given limited resources. He states that the eventual aim is to do away with volunteers in place of statutory monitoring – similar to the monitoring of bathing water quality. Volunteers currently provide data that enables the MCS to lobby for this particular goal.

The 1990 Environmental Protection Act in Scotland includes a ‘Code of Practice on Litter and Refuse’ that applies to beaches (EPA 1990). This code requires local authorities to clean all beaches under their ownership, regardless of beach award status. It is, however, the local authorities’ decision as to the level of cleanliness deemed most appropriate. By conducting regular litter clean-ups, the Adopt-a-Beach campaign is designed, in part, to increase pressure on local authorities to adhere to the spirit of this legislature (MCS 2004). The MCS notes, however, that beach cleaning operations can only be a short-term solution to the ongoing litter problem (MCS 2004). Citing academic studies of beach litter, the MCS claims that litter can be easily replenished within three months from offshore sinks, coastal currents and beach users (Garrity and Levings 1993; Fanshawe and Everard 2002; MCS 2004). Tackling litter therefore requires ‘holistic’ beach management that addresses the problem at source (MCS 2004).

At Silversands, the Adopt-a-Beach campaign ended in 2003 because volunteers could not be found to continue clean-ups. Prior to this, Silversands was cleaned by the project manager of the Coastal Litter Campaign (see above). She explained to me that the links between her campaign – supported by the Forth Estuary Forum – and Adopt-a-Beach were so close that it made sense to share information and coordinate volunteers jointly:

some of my groups would do litter surveys under the Marine Conservation Society’s Adopt-a-Beach campaign as well. And those people would understand the importance of clean-ups, because they understand if we need to show there’s a problem, we need to be able to provide facts and figures and keep lifting litter from beaches. Which is why what the Marine Conservation Society do is so good. And they are taken seriously, and their data is taken seriously. So some of

the volunteers in the Firth of Forth understand and appreciate that (Interview 7: 07/06/04).

As a result of the close relationship between the two projects, fifteen beaches not normally 'adopted' were included in the Adopt-a-Beach campaign between 2001 and 2003, including Silversands. The method used to observe and analyse beach litter is different from that used by Fife Council or the Coastal Litter Campaign in their litter surveys. While the above surveys sought to record items of litter in-situ, the Adopt-a-Beach campaign involves the collection of litter for analysis and eventual disposal or recycling. Adopt-a-Beach is an ongoing campaign that seeks not only to understand litter, but also to remove it from beaches.

Volunteer organisers of Adopt-a-Beach clean-ups are sent an 'Organiser Pack' that includes survey sheets and guidance on methodology and health and safety. Using this pack, organisers are asked to train other volunteers to participate in clean-ups. Litter identification guides based on the surveying method used by Velandar and Mocogni (1999) are issued to volunteers (see above; MCS 2004). The use of this identification guide means that results translate easily to the survey conducted by the Coastal Litter Campaign (FEF 2004). For the Adopt-a-Beach campaign, however, the identification guide is slightly simplified, and includes an additional category – 'faeces'. During an interview, the MCS coordinator in Scotland explained to me that the identification guide can sometimes make surveying overly complicated:

I know there's a lot of beach cleaning that takes place, and there's groups that are well aware – they've been beach cleaning for years – they're well aware of the Adopt-a-Beach project and so-on, but choose not to take part because they're quite happy with their local beach cleaning. And I'm sure there are many groups like that who are concerned about the beach litter, clean the beach, but choose not to do the survey. Surveying is time consuming and for some the identification form is too detailed. So we need a balance, and I suppose my role is to make as many groups as possible aware that they can add value to what they're doing by doing our projects and by getting information this way (Interview 6: 01/06/04).

For the MCS coordinator, beach cleaning itself has inherent value that can be supplemented if the items collected are recorded using a common identification

guide. The methodology used is based on the established litter surveying techniques used in the Coastal Litter Campaign. But stringent surveying rules are relaxed to encourage broader participation. Other litter surveys, for example, require just one trained volunteer to survey a predetermined beach transect (see above). The Adopt-a-Beach campaign encourages volunteer organisers to enlist the support of friends, family, colleagues, clubs, and schools – ‘the more the merrier!’ (MCS 2005b). Organisers are requested to conduct surveys, whenever possible, after high tide along a stretch of beach over 100m in length. Litter can be collected anywhere between the current water mark and the edge of the useable part of the beach – sand dunes, sea wall or promenade. Volunteer organisers are encouraged to collect litter from as much of the beach as possible, as long as the total length of the surveyed area is recorded (MCS 2005b).

Data collected during Adopt-a-Beach litter collections is recorded using categories that divide items of beach litter by their constituent materials. In addition, the total weight of litter collected is measured. Results are sent to the MCS and analysed according to both material type and probable source. The task of identifying sources for many litter items is described as ‘complex’ (MCS 2004: 25). But the analysis process identifies six specific sources that can be attributed to items of litter in many cases ‘with a high level of confidence’ (MCS 2004: 25). These sources are listed below (Figure 8.5).

- | |
|---|
| <ol style="list-style-type: none">1. Beach Visitors – cigarette butts, animal faeces, plastic bottles, etc...2. Fishing – buoys, crab pots, fishing line, etc...3. Sewage Related Debris – cotton buds, nappies, other sanitary items, etc...4. Shipping – industrial packing, aerosol cans, oil drums, etc...5. Fly-tipped – appliances, car parts, furnishings, etc...6. Medical – syringes, other medical items, etc... |
|---|

Figure 8.5: Litter Sources Identified by the Marine Conservation Society (MCS 2004)

Analysis of 2004 data revealed that beach visitors account for 38.6% of beach litter found on surveyed beaches in the United Kingdom (MCS 2004). Other notable sources of litter included Fishing (14.1%), Sewage Related Debris (9.3%) and Shipping (2.2%). In Scotland, the proportion of Sewage Related Debris was found to

be significantly higher than other regions. Cotton buds accounted for 87% of Sewage Related Debris, and almost half these were found at Saltings in West Dunbartonshire (MCS 2004). The MCS coordinator explained to me that Adopt-a-Beach does not claim to produce 'robust' results, and although 2004 data was skewed by one beach, findings produced are still valid and important:

the litter counts don't claim to be robust, and we don't have trained professionals. The important thing is, not that the data is representative, because it depends on who is picking up litter and when the collection takes place. What's important is that we raise awareness, and I think the survey does that (Interview 14: 13/10/05).

The Adopt-a-Beach campaign raises awareness of beach litter by encouraging volunteers to conduct surveys and by producing data that can be used to lobby those responsible for discharging or managing litter sources. By categorising litter into the above six sources, the MCS creates a persuasive story that contributes to its campaigning work. Recommendations made as a result of Adopt-a-Beach 2004 are broadly divided according to identified sources of litter. In relation to Sewage Related Debris, for example, the MCS recommends that national and community-based educational campaigns should be given funding to encourage the appropriate disposal of sanitary waste. In addition, private sewage outfalls and sewer overflows should be identified and screened to prevent the discharge of sewage related debris (MCS 2004). These, and other recommendations, are intricately bound together with a particular analysis of data. In this way, results both inform and support the campaigning work of the MCS, and its eventual aims of statutory litter monitoring and clean beaches.

Although Silversands has not been part of Adopt-a-Beach since 2003, the campaign continues to affect bathing area management at all beaches. The close involvement between Adopt-a-Beach and the 2001 – 2004 Forth Coastal Litter Campaign has meant that the beach manager at Silversands is highly aware of both litter clean-ups and the recommendations made by the MCS. During an interview she explained to me how she intended to adhere to one MCS recommendation, by providing support for volunteer groups:

certainly things like [Adopt-a-Beach] make people think more about their beach environment, or local environment. So I mean they're really good projects for doing that. I think because the Marine Conservation Society is a charity, its always struggling for money. It's difficult to keep up the momentum sometimes in some of these projects, and hopefully that's where, if [Fife Council] got a group of local people together at Silversands, and we were supporting them, we'd be able to keep things like that going (Interview 9: 06/07/04).

In many cases, local authorities have provided bin-bags, gloves and disposal facilities for litter collected during Adopt-a-Beach clean-ups. The MCS wants to strengthen these links both to support its campaign work and raise awareness of beach litter (MCS 2004). At Silversands, the beach manager would like to include local volunteers in future bathing area management plans, and this can be done by maintaining links with the Adopt-a-Beach campaign.

Litter collections described above produce socially robust knowledge of beach litter. The Adopt-a-Beach campaign involves a diverse group of individuals, trained to conduct litter surveys using an established method. But the campaign is more than a nationwide litter survey. Beach litter is collected both to gain knowledge of pollution sources, and to increase the aesthetic value and safety of beaches for humans and animals. Knowledge produced is context sensitive because volunteers are normally 'local' people cleaning their favourite beach. Yet the campaign coordinator admits that results are not 'robust' because volunteers lack professional training. Clean-ups do not adhere to the strict rules of litter sampling, described above in relation to other litter surveys. But this lack of expertise and professional conduct does not diminish the usefulness of results produced, or the awareness that is raised among volunteers. The Adopt-a-Beach campaign produces knowledge that increases the epistemic authority of the Marine Conservation Society. Although socially robust, knowledge of beach litter is created to support particular lobbying interests, and to highlight specific sources of marine litter.

Beach Management and Participation

In addition to beach litter surveys and collections, knowledge of Silversands was generated in 2004 using Participatory Appraisal methods facilitated by

representatives from Fife Council. This project was designed to allow both beach visitors and local people the opportunity to contribute to new beach management plans. The beach manager explained to me why they planned to use participatory methods during this project, as opposed to more traditional types of community consultation, like public meetings:

the problem is that in the past, public meetings aren't very successful with engaging everyone in the community. You get the sort of people who have a very strong opinion. And then you get people who maybe do have an opinion, and maybe do use the beach a lot, but wouldn't come along to a public meeting. So to overcome that, as opposed to having a public meeting, what I've tried to do is use a technique called Participatory Appraisal; which is more informal and will allow us to chat with more people. You go to the beach and the local pub and the local supermarket, and you get the unreachable people that wouldn't come along to a public meeting. So it's trying to get a much broader scope of the community and their views (Interview 9: 06/07/04).

For the beach manager, participatory appraisal methods are a means to engage with people who would not normally attend public meetings. In future management plans, the beach manager aims to use more inclusive community engagement to make better management decisions. For her, participatory methods are the first stage in creating a 'Beach Management Advisory Committee' that would consist of volunteers recruited during the initial participatory appraisal project (Fieldnote 4: 26/08/04). Volunteers can then contribute to beach management at Silversands by using their knowledge of relevant issues. The beach manager explained to me the type of issues that might arise from a volunteer advisory committee: '[volunteers can] review the beach, so that if they're feeling that the information board is looking a bit tatty, or if it's not being updated as often as it should, they can raise that, and then we would obviously take that forward' (Interview 9: 06/07/04).

The participatory appraisal project began in August 2004, when seven employees of Fife Council and I met to plan how we might best engage with people interested in the management of Aberdour's beaches – Silversands and Blacksands (Fieldnote 4: 26/08/04). Together, facilitators created a detailed project plan that identified both the people we thought should be invited to participate, and the most

appropriate methods of participatory engagement. Groups of potential participants were first identified diagrammatically, using circles of paper of different size to indicate the perceived importance we attached to each group (Figure 8.6). Circles were arranged by placing groups of greatest importance closest to the centre, and more peripheral groups further away. The resulting diagram was then used to identify the methods most likely to engage with each of the groups identified. Participatory mapping, for example, was used to engage with children at Aberdour Primary School. And 'H' diagrams were used to identify and discuss beach issues with all age-groups at different sites throughout the town and at both beaches (see Appendix VIII).



Figure 8.6: Planning Participatory Appraisal for Silversands, 26/08/04

Consultations were facilitated by each of the eight members of the planning group during three days in September and October 2004. On each of these days, a small display, staffed by members of the planning group, was erected at both Silversands and Aberdour community centre. Other participants were sought in several locations, including the coastal path, local shops and Aberdour Castle. In addition, a feed-back day was organised in Aberdour's community centre in October 2004 (Figure 8.7). During feed-back, the issues raised by all participants were further discussed and prioritised using methods such as 'matrix scoring' and 'pair ranking'

(Fieldnote 10: 07/10/04; for participatory methods see also Kesby 2000; Campbell 2002). Results of the consultation were collated by one member of the planning group – the beach manager of Silversands – and published in a Community Consultation Report by Fife Council (2005b). All participants were invited to enlist in a future beach advisory committee. Approximately thirty people indicated an interest in being part of this committee, but it has not yet been formally established.

**tell us your views on
Aberdour's
beaches**

**a chance to see the
consultation so far and
add any more
comments**

drop in (between 6 - 8pm)
Thursday 7th October 2004
Aberdour Community Centre
9 Shore Road

refreshments will be provided

Fife  **COUNCIL** Contact : Suzanne Somerville
on 01592 741212

Figure 8.7: Advertisement for Feed-Back Day

'H' diagrams are commonly used to generate a list of good and bad features of a particular place or issue, and an overall indication of participant approval (Wadsworth 2001). In the 'H' diagram used during beach consultation, participants were asked 'how good are Aberdour's award beaches?' on a scale from 1 to 10 (see Appendix VIII). On a copy of the diagram, each participant listed factors that they thought were good about the beaches on the right, and bad on the left. A space in the middle of the diagram was reserved for participants to suggest measures that might improve Silversands and Blacksands. A hand-drawn map above the 'H' diagram was included to allow participants the opportunity to mark particular features or issues of

concern. Below the 'H' diagram, participants were asked to indicate the months during which they are most likely to visit Aberdour's beaches, their favoured state of the tide and their willingness to be part of a Beach Advisory Committee. The reverse of the survey form was used for participants to indicate their sex, age-group and town or place of residence (Figure 8.8).

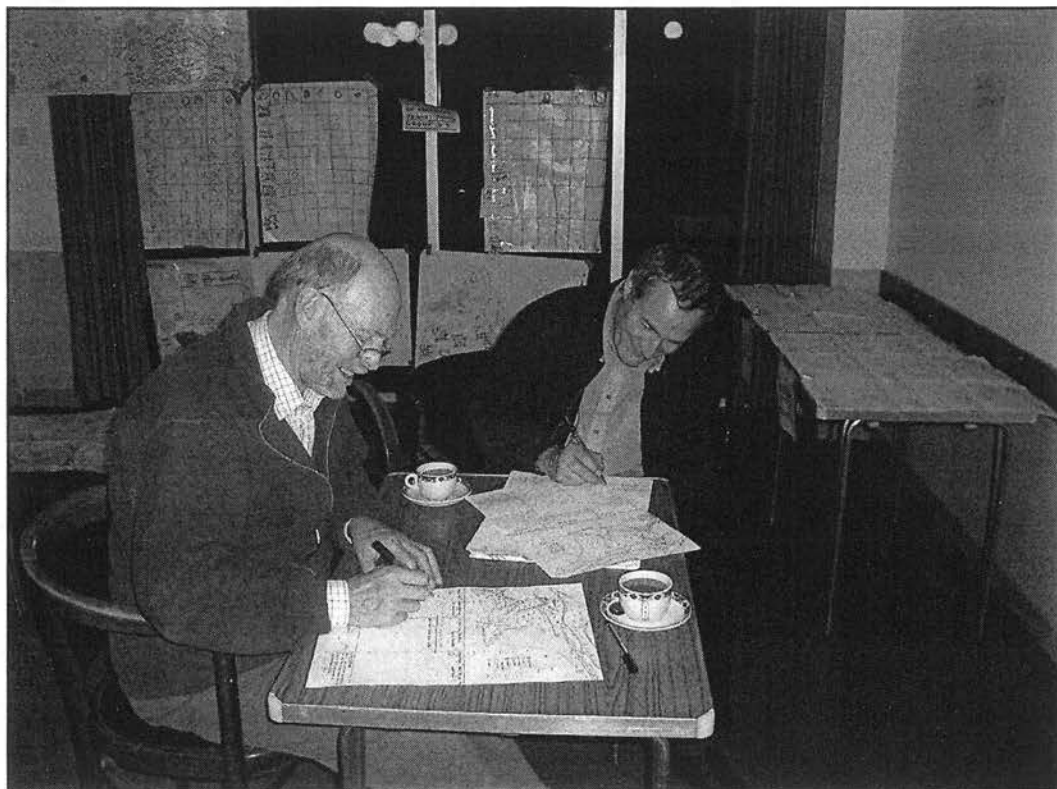


Figure 8.8: Participants Complete 'H' Diagrams at Community Centre, 07/10/04

Over 200 'H' diagrams were completed during three days of consultation and one feed-back day. As facilitators, our initial intention had been that participants, whenever possible, would complete the survey-form themselves, using their own words to express issues considered to be most important. On many occasions, however, survey-forms were completed by facilitators because participants were either confused by the 'H' diagram, or reluctant to record their own views. Opinions recorded on 'H' diagrams were categorised by the beach manager, and summarised in the final consultation report (Fife Council 2005b). Comments received during pupils' participative mapping at Aberdour Primary School were added to the results generated during the 'H' diagram consultations (Figure 8.9). These results indicate that 22% of participants liked the cleanliness of Aberdour's beaches; 22% liked the

peacefulness and natural beauty of beaches; 18% liked beach activities and 17% liked beach facilities. Within the 'cleanliness' category, comments related to litter-free sand, good water quality and well-maintained bins (Fife Council 2005b).



Figure 8.9: Participatory Mapping at Aberdour Primary School, 26/09/04

With regards to dislikes, participants' comments were again categorised by the beach manager. Results indicate that 18% of participants felt there was nothing dislikeable about Aberdour's beaches; 16% disliked the lack of facilities; 10% disliked toilet provision; 7% disliked dog management policy; and 3% disliked mechanical beach cleaning. Within the 'litter' category, comments highlighted the presence of broken glass, the debris from used barbeques and the difference between beach cleaning policy at Silversands and Blacksands. Comments relating to dog policy criticised breaches in the dog ban at Silversands and the lack of any ban at Blacksands. In terms of mechanical beach cleaning, participants commented that too much sand was being eroded from Silversands by mechanical sifting.

Ideas for improvements at Aberdour's beaches were again categorised by the beach manager in the consultation report (Fife Council 2005b). Results indicate that 16% of participants said no improvements were needed; 11% wanted more beach

information; 9% wanted better toilet facilities; 4% suggested more dog controls; 3% wanted cleanliness to be improved; and 2% suggested that provision of shower facilities would improve the beaches. Within these categories, the beach manager summarised some ideas for beach improvements. These included comments suggesting more bins, better enforcement of the dog ban and more information about water quality and wildlife (Fife Council 2005b).

Knowledge produced during the above participatory appraisal project was socially robust because it incorporated the views of many different social actors in a way that was context-sensitive. Unlike beach litter surveys, the data produced was largely qualitative. This allowed a large number of participants to express their views on issues that mattered to them most. Despite the apparent open-endedness of the consultation, the data was produced and interpreted in particular ways defined by facilitators and the beach manager. 'H' diagrams, for example, required participants to express their opinions in binary terms. Data expressed in this way does not convey the strength of feeling that some participants might have regarding a particular beach issue. In some cases, 'H' diagrams enabled participants to express their expertise on issues such as mechanical beach cleaning, or sources of beach litter. But this expertise was largely lost because survey forms were anonymous, and were grouped together to give equal value to each response during data analysis. While the approach was intended to be egalitarian, it meant that responses from participants visiting Silversands for the first time were given equal value to responses from participants with many decades of experience at Aberdour's beaches.

Analysis of qualitative data collected using 'H' diagrams and participatory mapping converted what was sometimes rich data into categories that were quantified to produce different meanings. Comments regarding different sources and types of litter were grouped together under one heading that was labelled 'litter'. This largely erased the richness of data gathered, although the beach manager did summarise some 'soundbite' comments in an appendix to the final report (Fife Council 2005b). New meanings created from quantitative data are exemplified by the percentage values assigned to likes, dislikes and ideas for improvement. Silversands was awarded an overall rating of 7.8 out of 10, and a large proportion of participants stated that no improvements were required. Expressing the results of data analysis in this way produced recommendations that were linked to categories identified by the beach manager. While knowledge produced is socially robust, it also serves to establish the

epistemic authority of the beach manager – and to a lesser extent facilitators – for whom results provide the basis for future management decisions.

Socially robust knowledge, according to Nowotny *et al* (2001), incorporates consensual agreement between experts and other social actors in a way that is context-sensitive. Information generated during participatory appraisal of Aberdour's beaches forms the basis of both knowledge of beach user perceptions and knowledge of the beaches themselves – including Silversands. Different perspectives were ordered in a particular way to best suit those involved, establishing both epistemic authority and new knowledge. The division between knowledge of perceptions and knowledge of the beach was not significant because consensually-agreed knowledge of beaches was bound together with perceptions of experts and other social actors. This is emphasised by the quantification of results during the participatory appraisal project, which depersonalised many of the comments recorded (Fife Council 2005b). Rating Silversands out of 10, for example, produced knowledge that determined the most appropriate level of cleanliness, the sufficiency of litter bins and the best-suited cleaning methods. This knowledge is context sensitive, and was produced by consensual agreement, but the beach manager and project facilitators were responsible for creating, managing and using this knowledge in particular ways.

Conclusion

In this chapter, the production of bathing area knowledge has been considered with reference to recent academic literature concerning what has been termed 'social robust knowledge' (Nowotny 1999, 2003; Nowotny *et al* 2001). Using different examples of data collection and analysis, I demonstrate how some knowledge used in beach management enlists the support of a broad range of social actors. This means that traditional divisions between expert and non-expert knowledge are blurred as the autonomy of scientific expertise is called into question. The place of people in the production of knowledge is therefore reconfigured so that social divisions between different groups of actors are less pronounced than they might first appear. Although some knowledge of bathing areas is socially robust, I demonstrate that certain actors seek to construct expertise in specific ways to produce knowledge that establishes epistemic authority. In this way, knowledge that can be characterised as socially robust can also be subject to sociological critique to uncover how expertise is enlisted to support particular policy outcomes.

At Silversands, knowledge of the bathing area has been created by volunteers and by the local authority employing different surveying techniques. During the 2001 – 2004 Coastal Litter Campaign, the Forth Estuary Forum facilitated the training of volunteers to use a widely recognised surveying method (Velandar and Mocogni 1999). This produced socially-robust knowledge in the sense that volunteers conducted context-sensitive observations that produced data that was analysed by FEF and presented to policy making organisations, like local authorities. It was argued that the role of FEF was similar to that performed by boundary organisations identified in the academic literature. In the beach litter survey, however, actors involved in the boundary organisation process did not originate from one of two relatively distinct social worlds – scientific and policy. Instead, volunteers were trained to conduct scientific assessments of beach litter, and became litter experts during the course of the campaign. Expertise developed included the ability to identify small items of litter – such as cotton buds and plastic pellets – not normally ‘visible’ to an untrained passer-by. In this way, the boundary organisation – FEF – was responsible for training and enlisting experts in support of litter storylines based on particular interpretations of cleanliness.

Unlike the Coastal Litter Campaign, the litter survey conducted by Fife Council in 2004 – 2005 did not produce knowledge that can easily be described as socially robust. This survey was conducted solely by the beach manager using a more complex technique developed by the National Aquatic Litter Group. Although results of this litter survey were expressed in a ‘public-friendly’ way, there was no opportunity to contribute context-sensitive knowledge from socially diverse actors. Nevertheless, both litter surveys can be subject to sociological critique to reveal how expertise was constructed with regards to particular interpretations of bathing area cleanliness. By doing this, I uncovered how the FEF litter survey was used to increase awareness of small litter items, and the litter survey using the NALG method was used to campaign for greater seaweed tolerance.

Beach clean-ups were shown to be different from the above surveys because the priority is to first remove litter, and then to analyse debris collected. At La Herradura, seawater cleaning boats were used by the municipal authority to collect and analyse floating debris. Knowledge created as a result was used by the beach manager to establish his expertise regarding debris discharge and seawater aesthetic quality. Seawater cleaning was also a highly visible performance that was viewed by

many hundreds of beach visitors. In this way, knowledge produced enlisted the support of many different social actors who witnessed the seawater cleaning process. It was, however, the beach manager who used newly-established epistemic authority to justify ongoing seawater cleaning and to lobby neighbouring municipal authorities.

At Silversands, the Adopt-a-Beach campaign invited volunteers to conduct quarterly beach clean-ups using a simplified survey method similar to that used by the Coastal Litter Campaign. Surveying rules were relaxed to avoid deterring potential volunteers. Knowledge produced was found to be socially robust because it enabled volunteers to use newly acquired expertise to both clean the beach and generate litter data. It was, however, the Marine Conservation Society that analysed observational data to produce knowledge useful in its campaigning work. By creating volunteer experts, the MCS was able to lobby local authorities and litter producers based on its interpretation of cleanliness and best management practice. The rhetorical message forwarded by the MCS challenged would-be litter experts to do better than its own team of volunteer experts.

The topography of expertise of bathing areas was found to be flattened during a participatory appraisal project at Silversands during 2005. In this project, facilitators used participatory methods to discuss issues relating to bathing areas with diverse social actors. In this case, knowledge produced was socially robust, but quantification of results created new meanings of both expertise and beach cleanliness. The beach manager was thus able to use the participatory project to increase her expertise of the bathing area, and to support particular ideas of beach cleanliness and best practice.

In this chapter, the connection between socially-robust knowledge and practice has been shown to be reciprocal and mutually constitutive. Seawater cleaning, for example, both produced socially-robust knowledge and was supported by that knowledge. This reciprocal relationship produced a particular type of expertise that was based on ideas of bathing area cleanliness and best management practice. In the case of the Adopt-a-Beach campaign, for example, both expertise and socially robust knowledge were created during beach litter clean-ups. In the next chapter, I conclude the thesis and reflect on the discursive limits of terms such as 'robust knowledge' used in this and other chapters.

Conclusions and Reflections

An Opportunity for Reflection: Introduction and Chapter Outline

This thesis presents the results of an investigation into the production of clean bathing water and the production of two bathing areas between 2003 and 2006. It has engaged with literature in geography, science studies and environmental policy and focused on five specific research questions derived, in part, from this literature. While the focus of research has remained necessarily narrow, this chapter returns to wider issues to explore how a study of two bathing areas can contribute to current academic debates. In addition to summarising the main findings, the aim of this chapter is to stand back from my research with a critical gaze and to look outwards in light of findings discussed in Chapters 4-8. In doing so, the chapter provides an opportunity to summarise and reflect on key debates within the thesis. Additionally, the chapter reflects on the rhetorical limitations of environmental policy discourse, and describes possibilities for future research.

The chapter is divided into three further sections. In the first, I summarise the principal research findings in the context of current debates in geography, science studies and environmental policy. Secondly, I reflect on some of the discursive and methodological limitations of the thesis. In this section, I give particular attention to the terms 'robustness' and 'participation'. Although earlier chapters considered the meaning of such terms, I here reflect on the limitations of adopting terminology that I have sought also to rework. Thirdly, I discuss possibilities for new research that might emerge as a result of this thesis. In relation to bathing waters, I describe how future research might question the links between the revised Bathing Water Directive and the Blue Flag campaign. Further research might also engage with the materiality and symbolic importance of flags in different contexts, or develop new geographies of dirt, pollution and disposal.

While this thesis began by investigating the production of clean bathing waters at two specific sites, research questions increasingly involved consideration of beach management practices that extended beyond the seawater itself. Chapter 8, for example, considered the production of beach knowledge resulting from litter surveys

that were undertaken by different groups of people at Silversands. Although beach litter might not appear to be immediately linked to seawater quality, the argument I have presented in this thesis is that beach management practices cannot be considered in isolation. As I have demonstrated, beach litter is intimately connected to seawater quality through beach awards based on the Bathing Water Directive. In this way, Chapters 4-8 presented one interpretation of how clean bathing waters are produced at Silversands and La Herradura using a relational ontology that focussed on management practices. In this concluding chapter, I hope to argue that while others may interpret the production of bathing waters differently, practices of beach management provide an opportunity to examine the emergence of social interactions relating, for example, to questions of expertise. In terms of future research, this chapter suggests that new interpretations of bathing waters might be explored and that an examination of 'practice' might usefully be employed by social scientists interested in environmental policies beyond bathing waters.

Research Findings: Two Types of Environmental Politics

This section critically reflects on key findings to have emerged in response to research questions outlined in Chapter 2. It describes links between empirical research material specific to Silversands and La Herradura and broader themes in geography and science studies. While the thesis has avoided direct comparison of beach management practices at each fieldsite, this section stands back from the empirical to reveal two very different types of environmental politics in Scotland and in Spain. Reflecting on the contrast between consensus politics and confrontational politics, this section summarises what has been uncovered by contrasting top-down European bathing water policy and bottom-up practices of beach management informed by different political cultures – what Jasanoff (2005) terms 'controlling narratives'.

My first research question asked 'how can the EU Bathing Water Directive, a top-down policy, be situated alongside bottom-up practices of beach management at each fieldsite?' Engaging with literature that identifies 'ecological modernisation' and 'environmentality' in discursive studies of environmental policy since the 1970s, Chapter 4 asked whether similar rationalising trends could be traced in bathing water discourse. Furthermore, the chapter asked whether rationalising trends in environmental discourse led directly to a rationalisation of beach management practices. By conducting policy discourse analysis, I found that a tension exists

between the top-down Bathing Water Directive and practices of beach management that do not follow directly from European policy.

The Bathing Water Directive, which applies equally to Silversands and La Herradura, did not result in similar beach management practices at each bathing site. What I found was that scientific measurement of bathing water is a socially-constructed activity. Instead of being a universalistic practice undertaken identically at each of 13,000 bathing areas (which is the intention of the Bathing Water Directive), I found that the performance of scientific measurement was key to establishing the legitimacy of EU policy. At Silversands, for example, the regular presence of microbiologists at the beach confirmed for many the reliability of water quality information produced by SEPA.

Instead of encompassing beach management, the Bathing Water Directive was only one component of beach management policy at Silversands and La Herradura. The management practices associated with seaweed and floating litter debris, for example, were shown to be based on interpretations of bathing area cleanliness that did not result directly from top-down bathing water legislation. To understand the emergence of beach management practices required a greater understanding of how cleanliness was socially constructed. In this way, environmental politics in both Scotland and Spain explain, in part, why bathing areas are not managed in the same way at different locations despite the Bathing Water Directive.

In response to my second research question – ‘what are the bottom-up practices of beach management that can be identified at Silversands and La Herradura?’ – Chapter 5 explored how cleanliness is constructed differently by different groups of people at Silversands and La Herradura. Chapter 5 concluded that coexisting constructions of cleanliness bring about very different types of beach management. Using ethnographic research and interviews, the chapter described five different beach management practices that were linked to issues of seawater quality. Dog exclusion zones, for example, though not a direct result of the Bathing Water Directive, have been created at Silversands and La Herradura in accordance with concerns for beach cleanliness. Despite both beaches having dog exclusion zones, what I found in Chapter 5 was that two distinct types of environmental politics were emerging at Silversands and La Herradura. In the Scottish context, the impulse to tidy Fife’s coast resulted in zoned areas for dog exercise and for safe bathing. This

impulse, which is investigated further in Chapter 8, was less important in the Spanish context, where *laissez-faire* restrictions on dog access were often flouted.

In identifying the bottom-up practices of beach management, Chapter 5 found that environmental politics at Silversands are informed not only by an impulse to tidy, but also by a pervasive view that groups should work together to achieve consensus on what constitutes good beach management. This was exemplified at Silversands by the annual beach award ceremony and by the beach passport scheme. Both of these initiatives required input from microbiologists, beach managers, coastal conservation groups and beach visitors. Consensus was reached at Silversands through a supposedly open and rational process that ostensibly could be influenced by any group or individual. Management goals were thus delivered by enrolling beach visitors and others into a consensus driven environmental politics that achieved broad support. The efficacy of this particular 'ecological modernisation' was informed, in part, by prevailing concerns to 'tidy' Fife's coast.

In contrast to environmental politics at Silversands, Chapter 5 revealed that in the Spanish context, beach management was not driven by the need to achieve consensus. In the case of La Herradura, a dog exclusion zone existed but was not policed according to international guidance of best practice. Instead, beach wardens only enforced the dog exclusion zone when pressure was brought to bear in the local media. Similarly in the case of the San Juan festival, during which thousands of beach visitors flouted beach regulations, there was a contrast between two types of beach management: the official beach management practices and the practices that reflected the view of many beach visitors. This, as explored more fully in Chapters 6 and 7, led to a confrontational politics that was evidenced by sometimes fierce debate concerning the appropriateness of certain beach management practices and the overall level of cleanliness at beaches.

My third research question asked 'how is bathing water quality created, maintained and represented at each fieldsite?' In response to this question, Chapter 6 investigated the case of beach flags at both Silversands and La Herradura that signify different interpretations of beach cleanliness. The Blue Flag campaign at Silversands, for example, allowed certain waivers to be applied in abnormal weather conditions to maintain the management goal of achieving the award each year. The Blue Flag itself occupied a prominent position both on the beach and in promotional literature. It acted to influence bathers and was used as a proxy for the Bathing Water Directive,

offering tacit support for European environmental policy. Chapter 5 discussed how the act of 'flagging' was the simultaneous deployment of symbolism and materiality that served to connect the material and the cultural.

At La Herradura, conservationists adopted a Black Flag to symbolise badly managed and dirty beaches. This interpretation of cleanliness, which was based on a different annual measurement, was used by conservationists to both highlight their concerns and to oppose the Blue Flag campaign. The environmental politics uncovered by investigating the Black Flag campaign again demonstrate the confrontational way in which different views were expressed at La Herradura. Instead of attaining management goals through consensus, environmental politics were characterised by the often heated confrontations between opposing groups. As discussed in Chapter 6, the Black Flag campaign originated in Andalusia and is supported by student-led conservationist groups in major cities throughout Spain. Historically, black flags in Spain are more commonly associated with the anarchist movement that was particularly strong in Andalusia prior to the civil war. For this reason, the choice of black flag to signify badly managed beaches is a politically motivated decision that reflects and maintains the division between what are now considered to be the 'left' and 'right' of Spanish politics.

Chapter 6 additionally described how the municipal authority in Almuñécar boycotted the Blue Flag campaign because of differences with the Blue Flag awarding body (ADEAC) concerning assessments of beach cleanliness. This confrontation introduced a more complex picture of the environmental politics found at La Herradura. Instead of a two-way confrontation between conservationists and beach managers, there existed a simultaneous confrontation between the municipal authority and national agencies working in the context of Europe-wide regulations. By boycotting the Blue Flag, the municipal authority asserted its interpretation of beach cleanliness. Within geography, an emerging literature concerning the importance of 'absent-presence' has begun to question how waste disposal practices are conceptualised (Hawkins 2001; Hetherington 2004). Chapter 6 engaged with this literature by considering how environmental politics has led to the absence of a Blue Flag. In this way, Chapter 6 contributes to a growing body of work interested in social relations influenced by disposed and unwanted objects.

My forth research question asked 'what happens when different interpretations of water quality exist?' As described above, environmental politics at La Herradura

were characterised by confrontation between different groups interpreting beach and water quality differently. Chapter 7 investigated uncertainties in expert knowledge further by engaging with recent literature that describes how science is increasingly unable to account for industrially-produced risks in society (Beck 1992, 1995; Giddens 1994). Even at Silversands, where environmental politics were characterised by consensus between different groups, interpretations of water quality provided a focus for dissent between groups that supported the same management goals.

Chapter 7 described how coastal conservation groups in Scotland produced their own guides to bathing risk largely because they viewed SEPA's official interpretation as unreliable. The Marine Conservation society, for example, publishes an annual *Good Beach Guide* in which it recommends bathers to beaches in Scotland where water quality is likely to be least affected by sewage disposal. In contrast with the Blue Flag campaign and other seaside awards, the *Good Beach Guide* did not recommend Silversands because of the risk that a nearby outflow pipe might cause sewage related pollutants to increase at Silversands. In the course of my research, however, I found that this conflict was eventually resolved when agreement was reached between conservationists and Scottish Water. While conservationists claimed that campaigning brought about improvements in water quality, the outcome also helped to achieve management goals by maintaining consensus.

Given the uncertainty in accounting for bathing risks at Silversands and La Herradura, Chapter 7 explored the possibility that a broader group of people might participate in beach management by offering alternative accounts of risk. Using the example of electronic bathing water information boards in Scotland, Chapter 7 explained how real-time advice concerning bathing risk cannot easily be obtained. While models of diffuse pollution were used by the environmental regulator to increase its ability to describe bathing water risks, such models were shown to create further uncertainty because of the risk that the model and associated instrumentation might fail. Chapter 7 also described how conservationist groups encourage bathers to report incidences of ill health that resulted from sea bathing. This was described as one way in which expert interpretations of water quality could be challenged. But in Scotland studies of self-reporting have been undertaken to discredit conservationists and bathers while at the same time supporting more 'accurate' accounts of health risk identified through scientific modelling (Fleisher and Kay 2006). The outcome of conflicting expertise at Silversands was increased focus on the importance of

scientific measurement. Even conservationist groups sought more statutory water quality monitoring instead of seeking to redraw the boundary between expert and lay.

At La Herradura, conservationists similarly sought to conduct their own assessments of industrial pollutants associated with large greenhouses. This, they claimed, offered a better account of health risk than current statutory scientific tests, which only measure for certain sewage-related pollutants. By claiming to account for water pollutants more accurately, *Ecologistas en Acción* sought to disrupt expert interpretations of water quality. The environmental politics encountered at La Herradura were again confrontational in the sense that consensus was not seen as the desired outcome for those involved.

My fifth research question asked ‘can knowledge of water quality at Silversands or La Herradura could be considered socially robust?’ To investigate this question, Chapter 8 drew upon recent literature in science studies that has identified a democratic deficit in much environmental decision making (Irwin 1995, 2001). Litter surveys at Silversands that enlist volunteers were used in Chapter 8 to exemplify how knowledge of the coast could be made more socially robust by generating greater support among citizens. Despite being offered the opportunity to participate in litter surveys, Chapter 8 found that volunteers became co-opted by organisers who sought to categorise litter and interpret results in particular ways. This rationalisation was examined by considering how the significance of small items of litter, such as cotton-buds and plastic pellets, was increased because of the data-recording methods used. Volunteers thus became increasingly aware of items they might not have otherwise noticed – a process that has been termed ‘making the invisible matter’ (Deluca 1999).

Chapter 8 additionally uncovered how the results of seawater clean-ups at La Herradura were used by the beach manager to construct a particular story of aesthetic purity and litter distribution. In this way, expertise was used to establish a storyline of coastal litter that attributed blame to a neighbouring municipal authority. The knowledge generated through seawater clean-ups was socially robust in the sense that it involved participation of non-experts. But in this case the beach manager used cooptation to ensure that blame for littering was directed elsewhere.

In seeking to uncover whether knowledge of Silversands or La Herradura is socially robust, my research found that increased participation of volunteers or non-experts simply led to these groups being co-opted into dominant environmental politics. At Silversands, for example, the local authority used participatory techniques

to explore beach issues that mattered most according to beach users. This method aimed to be open-ended, but Chapter 8 explained that the information produced remained in the possession of the beach manager who was responsible for interpreting findings to create new beach management plans. In seeking to uncover whether cooptation is the inevitable result of increased participation, Chapter 8 concluded that future research might rethink what is meant by 'participation'. By this I mean that participation could include all forms of agency exerted on, for example, beach management plans. While efforts to increase participation led to cooptation, my research found that agency worked more subtly both in the consensus politics encountered in Scotland and the confrontational environmental politics of Spain.

To conclude this section I would like to return to the different political cultures encountered at each fieldsite. Writing from the perspective of a research student at the University of Edinburgh, I reflect now that it was sometimes difficult to get away from the idea that consensus politics encountered in Scotland is somehow more normal than the confrontational environmental politics encountered in Spain. Similarly, attempting to engage with two case studies to the same level of detail was not possible given my familiarity with the Fife coast and with the structures of environmental management that exist in Scotland. Yet as discussed in Chapter 3, engaging with the unfamiliar and the partially understood can lead to a heightened awareness of research practice. While I found greater affinity with confrontational environmental politics as my research in Spain progressed, I am able to reflect now that the Black Flag campaign, and other similar initiatives, would generate more support by offering alternatives to those responsible for beach management. In Scotland, where conservationists publish a *Good Beach Guide*, environmental regulators and beach managers did enact changes in an attempt to co-opt conservationists. Positive change can therefore result from both types of environmental politics, but perhaps conservationists and other beach visitors can, like me, learn by engaging with the unfamiliar and the partially understood.

The Limits of Discursive Storylines: A Critical Reflection

With respect to two bathing areas, this thesis has presented an account that is both situated and partial. Chapter 3 discussed some of the reasons why objective analysis is not possible in a study that seeks to employ qualitative methods to understand the social construction of bathing waters. While subjectivity ought not to be seen as a

limitation of the thesis, I want here to reflect on how my methodology has influenced my analysis. I also reflect on the discursive limits of certain terms used both in this thesis and in environmental policy. I describe how such limits might have influenced my analysis, and I suggest that the thesis denaturalises discourses associated with 'bathing waters' and 'robustness' to open up possibilities for new and less restrictive meanings.

Chapter 1 described why I chose two particular bathing areas as objects of study in this research. Reflecting on that choice, it is clear that Silversands and La Herradura not only determined the research data collected, but also influenced my engagements with academic literature. When choosing La Herradura, for example, I had hoped to investigate the Blue Flag campaign and thereby to draw links to beach management practices in Scotland. On finding out that the municipal authority had recently announced a boycott of the Blue Flag campaign, however, I engaged with literature in geography that describes the importance of materiality and absent-presence. In reflecting on the iterative approach to research, I want to emphasise that my account of bathing areas cannot be taken as representative of other beaches in other contexts. Because of this, findings presented in this thesis can neither speak for other bathing areas, nor can useful comparisons necessarily be made between two different bathing areas.

There are also potential rhetorical limitations imposed on the thesis by using certain discursive storylines in my analysis and interpretation. In Chapter 4, for example, I described how 'bathing waters', 'bathing areas' and 'bathing seasons' are brought into existence through practices that derive from the Bathing Water Directive. Adopting such terms in this thesis could be seen as following the same technocratic discourses upon which environmental policy is based. To avoid taking such terms for granted, it might be considered more appropriate to distance my analysis from discursive storylines that I seek to analyse. What I argue in this section, however, is that an objective analysis of discursive storylines is impossible. There is, simply, no objective stand point from which to consider bathing water issues outside of dominant environmental discourses. By adopting legislative terms in this thesis, I have tried to decentre their meaning and further demonstrate that they are socially constructed. In Chapter 5, for example, I described how bathing waters only exist temporarily through practices of beach management applied during the bathing season. By

demonstrating that discursive storylines are actually multi-layered, I hope to have shown how apparently pervasive terms come into being in many different ways.

Chapter 2 reviewed the work of some geographers who have investigated discourses of 'ecological modernisation', and criticised what they see as the depoliticisation of environmental discourse (Langhelle 2000; Massa and Anderson 2000). What started as activist language to encourage us to rethink our interactions with the environment has now been adopted by governments and other officials to describe everyday environmental management practices. Within this 'greenspeak', terms such as 'sustainability' are commonly drained of meaning, so that anyone can add legitimacy and credibility to practices that would not otherwise be incorporated by such terms. One rhetorical limit of this thesis is that 'ecological modernisation' is a term used both to describe and to criticise the processes in which environmental discourses make their way into everyday usage. Although different writers use 'ecological modernisation' differently, the term nevertheless carries meanings that, for some, describe a rationalisation of environmental management that should be avoided.

Chapter 8 investigated the production of 'socially robust' knowledge in relation to bathing areas at Silversands and La Herradura. Like ecological modernisation, there is a danger that 'robustness' might similarly be stripped of its association with activist concerns for democratic accountability and greater public participation in environmental decision-making. Beach managers and other officials, for example, adopt 'robustness' to add legitimacy to particular types of bathing area knowledge that supports their preferred beach management policies. For this reason, I sought in this thesis to question the meaning of 'robustness' rather than seeking to define it. For me, the best way to consider 'robustness' is to ensure that as a term, it is not given a fixed and essential definition and not, therefore, taken for granted in all circumstances. By leaving question marks over what is meant by robust knowledge, I hope to encourage those who encounter the term to think more carefully exactly *how* knowledge production is made robust.

Chapter 8 investigated 'robustness' in the context of litter collections and surveying techniques at Silversands and La Herradura. The term is used in these situations to describe greater democratic accountability in the production and use of expert knowledge. Chapter 8 suggested that in cases where volunteers are involved in litter collection, knowledge produced can be described as more socially robust. This

interpretation risks defining 'robustness' through a scale in which knowledge production can be viewed as 'more' or 'less' socially robust. For this reason, Chapter 8 concluded by suggesting that despite the involvement of many different groups of participants in different litter surveys, organisers retained control of data interpretation. Even in the case of participatory appraisal, where the aim is to ensure that voices of 'hard-to-reach' groups are incorporated, the beach manager retained control of data, and used it as she thought best. In this way, seemingly 'robust' knowledge can hide the exclusion of different viewpoints, rather than offering full participation.

One danger of adopting the term 'robust' in this thesis is that I may have used term differently from my participants, and therefore risk misinterpreting the words and experiences of research participants. Chapter 8, for example, uncovered how 'socially robust' knowledge was used by beach managers to establish and legitimise storylines of marine litter. Reflecting on this, I here argue that my analysis questions how legitimacy is attached to certain forms of knowledge to demonstrate that 'robustness' has many meanings. Adopting discursive storylines concerning robustness in different contexts is to question how discursive structures serve to both legitimise policies and hide certain processes of exclusion. In this way, I hope to have questioned the idea that knowledge can be socially robust in all circumstances in the same ways by questioning the different senses in which 'robustness' is invoked.

Within recent academic literature, many have sought to find better ways to enable a broader range of citizens to participate in environmental decision making. Chapter 2 reviewed this literature and suggested that efforts to be more participatory are undertaken for many different reasons. In recent literature concerning environmental policy, greater community participation is seen as a positive step to increase democratic accountability. Yet like 'robustness', 'participation' is a term that needs to be subject to greater interrogation to avoid cases in which groups are offered cursory involvement in environmental decision-making under the banner of full participation. In this thesis, the term 'participation' is implicitly linked to a scale that describes some processes as 'more' participative and some as 'less'. Social scientists have, for example, identified a scale to assess participation, from cursory involvement right through to full engagement and leadership of a project (Chambers 1997). There is an assumption implicit in such scales that 'lower' level participation has little influence over outcomes. Chapters 6-8 demonstrated, however, that participation can

include all types of human agency, rendering any scale of participation too rigid to describe complex engagements between different groups.

Given what I have uncovered, this thesis is now able both to question and broaden what is meant by participation. While I think that 'increased' participation in beach management is a positive step to ensure greater democratic accountability, the form of participation needs to be considered carefully. By uncovering the agency of different groups, more people might be able to make use of their existing influence on environmental decision-making. In addition, different types of participation can be explored to maximise the influence of previously marginalised groups. In the case of bathing waters, I found in Chapters 6-7 that beach users exert influence over beach management practices in many different ways. This agency, although only limited, serves to exemplify how, from a relational perspective, participation need not simply be about taking part in a survey or other existing forms of knowledge production at beaches.

Chapter 7 considered how participation might be 'increased' when accounting for health risk at beaches. One possible method of participation was the self-reporting of illnesses associated with bathing. This was shown to supplement traditional methods of risk assessment by incorporating bathers' experiences to create a better understanding of bathing risk. While distrust of personal testimony exists, the self-reporting of bathing-related illness calls into question traditional forms of risk assessment and challenges experts to rethink participation of 'lay' citizens in environmental policy. Conservation groups that campaign for increased statutory measurement of seawater were examined in Chapter 7. Such groups were important as watchdogs of environmental regulators and have had some success in campaigning for stricter water quality measurements. Nevertheless, by seeking to uncover the 'true' quality of seawater, conservationist groups recreate a divide between water quality experts and 'lay' individuals. This is because conservationist groups are only able to engage with environmental regulators on a scientific level by conducting water quality research that might eventually bring about changes to statutory monitoring.

While conservationist groups have had some success, broader participation in risk assessment will, in the long term, remain limited. Environmental regulators currently see little value in engaging with coastal conservation groups and other potential participants in their accounts of bathing risk. In contrast, if the divide between expert and lay were questioned, participation could be reconceptualised. This

means that future accounts of bathing-related health risks might involve participation from environmental regulators, conservationist groups and bathers. Instead of seeking ever-more accurate predictive models of seawater quality, regulators might be encouraged to acknowledge the limitations of accounting for bathing risk using only scientific methods.

In questioning discursive storylines associated with ‘bathing’, ‘robustness’ and ‘participation’, I hope to have highlighted some of the limitations of incorporating such terms into this thesis. At the same time, I want to argue that such terms can be examined to enable critical reflection of their meanings and of the discursive storylines they, in turn, invoke. The use of terms such as ‘bathing area’ can appear constraining when seeking to describe Silversands and La Herradura. But by highlighting the situated context in which discursive storylines are invoked, the thesis questions established meanings. In science studies, the term ‘lay knowledge’ is destabilised by introducing new terminology to refer to ‘non-certified experts’ (Collins and Evans 2002). By questioning the divide between expert and lay, the term ‘non-certified expert’ encourages us to rethink whose knowledge should be incorporated in environmental decision-making. While this thesis does not introduce any new terminology, critical reflection of existing social structures and established terminology is enabled by re-examining discursive storylines.

Opportunities for Further Research

While the thesis has thus engaged with specific research questions in geography and related disciplines, it has simultaneously raised further questions and opened up possibilities for future research. In this section, I consider changes to the Bathing Water Directive that occurred in January 2006, and the creation of a Bathing Water Review Panel in Scotland. Related to these changes, I discuss what the revised Bathing Water Directive might mean for beach awards such as the Blue Flag campaign. In this section, I also discuss how future research might engage more fully with the geographies of dirt, disposal and pollution. The importance of materiality, considered in Chapter 6, suggests that future research might engage more fully with ‘flagging’ and with the importance of material presence and absence. Finally, this section explores new possibilities for research in relation to expertise and risk assessment.

Chapters 1 and 4 described revisions to the 1976 Bathing Water Directive, recently passed by the European Parliament. While no significant changes have been made to the designation of bathing waters, the microbiological standards of water quality required to reach an 'excellent' pass have since increased (CEC 2006). In addition, a fourth category of water quality has been introduced to differentiate more clearly between 'pass' and 'fail' – this is called 'sufficient' (CEC 2006). Measurements will occur at the same frequency during the bathing season, but only two sewage-related pollutants are now to be measured, despite calls from conservationist groups for other industrial pollutants to be tested. Environmental regulators will also be required to create a bathing area 'profile' for each designated bathing area to describe the most likely factors that might affect bathing area management.

The implications of the new Directive for bathing areas such as Silversands and La Herradura are, as yet, unknown. As stated in Chapter 1, the reduction of scientific measurements is, paradoxically, indicative of a move towards a more managerial style of bathing area management. This move – in line with broader trends in 'ecological modernisation' – has largely been implemented through practices of bathing area management such as beach awards. In accordance with recent environmental policy, current practices of coastal management claim to be 'integrated'. This means that environmental regulators are encouraged to consider how different aspects of the environment interact, rather than considering seawater quality in isolation. Beach awards are part of this process because they require operators to consider a wide range of factors in addition to water quality. As a result of recent revisions, the new Bathing Water Directive is more purposefully linked to integrated management strategies rather than to the simple measurement of legislative adherence.

The new Directive has caused beach operators to think again about designation procedures in Scotland. For this reason, the Scottish Executive created, in 2005, a Bathing Area Review Panel to consider how visitor numbers can be related to the designation of bathing waters. As described in Chapter 4, the review panel might, in time, recommend de-designation at beaches without large numbers of visitors. Future research of bathing water legislature might look, therefore, at how designation practices operate in Scotland and elsewhere. There is also an opportunity to look at how beach award criteria might operate with changes to categorisation of seawater

quality. In the past, for example, only beaches with 'excellent' water quality have been eligible for a Blue Flag. This might cause many Scottish beaches to fail award criteria because the new 'excellent' standard is more difficult to attain. Beach operators, as I discussed in the thesis, are apprehensive of the possibility of losing awards. New research might therefore consider how best to proceed with an award scheme that can suit different interests.

While geographers have not engaged fully with geographies of dirt, disposal and pollution, this thesis offers an introduction to what might be an emerging area of research. In the case of bathing areas, interpretations of cleanliness were linked closely to beach management practices that sought to separate dirt from healthy public spaces. Similar research could be conducted in different situations where dirt and pollution may be socially constructed in particular ways to suit different interests. This thesis considers, for example, how social order is maintained through the spatial organisation of dirt and pollution. Furthermore, the thesis uncovers situations in which the 'absent-presence' of dirt can be detected. Geographies of dirt might in future consider the construction of rhetorical and spatial barriers between objects that are considered 'dirty' or 'worthless'. Disposal, in this sense, is not about a permanent separation. Following Thompson's (1978) work on rubbish theory and more recent discussions of absent-presence (for example Hawkins 2001; Hetherington 2004), disposed objects can be linked, relationally, to a large number of different social processes.

In thinking about sewage disposal, this thesis suggested that our relationship with polluted seawater is complicated by the involvement of many different actors and beach management practices. From a methodological perspective, future research might also consider how complex relationships emerge when studying disposal and waste management practices. Although researchers in science studies have demonstrated the importance of practice, similar approaches in geography are not common. This thesis thus challenges geographers to think about the emergence of identities in practice rather than conceptualising objects and social relations in rigid actor-networks.

Chapter 6 described 'flagging' as the simultaneous deployment of symbolic meaning and physical presence or materiality. By investigating how different flags are used to symbolise bathing area cleanliness, I argued that flags provide a good example of how social relations are linked to material objects. In future research, geographers

might consider the importance of flags in different contexts, including bunting, pennants and lapel flags. Moreover, the approach used in this thesis provides a methodological perspective that uncovers links between social relations and material objects. Each object, I argue, has both symbolism and materiality. These properties emerge in practice, to offer a useful conceptual framework for those interested in uncovering how social relationships and objects interact.

As described above, expertise and participation are important discursive storylines in this thesis. Given the breadth of such terms, more research needs to be done to uncover how expertise is established and how participation is formulated in different situations. Chapter 7 considered citizen participation when accounting for bathing risk at Silversands and La Herradura. By destabilising the meanings of 'expertise' and 'participation', I suggest that processes normally 'black-boxed' can be opened to critical reflection (Wynne and Waterton 1998). Future research can thus address how citizen engagement is often hidden behind narratives that utilise terms such as 'participation'. Similar terms used in environmental discourse can additionally be questioned – notably 'sustainability' and 'integrated management'. Further, research might consider whether new discursive assessments can be created to criticise or to reclaim words that are too often drained of their meanings. By doing so, new approaches to environmental policy are possible, and new opportunities to increase democratic accountability can be explored.

Appendix I: Sample Interview Transcript (Interview 4: 19/05/04)

Colin: So, I would like to just start by asking if you could tell me a bit about the role of Fife Council in relation to the coastal environments in Fife. What are Fife Council's responsibilities in terms of coasts?

Respondent: Right, they are mixed in that there are obviously some statutory responsibilities, but a lot of them are discretionary. In relation to issues, the Council's overall responsibilities range from things like coastal protection, which is the statutory end of it, but that is undertaken by specialist engineers in transportation services. The role of community services, which obviously we're talking about today, is more to do with recreation, leisure, that side of things, tourism, and some education as well – we deal with a lot of schools groups and things. But it's more an informal agenda, rather than a formal agenda – that side of things. Within community services, we're trying to view the coastal fringe as one, and start to look at it as a whole and try and take a holistic approach to our management of a number of issues around that. Obviously our remit is restricted principally to recreation, but from that you can start to look at some of the economic aspects as well, because people who come to beaches or to walk along the coastal path have an impact on the local communities along there, so there is a spill-over.

We're in a relatively early stage in developing the overall strategic approach to that, we know roughly where we want to be going, but we've still got some way to go. It really started off from two sources: one, was the beach awards system, which has been around for some time, through – what was – the Keep Britain Tidy group, and now ENCAMS. And also the coast path, which obviously predates Fife Council by some time. From those two basic *facilities*, if we look at them as groups of facilities, we're actually trying to pull the whole lot together – manage it as a one, and trying to think strategically.

C: And does that relate to the type of management put in place for parks, and other kinds of environments?

R: Yes, there are a number of services who are involved from the Council side, who include the Parks and Amenities staff. So down at Silversands – your case study beach – it's the Parks staff that organises and get the cleaning done. You'll have impact, then, from Countryside Rangers, and other staff in the council to try and make the whole package come together.

C: And in terms of the aims and objectives that the council has for coasts, you mentioned education, and beach clean-ups. Can you tell me more about the aims of those initiatives?

R: Well, the approach we're trying to take with regards the beaches as facilities is if you look on them very much as a leisure centre. So we're trying to replicate a kind of approach – hence the management plans really. Rather than, I think historically it has been viewed as well, 'it's a beach' – cut the grass that's nearby, and pick the litter off the beach. I think users, and residents' expectations are far more sophisticated now, so they don't just see it as a bit of sand and a bit of grass, they're looking for other facilities such as litter-bins, toilets, refreshments, car-parking etcetera. So we're trying

to look at it as a facility and trying to treat it as though, as if it was just a leisure centre, we're trying to get every aspect of the management right. And obviously with the Blue Flag beaches, that's why we like to examine the lifeguards and everything else, so it's a complete management package now, as opposed to just a bit of ground maintenance.

C: In terms of Blue Flag beaches, all of Scotland's Blue Flag beaches are in Fife. Is there a reason for that, and is the role of the local authority in getting the blue flags an important one?

R: To answer the latter part of that question, the answer is 'yes'. Its local-authority driven throughout Great Britain. Private managers of beaches can apply for them, there's nothing to stop them, but it tends to be local authorities who are responsible for that. Why Fife? Well, a lot of this is where the Bathing Water Directive does kick-in. In terms, you've got criteria, the appropriate water quality, before you can bother with everything else. So if the water quality is not right, it doesn't matter what the Council does, if the water quality hasn't got the correct level, then we'll fail. So, it's a combined effort if you like. And going back historically, Scottish Water has spent a considerable amount of money improving it. So that puts Fife in a position to maximise on its beaches. And that goes back to the old district councils, who were keen driving that forward. Now, having got the water quality, we then have to invest on the land-based facilities, which comes back to the sort of 'stick' approach. What you try and do is drive that through a resort type approach where you're looking at everything from visitor safety, to – as I say – car-parking, access to telephones, etcetera. So it does build-up quite a complicated set of criteria to try and achieve high-standards in beach management.

C: In terms of award beaches, would you say that the effort, and perhaps the funding as well, is an investment?

R: Yes, we've carried out some economic work as part of a survey we did a few years ago, specifically looked at the economics. With beaches, this is based on external consultants doing the work, and – as usual – the caveats of what you want to believe, the principals of extension and things like that. You're looking, if estimates are correct, at a leverage factor of somewhere between fifteen and twenty. So every pound the council is spending on maintenance, something like fifteen or twenty pounds is spent by users going back into the local economy. So while the council doesn't benefit directly in its role of supporting the communities of Fife, it is actually having quite a marked impact. I think it would be fair to say that beaches are one of the key factors why people come to Fife generally. After the golf. Or alongside the golf.

C: Fife Council has placed beach management as one of its priorities, especially compared to some other local authorities. Do you think it is difficult in proving that these coastal initiatives are worthwhile? I mean, in competition with other departments, is it difficult to prove cost effectiveness?

R: Our position in Scotland, yes it is difficult. Because as you say, there is a lot of competition for limited resources, and that's increasingly the case as budgets are get cut-back. And I think the local authorities have wrestled with this one. That's why

we're the only local authority with blue flags. We're not the only local authority who could have blue flags, there's lots of others trying, but it's not cheap. It's a very small season if you think about it – summer months – and it's difficult to prove. The economic study we had carried out has given Fife some indication of the leverage it can bring in terms of the economic benefit. But I'll also say that local people are getting more vociferous about them, they do see beaches as a local recreational facility, and their expectations are increasing, So that's another group of pressures. If its okay to have a leisure centre, or parks, or a museum, or anything else, why is it not okay to have a beach? And a lot of people, local people, do use beaches for outdoor recreation. So you've got the economic argument, and you've got the recreation argument as well.

C: Is the recreational argument harder to make than the economic argument? Because you know, figures can be used to support an economic argument. But with a recreational argument figures are perhaps less conclusive?

R: The two go together to some extent. Obviously economic figures are based on usage figures – so you're collecting usage information at the same time. I think it's fair to say that of the studies we've had done, the levels of usage are as significant in comparison with anything else we provide. And I think there is a strong case to be made based on that. Part of the problem, if you go back to what I said earlier about the approach local authorities have taken historically, was that they would take the litter up, cut the grass, and more-or-less leave it. No if you say 'ok, where's the proof that that has had any impact at all?' most local authorities never bother collecting the evidence. So to some extent, its chicken and egg situation. If people haven't collected the evidence, you can't prove it is worthwhile spending the money. If you can't prove its worthwhile spending the money, then why should it be provided? We carried out our first survey in 2000, and we have another one planned for next year. So we're beginning to build up a bank of evidence that shows what the usage figures are, and what the potential economic impact is. So we're gathering information that is vital for the case we're going to be arguing.

C: Fife has nine beaches at the minute that are designated as bathing waters, and a further eleven, I think, that are measured by SEPA along-side the bathing water beaches. How important are these measurement in meeting the aims of Fife Council?

R: The bathing water quality comes in at different levels. I know there's an argument going on, certainly in Scotland, about how important bathing water quality really is to beach users – most people who use the beaches *don't* go into the water. But I would say there's a perception issue that if it is well-known that there is poor water quality, then people wouldn't go to the beach even though they're probably not going into the water. So the fact that the water quality is there does have an impact on peoples' attitude. As far as the awards go, it's obviously a critical component. Certainly if you're after the high level awards then 'guideline' you need. And even for the UK awards, 'mandatory' is required. So its tied in with all that. Even if you come-up with a system whereby you just look at the 'dry' side of the beach, the facilities and the beach itself, I think in the public's perception, whether they articulate it or not, is always this issue of well, 'is the water okay?'. It's difficult, and I think there is an increasing body of evidence to show that water quality is perhaps not as important as

we think. Maybe that's in some way down to how the questions are being asked about it.

C: And in addition to the bathing water data that's collected, does Fife Council collect any other information routinely, on either the water or the land side, for example with beach litter?

R: We haven't been. That's a weakness. It's a struggle to get the resources to do the work, which is obviously the first point. Up to now we haven't been able to identify resources to actually build-up that side of things. I think given the increasing priority that's been attached to coastal litter, at some point we will be looking to try and do something about that. It's difficult, but then again, what sort of monitoring system do you agree to, and everything else? [The beach manager] obviously has ideas behind what we'd like to try and do. Also the Forth Estuary Forum has been their sampling and collections with various other people. But it's now trying to pull the whole lot together and systematically record it, which is a daunting task!

C: Do you think there are changes in consultations to find out what people believe to be the most important aspect of coastal management?

R: The countryside survey we had done did look at the qualitative aspects as well as the numbers involved. And there was various questions to do with beaches. I'm paraphrasing here, but I think the results – on the whole – people were satisfied with the cleanliness of the beaches. That said, every time we have public consultations, litter comes up as a key thing, not just with the beaches but with the broader environment. So I think among the communities of Fife, the key environmental issues are litter and dog fouling. These are the two that come fairly close together. And I mean it's another interesting issue with the beaches here in Scotland in particular, because a lot of users are families and a lot of them have dogs with them.

C: And Blue Flag beaches don't allow dogs on beaches?

R: Yes. From what I'm told, that's a British interpretation. On the continent, that's not the way it's interpreted. It's more 'you must control your dogs'. So there dogs are not necessarily banned, they're just under control, which would be a big benefit to people certainly in Scotland. For the staff, a lot of the issues they have are around dogs, and trying to ban them from beaches is very difficult.

C: The Clean Coast Scotland forum has been established to bring together interested groups in the use and management of coasts. Do you think a Scotland wide scale is useful in certain aspects of beach management?

R: Yes. I mean I attend the group I do. I think it claims an important role. As an environmental issue, I think we have a long, long way to go with the coastal issues, particularly around something like marine litter. While there are efforts being made, a lot more needs to be done. This group, which has got quite wide representation, is a small group of relatively enthusiastic people trying to move the agenda forward across all the organisations, including the Scottish Executive. Where it sits in the national pecking order, I think is open for debate. Speaking of which, there was a debate quite recently in the Parliament you might of seen?

C: Yes, I think so. I saw some kind of publication about three weeks ago?

R: I'm trying to think, two or three weeks ago. There was a debate in Parliament about the Bathing Water Directive and beaches. The debate is quite interesting. From the discussions it would seem to be at least rhetorically, in terms of rhetoric it gets quite high on the agenda. But then you're back to national priorities of education and social work and everything else. I'm a bit of a cynic about environment policy. People speak a lot of nice words about it, but when you look at the amount of resources actually going in, the two don't necessarily match-up. So Clean Coast Scotland is obviously trying to change that and move the agenda forward. It's still early days for an organisation like that, but in small ways it has made considerable progress, and I think it's important that it keeps going. Because without that there is no coming together between those organisations which can, potentially, make a big impact.

C: One of the initiatives that Clean Coast Scotland has been trying to promote has been coordinated beach signage and to try and standardise formats across Scotland. Do you think standardisation is useful, and do you think that will be successful?

R: I think it will be useful. Has it been successful? Well I think we're still working on it. Most of the signs that have been put up have been by local authorities. Local authorities don't have a natural grouping around this issue, so while you're talking to me in Fife, in Community Services, you may be talking to Environmental Services, or Environmental Health Officers. So different departments is one thing. Equally who we talk to in those councils may vary as well. I'm a Chief Officer, but if you go to another local authority, responsibility, overall responsibility might be quite low-down, off to the side, not a big issue. We've made it a big issue in Fife, and that's reflected in the way we're trying to drive it forward. But that's not necessarily so in other local authorities. Coming together as COSLA, there isn't a natural home for it to sit. So while I attend Clean Coast Scotland for Fife as a local authority person, we try and encourage other local authorities. It is very difficult to get all council authorities together and to maintain a consistent voice. Clean Coast Scotland with Keep Scotland Beautiful is trying to do that. And if we can get that done, that would be a major step forward. We will start to get a degree of consistency about the message and a way of taking things forward there.

C: So there is no group in COSLA at the minute that would constitute a discussion forum to decide on a unified approach for councils?

R: No, that's a major weakness for us.

C: And you sit on Clean Coast Scotland, but for Fife Council rather than COSLA.

R: Well, I've got a Fife Council hat on and I've got a COSLAish hat on! And I suppose I've got a local authority perspective hat on. But I'm not an official COSLA rep, but I can take a line about the generality of local authorities in that I understand what happens with budgets in local authorities, what happens with the way we have to manage the local authority. So when you're talking to a range of other organisations its important to understand the environment in which local authorities work in, and cooperate as organisations. So I bring that perspective to the table.

C: In terms of CCS, you mentioned the breadth of organisations involved; do you think that that's a positive thing? And are there advantages of broadening out to so many groups?

R: I think it needs that breadth and approach if it's going to be successful. It needs that breadth if it's going to achieve that. So we do have the Scottish Executive and, at various times, people from the tourist board, myself, local authorities, voluntary organisations, SNH, etcetera. I suppose it's paradoxical in a way, in that it is only by everybody being there that we're going to tackle the problem that ultimately is going to fall back on the individual authorities. It's the way things work in Scotland, it rests with the local authority, and they're there as a group, which is always difficult getting everyone round a table. You do need everybody there. The local authorities couldn't do it themselves. And it's important that there's organisations like CCS, and KSB, who try and drive the agenda forward.

C: In terms of the local authority's relationship with SEPA; does SEPA provide any additional support for coastal issues?

R: It's mostly to do with the routine sampling on the one hand, and then dealing with specific incidents on the other. But it tends to be on that sort of level. They're providing us with information principally about water quality. Although they've started to do some sampling on beaches in terms of litter matter, just to combine the two to see if they can give them a bit more of an holistic approach to that. Beyond that, I think our contact with SEPA is limited.

C: You said that SEPA essentially provide information. Do you think it could be involved in providing more qualitative information on coastal policy priorities, surveys and that, rather than just quantitative information?

R: It's difficult, I think. I don't have a clear-enough understanding of how SEPA fit into the national jigsaw. As I say, we tend to deal with them in a relatively narrow remit. And that's not just with council stuff, whenever I've dealt with SEPA, it has tended to be around environmental quality issues and sampling; the enforcement side of things. So I'm probably not the best person to ask about the wider issue.

C: Moving on, Silversands is a Blue Flag winning beach, yet it's not recommended in the Good Beach Guide, produced by the MCS. Do you think the conflict in information there could be a problem?

R: There's been an issue around this for a number of years, which link the various organisations that produce good beach guides. And trying to get together to produce just the one is important, because it is confusing for the public. And in some ways, when we're talking about the Good Beach Guide, we're talking about the water quality. But it just gets more and more confusing because there's other people, there's the MCS, there's KSB obviously with the beach guide, and there's another voluntary organisation that produces a good beach guide as well. And all that does is confuse people, if people are interested. Again, I think there's a lot more rhetoric around this than reality, because, I think if you ask most people on the beach if they'd looked at anything before they got there, the answer is probably 'no'. And I suspect like a lot of

facilities and things, word of mouth is probably the key to why people come to beaches. They've heard about it from a friend, or they go there a lot. So while a lot of these organisations are pumping out these guides, I'm not sure how effective they are in determining people's decisions.

C: Do you think then it would be better to standardise them and produce one beach guide?

R: Yes, oh yeah definitely.

C: And most beach awards – the Blue Flag and the Good Beach Guide – are based, as you say, on the scientific tests on water quality rather than any other measures. Do you think there is scope then, for producing a more holistic beach guide, if there was to be one standard one?

R: I think you could come up with something that's factual. And then the line is you put something in front of people and they make their own decision. You have to be very careful, obviously, what you're saying is good, or not good because that's a quality judgement you're making on behalf of other people, which you shouldn't do. People decide if it's good or not. What you can do is describe the beach, and describe its environmental factors. So water quality, facilities available, management plans, whatever. Give that information to people and they can decide whether that's the beach for them or not. So I think there is an approach where you can do that, and by pulling everything together. I mean the interesting irony is that everyone is arguing over the same information. Nobody's got a totally separate set of information, they're using SEPA figures. It's the interpretation of where you decide the boundary is between the good and the not-so-good beach, and that's where the argument is going to end. The press like it because it's a bit controversial, but as I say, I don't think the public actually take that much notice.

C: You say that it is quite difficult to advise people on whether a beach is good or bad, and arbitrary where that line is drawn. SEPA has trailed electronic signposts in Ayrshire last summer, to give up-to-date information on the quality of water at bathing areas. Do you think these signs are useful, and do you see a place for them in Fife?

R: In principal the answer is 'yes'. If you think about it, what's the point in knowing what the quality of water is last year? I mean effectively all the guides you're talking about, that's what they're saying: 'last year – twelve months ago – these were the water quality factors'. Now what use is that to you today? Does that mean it will be like that today, like that tomorrow? Who knows? So it's much better to have a real-time process to display water quality information. The difficulty is that the sampling regime we're dealing with is always running behind with the analysis. And if somebody somewhere could come up with a very simple monitoring system, where you could almost sample the water on a daily basis then you could, with any given beach, put up real-time information on the water quality. They want to know that day, when they get there, what's the water like. Now what SEPA are proposing to do is try and cut back on the sampling regime in some of these areas and say 'well look, for the last five years, this beach, or the bathing water associated with this beach has had a guideline standard for every sample we're done or for the last bulk of the samples,

therefore, it's a fairly safe bet the probability is that its guideline today'. Yes it would be better to move to real-time if we can find a method to do it.

C: You said earlier that it is had to tell if a beach is good or bad, and that it is down to an interpretation of water quality or word-of-mouth. Do you think that electronic signs would have an affect on people's perceptions?

R: The trouble with information is that people switch off from it fairly quickly. We put the information up at the beaches as the samples are coming through during the season. So as we get each sample our information is going up. I'd probably take a bet that on any given day, the majority people on any given beach don't even bother looking at the notice boards with the information on. They take it as read that because you've got a flag up therefore it must be okay. I think that people put it at a very, very simplistic level. Without sitting down and reminding myself what all the readings were, I've got great difficulty understanding what the samples come back at! They're great for scientists and people who are interested in that, but they mean very little to the general public. All they are concerned with is, if they go into the water, will they get ill or not? And with improvements with general water quality, then the incidence of people getting ill from a day at the beach has probably dropped dramatically. How on earth we put that over without being technical, I don't know. Remember that the Ayrshire signs are predictive, based on heavy rainfall, and they [SEPA] know that causes runoff from agricultural land, which is likely to increase of the thing we're want to avoid. So what they're saying is, let's have this flush through the system, therefore its quite likely that the water quality is not-so-good today. They're not saying it is definitely, because the sampling regime doesn't allow us to do that. But you're giving people a sense, if they feel that it might be a bit dodgy today, you make the decision on whether you go into the water or not.

C: Do you think that with up-to-date information and provision of information to the public, that the council's might feel liable for people's ill health? That the move to more up to date information is a response to people's increasing worry about their health and the liability issue of who is responsible.

R: I think you say what is reasonable. The problem is that if you start putting up systems and don't maintain the systems you probably have a problem on you hands. If you put a system that was supposed to show on a daily basis what the water quality was, and then you didn't keep that up, then the argument would be, well I came down to the beach and the thing wasn't working properly, therefore the information wasn't available and I got ill. The more sophisticated you get with the information provision, the more vulnerable I think you are leaving yourself. Whereas, if you've just got very, very basic information, then it operates at that level. Providing you've done what's reasonable, then it's a court decision rather than anything else, I think you'll be okay.

C: You said that different councils give different priorities to their coasts. Some councils might argue that the negative publicity from being de-listed from a beach award might out-weight the positive publicity from winning an award. Do you think that's a fair comment?

R: Yes, the awards system for a local authority does have those two sides to it and can be very politically divisive if things don't work out. You weigh that up against the

other benefits. Some while ago, ENCAMS was working towards a different approach, a more continuous improvement, a more management model, which is what we're trying to develop in Fife now. It would appear that they've moved away from that again, which, on a personal level I find disappointing because I thought that was the right way. You're moving away from 'here's a hurdle, jump it, and if you get over, fine, you get your reward. Whereas if you took a proper management model of it, say well, we're in this system, it's a quality assurance system, and you're just in it, you have good years and bad years, just like everything else. You don't – disaster – suddenly lose the award or anything else. You just recognise that you have good times and bad times. When it's bad, in the water quality issue, then you have to be seen to be putting steps in place to ensure that's in front. It's like what we're saying, Fife did lose a Blue Flag at West Sands five or six years ago, and we got it back the year after. As you say, there's a political problem with that, but the penalty was that we lost the blue flag for water quality the previous year, not the year we were unable to fly the flag. So not only does it create a bit of a political problem, but it's also a confused picture to be putting to the public. Why you lost it is over a year ago. At the end of the day, I don't think droves of people didn't come to West Sands because it lost the blue flag. There's a great kudos for the council, for Fife Council, going round and saying well 'last year we had the only four in Scotland'. From the professional point of view, I don't think that's very good, I'd like to see more local authorities in Scotland getting awards because it starts to push Scotland as a destination. And on the other side it starts to mean we're improving the environmental quality, not just of the water but we're actually looking at the landward side.

C: There are revisions to the Bathing Water Directive being considered at the minute by the European Parliament. Some of these revisions are going to require beach management plans, and I think the number of scientific measurements is to be reduced considerably, so that the scientific measurement is replaced in some ways by beach management plans. In many ways, Fife council is pre-empting this. Can you tell me more about how that came about?

R: Well, I think there is a curious thing about how long things get talked about. They take a long time to come to fruition. The revision of the Bathing Water Directive, because it's European, does take a long time, one to get agreement and, two, to get enacted. So you've got plenty of lead-in time, if you want to have a look at what's happening. But as I said, I think ENCAMS at one point were very pro-active in terms of, 'okay, we've had an awards system that's proved very a good system, in a variety of ways'. Yes you can find holes in it, but nothing is ever perfect. But it has proved a good system, certainly in terms of getting local authorities in England and Wales on board to drive up environmental standards along the coasts. Where do you go next? And obviously given the changes that were happening in Europe, the answer is we need to look at a more holistic approach to beach management. Hence the management plan approach to it and some sort of scheme to back-up the improvement. So our interest stemmed from there. Fife got involved in the pilots for that. Now, the scheme itself didn't, or hasn't, come to fruition as we had expected, but we still feel that that's the right way forward. And like I say that is justification for that if nothing else. Because the Bathing Water Directive will eventually ask us to take a more holistic, measured, approach to beaches. So hopefully by the time that comes around, we'll have progressed along the route a considerable way.

C: And the local authority plans for changes to the Bathing Water Directive rather than SEPA?

R: It is difficult. While we get consulted on it, it's a very technical paper, as you're probably aware from looking at it. It's very difficult to see – other than a shift up the ladder for the guideline – where you should be going with a lot of it. So it goes from the sublime to the ridiculous in that some of it is really straight forward when talking about influences on local water quality, diffuse sources of pollution and all that. That is back to something that we can have a look at and we have a handle on, so on the one hand it's very simple, you can say 'yes' I can understand how to get involved in that. And on the other hand, the scientific arguments go all the way up to the World Health Organisation about whether this level or that level is appropriate. And I know that scientifically there are strong differences of opinion in this. It is almost like the Mediterranean countries have picked a standard that we have not got a cat-in-hells chance of reaching in Northern Europe anyway, because it suits them. It doesn't particularly suit us. Will that increase in standard make that big a difference to users? That said, I don't know whether it will or not. But I suspect we're only having that standard there because they [the Mediterranean countries] know they can achieve it.

C: They're able to achieve better results because of greater sunlight?

R: Yes, that's the key problem, sunlight!

C: With the revisions to the Bathing Water Directive, as with a lot of European environmental legislation, they seek greater public participation. Do you think that community involvement in management plans is important for beach managers?

R: Yes, but as part of a general trend anyway. Certainly things are moving forward in Scotland in local councils. There's greater consultation and involvement of local communities and service delivery becoming a trendy fashionable thing to be doing. I think there's a downside to that, which will become evident as we move forward. It's incredibly time consuming and resource greedy. We've got eleven award beaches and we'll do a management plan for each of them, and each of those management plans will be finalised in consultation with the local communities. At that juncture you've got all sorts of scope for differences of opinion to be coming through, unrealistic expectations etcetera. This is a process that all has to be worked through. So our plan at the end of it is a document that can stand-up in reality, and will be something worth doing, rather than something that's smothered in apple-pie, and we just stick it back on the shelf because there's no chance of implementing it. So you have to manage local expectations with that. But I think it's very important that local people have a say in what's happening. But it will entail a change in the way we do things. That's as much an issue for staff as it is for the local community.

C: The kind of group that might be involved – beach and water users, the sea-kayakers, or even the clean-up groups – do you think they could be information providers?

R: I think once you've got the management plan sorted, they have to become participative stakeholders in it. There's no point sitting at the side throwing bricks just for the sake of it. The whole idea of moving down this road is that all partners have a

role to play. I think as you're intimating there, there is a key role for those groups to have an input into it. But it has to be a positive input, and they have to be at the table to take responsibility for it as well as having rights. That's going to be one of the key changes, I know its going to be very easy to criticise other people, but when it is thrown back and say 'well okay, you're party to this as well, we've got collectively to make it work'. So with the rights involved in that process, also come responsibilities for what comes out of that.

C: And would it take time to convey the idea that these groups have responsibility as well as a right to be part of a management plan?

R: Yes, I think it's a different way of doing things. First, we're giving people a voice, and they like that, and want to flex that, and everything else. But moving on to the next stage and maybe getting equal participation is going to be the difficult bit. Experience with community groups generally, youth groups, community activist groups tend to show it's the same small group of people that appear on every community group. Now, two things: one, it shows that the level of interest in any given community is probably quite small in getting actively involved. And the flip-side in that these very keen enthusiastic people can actually put other people off. Again, as I say, it's a process that has to be managed and we have to be very careful that we don't just get the people who turn up and have a say because they turn up and have a say about everything. We actually get people who are interested. That will need to be worked through. Young people tend to not like to mix with other groups. Young people have a legitimate voice as to what happens on beaches. In lots of ways there're probably the key users for various activities.

C: One thing that struck me in relation to coastal litter and bathing water is that there is a kind of contrast between the top-down approach – whereby there are standards to be met and targets set. And the kind of bottom-up approach – whereby education is seen as important. Do you think that in Fife broader education is integral to the management plan?

R: I think that there's a need for that education process to be taking place. But you can't make people take part in that. You would hope that by working with the schools and community groups you can gradually increase interest in that. But I don't think there is any magic-wand with it. And there are plenty of examples that despite a considerable amount of effort being put into issues through education, it's not a panacea for all ills. And a lot of it is down to behaviour. Education does not necessarily change behaviour. How we change people's behaviour, that's, I think for any issue, government, local authority, whatever, is a key factor. Greenpeace and all these other organisations have been campaigning for some considerable amount of time now, trying to get society to change its behaviour patterns and it's a very, very slow uphill process. And sometimes you seem to slip back just when you thought you were going forward. While people are happy moaning about the amount of litter in the community, getting them to do something positive in their contribution to that, I think, is another matter.

C: Yes.

R: People see the litter issue as: ‘the litter is on the floor, and we want someone to come and pick it up’. They don’t actually say: ‘well where did it actually come from in the first place’ and ‘would we be better recycling, or not using so much of it’, or whatever else. So there is a cycle there, a behavioural cycle, somehow we’re going to have to influence.

C: You said that some local authorities are wary of beaches being de-listed for awards because of negative publicity. If the Bathing Water Directive moves to a more beach management plan process, do you think that some local authorities might be encouraged to take part because there is less of a success / failure divide?

R: I would hope so. That’s just a personal opinion, I think it makes it easier if you can take part in something that you realise is a long-term process. There are a lot of quality awards around, and you’re in there for the long-haul. And there are improvement plans for taking it forward. Now, obviously, that still means monitoring and verifying. If you took something like Investors in People as a quality assurance, the way you treat staff – you don’t get your flag, and that’s it. Nobody looks at you ever again. They’re coming back in a cyclical way and reassessing you to see how you’ve done stuff and they’re asking not just you as the boss, but they’re also asking the staff whether they think things have improved. And you can see something similar if you’ve got these beach management groups set up and you’re working to an improvement plan and trying to take it forward you’ve got the agreed quality – in lots of senses. What the local people want, not what you’re telling them they should have. So beaches being managed along the lines of the local communities, and you can have external verifiers, or peer group verifiers coming in to say ‘okay, there’s your plan, I’ll go and have a look to see if you actually come up to that. So we could have someone from Dundee coming across and assessing what we said we’re going to do. You can gather peer group assessment from them, the kayakers, the beach litter groups, the local community anyway. They’re usually very quick if things are not going right, but instead of making a complaint, they know they’re in a process where if they phoned up and asked to speak to so-and-so, somebody will try and get something done about it. So it is in everyone’s interest to do that. But instead of that ‘bang’, you’ve failed, and everything that goes with that, the staff gets de-motivated, the politicians get edgy about it, the local communities feel angry about it. Instead you’re in a situation where you can say: ‘okay, we’ve had a bad year’ – it could be storms; it could be just grotty weather when we’ve not had enough sunshine or whatever else. We’ve got the information on that, it’s not been lost, we’ve got that, we know why those things are. Let’s move on and try and tackle that. Some of the factors we’ll never be able to influence, if you have a bad year with sunlight. Scottish Water relies on sunlight as part of the process with the water quality – there’s nothing you can do about that. The irony about losing the awards is, I’m not aware of any of any water being lost because councils have failed to hold their bit of the bargain. It has been the water quality. And as the local authority we have no influence on that at all, that’s Scottish Water.

C: I suppose the flip-side to awards is that the policy-makers quite like something they can say: ‘Scotland has a 97% pass rate for bathing beaches’. To do that with beach management plans might be more difficult because some kind of assessment is required to assess how it is working.

R: I wouldn't see it that way. I think you would have some kind of quality verification tied in with the system. You get people, say a local authority comes on board 'year one', they've probably got a long journey to go. They'll have probably just entered the scheme, and they'll have an evaluation and they'll have another evaluation, let us say, in three years time and another three years time after that. Just like you interview beach users every so often, you made this progress, in the next three years you've made that progress. You can gather that together nationally and say, well the general picture is, okay you've got 80% of coastal local authorities in the scheme, you have 10% in stage one of the scheme, just beginning, 20% at stage two, and I don't know, 40% at stage three. So you can come up with a scheme that has internal mechanisms where people are progressing, or 'scoring' if you like internally, or point to how far they're getting. But what doesn't happen is they *fail*. Year three, you've had your evaluation and they may say 'you've not made any progress at all. You need to sit down and think about this. In fact you'd say 'we're going to serve an improvement notice on you'. So that when we come back next time, if there's been no progress, then you should more-or-less leave the scheme because its not doing anything for you, and you're not achieving what's required. So you can build all that in, its just, its not got that annual fail/pass, fail/pass routine that becomes the focus of everyone's attention rather than moving the whole agenda on.

C: CCS, again, has been involved with community groups in Dundee in supporting moves to get a beach award. Could this be an example of how broad-based support is put into action?

R: Yes, in Dundee they've been moving forward to get an award beach, at Broughty Ferry. So the local council have been working with a variety of people to get that. And again, because they're coming in at the latter stages, I think they're trying to take a more holistic approach to it. We've given some support to them where we can. And we're learning from them because they're starting afresh. What we've done traditionally for the last five years in the same old way, they've got fresh eyes and things, so they'll maybe do it slightly differently so we can learn from that the other way. I think CCS would try and encourage local authorities to get involved in the process, and we're currently in discussions with KSB, CCS and the local authorities who are interested in saying where can we go with this. Our beach award systems, I don't know whether you know, might be changed?

C: Yes, up for review.

R: And the initial thought was that they were going to do away with the seaside awards, which is the orange and blue flags. I know down south, from the beach managers, many local authorities would regard that as a retrograde step. But some of us don't – I said that Fife was involved as a pilot with some English local authorities. The rest were somewhat alarmed and disappointed when we moved away and started developing this beach management approach, rather than the award approach. So there are lots of negotiations going on about that. Scotland, Wales, Ireland, Northern Ireland in particular have to look at what's being proposed in the national context. There may be scope for saying: 'well we can accept there is a core set of values'. The context in Scotland, Wales, Northern Ireland – the Celtic fringe – whatever you want to call it, is different. Therefore we're going to take a slightly different approach to it we'll still have the core, but our interpretation of the context will be different. So

there's that scope and potential coming up, but its early days in the discussions, and I think everyone is trying to feel their way into where we go with it.

C: So in terms of the beach awards, you would like to see a more rationalised beach awards scheme?

R: I think it is difficult to say. I don't know. I think a lot of people are, on the one hand, thinking that rationalisation might be appropriate, but on the other hand, people are recognising that it's the flexibility and diversity that makes it work. Just as we were touching on earlier, you may get a lot of Scottish beaches that have virtually zero facilities, but are nice beaches if you want to go for a quiet walk – the Highland ones, and the islands. Now you say, that's too simplistic, we don't want you in the scheme because we're talking about the big end of things. The scheme we come up with has to take on board all sorts of beach where the local authority and community are interested, and I think there are good examples where beach cleaning in particular is done by the local community with some support from the local authority in terms of providing skips and bags or whatever else. But it is the community who go out and do it. You're not talking car-parks, toilets, massive amounts of information. It's a natural beach, at the one end, right the way through to a resort beach like Blackpool at the other end. And given that range and diversity, you've got to have a system that's capable of taking all that on board.

C: In Wales there is a system of green flags.

R: They've got the green coast award, which is a Welsh initiative and it does have some value. But again I think there are problems with the water quality side of that. So you couldn't move that naturally to the west coast of Scotland, because the beaches there would just fail. So again you need to look at it, what you're interested in. There's talk about having different categories of beach, but it may well be that you just have 'rural', which is somewhere like Crail, you know Crail in East Fife?

C: Yes.

R: Smaller beaches that don't tend to be associated with towns – Kingsbar, Crail, places like that. There'll be a car-park, there may well be an information board and life-saving equipment, but the beach itself is basically a natural beach. Whereas somewhere like Silversands or Elie where you get more intensive use and more intensive management, higher specification for the facilities and those sorts of things. So you've got rural on the one hand, with the likes of Kingsbarns, Crail, and then you've got the resort beaches. And then you've got the Blue Flag which then comes in on top of that, which you know, just lifts the bar. But you've got to be a resort beach to get the Blue Flag. There is nothing for the rural beach, which is why the Welsh came up with their green coast system.

C: In terms of private beaches, obviously Fife Council doesn't have any responsibility for them, but do you provide any support for privately owned beaches?

R: The simple answer is no. It's a resource issue. And we struggle to keep the resources we need for our own beaches. So we're not in a position to be able to go out and help private beaches to reach standards. That said we're very conscious that the

local communities associated with a lot of these beaches would like something to happen. So one of the things we want to do is move forward with communities in general. So if you like, it's the second part, and say: 'okay, there's a beach, associated with this community, it's a private beach, but everyone uses it. The council are currently not involved in the management of it so how do we come up with a way of taking it forward?' Like you say golf courses; we need to speak to the golf course owner to see what's going to happen to get nice beaches. At the minute they're strewn with marine litter. How do we start to try and get that sorted? In theory they've got men on the ground and equipment on the ground, and it should be quite straight forward. In practice they'll probably say: 'look, we're a business and run a staffing level just to run the golf course, not to start doing something for the public good'. I understand that the legislation might change that, there's a revision of the Environmental Protection Act. And in that I think there are bits about – there'll be a duty on the owner to clean them up. That could be quite interesting, but we'll see how that works. I'd prefer to work in a more constructive way of doing it obviously.

C: And if, for example, a private owner were to submit their beach for a beach award, would it be up to Fife Council to provide any help?

R: I don't think so. That would rest with SEPA. It tends to be, the two people doing the measuring, you've got SEPA with the water quality, and again they're just doing that because SEPA do that. Beach owners can pay for them to do it, or they'll do it as part of the agreed register of bathing waters. So that's the water quality side. On the landward side, you get inspections for the awards, and that's it. So you're really looking at KSB in Scotland sending out an inspection team. And they'll inspect it to see if you meet the standard with regards to the facilities included on the beach and things. If you do, you do, and if you don't, you don't. It tends to be an interactive process in that they do tend to talk to you about it and try to give you a chance to improve it. If inspectors came down and it was a bad day, and it was awful – someone has stolen the sign – they give you a chance to come up to the standard. Shell Bay near Elie used to be in the scheme. But what happened was the manager was fed up with the amount of sea-borne waste being washed up from the sewage output. He was getting condoms and tampons and all sorts of things being washed up on his beach, and was thinking it's very unfair. So he pulled out. But there's scope there to work in partnership with people.

C: The final think I was going to ask is whether you'd like to see more of Fife's beaches designated as bathing waters, and whether you think that might eventually happen?

R: I think we would like to see more sampling around the coast that would allow us to bring more beaches into the beach management scheme. Now I know if that's down to the register of bathing waters there's a resource issue about that. And the current review that SEPA are undertaking is trying to cut-back, even in Fife. As I say, places like Crail just have continuous guideline standard. They'd like to cut-back the sampling regime considerably because it frees up resources for looking at other areas. SEPA obviously has to take a rational view of that. It will be a factor in determining where we go with beach management in that we do have a policy that states we would like to bring more beaches under the beach management system. Depending on where the awards go, where the Bathing Water Directive takes us, SEPA's ability to support

that will determine in due course which beaches we do put forward for awards. The first thing we do is look at the beaches that are currently sampled, to keep them up to the standard.

C: And would the designation of further bathing waters cause the local authority to stretch existing resources even further?

R: If my understanding is right, they're not talking about cancelling bathing areas, just reducing the sampling. Now the importance with that is down to British interpretation of sampling, and stipulation for the awards about the sampling regime you have in place. So inadvertently SEPA are saying in fact: 'we're happy and convinced that you're going to have good quality water'. The fact that they're not going to carry out a set number of samples on that basis could actually cost you the award! The water is okay, it's just you don't have a sampling regime which is required! That is an issue, and I know that is being looked at because last years conference, I think it was Portugal, or somewhere, and they started talking about their sampling regime. I think the audience was flabbergasted how, relatively speaking, the sampling there lacks what we're going to be going through. So again you're back down to British versus other European countries interpretations of what the criteria are. And if there is a way forward that will allow SEPA to operate within the system, doing fewer samples, then yes, I am in favour of it. Hopefully we're moving to a position where we're only sampling by exception anyway, rather than just doing the number crunching. So I'd like to see that. It comes back to, it's the nearest we get to real-time sampling for the public, so it is important. To some extent I think that having the information to put up on an information board regularly at the beach as a beach manager is more important than whether last year you didn't quite hit the standards, and now you're twelve months on. So I think there's a balance that needs to have to be struck.

C: Thank you, I think I've covered all I wanted to cover.

Appendix II: Sample Fieldnote: Participant Observation of Seawater Sampling and Laboratory Testing (Fieldnote 28: 25/07/05)

I arrive at the SEPA offices at about 9.15am, ahead of Steven – who I am to meet. After waiting for about ten minutes, Steven meets me and takes me to his office and laboratory. He is about the same age as me with red hair and a beard. Later, I find out that he studied microbiology in Edinburgh before working for Scottish Water. He only recently transferred to SEPA, and was still learning the ropes. The bathing water laboratory is small (about 4m by 3m), and has one computer on a desk in the corner. A number of fridges and incubation ovens are lined up against two walls as well as three water baths. These baths are programmed to different temperatures to test for faecal coliforms and total coliforms. At the back of the laboratory are six filters which draw bathing water samples through filter-paper, so that bacteria and other residue is left on the paper and then added to labelled Petri-dishes. On the left of the laboratory is a fumigation chamber, and to the left of this is a Bunsen burner for sterilising tools, and a sink with emergency eye-drops placed next to the first-aid kit.

On the right of the laboratory is a store cupboard in which some of the chemicals and Petri-dishes are kept. And in the laboratory are various containers of distilled water, other receptacles and jars, as well as binders, files and a notice board with a sampling rota. Before we go out to collect samples, Steven counts the results from the previous days' measurements. He removes several screw-top metal containers from the water baths, which each contain about eight Petri-dishes with samples. He explains to me that they do two types of test: first, for coliforms, and secondly, for 'strep' (streptococci). The dishes he counts first are the coliforms, which are normally colonies of *E. coli*. These show-up as tiny yellow dots on the red background of the Petri-dish. On the sample that Steven shows me, there are clearly three colonies. This means that in this 10ml sample, there are thirty colonies per 100ml – which passes the bathing water test with 'guideline' quality.

Next we look at the streptococci, which are kept in the incubation box. These are yellow-ish on the red Petri-dish, and the colonies here show-up as tiny red dots. The one Steven shows me has over twenty red dots, but this is still passed at 'guideline' standard. Steven tells me that if results come out as a marginal 'fail', they do a confirmation test – which involves separating out the Petri-dish into test-tubes using distilled water and testing for gas release. Then, after incubation, a white solution is added and if the surface turns red immediately, the presence of streptococci is confirmed. Steven does a confirmation test for a water sample collected at Lower Largo, and most of the results come-up as red.

There is a lot of counting of coliforms and streptococci involved in water sampling, and the results are initially logged on paper by Steven and the part-time summer assistant Ruth. These results are then checked over by a supervisor, who then sends them electronically to the SEPA office in Stirling, when they are uploaded onto the central database and the website. The supervisor, Mike, called by the laboratory and explained to me that the computer is only connected to an old 56k modem, and that uploading data is a pain because it can take ages for the information to be sent. Normally, he says, results appear on the website the same evening, if they were submitted by 6pm. Mike looked over the work Steven was doing, and suggested that we leave in the van fairly soon to collect samples, because the tide was going out. At this point he spoke to me about the electronic notice boards that are used in some bathing areas. He stated that calibrating electronic signs required daily measurements

over the course of a month. This, he claimed, was a pain at some sites where the walk to collect a sample can be quite lengthy when the tide is out. Mike joked by stating that he asked the caretaker to collect daily samples at Portobello when this sign was being calibrated because it was on the caretakers' way to work.

Mike explained that the electronic signs are owned and monitored by SEPA, rather than the local authority, which maintains all other signs. SEPA is also responsible for deciding what constitutes an 'abnormal' event (once in five years), for which several beaches were granted in 2004 due to heavy rainfall. I asked Mike about the dangers of other pollutants that are not measured by bathing water tests. He said that some chemicals are potentially a lot more harmful than 'e-coli bugs' if washed into the sea.

Steven and I then went out in the van with a cool-box filled with empty glass jars to collect water samples. On the way, I asked about how sunlight can kill coliform bacteria. Steven explained that samples should be quickly placed into the darkness of the cool-box because sunlight can change results. We drove to the furthest beach to be sampled – Pathhead Sands, near Kirkcaldy. Steven told me that he regularly drives over 600 miles every week, and that the furthest he normally goes is to Arbroath, almost two and a half hours away. He returns to Edinburgh quickly with water samples because water testing must commence within six hours of a sample being taken.

At Pathhead Sands we stop, and Steven puts on Wellingtons that cover the whole leg. He brings out a testing pole from the back of the van, which has a metal cage on the end into which a glass testing bottle is fixed. The metal cage is fixed by duct-tape to a secondary collection tube. We walk to the water's edge and Steven continues until the sea is about thigh-deep. He later explains that each beach has a sampling point that he, and the other microbiologists, try to return to every time to ensure that measurements are consistent. But this can be difficult where the tide has a large range. This means that the sampling point at low-tide can be 300-400m away from the high-tide sampling point. Steven says that the sample should be taken at about 30cm below the surface of the water, beyond breaking waves. This is where bathers are most likely to be swimming. In practice however, he explains that breaking waves can often be a lot further out. He collects water samples by swinging out the black pole at arms-length to collect a bottle-full of seawater. He leaves the electronic thermometer in the secondary tube while capping the main sample. Then he reads off the temperature and discards water collected in the secondary tube.

Back at the van, Steven places each full bottle in the cool-box, and puts a fresh empty bottle in the metal cage ready for the next measurement. Each bottle is carefully pre-labelled with the name of the beach. Steven then fills out a survey sheet for each beach. This requires him to note the following characteristics, which he does quickly from memory:

- Transparency (this is assessed as 'less than 1m', 'between 50cm and 1m', and 'less than 50cm'). Steven later shows me white markings on the sampling pole that are used to estimate transparency.
- Mineral oil (present or not)
- Sub-surface substances (present or not)
- Wind direction (a rough estimate)
- Weather conditions
- Number of people in the water
- Number of people on the beach
- Date, time and any other remarks

Pathhead Sands has a lot of litter. It is a stony beach, and there are very few people about. We quickly move on to the Kirkcaldy Seafield, our second beach. This beach has more sand, and is further from town. It is also more of a leisure beach with car parking area and signs to inform visitors of the coastal wildlife and the coastal path. Steven conducted the same sampling process and quickly registered other readings back at the van. At Kinghorn, a large school-group was on the beach collecting items from rock-pools. A group of older men at the sea-wall spoke to Steven and I to ask about recent bathing water results and to complain that nobody was maintaining the notice board next to the life-ring. Apparently someone from Fife Council had been round replacing some of the old notices after complaints had reached the council. Steven explained that all beach notices are the responsibility of the council, but said he would have a word to see if anything could be done.

Two mechanical beach-cleaning machines were working at Kinghorn, lifting seaweed from the east of the beach. At Pettycur, Steven showed me a sign that indicated the sampling point on the beach. The tide had retreated quite far, so Steven had a long walk past several bait diggers before he reached water that was deep enough to sample. At Burntisland, we stopped at a bakery for lunch, and then drove on to the beach car park. While Steven walked across mud-flats to collect a water sample, I spoke with the lifeguards on duty. They explained that while the beach was deserted, on busy weekends there could be many hundreds of people at the beach. I asked whether the tides could be dangerous, and they said that they advised people not to use inflatable lilos because of the risk of being taken out to sea by a retreating tide. They explained that their other job was to ensure that dogs were kept off the beach.

At Silversands the number of beach visitors was greatest, with over fifty people. There was a bouncy-castle for children and two vans selling hot and cold snacks. Two lifeguards were present here also, and the beach warden. Both Silversands and Blacksands had recently been given new beach signs, which contained the results from bathing water tests taken just five days previously. Steven took his water sample and later told me how, at the start of July, the beach was so busy he had to step over people. During this hot spell, he counted over 100 people in the water and perhaps five times as many people on the sand. He explained how a young girl paddled round him on a lilo while he was trying to collect a water sample.

We then drive to Dalgety Bay, where I speak to an elderly passer-by about water sampling procedures. While Steven collects a water sample I explain that SEPA water quality tests are conducted regularly to assess adherence to the Bathing Water Directive. The man explains that he was aware of the results of water tests, but that this was the first time he has seen someone out collecting samples.

Back at the laboratory, Steven starts the analysis procedure. First, he counts out adequate Petri-dishes for both him and Ruth, who has been sampling in East Lothian. Each beach sampled requires six Petri-dishes, as shown in the table below:

	Bacteria Tested	Amount of Seawater	Type of Petri-dish	Incubation
1.	Faecal Coliforms	1ml	Red	4hrs 30°c 14-18hrs 44°c
2.	Faecal Coliforms	10ml	Red	4hrs 30°c 14-18hrs 44°c
3.	Total Coliforms	1ml	Red	4hrs 30°c 14-18hrs 37°c
4.	Total Coliforms	10ml	Red	4hrs 30°c 14-18hrs 37°c
5.	Faecal Streptococci	10ml	Yellow	4hrs 30°c 48hrs 44°c
6.	Faecal Streptococci	50ml	Yellow	4hrs 30°c 48hrs 44°c

Steven prepared each Petri-dish by placing on a small white growth-pad. The faecal streptococci Petri-dishes were pre-prepared. Then he printed out labels on the computer and stuck them on each of the Petri-dishes before lining them up at the suction pump. Steven boiled the measuring containers and filter heads to sterilise them, and used a Bunsen Burner to sterilise the tongs used to lift squared paper onto each of the filter heads. Then he used a pipette to measure each amount of seawater and turned on the pump so that water was drawn through the filter paper. At this point, the suction pump broke. Steven explained that it was over thirty years old and could be temperamental. He found a replacement pump in the store cupboard, but his one did not perform the job as quickly as the pump used normally. Once all the water was drawn through filter paper, Steven placed each piece of filter paper onto a relevant Petri-dish. The lids were then placed on the Petri-dished and Steven collected them together and put them into relevant incubation machines and water baths at the correct temperatures.

At this point we took a tea break, and went with other microbiologists through to the canteen. Steven and Ruth told me several stories related to seawater sampling. Ruth, for example, had fallen into the sea at St. Stevens the previous day after slipping on some kelp-weed.

While Steven packed away the chemicals and bottles used for water sampling, I spoke with the supervisor, Mike, about other work that microbiologists do at SEPA. He explained that in addition to bathing water tests, they also take freshwater samples where they suspect water quality guidelines are being breached. These measurements account for only a small portion of their time during the summer months, however, because bathing water tests are continual from May to September. Mike explained that they had recently tested the effluent from a sewage treatment plant near Edinburgh. Results from these tests indicated that the water was of drinking water quality because it had been subject to UV treatment, which kills all bacteria. After this discussion I thanked Mike and Steven for letting me accompany them, and left shortly before 5pm.

Appendix III: Original Spanish Text

- a. Estimado D. Colin Campbell. Gracias por su interés en la Campaña Bandera Azul. Lo siento, no se puede dar información sobre la inspección, ya que es un tema interno.
- b. pues, necesitamos escuchar las opiniones de los visitantes, los turistas. En Almuñecar, lo que es más importante es el turismo porque la mayoría de empleo está en turismo. En los últimos años, preguntamos a qué turistas tienen gusto... y dijeron que los perros no deben estar en las playas. Y debido a esto, los perros están prohibidos.
- c. ni las piedras de la playa, ni el agua fría, ni la seguridad. Lo que más molesta a los turistas almuñequeros es la presencia de cacas de perro en playas, calles o paseos. Al menos así se desprende de las encuestas de satisfacción que rellenan en los hoteles sexitanos y que suelen estar encabezadas por la presencia de excrementos caninos. Pero las cacas de perro no sólo molestan a los visitantes, los almuñequeros están cansados de que su imagen se vea perjudicada por la mala educación de unos pocos. Por eso su Ayuntamiento ha tomado buena nota y se ha puesto manos a la obra para cambiar la poca conciencia de los propietarios de los animalitos por la vía sancionadora. Desde este mes, según anunció el concejal de Medio Ambiente, Jesús García Alabarce, tres inspectores se dedicarán a la caza y captura de los ciudadanos que demuestran falta de educación y de respeto hacia el resto cuando sacan sus perros a realizar sus necesidades en la vía pública y no retiran sus defecaciones.
- d. para mantener la limpieza de la arena, las piedras, los tres inspectores tienen instrucciones de espiar y perseguir a los infractores y aplicarles la correspondiente sanción que oscila entre los 100 y 600 euros. Vamos a ser inflexibles en la política de infracciones para ver si de esta manera los ciudadanos que tengan perros de compañía cumplen las normas.
- e. es la segunda parte de la tradición de San Juan; a la noche fiesta, le sigue una mañana más puerca en las playas sexitanos. Las playas amanecieron en un lamentable estado de suciedad que obligó a los servicios de limpieza municipales a triplicar esfuerzos para volver a dejarlas en estado de revista. Más que treinta mil kilos se llevaron de las playas en la primera limpieza de la mañana. Después se volvieron a realizar dos batidas más. No fue una tarea fácil, ya que los operarios y máquinas de limpieza tuvieron que ir sorteando a centenares de bañistas acampados en las playas. También, hay actos vandálicos... las pasarelas de madera se convirtieron en combustible para las hogueras de algunas personas. No se enteran que cada módulo cuesta unos 140 euros y que son un elemento fundamental para garantizar el acceso al litoral a las personas con movilidad reducida.
- f. hay un problema en invierno, particularmente cerca de playa Velilla, donde están vacíos un ciertos ochenta por ciento de apartamentos. ¡Es un pueblo fantasma!

- g. Banderas Negras es una campaña en la cual el principal objetivo es realizar un informe contrastado sobre la situación de nuestro litoral.
- h. la finalidad no es ahuyentar al turismo, ni castigar a los ayuntamientos que mantienen con mala calidad sus playas o consienten agresiones urbanísticas; creemos que el mantenimiento del buen estado de las aguas y de las playas es una exigencia ineludible que continuamente vemos incumplida, a pesar de que el mayor y mejor atractivo turístico es ofrecer una costa en perfecto estado de salud ambiental, además de ser uno de los compromisos de "desarrollo sostenible" emanados de la Cumbre de la Tierra de Río de Janeiro. Deseamos que los ayuntamientos que se han ganado a pulso este baldón, lo asuman como un requerimiento para que saneen sus playas y pongan fin a la degradación ambiental del litoral.
- i. Ecologistas en Acción Marking Criteria:

Los objetivos de "Banderas Negras" son:

- Dar una información rigurosa a los ciudadanos, y a todos los usuarios del estado ecológico en el que se encuentran las playas y lugares de baño.
- Requerir a ayuntamientos, resto de las administraciones y a empresas, para que contribuyan al saneamiento de las playas y pongan fin a la degradación ambiental del litoral.

- j. Ecologistas en Acción Marking Criteria:

Marca el grado de suciedad dentro de las categorías:

- muy sucio (imposible caminar sin pisar la basura)
- moderadamente sucio
- limpio (sin basura o con menos de 10 objetos)

k. Ecologistas en Acción Marking Criteria:

Si tienes evidencia de que existe un riesgo serio (R) o amenaza inminente (I) para la costa señala con R ó I cuál es:

- Erosión Extracción de arenas o gravas Edificación
- Vertedero de basuras Contaminación del agua por:
 - aguas fecales* *radiactividad* *aceites, petróleo*
 - industrias* *agricultura o granjas*
- Abuso de actividades recreativas Acuicultura
- Otros:

- l. La pretensión de convertirlo en otro Torremolinos con el argumento de que lo que es bueno para Málaga no va a ser malo para nosotros, ha vuelto locos a los gobernantes municipales, que quieren llenar de cemento y ladrillos todo lo verde que queda. No se preocupan de basura o aguas hasta que es demasiado atrasada.
- m. es más efectivo dar Banderas Negras sólo a aquellas playas que tengan muchas evidencias negativas o alguna muy significativa. Vertidos no demasiado importantes, o problemas puntuales es más adecuado calificarlos como 'Puntos Negros', con lo que el peso de las Banderas Negras termina teniendo más efectividad.
- n. esta situación explica que playas españolas que han sido agraciadas con banderas azules pese a tener graves irregularidades en aspectos tales como la calidad del agua, el incontrolado desarrollo urbanístico, la destrucción de espacios naturales, etc. Ecologistas en Acción ha denunciado en múltiples ocasiones que la concesión de Banderas Azules no supone una garantía de la situación ambiental de las playas, ya que este distintivo se concede principalmente en función de intereses turísticos.
- o. solicitamos a los ayuntamientos que impidan la colocación de las banderas azules, ya que solo van a aportar desprestigio a sus municipios. Si quieren gestionar las playas con rigor y transparencia deben desechar el mercadeo de las Banderas Azules. Este es el único manera de reconoce los esfuerzos de una administración por identificar y hacer frente a los impactos ambientales de sus operaciones. Concedería credibilidad, y demostraría a la comunidad su auténtico compromiso con respecto a la protección del medio ambiente.
- p. en este sentido, y atendiendo a su solicitud, le informo que en el año 2004, en el municipio de Almuñécar, la playa de Velilla obtuvo la Bandera Azul 2004 (fue la única playa galardonada de este municipio). Asimismo, le informo que dicha Bandera fue retirada por los inspectores de ADEAC el día 4 de agosto, al considerar en la inspección in situ realizada a dicha playa, que no se cumplían todos los criterios imperativos exigidos por la Campaña. No se puede dar información sobre la inspección, ya que es un tema interno.

- q. en Almuñécar, que otrora ha recibido varias banderas azules, este año hemos decidido no optar a ellas. Estamos en desacuerdo con los criterios que se siguen para su otorgamiento. En 2004, el municipio obtuvo una sola Bandera Azul - única de la provincia de Granada ese año. Estamos en desacuerdo con los criterios de evaluación de la Fundación que otorga la distinción, a los que no son muy objetivos, Anunciamos en febrero pasado nuestra renuncia a optar por las banderas azules. Para no aspirar al premio, no necesitamos el trabajo que requiere por parte de los servicios técnicos municipales el preparar toda la documentación y no hay repercusión negativo que supone el hecho de que no se conceda el galardón.
- r. el Ayuntamiento no se estaba de acuerdo con los criterios en las formas de conceder este galardón, que dicho sea de paso, tiene un amplio cumplimiento de documentación que hay que aportar. Como le decía los criterios no eran, a nuestro juicio, los más idóneos según pudimos comprobar en la documentación y argumentos. Estos trámites se habían realizado siempre y cuanto más inversión y empeño hemos puesto en mejorar las condiciones y servicios de las playas han sido a la inversa en la concesión de galardones con argumentos poco creíbles. Sepa que invertimos en limpieza de arena y agua, despedregado de aquellas playas o zonas que los requieren, ampliación de puestos de servicios, duchas y mayor implantación de protección civil como medidas de socorro e información. En fin un capítulo amplio de inversión que tenemos como resultados la confianza de los usuarios y la opinión de estos que es, en definitiva, lo que más nos importa. En un futuro si cambian los criterios, es posible que volvamos a participar en la tramitación pero por ahora, insisto, lo que más nos importa es el resultado de los usuarios.
- s. claro que la bandera azul es sin setido. Pero es inadmisibile que el ayuntamiento alabe el buen estado sanitario de las aguas cuando todos los veranos nos encontramos con cientos de casos de dermatitis y otras afecciones achacables al mal estado de las aguas de baño. Hay que establecer un nuevo inventario de contaminantes marinos. Y el ayuntamiento necesita hacer algo, frente a los impactos ambientales.
- t. no necesitamos limpiar la playa de la misma manera cada día. La compañía concesionaria recoge basura por las mañanas, pero si la playa necesita un limpio especial, es él que lo organiza.
- u. estoy sorprendido por el informe sobre la calidad de aguas de baño en 2004. La consejería de Salud de la Junta efectúa analíticas periódicas sobre el estado de las aguas que siempre han dado resultados muy favorables. Por lo que considero que el informe comunitario no se ajusta a la veracidad del estado actual de esta playa. La consejería de salud confirmó ayer mismo que tanto en 2004 como este año los niveles fueron calificados como correctos en el Pozuelo. Y tanto en el caso de El Pozuelo, como en las playas de Almuñécar los niveles de calidad de las aguas son muy aceptables y esos informes son los que dan tranquilidad.

- v. no me preocupo con los informes oficiales sobre la calidad de las aguas de baño, que son anticuados. Pozuelo, como el resto del litoral, se encuentran en perfecto estado y no hay motivos para crear la alarma social ya que cumplen con los requisitos de salubridad. Cada día miles de bañistas utiliza las playas para aprovechar el sol y las aguas, y saben que las playas son muy aceptables.
- w. el incontrolado desarrollo urbanístico ha aumentado las aguas residuales que son descargado en el mar. Y todos los veranos nos encontramos con cientos de casos de dermatitis como resultado de contaminación en las aguas de baño.
- x. el invernadero no es de lo más bonito como estampa turística. Y necesitamos delimitar bien las zonas turísticas con las zonas dedicadas a la agricultura, sin interferir unas con otras. Vamos a estar todo zonificado y separado – industria y playa – para mantener la calidad de las playas y las aguas de baño.
- y. en el litoral granadino los invernaderos llegan hasta la misma orilla del mar y desechan residuos agrícolas que adorna sus aguas. Hay vertidos de residuos agrícolas y envases de fitosanitarios tóxicos y peligrosos. Necesitamos una norma que incorpore nuevos parámetros físico-químicos y microbiológicos.
- z. el Partido Popular de Almuñécar ha denunciado que desde hace varios días se vienen produciendo vertidos incontrolados en las playas de Pozuelo y La Herradura. Según afirma, podría provocando fuertes olores y contaminación. El portavoz del PP de Almuñécar dijo haber comprobado que las playas se encuentran afectadas por manchas en el agua de grandes dimensiones que impiden el baño. Los populares señalaron que ‘no queremos ser alarmistas, pero hemos recibido quejas de muchos bañistas por la existencia de grandes manchas de suciedad, al parecer aguas fecales sin depurar, con materia orgánica, altamente pestilentes y contaminantes, que han extendido por nuestras playas. Por su parte, el PSOE han pedido que ‘ante la gravedad de los hechos’ el gobierno municipal informe a los ciudadanos sobre lo que está sucediendo.
- aa. los populares y socialistas han informado con un alto grado de oportunismo e irresponsabilidad. Tras un minucioso análisis de muestras recogidas en el mar, el laboratorio ha concluido que las manchas en la playa eran residuos de origen natural – compuestos de algas principalmente. Los populares no hacen más que crear alarma social, totalmente injustificada entre los posibles visitantes y turistas. Esta irresponsabilidad pone en peligro el futuro social, económico, turístico y medioambiental de todos los ciudadanos.
- bb. las embarcaciones cuentan con seis metros de eslora y dos de ancho, poseen tres motores de 10 caballos – dos a bordo y uno de reserva. Así como equipamiento de salvavidas y canastas para el arrastre de basura en el agua, desde bolsas, preservativos o pescados de gran tamaño, que son arrojados en alta mar por los pescadores debido a que no les son útiles para el mercado. Hemos dividido el litoral en tres sectores: uno que comprende la zona de La Herradura, Cantarriján y Marina del Este, el Segundo, desde la playa de El

Muerto a Velilla, y el último desde Velilla hasta la zona limítrofe con Salobreña.

- cc. se ha señalado que los residuos que más se recogen son palos, maderas, mucho plástico y algún que otro metal desechable, entre otros objetos. Y es que dependiendo del estado del oleaje del mar, es decir, con poniente o levante, la suciedad aumenta o disminuye. Con el levante aumenta, sobre todo porque arrastra todos residuos de la parte de Motril y cuando es levante Marina del Este hace la barrera.

Appendix IV: SEPA Water Quality Results for Silversands 2004

Aberdour (Silver Sands) Results				
Date	Total Coliforms (colonies/100ml)	Faecal Coliforms (colonies/100ml)	Faecal Streptococci (colonies/100ml)	Abnormal Weather Waiver
2-Jun-2004	10 (G)	10 (G)	2 (G)	-
	😊 : Excellent Quality			
11-Jun-2004	10 (G)	<10 (G)	6 (G)	-
	😊 : Excellent Quality			
15-Jun-2004	<10 (G)	<10 (G)	4 (G)	-
	😊 : Excellent Quality			
24-Jun-2004	270 (G)	270 (M)	30 (G)	-
	😐 : Good Quality			
29-Jun-2004	10 (G)	<10 (G)	<2 (G)	-
	😊 : Excellent Quality			
7-Jul-2004	40 (G)	30 (G)	4 (G)	-
	😊 : Excellent Quality			
13-Jul-2004	20 (G)	10 (G)	<2 (G)	-
	😊 : Excellent Quality			
16-Jul-2004	<10 (G)	<10 (G)	<2 (G)	-
	😊 : Excellent Quality			
21-Jul-2004	30 (G)	10 (G)	8 (G)	-
	😊 : Excellent Quality			
25-Jul-2004	10 (G)	10 (G)	2 (G)	-
	😊 : Excellent Quality			
30-Jul-2004	10 (G)	10 (G)	97 (G)	-
	😊 : Excellent Quality			
4-Aug-2004	120 (G)	50 (G)	12 (G)	-
	😊 : Excellent Quality			
6-Aug-2004	230 (G)	60 (G)	34 (G)	-
	😊 : Excellent Quality			
11-Aug-2004				Yes
	Abnormal Weather Waiver Applied			
18-Aug-2004	350 (G)	310 (M)	80 (G)	-
	😐 : Good Quality			
26-Aug-2004	50 (G)	10 (G)	6 (G)	-
	😊 : Excellent Quality			
27-Aug-2004	170 (G)	160 (M)	20 (G)	-
	😐 : Good Quality			
30-Aug-2004	142 (G)	80 (G)	82 (G)	-
	😊 : Excellent Quality			
31-Aug-2004	210 (G)	70 (G)	6 (G)	-
	😊 : Excellent Quality			
8-Sep-2004	60 (G)	20 (G)	6 (G)	-
	😊 : Excellent Quality			
14-Sep-2004	80 (G)	20 (G)	16 (G)	-
	😊 : Excellent Quality			

OTRAS INFORMACIONES

Si tienes evidencia de que existe un riesgo serio (R) o amenaza inminente (I) para la costa señala con R ó I cuál es:

- Erosión Extracción de arenas o gravas Edificación
- Vertedero de basuras Contaminación del agua por:
 - aguas fecales* *radiactividad* *aceites, petróleo*
 - industrias* *agricultura o granjas*
- Abuso de actividades recreativas Acuicultura
- Otros:

CALIDAD AMBIENTAL

Vegetación:

- Formación dominante: arborea arbustiva herbácea
- Densidad: muy densa poco densa esparcida
- Hábitat dominante: rocoso arenoso artificial
- Especies características:
- Especies endémicas:
- Estado de conservación:

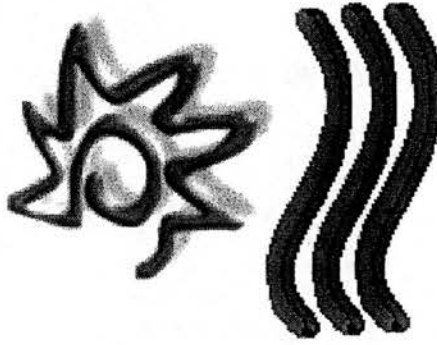
Fauna:

- Hábitat dominante: rocoso arenoso artificial
- Invertebrados:
 - Moluscos:
 - Artrópodos:
- Vertebrados:
 - Mamíferos:
 - Reptiles:
 - Aves:
- Presencia de aves: ocasional estacional sedentaria

Estado de conservación: _____

NOTAS: _____

PROTECCIÓN DEL LITORAL
FICHA DE TRABAJO



ECOLOGISTAS EN ACCIÓN

Nombre de la zona:		✓ Han existido ilegalidades urbanísticas:	SI	NO
Longitud:		En caso afirmativo, especificar:		
Tipología del litoral:		✓ Paseos marítimos: año de construcción.....		
Playa <input type="checkbox"/> Cala <input type="checkbox"/> Acantilado <input type="checkbox"/> Puerto <input type="checkbox"/> Escollera <input type="checkbox"/>		✓ Han rellenado o afectado a:		
Término municipal:		*playa	*dunas	*arrecifes
Localización:		*pinares	*acantilados	
Entidad que facilita la información:		✓ Consecuencias ambientales del paseo:		
Nombre:		✓ Han existido otros rellenos:	SI	NO
Dirección:		Objetivo de los rellenos:		
Localidad:		✓ Entidad que los ha realizado:		
Teléfono:		✓ Consecuencias de los rellenos:		
Correo electrónico:		✓ Existen proyectos urbanísticos de ocupación del litoral:	SI	NO
Fax:		El Plan General Municipal de Ordenación o las Normas Subsidiarias vigentes aseguran para este tramo costero:		
Persona de contacto:		➤ la edificación		
Fecha de observación:		➤ la protección como no urbanizable		
Intensidad del viento (leve, moderada, alta) y dirección:				

Si se dispone de mapa, adjuntarlo, a ser posible de escala mínima 1:50.000

INFLUENCIAS PROCEDENTES DE TIERRA

Zona próxima a la costa

- pastizal intensivo / golf
- huerta / granja / cultivos
- matorral / monte bajo
- dunas / marismas
- parque / bosque
- acequias / canales de riego
- rocas / arena
- población o zona residencial
- uso por o para turistas
- vertedero
- invernaderos / industrias
- carretera / ferrocarril / puerto
- grandes construcciones
- zona militar
- paseo marítimo
- otros

VERTIDOS

Número: _____ Origen: _____

Entidad: leve grave muy grave

Descripción: _____

Localización: _____

* directamente a la costa

* con emisario submarino longitud del vertido: _____

Causa del vertido: _____

-no existe depuradora

-existe, pero los colectores no está conectados

-funciona: mal intermitentemente

no funciona, cerrada (desde el año): _____

-el emisario está roto (estado en que se encuentra): _____

Presencia de sólidos flotantes en el agua: _____

Excrementos Bolsas de plástico "Nata" o espuma

Papeles, cartones Envases, botellas Otros (describir cuáles): _____

Consecuencias de los vertidos: _____

Ecológicas: _____

Sanitarias: _____

AGRESIONES URBANÍSTICAS

Urbanizaciones que han destruido espacios de valor ecológico o paisajístico:

*playas *dunas *pinares

*áreas de interés faunístico *vegetación valiosa

Especificar: _____

Las edificaciones invaden : _____

• El dominio público marítimo terrestre: SÍ NO

• La zona de servidumbre: SÍ NO

VERTIDOS

BASURAS Y CONTAMINACIÓN

	SI	NO
Existen análisis oficiales que determinan contaminación (especificar Administración)		
Existe analítica realizada por particulares o asociaciones		
La playa ha estado cerrada por contaminación Fechas:		
Han existido problemas sanitarios Especificar:		
Se han denunciado los vertidos: Judicialmente Administrativamente		
Organismo: Fecha:		
Existen sanciones administrativas		
Existe procedimiento judicial abierto Estado del mismo:		

Marca el grado de suciedad dentro de las categorías:

- muy sucio (imposible caminar sin pisar la basura)
- moderadamente sucio
- limpio (sin basura o con menos de 10 objetos)

Anota los restos de gran tamaño que se encuentran:

- materiales procedentes de tierra (hormigón, escombros,...)
- grandes objetos metálicos (coches, vigas, maquinarias,...)
- mobiliario doméstico (camas, alfombras, restos de muebles,...)
- basuras domésticas en bolsas o montones de desperdicios
- restos de naufragios
- restos de cosechas (patatas, naranjas,...)
- neumáticos (restos o enteros)
- cadáveres de animales

Tipo de basuras contaminantes encontradas:

- restos de plásticos
- cintas de embalar
- otros plásticos (bolsas, bidones ... no sanitarios ni botellas)
- poliestireno (corcho blanco) o espuma de polietileno
- alquitrán
- aceite, petróleo, gasóleo
- contenedores de sustancias químicas
- restos de textiles, calzado, ropa
- papeles, cartones, maderas, restos vegetales
- alimentos
- excrementos animales y humanos
- materiales sanitarios (preservativos, compresas, pañales,...)
- residuos médicos (jeringas, vendas,...)
- vidrios
- latas
- envases de plásticos (de bebidas, champú, ... no bolsas)

En la zona existen contenedores de basura o papeleras (describir tipo):

Cada cuántos metros: _____ Tramo sin ellos: _____ metros

Appendix VI: Beach Litter Identification Guide (adapted from FEF 2004)

Beach Name:		Surveyor:	
Beach Address:		Date and Time of Survey:	
OS Grid Reference:		Length of Beach Surveyed (if less than 100m):	
	TOTAL		TOTAL
PLASTICS		METAL	
4/6 pack yokes		Aerosol cans	
Bags/sheets		Appliances	
Brackets		Container caps/lids	
Containers (drinks)		Car parts	
Containers (cleaner)		Drink cans	
Containers (oil <50cm)		Fishing weights	
Containers (oil >50cm)		Foil wrappers	
Containers (toiletries)		Food cans	
Containers (other)		Industrial scrap	
Caps/lids		Oil drums	
Cellophane		Paint tins	
Cigarette lighters		Wire/wire mesh	
Combs/hair brushes		Metal pieces	
Confectionary wrappers		Other (specify)	
Cups		MEDICAL	
Cutlery/trays/straws		Clinistix*	
Electrical wire		Syringes	
Electrical fittings		Other (specify)	
Fishing line		SANITARY	
Fishing nets		Colostomy bags	
Floats		Condoms	
Hosing/tubing		Cotton bud sticks	
Industrial packaging		Nappies	
Medicine/pill bottles		Plastic backing strips	
Mesh bags		Tampon applicators	
Party poppers		Toilet fresheners	
Pens		Towels/panty liners	
Razors		Towels/panty liners wrappers	
Rope/cord/net <50cm		Other (specify)	
Rope/cord/net >50cm		PAPER	
Sacking		Bags	
Scrubbing brush		Bitumen paper	
Shoes/sandals		Cardboard	
Shotgun cartridges		Cartons (household, toiletries)	
Strapping bands		Cigarette packets	
Tape (binding)		Cigarette stubs	
Toothbrush		Cups	
Toys		Fireworks	
Traffic cones		Hardboard	
Plastic pieces <5cm		Medicine/pill boxes	
Plastic pieces 5-50cm		Newspapers/magazines	
Plastic pieces >50cm		Paper pieces	
Other (specify)		Other (specify)	
POLYSTYRENE		WOOD (NOT DRIFTWOOD)	
Buoys		Corks	
Cups		Crab pots	
Fast food containers		Crates/pallets	
Fibreglass		Ice lolly sticks	
Foam/sponge		Paint brushes	
Packaging (household, toiletries)		Pencils	
Polystyrene pieces <50cm		Wood pieces <50cm	
Other (specify)		Other (specify)	
RUBBER		CLOTH/NATURAL FIBRES	
Balloons		Cloth pieces	
Boots		Clothing	
Gloves (household)		Furnishings	
Gloves (heavy duty)		Leather	
Gloves (surgical)		Rope/cord/net <50cm	
Hosing/tubing		Rope/cord/net >50cm	
Tyres		Sacking	
Rubber pieces <50cm		Shoes/sandals	
Other (specify)		String	
GLASS		Wool	
Bottles		Other <50cm (specify)	
Bottle tops/lids		Other >50cm (specify)	
Containers (household, toiletries)		POTTERY/CERAMIC	
Light bulbs/tubs			
Glass – sharp pieces <2.5cm		OTHER (SPECIFY)	
Glass – sharp pieces >2.5cm			

Appendix VII: NALG Beach Survey Forms

Site:	National Grid Reference:
State of Tide:	Date:
Time:	Weather Conditions:
Description:	Location of Site:

Accumulations: Continuous strip?

SRD:
General

Cotton Buds:

Gross Litter (> 50cm diameter):

General Litter: (< 50cm in one dimension)

Potentially Harmful Litter:
Broken Glass:

Other:

Faeces:

Oil:

Other Items:

General Comments

Site:

SRD

Gross Litter

General Litter

**Potentially Harmful
Litter**

Accumulations

Faeces

**Oil and related
smell**

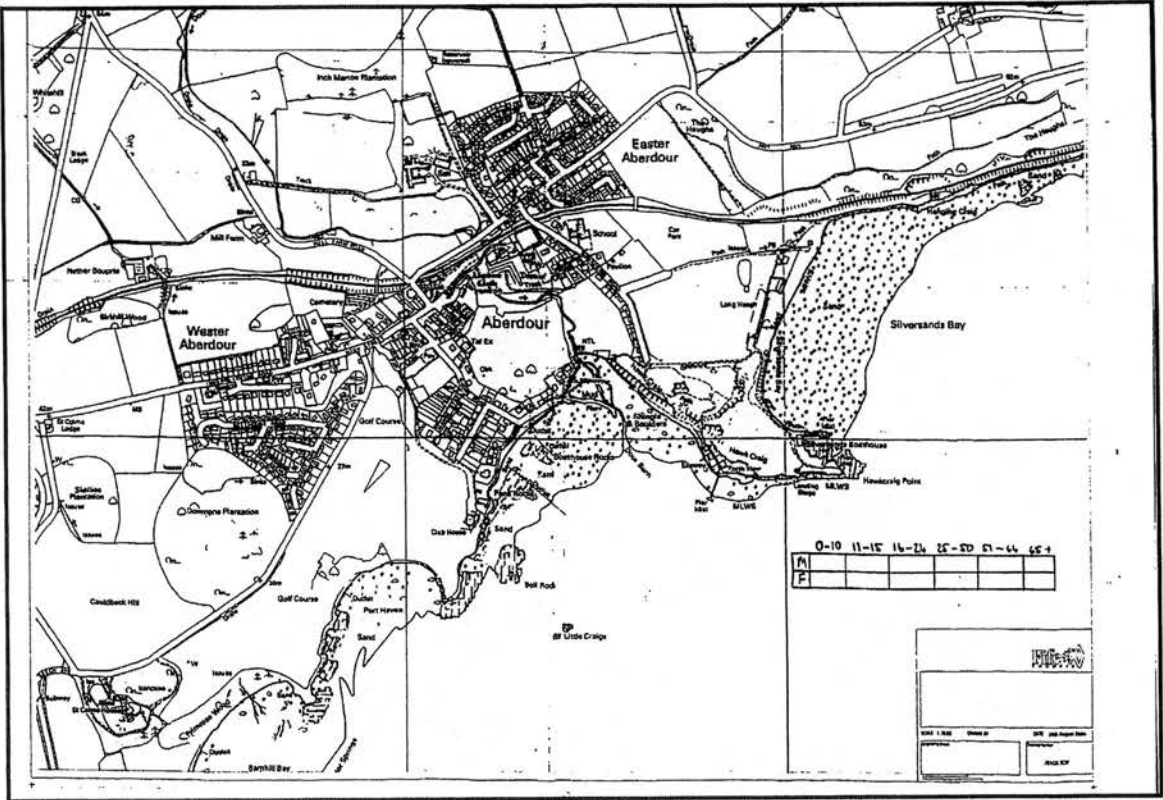
**Water
Discoloration**

Appendix VIII: 'H' Diagram (Front and Reverse)

Legend:

- GUESTS/M.A.O.
- BEACH
- RAILWAY
- CAR PARK
- BUILDINGS
- PLOTS/TERRACES
- FOOT PATH
- TREES

<p>Why so low? What <u>don't</u> you like about them?</p> <p>☹️</p>	<p>How good are Aberdour's Award Beaches?</p> <p>0 1 2 3 4 5 6 7 8 9 10</p>	<p>Why so high? What <u>do</u> you like about them?</p> <p>😊</p>
<p>When do you usually visit the beach?</p> <p>..... 6 am 12 pm 6 pm 12 am</p> <p>J F M A M J J A S O N D</p>	<p>What would make them better?</p>	<p>Further Involvement.</p> <p>Would you like to receive an invite to join with like-minded people, and help shape the future management of Aberdour's Award Beaches?</p> <p><input type="checkbox"/> Y <input type="checkbox"/> N</p>
<p>TIDES</p> <p>LOW HIGH LOW HIGH</p>		



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Interview Index

1. Kinghorn Residents' Beach Clean-up Group	21/04/04
2. Wester Ross Marine Reserve Partnership	21/04/04
3. Keep Scotland Beautiful – Beach Inspector	04/05/04
4. Fife Council – Community Services	19/05/04
5. Scottish Canoe Association	27/05/04
6. Marine Conservation Society	01/06/04
7. Forth Estuary Forum	07/06/04
8. Tourism and Environment Forum for Scotland	09/06/04
9. Fife Council – Beach Manager	06/07/04
10. Fife Sea Kayak Club	05/08/04
11. Representative of <i>Bagelsa Costa Tropical S.L.</i>	01/07/05
12. Newspaper Editor – <i>Costa Tropical Información</i>	06/07/05
13. <i>Ayuntamiento de Almuñécar</i> – Beach Manager	06/07/05
14. Ecologistas en Acción	07/07/05
15. Marine Conservation Society	13/10/05
16. Fife Council – Beach Manager	19/10/05
17. Clean Coast Scotland	06/12/05
18. Scottish MEP	08/12/05

Fieldnote Index

1. Coastal Litter Campaign Conference	21/04/04
2. Keep Scotland Beautiful – Beach Inspector	04/05/04
3. Blue Flag Award Ceremony – Silversands	01/06/04
4. Planning Day for Fife Council Participatory Appraisal – Lochore	26/08/04
5. Fife Council Participatory Appraisal – Silversands and Blacksands	27/08/04
6. Fife Council Participatory Appraisal – Beach Café	28/08/04
7. Visit to Silversands with Beach Warden	02/09/04
8. Site-visit with Fife Council Beach Manager	02/09/04
9. Fife Council Participatory Appraisal – Aberdour Community Centre	26/09/04
10. Fife Council Feedback Day – Aberdour Community Centre	07/10/04
11. Informal Interviews at Silversands	04/11/04
12. Ecologistas en Acción – Weekly Meeting Granada	07/04/05
13. Informal Interviews at La Herradura	27/04/05
14. Protección Civil – La Herradura	01/05/05

15. Visit to <i>Windsurf La Herradura</i> with Owner	28/05/05
16. Informal Interviews at La Herradura – Public Library	28/05/05
17. Informal Interviews with Beach Visitors – Promenade	28/05/05
18. Informal Interviews with Beach Visitors – Beach Café	28/05/05
19. Visits to Diving Companies – <i>Scubasur</i>	30/05/05
20. Festival of San Juan – La Herradura	24/06/05
21. Clean-up after Festival of San Juan	25/06/05
22. Visits to Diving Companies – <i>Buceo La Herradura</i>	25/06/05
23. Beach Cleaning Team – <i>Limpiezas Inés</i>	01/07/05
24. Informal Interviews with Beach Visitors – La Herradura	01/07/05
25. <i>Ecologistas en Acción</i>	01/07/05
26. Site-visit to La Herradura with Beach Manager	06/07/05
27. Site-visit to Playa Calahonda with Beach Manager	10/07/05
28. Water Collection and Sampling with SEPA – Edinburgh	25/07/05

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1. Letter to Potential Interview Respondents	03/04/04
2. Marine Conservation Society	28/05/04
3. Email to the Scottish Environmental Protection Agency (SEPA)	24/08/04
4. Asociación de Educación Ambiental y del Consumidor (ADEAC)	26/05/05
5. Ayuntamiento de Almuñécar	26/06/05

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1. Progress Report – Research Proposal (Submitted to ESRC)	07/10/03
2. Progress Report – Research Design	11/11/03
3. Progress Report – Issues Emerging from Interviews	06/07/04
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