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Maritime resource exploitation in southwest Australia prior to 1901

Paul R. Weaver
Edith Cowan University

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***Maritime resource exploitation in southwest
Australia prior to 1901***

Paul Richard Weaver B.A. Hons.

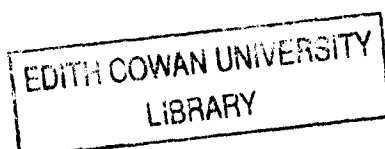
A dissertation submitted for the degree of

Doctor of Philosophy

Edith Cowan University

Western Australia

Submission date: 4 March, 1997



USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

Maritime resource exploitation in southwest Australia prior to 1901

Abstract

This ethnohistorical study identifies maritime resources of southwest Australia which were subject to human exploitation prior to 1901 and provides an overview of how, when and why this took place by integrating historical, archaeological, ethnographic, and natural-science information. The resources included for discussion are whales, seals, seabirds, guano, oysters and pearls, and fish. An argument is developed that the socio-spatial relationship which existed between peoples and marine-estuarine species in the region was determined by the physiography and climate. This relationship has always been imperfect, if not chaotic because of the unpredictability of the resources through long and short term cyclic phenomena. Control of access was the key to furthering economic and social advantage for all peoples, and this control could be sustained by a complex matrix of customary beliefs and/or law. An abundant resource could occasionally engender friendly interaction, however ruthless competition, and resource over-exploitation emerged as predominant themes. The study proposes that regardless of cultural origins, the finite nature of southwest Australian maritime and estuarine resources has long been recognised, and the resultant priority of people was to maximise effort at the most opportune times in order to augment socioeconomic advantage.

Declaration

I certify that this dissertation does not incorporate without acknowledgement any matter previously submitted for a degree or diploma in any institution of higher education; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Paul Richard Weaver

Date: 4 March, 1997

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Acknowledgements

I wish to thank my supervisors, Dr. Sherry Sagers and Professor Ed. Jaggard for their tireless advice and encouragement over the years. Thanks too are extended to Dr. Neville Green, who was my initial supervisor until he left the university and then was always available for any queries or advice. Appreciation is also extended to Edith Cowan University for a post-graduate scholarship, without which I could never have started.

My gratitude is also extended to the following persons whom at various times generously allowed me to draw upon their knowledge, expertise and resources:

Dr. Joseph Gentilli of the University of Western Australia.

Dr. Peter Veth formerly of The University of Western Australia.

Dr John Stanton of the Berndt Museum of Anthropology, University of Western Australia.

Dr. Moya Smith of the Western Australian Museum.

Dr. Anne Atkinson of Edith Cowan University.

Dr Lindsay Hunter of Edith Cowan University.

Dr Rica Erickson.

Dr. Martin Gibbs.

Mr. Charles Dortch of the Western Australian Museum.

Ms. Sue Le Souef.

Mr. Gerry Benson-Lidholm.

The library volunteers at the Royal Western Australian Historical Society.

The librarians at Edith Cowan University.

Staff at the Department of Aboriginal Sites.

Staff at the State Archives and Battye Library.

Staff at the Fremantle Maritime Museum.

Staff at Mystic Seaport Museum, Connecticut.

Associate Professor Dennis Moore and Mrs Jo Moore of Mainly Books, Northbridge.

Dr. and Mrs. Lilleburn of Antipodean Gallery and Rare Books, Subiaco.

Dr. Ian McGill of Serendipity Antiquarian Books, Nedlands.

Mr. Steven Marcuson of Trowbridge Gallery, Claremont.

Mrs Helen Muir and Mr Robert Muir of Muir's Old and Rare Books, Claremont.

Dr. Pierre L. van den Berghe, for his insightful words of twenty seven years ago.

A special acknowledgement is also due to my long time Aboriginal friends at Cosmo Newbery, Warburton, Jigalong and Tjirrkarli Communities, and to Mr. Clarrie Isaacs and the Swan Valley Fringe Dwellers in Perth. All provided me with inspiration to delve further into the ethnohistory of Western Australia.

Finally, words hardly justify the appreciation I feel towards my wife Jill and our eight young children, Luke, Ken, Terry, Tim, Dale, Fiona, Peta and Glen for putting up with my scholarly indulgence. Thank you all.

Introduction

This study is not intended to be exclusively about people of any single ethnicity. It is constructed by considering the maritime resources which were available to the end of the Western Australian colonial period in 1901, and then attempts to answer when, where, how, why and by whom they were exploited. As such it involves both the activities of Aborigines and non-Aborigines. The maritime resources included for discussion are whales, seals, seabirds and guano, oysters and pearls, and fish.

The study area extends from Shark Bay on the west coast to Cape Arid on the south, which comprises the southwest corner of the Australian continent. (See Fig. 2.1) Coastal estuarine waters are included because of their intimate relationship with many marine vertebrate and invertebrate species. The geographic limitations were established because they conveniently involved a definable region where significant and diverse human interaction took place with marine-dependent species during the selected time frame. They comply with the southern and western zonal boundaries set out for the grouping of marine species in the *Zoological Catalogue of Australia*. In addition they approximate the extremities of the "South West Botanical Province" marked by an average recorded winter rainfall isohyet in excess of ten inches (254 mm).¹ As will be discussed in detail elsewhere in this dissertation, substantial winter rainfall was required for southwest estuary entrances to be kept open for 'recharging' by ocean waters, which in turn enhanced the diversity and numbers of available fish and benthic fauna available to people.

Coincidentally, a "circumcision line" which arguably defines the limitation of that male desert-Aboriginal ritual also has a transect drawn approximately diagonally between the two extremities and conveniently serves to further identify the southwest region in the Aboriginal context.² Even so, no link between maritime resource exploitation and non-circumcision is implied.

The study explores a presumption that environment is one of the most important determining factors as to how successfully, or how intensively people exploited maritime species in the southwest coastal region. The colonisation of the southwest by the British

¹ Gardner, C.A. in Gardner C.A. and Bennett, H.W. *The Toxic Plants of Western Australia*, (Perth: Western Australian Newspapers, 1956).

² Elkin, A.P. *The Australian Aborigines*, (1938), (Sydney: Angus and Robertson, 1973 ed.); Bates, D. *The Passing of the Aborigines*, (Melbourne: Oxford University Press, 1944). Berndt, R.M. & C.H. *The World of the First Australians*, (Sydney, Use Smith, 1964).

after 1829 is well enough recorded to show environmental variables quickly became apparent to astute settlers, who, while probably not understanding many of the subtle mechanisms at work, soon located themselves in those places with the best soils and a climate to suit their agricultural needs.

The priorities which determined the territorial ranges of southwest Aborigines is more problematic, and the information gathered by settlers in this respect is fragmentary. Because of a general lack of recognition by pioneering Europeans of the complexity of the Aboriginal lifestyle and its intimate association with the environment, the information is also unsatisfactory. The situation is not dissimilar elsewhere on the continent, and in attempt to overcome the problem, maps based upon various attributes including language similarities, artifact distribution, customary practices, gene pools, blood groups and the physiography of the landscape have been generated by various researchers in the past.

Perhaps best known are those by Norman Tindale, who produced his initial map of Aboriginal boundaries in 1940 after reference to historical literature and regional consultation with Aborigines. In an attempt to fill in the still many gaps, he also took into consideration of a range of environmental and topographic factors. Three decades later and after numerous revisions he confirmed his opinion that environmental factors had a significant effect on how well Aboriginal groups maintained their cultural identity.³

Tindale's work was controversial because of the inherent implication that the "tribe" can readily be identified as a social and spatial unit which has been consolidated by the presence of relatively stable ecological features. For some it was too convenient. Berndt and Berndt did not dismiss the influence of natural features on boundaries, but pointed out that tribal delineation in Australia is more marked within relatively small areas, rich in predictable resources, such as the coastal wetlands in southern and northern Australia. This trend becomes increasingly nebulous in areas where resources and people are more widely distributed, such as in the central desert regions. There, such factors as mythology, language relationships and a peoples' perceived identity-of-self were more effective ways of establishing the limits of cultural commonality. Contributing to the discourse Peterson proposed that Aboriginal boundaries have always fluctuated according to a combination of ever-changing economic, topographic and cultural circumstances.⁴

³ Tindale, N.B. "Some ecological bases for Australian tribal boundaries," in *Tribes and Boundaries in Australia*, Peterson, N. (Ed.), (Canberra: Australian Institute of Aboriginal Studies, 1976), (pp.12-29), (26-28).

⁴ Peterson, N. "The natural and cultural areas of Aboriginal Australia: A preliminary analysis of population groupings with adaptive significance," *ibid.*, pp.50-71.

This dissertation advances the proposal that in the southwest, successful Aboriginal exploitation of maritime-estuarine resources had primarily depended on favourable climate-induced environmental factors and, as these varied over time, so were the customary associations with the resources modified. With the rapid sociocultural change following British settlement, the customary adaptive strategies for groups became increasingly inadequate, until ultimately, they ceased altogether.

In order to acquire an understanding of what environmental factors may have been influencing exploitation of these resources it was considered necessary to undertake a detailed review of the coastal physiography of the southwest region. Chapter Two provides a progressive description of the region between Shark Bay and Cape Arid, including estuaries and offshore island groups thought to have significance. As part of this examination the significance of ocean currents in relation to the distribution of exploited marine species in the southwest is also discussed.

It can safely be said human exploitation of such species has frequently been associated with a complex system of beliefs primarily intended to maintain and enhance catches. Chapter Three examines Aboriginal spiritual connections with seasons and species as they are thought to have occurred in the past, based upon analysis of historical ethnographic descriptions. Nevertheless while it is tempting to accept them as valid representations of the entire region, they are but localised examples from what probably was a much greater body of beliefs and practices which were never recorded. In addition, whether or not the observations made of traditional activities during the post-settlement historical period can truly represent activities of the prehistoric period is also arguable. To better arrive at conclusions, an examination of the southwest archaeological record was undertaken, with this being the subject of Chapter Four.

Stone fishtraps aside, cultural material relating to Aboriginal fishing activities in the southwest is sparse. This is compensated in part by a small body of historical literature on methods and technology, with the observations tending to coincide chronologically with the spread of settlement. Aboriginal fishing strategies are the subject of Chapter Five.

Chapters Six and Seven provide an overview of why, where, when and how non-Aboriginal mariners have interacted with whales and seals in the southwest prior to, and after settlement. The resultant impact upon the subsistence lifestyles and health of coastal Aboriginal peoples who interacted with these foreign maritime hunters is also discussed.

Commercial entrepreneurs have long been attracted to Australia because of the opportunities to make quick profits with a minimal investment. It is fair to say that with any group of people commercially exploiting finite resources, predictable strategies can develop. As the resources decline, the competition and potential for antagonistic conflict with outsiders increases, occasionally resulting in the most outrageously violent acts. If sufficient political influence exists, legal manoeuvring, sometimes incorporating racist devices may become justified as protectionist strategies. These type of practices occurred to some degree with most southwest maritime resources, but those particularly in respect to the guano and pearling industries are the subject of Chapter Eight.

Subsistence activities were undertaken by many European mariners who visited the region in the pre-settlement period, fishing possibly being their most common and productive activity. A continuum occurred after settlement in 1829, ensuring so called “wet fishing” quickly became the most orderly and enduring of maritime industries in the southwest. Therefore fishing readily qualifies as the colony’s first primary industry, with professional fishermen hauling their seine nets across the mouth of the Swan River and selling their catch to fellow arrivees, who otherwise were obliged to subsist on preserved stores transported from England. Chapter Nine discusses the progression of the wet fish industry from its humble beginnings in 1829 through to being a technologically sophisticated, highly competitive, and multicultural industry by the end of the nineteenth century.

Justification for the research

There has been no comprehensive study of pre-twentieth century maritime resource exploitation in southwest Australia. In view of the increasing public debate involving environmental change through climate variation, conservation issues involving various aquatic species, and matters involving Aboriginal land and sea-rights, an examination of these issues as they are thought to have occurred in the past is appropriate.

There are several questions which have relevance to modern issues and which have helped consolidate the thesis for this dissertation. For example could climatic change in the past be related to major shifts in species availability, thus necessitating rapid cultural adjustments, including modifications to technology? In addition, was conservation of species ever a serious consideration for any hunter-collector-fishers in the past? If any restrictions were imposed, were they simply a covetous means by which the most

influential people endeavoured to exclude competitors? Another consideration was whether it was possible to determine how Aboriginal exploitation of maritime resources in the past was intertwined with the general pattern of their lives, and to what degree was this maintained, modified or eroded as the settlement frontier expanded? Importantly could changing patterns of human activity involving any maritime resources be related to historical data involving environmental changes?

The intention of the study

The intent of this study therefore was to carry out a comprehensive examination of the human usage of the maritime resources associated with the coastal and estuarine waters of southwestern Australia prior to 1901, the year of Federation of the Australian colonies. The dissertation will examine the distribution of exploited maritime resources and attempt to construct from available evidence a greater understanding of the inspired activities which took place over them, including competition, intimidation or cooperation between various parties. It is supposed that some examples of past resource exploitation highlighted in this study will have the potential to serve as cautionary dictums for future decisions involving maritime resources.

Data sources

Just as there is a general trend for an attenuation of reliable data the further one explores back in time, so too is there a tendency, at least in this study region, for an increasing scarcity of information beyond the immediate zonal range of activity by colonial Europeans. Therefore there is a dearth of pre-twentieth century fishing observations in the more arid, or very wet parts of the study region which Europeans found unattractive, for instance the regions between Geraldton and Shark Bay, between Augusta and Albany, and thence further east along the southern coast to Cape Arid.

The study has been constructed from a wide range of historical literature including Colonial Secretary's records, parliamentary proceedings, legislative Acts, government annual reports (Bluebooks), and newspapers; as well as from archival material such as explorers' journals, diaries, field notes and theses. It also draws upon published literature originating from the historical, archaeological, anthropological and natural history disciplines.

A decision was made to utilise material such as typescripts in the interests of

conserving the more fragile originals. Such an example is the abundant field notes left by Daisy Bates, which in the post-Mabo period have suddenly become of great significance to the Aboriginal land rights movement. There are also slightly differing sets of these typescripts in existence throughout Australia, but the set located in the Western Australian State Archives was the only one examined. Similarly the facsimile reprints of classic nineteenth century works were considered appropriate, although many of the more fragile original editions were available. The almost indecipherable microfilmed journals of Collet Barker also quickly gave way to a timely published transcription by Mulvaney and Green.⁵ Their several years of dedicated effort in such a difficult task cannot be too highly praised.

Initially a general literature search for relevant studies was carried out in December 1991 and January 1992 of *Austrom* and *Hera* databases using the library facilities of Edith Cowan University and the Western Australian State Archives. Subsequent searches for further relevant information were carried out through the Institute of Aboriginal and Torres Strait Islander Studies in Canberra and the general and maritime departments of the Western Australian Museum. Various published bibliographies were also consulted in order to identify relevant material. Of these, Greenaway's 1963 bibliography has been useful in identifying early archaeological papers and several obscure journal articles relating to maritime exploitation by Aborigines published up to 1959.⁶

At this time there is no comprehensive world listing of research carried out on coastal indigenous fishing peoples. Kerber has attempted to partially overcome this deficiency but the majority of studies mentioned in his work relate to north America.⁷ Of greater usefulness was a bibliography of the Australian fishing industry by Smith and Tull in 1990. The difficulty in examining works directly relevant to fishing activities, including those by Aborigines in Australia, can be ascertained from the introductory comment of the editors: "With the exceptions of whaling and sealing remarkably little has been written on the history of the Australian fishing industry."⁸ There was more material

⁵ Barker, C. in Mulvaney, D.J. and Green, N. (Eds.), *Commandant of Solitude: The Journals of Captain Collet Barker 1828 -1831*, (Melbourne: Melbourne University Press, 1992).

⁶ Greenaway, J. *Bibliography of the Australian Aborigines and the Native Peoples of Torres Strait to 1959*, (Sydney: Angus and Robertson, 1963).

⁷ Kerber, J. *Coastal and Marine Archaeology - a bibliography*, (London: Scarecrow Press, 1991).

⁸ Smith, H. and Tull, M. (Eds.), *The Australian Fishing Industry, A select historical bibliography*, (Perth: Murdoch University, 1990), p.iv.

available than they have listed, but the omissions are indicative of the logistical problems in tracing material, rather than any fault of the editors. A *1981 South West Aboriginal Studies Bibliography* by Haebich and Tilbrook has also been of ongoing value in locating archival and published sources relating to southwestern Aborigines.

A substantial body of information about Aboriginal subsistence activities in Western Australia is located in colonial newspapers, many of which have been copied to microfilm and are readily available. In the absence of comprehensive indexing for most these sources, a substantial number were searched; however a 1973 thesis by Meagher was of exceptional value in identifying the most important references to Aboriginal food resource exploitation.⁹

Some material in early Western Australian newspapers is surprisingly substantial and unique, as for example a series of six articles about the customs of King George Sound Aborigines which appeared in *The Perth Gazette and West Australian Journal* in July and August 1834. The primary documents from which these reports were created appear to no longer exist.

Nineteenth century newspapers published in other colonies and Britain also provide important clues about intensive pre-settlement maritime resource exploitation in the western part of the continent. The nineteenth century was a time when for many settlers home was somewhere in Britain and they took care to keep those at home informed. English periodicals such as *Swan River News* and *Fischer's Colonial Magazine* also contain unique material.¹⁰

The meaning of ethnohistory

Ethnohistory can be viewed as a disciplinary hybridisation by which researchers have been able to present a broader perspective of frontier studies than the arguably narrower and separate disciplines of history and ethnology. Ethnohistory provides a bridging of those disciplines, and in this dissertation, of others. The term "frontier" is used here to describe the somewhat ambiguous and frequently shifting arena of conflicting cultural and social values which seriously effected the behaviour and lifestyles

⁹ Meagher, S.J. *A Reconstruction of the Traditional Life of the Aborigines of the South West of Western Australia*, unpublished Master of Arts thesis, (Nedlands: University of Western Australia, 1973).

¹⁰ There are hundreds of other nineteenth century periodicals which have references to Australian Aborigines. A formidable listing can be found in Greenaway, *op. cit.* pp.1-20, but it is by no means exhaustive.

of the European and Aboriginal participants, rather than a frontier in the fixed geopolitical sense.

The disciplines of history and anthropology have traditionally tended to focus on single cultures, but in recent years there has been a tendency towards dual culture focus, particularly in frontier studies and it is in this area that ethnohistory has made a distinctive contribution. Ethnohistory is characterised by an emphasis on sociocultural change, and a diachronic approach is taken by uniting a wide range of information sources including maps, photographs, museum collections, enduring customs, language, place names, as well as the richer varieties of written sources. In utilising these sources the collator must keep in mind that they have mostly originated from non-native observers, and therefore be aware of the inherent cultural bias. As to how well this is done will probably always be subject to criticism.

Neither has there been an attempt to give particular emphasis or status to any particular category of source. The justification for this is not unlike that adopted by the late Professor Manning Clark who wrote, "In some quarters there is a tendency to treat manuscript material with reverence and awe – as though it had in some mysterious way the keys to the great truths."¹¹ Of course creators of these primary documents were in all probability as prone to bias, error and misinterpretation as any human.

Meaningful too are the words of James Axtell, who points out that success for the ethnohistorian is achieved not only through training, but also through instinct.¹² Instinct in this case meaning deductive reckoning based upon the available material, rather than totally unsupported guesswork. In many cases such attempts are undertaken in an bold attempt to unlock what was generally believed to be lost forever.

Ethnohistorical studies have played a role in promoting increased understanding of the changing social processes which non-literate native peoples have experienced over time. In Australia they have generally served as expressions of appreciation of the intrinsic value of Aboriginal cultural practices, and as an acknowledgement that there is indeed a part of Australian history which has hitherto been neglected by the former elite and influential of the dominant society. Western Australian ethnohistorian Lois Tilbrook

¹¹ Clark, C.M.H. *Select Documents in Australian History 1851-1900*, (Sydney: Canberra, 1955), p.xviii.

¹² Axtell, J. "Ethnohistory: An historian's viewpoint," *Ethnohistory*, 26, 1979, pp. 1-13.

evocatively described ethnohistory as the new history of the common and the poor.¹³ However it will become apparent that many of the actors portrayed in this study, while undoubtedly poor in the commercial sense, were far from common.

The question of validity

In Australia the lack of a written record from Aboriginal people during the earliest days of colonisation can present a severe challenge to the ethnohistorian. This omission can be attributed not only to the illiteracy of traditional Aboriginal culture but also to the necessity of the invading colonists to justify their usurpation of the land and resources of the indigenous peoples. The interests of Empire gave credence to the fiction of *terra nullius*, a land of unestablished ownership.¹⁴ That Aboriginal people ranging over it had a rich history worthy of serious consideration by scholars was barely considered, and even amongst those who did make a valuable record of the contemporary Aboriginal lifestyle, the few recorded attempts to raise events of the distant past are frustratingly meagre. Even though some Aboriginal people in the region became semi-literate during the nineteenth century, no historical Aboriginal literature from that period relating to the southwest has been identified.¹⁵ Because the time frame is now beyond living memory, this study has therefore been obliged to rely exclusively on the writings of Europeans and assess them accordingly. This threat to validity was intended to be addressed by consulting the earliest available sources, and where more than one account of an event existed, a process of triangulation would be undertaken with a rigorous attempt to compensate for cultural bias. Unfortunately in Western Australia most descriptions of early activities involving maritime resources, either by Aborigines or Europeans, tend to be singular and are not usually able to be verified as atypical. In an attempt to acquire a better understanding of the historical data, information from contemporary, scientifically-based sources has been utilised when necessary, but it is appreciated that circumstances have existed in the twentieth century can only be taken as rough guides to conditions

¹³ Tilbrook, L. *Shadows in the Archives*, unpublished doctoral dissertation, (Nedlands: University of Western Australia, 1987).

¹⁴ High Court of Australia. *Eddie Mabo and Ors v The State of Queensland (1992)* 66 ALJR 408 (*Mabo No.2*).

¹⁵ The earliest Aboriginal literary record appears to be a series of handwritten newsletters written by Tasmanian Aborigines under missionary control on Flinders Island, during the 1830s. See Rose, M. *For the Record – 160 years of Aboriginal Print Journalism*, (St. Leonards: Allen and Unwin, 1996). pp.1-19.

which existed in the past. In the light of this, none of the material or statements in this dissertation are presented as absolute truths, instead they are interpretations based upon the evidence examined, and it is accepted that others in the future may arrive at differing conclusions.

The thesis stated

The availability of maritime/estuarine resources to people living in the southwest of Australia has largely been determined by relatively unpredictable environmental conditions, the dynamics of which are not yet fully understood. For example it is known that long term semi-cyclic phenomena involving reversals of the *El Niño* current in the Pacific Ocean have influenced local currents and terrestrial precipitation. This in turn has impacted upon the physiography of the coastal estuaries and the extant zoological and biological populations, in some cases for periods lasting over decades. Long term access to aquatic resources could therefore be uncertain, and coveted. Groups who controlled access to them through right of their territorial occupation stood to gain a substantial socioeconomic advantage. For Aborigines, maintenance of these resources could involve a complex of commonly held customary totemic and kinship obligations, recitation of myth and the invocation of supernatural beings specific to the resource and the locality. Confrontation with potential usurpers could also take place. In the case of non-Aborigines, familial and cultural ties, as well as religious beliefs and confrontation could also play a role in the establishment of perceived rights over resource exploitation. Added to this was the weight of officially sanctioned policing activities and discriminatory legislation, framed to specifically exclude competitors in favour of more influential citizens.

It is proposed to show in this dissertation that from the available record and regardless of cultural origins the uncertain availability of southwest maritime/estuarine resources has long been recognised, and as a result, the overriding priority involving all such exploitation prior to 1901 was to maximise effort at the most opportune times in order to augment the socioeconomic advantage to be had over others. Any conservation measures, if they were at all perceived, were always irrelevant in the face of this primary objective.

Chapter 1 The literature reviewed

Literature relating to pre-twentieth century maritime resource exploitation in Australia by any peoples is not substantive. Expeditions such as those by Cook, Vancouver and Baudin all produced rich scientific collections from Australian coastal waters, but the ethnographic material gathered at the same times for the most part offers little insight into the socioeconomic and environmental forces which operated at the time. Similar criticism can be levelled at notable post-settlement works relating to the ethnography of southwest Australia, such as those by Nind, Grey, and Moore.¹ While providing unique information which is of undoubted ethnohistorical value, they tend in the main to be based upon single observations, and therefore provide only a tantalising glimpse of a complex society which through its beliefs and practices, as will be shown, was intimately tied to the largely unpredictable variations of environment.

In comparison to other parts of Australia, the early history of southwest Aborigines was generally obscured for the first 150 years of settlement. This has been attributed to the rapid decimation of the original population under the impact of European encroachment. The perceived early willingness of people to abandon the traditional ways and become dependent on European handouts, and the marked effects of miscegenation within the first fifty years which initiated a view that significant cultural information in the proximity of the most settled areas was irretrievably lost.² Undoubtedly many settlers also feared, or were revolted by Aborigines and their customary activities, and combined with a need to justify the often aggressive usurpation of Aboriginal territory; this too may also have contributed to the omission.

In a similar manner, the many thousands of non-Aboriginal working-class people who found their way into the colony, and which were so essential to the success of the gentry are also obscured. That is unless they fell foul of the law, or in some manner drew adverse attention to themselves, such as being speared by Aborigines while tending

¹ Nind, I.S. "Description of the Natives of King George's Sound (Swan River Colony) and the Adjoining Country." *Journal of the Royal Geographic Society*, 1, (1831), pp. 21-51. Grey, G. *Journals of Two expeditions of Discovery in North-west and Western Australia During the Years 1837, 38 and 39 Under the Authority of Her Majesty's Government*, 1841, (Victoria Park: Hesperian Press, 1984 facsimile edition). Moore, G.F. "Descriptive Vocabulary," in *Diary of Ten Years Eventful Life of an Early Settler in Western Australia*, 1884, (Nedlands: University of Western Australia Press, 1978 facsimile edition).

² Haebich, A. and Tilbrook, L. *South West Aboriginal Studies Bibliography*, (Mount Lawley: Mount Lawley College, 1981), p.1.

sheep, or suffering unfortunate accidents. Otherwise, their activities, beliefs and aspirations, including the fishers and others who laboured to exploit coastal/marine resources, and whom are of such interest to this study, are not well recorded. To a great degree this can be attributed to their own illiteracy, but it is likely too that the fever of economic pragmatism which had stimulated the colony since its birth, far outweighed the relative luxury of a deep probing social enquiry into their circumstances by those who had the ability to do so. This lack of detailed information has necessitated a search for clues about them elsewhere.

As the colony developed its economic baseline, so was the need for greater technological and scientific information recognised. Enthusiasm alone, as many of the pioneers learned, was not necessarily the key to success. Relevant knowledge was essential, not only of the environment and its associated resources, but also of appropriate technology to exploit them. This certainly applied to maritime related resources. For example an 1860 edition of *Orr's Circle of the Sciences* from the Mechanics' Institute library in the fledgling port at King George Sound contains extremely detailed information on how to process various maritime resources, and its worn condition raises the conjecture that many people perused its contents, with exploitation of the local resources, in particular whales, being a likely objective. The thirst for useful technical knowledge was such that book circles which developed within the first decade of settlement regularly complained of the noticeable reluctance of borrowers to return engineering and scientific works on time.³

In regard to Australian fisheries, later works by Tenison-Woods, Stead and Saville-Kent did much to enhance knowledge of Australian fish species but with the exception of Saville-Kent's 1897 book *The Naturalist in Australia*, there was little scholarly consideration of how peoples interacted with the maritime/coastal environment.⁴ This pattern continued until the mid-twentieth century when Roughley's *Fish and fisheries of Australia* appeared, and notably included a chapter about Aboriginal fishing, the bulk of it

³ PGWAJ. 3/2/1838.

⁴ Tenison-Woods, J.E. *Fish and Fisheries of New South Wales*, (Sydney: Government Printer, 1883); Stead, David, *Fishes of Australia: A popular and systematic guide to the study of the wealth within our waters*, (Sydney: William Brooks, 1906); Saville-Kent, W. *The Naturalist in Australia*, (London: Chapman and Hall, 1897).

drawn from the much earlier works of Roth, Brough-Smith and Grey.⁵

Most research into marine resource usage has been comparatively recent, and in the case of southwest Aborigines tends mainly to originate from the archaeological discipline. Generally, these studies relate their conclusions tangentially towards the associated peoples, tending to less identify observations with either contemporary or historical ecological determinants and associated marine species which could have influenced human behaviour.⁶ This is not to say that the early marine environment and its species are never considered by archaeologists in relation to human behaviour. Rising ocean levels have provided speculation as to how people may have reacted to the encroachment, and generated discourse over changes in material culture. However there has, with a few exceptions, been a reluctance to explore philosophically beyond the constraints imposed by the material evidence.

Ever since the visit of James Cook to Tasmania in 1777, Europeans had appreciated that Tasmanian Aborigines did not use fish hooks, nor for that matter ate fish, and realised that there must have been some determinant factor.⁷ The subsequent archaeologically based confirmation in 1978 by Jones that fish have been absent from the Tasmanian diet for approximately the past 4,000 years⁸ excited a polemical argument within the discipline which was perhaps more notable for its lengthy duration and diversity of expert opinions rather than for the arrival at a satisfactory explanation. Climate change is now suspected as an ingredient, but in reality the final answer as to why Tasmanians suddenly chose to exclude fish from their diet has remained as enigmatic as why people in the southwest excluded molluscs. Tasmanian studies such as by Jones⁹ have produced information in relationship to the exploitation of resources on offshore islands which have implications for considering how Aborigines may or may not have

⁵ Roughley, T.C. *Fish and Fisheries of Australia*, (Sydney: Angus and Robertson, 1951)., Roth, W.E. "Food: Its search, capture, and preparation" *North Queensland Ethnography Bulletin*, 3, (Sept. 1901); Brough Smyth, R. *The Aborigines of Victoria: With notes relating to the habits of the natives of other parts of Australia and Tasmania*, (1876), (South Yarra: John Currey, O'Neil Pty Ltd., 1972); Grey, *op. cit.*

⁶ Smith, A. An ethnobiological study of the usage of marine resources by two Aboriginal communities on the east coast of Cape York Peninsular, Australia, unpublished Ph.D thesis, (James Cook University of North Queensland, 1987).

⁷ Wilson, Robert, *Voyages of Discoveries Round the World*, (London: James Cunder, 1806), vol. 3, pp.20-22; Kingston, W.H.G. Captain Cook, *His Life, Voyages, and Discoveries*, (London: Religious Tract Society, 1906), p.222.

⁸ Jones, R. "Man as an element of a continental fauna: The case of sundering of the Bassian bridge," in Allen, J. and Jones. R. (eds.), *Sunda and Sahul*, (London: Academic Press, 1977). pp. 317-86.

⁹ *Ibid.*

addressed resources on the offshore islands of southwestern Australia.

Berndt and Berndts' study of the *Yaraldi* fishing and hunting peoples near Encounter Bay in South Australia published in 1993,¹⁰ was compiled from anthropological data gathered during the 1930s when elderly people who had experienced aspects of the traditional lifestyle were still alive. It includes a considerable quantity of cultural information relating to fishing methods which is not now available from living informants. Although a fascinating glimpse of the neo-traditional lifestyle, it has been a long time emerging, and like most ethnohistorical studies it is now confronted with the contradictory problems of validity which frequently confound the complementary use of historical material. For example one of their major historical sources was the writings of nineteenth century missionary F.W. Taplin, who was being strongly criticised for interpretive errors as early as 1884.¹¹ It is perhaps also worth noting that Taplin, through his missionary work, is now viewed by Aborigines as a major destroyer of traditional Aboriginal custom in South Australia.¹²

The Berndts are renowned for their anthropological study of Aborigines in various parts of Australia but surprisingly gave little serious attention to the southwest where they spent so much of their lives. A chapter by Ronald Berndt in the anthology *Aborigines of the West*, reveals that for him, the paucity of ethnographic material and the confusion in the oral tradition of the twentieth century negated a more substantive exposure of life in the past.¹³

The most substantial anthropological material relating to the pre-twentieth century coastal peoples of the southwest of Australia lies within the mass of field notes and associated papers left by Daisy Bates. There are various typed sets of these located throughout Australia, but those consulted for this dissertation are in the collection of the Western Australian State Archives. An Irish journalist, Daisy Bates arrived in Western Australia in 1899 where she embarked on an urgent, largely self-financed quest to try and salvage what cultural information she could from the few surviving people of direct

¹⁰ Berndt, R.M & Berndt, C.H. *A World that Was: The Yaraldi of the Murray River and the Lakes, South Australia*, (Melbourne: Melbourne University Press, 1993).

¹¹ Curr, E.M. *The Australian Race*, (Melbourne: Government Printer, 1896-7), vol. 2 pp.58-59.

¹² Mattingly, C. and Hampton, K. *Survival in Our Own Land: Aboriginal experiences in 'South Australia' since 1836*, (Sydney: Hodder and Stoughton, 1988).

¹³ Berndt, R.M. "Aborigines of the South-West," in Berndt, R.M & Berndt, C.H. *Aborigines of the West*, (Nedlands: University of Western Australia Press, 1979) pp.81-89.

Aboriginal descent scattered throughout the southwest and in the Eucla regions. She also visited the northwest, but is perhaps most remembered for her sixteen years of semi-seclusion in the company of desert Aborigines at Ooldea in South Australia.¹⁴ In spite of her unique collection of data it has been observed she came under criticism from anthropologists of her time because she was perceived as an “amateur” without formal anthropological training.¹⁵ Since the post-1960s reassessment of Australian history and the emergence of political correctness she has come under criticism for derogatory remarks relating to people of mixed ancestry in works such as her 1944 book, *The Passing of the Aborigines*. Some people also take offence at reports about past customary practices such as infanticide and ritualised cannibalism. Further criticism has also been levelled at contradictions and inconsistencies in her field data, the compilation of which spanned more than fifty years. Nevertheless the potential usefulness of the Bates material should not be underestimated. Combined with her manuscript, published posthumously in 1985 as *The Native Tribes of Western Australia*, there is no equivalent legacy of data concerning the early customary practices of Aborigines in the southwest.

Ethnohistorical studies have been undertaken along the eastern seaboard of Australia, but because the period of British occupation commenced there much earlier than in the southwest (1788 compared with 1826), so too did the disintegration of the traditional Aboriginal lifestyle. As the nineteenth century progressed, social Darwinist attitudes began to prevail and served to exclude anthropological scrutiny of peoples of mixed descent. When accounts of the traditional lifestyle were sought they were assumed to be valid only if they came from people with “racially pure” credentials. As a result the scientific curiosity about Aborigines which emerged towards the end of the nineteenth century came too late for anything of substance to be recorded in proximity to settled areas.

It is perhaps not surprising on the eastern seaboard that the most detailed early descriptions tend to be from the periods and places of initial European contact such as

¹⁴ Salter, E. *Daisy Bates, the Great White Queen of the Never Never*, (Sydney: Angus and Robertson, 1971), pp.xi-xvi.

¹⁵ White, I. “Mrs Bates and Mr Brown: An examination of Rodney Needham’s allegations.” *Oceania*, 41, (1981), pp.193-210; Haebich, A. *For Their Own Good: Aborigines and government in the southwest of Western Australia 1900-1940*, (Nedlands: University Western Australia Press, 1988); Bindon, P. in Bridge, P.J. (ed.), *Aboriginal Perth, Bibbulmun Biographies and Legends - Daisy Bates*, (Victoria Park: Hesperian Press, 1992), pp.v-ix.

with the First Fleet at Port Jackson in 1788.¹⁶ To a lesser extent this was also the case in Western Australia. On the east coast, this literature has encouraged thoughtful attempts by ethnohistorians to unlock other information not immediately apparent. On the basis of colonists' records, the surviving Aboriginal oral tradition, and archaeological information, Turbit attempted to synthesise a reconstruction of the traditional lifestyle of coastal Aborigines in the Sydney region prior to 1788. He found fishing was a significant, and sophisticated subsistence activity for men and women. Gender specificity could apply to fishing activities, and it was apparent these were enveloped in a system of beliefs intended to enhance the relationship between the fisher and the fish. The author was of the view that fish species which were common in the archaeological and early historical record had declined since colonisation. Cartilaginous fish such as sharks and rays were excluded from the diet, as was also the case in the southwest, but in both instances the reason is unclear. Importantly, early observers provided sufficient information to conclude fish was the primary subsistence resource for Sydney Aborigines, with a significant potential for dietary stress occurring in times of seasonal shortages.¹⁷

According to Kohen and Lampert the variety of marine species exploited in the Sydney region was substantial, with the main fishing season being summer. The richness of coastal resources enabled concentration of a greater number of groups, controlling smaller territories than inland. People living away from the coast developed strategies to optimise exploitation of aquatic food resources, for example fishtraps were constructed along the Nepean River. However, there was no substantive evidence for the movement of coastal peoples inland during times of shortage. Among the coastal groups there were some, such as the *Cam-er-ay* who maintained a higher customary status than others.¹⁸

Optimisation was no guarantee against starvation. The now popularly held notion that in the past, Australian Aborigines all lived harmoniously in an Eden-like environment of plenty is misleading. As has been revealed by Kirk, adverse seasonal factors could be

¹⁶ McBryde, I. *Records of Times Past: Ethnohistorical Essays on the Culture and Ecology of the New England Tribes*, (Canberra: Australian Institute of Aboriginal Studies, 1978), p.3.

¹⁷ Turbit, P. *The Aborigines of the Sydney District*, (Sydney: Kangaroo Press, 1989), pp.53-56.

¹⁸ Kohen, J.L. and Lampert, R. "Hunters and fishers in the Sydney region," in Mulvaney, D.J. & White, J.P. (eds.), *Australians to 1788*, (Broadway: Fairfax, Syme & Weldon, 1987), pp. 343-365.

prolonged with the resultant nutritional deprivation severely impacting on the physical development of young children and adolescents, although people who lived in the shadow of European activity could offset this to a degree.¹⁹

An archaeological study of coastal Aboriginal peoples at Western Port on the south coast of Victoria by Gaughwin in 1983 drew extensively on historical sources to construct a composite model of Aboriginal land use in a coastal environment. In spite of the fragmentary nature of both the historical data and archaeological evidence available, the study concluded that exploitation of readily available maritime resources was sporadic and in the case of sea mammals, opportunistic, occurring only when such animals were cast ashore. Neither did mollusc exploitation in low energy waters apparently take place although the reason was obscure. Optimal foraging theory, whereby caloric expenditure on obtaining a resource eventually outstrips caloric return was proposed as an explanation and this had thus obliged or encouraged coastal dwellers to focus on more abundant wetland resources further inland.

Coastal dwellers in northern Australia could have extremely diversified marine diets as evidenced from a 1977 study by Meehan of the *Anbarra* peoples in Arnhem Land. Such was the richness of the benthic community that men and women had a choice of collecting 29 shellfish species, as well as selecting at various times from a diverse range of fish, crustacea, sea mammals, water birds, marsupials, reptiles, insects and terrestrial and aquatic plants. Unlike their southern counterparts they had no compunction in eating cartilaginous fish.²⁰ Jones also reports that some 70 species of fish were variously taken by these people with spear, net, hook and line, and fishtraps. The large variety of species and the diverse technological inventory meant there was little difficulty in accommodating seasonal changes, or offsetting dietary stress.²¹

In Queensland Aboriginal coastal peoples still engage in what is arguably described as a traditional lifestyle. For example dugong hunting which was an important cultural activity in the past is now meeting resistance from authorities and conservationists because adoption of non-Aboriginal technology has created the potential for catch rates to rise above sustainable levels. This problem is also occurring in connection with fisheries

¹⁹ Kirk, R.L. *Aboriginal Man Adapting: The Human Biology of Australian Aborigines*, (Melbourne: M.U. Press, 1986), pp.146-7.

²⁰ Meehan, B. "Hunters by the seashore," *Journal of Human Evolution*. Vol. 6. 1977, pp.363-70.

²¹ Jones, R. "Hunters in the Australian coastal savannah," in Harris, D. (ed.), *Human Ecology in Savannah Environments*, (London: Academic Press, 1980), pp.107-45.

in Western Australia, such as with the use of rifles and crossbows to hunt dugong and turtle, and with the use of nets in waters set aside for fish conservation. Problematic too is gauging the veracity of imputed knowledge when contentious issues such as land and sea rights are involved. Smith in his 1987 doctoral thesis found that indigenous knowledge of marine resource usage in Queensland varied with the individual and could often be incomplete, or influenced by social position or factors such as introduced technology and commercial considerations. As such, “culturally correct” information about marine resources handed down from the past might be markedly different from the more pragmatic realities of the present. The variation between the description of the traditional obligation and the observed reality might, for example, arise from a sense of guilt at the departure from past practices, or from a desire for an informant to enhance a reputation in the eyes of the non-Aboriginal researcher.²² It is of course an age old problem experienced by most anthropologists and historians at various times, and highlights the need to address with caution the veracity of contemporary statements about cultural activities, either in the present, or the distant past, and whether they be from Aboriginal or non-Aboriginal sources.

In Western Australia there has long been interest in general subsistence strategies of southwest Aborigines, with the previously mentioned nineteenth century books of Grey and Moore becoming classic references, but both lack analysis. In addition little early southwest scholarly material on the subject has been identified. A dissertation by Andrews in 1939 examined the history of European penetration of the southwest and also provided some discussion of Aboriginal subsistence activities.²³ However, coinciding with the burgeoning academic interest in Aboriginal matters since the 1960s, most studies involving Aboriginal subsistence strategies have occurred more recently.

Meagher’s 1973 master’s thesis involving southwest Aboriginal food resources has been of significant value for the correlation of a large number of otherwise obscure historical references. The original aim of her study was to shed further light on the poorly documented collection of southwest Aboriginal artifacts held by the Western Australian Museum. Coinciding with this a view emerged that while cultural restrictions imposed by age, totemic obligations and gender ensured that hunting pressure on species

²² Smith, *op. cit.*, p.33.

²³ Andrews, W.N. The exploration of south-western Australia 1829-1838 with particular attention to certain explorers, BA hon. thesis, (University of Western Australia, 1939).

was lessened, there was no evidence that conscious, planned effort to conserve any species took place.²⁴ A subsequent paper by Meagher and Ride provided an overview of natural resource exploitation by southwest Aborigines and briefly noted the absence of evidence for long-term fish preservation, watercraft and technology such as fishing lines and nets.²⁵

Archaeologists increasingly recognise that a mass of quantitative data based upon material culture, when presented alone, has the capacity to produce a narrowly focused and distorted account of prehistoric lifestyles. Use of historical literature in support of the more ancient evidence is not uncommon, but the practice is problematic because it can carry with it an implication that because phases of certain lithic technologies have existed over long periods the associated Aboriginal culture and customary practices may have been relatively static.

Benson-Lidholm in 1980 examined numerous mortar-like bait grinding depressions in shoreside rock platforms along the south coast, and correlated the positions with local knowledge of wave actions to identify why favoured fishing sites were chosen. This information was used to predict the location of further depressions with some success.²⁶ Historical information relating to post-settlement Aboriginal fishing practices was used to postulate about fish species which might have been taken in the past. Of added interest was confirmation that local fishermen did not view the remains of estuarine stone arrangements along the south coast as being effective fishtraps, but no plausible explanation was provided.

An honours thesis by Ward in 1981 set out to examine Aboriginal subsistence patterns in the vicinity of Geographe Bay on the west coast.²⁷ The study particularly related to the historically recorded estuarine and coastal fishing activities and concluded that fishing had been a very important activity which had been intensified with the use of fish weirs. Ward postulated that fishing had the potential to lessen stress on other food

²⁴ Meagher, *op. cit.*, p.284.

²⁵ Meagher, S. J. and Ride, W.D.L. "Use of natural resources by the Aborigines of South-Western Australia." In Berndt, R.M. and Berndt, C.H. *Aborigines of the West*, (Nedlands: University of Western Australia Press, 1979) pp.66-89.

²⁶ Benson-Lidholm, G.O. The archaeological, ethnographic, historical and oral traditional evidence of a marine/estuarine fishing adaptation on the south coast of Western Australia, unpublished BA dissertation, (Nedlands: University of Western Australia, 1980). I am grateful to Mr Benson-Lidholm for taking me to some of these sites in 1993.

²⁷ Ward, K. Gone fishing, patterns of Aboriginal subsistence around Geographe Bay, unpublished honours dissertation, (Nedlands: University of Western Australia, 1981).

resources not so plentiful. It will be recalled that Turbit conversely proposed that fish in the Sydney region were a primary subsistence resource far exceeding the value of terrestrial ones, and that substantial stress occurred when the fishery lapsed.²⁸ Population densities varied significantly between these regions. In the area of Turbit's study there were many groups living in relatively close proximity along the coast and it seems probable that access to terrestrial resources under control of other groups was well guarded. In the post-settlement period, the rapid European usurpation of land and introduction of domestic livestock probably involved areas containing formerly reliable terrestrial food sources. Movement into other groups' territories in times of food shortage could only result in severe conflict, which was a relatively poor option in a densely populated region. In the southwest there was intergroup conflict, but less people ranged over greater areas. Terrestrial resources in the southwest appear to have been abundant enough in the immediate pre-settlement period, but there too, European incursion quickly restricted access, and livestock soon destroyed favoured places such as yam patches.²⁹

The cultural diffusionist argument advocates that the spread of ideas and change to cultural activities is inevitable when there is regular communication between distinctive groups of people. If there are shared traits or modes of behaviour identified this is interpreted as evidence of interaction. Diffusionist theory has a tendency to exclude the chance of similar traits or inventions appearing simultaneously and independently of each other. Conversely if there are noticeable variations between groups this is taken as an indicator that interaction has been minimal. The diffusionist concept also accepts that cultural units self-consciously perpetuate their cultural identity.³⁰

Because the southwest is geographically remote from the north of the continent, where much Aboriginal innovation in technology and arts is assumed to have commenced, and from the east coast where innovative fishing technologies such as hook, line and large nets were evident, there has been a tendency to believe the southwest was culturally remote. Perhaps understandably the temptation arises to regard Nyungar culture with its distinctive aspects as a surviving relic of a cultural phase long past, in

²⁸ Turbit, *op. cit.* p.56.

²⁹ Hallam, S.J. "Aboriginal resource usage along the Swan River." In John, J. (Ed.) *The Swan River estuary, ecology and management.* (Bentley: Curtin University of Technology, 1987). pp. 21-33.

³⁰ Crawford, I.M. "Aboriginal cultures in Western Australia," in Stannage, T. (ed.), *A New History of Western Australia,* (Nedlands: University of Western Australia Press, 1981), p.12.

other words as a cultural anachronism which would inevitably succumb to mounting pressure from “more advanced” external groups. However as many people obliged to endure constant change in the twentieth century might agree, new is not necessarily better. Undoubtedly Aborigines in the past, as they do in the present, adopted or rejected new ideas as it suited them.

Crawford in his consideration of distinctive items in the southwest technological inventory, such as the kodj axe and taap knife has proposed they are specialised innovations rather than ancient hand-me-downs. The latter tool in particular being viewed as distinctive of a maritime environment, where it is known to have been used in the post settlement period for the butchering of seals and whales.³¹

A problem with diffusionism is that it assumes the inevitability of acculturation, and therefore imposes a Eurocentric concept of ‘primitiveness’ on a culture when a more modern innovation is not evident. It is something Aboriginal people have had to contend with since the arrival of the first Europeans. A historical example of this occurred when Captain Fremantle tried to introduce fish hooks and lines to Aborigines at Swan River in 1829. It was his first visit to the continent, but because so much information about Australia had been transmitted back to England since the visit of Cook, he may have been aware that Aborigines used hooks and lines on the eastern seaboard. Try as he might, he could not make the Swan River men appreciate the worth of the technology.³² What Fremantle failed to appreciate was Swan River spears were quite adequate for fishing in the prevailing conditions.

Sometimes too, European hook and line technology was quite inadequate for Australian freshwater species, as discovered by the ill-fated explorers Burke and Wills, who saw the remains of many fish at old Aboriginal campsites, but despite carrying lines and hooks they enjoyed only one fish which had been dropped by a crow, and another which had stranded while choking on a smaller fish.³³

With diffusionist argument the notions that choice and strength of prevailing cultural mores may sensibly preclude adoption of new technology are generally sidestepped for want of evidence, although the adoption of new practices might well

³¹ *Ibid.*, p.14.

³² Fremantle, C.H. *Diary and Letters of Admiral Sir C.H. Fremantle, G.C.B. Relating to the Founding of the Colony of Western Australia*, Cottesloe, Lord C.B. (ed.), (1829), (Fremantle: Fremantle Arts Centre Press, 1985), p.39.

³³ Blainey, G. *Triumph of the Nomads: A History of Ancient Australia*, (Melbourne: Macmillan, 1975), p.222.

occur because of necessity, perceived socioeconomic advantage, or simply because of appeal. As such, the long term viability of any group was possibly more dependent on its ability to adapt or adopt accordingly. While prevailing environmental and social conditions might have imposed variation upon the frequency of contact and exchange of ideas, these took place nevertheless. Commodities such as stone axes, ochre, narcotics and pearlshell have undoubtedly travelled over transcontinental distances via so called “trade routes,” and Mulvaney has described a classic transference of a “corroboree” between northwest Queensland and the Great Australian Bight on the south coast over a period of some 25 years.³⁴

The diffusionist concept has influenced exploration of the cultural origins and territorial boundaries or so called “Nyungar cultural bloc” of southwest Aborigines.³⁵ An honours thesis by Le Souef in 1980 attempted a reconstruction of the social and territorial organisation of south-coast Aborigines who lived in the vicinity of King George Sound.³⁶ Based upon historical records the study concluded that territorial boundaries with neighbouring groups overlapped considerably, and that timing of seasonal movements and related customary activities could not be sharply defined. The implications of the finding in relation to determining the degree of predictability of food resources, particularly those from the maritime environment are discussed later in this dissertation.

Defining the geographic limitations of the Nyungar cultural bloc was a theme further explored by Ferguson who also carried out archaeological work in the same region as Le Souef, and in other parts of the southwest, and correlating it with historical, environmental and fossil-pollen data. Stratigraphic archeological evidence was uncovered in Ferguson’s study to suggest that there had been continuous human activity in the vicinity of the Kalgan River near King George Sound over the past 18,000 years, but he proposed that there had been a general depopulation of the southwest region due to climate changes during the early Holocene period of about 6,000—4,000 BP.³⁷ This

³⁴ Mulvaney, D.J. *The Prehistory of Australia*, (Ringwood: Pelican, 1975).

³⁵ Nyungar cultural bloc is a term used to describe the hypothetical region of cultural commonality involving material culture, language and custom specific to Aborigines of southwest Australia.

³⁶ Le Souef, S. Social organisation and territoriality among the Aborigines of King George Sound, unpublished honours thesis, (Nedlands: University of Western Australia, 1980).

³⁷ Ferguson, W. A mid-Holocene depopulation of the Australian southwest, unpublished PhD thesis, (Australian National University, 1985); “Mokare’s domain,” in Mulvaney, D.J. and White, P.J. (Eds.), *Australians to 1788*, (Canberra: Fairfax, Syme and Weldon, 1987), pp. 121-45.

roughly coincides with recognised increases in temperature and rainfall throughout temperate Australia.³⁸ If Ferguson's depopulation hypothesis is true then it also raises the intriguing, and undoubtedly controversial question of whether the genesis of Nyungar culture is as recent as between six and four thousand years, or less?³⁹ Human activity in other parts of the southwest can be traced with radiometric dating to about 35,000 BP, but there are substantial gaps in the chronology as long as 9,000 years which seems to indicate there have indeed been prolonged periods of minimal human activity in some parts.⁴⁰

Smith (M.) also addressed the existence of an identifiable Nyungar cultural bloc in a study of the Esperance region. The archaeological record there is minimal, but extends back to the late Holocene about 13,000BP. Evidence uncovered suggests that aridity has been a factor in subsistence strategies since the mid-Holocene, and these were successful enough to preclude regular dependence upon any maritime resources. Smith was unconvinced a mid-Holocene depopulation occurred in the southwest, partly because of the enigma of where a replacement population might have come from and partly because 20 percent of southwest sites show evidence that initial usage occurred during the supposed period of depopulation. In addition there is no archaeological evidence of a mass migration to other parts.⁴¹

A popular theory originating with Stirling's visit to Swan River in 1827 was that the seasonal changes of summer to winter influenced a regular coastal-hinterland migration by Aborigines in the southwest.⁴² It assumed homogeneity existed between coastal and inland peoples and the theory has gained further support from researchers of

³⁸ Bird, C.F.M. Prehistoric resource utilisation: A case study from the southwest of Western Australia, unpublished PhD thesis, (Nedlands: University of Western Australia, 1985), p.79

³⁹ Controversy arises because the emotive cliché "40,000 years of history," invariably implying continuous Aboriginal occupation of a place during that period. It is particularly used to reinforce the Aboriginal argument in disputes involving land rights and customary access.

⁴⁰ These gaps have been discussed in Weaver (1991), and to an extent are readdressed in this dissertation, in the chapter dealing with archaeology.

⁴¹ Smith, M. Recherche A L'Esperance: A prehistory of the Esperance region, unpublished PhD thesis. (Nedlands: University of Western Australia, 1993).

⁴² Stirling, "Narrative of operations". *HRA.*, VI, III. (1827). pp. 551-583; Nind, *op. cit.* p.25. Collie, A. Account of an Excursion to the North of King George's Sound, Between the 26th of April, and the 4th of May, 1831..., In Cross, J. (Ed.), *Journals of Several Expeditions Made in Western Australia*, (Nedlands: Royal Western Australian Historical Society, 1980 facsimile ed.), pp. 132-154.

the 1970s.⁴³ There is a view this is an over simplification, because historical accounts reveal Aboriginal people were observed in both regions in all seasons.⁴⁴

An archaeological study of surface artifact distribution in the Plantagenet region north-east of Albany was undertaken by Bird to develop an understanding of the economic relationship between adjacent groups of Aboriginal people over lithic resources.⁴⁵ Two distinct stone artifact provinces were identified, one based on Plantagenet chert near the coast and one based on quartz inland. Chert was also acquired and used by inland people but was subjected to more conservative usage presumably because of undersupply. Bird found in her 1985 study that lithic resources could be a valid reason for inland people to periodically visit the southwest coast, where presumably they also engaged in coastal subsistence activities such as fishing.

Certainly in the colonial period there was movement of people over substantial distances to coincide with seasonal aggregations of fish usually coinciding with late autumn to early winter, and some of these people undoubtedly came from beyond the coastal regions. An ethnohistorical study of a fishweir which operated on the Serpentine River near Mandurah during the nineteenth century was carried out by Gibbs in 1987.⁴⁶ The study correlated Aboriginal group gatherings from historical sources to identify timings of group interaction with the resource and in turn identify the major seasonally used trading routes along the Swan Coastal plain, and through the valley systems of the adjacent Darling escarpment to the drier inland regions. While there was evidently movement of people to and fro, it does not appear to have been urgent, and may have been as much related to customary or ceremonial interaction as anything else. Importantly, no mass migration of peoples from the coast to inland regions specifically because of cold winter weather was revealed. In a similar manner Mulvaney correlated historical accounts of major Aboriginal gatherings in Eastern Australia and found many of

⁴³ Meagher, *op. cit.*, Hallam, S.J. *Fire and Hearth: A study of Aboriginal usage and European usurpation in south-western Australia*, (Canberra: Australian Institute of Aboriginal Studies, 1975), Dortch, C.E. and Gardner, G. Archaeological investigations in the Northcliffe district, Western Australia. *Rec. West. Aust. Mus.*, 4 (3).1976, pp.257-293.

⁴⁴ Le Souef, *op. cit.*, Bird, *op.cit.*, Smith, M.*op. cit.*

⁴⁵ Bird, *op. cit.*

⁴⁶ Gibbs, M. Aboriginal gatherings in the west coastal region of south western Australia: An ethnohistorical study, unpublished honours thesis, (Nedlands: University of Western Australia, 1987).

these related to species aggregations or seasonal harvests.⁴⁷

An honours dissertation by myself examined the pre-1837 human interaction with food resources associated with the Swan and Canning Rivers on the basis of extant historical, environmental and ecological evidence. The study found that exploitation of the estuarine food resources was influenced by physiography, fluctuations of season, general availability, cultural preferences and technology. Europeans and Aborigines for the most part ate fish when the opportunity, or inclination arose, but there did not appear to be large scale systematic exploitation by either peoples during the period selected. Neither was evidence found to confirm direct competition for the resources, although there were occasional incidents of stolen catches. Of greater significance was competition for other fauna. Because red meat was more valued by Europeans than fish, local native game acquired a commercial value and became scarce. Aborigines of the Upper Swan region optimised their chances by falling in with settlers, and by 1837 agricultural grains and introduced animals, including vermin, had become an important part of their diet.⁴⁸

Over time researchers from many disciplines have interested themselves in various aspects of Aboriginal culture, but there have been few works which can truly be described as multi-disciplinary. The first broad multidisciplinary overview of the southwest region was attempted in 1973 when The Royal Society of Western Australia published an anthology of six specialist papers.⁴⁹ These addressed the geology, soil types, and geography of the region, plus species diversity and a brief overview of early Aboriginal and European activities, including some aspects on coastal resource exploitation. Correlation between them was left to the judgment of the reader. In a similar respect an anthology of the Swan and Canning Rivers emerged from Curtin University in 1987. It provide a detailed assessment of the ecological status of the contemporary estuarine environment, with some mention of past human exploitation of the fishery resources in a descriptive rather than analytical context.⁵⁰

Aboriginal authors have been generally absent from southwest ethnohistorical studies, tending instead to concentrate upon the experience resulting from socially

⁴⁷ Mulvaney, D.J. "The chain of connection," in Peterson, N. (Ed.), *Tribes and Boundaries in Australia*, (Canberra: AIATSIS, 1976), pp.72-93). (85-6).

⁴⁸ Weaver, P. An ethnohistorical study of the Swan-Canning fishery in Western Australia: 1697-1837, unpublished honours dissertation, (Mount Lawley: Edith Cowan University, 1991).

⁴⁹ *Journal of Royal Society of Western Australia*, Vol. 56 Parts 1 and 2, July 1973.

⁵⁰ John, J. (Ed.), *The Swan River estuary ecology and management*, (Bentley: Curtin University of Technology, 1987).

disruptive government policies of the twentieth century, a subject for the most part which lies beyond the scope of this dissertation.

1.1 Studies of other fishers and marine hunters

Smith and Tull produced a brief overview of the history of maritime resource exploitation in Western Australia in order to assist in the economic analysis of the growth of the fishing industry later, during the twentieth century. They noted that in Western Australia the general history of fishing has been severely neglected. It is a view confirmed in preparation for this dissertation.⁵¹ Nevertheless a 1952 study by Gamba has been particularly useful for identifying the role of Italian fishermen in the southwest, and providing an understanding the socioeconomic and racial tensions which developed as a result of their arrival towards the end of the nineteenth century.⁵² In many respects the allegations and prejudice directed at Italian fishermen because of declining catches at the end of the nineteenth century resembles that directed at southeast Asian fishers towards the end of the twentieth.

An illustrated history of Australian fishing-boat technology from 1870 to 1970 by Kerr provides information about early fishing practices in Australia, primarily via the medium of oral history interviews with elderly fishermen. Of added significance is the revelation that a declining economic situation in Victoria was the cause of several fishing boats, their crews and families moving permanently to the southwest.⁵³

Intensive whaling operations have been carried out intermittently in Western Australian waters since the late eighteenth century but it was not until 1966 that Heppingstone provided the first serious examination of the southwest industry. Bay whaling particularly made its mark in the first few decades of settlement and promised to provide the struggling colony with a valuable economic injection. However, enthusiastic expectations frequently outweighed results due to inexperience, inadequate equipment, and to the intensive activities of the highly skilled crews on American whalships.⁵⁴

⁵¹ Smith and Tull, *op. cit.*

⁵² Gamba, C. A report on the Italian fishermen of Fremantle, (Nedlands: University of Western Australia Economics Department, 1952).

⁵³ Kerr, G. *Craft and craftsmen of Australian Fishing 1870-1970: An illustrated oral history*, (Portland, Mains'l Books, 1985).

⁵⁴ Heppingstone, I. "Bay Whaling in Western Australia," *Journal and Proceedings of the Royal Western Australian Historical Society*, 6, 5, 1966; See also by Heppingstone: "American Whalers in Western Australian Waters," *Early Days*, 7, 7: 1. pp. 35-53, 1969., "Whaling in Cockburn Sound and Thereabouts," *Early Days*, 7, 5, pp. 90-103, 1973; "A whaling family," *Early Days*, 10, 5 pp. 461-472, 1993.

McIlroy, on behalf of the National Trust of Western Australia, subsequently attempted to identify the locations and intensity of all shore based whaling operations in the region thus creating the most substantial work on the subject to date.⁵⁵ There has also been a partial examination of logbooks of American whalers to estimate the intensity of operations in the Eastern Indian Ocean region and correlate them to contemporary estimates of whale populations.⁵⁶ This complements the 1935 work of Townsend which collated on a global scale all the known kills of nineteenth century whalers to establish species distribution charts, including off the Western Australian coast. A 1995 doctoral thesis by Gibbs correlated historical and archaeological data relating to nineteenth century whaling activity in the southwest, particularly in relation to a shore station slightly eastward of Albany.⁵⁷ It concluded that whaling contributed significantly to the early economy of the colony, but this importance faded with the increasing success of agriculture.

1.2 Studies of fishing peoples outside Australia

At an early stage in the development of this dissertation it was decided to examine published studies of fishing peoples outside of Australia to acquire an understanding of methodologies used and problems experienced by researchers beyond the influence of the local ethos. In addition it was thought desirable to try to identify emergent themes in studies of coastal economies when indigenous inhabitants encountered colonial interference, or were otherwise circumstantially obliged to modify their fishing strategies.

In the northern Pacific, several ethnohistorical studies have involved the native peoples of the Bering Strait region. In the absence of any indigenous literature Ray made use of early documents which were the legacy of hunters, traders and visiting mariners in the region between 1819 and 1822. These provided an overview of the frontier

⁵⁵ McIlroy, J. *Whaling Stations Survey 1987: Sites south of Perth*, unpublished report, (Perth: National Trust of Australia, 1987).

⁵⁶ Bannister, J.L. Taylor, S. and Sutherland, H. "Logbook Records of 19th Century American Sperm Whaling: A Report on the 12 month project, 1978-79," in *Report of the International Whaling Commission*, 31, 1981, pp. 821-333; Bannister, J.L. "Notes on nineteenth century catches of Southern Right Whales (*Eubalena australis*) off the southern coasts of Western Australia," in Brownell, R.L. Best, P.B. and Prestcott, J.H. (Eds.), *Right whales past and present status*, (Cambridge: International Whaling Commission, 1986).

⁵⁷ Gibbs, M. The historical archaeology of shore-based whaling in Western Australia, unpublished Ph.D thesis, (Nedlands: University of Western Australia, 1995).

processes which dramatically altered the activities of the native peoples.⁵⁸ In some respects what happened to Eskimo⁵⁹ people also happened Nyungar people in the southwest of Australia at about the same time. The appropriation of accustomed territories and traditional food resources by the invaders, miscegenation, and a marked increase in mortality from introduced diseases brought about rapid and permanent cultural changes.

Another study of Aleutian peoples was undertaken by Black. Available sources were considered in two time frames: 1747-1799, being the early post-contact period when primary sources came from brief intermittent explorations, and 1799-1867, the period of well documented Russian company rule. The study proposed that modern Aleuts and Eskimos, (Eskaleuts) had a common ancestry and confirmed that epidemics spread by Russian trading ships had a significant effect on reducing scattered populations of original native peoples. This study provides useful comparisons for the historical situation which developed on the southwest coast of Australia where foreign hunters also engaged in the fur trade and were sometimes isolated for long periods by unreliable employers. This often necessitated intensified usage of local maritime food resources and encouraged more intimate interaction with the indigenous people.⁶⁰ The similarity of the Eskimo and Australian Aboriginal experience has also been noted by Rowley.⁶¹

The enduring fur trade in northwest America and Alaska has provided ethnohistorians in that region with a rich legacy of documents unmatched for the southwest of Australia. According to Gibson,⁶² who drew heavily on this material, the coastal trade in the northwest commenced in the late 18th century and was maintained through to the mid-nineteenth, by which time all fur-bearing species had undergone severe decline.

Initially, the arrival of the itinerant Russian, British, Spanish and Euroamerican fur traders heralded a period of prosperity for the many hunter-fisher tribes, who having already developed a proclivity for such enterprise amongst themselves, had little trouble

⁵⁸ Ray, D.J. *Ethnohistory in the Arctic: The Bering Strait Eskimo*, (Kingston: The Limestone Press, 1983).

⁵⁹ The term Eskimo is geographically specific. It is not always appropriate to use the all-encompassing name of Inuit for all the indigenous peoples of Arctic-America.

⁶⁰ Black, L.T. *Atka: An ethnohistory of the Western Aleutians*, (Kingston: The Limestone Press, 1984).

⁶¹ Rowley, C.D. *The Remote Aborigines: Aboriginal policy and practice*, (Canberra: Australian National University Press, 1971), p.8.

⁶² Gibson, J.R. *Otter Skins, Boston Ships, and China Goods*, (Seattle, University of Washington Press, 1992).

in understanding the wishes of the newcomers. As they intensified their efforts to accommodate these demands, so attention to other customary activities began to wane. The exchange of pelts for commodities such as alcohol and firearms hardly compensated for problems with increasing inter-tribal warfare and introduced diseases, especially smallpox. In spite of the major demographic changes inflicted upon northwest Indians in the trading era, Gibson, perhaps patronisingly, viewed this fate as preferable to changes which could hypothetically have been brought about by colonisation and missionaries.⁶³

The northwest fur trade also echoed throughout the Pacific, and especially at Hawaii, where immense quantities of sandalwood joined the list of items bound for China. The sandalwood trade stimulated an insatiable appetite for high quality firearms amongst the Hawaiians, and brought about significant changes to their society. When the resources became exhausted, animosity increased between all parties. Goodwill, as it existed, was as short lived as the resources.

As with most ethnohistories examined, including those by Ray and Black, Gibson's work provides minimal information about distribution and natural history of the actual species exploited, even though these are a key ingredient in the saga. There is little attempt to investigate the mechanisms of environment which influenced their distribution, and in turn shaped the historical actions of people who exploited them. Without wishing to be over critical, furs and sandalwood are presented as little more than an attractive commodity which is exchanged for imported goods between conniving peoples, then quickly conveyed away to the Orient. In spite of this criticism, there are tantalising glimpses in Gibson's work of how quickly nature compensated for the excesses of people. The hunting of the sea otter to near-extinction brought about a significant increase in the numbers of abalone and from the late 1880s, and a major industry exploiting the mollusc arose. Thus the few otters which survived the original onslaught of the hunters became a threat to the industry and were pursued with equal vigour.⁶⁴

A 1971 ethnohistorical study of the peoples of the Swahili coast in East Africa by Nichols examined the impact of Omani Arabs upon the activities of native peoples during the in the first half of the nineteenth century.⁶⁵ As with the southwestern coastal region of Australia the Swahili littoral is backed by a dry hinterland. In both countries the

⁶³ *Ibid.* p.277-8.

⁶⁴ *Ibid.* p.277.

⁶⁵ Nichols, C.S. *The Swahili Coast: Politics, diplomacy and trade on the East African littoral 1798-1856*, (London: Allen and Unwin, 1971).

indigenous people were ruthlessly exploited by invaders for economic gain, with distinct variations. In east Africa many people, particularly women were captured from the hinterland and sent to Europe, Arabia, India and the Americas as slaves, while people living on the coast, the *Swahili* (coastal dwellers) who had developed commercially orientated strategies to trade salted fish, fish-oil and cowrie, were able to maintain their cultural identity with a minimum of conflict. In Western Australia the indigenous people had no commercially orientated fishing strategies and thus had no more use to colonists than as unskilled labourers. Slavery along the African model did not take place, but significant numbers of people were displaced, and men who opposed the colonial invasion were either shot, or incarcerated for long periods in offshore prisons. Some of these men eventually found their way into the whaling and pearling industries, but unlike the coastal Africans they never achieved significant socioeconomic status under colonial rule.

Many studies of fishing practices have been carried out in the Pacific region, usually in association with archaeological work. In the absence of a written record, Allen undertook a comparison of archaeological data and modern oral evidence for a study of traditional fishing activity on Motopure Island which is located 15 km east of Port Moresby.⁶⁶ Motopure had been continuously occupied between about 1200 and 1700. Allen combined archaeological evidence and oral sources to confirm that the former inhabitants had subsequently moved en-masse to an island 65 km distant. Of relevance is how regionally common contemporary fishing practices were unrepresented in the Motopure record. Contrary to expectations and beliefs, indigenous fishing practices had not been enshrined since time immemorial. Like all aspects of culture they were subject to change, which included abandonment or replacement according to prevailing conditions. Similarly in a study of Hawaiian fishing practices Goto provided the cautionary dictum that because a form of fishing technology is not evident in the present does not mean that it was not used in the past.⁶⁷

An ethnohistorical study of the people of northern Luzon in the Philippines by Felix Keesing is another example involving cultural change and adaptations made by coastal dwellers after the arrival of a colonial power. Keesing endeavoured to estimate

⁶⁶ Allen, J. "Fishing without fishhooks," in Traditional fishing in the Pacific, Anderson, Athol, (Ed.), *Pacific Archaeological Records*, 37, (Honolulu: Bernice Pauahi Bishop Museum, 1986).

⁶⁷ Goto, A. Prehistoric ecology and economy of fishing in Hawaii: An ethnoarchaeological approach, (Doctorial dissertation, University of Hawaii, 1986).

the redistribution of native peoples since the time of first Spanish contact in the sixteenth century through consideration of official records and the geographical, ecological and environmental factors which might have facilitated or limited human movement and influenced cultural development. Distinctive groups which were obliged to make strategic adjustments after the arrival of the Spaniards were many and included coastal fishers, mountain dwellers who were hostile to the coastal people, plus dry cultivators in the hinterland, terracing people who lived on the highland streams and the oldest human stratum in the region, the “negritos” who could be loosely described as nomadic hunter-gatherers and the closest Philippines parallel to Australian Aborigines living in a traditional mode. Because these latter mentioned people offered no economic advantages they were the most vulnerable to the new influences. They maintained no significant trade relationships amongst themselves, or with the other distinctive ethnicities.⁶⁸

As a result of field work initiated during the 1930s Firth examined the peasant economy of Malay fishermen and compared subsequent changes which were in part influenced by Japanese occupation during World War 2. Small fishing communities were located at most river mouths or *kualas*. Each had its own customs in relation to the fishery, and to the economic market by which fish, a staple in Malay rural society, was distributed. Technology varied considerably, and those with more sophisticated forms stood to be more successful. Managing the risk in acquiring this technology involved long term planning and had to be juggled against the almost day to day unpredictability of catches. Having an existing commercial fishing infrastructure provided some insulation from usurpers, but the most economically successful were those fishers prepared to quickly modify strategies according to changing circumstances. Highly exploitive practices contributed to socioeconomic success, an emergent theme in many of the studies of fishing peoples which were examined. Even so, the unpredictability of the resource allowed for the entry of marginal fishers, whose primary interest might for example be in a small family-operated agricultural plot. For them fishing supplemented a rice diet, and occasionally produced income during seasonal agricultural slumps. Due to custom and physical necessity, fishing was a mainly male activity.⁶⁹ Similar parallels occurred with agriculturalists in the southwest of Australia during the early stages of settlement and these are discussed elsewhere within this dissertation.

⁶⁸ Keesing, F. *The Ethnohistory of Northern Luzon*, (Stanford: Stanford University Press, 1961).

⁶⁹ Firth, R. *Malay Fishermen: Their peasant economy*, (New York: Norton, 1975).

With the exception of Firth's work, which enjoyed the anthropologist's luxury of an abundance of living informants, all the others attempted to uncover information not specifically recorded from the distant past, through a diversity of sources. While none can be said to have provided direct inspiration for the methodology devised for this study, they have provided inspiration to persist after a goal which at face value appeared unobtainable. They attempted, and to a great degree succeeded in providing a sympathetic historical record for a peoples of the past, who themselves had been unable to do so. The lesson of this has been invaluable.

Chapter 2 Physiography of the southwestern coastal environment

2.1 The regional divisions

This chapter describes the physiography of the immediate coastal environment, the influence of ocean currents and the climatic variability of southwest Australia. Some historical relationships between people, the environment and its notable marine species are introduced. For convenience the region is divided into four sections: 1. Shark Bay to Geraldton; 2. Geraldton to Cape Naturaliste; 3. Cape Naturaliste to Cape Leeuwin and 4. Cape Leeuwin to Cape Arid. These divisions also coincide approximately with geological subdivisions described in *Memoir 2 Geology of Western Australia. Western Australia Geological Survey*, and can be identified in Fig. 2.1. Approximate rainfall patterns which strongly influenced estuary development, and the biological diversity within them, are shown in Fig 2.11.

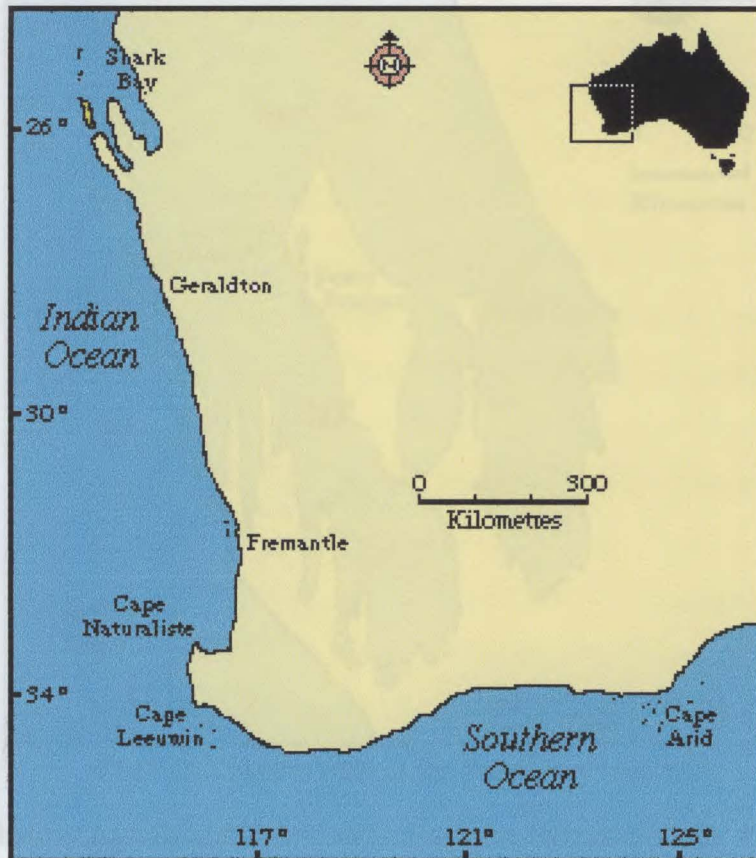


Fig. 2.1 Sketch map of southwestern Australia

2.2 The Shark Bay region

The region generally known as Shark Bay shown in Fig. 2.2 includes two parallel peninsulas and four islands. Three of these, commencing with Dirk Hartog Island,

extend lineally in a general north-westerly to nor-north easterly direction from the mainland at about 26° south latitude. Dorre and Bernier Islands are the most northern, and apart from brief use as Aboriginal quarantine facilities from 1908, are uninhabited.¹ Dirk Hartog Island is now used as a sheep station, but guano miners operated on its eastern side, between about 1850 and 1888. The island is separated by a narrow tidal-swept passage from Steep Point, the most western extremity of the Australian mainland. The three islands provide significant shelter to the expansive and relatively shallow waters in their lee, where Faure Island is located.

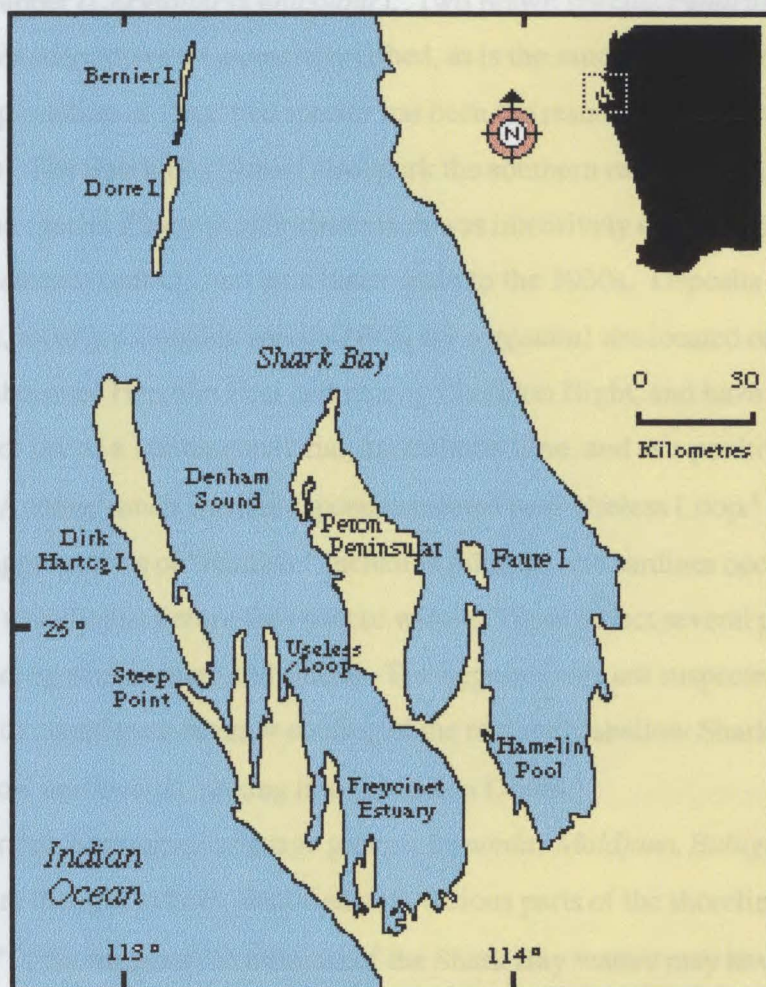


Fig. 2.2 Sketch map of the Shark Bay region

Many shallow bays, bights, islets and inlets have formed in these waters, with 2,101 km² of tidal flats lining most of the shorelines.² The waters are renowned for the abundance of fish species, and sea-grass meadows in deeper parts support a population

¹ See Davidson, W.S. *Havens of Refuge: A history of leprosy in Western Australia*, (Nedlands: University of Western Australia Press, 1978).

² *An inventory of Australian estuaries and enclosed marine waters*, (Canberra: Australian Recreational and Sport Fishing Council, 1989).

of dugong. Sea turtles are also found. The salinity varies considerably, for instance living stromatolite formations exist at the extreme southern end of Hamelin Pool where it is high, and an evaporative salt works now operates at Useless Loop, adjacent to the western side of Freycinet Estuary. The creation of artificial distilling pans or 'salinas' for salt production has destroyed important fish nursery areas.³

Commercial fishermen have operated in Shark Bay since the late nineteenth century, and the region has provided the major fishery for the economically important north-west snapper (*Chrysophrys unicolour*). Two prawn species *Penaeus latisulcatus* and *Penaeus esculentus* are commercially fished, as is the saucer scallop *Amusium balloti*, but exploitation of these two species has been the result of twentieth century developments. The Shark Bay waters also mark the southern range for pearl oysters, specifically the species *Pinctada imbricata* which was intensively exploited in the latter part of the nineteenth century, and on a lesser scale to the 1930s. Deposits of small bivalve shells, mostly a Coquina species (*Fragum erugatum*) are located on the southern and western shores of Hamelin Pool and nearby Charidon Bight, and have been mined periodically for use as a building material, agricultural lime, and as a poultry-feed supplement. Another much smaller deposit is located near Useless Loop.⁴

Large aggregations of "baitfish," including pilchard and sardines occur seasonally in the region, usually just before the onset of winter. These attract several pelagic species, including whales, tuna and sharks. The aggregations are suspected of being related to the the rapid post-summer cooling of the relatively shallow Shark Bay waters which then flow northwards, mixing into the Indian Ocean.⁵

Five former Aboriginal language groups, *Ingaarda*, *Maldjana*, *Buluguda*, *'Damala* and *Daguda* are thought to have identified with various parts of the shoreline environment.⁶ This suggests the richness of the Shark Bay waters may have been significant to Aborigines in the past; however little confirmation of the cultural association

³ Anderson, C. "World Heritage Comes to Shark Bay," *Western Fisheries*, Winter (1993), pp.18-25.

⁴ Townsend, D.B. Basic Raw Materials of the Shark Bay World Heritage Area. (Perth: Geological Survey of Western Australia. 1996), p.27. Controversy raged between miners and the conservation movement over the fate of this shell deposit in 1994. Its size can be gauged by the claim of a former miner to have removed 60,000 tonnes in one year "...without making a dent." See *The West Australian* 29/8/1994, p.1 and 2/9/1994, p.13.

⁵ Cribb, A. Cape Cuvier Anchovy Frenzy, *Western Fisheries*, Winter (1993), pp.26-27.

⁶ Oats, W. and Oats, L. (Eds.), *A Revised Linguistic Survey of Australia*, (Canberra: Australian Institute of Aboriginal Studies, 1970), pp.50-51.

has been identified in the historical record. The region is generally arid, but several ephemeral fresh-water sources exist.

2.3 Shark Bay to Geraldton

Extending 130 km southwards from the vicinity of Shark Bay to near the mouth of the Murchison River are the Zuytdorp Cliffs, so named for a Batavia-bound Dutch treasure ship which was wrecked against them in June 1712. These cliffs are associated with the Carnarvon geological basin, which lies between Kalbarri to the south and the Dampier Archipelago to the north.⁷ They are comprised of a type of limestone known as Tamala eolianite, which is late Pleistocene in origin.⁸ Tamala is a derivative of *Damala*, the name of the Aboriginal group which in the past ranged in the southern vicinity of Shark Bay. In many places the cliffs are sheer and generally vary in height between 100 and 200 metres.⁹ The highest cliff measures 251 metres (825 feet),¹⁰ but in some locations they are as low as 30 metres with breakaway rubble allowing comparatively easy access to the ocean. The modern European discoverer of the *Zuytdorp* wreck site was a dogger who descended the cliffs at such a place in 1927 to fish. He first noticed the place while setting his dingo traps along a well defined path or "pad" which ran along the top of the cliffs.¹¹ Besides dingoes it is possible that this track was also used by Aborigines. Similar pathways connected all favoured coastal haunts of Aborigines further south, extending as far as Cape Leeuwin and eastwards, thereby facilitating customary interaction between neighbouring groups.¹² Europeans such as George Grey also found them convenient to use in their initial explorations,¹³ and later some served as initial routes between settlements.¹⁴

⁷ Geological Survey of Western Australia, *Geology of Western Australia. Western Australia Geological Survey, Memoir 2*, (Perth: Western Australian Government, 1974), p.269.

⁸ *Ibid*, p.306.

⁹ Bunt, J.S. "The Australian marine environment," *Fauna of Australia*, vol. 1A. (Canberra: AGPS. 1987), p.21.

¹⁰ Playford, P. "The Wreck of the Zuytdorp," in *Journal and Proceedings of Royal Western Australian Historical Society*, 5, 5, (1959), (1976 Reprint), p.20.

¹¹ *Ibid*, p.23.

¹² Bates, D. "Geographical notes, additional SW information, names of places, routes, etc.," Acc.1212A, Typescript of notes: II 3d, ii., notebook 15, pp.6-7, (Western Australian State Archives: ND).

¹³ Grey, *op. cit.*

¹⁴ Shann, E.O.G. *Cattle Chosen; The Story of the First Group Settlement in Western Australia 1829-1841*, (1926), (Nedlands: U.W.A Press, 1978 facsimile ed.); Turner, T. *Turners of Augusta*, (Perth: Patterson Brokensha, 1956).

The Zuytdorp Cliffs region is arid, with an annual average rainfall of approximately 300 mm, usually arriving between May and September. There are at least 65 gullies along the cliffs which remain dry for most of the year, flowing briefly only after rain.¹⁵ With the onset of the dry season a reliable potable water supply would have become an urgent need for any people in the region. A few longer lasting sources exist further inland, but they too are ephemeral. The best permanent fresh water lies to the south, in the Murchison River. No historical accounts of how Aborigines related to this part of the coast have been identified, and enquiries with Aboriginal people now living on nearby stations yielded no information regarding fishing practices of the past.

The mouth of the Murchison River (Kalbarri), provides a brief respite from the high cliffs. It has been reported by Hallam that in the past Aborigines occasionally ate meals of shellfish on rock platforms located near river mouth.¹⁶ Kalbarri has now become a popular recreational centre and a base for commercial ocean-fishing operations, but this has occurred only in the latter twentieth century. The Murchison River is the major watercourse between Shark Bay and Geraldton. Some 820 km in length, it drains an extensive inland area of 82,300 km². No reliable streamflow data is available before 1967, and rainfall records do not go further back than 1900.¹⁷ In flood the river presents a barrier of deep, swiftly flowing water, impossible to cross without bridges or boats. Aborigines here had neither. When floods subside a narrow tidal estuary extends some 17 km from the river mouth. The extreme rise and fall of tides annually is about 1.4 m.¹⁸

In summer fresh water is trapped within the 70 km long Kalbarri Gorge, and in a series of long pools which lie up to several hundred kilometres further inland. The gorge has been cut into an ancient (400 million BP) Silurian formation known as Tumblagooda Sandstone. The principal larger fish upstream are now black bream and a mullet species. Mullet in the Murchison reportedly acquire a distinctive muddy flavour which has locally been attributed to the silt carried in floodwaters, although it more probably has fungal origins, as is the case with the species elsewhere. Kalbarri marks the approximate boundary of the Carnarvon and Perth geological basins. Extending 17 km south along

¹⁵ Topographic map SG 50-13, Edition 1, Series R502, *Ajana*, 1:250,000.

¹⁶ Hallam, S.J. "Changing landscapes and societies: 15000 to 6000 years ago," in Muvaney *et al.*, *op. cit.*, p.64.

¹⁷ Public Works Department, Western Australia, *Streamflow records of Western Australia to 1975*, (Perth: Public Works Department, ND.), (No page numbers, waterways are alphabetically listed.)

¹⁸ RAN Hydrographic Service. (1987).

the coast from Kalbarri are further high cliffs, initially of the red Tumblagooda formation, then changing to a limestone.¹⁹ These cliffs, like those to the north of Kalbarri are scalable in places, but generally provide a barrier to the ocean until they merge with a widening Quarternary sand plain, which then continues south beyond Geraldton, and almost to Cape Naturaliste.²⁰ The Aboriginal group ranging over the area along the southern side of the Lower Murchison were once known as *Nanda*.²¹

Between the Murchison and Geraldton are some minor rivers, the Hutt, Bowes and Chapman, plus other minor creeks and gullies. Little record of fishing activity exists for any of them. The Hutt River is about 60 kilometres long and flows into the southern end of a 21 kilometre long semi-enclosed lagoon with an area totalling about 2,460 ha in area.²² Here in 1839 explorer George Grey reported he saw Aborigines fishing. He also remarked on the large number of well-worn native paths converging on this estuary, which suggests it was an important place for this activity.²³ No other descriptions have been discovered.

2.4 Geraldton to Cape Naturaliste

Geraldton is located adjacent to Champion Bay and is now a major commercial fishing and light-industrial port, playing an important role servicing the inland agricultural and mining regions. In the late nineteenth century guano was landed from the offshore Abrolhos Islands. Little historical ethnographic information about the original Aboriginal people in the Champion Bay region has been identified. According to missionary John Gribble many, “were shot down right and left for sheep and cattle stealing.”²⁴

¹⁹ *Geological Survey, op. cit.*, p.272.

²⁰ Prider, R. (Ed.), *Mining in Western Australia*, (Nedlands: University of Western Australia Press, 1979), p.132.

²¹ Gerritsen, R. *And Their Ghosts May be Heard*, (Fremantle: Fremantle Arts Centre Press, 1994), and a Western Australian Parliamentary Select Committee report later in the same year have particularly fuelled racist speculation that Aboriginal people in this region had their genetic composition, culture and language altered through miscegenation with Dutch castaways. The argument was further promoted in 1996 by Hiddens, L. in an ABC TV documentary “The Dutch Settlement” *Bush Tucker Man*. (6/7/1996.) Several speakers raised the subject again at Fremantle during a 1997 colloquium commemorating the tricentenary of the visit of Willem de Vlamingh to Western Australia. Nevertheless, evidence is scant, the theory remaining unproven.

²² Hesp, P.A. “Aspects of the geomorphology of south western Australian estuaries,” in *Estuarine Environments of the Southern Hemisphere*, (Perth: Department of Conservation and Environment, 1984), p.9.

²³ Grey, *op. cit.* p.19.

²⁴ Gribble, J. *Dark Deeds in a Sunny Land*, (1905), (Victoria Park: Hesperian Press, 1987 facsimile ed.), p.37.

Approximately 10 kilometres south of Geraldton is the mouth of the Greenough River. This waterway is 330 kilometres long and has a 5,410km² catchment area. The river is unusual on the west coast because it runs parallel with, and adjacent to the coast for 14 kilometres before meeting with its estuary. The estuary is shallow and narrow, being only a few kilometres long and covering an area of about 80 ha.²⁵ The northern side of the mouth of the Greenough is known to have been a favoured camping and fishing place for Aborigines during the late nineteenth century.²⁶ The Aboriginal people who ranged over this country were once known as *Amangu*.²⁷

The coastline is afforded partial protection by extensive limestone reefs lying offshore. Adjacent seagrass meadows support a rich and diverse fish population. Because of the cooler waters, these aquatic meadows are beyond the climatic range of dugongs, which it will be recalled were present at Shark Bay. Hair seals (*Neophoca cinerea*) become evident on offshore islets. South of the Greenough River many sections of coast are marked by exposed limestone, both as the primary constituent of reef formations and along the shoreline. Commercial fishing of the western rock lobster (*Panuliris longipes*), abalone (*Haliotis roei*), and saucer scallops (*Amusium balloti*), maintains several small fishing settlements, which for the most part were established in the latter twentieth century.

Fifty kilometres south of Greenough is the mouth of the 135 kilometre long Irwin River with a catchment 4,480km². It enters the ocean at Dongara. Further along the coast is the mouth of the Moore River, which is 195 kilometre long with a catchment 124,000 km². Neither river has a large estuary and no significant information about the fish populations extant in them has been identified.

The Moore River is named for its Irish discoverer George Fletcher Moore, who recorded a significant body of information about the Aboriginal lifestyle on the Swan Coastal Plain. The people who ranged near the mouth of the Moore River in the past have been known as *Jued*.²⁸ It was also on this river in 1847, some 80 km inland from its mouth, that Benedictine monks led by Salvado established New Norcia Monastery to facilitate their plans for the conversion of Aborigines to Christianity.

²⁵ Hesp, *op.cit.* p.9.

²⁶ Personal communication with R.H. Norris, 3 February 1993.

²⁷ Oats and Oats, *op. cit.*

²⁸ Berndt, R.M. "Aborigines of southwestern Australia: The past and the present," *Journal of the Royal Society of Western Australia*, 56, pt. 1&2, (1973), pp.44-55.

South of the Moore River lies a series of lakes, mostly fresh, but occasionally salt. There are also many ephemeral swamps. The lakes are orientated in a general north-south direction in association with ancient dune systems of varying ages which are thought to be evidence of higher (eustatic) sea levels in the ancient past, well prior to any human presence. The lakes number in the many hundreds, and they and the associated wetlands are spread along the sandy coastal plain, almost to Cape Naturaliste. Archaeological surveys reveal there was a heavy concentration of Aboriginal encampments in association with these wetlands, presumably because of the diverse range of edible flora and fauna they supported.²⁹ Many lakes and swamps are also in the immediate lee of dunes, which offer considerable protection from winter storms. These coastal wetlands acquired a high commercial value amongst settlers after 1865, because of their usefulness in watering livestock, brought from drought effected inland areas.³⁰

Parts of the dune system closest to the coast are calcareous and have undergone lithification. Prominent outcrops of "Tamala" limestone, named after the similar deposits at Tamala Station near Shark Bay, are now exposed. This formation can readily be seen in cliffs in the lower reaches of the Swan and Moore Rivers and along much of the coastline between them, as well as on all the offshore islands. The formations are still consolidating and geologically are relatively young, perhaps as recent as the late Pleistocene glacial period, or about 120,000 years BP, which is the oldest age determined for similar deposits on nearby Rottnest Island.³¹ This island, located approximately 15 km offshore from Fremantle is believed to have been isolated by eustatic factors as recently as 6-7,000 BP.³² It lies directly in the path of the warm Leeuwin Current with the result many semi-tropical fish and corals originating from the Abrolhos Islands are present, but are not found on reefs near the adjacent mainland. Several other islands and rocky outcrops lie slightly south of Rottnest, the largest of these being Garden Island, which shelters Cockburn Sound from southwesterly storms. The evidence of prehistoric Aboriginal activity on any of these islands is scant, despite the comparatively recent

²⁹ Hallam, S.J. "Coastal does not equal littoral," *Australian Archaeology* 25. 10-29. 1987 (pp.10-11.)

³⁰ Erickson, R. *The Dempsters*, (Nedlands: University of Western Australia Press), p.86.

³¹ Teichert, C. "Age of Coastal Limestone, Western Australia," *Australian Journal of Science*, 30, 1967, pp. 68-69.

³² Playford, P. *The Natural Features of Rottnest Island - Geology*, (Rottnest: Rottnest Island Board, 1977), p.25; Collins, Lindsay B. "Geological evolution of the Swan-Canning estuarine system," in John, Jacob, (Ed.), *The Swan River estuary ecology and management*, (Bentley: Curtin University of Technology, 1987), pp. 9-20.

isolation from the mainland.³³

In 1829 Captain Stirling and other Swan River Colony officials and settlers made a temporary encampment on Garden Island prior to establishing a permanent settlement on the mainland.³⁴ Nearby Carnac Island became a base for an unsuccessful whaling operation in 1837.³⁵ Rottnest Island supported small-scale commercial fishing operations during the nineteenth century, and all three islands have a history as Aboriginal prisons, with the most notorious being Rottnest.

The adjacent waters in Cockburn Sound provide a deep anchorage for ships but also contain large areas of shallow sand banks, often overlying limestone reefs. Within the Sound are seagrass meadows which in turn attract a wide and commercially important range of marine fauna. The seagrass and associated benthic community is under threat during the latter twentieth century because of shell-sand dredging for the manufacture of cement. A small population of hair seals are the resident sea mammal. Many of the sandbanks in Cockburn Sound can be accessed by fishers wading from the mainland and historical accounts exist of their being used by Aboriginal fishermen.³⁶ Even so all these aspects may be relatively recent. Between about 5,000 and 5,500 BP the ocean level is believed to have been about three metres higher than at present.³⁷ A sketch map of this region is shown in Fig. 2.3.

³³ Dortch, C.E. and Hesp, P.A. (1994), "Rottnest Island artifacts and palaeosoils in the context of Greater Swan Region prehistory," *J. Roy. Soc. WA.* 77, 1994, pp. 23-32. Dortch, C.E. "Rottnest and Garden Island prehistory and the archaeological potential of the adjacent continental shelf, Western Australia," *Australian Archaeology*, 33, 1991, pp. 38-43.

³⁴ Cameron, J.M.R. *Ambition's Fire: The Agricultural Colonization of Pre-Convict Western Australia*, (Nedlands: University of Western Australia Press, 1981), pp.86-7.

³⁵ Garden, Carnac and Rottnest Islands have all been used for the confinement of Aborigines. Rottnest has the most notorious reputation, being used as an Aboriginal prison from 1838 to 1932. The island has also been used to imprison non-Aborigines, but mostly in the twentieth century. For example German POWs were held there in WW1. Garden Island is now a naval base and Rottnest is a tourist resort.

³⁶ Dredging and industrial pollution have now degraded this region, although parts are still important to recreational and professional fishers.

³⁷ Playford, (1977), *op.cit.* p.25.

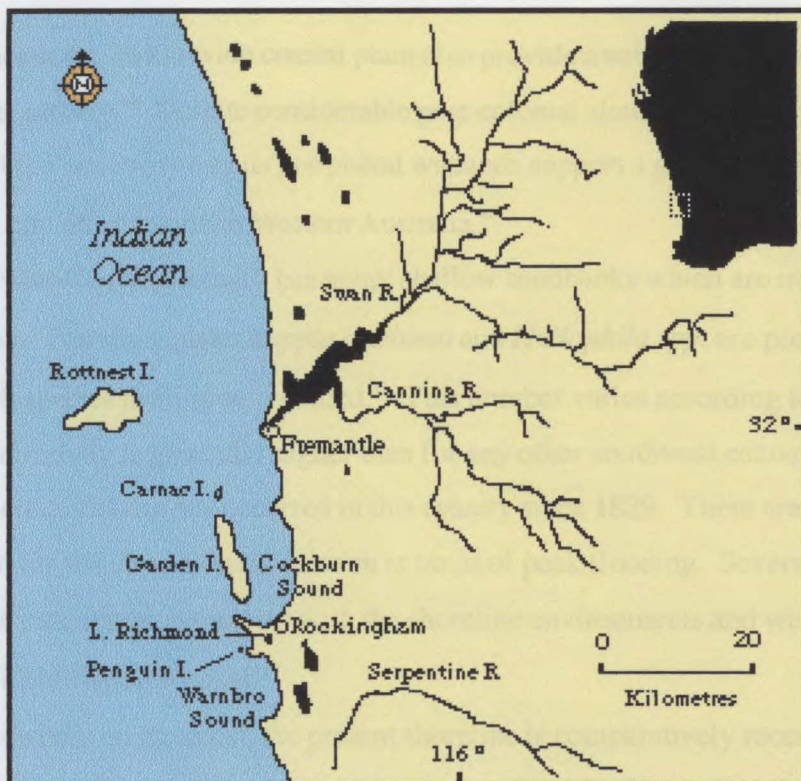


Fig. 2.3 Sketch map of the aquatic environment near Swan River

On the coast opposite Rottneet Island is the Swan River, with Fremantle at its mouth. From here the first commercial fishing operations in the southwest took place, and it has become a major fishing port. Prior to engineering works in 1892 the river mouth was obstructed by a natural sandbar overlying solid limestone. The depth of the water varied with tides and seasons. Settlers found that sometimes it was so shallow that boats had to be dragged over it. As such it also restricted the size of fishing boats which were kept in a small haven near the mouth. When shallow the bar was used as a causeway by Aborigines, while at other times it could be two metres or so deep, making a long inland detour obligatory.³⁸ A few kilometres east of the mouth is an expansive estuary, fed principally by the Canning and Swan Rivers. The estuary has a surface area of approximately 53 km².³⁹ Maximum tidal range within is about 1.2 metres. The inland catchment area of this system is vast, being about 434,325 km² with tributaries extending through the Darling Escarpment and well into the elevated hinterland. Rain-charged

³⁸ During harbour deepening works in the early 1990s more of this bar was blasted. The debris was rich in corals, confirming that the waters here had once been much warmer than they are now.

³⁹ Loneragen, N.R., Potter, I.C. & Lenanton, R.C.J. "Influence of site, season and year on contributions made by marine, estuarine and freshwater species to the fish fauna of a temperate Australian estuary," *Marine Biology*, 103, 1989, pp. 461-479.

aquifers beneath the 28 km wide coastal plain also provide a subterranean freshwater flow into the estuary.⁴⁰ Despite considerable post-colonial alteration of the riverine environment the waterway and its peripheral wetlands support a greater diversity of bird species than any other region in Western Australia.⁴¹

The Swan-Canning estuary has many shallow sandbanks which are important fish nursery areas. The sea grasses *Ruppia maritima* and *Hallophila spp.* are present.⁴² At least 137 fish species have been recorded.⁴³ This number varies according to season and salinity, but currently is generally higher than for any other southwest estuary. (See Fig. 2.8) Commercial fishing has occurred in this estuary since 1829. There are some deeper parts of the river which remain saline even at times of peak flooding. Several Aboriginal groups in the past can be associated with the shoreline environments and were collectively identified as *Wadjuk*.⁴⁴

As elsewhere on the coast, the present shoreline is comparatively recent in geological time. Slightly inland from the southern end of Cockburn sound, near Rockingham lies Lake Richmond, which appears to have been a deep lagoon cut off from the ocean during the mid-Holocene. Following drought conditions in early 1996, putative remains of prehistoric stone fish traps were identified in its shallows.⁴⁵ Near here, Warnbro Sound, which is also adjacent to Cockburn Sound, but separated by Point Peron, was an important commercial fishing ground in the nineteenth century, in part because of the schnapper or snapper (*Chrysophrys auratus*) which aggregated there in large numbers for spawning.⁴⁶ The northern end of Warnbro Sound has large sandbanks, and beds of seagrass. At the southern end of Warnbro Sound near Mandurah is the entrance to the Peel Inlet. This estuary is formed by the confluence of the Serpentine, Murray and Harvey Rivers. The total catchment is about 10,800 km². Maximum annual

⁴⁰ Exploitation of fossil water with domestic and industrial bores has lowered the water table and many surface springs along the river are now dry. The impact upon the fishery has not been determined.

⁴¹ Jaensch, Rodger P. "Waterbirds in the Swan-Canning estuary," in John, *op.cit.*

⁴² Australian Recreational and Sport Fishing Council, *An inventory of Australian estuaries and enclosed marine waters*. Canberra, (1989). p.19.

⁴³ Loneragen, N.R., Potter, I.C. & Lenanton, R.C.J. "The fish and fishery of the Swan River," in John, *op. cit.*, pp.178-201.

⁴⁴ Oats and Oats, *op. cit.*, p.277.

⁴⁵ These stone (stromatolite) arrangements are the subject of ongoing investigation by Mr C. Dortch at the Western Australian Museum.

⁴⁶ Abjornsson, A. "Notes on the Spawning of the SCHNAPPER (*Pagrus unicolour*) at Warnbro Sound (Safety Bay)," in *Journal of the Natural History and Science Society of Western Australia*, 1910, pp.68-69.

tidal range here is a little over one metre. Large areas of sand and mud bank in the estuary totalling some 54 km² support a rich benthic community. Many sandbars are accessible by foot from the perimeters of the estuary. Open water area is about 86.34km² and is sufficiently navigable for small seine fishing operations. Wet-fish and fish-canning operations existed on the shores of the estuary in the late nineteenth century. Thirty three fish species are recorded and the sea grasses *Ruppia maritima* and *Halophila spp.* are present.⁴⁷ The Aboriginal people associated with this estuary have been identified as *Pinjarup* and have enjoyed a strong and beneficial relationship with the fishery resources.⁴⁸ Some historical material also refers to them as the Pinjarra, or Murray people. Fishweirs are known to have been operated on the Serpentine River and are discussed in detail in Chapter Five.

Between Perth and Bunbury the adjacent escarpment receives the most rainfall for the west coast, averaging about 1,200 mm per year.⁴⁹ As a result substantial annual flushing of the coastal estuaries can be expected unless there is a drought. Leschenault Inlet near Bunbury is fed by the Preston and Collie Rivers which have a combined catchment of about 4,900 km². The Collie River extends some 105 km² inland and an Aboriginal fishweir is known to have operated near the junction of the Collie and Brunswick Rivers in 1837.⁵⁰ The estuary proper has about 34 km² of open water and peripheral sandbanks. Some seagrass is present, and scattered stands of the mangrove *Avicennia marina* also exist, which are unique this far south. Leschenault Inlet, where 31 fish species are known, has supported small-scale commercial fish and crabbing operations since the late nineteenth century.

Nearer Busselton, the Wonnerup Inlet has about 7.16 km² of open water. This is fed by runoff from adjacent coastal flatlands and a small 11 km long stream. The Aboriginal people on this southern-most part of the western coastal plain have been identified as *Wardandi* and *Kaneang*.⁵¹ In some historical material they are referred to as Capel people. Their spiritual relationship with the maritime/coastal environment and

⁴⁷ Australian Recreational and Sport Fishing Council, *op. cit.*, p. 19.

⁴⁸ Oats and Oats, *op. cit.*, p.277.

⁴⁹ *Clearing and stream salinity in the south west of Western Australia*, (Perth: Public Works Department, 1979).

⁵⁰ Ward, *op. cit.*, p.30.

⁵¹ Oats and Oats, *op. cit.*, p.277.

certain fish species was complex, and this is discussed in detail in Chapter Three.

2.5 Cape Naturaliste to Cape Leeuwin

Between Cape Naturaliste and Cape Leeuwin is a ruggedly spectacular section of coastline, with numerous small sandy bays located between exposed granite headlands. Bay-whalers operated at Castle Bay, situated in the eastern lee of Cape Naturaliste. Leading away from the shoreline of this coast is a steep incline which attains a maximum height of about 230 m and precludes easy access in many places. The soil generally comprises a sand and coastal limestone mixture overlaying pre-Cambrian granites.⁵²

The region contains many cave systems, formed by leaching and calcification, and numerous subterranean fresh water springs emerge from the sands along the beachline. For Aborigines the caves were inhabited by *Nyorleem*, or evil spirits, and in recent times were places to be avoided.⁵³ Nevertheless traces of ancient human visitations more than 30,000 years ago are apparent in some.

Along the coast are small bays which afford relatively safe places to fish. In some locations there are reef platforms which can be walked over. Fish of many species are readily available to the angler, and it is possible to also spear fish from the rock outcrops and beaches. Even so much of the coast is very dangerous because it is exposed to the open ocean. Even on apparently calm days many unsuspecting fishers have been swept to their deaths by "king" waves, the origin of which is the large, easterly moving swells corresponding with the prevailing Southern Ocean weather pattern.

The main watercourse on this section is the 58 km long Margaret River with a catchment of approximately 450 km². An 0.18 km² stretch of open water lies near the mouth, which is frequently obstructed by a bar. An inventory of fish species has not been identified for this waterway, but there are mullet present. This and most of the other rivers of the far southwest are also seasonally visited by large numbers of the rather mysterious eel-like lamprey, but exploitation by settlers or Aborigines appears not to have occurred.

⁵² *Geological Survey...*, *op. cit.*, p.102.

⁵³ Bates, *op. cit.* Notebook 15 p.64 BL.1212A. (In 1996 this belief is still strong in some quarters.)

2.6 The southern coast - Cape Leeuwin to Cape Arid

Between Cape Leeuwin and Cape Arid there are in excess of thirty estuaries. These are listed in Fig. 2.6. Those discussed in detail are shown on a map in Fig. 2.7. Some smaller waterways are not included because of their insignificance to this study.

Generally the estuaries in the lower rainfall areas to the east, near Cape Arid are small, and fed by relatively short rivers. They also have lower species counts. Most waterways east of Beaufort Inlet (118° 53'E) remain closed for several years, and some are now regarded as permanently closed, as indicated in Fig 2.6. The estuaries and inlets between Beaufort Inlet and Cape Leeuwin are generally larger and seasonally open to the ocean. Oyster Harbour near Albany, the Normalup Inlet near Walpole, and Hardy Inlet near Augusta are now permanently open. The numerical comparison of available fish species in south-coast estuaries is shown in Fig. 2.8. These vary significantly according to whether or not there is regular flushing by ocean waters, with a greater diversity when this occurs.

A kilometre or so east of Cape Leeuwin is the town of Augusta, located on the western shore of Hardy Inlet, the estuary of the Blackwood and Scott Rivers. This settlement originated in 1830 because of the lack of suitable agricultural land remaining for allocation at Swan River.⁵⁴ Being so distant from regular suppliers, and because of overwhelming agricultural problems, fishing this waterway became an essential subsistence activity. The Blackwood is one of the major rivers of the southwest and has an extensive system of tributaries extending about 200 km ENE. The catchment area is about 22,500 km². Salt water penetrates the river for about 42 km upstream until it meets a rock bar. A similar barrier lies about 8 km upstream on the Scott River. Hardy Inlet and its estuary have a surface area of about 925 ha, with approximately 5km² of intertidal mud flats. The flooding of the Hardy Inlet is thought to have begun between 5,000 and 7,000 BP⁵⁵ coinciding roughly with eustatic changes previously mentioned for elsewhere. The maximum tidal range here is about 1.3 m. Approximately thirty species of fish have been recorded in its waters.

Hardy Inlet opens into Flinders Bay which is in the lee of Cape Leeuwin. The bay was a favoured place for winter lay-overs by American whalers during the mid-nineteenth

⁵⁴ Cameron, *op.cit.*, p.95.

⁵⁵ Hodgkin, E.P. *An environmental study of the Blackwood River Estuary Western Australia 1974-1975*, (Perth: Department of Conservation and Environment, 1978), p.17.

century. Offshore near Cape Leeuwin are numerous small islands and granite outcrops which accommodate seals and birds. These were inaccessible to Aboriginal people of the lower Blackwood, who were known as *Pibelmen*.⁵⁶ A modern corruption of this word is Bibbulmen.⁵⁷

A series of ancient dune systems similar to those on the west coast lies along parts of the coast between Cape Leeuwin and Cape Arid. Much of the southern coastline is “high energy” being exposed to the full force of the Southern Ocean. While occasional granite outcrops offer a tempting invitation to coastal fishers, the same notorious dangers from unexpected king waves can exist, and have claimed many victims.

A narrow strip of coast between the mouth of the Warren River and Nornalup Inlet receives the highest rainfall in the southwest with an annual average about 1,400 mm.⁵⁸ Lying within this south coast zone is Broke Inlet, fed by the Shannon River. The open water area of this estuary is about 23 km², with about 26,54 km² of sand banks and flats. The bar is not permanently open due to the relatively small catchment area of 337 km². Sea grasses have not been recorded.

In marked comparison the Nornalup Inlet has a catchment of about 5,280 km² and is fed by the Frankland and Deep Rivers. It has about 9.91 km² of open water and about 3.45 km² of intertidal mud flats. It is the largest permanently open estuary in the southwest and apart from Oyster Harbour has the most diverse range of invertebrate fauna of any along the south coast. Two species of seagrass are present.⁵⁹

Further east is Wilson Inlet, a 14 km long lagoon lying in a west-east configuration, parallel with the coast. At its widest point it is about four kilometres wide and has a total surface area of about 48 km². Fed by the Sleeman, Little, Hay and Denmark Rivers, with several other smaller creeks draining from the immediate, often swampy surrounds, the total catchment area is about 2379 km². Granite outcrops are

⁵⁶ Oats and Oats, *op. cit.*, p.277.

⁵⁷ It is probable that all the Aboriginal terminology quoted in this dissertation has an element of corruption because of the variability of early ethnographers' interpretations.

⁵⁸ *Clearing and stream salinity in the south west of Western Australia*, (Perth: Public Works Department, 1979) (No page nos.).

⁵⁹ *An inventory of Australian estuaries and enclosed marine waters, Vol. VI Western Australia*, (Canberra: ARSFC. ND.), p.1.

visible along the western and northern shores, sometimes as small islands.⁶⁰ Also on the western shore near the river mouth are some low limestone cliffs and it is beneath these that Aboriginal fishers have camped over several millennia. The estuary also supported a profitable commercial fishing operation in the late nineteenth century. These matters are discussed in greater detail in Chapter Four, which involves the prehistory of the southwest region, and Chapter Ten, which relates to post-settlement estuarine/coastal fishing activities.

Oyster Harbour, near Albany is a semi-enclosed waterway permanently open to the King George Sound and the Southern Ocean. It has about 11 km² of open water and a little over 7 km² of intertidal sand flats. The extreme tidal variation annually is about one metre. Prehistoric stone fish traps are located on these banks and stone fishweirs were once upstream in the adjacent river system. The name for Aboriginal people who lived in the Oyster Harbour region was recorded as *Mirning*.

The King and Kalgan Rivers flow into Oyster Harbour. The King is short, with a catchment extending a few kilometres to the north of Albany. The Kalgan source is about 60 km inland, between the Stirling and Porongurup mountain ranges. These are the only mountain ranges in the southwest. Both are relatively small. The Stirlings cover an area of about 1,600 km², with the highest peak being 1,096 m. The Porongurups are about 100 km² with a maximum height of 654 m. Occasional snow falls are recorded in exceptionally cold winters.

To the east of Oyster Harbour lies Beaufort Inlet. This has a catchment of 4,795 km² and is fed by the Pallinup River. The estuary's bar is often closed and this has a noticeable impact on the diversity of species in comparison to the waterways to the west. This is discussed in more detail elsewhere. The waterways east of Beaufort Inlet are rarely open to the ocean. This correlates with the lower rainfall in their catchments, on average less than 600 mm per year near the coast, and much less inland. There is correspondingly a much less diversified range of fish species in these eastern inlets than in those to the west. An Aboriginal group known as *Koreng* ranged along the coast here. Further east near Esperance people were known as *Wudjari*. Their territorial precinct

⁶⁰ Hodgkin, E. and Clarke, R. *An inventory of information on the estuaries and coastal lagoons of south western Australia: Wilson, Irwin and Parry Inlets*, (Perth: Environmental Protection Authority, 1988).

extended to the vicinity of Cape Arid, the limit of this study.⁶¹

2.7 The Recherche Archipelago

Offshore between Esperance and Cape Arid lies the Recherche Archipelago, a cluster of some 75 islands and rocky outcrops. Prehistoric Aboriginal activity is known to have occurred on some of these when they were part of the mainland, but access ceased in the late Holocene, after they were isolated.⁶² Larger islands carry populations of marsupials and have small eucalypt forests. Sealers made semi-permanent camps on some of these islands during the nineteenth century, activities which are discussed in the chapter about sealing. (Chapter Six). Fig. 2.4 is a sketch map of the Recherche Archipelago.

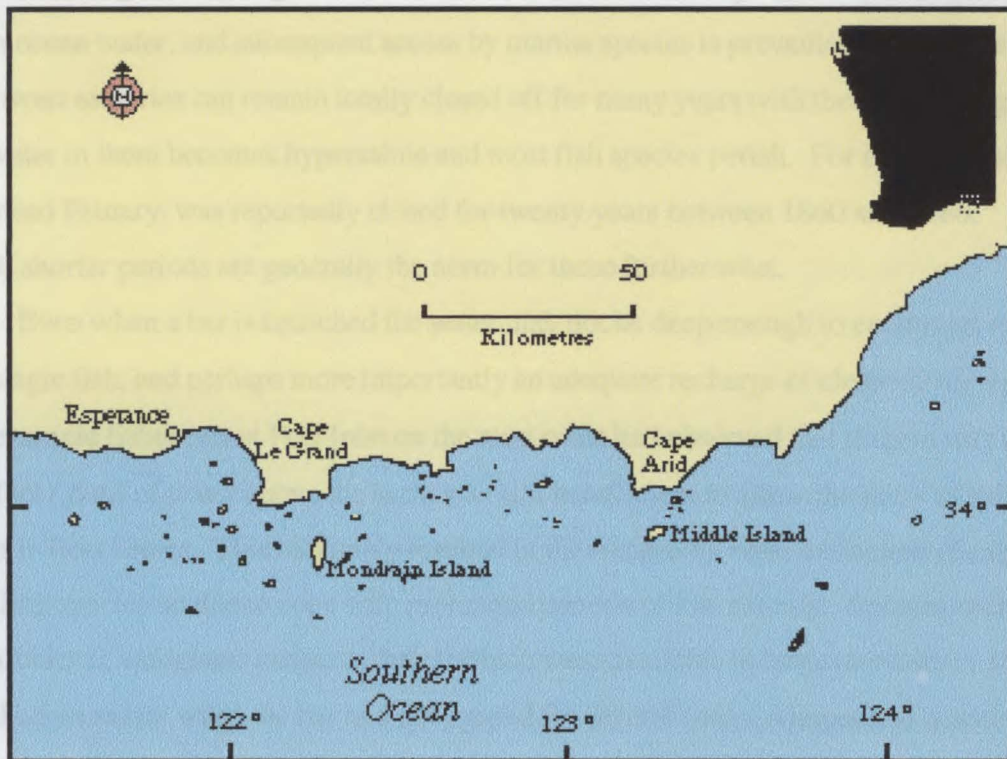


Fig. 2.4 Sketch map of the Recherche Archipelago

2.8 The seasonal closures of southwest estuaries

A common feature of all river mouths and estuary entrances opening to the ocean in the south-west is their tendency to form sand bars which then prevent any passage of fish species between the ocean and the estuary. The bars are formed as a dual result of silt

⁶¹ Oats and Oats, *op. cit.*, pp.50-51.

⁶² Dortch, C.E. and Morse, K. (1984). "Prehistoric stone artefacts on some offshore islands in Western Australia," *Australian Archaeology*, 19, (1984), pp.31-47.

deposition through diminished post-winter water flow from inland areas, and the build up of beach sand caused by surf and wind. Re-opening of them is mainly dependent on the amount of rain which falls in the catchment areas and the strength of winter storms. Sometimes local topography assists in preventing sand buildup. For example with the Wellstead Estuary near Bremer Bay the entrance is sheltered by a rocky headland, restricting the deposition of beach sand by wind and wave action. The result is a tendency for more frequent breaches of the bar than would otherwise be expected for the region.⁶³

If there is a period of drought inland the water flow from many estuaries may cease entirely, or be only a few millimetres deep, sometimes disappearing beneath the porous sands to emerge as a spring on the beach. In these cases recharging of the estuaries with clean ocean water, and subsequent access by marine species is prevented. Sometimes southwest estuaries can remain totally closed off for many years with the result being that the water in them becomes hypersaline and most fish species perish. For example the Welstead Estuary was reportedly closed for twenty years between 1860 and 1880.⁶⁴ Much shorter periods are generally the norm for those further west.

Even when a bar is breached the water may not be deep enough to encourage entry of pelagic fish, and perhaps more importantly an adequate recharge of clean ocean water. For example fishermen at Peel Inlet on the west coast had observed that if there was only two feet (.6 m) of water above the bar it was still insufficient to allow the entry of salt water in flood times. This inevitably resulted in the frustrating mass extinction of estuary dwelling species unable to cope with prolonged periods of low salinity. Species such as the cobbler (*Cnidoglanis macrocephalus*) which were available in large numbers in 1862 perished *en masse* when the bar had not opened for several years. Almost half a century later in 1906 the species had still not fully recovered. One cannery operator, Tuckey felt the ideal water depth on the bar there was about six feet, (1.8 m) which was enough to allow tidally or storm propelled salt water to flow in beneath the outwardly flowing fresh water.⁶⁵

Salinity is not uniform throughout any estuarine waterways, even for example in

⁶³ Hodgkin, E. and Clarke, R. *An inventory of information on the estuaries and coastal lagoons of south western Australia: The Wellstead Estuary*, Estuarine studies series No. 1, (Perth: Environmental Protection Authority, 1987).

⁶⁴ Bignell, M. *The Fruit of the Country. A History of the Shire of Gnowangerup*, (Nedlands: University of Western Australia Press, 1977), p.128.

⁶⁵ Tuckey, C. *Evidence: Report of Joint Select Committee Appointed to Enquire Into the Fishing Industry*, (Perth: WA Parliament, 1906), p.97.

the Welstead Estuary where the maximum depth is no more than 2.5 metres. Variation is dependent on the time available for mixing of fresh and ocean water and generally speaking the further distance from the ocean the lower the salinity level. Different fish species also have varying salinity preferences. Some such as the black bream (*Acanthopagrus butcheri*) which inhabit most southwest riverine systems are able to adjust to substantial salinity variation over time, but generally the diverse range of fauna in an estuary progressively diminishes the longer it is closed off to the ocean.⁶⁶

The Welstead Estuary was certainly richer in some potential human food species in the past. Evidence of this is in massive fossil deposits of cockles (*Katelysia scalarina*) dating from about 4,900 to 4,430BP. These grew at a time when the estuary was permanently open to the ocean, and coincide with the brief three metre rise above present levels described for elsewhere by Playford.⁶⁷ The apparently sudden decline of the estuarine environment favourable to this species has been attributed to silting rather than a fall in ocean level, by Hodgkin and Clarke.⁶⁸

Large and diverse populations of benthic flora and fauna can be taken as indicators of a healthy aquatic environment. They are the main food source for most species of fish in southwest estuaries, and provided the benthic community is thriving, excellent fishing can be expected. For example sandbars near the mouth of the permanently open Wilson Inlet, adjacent to the town of Denmark still support large populations of *Katelysia spp.* and mussels, and there is a wide range of other bottom dwelling invertebrates. As a result there are at least 65 fish species found in its waters. In comparison nearby Irwin and Parry Inlets have a lower benthic invertebrate count and a correspondingly lower number of fish species, Irwin with 43 and Parry with 15.⁶⁹

In summary, southwest estuaries in a natural state become open to the ocean primarily because of overflow resulting from the increased winter water from rivers, and storm-wave action from the ocean. This mechanism was readily understood in the past, but accurately predicting the periodicity remained an enigma, with time frames as long as a generation being quite possible.

There are numerous interdunal lakes, swamps and old estuaries along the southern littoral which now never become open to the ocean. Because the estuaries to the east are

⁶⁶ Hodgkin and Clarke, *op. cit.*, 1987, p.18.

⁶⁷ Playford, (1977), *op.cit.*

⁶⁸ Hodgkin and Clarke, *op. cit.*, 1988, p.12.

⁶⁹ Hodgkin and Clarke, *op. cit.*, 1987, pp.18, 31, 33.

physically small compared to those further west, even after occasional recharging, evaporation during the summer months is high, and water salinity can quickly increase to the extent that most fish and benthic species do not survive. Only one mollusc, *Coxiella spp.* has adapted to the hypersaline conditions which occur in Barker Inlet, (121°21'E. 33°49'S.) and manages to survive long after most other species have perished.⁷⁰ Salinity undoubtedly influenced the resource potential of these waterways for Aboriginal people, but not always negatively. Some lakes, particularly those further east in the Esperance region are always salt, but are attractive to a wide variety of migratory birds which feed on the brine shrimp and other salt tolerant organisms in them. In June 1840 the British terrestrial explorer Edward John Eyre saw evidence of many Aboriginal campsites in the vicinity of these lakes.⁷¹

Some estuary entrances adjacent to the major settlements at Swan River, (Fremantle) Peel-Harvey Inlet (Mandurah) and Leschenault Inlet (Bunbury) have undergone major engineering works to keep them permanently open, and it has not been possible to determine if contemporary species numbers equate to those present in the nineteenth century or earlier. At best the species counts can be considered a comparative guide, but certainly at times in the past all these waterways had abundant fisheries.

The maintenance of a healthy southwest estuarine environment is important for commercial fishers. As discussed, the estuaries which are regularly recharged with ocean water on a seasonal basis generally offer to the fisher a greater potential number of species for exploitation. Lenanton has determined that in 1979 approximately 70% by weight of commercially caught fish in temperate Western Australia were dependent on the estuarine and inshore marine embayments at some stage during their life cycle.⁷² In recognition of this along the south coast, persistent sandbars are frequently breached by people using shovels or bulldozers. Figure 2.5b is a photograph of the unmodified Irwin Inlet entrance and bar. Fig. 2.5b is of the Hardy Inlet, which is now permanently open to the ocean.

⁷⁰ Hodgkin, E. and Clarke, R. *An inventory of information on the estuaries and coastal lagoons of south western Australia: Estuaries of the shire of Esperance, Stokes Inlet, Oldfield Estuary and ten others.* Estuarine studies series No. 5, (Perth: Environmental Protection Authority, 1989a).

⁷¹ Eyre, Edward John, *Journals of Expeditions of Discovery into Central Australia and Overland from Adelaide to King George's Sound in the Years 1840-1,* (Adelaide: Libraries Board of South Australia, 1964 facsimile), vol. 1, p.82-83.

⁷² Lenanton, R.C.J. "Life history strategies of fish in some temperate Australian estuaries," in *Estuarine Environments of the Southern Hemisphere,* (Perth: Department of Conservation and Environment, 1984), p.2.



Fig. 2.5a Photograph of a typical unmodified southwest inlet entrance: Irwin Inlet



Fig. 2.5b Photograph of Hardy Inlet

COASTAL SECTION	INLET NAME	ENTRANCE	LATITUDE	LONGITUDE
Shark Bay to Geraldton	Murchison	PO	27° 42'S	114° 10'E
	Hutt	PC	28° 14'S	114° 18'E
	Bowes	SO	28° 25'S	114° 27'E
	Chapman R.	SO	28° 46'S	114° 41'E
Geraldton to Cape Naturaliste	Greenough	SO	28° 51'S	114° 38'E
	Irwin	SO	29° 15'S	114° 54'E
	Hill	SO	30° 23'S	115° 03'E
	Moore	SO	31° 22'S	115° 30'E
	Swan-Canning	PO	31° 45'S	116° 04'E
	Peel-Harvey	PO	32° 36'S	115° 43'E
	Leschenault	PO	33° 15'S	115° 42'E
	Capel	SO	33° 34'S	115° 35'E
	Vasse	SO	33° 39'S	115° 23'E
	Wonnerup Inlet	SO	33° 36'S	115° 27'E
Cape Naturaliste to Cape Leeuwin	Margaret R.	SO	33° 53'S	115° 17'E
Cape Leeuwin to Cape Arid	Hardy Inlet	PO	34° 17'S	115° 10'E
	Donnelly R.	SO	34° 31'S	116° 05'E
	Warren R.	SO	34° 23'S	115° 45'E
	Gairdner R.	SO	34° 43'S	116° 10'E
	Broke	SO	34° 56'S	116° 27'E
	Nornalup	PO	35° 00'S	116° 44'E
	Irwin	SO	34° 59'S	116° 58'E
	Parry Inlet	SO	35° 01'S	117° 09'E
	Wilson	SO	35° 00'S	117° 20'E
	Torbay	SO	35° 02'S	117° 41'E
	Oyster Harbour	PO	34° 58'S	117° 58'E
	Taylor	SO	-	-
	Moates-Gardner-Angove	PO	34° 58'S	118° 07'E
	Waychinicup	SO	34° 50'S	118° 17'E
	Beaufort	NC	34° 27'S	118° 53'E
	Wellstead	NC	34° 23'S	119° 22'E
	Gordon	NC	33° 17'S	119° 28'E
	St Mary's	NC	34° 08'S	119° 29'E
	Fitzgerald	NC	34° 05'S	119° 35'E
	Dempster	NC	34° 04'S	119° 37'E
	Hampersley	NC	33° 54'S	119° 44'E
	Culham	PC	33° 54'S	120° 04'E
	Jerdacuttup	PC	33° 39'S	120° 13'E
	Oldfield	NC	33° 35'S	120° 34'E
	Munglinup	NC	33° 40'S	120° 51'E
	Torrakup	NC	33° 50'S	121° 01'E
	Stokes	NC	33° 49'S	121° 09'E
Barker	NC	33° 48'S	121° 20'E	
Gore-Dalyup	PC	33° 38'S	121° 38'E	
Bandy	NC	33° 39'S	122° 02'E	
Dailey	NC	33° 51'S	122° 34'E	
Alexander	NC	33° 50'S	122° 47'E	
Thomas	NC	33° 49'S	123° 02'E	
Youndee	PO	-	-	
Poison Ck.	NC	-	-	

PO = Permanently open
PC = Permanently closed
SO = Seasonally open
NC = Normally closed

Fig. 2.6 A list of southwest estuaries and inlets⁷³

⁷³ The bar status of estuaries is sourced from from Lenanton, *op. cit.*, (1984) p.124. Poison Creek is very small and located slightly beyond Cape Arid, but is listed here because it is the eastern-most 'estuary' along the southwest coast.

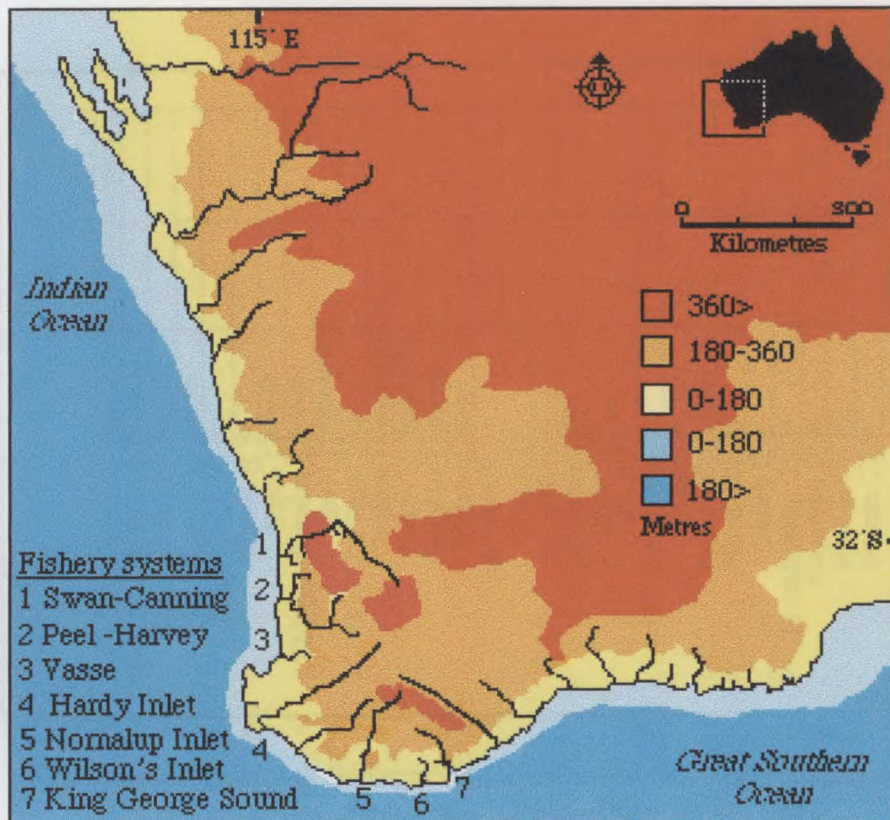


Fig. 2.7 Drainage pattern of southwest and location of intensive estuarine fishery exploitation

The estuarine associated fisheries which feature in the bulk of the pre-twentieth century literature are shown in Fig. 2.7. The river systems are included to indicate the pattern of drainage. All have many hundreds of kilometres of tributaries. As is indicated in Fig. 2.6, there are also many lesser rivers in between which contact to the ocean, especially along the south coast. While some form of fishing activity undoubtedly took place in the smaller rivers and the upstream tributaries, the major activity was associated with the estuaries and nearby environs. The light blue 0-180 metre bathymetric shading is an approximation only, and the coastline in the late-Pleistocene apparently laid within this. As to exactly where appears to be one of those mysteries of the sea, however Kirk states that the lowest level experienced by humans was approximately 150 metres below the present, 15,000 to 17,000 years ago.⁷⁴

⁷⁴ Kirk, *op. cit.*, p.13.

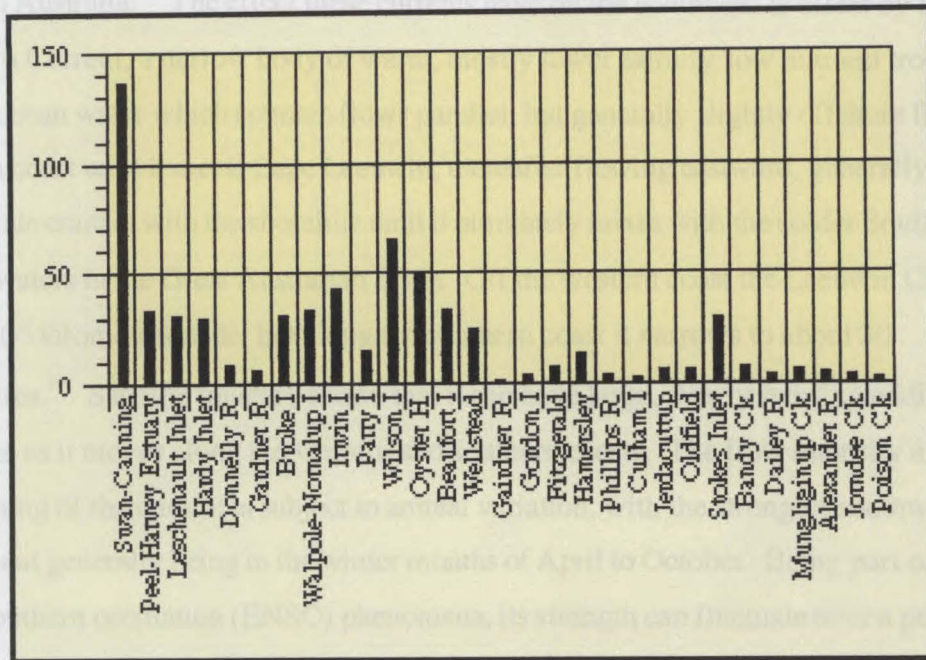


Fig. 2.8 Diversity of fish species recorded in southwest estuaries ⁷⁵
 (NB. Fish species lists for estuaries north of Swan River not discovered)

2.9 The influence of ocean currents on the southwest coast

The southern continental shelf of Australia is swept by the edge of the Great Southern Ocean Current. This cold flow moves in an easterly direction and circles the globe in sympathy with the prevailing wind pattern at these latitudes. A general counter-clockwise circulation takes place in the southern-Indian Ocean. The southern portion of this gire runs with the Southern Ocean Current then sweeps northward adjacent to

⁷⁵ Sources: Hodgkin, (1978), *op. cit.*; Hodgkin and Clarke, (1987), *op. cit.*, Hodgkin and Clarke, *An inventory of information on the estuaries and coastal lagoons of south western Australia: Normalup and Walpole Inlets. Estuarine studies series No. 2.* (Perth: Environmental Protection Authority, 1988); Hodgkin and Clarke, *An inventory of information on the estuaries and coastal lagoons of south western Australia: Beaufort Inlet and Gordon Inlet.* (Perth: Environmental Protection Authority, 1988b); Hodgkin and Clarke, (1989a), *op. cit.*, Hodgkin and Clarke, *An inventory of information on the estuaries and coastal lagoons of south western Australia: Broke Inlet and other estuaries of the Shire of Manjimup,* (Perth: Environmental Protection Authority, , 1989b); Hodgkin and Clarke, *An inventory of information on the estuaries and coastal lagoons of south western Australia: Estuaries of the Shire of Ravensthorpe and the Fitzgerald River National Park,* (Perth: Environmental Protection Authority, 1990a); Hodgkin and Clarke, *An inventory of information on the estuaries and coastal lagoons of south western Australia: Estuaries of the Shire of Albany,* (Perth: Environmental Protection Authority, 1990b); Chalmer, P.N. and Scott, J.K. "Fish and benthic faunal surveys of the Leschenault and Peel-Harvey estuarine systems of south-western Australia in December 1974," *Department of Conservation and Environment Bulletin* 149, (1984), pp. 29-28. Loneragen *et al.*, in John, *op. cit.*, (1987); Loneragen *et al.*, *op. cit.*, (1989).

Western Australia.⁷⁶ The effect these currents have on the southwest is offset by the Leeuwin Current, a narrow body of warm, mostly lower salinity, low nutrient tropical Indian ocean water which counter-flows parallel, but generally slightly offshore from the western coast until it meets Cape Leeuwin, thereafter flowing eastward, generally in immediate contact with the shoreline until it ultimately mixes with the colder Southern Ocean waters in the Great Australian Bight. Off the western coast the Leeuwin Current is about 100 kilometres wide, but along the southern coast it narrows to about 30 kilometres.⁷⁷ Satellite imagery shows that it can have large, slowly swirling eddies off to the sides as it moves along the western and southern coasts. The flow intensity and positioning of the current is subject to annual variation, with the strongest southward movement generally being in the winter months of April to October. Being part of the *El Niño* southern oscillation (ENSO) phenomena, its strength can fluctuate over a period of years in sympathy with current reversals in the Pacific. This has important consequences for several southwest marine species. While this warmer current is generally low in nutrients it enables normally tropical species to establish themselves at latitudes well south of their normal latitudinal range. Some species have surprisingly distant origins, as for example the Chilean scallop (*Argopecten purpuratus*) which is now thriving at Shark Bay.⁷⁸ The current is therefore a primary influencing factor on the distribution of sea grasses, corals, fish, sea birds and sea mammals in the southwest.

The Leeuwin current has a suppressing effect on the upwellings of deep, colder, and more saline, nutrient rich offshore waters from the Southern Ocean which would otherwise support extremely large populations of so called “bait fish” such as sardines and pilchard, which in turn attract larger species. It is primarily because of this that a major pelagic fishery is not found along either the western or southern coastlines, as happens on other continents.⁷⁹ In the late twentieth century the most profitable commercial fishing involves benthic species such as crayfish, abalone and scallops. Pelagic species such as

⁷⁶ Jenkins, H.L. (Ed.), *Ocean Passages for the World*, (Taunton: Hydrographer to the British Navy, 1973), p.28.

⁷⁷ A former submariner informed me in an oral history interview unconnected with this project that the temperature differentiation of the current was used as an underwater navigation aid during WW2.

⁷⁸ Lenanton, R., Joll, L., Penn, J., and Jones, K. (1991), “The influence of the Leeuwin Current on coastal fisheries of Western Australia,” *J. Roy. Soc. WA.*, 74, (1991), pp. 101-114.

⁷⁹ Pearce, A.F. “Eastern boundary currents of the southern hemisphere,” *Roy. Soc. WA.*, 74, (1991), pp.35-45; *Western Fishery*, (Spring 1992), pp.42-43.

the Australian salmon (*Arripis esper*)⁸⁰ which are also exploited tend to avoid warm waters as are in the Leeuwin Current. Because of wind stress this current usually loses some of its strength in the summer months, allowing the colder water to move closer inshore and the species to be more readily caught by shore-bound fishers.⁸¹ However the absence of an ENSO event in the Pacific can ensure the full strength of the warm current is maintained, then the species tends to stay offshore with many fish making the migratory spawning journey along the cooler outer edge, to the disadvantage of shorebound fishers. ENSO events can occur several times in a decade, but the predictability so far has been relatively uncertain.

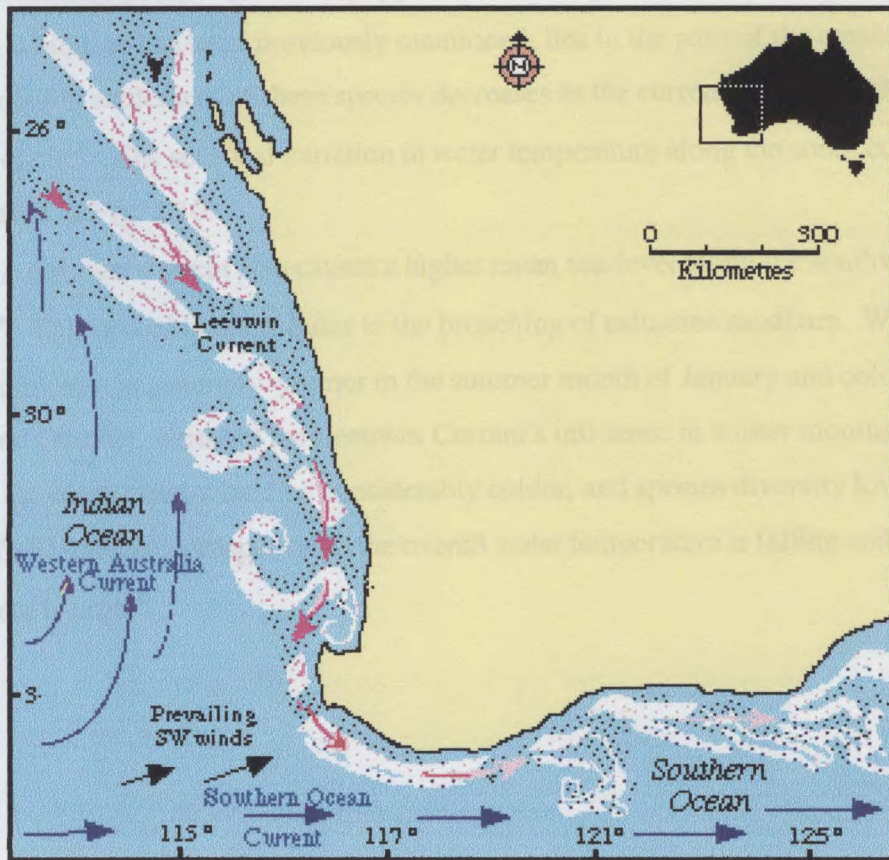


Fig. 2.9 An illustrative representation of the Leeuwin Current

A weak Leeuwin current can be detrimental to populations of some species, for example the lifecycle of the western rock lobster. After hatching in deep water the crayfish larvae (phyllosomata) undergo a metamorphosis while circulating in the counter-clockwise Indian Ocean current for between nine and eleven months. Eventually they are

⁸⁰ Also known as *Arripis truttaceus*.

⁸¹ Pattiaratchi, C.B. and Buchan, S.J. "Implications of long term climate change for the Leeuwin Current," *Journal Royal Society of Western Australia [J. Roy. Soc. WA.]*, 74, (1991), pp. 133-140.

picked up by the Leeuwin Current and re-transported back to the west coast where as puerulus they settle to grow into mature specimens over three or four years. A weak Leeuwin Current therefore reduces the puerulus deposition and accordingly the available number of mature specimens to fishers.⁸²

A strong current benefits some pelagic fish populations, for example juvenile Bluefin tuna (*Thunnus tonggol*) and Australian salmon hatchlings are also transported from the Indian Ocean to nursery areas on the coast of South Australia. Furthermore, at least 49 tropical reef fish species have been identified along the southwest coast as far as the Recherche Archipelago. These appear to have originated from the Abrolhos Island group, which, as has been previously mentioned, lies in the path of the current. Chance of successful settlement of these species decreases as the current moves south and the water cools.⁸³ The seasonal variation in water temperature along the south coast is illustrated in Fig. 2.10.

A stronger current also causes a higher mean sea-level along the southwestern coast.⁸⁴ This probably contributes to the broaching of estuarine sandbars. Water along the south coast is generally warmer in the summer month of January and coldest between July and October. Without the Leeuwin Current's influence in winter months the water along the south coast would be considerably colder, and species diversity lower. Even so most fish larvae are transported as the overall water temperature is falling and mortality for them is high.⁸⁵

⁸² *Western Fisheries*, (Autumn 1994), p.12.

⁸³ Hutchins, J.B. "Dispersal of tropical fishes to temperate seas in the southern hemisphere," *J. Roy. Soc. WA.*, 74, (1991), pp. 79-84.

⁸⁴ Pattiaratchi and Buchan, *op. cit.*

⁸⁵ Hutchins, *op. cit.*

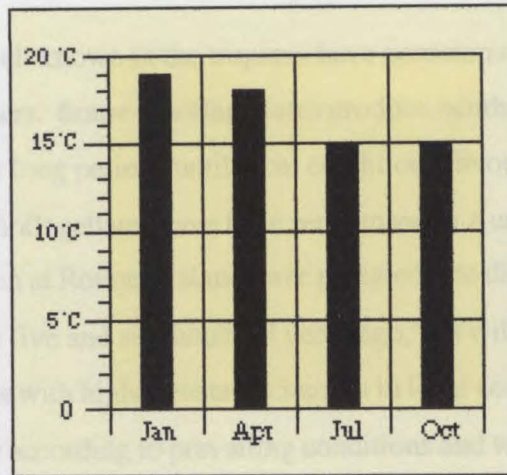


Fig. 2.10 Coastal water temperatures: Cape Leeuwin - Cape Arid⁸⁶

To recapitulate, the availability of pelagic fish-species such as the Australian salmon is very much dependent on the intensity of the Leeuwin Current. When strong it reduces the catch-rate from shore of these mature specimens, but its warmth and speed ensure the transport of maximum fry to nursery areas, thus ensuring greater numbers in future seasons. Almost all fish stocks in southwestern Australia are influenced in some manner by this current.⁸⁷ A strong current also causes higher water levels along the southwest coast and combined with storm surges, contributes to the periodic broaching of sandbars and the recharging of estuarine waters.

2.10 Red tides

The Leeuwin Current can also transport so called "red-tides" from tropical waters to the southwest, the most recent occasions being observed off Fremantle in April/May 1994 and 1996. These algal blooms have the ability to fix atmospheric nitrogen and can thrive in low nutrient waters. Not all species are toxic, but all have the potential to damage fish populations. For example *Trichodesmium spp.* is a blue-green (sometimes reddish) algae which if able to accumulate during prolonged calms, or in sheltered bays, can cause anoxic conditions sufficient to kill fish and marine flora. Some toxicity may be present as the algae decays, causing further mortality. Blooms of blue-green algae are known to occur regularly in the southwest. Other far more toxic blooms of organisms known as

⁸⁶ Source: *Australia Pilot. Vol.1. North, north-west, and west coasts of Australia from the west entrance of Endeavour Strait to Cape Leeuwin*, (Taunton: Hydrographic Department, British Ministry of Defence, 1973).

⁸⁷ *Western Fishery*, (Spring 1992), p.43.

dinoflagellates, while well known in the tropics, have occasionally been recognised in southern Australian waters. Some dinoflagellates produce benthic cysts which remain dormant in sediment for long periods until local conditions favour a new bloom. Seven taxonomic groups of dinoflagellates have been recognised in Australian waters.⁸⁸

Core samples taken at Rottnest Island have revealed that dinoflagellates were abundant there between five and six thousand years ago,⁸⁹ It will be recalled that this approximately coincides with higher eustatic changes in local ocean levels. Toxicity of dinoflagellates can vary according to prevailing conditions and water chemistry, nevertheless these organisms have the potential to influence human exploitation of marine and estuarine species such as molluscs. In particular they can cause diarrhetic or paralytic poisoning in people who unwittingly consume contaminated fish and shellfish. The toxins are not destroyed by cooking and can be present in shellfish for as long as five months after the bloom has disappeared.⁹⁰

Dinoflagellate contamination in the past may have been why southwest Aborigines had an aversion to eating molluscs. There is, after all, nothing quite like the experience of eating a bad oyster or mussel which appeared safe. In 1839 explorer George Grey was told by Kaiber, an Aboriginal companion that a “very very long time ago” some Aboriginal people had eaten molluscs and then immediately died. Kaiber assumed the deaths were induced by *boylyas*, or sorcerers.⁹¹ The account is important because although solitary, it relates from an early Aboriginal source that at one time some Aboriginal people in the southwest region were prepared to eat molluscs, and that their subsequent deaths were quite unexpected. Attributing this seemingly inexplicable event to sorcery provided a rational explanation within a cultural context. According to Grey’s informant the tabu had existed since the event. Unfortunately Kaiber’s account of people eating molluscs in the distant past appears to be unique in the southwest ethnographic record. Archaeological evidence, which is discussed in detail in Chapter Four, confirms that to a limited extent mollusc consumption has taken place in the region, but it was comparably minuscule to what occurred elsewhere on the continent. A sudden and widespread toxicity seems the likely reason for what turned out to be a very strong

⁸⁸ Hallegraeff, G.M. *Red tides in the Australasian region*, CSIRO Report 187, (1987), pp.3-4.

⁸⁹ Backhouse, J. “Holocene vegetation and climate record from Barker Swamp, Rottnest Island, Western Australia,” *J. Roy. Soc. WA.*, 76, (1993), pp. 53-61.

⁹⁰ *Ibid.*

⁹¹ Grey, *op. cit.*, vol.2 p.84.

cultural aversion, and it seems possible the dinoflagellate blooms coinciding with climate-induced sequences from, or since about 5,000 years ago might have been responsible.

2.11 The southwest climate

Detailed climatic records exist for most of the southwest region and comprehensive streamflow data is available for all the major, and many of the minor waterways. Unfortunately in the case of streamflow, usable data extends in time back only to 1908.⁹² Official rainfall and other climatic data have been compiled only since 1876.⁹³ Climate records for the southwest prior to that year are sporadic and exist only in sources such as newspaper reports and private journals, and there appears to have been no attempt to correlate them.

Unofficial but detailed 19th century rainfall figures exist for some places, as for example records kept by a pastoralist William Dempster for the Esperance region, and they provide a tantalising indication of long term climate change. Dempster controlled a 1.5 million acre allotment of land which he took up in the middle of the 19th century. In 1865 the region had experienced a severe drought, but in spite of a recovery there nevertheless had been a steady decline in the annual average rainfall. In 1901 he claimed it was about six inches (104mm) less per year than when he arrived.⁹⁴ The climatic change noticed by Dempster is consistent with a long term study of global warming which shows that mean temperature of the southern hemisphere has increased consistently since at least the mid-nineteenth century.⁹⁵ This trend is continuing. It is estimated that southwest rainfall has decreased by approximately 22 percent since the 1930s.⁹⁶ The phenomena of global warming appears responsible. Future researchers may be able to correlate a useful body of pre-1876 meteorological data for the southwest from sources such as pastoral records and ship journals.

The southern trans-oceanic winds which circulate the globe in a west-east direction are of particular importance to rainfall patterns in the southwest during the winter months,

⁹² *Streamflow records of Western Australia... op. cit.*

⁹³ Hunt, H.A. (Ed.), *Results of rainfall observations made in Western Australia: Including all available annual rainfall totals from 1371 stations for all years of record up to 1927, with maps and diagrams; and record of notable meteorological events*, (Melbourne: Bureau of Meteorology, 1929).

⁹⁴ Erickson, *op. cit.*, p.264.

⁹⁵ Gribben, John, "Britain shivers in the global greenhouse," *New Scientist*, (9/6/1988), pp.42-43.

⁹⁶ *Ecos*, (Winter, 1972), pp.6-10.

and in turn the coastal estuaries. As they progress eastwards they carry a series of low pressure troughs or depressions which occasionally approach the coast from a southwesterly direction. This is due to the influence of lower-pressure tropical climatic patterns to the north of the continent. The result in mid-winter can be a series of squalls and moderate gales accompanied by heavy rain showers and low temperatures. Even so clear days are not infrequent. When high pressure anti-cyclones form over the ocean to the west they can suppress the approaching cold-fronts, even in mid-winter.

It is the winter rainfall which has the most important effect on flushing southwest coastal waterways. This forces many species from the estuarine systems into the ocean, but providing the bars are sufficiently open, these are soon replaced when flooding subsides and the estuaries are recharged with salt water. In a global context the winters in the southwest of Western Australia are officially described as mild.⁹⁷

Most precipitation from this weather system falls near the coast but there is usually some rain which penetrates into the more arid interior each season. The most humid part of the southwest is along the south coast. This diminishes eastwards towards the appropriately named Cape Arid. Rainfall patterns for the southwest are shown in Fig. 2.11. An isohyet drawn between Shark Bay and Cape Arid delineates the eastward extent of the average annual rainfall in excess of 250 mm. Where this line intersects the coast has partially defined the geographical limitations for this study. However, the line is only an approximation based on sporadic historical observations and considerable fluctuation can occur from season to season. In wetter prehistoric times the isohyet may well have been much further inland, although it should be remembered that because of the glacial maximum the relevant altitude of the land mass above ocean level would have been higher, and therefore cooler. The southwest is believed to have been wetter about 3,000 to 4,000BP.⁹⁸

⁹⁷ *Australia Pilot*, vol.1. *op.cit.*, p.12.

⁹⁸ Lamb, H.H. *Climate, Present, Past and Future*, (London: Methuin, 1977), pp. 390-91.

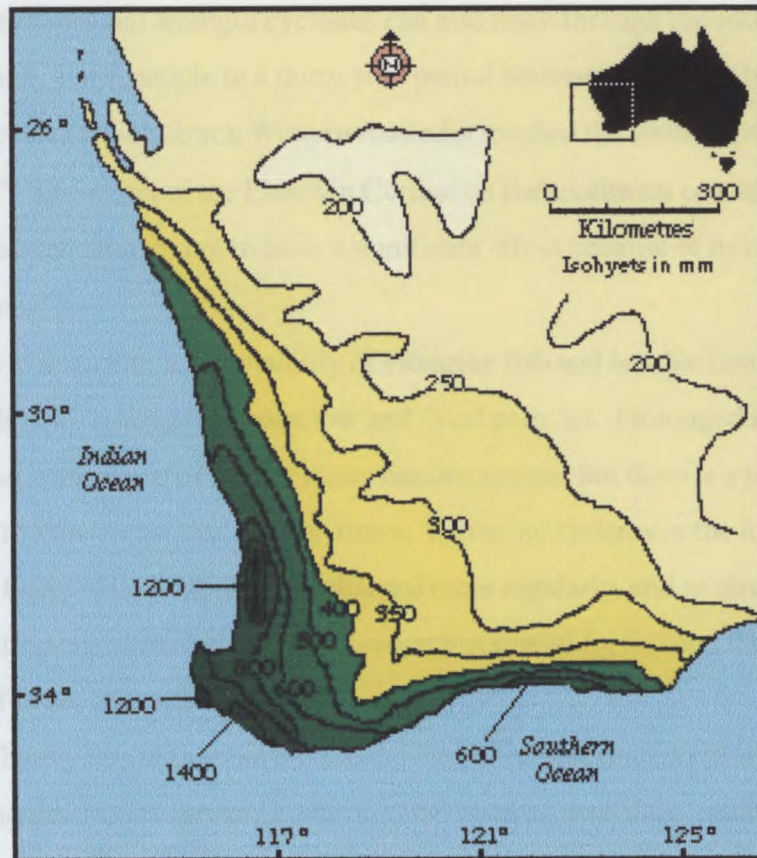


Fig. 2.11 Sketch map of southwest annual rainfall patterns⁹⁹

In the colder Pleistocene, 23,000 to 27,000 years ago Australia is thought to have been much dryer, and it has been proposed by others this was in part due to the evaporative influence of stronger westerly winds.¹⁰⁰ In more recent times, a less important seasonal factor influencing the southwest weather system is the northern tropical monsoon. This can make its effect felt as the southern global wind system drifts southwards during the summer months. Intensive low pressure systems, or tropical cyclones form over the seas in the regions to the northeast and northwest of Australia, between 5°S and 15°S. Those forming to the northwest generally move into the Indian Ocean along a curving southwesterly track which sometimes continues until they bear down in a south easterly direction upon the Western Australian coast. A massive quantity of rain is frequently dumped in a broad inland swathe which may, depending on where the cyclone crosses the coast, fall from the Kimberley region through to Cape Arid. On these occasions large quantities of rain may also fall in the southwest during the normally dry mid-summer season because of humid air flowing from these rain bearing

⁹⁹ Source: *WA Yearbook*, (Perth: Western Australian Government, 1981), p.55.

¹⁰⁰ *Ibid.*, pp.352.

depressions. Sometimes full strength cyclones can also track through the southwest into the Southern Ocean. For example in a thirty year period between 1924 and 1954 five out of 68 tropical cyclones which struck Western Australia reached the southern coast without loss of strength.¹⁰¹ The effect of the Leeuwin Current on the southwest coastal climate is uncertain, but has been thought not to have a significant effect because of its relatively narrow dimensions.¹⁰²

The period of occupation and viability of estuarine fish and benthic faunal populations are directly related to streamflow and flood patterns. Prolonged freshwater levels in southwest estuaries are fatal for many benthic species but there is a tendency for many larger fish to move seawards at these times. Estuarine systems in the higher rainfall areas are likely to be flushed and recharged more regularly, and as already discussed, this ultimately provided a greater resource potential for fishers. The presence of sea grasses is further indicative of this.

The peak flood years of the south-west and their seasonal frequency are shown in Fig. 2.12. Unseasonal floods shown in March 1858 were probably the result of a tropical cyclone or associated rain-bearing depression coming from the northwest. It is not possible from this data to determine if flooding was widespread throughout the southwest at the same times. For example the Blackwood River which is not shown in the list is known to have flooded in 1832.¹⁰³ As mentioned, official meteorological records for the southwest are deficient in this respect, but parts of the region appear to have been wetter and colder in the nineteenth century than the present.

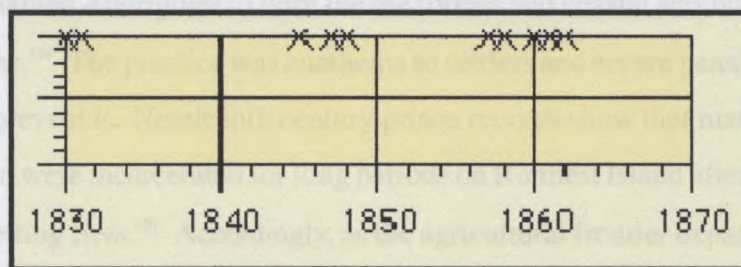


Fig. 2:12 Flood frequency in the southwest, 1830-1870¹⁰⁴

¹⁰¹ *Australia Pilot*, vol.1. *op. cit.*, p.12.

¹⁰² Gentilli, J. "Homologous peri-oceanic west coast climates in the southern hemisphere," *Jour. Roy. Soc. WA.* 74, (1991), pp.15-33.

¹⁰³ Turner, *op. cit.*, p.109.

¹⁰⁴ Source: Hunt, *op. cit.*

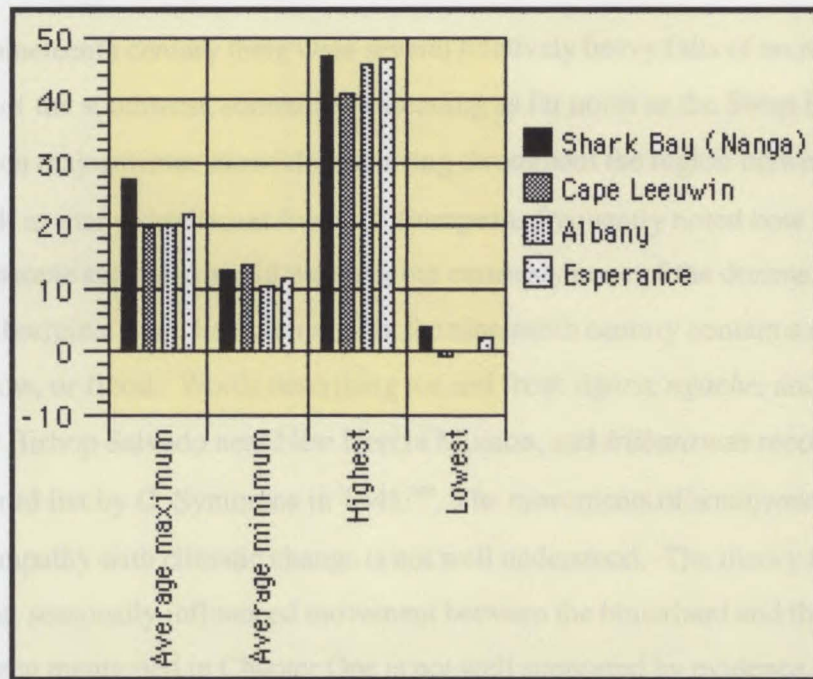


Fig. 2.13 Extremes of air temperature distribution between Shark Bay and Esperance¹⁰⁵

The air temperature distribution shown in Fig. 2.13 shows that the range in the southwest coastal environment over a year can be extreme, with a maximum recorded at Shark Bay of 47.1° C and a minimum of -0.2° at Cape Leeuwin. Those places further north experience an overall warmer climate throughout the year. It will be noticed that the locations well to the east of Cape Leeuwin are also warmer. Overall the south coast is cooler than the west coast. Generally southwestern summers can be regarded as hot and dry, and this enabled Aborigines to burn the the forests and coastal scrublands in the late summer months.¹⁰⁶ The practice was anathema to settlers and severe penalties were introduced to prevent it. Nineteenth century prison records show that many southwest Aboriginal men were incarcerated for long periods on Rottnest Island after being convicted of setting fires.¹⁰⁷ Accordingly, as the agricultural frontier expanded there was substantial and permanent disruption to the traditional subsistence activities, and associated customary practices, which also involved fishing.

In the twentieth century freezing winter temperatures and light falls of snow occasionally occur on the Stirling and Porongurup mountains near Albany. These may lie on the ground at most for no more than a few days, but usually only for a few hours.

¹⁰⁵ Source: Western Australian Bureau of Meteorology records, 6 Jul. 1994.

¹⁰⁶ For the classic description of these activities see Hallam, (1975), *op. cit.*

¹⁰⁷ Green, N. and Moon, S. *Far from Home: Aboriginal Prisoners on Rottnest Island 1838-1931*, (In press 1997).

During the nineteenth century there were several relatively heavy falls of snow over much larger areas of the southwest, sometimes extending as far north as the Swan River. Hunt records fifteen major winter snowfalls occurring throughout the region between 1846 and 1901, as well as many significant frosts.¹⁰⁸ Europeans frequently noted how severely Aboriginal people suffered in cold weather, but curiously none of the dozens of southwest Aboriginal word lists compiled in the nineteenth century contain a descriptive word for snow, or frost. Words describing ice and frost: *ngaca*, *ngache*, and *uinga* were collected by Bishop Salvado near New Norcia Mission, and *irilbara* was recorded for the same in a word list by C. Symmons in 1841.¹⁰⁹ The movements of southwest Aboriginal people in sympathy with climatic change is not well understood. The theory that there was a regular, seasonally influenced movement between the hinterland and the coast which has been mentioned in Chapter One is not well supported by evidence. Throughout the nineteenth century extremely cold conditions could be experienced inland. However, even in the coldest winters, no snow was recorded on the littoral.

2.12 People and the changing landscape

Since people first arrived in the southwest there has been remarkable change to the landscape. Extensive areas of land once ranged over are now submerged beneath the ocean and deep river valleys are silted over. The oldest and largest tree specimens in the southwest hardwood forests which exist today are dozens of generations removed from their ancestors which were first stood under by humans more than 30,000 years ago. Since that time there must have been immense changes to the landscape, due to natural factors, and perhaps also, through human intervention. For example it has been proposed by Hallam that repeated firing of the southwest landscape by Aborigines would have imposed significant stress on the ecosystem, to which the biomass would have had to adjust over time. This may for instance have assisted in the generation of extensive areas of grassland which attracted settlers to the coastal plain near Busselton.¹¹⁰

For people any perceived stability of the environment was illusionary and the predictability of resources adjusted accordingly. The system was chaotic inasmuch as cause and effect relationships existed, but to paraphrase Acheson and Wilson, the

¹⁰⁸ Hunt, *op. cit.*

¹⁰⁹ Bindon, P. and Chadwick, R. *A Nyoongar Wordlist from the South-West of Western Australia*, (Perth: Western Australian Museum, 1992).

¹¹⁰ Hallam, (1975), *op. cit.*, pp.110-111.

complexity and non-linearity of these relationships ensured the output was highly unpredictable.¹¹¹ In the post-settlement period humans have much to answer for in contributing to this chaos. Clearing of land for agricultural and forestry purposes in catchment areas has caused significant detrimental change. In many areas, increased water runoff has caused substantial soil erosion, with a subsequent rise in sedimentation levels in rivers. This in turn has led to increased silting in the lower reaches and in estuaries. As early as the 1890s fishermen were complaining about the increased sediment suspended in the Swan River.¹¹² Further south fishermen on the Peel-Harvey Inlet complained that sawdust being dumped in the rivers by upstream loggers was destroying fish habitats.¹¹³ These matters are further discussed in Chapter Ten. (Estuarine and coastal fishing).

In addition, the intensive clearing of forests has allowed the water table to rise and this has forced salts to the surface which in turn raise the salinity levels of the rivers and severely disrupt the biota. Chemical pollution of south-west waterways has also occurred in some rivers and estuaries, almost since the colonisation process began. For example sheep farmers regularly cleaned their wool-clip in them, and as much as 10cwt (508kg) of lanolin grease could be washed from a 50 bale clip.¹¹⁴ Sheep were also dipped in strong chemicals to overcome parasites and the residue from this too readily entered the ecosystem. Such additions to an otherwise "pristine" waterway can be considered a pollution factor of unprecedented dimension for native fish species, especially when introduced to a diminishing stream flow through drought, or damming. When a number of farmers were using the same waterway then the pollution problem downstream was exacerbated. It is improbable that the true extent of this nineteenth century pollution will ever be calculated accurately. Suffice to say that in southwest Australia there has been a long history of environmental abuse by humans in favour of short-term economic gain, and in all likelihood it effected the fisheries.

¹¹¹ Acheson, J.M. and Wilson, J.A. Order out of Chaos, the case for parametric fisheries management, *American Anthropologist*, 98, 3, (1996), pp. 579-594. (584).

¹¹² Abjornsson, (1906), *Evidence: Report of Joint Select Committee Appointed to Enquire Into the Fishing Industry*, (Perth: WA Parliament, 1906), p.23.

¹¹³ Tuckey, (1906), *op. cit.*, p.95.

¹¹⁴ Erickson, (1978), *op. cit.* p.191.

Chapter 3 Seasons, spirits and species

3.1 The solar influence on climate and seasonal change

In the southwest, seasonal availability of maritime resources was to a considerable extent unpredictable because of environmental variables. As defined by Gentilli, weather can be thought of as the condition of the atmosphere at a given moment, while climate is the generalised condition of the atmosphere over a period of time.¹

Seasons are the indefinite times of the year when distinguishable, climate influenced changes occur. In this dissertation they are frequently associated with phenomena relating to species' behaviour, for example when aggregations occur which facilitate maximised human exploitation, however timings of these events can be localised and extremely variable.

Solar energy is the primary driving force of climate and weather, but the solar constant alters continuously with the progression of the Earth's orbit around the Sun, with highest insolation being at the perihelion in late December. This change accounts for an annual variation in energy received by about three percent. The axial inclination of the planet and resultant varying angle of incidence enables substantial energy distribution over a greater surface area, and a resultant lessening of extreme temperatures. Even so a difference between equinoxes ensures the southern hemisphere receives more solar energy during its summer period than does the northern hemisphere.²

Long-wave radiation or heat is readily absorbed by water vapour and this has been primarily responsible for warming of the atmosphere near the Earth's surface. Retention of energy at surface level varies according to surface type, however much is either reflected back into upper levels of the atmosphere, or when conditions are clear, reradiated back into space. Dense forests such as in the southwest have a much higher rate of thermal energy retention than do desert regions, however the oceans are able to absorb far more energy than most terrestrial surfaces.³

A short term balance between radiation absorbed and radiation expelled does not exist, therefore over time there is either a gradual warming or cooling of the biosphere occurring. This is largely dependent on the level of water vapour and other long-wave

¹ Gentilli, J. *A Geography of Climate, the Synoptic World Pattern*, (Nedlands: University of Western Australia Press, 1958), p.5.

² *Ibid.*, pp.7-11.

³ *Ibid.*, p.12., and Gentili, J. *Sun, Climate and Life*, (Brisbane: Jacaranda Press, 1971), pp.12-25.

absorbing compounds in the atmosphere.⁴ The point at which thermal reversals occur is uncertain. Suffice to say that global thermal change is always taking place and it is inevitable that all seasonally related phenomena, and associated behaviour of species will inevitably be influenced in some manner. In recognising that a chaotic system exists, it is quite possible to understand how species can become jeopardised or totally extinguished within a comparatively short period of geological time, because favourable conditions are inevitably eclipsed.

Neither can the southwest maritime environment be regarded as a homogeneous climatic or seasonal zone; it is always in a state of flux. The availability of maritime species to human fishers and hunters in the past must always have varied in timing and intensity according to latitude, longitude, and general physical state of the littoral. Added to this was the fluid complication of the hitherto unsuspected ENSO related events, which were mentioned in Chapter Two. The resultant influence by these on water temperatures and elevation of mean shore levels, combined with the Southern ocean frontal system had the capacity to alter the physical landscape to the extent the chronological impact upon estuarine waterways could be considered in human terms as trans-generational. Furthermore, in the coastal regions, ambient temperatures generally increased and rainfall decreased the further north or east a location was located from Cape Leeuwin. As the solar precession took place, so did the dependent seasons advance or retreat, in a manner comparable to a slow-moving wave across the southwest landscape. Even so, prolonged drought, sometimes lasting many years could occur if high pressure systems predominated in the interior during the winter months, forcing the bulk of rain bearing depressions south, beyond the continent.

For most people, seasons generally related to annual repetition of phenomena associated with the observable environment and familiar flora and fauna, whether they were terrestrial or aquatic. Therefore the human concept of season was based upon past experience, and was always motivated in some manner by the self-interest of the individual observer. Commonality of self-interest amongst individuals ensured that group beliefs evolved, and were maintained in relationship to the seasonally expected events. For a hunter-gatherer Aborigine, seasons could be the times when plants produced ripe fruit, when the post-drought flush of new grasses and other herbage attracted game, and when fish were expected to appear *en-masse* in favoured locations.

⁴ Bowditch, N. *American Practical Navigator*, (Washington: Defence Mapping Agency Hydrographic Centre, 1977), vol.1. p.864.

There could be seasonal shortages and resultant stress, but there were also the times when food resources became sufficiently abundant to enable mutually beneficial relationships with neighbouring groups to be established, or revitalised.

Seasonal dependence was also as important for non-Aborigines. For them they were the times when crops were planted and harvested, or when other culturally specific practices were observed. In the case of commercial fishermen, all activities revolved about the expectation of maximised catches. Even so, and as with hunter-gatherers, uncertainty always applied.

In southwest Australia, there was never the profusion of indigenous foods and high commercial-value resources such as furs which encouraged regular seasonal expeditions by Europeans, with the resultant development of enduring crosscultural trade relationships, as for example have been described for northwest America (and Hawaii) by Gibson.⁵ Most southwest Aboriginal marine-estuarine resource exploitation tended to be opportunistic, and while some methods of fishing such as fishweirs or other group efforts might be classified as systematic, neither the yield nor the customary treatment of the catch lent to the development of mercantile trading relationships. Furthermore, apart from short-term effects of cooking there were no fish preservation methods and no rendering and storage of oils which could attract the attention of foreign traders.⁶

As a defence against uncertainty, culturally defined activities could be devised by all peoples with the specific intention of enhancing catch rates and personal well being. Examples are so called “increase ceremonies” of the hunter-gatherers, some of which are discussed in depth further on in this chapter, or by rites such as the “Blessing of the fleet,” which is a Christian (Catholic) ritual of Italian origin, introduced during the twentieth century (post WW2 1948) and now performed annually in several Western Australian ports with the intention of invoking divine protection, and of course, the blessing of a bountiful catch in the forthcoming season.

The success and continuing maintenance of such customs is dependent on the continuing self-interest of the individual participants, and of the reoccurrence of species’ aggregations. They are traditional practices inasmuch as they have precedents. They exist because of the unpredictability of the resources, and sometimes because of the

⁵ Gibson, J.R. *Otter skins, Boston Ships and China Goods*, (Washington: University of Washington Press, 1992).

⁶ While mercantile trading did not occur in Aboriginal Australia, the movement of objects and materials by reciprocated exchange in association with sociocultural intercourse was widespread, and far reaching.

sometimes immense dangers perceived in obtaining them. The dangers feared may be physical or supernatural. They may involve death or the possibility of economic ruin, but for those who face them and survive, there is the real possibility of enhanced economic and social status. For the participants all beliefs are as reality and must be ensured against in a culturally appropriate manner. If the desired species become extinguished, so too do the associated customary seasonal practices. The rituals are the insurance against uncertainty. If the hoped-for result does not occur, scapegoats can be determined.

There have been some scientifically based conservation attempts to overcome this uncertainty. For example careful observation of some species' life cycles, particularly the western rock lobster have met with some success at predicting catches in the late twentieth century.⁷ So too has the arbitrary licensing, specific catch periods, catch quotas and minimum-size limits. Even so the success of the latter practice is arguable as a conservation measure, because it in the main protects immature juveniles while still allowing the taking of sexually mature adults. Further aspects relating to the success or otherwise of historical conservation strategies are discussed in Chapters Six, Seven, Eight and Ten.

In the period embraced by this study it is proposed that people generally desired to live in what can be thought of as economic zones of preference. These were places where sufficient resources occurred to enable subsistence to take place with minimised effort. Specialisation enabled some resources such as fish to be exploited to the maximum limits, sometimes to the extent that they became valuable economic assets which elevated the status of the controlling group or individuals. Ideally when a resource declined or became unviable, acceptable alternatives became available until renewal occurred. Adaptation in the face of adversity hopefully precluded disaster, but the climatically induced variables ensured this was not always so. It will become clear from the historical material discussed further on in this dissertation that accurate seasonal predictions for the availability of marine species were not generally possible.

3.2 The seasonal nomenclature

Non-Aborigines divided the solar year into four arbitrary seasons: spring, summer, autumn and winter, which are defined in the calendar and are the reverse of the divisions established for the northern hemisphere. Southwest Aborigines determined at least six seasonal divisions which were associated with resource availability or locally

⁷ *Western Fisheries*, (Autumn 1994), p.12.

observable environmental changes. There was no common nomenclature for seasons amongst Aboriginal groups in the southwest. As an example the comparative names and approximate timings of Swan River and King George Sound groups are set out in Fig. 3.1. Even so it may be an understatement of the neo-chaotic complexity which existed. Other southwest seasonal names are occasionally used elsewhere within this dissertation when they are known for a specific location. That Aboriginal peoples were seasonally governed was widely known amongst settlers. What they generally failed to comprehend in any but the most rudimentary manner was that the highly structured social order of the indigenous peoples involved an intimate, all-encompassing relationship with the natural environment and an overseeing supernatural world.

		Swan River	King George Sound
December	summer	<i>birak</i>	<i>meerringal</i>
January			
February		<i>burnuro</i>	<i>maungernan</i>
March	autumn	<i>wunyarang</i> <i>or geran</i>	<i>berue</i>
April			
May			
June	winter	<i>maggoro</i>	<i>meertilic</i>
July			
August		<i>jilba</i>	<i>pawner</i>
September	spring		
October		<i>gambarang</i>	<i>mokkar</i>
November			

Fig. 3.1 Some comparative names of seasons in the southwest⁸

In the absence of this understanding Aborigines tended to be viewed as primitives, either in need of religious salvation or extermination. In fact southwest Aboriginal society had evolved a sophistication arguably exceeding that of many of its critics. Prison chaplain and museum curator Charles Nicolay wrote something of it in 1886:

No people are more slaves to form and ceremony than the natives of Western Australia. There are forms for meeting, forms for parting, for communicating intelligence good or bad; in short, for every daily occurrence of life.⁹

The ritualised conventions also extended to landforms, and to the exploitation of species, thus providing meaning for all things and observable phenomena. Daisy Bates probably recorded more information about these relationships in the southwest than any

⁸ Sources: Moore, (1884), *op. cit.* Green, N. *Broken Spears*, (Cottesloe, Focus Education Services, 1984), p.13.

⁹ Nicolay, C.G. *Colonial and Indian Exhibition 1886: Notes on the Aborigines of Western Australia*, (London: Clowes, 1986), p.11.

other person. She commenced her work at the beginning of the twentieth century when there were few Aboriginal informants left who had been born into the traditional lifestyle. In regard to fishing, some things she recorded are problematic. For example she stated that "salmon-trout" (*Arripis esper*)¹⁰ regularly came into the southwest estuaries to spawn.¹¹ Bates' notes were based upon what she was told by aged Aboriginal informants and in the translation she probably misidentified the large sea mullet (*Mugil cephalus*) as an Australian salmon. This certainly seems to be the case for the Peel-Harvey Estuary where *A. esper* was rarely recorded, but *M. cephalus* was the significant commercial species. Perhaps however the information she obtained was in part correct, and some factor such as climatic change, over-exploitation or agricultural pollution contributed to a cessation of this species' estuarine incursions into the Peel-Harvey system.¹² (*A. esper* is not recorded in the Peel Harvey system for most of the twentieth century, but large numbers of juveniles appeared in 1994.)¹³

Fish are believed to imprint the scent of various stages of a river system as juveniles and there is also believed to be a mechanism by which part of this memory is genetically inherited. Once a fish run is extinguished, a very long time may elapse before the species reappears, if ever. For example return has been minimal after attempts to reintroduce anadromous fish stocks to north American rivers where the run of the same species formerly had been extinguished.¹⁴

The main spawning activity of the Australian salmon is thought to take place amongst offshore reefs but exactly where final aggregations take place has not been determined.¹⁵ The known occurrence of Australian salmon and sea mullet in southwest estuaries is shown in Fig. 3.2. They are included in order to identify where Aboriginal fishing for these important species may have occurred in the recent past. For most locations there is little ethnographic material to support this theory, but future

¹⁰ Also formerly known as *A. truttaceus* and *A. salar*.

¹¹ Bates, D. Notebook. Vc1. (ND), p.11. BL 1212A.

¹² In the later part of the twentieth century agricultural pollution has become a major environmental problem for this waterway to the extent that a multi-million dollar canal between the estuary and the ocean known as "The Dawesville Cut" was opened in 1994. Since then *Arripis esper* have been taken by anglers in the Peel Harvey Estuary. Nevertheless professional fish catches are down, allegedly because target species now find it too easy to depart from the enclosed waters for the ocean.

¹³ "Big herring that salmon!" in *Western Fisheries*, (Summer 1994), p.12.

¹⁴ Long, M. E. and Amos, J. L. "Secrets of animal navigation," in *National Geographic*, (June 1991), pp. 70-99.

¹⁵ "Salmon catch the current..." in *Western Fisheries*, Summer 1994, pp.8-9.

archaeological work may shed light.

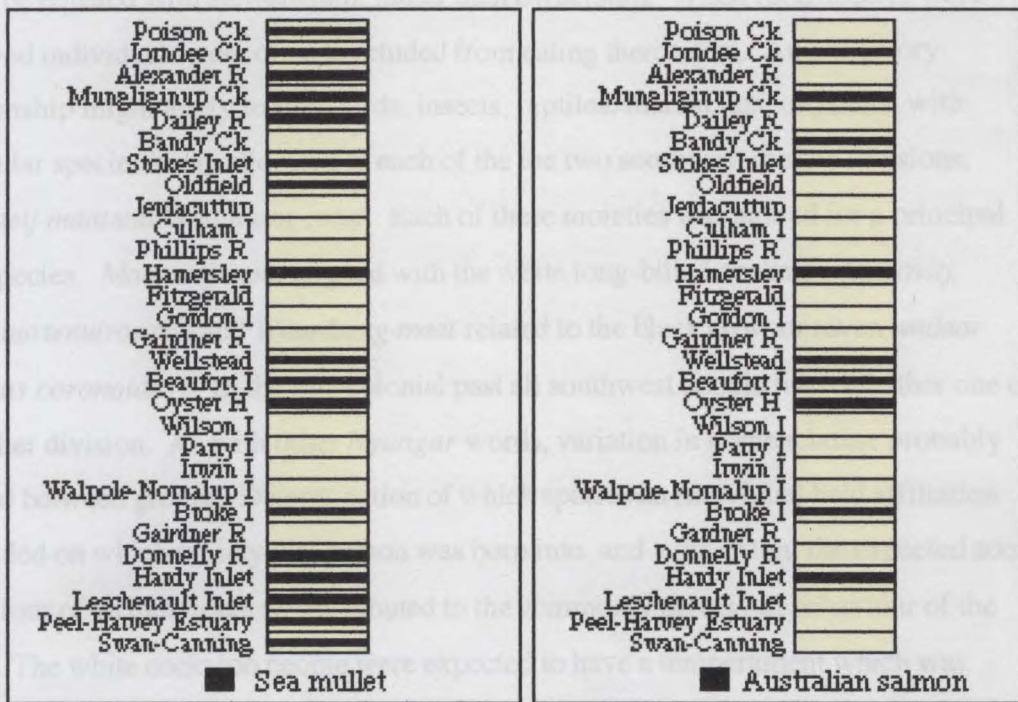


Fig. 3.2 Distribution of sea mullet and Australian salmon in southwest estuaries¹⁶

Poison Creek is located just beyond Cape Arid, but is listed on Fig 3.2 because it is the most eastern water-course resulting from southwest precipitation. Estuaries between Shark Bay and Swan River are not included because of the lack of published data on their fish populations, however both species are known offshore between those two places.¹⁷

Because salmon move westward along the coast in late summer before rounding Cape Leeuwin, their initial seasonal appearance at each place varies progressively. The indigenous fishers who exploited them lived within a multi-dimensional world of time and space which incorporated phenomena, mythical ancestral-beings, the landscape and the many other food species which seasonally became available. Time in the European sense was irrelevant. For them the past existed laterally and was very much part of the present.¹⁸ As with Aborigines elsewhere on the Australian continent, southwest people had totemic affiliation with the many things available to them, or which could be observed within their local environment. How people related to each other, and to the species they exploited was defined by moiety and totemic obligations, and all these had

¹⁶ Chart is developed from same data sources as listed for Fig. 2.9.

¹⁷ Comprehensive studies of the estuarine fauna between Swan River and the Murchison have yet to be undertaken.

¹⁸ Berndt, R.M. & C.H. *The Speaking Land: Myth and Story in Aboriginal Australia*, (Ringwood: Penguin, 1989), pp.xxvi.

an incontrovertible relationship to the omnipresent spiritual ancestors. Totemic affiliation could be equated with stewardship, rather than ownership. When food species were involved individuals were often precluded from eating their totem. An obligatory relationship might apply to fish, birds, insects, reptiles, marsupials, or plants, with particular species being allocated to each of the the two southwest moiety divisions, *Maarnetj-maat* and *Waardarng-maat*. Each of these moieties was named for a principal bird species. *Maarnetj-maat* aligned with the white long-billed cockatoo *Maarnetj*, (*Cacatua tenuirostris*) and *Waardarng-maat* related to the black crow or raven *wadaar* (*Corvus coronoides*). In the neo-colonial past all southwest people were in either one or the other division. As with other *Nyungar* words, variation in nomenclature probably existed between groups. Determination of which species an individual held affiliation depended on which moiety that person was born into, and to an extent the expected social behaviour of an individual was attributed to the commonly perceived behaviour of the birds. The white cockatoo people were expected to have a temperament which was active, quick and clever whereas the black-crow people were expected to be passive, more contemplative, and sometimes even foolish.

Other totemic species which could be attributed to each division could have similar, although not necessarily all the same behavioural attributes. The tendency of any species to be of a light or dark colouring could also be a determining factor as to which moiety it came under.¹⁹ Therefore if a new fish or any other species was encountered a decision could readily be made about its totemic affiliation.

It is recognised here that this description of the southwest moiety structure is at variance with a modern Aboriginal account which attributes crows as “keepers of the country” and representing coastal Nyungars, whereas cockatoos represent inland peoples.²⁰ There is no indication in the ethnohistorical literature that these species specifically related to such geographical separation.²¹

¹⁹ von Brandenstein, C.G. (1977). “Aboriginal ecological order in the south-west of Australia - meaning and examples,” in *Oceania*, XLVII, 3, (March 1977), pp.174-175.

²⁰ Vinnecombe, P. *A Site Complex on the Southern Side of Mount Eliza, Goonininup, an Historical Perspective of Land Use and Associations in the Old Swan Brewery Area*, (Perth: Western Australian Museum, 1989), p.12.

²¹ Southwest Aboriginal people have experienced severe cultural disruption via official resettlement and assimilation programmes which enforced separation of children from parents and cast opprobrium on indigenous beliefs. In the subsequent quest for cultural reconstruction, modern interpretations and beliefs are expressed by Aborigines which occasionally may be at variance with those recorded in the past. Validity is neither denied nor confirmed here.

A selection of known totemic aquatic species from the past is shown in Fig. 3.3. The species are not ranked in any order of importance. It should be remembered that as with Aboriginal seasons, the name for many of these species differed throughout the southwest and variations will exist.²² The tea-tree or *Melaleuca spp.* is included because it was favoured for use in fishweir and spear making. Not included in the list because of uncertainty over correct identification of species is *Kalgan*. This was the name of a fish totem in the King George Sound area and is now the official name of one of the rivers which flows into Oyster Harbour where Aboriginal stone fish traps were once operated.²³ Aborigines readily tried European foods, however it is unclear if or how they were incorporated within the traditional system. Interestingly Daisy Bates reported that generally the men tested unfamiliar European foods on the women.²⁴

<i>Maarnetj-maat</i> , cockatoos (Active - lighter colours)		<i>Waardarnj-maat</i> , ravens (Passive - darker colours)	
Pelican	<i>paubor</i>	Blue crane	<i>poolang</i>
Seagull	<i>jarangap</i>	Sea eagle	<i>tiijarn-piurr</i>
Salmon	<i>ngaari</i>	Snipe	<i>tiit</i>
Butterfish		Dabchick	<i>puarr-gian</i>
Groper	<i>ngaawil</i>	Penguin	<i>thulasa</i>
Rock cod	<i>tauwil</i>	Sea mullet	<i>maid-g'haar</i>
Estuary bream	<i>panai</i>	Black bream	<i>poanang</i>
Whale	<i>miamanj</i>	Seal	<i>toat-paij'haat</i>
Dolphin	<i>toat-waunt</i>	Duck sp.	<i>ginbinu</i>
Tea-tree	<i>paig'garij</i>	Duck mountain	<i>karr'bunga</i>
Cormorant	<i>kagaga</i>	Whitebait sp.	<i>na'g'arna</i>
Stingray			

Fig. 3.3 Totemic species with a marine, or estuarine association²⁵

A *Maarnetj-maat* person who had a salmon totem, might spear and kill the fish, but was precluded from eating it. However the fish could be given to people of the other moiety and reciprocity was expected. Conversely, *Waardarnj-maat* people who were affiliated with the mullet enjoyed a similar obligation. Therefore in a formal sense all fishers might eat one or the other species, but not both. Further distinction could come from where people mostly fished. Bates reported coastal people were known as

²² Aboriginal languages have a potential for rapid change. When a person dies their name is not spoken again, nor are words which sound similar and could mistakenly be heard as the name of the deceased. Substitute words then come into use.

²³ Bates, (1944), *op. cit.* p.78.

²⁴ Bates, D. Notebook 26c, BL. 1212A. (ND), p.35.

²⁵ Extracted from von Brandenstein, *op. cit.*; Moore, *op. cit.*

Waddan-gar and that river people were *Beelgar*.²⁶

3.3 Fish movements and myth

Some 728 species of reef associated fish have been recorded for the south and west coasts. Of these 63 are endemic. That is to say they are present only within a localised context.²⁷ Most of these species have no mention in the historical literature relating to either European or Aboriginal fishers. Neither do many species have mention in the recorded Aboriginal mythology. Two species which are frequently mentioned are the Australian salmon *Arripis esper* and the sea mullet *Mugil cephalus*. These are sketched in Fig. 3.4. The measurements approximate maximum recorded sizes.²⁸

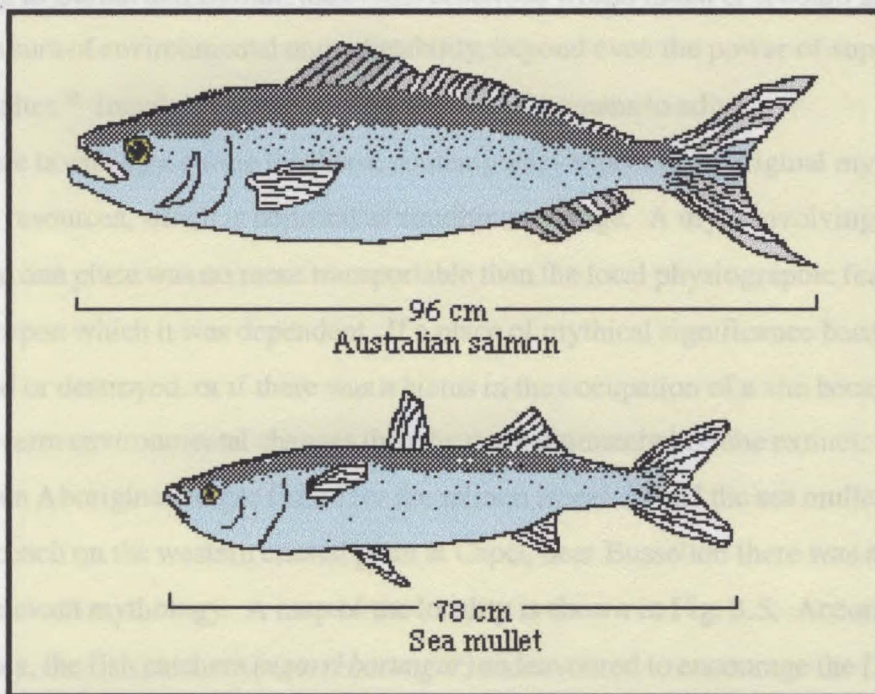


Fig. 3.4 A sketch of an adult Australian salmon and adult sea mullet

Salmon arrive in large schools in southwest waters from late summer through to winter. These have been identified as far north as Kalbarri on the west coast²⁹ Sea mullet are found along the coast, and in estuaries as far north as Shark Bay during most of the

²⁶ Bates, D, "Jitti-Jitti and Wej," in *The Western Mail*, 21/1/1926; Bates, D. (1944), *op. cit.*, p.77; Bates, D. *Aboriginal Perth, Bibbulmun Biographies and Legends*, Bridge, P. (Ed.). (Victoria Park: Hesperian Press, 1992), p.155.

²⁷ Hutchins, B. "A survey of the nearshore reef fish fauna of Western Australia's west and south coasts - the Leeuwin Province," *Records of Western Australian Museum*, 46, (1994), pp. 19-26.

²⁸ Hutchins, B. and Thompson, M. *The Marine and Estuarine Fishes of South-Western Australia*, (Perth: Western Australian Museum, 1983).

²⁹ *Ibid.*

year, however they aggregate near river mouths in autumn.³⁰ This phenomena is known to have attracted large numbers of Aborigines, for example at the entrance to Wilson's Inlet on the south coast,³¹ and at the entrance to the Collie River on the west.³² Such was still the importance of the mullet season along the coast that settlers complained of being unable to hire Aborigines to carry mail, despite what they considered were generous offers of flour and money.³³

Aboriginal mythology is inseparable from the traditional lifestyle. As an oral literature its richness is undisputed, and in its many diverse forms across the continent it can be seen to represent an enormous tapestry of human experience and perception. According to Berndt and Berndt, the events described within much of it could generate an inevitable aura of environmental unpredictability, beyond even the power of supernatural beings to alter.³⁴ Inevitably it was always the role of humans to adjust.

There is usually a strong localised, contemporary aspect to Aboriginal mythology involving resources, which is adjusted as conditions change. A myth involving a resource at one place was no more transportable than the local physiographic features and resources upon which it was dependent. If a place of mythical significance became submerged or destroyed, or if there was a hiatus in the occupation of a site because of very long-term environmental changes then the myth ultimately became extinct.

When Aboriginal people fished for the salmon (*meelok*) and the sea mullet (*kalda*) from the beach on the western coastal plain at Capel, near Busselton there was a strong body of relevant mythology. A map of the locality is shown in Fig. 3.5. According to Daisy Bates, the fish catchers (*ngarri borungur*) endeavoured to encourage the fish towards the shore with a song which they directed at spirit ancestors (*demma goomba*),³⁵ who over-watched the ocean from within a large sand dune. For Aborigines the seasonal indicator for the impending arrival of salmon was when vegetation on the ocean side of the dunes took on a darker appearance in the autumn (*boornor*). This change was called *demma goomberang booka*, and was interpreted as the actions of the resident mythical ancestors within the dunes, Dauwer and Yuongool donning a *booka* or skin cloak

³⁰ Roughley, (1951), *op. cit.*, pp.31-35.

³¹ Neill, (1845), in Eyre, vol.2. *op. cit.*, p.426.

³² *PGWAJ.*, 4/10/1850.

³³ *CSR.*, 1850 vol. 204. 12/9/1850.

³⁴ Berndt and Berndt, (1989), *op. cit.*, pp.2-3.

³⁵ *Demma* may be an Aboriginal derivative of "them." Daisy Bates,(1944), *op. cit.*, p. 89 suggests that when she was collecting information all southwest spirit ancestors were collectively called *demma goomba*.

in preparation for winter. It was believed this did not happen until the ancestors had detected the approach of *kalda* and *melok*, which were their kin. The names of the ancestors are probably kinship terms used by Bate's informant, with *Yuongool* being female. They may have varied according to the relationship with the person addressing them.³⁶

At night the phosphorescent trail of the fish could be seen in the deeper water. This was interpreted as the fire that the ancestors carried with them on their journey. It was extinguished in the shallows so they would not be seen.³⁷ Sea mullet also revealed themselves because they have a tendency to jump out of the water at night, and sometimes in very calm shallow water their dorsal fin breaks the surface, like a small shark. It was related in myth that when the fish in turn saw *demma goomber* on shore they called out, "*Ngana ngammau dau-eera yoolburt yool. Yuongool yoolburt yool. Yuongool.*" (My mother's brother Dauera come and save us, come, come, come.)³⁸ The ancestors, Dauera and Yuongool, who could hear this call would take no notice and spear them through the surrogate actions of the people who shared the ancestors' moiety.

When necessary speared fish were landed with the aid of a *ngoonjook*, or roughly woven net, which would be stroked during preparatory singing. Sometimes captured mullet (*kalda*) were also stroked in accompaniment with singing, and then presented to a visitor.³⁹ In return, visitors, (*koobongur*) would be obligated to provide red meat for the song-singers and fish-catchers (*kallepgur*), who were precluded from eating their own totem. Such exchanges always involved ritual, even if brief. For visiting groups evidence of the relationship between the Capel *ngarri borungur* and their fishy ancestral kin was also represented in their physical appearance. People with that totemic affiliation were referred to as *mela-murnong* because they were perceived to have "full eyes like the salmon."⁴⁰

It should not be inferred that these seasonal gatherings were sombre occasions or that the fish were in some way lulled into passive submission by the rituals. Sea mullet

³⁶ For an example of the potential complexity of Aboriginal kinship terminology see Tonkinson, R. *The Mardudjara Aborigines: Living the dream in Australia's desert*, (New York: Holt, Rinehart and Winston, 1978), p.46.

³⁷ Aboriginal people routinely carried smouldering seed cones of *Banksia spp.* or other smouldering items under their skin-cloaks during cold weather. See Hallam, (1979), *op. cit.* pp. 114-126.

³⁸ Bates, D. notebook, V1c, (ND), pp.16-17 Acc.1212A

³⁹ *Ibid.*

⁴⁰ Bates, notebook, V1d (ND), p.5 Acc.1212A

attain a maximum size of about 78 cm and salmon 96 cm with an approximate weight of about 5 kg and 9.4 kg respectively.⁴¹ Both are strong, fast swimmers, and energetic group cooperation was still necessary to secure them, as observed by Henry Bunbury in 1836:

...it is very interesting to watch a party of men pursuing a shoal of Mullet in shallow water, endeavouring to cut them off from the deep parts and following with unerring sight the course of the fish under water., until they get within reach to throw the spear, which they generally do without the Mero (spearthrower) and with excellent aim. It is an exhilarating sight and a favourite sport with the young men, the mullet being considered by them the best fish they have, being very fat.⁴²

Neither should it be inferred that the mythical beings Dauceera and Yuongool were in total control of the fish or people who speared them. As Berndt and Berndt point out with Aboriginal myths elsewhere, they existed within a precisely defined topographic perspective and like most mythical figures, they could possess all the frailties of human behaviour, including the spearing of kin. Generally Aboriginal mythology was not censorious and the characters depicted within it behaved much as would their human counterparts. Myth was and is a reflection of the familiar and provides identification with, and perhaps justification for parallel human actions. Importantly there were no clear boundaries between morality and immorality. However perhaps above all, myth acted as a deterrent to complacency. Nevertheless it was flexible, being responsive to changing social circumstances and new interpretations as occasions demanded. Notably, as predictors of natural phenomena, mythical beings were as fallible as their human neighbours.⁴³

⁴¹ Hutchins and Thompson, *op. cit.*

⁴² Bunbury, W.H. *Early days in Western Australia*, (Oxford: Oxford University Press, 1930), p.87.

⁴³ Berndt and Berndt, (1989), *op. cit.*, pp.xxvi - 6.

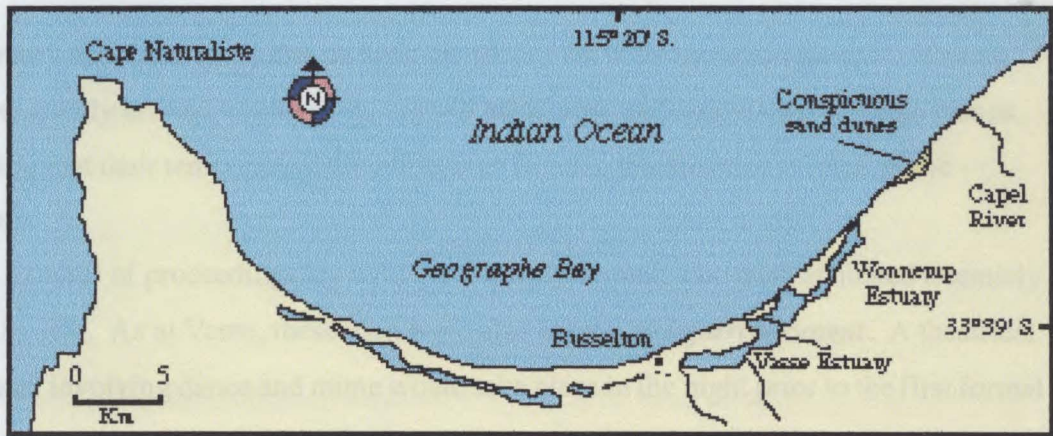


Fig. 3.5 A sketch map of the Vasse - Capel region

Autumn (*Wunyarang*) was also an important mullet fishing time for the *Kalyute* people on the Serpentine River at Barragup, near Mandurah.⁴⁴ The location is shown in Fig. 3.6. The fish there swam downstream from a chain of shallow lakes where they had been maturing since they were about a year old. There has been a popular belief that the fish were forced downstream by the first winter floodwaters.⁴⁵ Sexual maturity for sea-mullet is reached at the end of the third year and this is the main factor which brings them downstream to spawn, not the fresh water. The species can tolerate low salinity levels during their time upriver. In the previous year's winter conditions, parts of the waterways they occupied could have been near fresh. Sea mullet ultimately spawn in the ocean, possibly along the surf line, and they avoid fresh water outflows from then. The developing roe in females at this time can account for a fifth of the body weight.⁴⁶ This was highly prized by southwest Aboriginal and European fishers. (The non-Aboriginal exploitation of sea mullet and their roe as a factor leading to species decline is discussed in Chapter Ten.)

For Aborigines in outlying areas a seasonal indicator for the commencement of the Barragup fish-run was when eucalypt trees had finished their summer flowering. According to Bates surrounding groups would eagerly converge on the lower reaches of the Serpentine River, not only because of the quantities of large fish (*ngarri*) which they would be permitted by the *Kalyute* to eat, but because it was also a time for other

⁴⁴ Bates refers to this place as *Berreek* in *The Native Tribes of Western Australia*, (Canberra: National Library of Australia, 1985), p.251.,

⁴⁵ Hammond, J.E. *Winjan's People: The Story of the South West Australian Aborigines*, 1933, (Victoria Park: Hesperian Press, 1980 facsimile ed.), pp.46-47.

⁴⁶ Roughley, T.C. *Fish and fisheries of Australia*, (Sydney: Angus and Robertson, 1957), pp.32-33.

customary activities, including an episodic part of the male initiation process. Visiting groups usually arrived within a few days of each other and established separate camps, ensuring that their temporary shelter openings faced in the direction of their home territory.

Control of proceedings lay with the old *Kalyute* men who were affiliated totemically with the fish. As at Vasse, these men were also known as *ngarri borungur*. A theatrical rehearsal involving dance and mime would take place in the night prior to the first formal catch for benefit of the visitors. This was led with a fishing song *ngarri maia*, sung by the oldest *Kalute* man:

Ngaari bi ngaari-i
Ngana moogaa
Koort beet beet-al-wee
*Kalbarayaawaddarn.*⁴⁷

As the old man sang he imitated the swimming motion of a small fish (*bi*) with his hands, enacting its rushing through the water and finally gliding to its *kaleep* or home place. This enactment or *koobongur* was accompanied by a kissing sound and a fluttering “brrrrrr” which imitated the sound of the fish progressing over shallow waters. Representations of various obstacles the fish encountered, including the *manga* further enhanced the narration. Finally the imaginary fish were then killed with spear (*gidgee*) and boomerang (*kylie*), then placed in an ever growing imaginary heap. Other elders gradually joined in until all *ngarri borungur* were acting out the story. The visitors would sit transfixed on the perimeters of the performance area, but did not join in other than by voicing encouragement and approval for the actors during pauses in singing. Neither did the visitors participate in the actual fishing which commenced in earnest the following day. Only *kaleepgur* could catch fish, and as happened on the beach at Capel the visitors were expected to maintain a supply of meat foods for the *kaleepgur*. These reciprocal gestures were called *dajjeluk*.

The spiritual and totemic obligations of people who exerted control over rich fish resources appear to have enabled an economic superiority and assertive authority over neighbouring groups. In the 1830s Aboriginal people in the Murray district, which includes Barragup, were noticed by H.W. Bunbury to be better supplied with kangaroo

⁴⁷ Bates, notebook V1c pp.(ND), 13-14 Acc.1212A.

skins than other coastal groups.⁴⁸ George Fletcher Moore also remarked that the “Murray River men” carried more body fat and were of a noticeably larger stature than any other groups he had seen in the southwest. Moore suggested the physical variation may have been as a result of a superior diet resulting from the abundant fish resources.⁴⁹ It probably included the bonus of reciprocated meat. It is known that individual coastal groups elsewhere on the continent such as the *Cam-er-ay* near Sydney maintained a higher customary status amongst surrounding groups because of the resources they controlled.⁵⁰ Furthermore, Gunson in consideration of the ethnographic observations compiled by Threlkeld in the 1820s determined the coastal fishing peoples in New South Wales were generally more robust than the inland peoples.⁵¹

Physical superiority undoubtedly can also encourage boldness. Among the several groups of native peoples occupying the Swan coastal plain the Murray River or *Kalyute* people were conspicuous in their resistance to settlers and had been urging other groups to react in a similar way.⁵² This ultimately resulted in the notorious October 1834 Pinjarra Massacre conducted by Governor Stirling and his cohorts. Apart from being a reaction to resistance, there was an additional factor about the attack which perhaps should not be overlooked. Fletcher points out that the land ranged over by the *Kalyute* was regarded as some of the best in the colony and that Thomas Peel, a cousin of the British Home Secretary, had hosted Stirling and his party immediately prior to the raid, then within a month received title to 250,000 acres and immediately took steps to sell off two fifths.⁵³

There are other examples of enhanced physical attributes of Aboriginal people who are known to have associated with a rich fishery. In 1833 the botanist Carl von Hügel noticed that the people of King George Sound were stronger and apparently more alert than those he met at Swan River.⁵⁴ In 1834 the skipper of the ship *Monkey* remarked on the noticeably larger stature of Aboriginal men seen at Shark Bay, a region which perhaps

⁴⁸ Bunbury, *op. cit.*, p.86.

⁴⁹ Moore, *op. cit.*, p.286.

⁵⁰ Kohen and Lampert, in Mulvaney and White, *op. cit.*, pp. 343-365.

⁵¹ Gunson, N. (Ed.), *Australian Reminiscences & Papers of L.E. Threlkeld*, (Canberra: AIAS, 1974), vol. 1, p.3.

⁵² *Ibid*, p.237.

⁵³ Fletcher, C. “The Battle for Pinjarra: A revisionist view,” in *European-Aboriginal Relations in Western Australian History*, (Reece, B. and Stannage, T. [Eds.], Nedlands: University of Western Australia Press, 1984), pp. 1-4. See also, Hasluck, A. *Thomas Peel of Swan River*, (Melbourne: Oxford University Press), pp.50-51.

⁵⁴ von Hügel, C. *New Holland Journal, November 1833-October 1834*, (Melbourne: Melbourne University Press, 1994), p.81.

has the best maritime resources in the entire southwest.⁵⁵ However this observation contradicted the views formed by members of the Freycinet expedition, who had described Shark Bay people in September 1818 as being of a very poor appearance and living mainly on shellfish. Perhaps echoing Dampier's earlier infamous and much quoted comments on north-west Aborigines, the French declared the Shark Bay people as "perhaps the saddest savages in creation."⁵⁶ This was not a conclusion reached by those on *HMS Champion* in February 1851, who reported sighting several Aborigines on Peron Peninsular. It was noted that an abundance of fresh water existed on the western side of the peninsular, and that sea turtle eggs played a significant role in the indigenous diet. While no close contact occurred, there was apparently nothing remarkable about their appearance.⁵⁷ It may be that the variations between the observations are symptomatic of prejudice, but they may also be indicators that the reliability of the resources and subsequent benefits could fluctuate from generation to generation.

As will be described in Chapter Eight, Aborigines in the Shark Bay region were to become the victims of substantial post-colonisation trauma. Aside from the impact of culturally destructive introduced diseases and imprisonment, people there were also abducted by entrepreneurs to labour in the pearling industry further north. In addition the Aboriginal oral history record has recently revealed that at least one substantial post-settlement massacre may have occurred in the immediate region, as recounted by Aborigine, May Bellotti:

On Tamala Station, there's one place with lots of bones, even little baby bones. My granny said that's where they were fighting in the early days, and all them Yammatjis got shot in that one place. They couldn't have liked Yammatjis back then.⁵⁸

The massacre is not mentioned in official records, but this should not be taken to negate the veracity of the Aboriginal account. Western Australia was the scene of several infamous massacres of Aborigines, which were still occurring in remote rural areas as recently as the 1930s.⁵⁹ Generally the details of such incidents were obscured, any

⁵⁵ Moore, *op. cit.*, p.231.

⁵⁶ Marchant, L.R. *France Australe*, (Perth: Artlook Books, 1982), p.216.

⁵⁷ *PGWAJ*. 7/2/1851.

⁵⁸ Bellotti, M. "Did they chuck the bones in the sea?" In *Yammatji: Aboriginal Memories of the Gascoyne*, Clark, B., (Ed.), (Victoria Park: Hesperian Press, 1992), pp. 155-156.

⁵⁹ The Forrest River massacre of 1926.

significance being overshadowed by the desire to preserve gentry reputations.⁶⁰

Species conservation does not appear to ever have been a consideration for any Aborigines in southwest fishery exploitation. It is arguable that abstinence because of totemic obligations can be viewed as a conservation measure because there were always plenty of people not restricted from eating particular species. No fish were allowed to escape at Barragup because it was believed they would warn other fish. This meant that large rotting piles soon built up beyond the banks. While apparently wasteful, the practice can be justified. Sea mullet are an oily fish and contemporary commercial beach fishermen throughout Australia know that care must be taken not to contaminate the water with their oil or slime because other mullet will detect even minute traces and avoid the area.⁶¹ No southwest Aborigines preserved fish, nor did they transport any surplus for trade with other Aboriginal groups.

Just as there was an inescapable link between the fishery and the mythological ancestors on the Vasse, so too was there one at Barragup. The mythological origin of its fish resource is represented in an account collected by nineteenth century explorer John Forrest:

A long time ago Boolyun lived. He was half man and half kangaroo. He had a long tail, and made a *manga* to catch fish - and when the water was too high, he struck the water with his tail and caught the fish easily.⁶²

Manga is a southwest word meaning bird-nest and has apparently been extended in meaning to describe the larger stick and twig structure of a fishweir. *Boolyun* is apparently associated with *boilya* which was the descriptive term for individuals possessing supernatural power.⁶³ It is not difficult to imagine people beating the water in an emulous manner to drive the fish. Aborigines stayed over at Barragup for as long as the fish-run lasted, or until they tired of the company, and of eating fish. During their visit they would contribute to the occasion with their own songs and dances. It was also the season when the young men (*kobong*) from the various groups ceremonially

⁶⁰ For more information on attitudes to Aboriginal massacres in Western Australia see, Garrick, P. "Two historians and the Aborigines Kimberly and Batty," in Reece, R. and Stannage, T. (Eds.) *European-Aboriginal Relations in Western Australian History*. (Nedlands: UWA Press, 1984). pp.111-130.

⁶¹ Roughley, (1957), *op. cit.*, p.34.

⁶² Forest, J. (ND). BL PR 390a.

⁶³ Symmons, C. "Grammatical introduction to the study of the Aboriginal language of Western Australia," in *Western Australian Almanack*, (Perth: 1841); Moore, (1884), *op. cit.*, p.49.

consolidated friendships (*babin*) or developed enmities.⁶⁴ The old men who held customary authority apparently enjoyed a less stressful existence, having sorted out differences with men of their age-set in former times. The gathering at Barragup also provided opportunity for exchange of artefacts, with boomerangs coming from the hinterland, and spears being the esteemed specialty of the locals.⁶⁵ Although the custodians of the Barragup fishery apparently enjoyed a nutritious advantage and high status compared to surrounding groups they did not live a sedentary existence. As determined by Gibbs, prior to 1834 it was known they participated in at least three major seasonally influenced gatherings at distant locations elsewhere in the southwest.⁶⁶

The Barragup fishery was ruthlessly efficient, but sea mullet reproduce in large numbers, and as shown in Fig. 3.2 are widely distributed along the southwest coast. Mature females which managed to reach the ocean and spawn could each produce as many as two million eggs. Understandably there is always a high mortality of spawn and hatchlings because of predation by other fish and birds. Juvenile fish in late autumn, perhaps from the preceding year and probably including other smaller mullet species also attracted the attention of Aboriginal fishers at river mouths, as observed by Henry Bunbury in 1836.

Mullet are also caught by the Natives in immense numbers at the mouths of the little salt water creeks by means of weirs which are left open for the tides to rise. With the tide vast shoals of Mullet, principally small fry, enter, and, the weir being suddenly stopped up, they are either caught as the water filters off with the ebb, or, more often, the women are sent to drive the fish with their hands into corners where they are easily taken.⁶⁷

⁶⁴ Bates, D. (ND) Notebook V1c, pp.13-14, Acc.1212A.

⁶⁵ Patterson, C.A. (1896) "Notes about the tribes inhabiting the coastal district from Geraldton to Albany, and those of territories nearest adjoining them," in Helms, Richard. (Ed.). "Anthropology," *Transactions of the Royal Society of South Australia*, XVI, 3. 1896, p.288.

⁶⁶ Gibbs, *op.cit.*

⁶⁷ Bunbury, *op. cit.*, p.87.

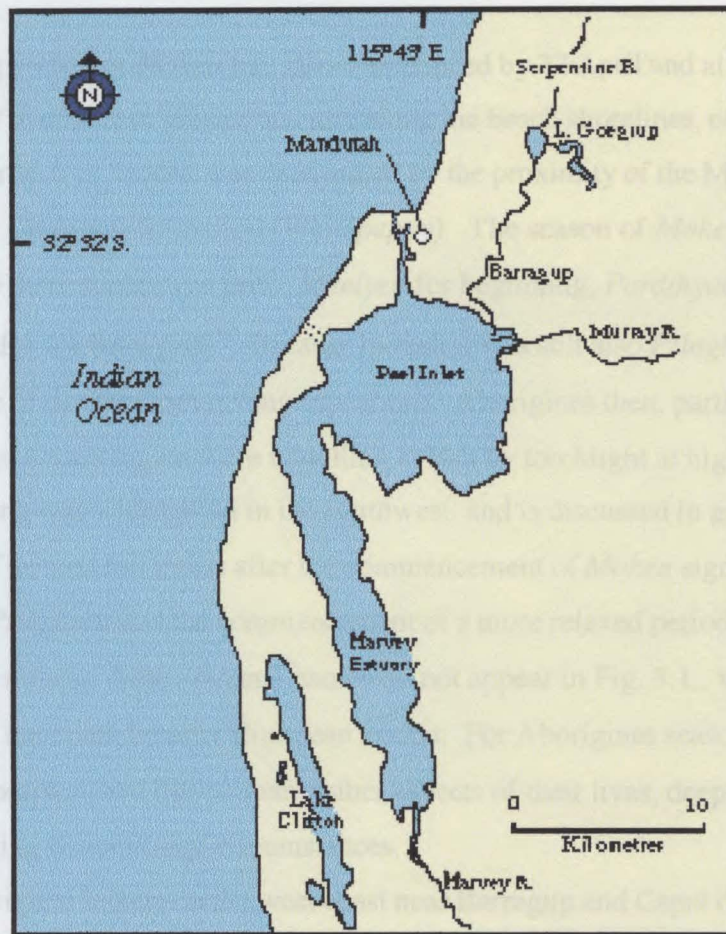


Fig. 3.6 A sketch map of the Peel-Harvey estuarine system

The arrival of migratory fish became a determinant factor for some Aboriginal seasons on the south coast near King George Sound. A sketch map of the region is shown in Fig. 3. 7. Captain Collet Barker wrote that when he returned there from an exploration on 9th February 1830 it had become the Aboriginal season of *Piroe*, and that by the 20th February it was merging into *Metelock* which seemed dependent on the arrival of the salmon, which would then remain available for approximately two lunar months. The season of *Metelock* was followed by *Prenghsen*, or *Pringhren*. This was the time for "payback" in the form of semi-ritualised retributive spearings between Aboriginal groups. A broad range of justifiable criteria existed by which any individual could unexpectedly become a victim of revenge, either because of actual guilt or because of perceived allegiances. These attacks frequently provoked retaliatory spearings so that an ongoing cycle of fear and suspicion was maintained. Fishing activities were minimal and restricted to daylight hours in order to lessen the chance of ambush. By the time the season of *Mondiarang* arrived a mutual consensus between groups began to be developed that this form of aggression should be suspended. Barker noted that during *Mondiarang*

⁴⁶ Barker, in Malvoney and Green, *op. cit.*, p.264

the overlapping season of *Moken* had also commenced by 22 April and at this time mullet were noticeably available in greater quantity along the beach shorelines, especially at night. The approach of *Moken* was determined by the proximity of the Magellanic Cloud to the Southern Cross star formation (*Whitepepoy*). The season of *Moken* was subdivided into three successive parts, *Moelyen* for beginning, *Pardihyue* for middle, and *Coolingun* for the latter part.⁶⁸ Because overall it was still also *Pringhren* and therefore a time of danger from revenge spearings. Aborigines then, particularly those in the King George Sound region were unwilling to fish by torchlight at night. (This method of fishing was widespread in the southwest, and is discussed in greater detail in Chapter Six.) The next full moon after the commencement of *Moken* signified the completion of *Pringhren* and the commencement of a more relaxed period on the coast.

It will be noticed these seasonal names do not appear in Fig. 3.1., which provided comparisons to the much broader European notion. For Aborigines seasonal reckoning was far more complex, and like so many other aspects of their lives, deeply intertwined with the prevailing sociocultural circumstances.

The Aboriginal fishers on the west coast near Barragup and Capel do not appear to have engaged in such a ferocious cycle of retributive spearings as Barker recorded for their brethren on the south coast. As to why this should be so is unclear. The west coast fishers may have had a more reliable fishing resource upon which to develop a stronger controlling body of myth and customary obligations into which visitors could be accommodated. On the other hand the existence of a military post at King George Sound since 1826 may have disturbed local customary equilibrium over local resources, with resultant tensions, although there apparently had been a cessation of fishweir usage in Oyster Harbour prior to the establishment of the garrison. Changes to fishing strategies are discussed in greater detail in Chapter Five.

⁶⁸ Barker, in Mulvaney and Green, *op. cit.*, p.284.

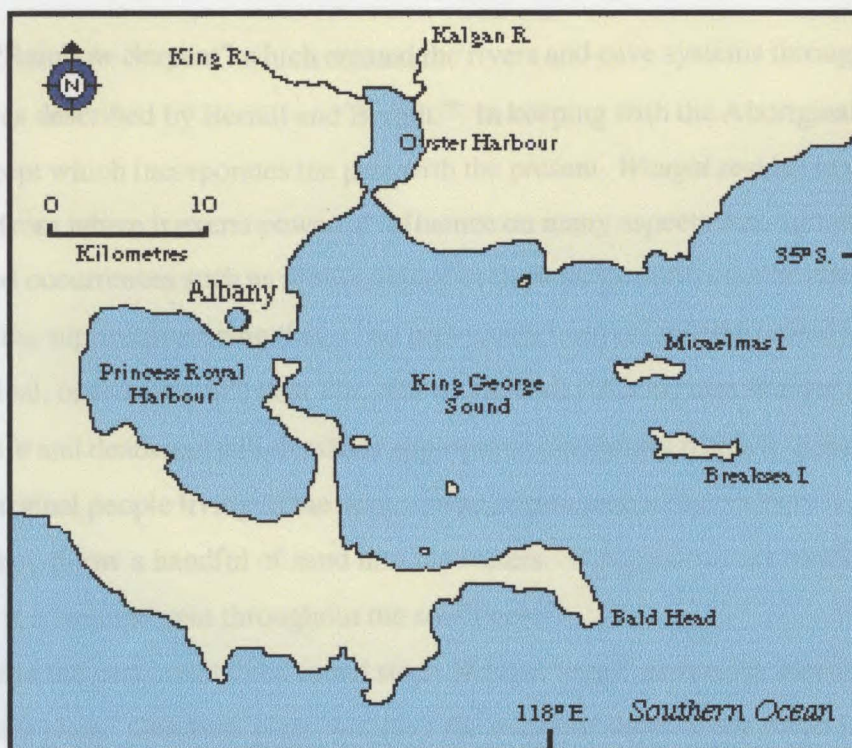


Fig. 3.7 A sketch map of the King George Sound Region

Detailed historical accounts relating to seasons and beliefs of Aboriginal fishers north of Swan River have not been identified, but there is no reason to suppose that activities there were not as complex and locally specific as those further south. There intergroup hostilities appeared to have exist even when fishery resources were abundant. In comparing people at Chapman River near Geraldton to those further south settler Edward Parker wrote in January 1851:

Our natives here differ from yours in many things: in particular, they do not sleep all day, like some of yours, and are no so good to each other. We have had upwards of one hundred fighting men down here, at a time...the Chapman, I must tell you that it is a narrow cannal, half-a-mile wide at the mouth, full of fish easily caught, and duck, also white cockatoo in abundance.⁶⁹

Access to this fishery does not appear to have been subject to the same sort of stewardship which prevailed over those further south.

3.4 Waugal, the omnipresent spirit ancestor

For Aborigines the supernatural snake-like-spirit *Waugal* dominated the aquatic environment of the southwest coastal plain. It is the Nyungar manifestation of the pan-

⁶⁹ PGWAG, 31 Jan. 1851.

Australia “Rainbow Serpent” which created the rivers and cave systems throughout the continent, as described by Berndt and Berndt.⁷⁰ In keeping with the Aboriginal time-space concept which incorporates the past with the present, *Waugal* resides in deep pools and rivers from where it exerts powerful influence on many aspects Aboriginal life.

Unexpected occurrences such as illness, injury or drownings may often be attributed to this force, the supposition being that it had previously been offended in some manner by the individual, or that person’s near kin. For modern-day Aborigines *Waugal* has the power of life and death and still demands appropriate customary respect. For example when Aboriginal people living in the upper Swan region pass a place where it is known to dwell, they throw a handful of sand into the waters. *Waugal* does not reside in any one place, it is omnipresent throughout the southwest.⁷¹

Aborigines in the past maintained round stone *Waugal* “eggs” at various locations on the Swan coastal plain. One such place was near the northern shore of the Swan River at the foot of Mount Eliza (*Goonininup*). The stones resided in an artificial nest of foliage which was renewed from time to time by passers-by.⁷² While *Waugal* was a powerful deity and was present at places in the Swan-Canning estuary it did not prevent male fishers from operating nearby.⁷³ According to one report “*wau-gul*...usually attacked females...”⁷⁴ This would seem to be associated with the generally prevailing gender roles in Aboriginal society which established men as the primary hunters of larger game and fish, whereas women were obliged to attend to the more mundane collection of small, less exciting stuff and staples.⁷⁵ The few descriptions of Aboriginal women fishing in the southwest involve groups operating in very shallow water, never as individual fishers in pursuit of large fish. This is in accordance with the generalised notion of labour division and it seems possible that *Waugal* may have been used as a reinforcing factor to dissuade women from fishing independently. It also emphasised the need for the inexperienced, including children, to avoid deep waters.

⁷⁰ Berndt, R.M. and Berndt, C.H. *The World of the First Australians*, (Sydney: Ure Smith, 1964), p.209.

⁷¹ A summary of information involving *Waugal* is contained in Vinnecombe, *op. cit.*

⁷² Armstrong, F. “Manners and Habits of the Aborigines of Western Australia. *PGWAJ.*, 5/11/1836., Also in Green, N. *Nyungar-the people: Aboriginal customs in the Southwest of Australia*, (North Perth: Creative Research, 1979), p.189.

⁷³ *PGWAG*, 9/3/1832.

⁷⁴ Calvert, A.F. *The Aborigines of Western Australia*, (1894), (London: Milligan, 1982), p.40.

⁷⁵ Berndt and Berndt, (1964), *op. cit.*, p.104.

3.5 The seasonal occurrences of other fish in estuarine waters

As has been partially discussed earlier, the number of fish species living in well flushed estuaries can be considerable. For example in the Swan-Canning system some 137 species have been recorded, with 55% of them being categorised as marine stragglers. That is to say they have entered the waterway by chance rather than as part of an instinctive spawning action. However at least 38 marine species use this estuary as a nursery area. The four principal commercial species in 1987 were: *Nematalosa vlaminghi* (Perth herring); *Mugil cephalus* (sea mullet); *Aldrichetta forsteri* (yellow eyed mullet) and *Cnidoglanis macrocephalus* (cobble).⁷⁶ All are mentioned within the historical record as species sought by fishers in the nineteenth century. Another sought-after species which was once relatively common on a seasonal basis in the estuary was the tailor (*Pomatotomus saltator*). Its numbers have now declined to the point that its presence may be extinguished. The reason is unclear, but unsubstantiated allegations of pollution and over-fishing of juveniles resemble nineteenth century allegations about the catch decline of other species. This is further discussed in the chapter involving coastal/estuarine fishing. (Chapter Ten).

It was previously discussed how the sea mullet moves into the ocean, where spawning occurs between March and September.⁷⁷ Other species move into the sheltered water of the estuaries after winter flushing, but not all penetrate the same distance upstream, or at the same time. For example mature Perth herring move in from the ocean in August and September, to eventually spawn in the upper reaches of the river between November and January.⁷⁸ The bottom dwelling cobble are ocean going, but can spend long periods in estuaries, where they spawn between late spring and mid-summer (October-December). The extent of penetration upstream by young cobble is determined by salinity preference, with very young fish being occasionally seen in fresh pools in the upper levels of the escarpment. According to Moore, the cobble was a much esteemed species by Aborigines in the 1830s, and he caught many large ones in the company of Aborigines at *Jainabingup* to the south of Swan River.⁷⁹

⁷⁶ Loneragen *et. al.* in John *op. cit.*, pp. 178–201.

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

⁷⁹ Moore, *op. cit.*

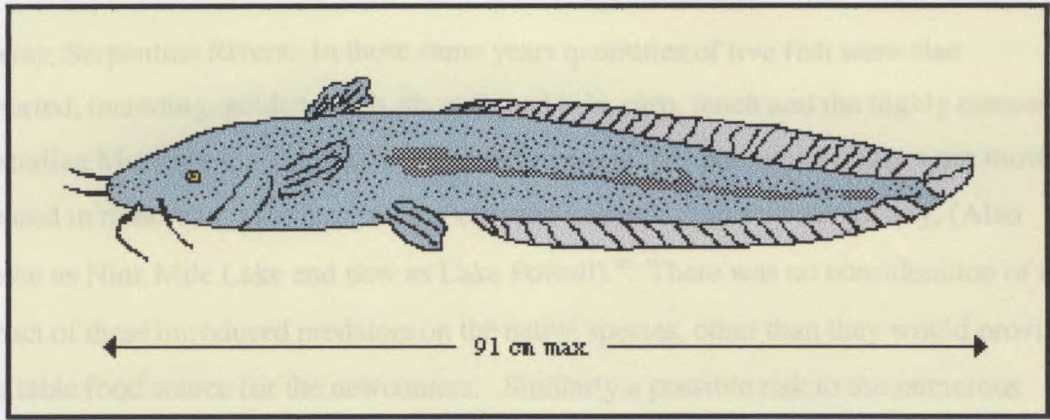


Fig. 3.8 A sketch of an adult Cobbler

3.6 Introduced species and their potential seasonal impact

Since the beginning of southwest settlement, fish have played an important role in the diets of non-Aborigines. In the main these were caught in the oceans, or estuaries, although netting of mullet also took place in the lakes upstream from Barragup. Because of technology including nets, hooks and boats the range of fish available at any time was much greater for Europeans than for Aborigines. It seems probable that because of this the seasonal arrival or non-arrival of endemic species such as salmon and mullet did not carry the same importance for Europeans until they became commercially important towards the end of the nineteenth century. This is discussed in more detail in Chapter Ten.

Of significance were the expectations of gentlemanly recreational fishers. The native fresh-water species in the upper reaches of southwestern rivers were, according to European standards, small and disappointing. In eastern Australia several European species had been successfully acclimatised by the 1860s, and in Tasmania the brown-trout (*Salmo trutta*) had been thriving in rivers and lakes since 1864. Inspired by these successes about 800 brown-trout eggs were imported to King George Sound from Tasmania in August 1874 and set to hatch in a quiet fresh-water stream on the western side of Princess Royal Harbour. The fry grew to fingerling size, or about 40 mm long within a few months, but it is uncertain if they were transferred to other rivers, as had been planned. In the early 1880s the Western Australian Commissioner of Fisheries, W. Saville-Kent authorised the construction of a trout hatchery on the Preston River near Bunbury and started importing fish eggs on a larger scale from the Eastern Australia. Between 1892 and 1894 many trout were released into the Preston, Collie, Harvey,

Murray, Serpentine Rivers. In those same years quantities of live fish were also imported, including, golden perch, short finned eels, carp, tench and the highly esteemed Australian Murray cod. These fish, some as large as a half pound in weight were mostly released in rivers and lakes near York, Perth and Lake Grassmere near Albany, (Also known as Nine Mile Lake and now as Lake Powell).⁸⁰ There was no consideration of the impact of these introduced predators on the native species, other than they would provide a suitable food source for the newcomers. Similarly a possible risk to the numerous semi-anadromous marine species which entered the many river systems was discounted.

A Fish Acclimatisation Committee consisting of eminent Western Australian citizens was formed in 1896 and they authorised the construction of a new hatchery and the importation of 30,000 brown trout ova from Eastern Australia in that same year. The fry were ultimately released into the Murray, Serpentine and Blackwood Rivers, as well as Samson and Gin-Gin Brook. Between 1888 and 1900 large numbers of brown trout were also released into the upper reaches of the Canning River. While many of these fish survived, the river conditions were generally unsuitable for successful spawning.⁸¹

One of the most successful species to be acclimatised was the English or redfin perch (*Perca fluviatilis*). This fish spawns about September and the ova soon hatch as water temperatures increase with the approaching summer. Perch are fast growing, sometimes attaining a 12 cm length and the ability to spawn in their first year.⁸² The hatchlings have a voracious appetite, not only competing with native species for benthic fauna and a diverse range of insect larvae, but also consuming the eggs and fry of other fish. The spawn of semi-anadromous fish which entered the southern river systems in autumn became highly vulnerable. The redfin perch became a notorious predator of native fish, and it is possible it also preyed upon juvenile mullet which entered the river systems. By the early twentieth century it was the proud boast of official tourist literature that most southwest rivers had been successfully stocked with perch.⁸³ On the Capel River near Busselton the numbers of this species increased to the point that commercial netting became a viable prospect, with several tons being caught each year.⁸⁴ No literature

⁸⁰ Coy, N.J. *Freshwater fishing, South-west Australia*, (Perth: Jabiru Books, 1979), pp.119-120.

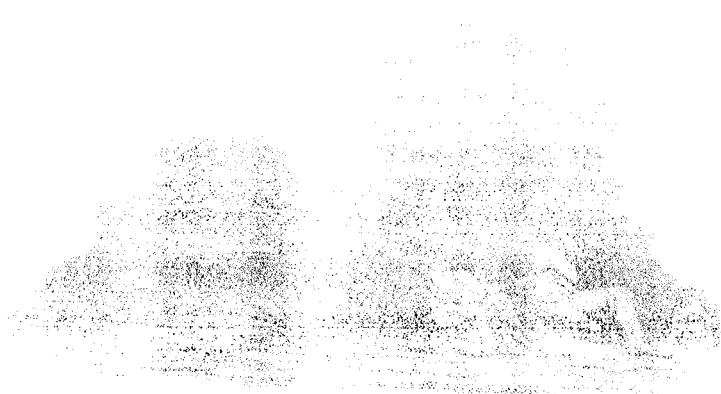
⁸¹ In 1997 trout are still bred by the state government at Pemberton, and released into southwest rivers. Growing opposition from conservation groups may yet win the day.

⁸² Coy, *op.cit.*, p.186.

⁸³ *Western Australia 1912*, information booklet - State Immigration and Tourist Department, p.92

⁸⁴ Coy, *op.cit.*, p.184.

concerning the impact of acclimatised species on the activities of Aboriginal fishers in the region has been identified.



Chapter 4 Prehistoric maritime resource exploitation by southwest Aborigines

4.1 The maritime association with southwest Pleistocene sites

Forensic probing and excavation of Aboriginal cultural material by Europeans has occurred in Western Australia since William Dampier first landed in the northwest in 1688; however 1948 has been identified as the beginning of modern Australian archaeology.¹ In that year Frederick McCarthy pioneered a formalised analytical style by which conclusions were mostly based upon the evidence uncovered in-situ, not inherited supposition based on experience with sites in other lands.² Of equal importance was Edmund Gill's 1955 introductory use of C₁₄ radiocarbon dating in Australia, which provided proof that the Aboriginal presence had been far longer than hitherto suspected.³

Substantial development of Australian archaeology has occurred since, and has coincided with the general burgeoning of research with Aboriginal themes which has occurred since the 1960s. In order to assist interpretation of discoveries, archaeologists working in the arid interior have to some extent compared their discoveries with Aboriginal people still living in close proximity, and engaging in aspects of a traditional hunter-gatherer lifestyle. This has not generally been possible in the coastal regions of the southwest because of the extensive degree of cultural disruption which has taken place during the post-settlement period. As a result historical ethnographic literature is more frequently used to corroborate interpretations. Both strategies present problems because there is the tacit assumption that the cultures under scrutiny have remained relatively static. While phases of lithic technology may be evident over long periods, as was discussed in Chapters Two and Three, unpredictable climatic and seasonal variations had the potential to induce adaptive cultural changes.

How and when and where the continent was first populated has not been resolved, however human activity is believed to have been occurring in northern Australia by about

¹ Horton, D. *Recovering the tracks, the story of Australian archaeology*, (Canberra: Aboriginal Studies Press, 1991). p.154.

² McCarthy, F. "The Lapstone Creek Excavation, Two Culture Periods Revealed in Eastern New South Wales," *Records of the Australian Museum*, 22. (1948), pp.1-34.

³ Gill, E. "Radiocarbon Dates for Australian Archaeological and Geological Samples," *Australian Journal of Science*, 18, (1955), pp.48-52.

50,000 BP,⁴ and there have been a number of differing theoretical models favouring the northwest coast as the first-point of-entry.⁵ The subsequent manner in which people then occupied the continent has also been the subject of considerable speculation, with models variously incorporating aspects of a trans-continent spread, and/or a coastal orientated migration.⁶

When and from what direction people first arrived in the southwest has not been determined. A few occupation sites have been discovered older than 30,000 BP. For example a site at Upper Swan, near Perth, where the Avon River emerges from the Darling Escarpment has revealed an archaeological sequence dated between 39,000 and 35,100 BP.⁷ This is the oldest known site of human activity in the southwest.⁸ Another date of about 29,000 BP has been determined at nearby Helena Pool.⁹ Both the Avon and Helena River valleys are believed to have been Aboriginal trade and communication routes to the hinterland,¹⁰ but in spite of many searches, dates of similar antiquity have not been discovered further inland beyond the escarpment, which suggests the first people may not have arrived from that direction. A few kilometres upstream from the Upper Swan site and just beyond the coastal plain a much younger date of about 8,000 BP was obtained.¹¹

⁴ White, J.P. "The settlement of Ancient Australia," in Burrenhult, G. *The Illustrated History of Humankind: The first humans*, (St Lucia: University of Queensland Press, 1993), p.153.

⁵ Birdsell, J. "Some problems involving Pleistocene man," *Cold Spring Harbour Symposia on Quantitative Biology*, 22, (1957), pp. 47-69; Bowdler, S. "The Coastal Colonisation of Australia," in Allen *et al.*, *op.cit.*, pp.205-246; Horton, D.R. "Water and Woodland: The peopling of Australia," in *Australian Institute of Aboriginal Studies Newsletter*, 16, (1981), pp. 21-27. (N.B. These theorists were preceded by Kimberley, W.B. *History of West Australia: A Narrative of her Past Together with Biographies of her Leading Men*, (Melbourne: Niven, 1897).

⁶ An analysis of colonisation models is presented in Hallam, S.J. "Coastal does not equal littoral," *Australian Archaeology*, 25, (1987), pp.10-29.

⁷ Pearce and Barbetti, *op. cit.*, pp.173-178.

⁸ Contemporary Aboriginal belief, based upon supposition, holds that this site is at least 110,000 years old.

⁹ See also: Schwede, M. "Supertrench - Phase 2: A Report on Excavation Results," in Smith, M. (Ed.), *Archaeology at ANZAAS 1983*, (Perth: Western Australian Museum, 1983), pp. 53-62; Strawbridge, L. *Aboriginal Sites in the Perth Metropolitan Area: A management scheme*, (Nedlands: Centre for Prehistory, University of Western Australia, revised edition, 1988).

¹⁰ Gibbs, (1987), *op. cit.*

O'Connor, R., Quartermaine, G. & Bodney, C. Report on an investigation into Aboriginal significance of wetlands and rivers in the Perth-Bunbury region, (Perth: Western Australian Water Resources Council, 1989).

¹¹ Pearce, R. "Changes in the artifact assemblages during the last 8,000 years at Walyunga, W.A." *Journal of the Royal Society of Western Australia*, 61, (1978), pp. 1-10.

Another excavation near the present mouth of the Swan River has produced a date of approximately 9,930 BP.¹² Neither this nor any of the several other known ancient Swan Coastal Plain sites have produced evidence for exploitation of marine or aquatic species, the bulk of culturally associated material being lithic, and sometimes extremely minimal. This has caused them to be aptly described by Ferguson, "as a stop on the way to somewhere else."¹³ This is not to say that maritime exploitation in the late Pleistocene or early Holocene did not take place. Conditions for the preservation of organic material may not have been suitable, and most places which might have favoured the earliest maritime activities are now submerged.

Some Pleistocene maritime material has been found in the proximity of southwest Holocene sites, for example at Shark Bay, where the present aquatic environment was created in the mid-Holocene. There, baler shell dated at about 18,730 BP was apparently transported inland when the coast was located some 100 km further to the west.¹⁴

Between Cape Naturaliste and Cape Leeuwin is "Devil's Lair," so named for its former association with the carnivorous marsupial *Sarcophilus harrisii* or "Tasmanian devil."¹⁵ This site currently ranks as the southwest's second oldest.¹⁶ Cultural material dating between 6,490 BP and 33,000 BP. has been recovered, but occupation has been in phases, due in part to an entrance collapse. While not far from the coast and the upper reaches of a substantial river system, the abundant and diverse quantity of faunal remains recovered provides little evidence of a connection with a marine or riverine environment, although there have been a few fragments of marine shell dated at approximately 32,800BP.¹⁷ The bones of a fish recovered from below a 11,960 BP level may have been introduced by a bird.¹⁸ Another ancient site at nearby Tunnel Cave has produced a few

¹² Clark, J. and Dortch, C. E. "A 10,000 year BP radiocarbon date for archaeological finds within a soil of the Spearwood dune system, Mosman Park, W.A.," *Search*, 8, (1977), pp. 36-38.

¹³ Ferguson, (1985), *op. cit.*, p.78.

¹⁴ Bowdler, S. "The Silver Dollar site, Shark Bay: An interim report," *Australian Aboriginal Studies*, 2, (1990), pp. 60-63.

¹⁵ This site is extremely rich in faunal remains, however the bulk of material is not due to human activity.

¹⁶ For a more comprehensive comparative chronology of southwest sites see: Ferguson, (1985), *op. cit.*, p.461. and Smith, M. (1993), *op. cit.*, p.43.

¹⁷ Dortch, C.E. "33,000 year old stone and bone artifacts from Devil's Lair, Western Australia," *Records of the Western Australian Museum*, 7, (1979), p.362; Dortch *et. al.*, (1984), *op. cit.*, p.88.

¹⁸ Balm, J. Merrilees, D. and Porter, J.K. "Late Quarternary mammal remains, spanning about 30,000 years from excavations in Devil's Lair, Western Australia." *Journal of Royal Society of Western Australia*, 61, (1979), pp.33-65.

fragments of freshwater and marine mollusc shell, but their age requires further clarification.¹⁹

To the east near Esperance is the Recherche Archipelago. Creation of this island cluster was also a result of marine transgression, with isolation possibly commencing in the late-Pleistocene, about 10,000 BP. The archaeological evidence on the islands represents two phases, firstly the period prior to inundation, and secondly the post-contact period when fragments of glass and china are present, these most likely being connected with sealing, and possibly whaling activities.

The earliest radiometric date for cultural material on the adjacent mainland is about 13,000 BP at a site known as Cheetup, which was then about 80 km from the ocean.²⁰ This distance compares favourably with that known for previously mentioned inland incursions by coastal people near Shark Bay. Supposed pieces of seaweed identified in association with remains of a cremated Aboriginal infant at Cheetup suggest that some sort of sociocultural relationship with the coast may have existed.²¹

All in all, the archaeological evidence of a relationship between people living during the Pleistocene and any maritime resources is sparse. Obviously there has been the potential for much evidence to have been covered by eustatic events, but it is by no means certain that Pleistocene fisheries in any way resembled those of the mid-Holocene, or the present. Fig 4.1 shows the general location of ancient sites mentioned.

4.2 More recent Holocene coastal sites

In the Shark Bay region there are numerous Holocene sites containing evidence of marine food resources. Surface scatters frequently contain crab claws and mollusc shell, including oyster, baler and turban species. Also present are mudwhelks (*Terebralia spp.*) which are normally associated with mangrove environments. Mangroves were apparently more prevalent in the past, especially in the vicinity of Peron Peninsular. Dugong and turtle remains have also been found in association with Aboriginal activity on the east side of this promontory, and a stone structure thought to be a fish-trap is

¹⁹ Dortch, J. "Pleistocene radiocarbon dates for hearths at Tunnel Cave, southwestern Australia," *Australian Archaeology*, 38, (1994), pp.45-46.

²⁰ Smith, M. *op. cit.*. (A request was made to view the seaweed, but it has been lost.)

²¹ Freedman, L. and Lofgren, M. "Human skeletal remains from Cheetup, Western Australia," *Records of Western Australian Museum*, 10(3), (1983), pp. 235-242.

located near Denham.²²

The search for Zuytdorp wreck survivors has stimulated some archaeological examination of the region between Shark Bay and Kalbarri. An extensive Aboriginal site at Wale Well, 50 km north of the wreck site is strewn with marine shells.²³ Some of the midden material in the same area has produced a date of about 4,600BP.²⁴

Very little early ethnographic information concerning the various Aboriginal peoples who ranged between Shark Bay and Greenough has been identified. *Willigulli* rockshelter, close to the mouth of the Bowes River contains a gallery of Aboriginal paintings and hand-stencils. Such rock art is rare in the southwest, and there is none linked to the Pleistocene. Perhaps significantly, neither are there any representations of aquatic species, as is commonly the case with rock art galleries near the coast in northern Australia.²⁵ There seems little doubt that answers about the activities of people who once ranged in this vicinity will come from future archaeological work.

Scattered remains of shellfish have been noted on the surface near the mouth of the Murchison, Bowes, and Moore Rivers.²⁶ In the Geraldton region some small prehistoric shell middens exist. At Flat Rocks, near Greenough, exploitation of the clam *Andara erebricostata* has occurred. The present southward range of this species is Shark Bay, 400 km to the north, which is indicative that significant environmental changes have occurred since these molluscs were collected.²⁷

At a reputed Aboriginal camp at Sandy Point, slightly north of Jurien Bay, wrass (*Labridae spp.*) and leatherjacket (*Monacanthys chinensis*) fish remains have been identified in association with burnt mollusc shell. Daisy Bates identified coastal dwellers

²² Bowdler, S. "Before Dirk Hartog: Prehistoric archaeological research in Shark Bay, Western Australia," *Australian Archaeology*, 30, (1990), pp. 46-57.

²³ Bowdler, S. "In Search of the Zuytdorp survivors: Report on an archaeological reconnaissance of a site in the Shark Bay area, 1990," in appendices, *Select Committee on Ancient Shipwrecks*, (Western Australian Legislative Assembly, 17/8/1994).

²⁴ Morse, K. "An archaeological survey of midden sites near the Zuytdorp wreck, Western Australia," *Bulletin of the Australian Institute for Maritime Archaeology*, 12, (1988), pp.37-40.

²⁵ These rockshelters were excavated in 1993 by Dr Madge Schwede. Two dates of 460BP and 1,190BP have been announced. (University of Western Australia Centre for Archaeology seminar 21/10/1994). A full analysis and publication of excavation data relating to these sites is in preparation by Dr Schwede.

²⁶ Hallam, S.J. "Changing landscapes and societies: 15000 to 6000 years ago," in Mulvaney, and White, *op. cit.*, p.64.

²⁷ Dortch, C.E., Kendrick, W. & Morse, K. "Aboriginal mollusc exploitation in southwestern Australia?" *Archaeology in Oceania*, 19, 3, (1984), p.94.

in this region as *wattarn borungur*, a people whom had ocean fish species as totems.²⁸

Southward, limpet shells at Moore River found in context with Bryozoan chert artifacts produced a C₁₄ date of 5,090BP. Slightly further south amongst sand dunes and eroded beach ridges at Lancelin, fishbones and marine shell have been identified in association with surface scatters of stone artifacts.²⁹

On the more humid Swan Coastal Plain near Perth at least 563 Aboriginal archaeological sites have been examined. These are largely represented by surface scatters of stone artifacts, with the majority being located less than 350 metres from a fresh-water source, namely swamps, lakes and associated coastal wetlands and rivers.³⁰ Many other sites will have been obliterated as a consequence of urbanisation. According to Dortch *et. al.*, those which may have particularly revealed evidence of Aboriginal estuarine fishing activity have been lost because European fishermen subsequently chose to use the same favourable locations.³¹

There is evidence that once favoured quarry locations now lie beneath the ocean because of the sudden cessation of fossiliferous Bryozoan chert artifacts in the Swan Coastal Plain archaeological record.³² Excavations in the vicinity of the previously mentioned 38,000 BP Upper Swan site have shown that about five percent of recovered artifacts were manufactured from this stone, with intensive usage continuing into the Holocene, and ceasing about 4,600 BP.³³ A similar eustatic event involving this type of stone also occurred on the south coast near Esperance, and on the islands of the Recherche Archipelago.³⁴

Between Cape Naturaliste and Cape Leeuwin several stratified mid-Holocene sites containing stone artifacts and evidence of mollusc exploitation have been identified. Transported whelk shells, found in association with artifacts at Calgardup Brook, south

²⁸ Bates, (1985), *op. cit.*, p.201.

²⁹ Dortch *et. al.*, (1984), *op.cit.*, p.87.

³⁰ Strawbridge, *op. cit.*

³¹ Dortch *et. al.*, (1984), *op.cit.*

³² Glover, J.E. "Aboriginal chert artifacts probably from quarries on the continental shelf, Western Australia," *Search*, 10, (1975), pp.118-119.

Pearce, R. "Relationship of chert artefacts to rises in Holocene sea levels," *Search*, 8, (1977), pp. 375-377; Hallam, (1975), *op. cit.*, pp.103-104.

Dortch *et al.*, (1984), *op. cit.*

³³ Pearce and Barbetti, *op. cit.*

³⁴ Smith, M. (1993), *op. cit.*, p.336.

of Margaret River have yielded a radiometric date of about 4,310BP.³⁵

Extending eastwards from Hardy Inlet near Cape Leeuwin there are numerous interdunal swamps and lakes. As mentioned in Chapter Two, the region receives the highest rainfall in the southwest.³⁶ These wetlands appear to have been favoured by Aborigines in the past. Lake Jasper, located approximately 50 km south-east of Cape Leeuwin and 5 km inland from the present coastline has the distinction of being the first underwater Aboriginal occupation site in the Australia to successfully be archaeologically examined. C₁₄ dates on submerged tree stumps indicate quantities of stone artifacts on the 10 m. deep lake-bed were in place when the depression was flooded about 4,000 years ago.³⁷ Wilson's Inlet, adjacent to the town of Denmark has produced the most significant archaeological record of Aboriginal fishing activity along the south coast. Excavations at Katelysia rockshelter, located beneath an easterly facing limestone cliff, adjacent to the inlet mouth and bar have produced a substantial quantity of fish remains, including large snapper, King George whiting, herring, black bream, yellow eyed mullet, tarwhine, mulloway, sea mullet, sand whiting and flathead. There has also been a small quantity of burnt mollusc shell (*Katelysia spp.*) for which the site is named. Maximum age of this material is about 2,000 BP and so relates approximately to the present sea level.³⁸ Remains of stone fish traps exist near the western and eastern extremities of the estuary, but their antiquity remains undetermined.

In the 1840s it was reported that Aborigines from various parts of the southern region congregated seasonally at Wilson's Inlet in winter to exploit the abundant numbers of sea mullet (*Mugil cephalus*),³⁹ but it is not recorded if the stone arrangements were utilised at these events. Extensive stone fishtraps also exist at Oyster Harbour near King George Sound and other places. The recent identification of a putative stone fishtrap, found in association with mid-Holocene dunal depositions at Lake Richmond near Rockingham, and previously mentioned in Chapter Two, raises speculation that the south coast estuarine arrangements may be of a similar antiquity. This is further discussed under technology in Chapter Five.

³⁵ Dortch, (1979), *op. cit.* p.362.

Dortch *et al.*, (1984), *op. cit.*, p.88.

³⁶ *Western Australian Yearbook*, 25, (1988), p.37.

³⁷ Dortch, C.E. and Godfrey, I.M. "Aboriginal sites in a submerged landscape at Lake Jasper, southwestern Australia," *Australian Archaeology*, 31, (1990), pp.28-33.

³⁸ I am grateful to the site archaeologist Mr. Charles Dortch for permission to mention this information. (Personal communication, 12 Oct. 1994.)

³⁹ Neill, in Eyre, *op. cit.*, vol.1, pp.419-427.

The archaeological record in the Esperance region is minimal in comparison to those regions further west. This appears to be due to its long-term, semi-arid marginality, and resultant scarcer and less predictable terrestrial food resource base. There is some evidence of maritime resource exploitation in the form of crustacea shell, fishbones, sea-bird bones and charred shell of molluscs, the latter being transported some distance from their source, but these for the main appear to be late-Holocene.⁴⁰

4.3 Dates and interpretations

Because of the dearth of some types of archaeological evidence in the southwest, interpretations are always prone to revision as new evidence becomes available. As such very little of what is known about prehistoric maritime resource exploitation can be stated as a categorical absolute. There is also an element of ambiguity in all archaeological dating methods, the scientific complexity of which is well beyond the scope of this dissertation. Suffice to say there is always a margin of error allowed for, and in the case of C₁₄ this widens the older the sample is under test. Neither is there always agreement between disciplines over when events took place. As an example the archaeological reckoning that Bryozoa chert ceases in the archaeological record at about 4,600 BP⁴¹ is contradicted by geological evidence which suggests the present ocean level was established in the vicinity of 6,000BP.⁴² Usage of the term mid-Holocene safely accommodates both. Core samples from at least three offshore drilling sites have produced Bryozoa chert of a chemically similar type to the old artifacts. Using the evidence of increased numbers of non-chert artifacts since the submersion it has been estimated that the Aboriginal population along the present Swan Coastal plain also increased by as much as ten times after inundation. It has also been suggested by Hallam that the flooding could probably have been measured horizontally in meters per day and that territorial disruption would have occurred on a major scale, possibly within the span of a single generation.⁴³ In the light of such rapid environmental change it has been presumed people living in the region would have had to quickly revise their survival strategies, both in exploitation of available species, and in their socio-political

⁴⁰ Smith, M. (1993), *op. cit.*, p.345.

⁴¹ Pearce and Barbetti, *op. cit.*

⁴² Collins, in John, *op. cit.*, pp.9–20.

⁴³ Hallam, S.J. "Aboriginal resource usage along the Swan River," in John, (1987), *op. cit.*, p.62.

reconciliation with other groups.⁴⁴

On the south coast another study by Smith has also interpreted the marine transgression as being fairly rapid.⁴⁵ However in consideration of an estimate that the ocean advanced 69 km between 13,000 BP and 10,000 BP this can be equated to an average transgression of about 23 metres per year. On the eastern seaboard the ocean level is estimated to have risen by about 10-15 mm per year between about 10,000 and 6,000 years ago, with the rate of inland incursion dependent on topography.⁴⁶

Such an event would of course be catastrophic for a sedentary landholder today, but it probably was not as alarming for mobile hunter-gatherers who were in any case obliged to constantly revise substance strategies in the face of seasonal aberrations. The creation of new estuaries and lagoons, and the influence of a warming climate on marine phenomena such as the previously discussed fish-larvae transporting Leeuwin Current, may well have presented unprecedented fishing and other subsistence opportunities which formerly did not exist. This change in turn provided an economically advantageous focus well within the capacity of any Aboriginal cultural system to accommodate.

4.4 Shellfish usage

Shell middens are relatively common in many parts of Australia, and in higher latitudes as far south as Tasmania.⁴⁷ They are however not usually older than the mid-Holocene, due the marine transgression. Early ethnographic observations of 18th and 19th century Europeans recorded that southwest Aborigines generally did not eat molluscs.⁴⁸ Nevertheless many small deposits of shell material have been identified along the southwest littoral which are the result of human activity. Clearly these activities

⁴⁴ Hallam, S.J. "The first Western Australians," in Stannage, T. (Ed.). *A New History of Western Australia*, (Nedlands: University of Western Australia Press, 1981), pp.35-71.

⁴⁵ Smith, M. (1993), *op. cit.*, p.356.

⁴⁶ Thom, B.G. "Coastal sand deposition in southeast Australia during the Holocene," in *Landform Evolution in Australia*, Davies, J.L. & Williams, M.A.J. (Eds.). (Canberra: Australian National University Press, 1978), p.201.

⁴⁷ Jones, R. "Why did the Tasmanians stop eating fish?" in Gould, R.A. *Explorations in Ethnoarchaeology*, (Santa Fe: University of New Mexico Press, 1978), pp.11-47.

⁴⁸ For example: Vancouver *op. cit.*, vol. 1, pp.354-355; Grey, *op. cit.*, vol.2, pp.84-86, 288, 290; Moore, *op. cit.*, pp.51,82; Nind, *op. cit.*, p.33.

were not on the scale that has occurred in northern Australia, for example at Cape York,⁴⁹ Arnhem Land,⁵⁰ or in the Kimberley,⁵¹ where deposits several metres thick are to be found. Neither are all shell deposits necessarily of human origin. Some have been created by high energy wave-action, or sea-birds dropping shells onto rocks in order to expose the contents.⁵²

The lack of substantial midden sites in the southwest undoubtedly has some cultural connotations, and possible climate influenced reasons which triggered a shellfish aversion were discussed in Chapter Two. Another reason for their absence may be that the chance of long-term preservation of shell material generally becomes poorer towards the higher rainfall areas in the south.⁵³ For example one type of bivalve, the “sunset shell” (*Sanguinolaria [Soletellina] biradiata*) which can measure about 50mm across is presently abundant beneath the sand-banks of the Swan-Canning estuary, but has a shell fragile enough for a child to crush between the thumb and forefinger. This thinness apparently results from highly accelerated growth after it enters the estuary in a larval stage following cessation of the winter fresh-water flush. If this species was exploited by humans in the past it could well be that such fragility was not conducive to long-term survival in the order of millennium for weather-exposed situations.⁵⁴

It has been recorded at King George Sound that Aborigines commenced eating marine molluscs soon after settlers had set an example.⁵⁵ This suggests that the original aversion may have been more based on prudent health concerns rather than deeply entrenched religious beliefs. Southwest Aborigines readily used some shell, such as

⁴⁹ See Moore, D. R. *Islanders and Aborigines at Cape York: An ethnographic reconstruction based on the 1848-1850 'Rattlesnake' journals...*, (Canberra: Australian Institute of Aboriginal Studies, 1979), p.39; Mulvaney, D.J. “The end of the beginning: 6000 years ago to 1788,” in Mulvaney and White, *op.cit.*, pp. 75-114.

⁵⁰ Kirk, *op. cit.*, pp.64-66.

⁵¹ Dampier, William, *A New Voyage Around the World*, (1697), (London: Adam and Charles Black, 1937 facsimile ed.), p.313; O'Connor, S. “Saltwater people of the southwest Kimberley coast,” in Burrenhult, *op. cit.*, pp.226-227.

⁵² Teichert, C. and Serventy, D.L. “Deposits of shells transported by birds,” *American Journal of Science*, 245, (1947), pp.322-328; Horton, D. “Preliminary note on the analysis of Australian coastal middens,” *Australian Institute of Aboriginal Studies Newsletter*, 10, (1978), pp. 30-33.

⁵³ Dortch, *et. al.*, (1984), *op. cit.*, p.84.

⁵⁴ Weaver, *op. cit.*, p.33.

⁵⁵ Nind, *op. cit.*, p.33.

from mussels, for cutting tools.⁵⁶ There are several mussel species which are relatively common in the southwest and the likely candidates which Europeans noticed amongst the paraphernalia carried by Aboriginal women are the larger species, for example *Mytilus edulus*, *Modiolus philippinarum*, and *Botula vagina*.⁵⁷ When snapped the thin shell produces a sharp edge and can be used for cutting fibrous material, or rudimentary shaving. Much larger baler shells (*Melo spp.*) provided an item of exchange and traces of them often appear in excavations throughout Australia including the southwest.⁵⁸ In other parts of Australia baler shell is thought to have had significance in sorcery and sacred ritual.⁵⁹ They are found commonly enough to conclude that they might have also had a utilitarian function in some regions. For example on Groote Eylandt in north Australia they were used as water containers.⁶⁰

A drawing from the 1801 French visit to Geographe Bay shows discarded abalone shells and fish remains in front of an Aboriginal shelter, alongside the Vasse Estuary.⁶¹ It is reported that coastal people in the southwest used a curved section of abalone shell as a toggle fastener for their *bookas*, or skin cloaks.⁶² The archaeological record has yet to produce substantial evidence of a shell tool assemblage even though the historic record confirms shell tools were in use.

As in Tasmania there is no evidence of fishhook usage by Aborigines anywhere in the southwest prior to European arrival.⁶³ Carved or ground hooks of shell were known to Aboriginal people on the eastern seaboard, but the technology appears to be

⁵⁶ King, P.P. *Narrative of a Survey of the Intertropical and Western Coast of Australia. Performed Between the Years 1818 and 1822*, (London: Murray, 1827), p.138; Grey, *op. cit.*, p.266; Roth, W.E. "Notes of savage life in the early days of West Australian settlement," *Proceedings of the Royal Society of Queensland*, 17, (1903), pp. 45-69, (68); Dortch *et al.*, (1984), *op. cit.*

⁵⁷ For a more detailed description of southwest mussels see, Wells, F.E. and Bryce, C. W. *Seashells of Western Australia*, (Perth: Western Australian Museum, 1985), pp. 150-153.

⁵⁸ Mulvaney, (1976), *op. cit.*, pp.72-93).

⁵⁹ Flood, J. *Archaeology of the Dreamtime*, (Sydney: Collins, 1983), p.236.

⁶⁰ Rose, F. *The Traditional Mode of Production of the Australian Aborigines*, (North Ryde: Angus and Robertson, 1878), p.xii.

⁶¹ Jones, R. "Images of a natural man," in Boonemains, J. Forsyth, E. and Smith, B. (Eds.), *Baudin in Australian waters: The artwork of the French voyage of discovery to the southern lands 1800-1804*, (Melbourne: Oxford University Press, 1988), pp. 42, 86.

⁶² Hassell, E. and Davidson, D.S. "Notes on the Ethnology of the Wheelman Tribe of Southwestern Australia," *Anthropos*, 16, (1936), pp. 679-711, (695).

⁶³ Travers, R. *The Tasmanians, the Story of a Doomed Race*, (Sydney: Cassell Australia, 1968); Flood, 1983, *op. cit.*

comparatively recent, being adopted perhaps less than 700 years ago.⁶⁴

Nineteenth century European observers recorded that southwest Aborigines had no qualms about using crushed molluscs as bait to lure fish within spearing range.⁶⁵ Lithic evidence of this activity exists at various locations along the south coast in the form of mortar-like depressions in the granite boulders near the water's edge. These apparently were used to grind molluscs into burley which was then thrown into the water to attract fish within spearing range. The depressions are located in safe places which are never washed by "king waves." They are also sheltered from the prevailing winds. Under these conditions the adjacent water is generally clear and not more than three metres deep. A safe place where a person might stand in the water is often nearby. Grinding depressions east of Denmark are smooth, whereas many of those to the west have conspicuous pitting caused by weathering.⁶⁶ Their age has not been determined, but they must have been created at some time near the establishment of the present sea level. The weathering distinctions may indicate that fishers formerly favoured one coastal section over the other, or it may simply be that the greater rainfall west of Denmark has accelerated erosive chemical action.

Large fish would undoubtedly have been desirable to these hunter/fishers, but the most frequent target may have been smaller fish such as banded sweep (*Scorpiis geogianus*) which are common in such places and readily rise to bait. A brief description of this style of fishing is provided by Captain Barker, the Commandant at King George Sound, where he observed four men fishing at nearby Point Possession in April 1830: "These were spearing small fish from the rocks. They first attracted them by bruising shell fish & throwing it into the water."⁶⁷ This form of fishing was still being practised in the 1840s. J. Neill wrote of Aborigines fishing for sweep:

It is a gross feeder, and poor eating. Very common on rocky shores. Being a bold voracious fish, it is easily speared or taken with a hook. The Aborigines generally select a rock which juts out into the sea, and sitting on their hams, beat crabs into fragments with a little stone, and throw them into the sea to attract this fish. The instant a fish comes to feed on the bait, the native, whose spear is ready, suddenly darts it, and rarely fails in bringing up the fish on its

⁶⁴ Massola, Aldo (1956). "Australian fish hooks and their distribution," *Memoirs, National Museum of Victoria*, 22;1, (1956), pp.1-17; Turbit, P. *Aborigines of the Sydney district before 1788*, (Kenthurst: Kangaroo Press, 1989.); Rose, *op. cit.*

⁶⁵ Barker, in Mulvaney and Green, *op. cit.*; Nind, 1831, *op. cit.* p.33.

⁶⁶ Benson-Lidholm, *op. cit.*

⁶⁷ Barker, in Mulvaney and Green, *op.cit.*, p.279.

barbed point.⁶⁸

Neill's opinion that the species was poor eating reflects the differing cultural attitudes as to what was desirable. Another species which was, and still is repugnant to Europeans was the much larger buffalo bream, (*Kyphosus sydneyanus*). They too were appreciated by southwest Aboriginal fishers, but do not appear in significant numbers in the archaeological record.⁶⁹

Just as Aborigines selected sheltered fishing locations, so too were most of the old habitation sites along the south coast selected to provide maximum protection from the southwest winter weather pattern.⁷⁰ The previously mentioned Katelysia rockshelter at the western end of Wilson's Inlet is such a place. As well as its fish bones it has produced a small quantity of burnt mollusc shell (*Katelysia spp.*) which suggests these shells have had an occasional role in the Aboriginal diet as long as about 2,000 years ago.⁷¹ There are at least three species of *Katelysia* found along the southern coast as well as several other similar sized bivalves. For example *Gomphina undulosa*, which is a 3 cm cockle readily recovered from beneath the sands of several southern estuaries by feeling for them with bare feet. A 1986 collecting experiment by myself in Wilson's Inlet was quickly curtailed when it was discovered that cone shells were living amongst the cockles and being accidentally picked up. Cone shells are roving predators of worms, other molluscs and fish. All species have a venom apparatus equipped with harpoon-like hollow barbed shafts which are inserted into prey through their extendible proboscis. In the tropical waters of northern Australia *Conus geographus* has caused numerous human fatalities. Many other species have caused severe injuries, with those which prey on small fish being the most dangerous. As with dinoflagellates, toxicity appears to vary within the same species, and presumably is dependent to a degree on the prevailing habitat or environmental conditions. The dozen or so *Conus* species present in cooler southern waters are reputed to be not as toxic as those in the north, but nevertheless should be regarded with caution.⁷²

Warmer conditions which have encouraged dinoflagellate blooms in the southwest

⁶⁸ Neill, *op. cit.*

⁶⁹ *Ibid.*

⁷⁰ Bird, 1985, *op. cit.*, Smith, M.(1993), *op. cit.*

⁷¹ I am grateful to the site archaeologist Mr. Charles Dortch for this information. (Personal communication, 26 May 1993).

⁷² Wilson, B.R. and Gillet, K. *Australian Shells, Illustrating and Describing 600 species of Marine Gastropods from Australian waters*, (Sydney: Reed, 1971), pp.140-143.

in the past may have also supported more deadly cone species, but this remains to be determined. Other molluscs which are presently found in northern waters are known to have temporarily extended their range southward during the mid-Holocene.⁷³ It is recognised that cone shells do not appear to have prevented mollusc exploitation by Aborigines in northern Australian waters. Whatever triggered the aversion to eating molluscs in the southwest, the long term maintenance of the practice might have been because the overall richness of fish resources in southwest estuaries where benthic fauna thrived precluded the necessity to exploit molluscs intensively as food.

Because fish generally have a much higher caloric return in comparison to molluscs this may have been a factor influencing the choice. For example in Hawaii, Goto has compared the dietary value of sea mullet (*M. cephalus*) and marine molluscs, concluding that the latter are an inefficient source of protein. The total daily nutritional requirement for an adult can be satisfied with 2.19 kg of sea mullet, whereas it is necessary to consume 4.16 kg of molluscs to achieve the same benefit.⁷⁴

Cultural material excavated from close by the lower reaches of the Kalgan River, near Oyster Harbour has produced a date of 18,850 BP. As a result of this and other excavations nearby it has been proposed that Aboriginal occupation in the vicinity of King George Sound has been continuous since that time.⁷⁵

The archaeological evidence for Aboriginal shellfish exploitation in this area is scant, although rich beds of oysters existed and were vigorously exploited by waves of Europeans following Vancouver's discovery of them in 1791.⁷⁶ Even so these beds can only have existed since the mid-Holocene marine transgression. Whatever conspicuous shell middens might have existed could well have been destroyed soon after the establishment of a military garrison in 1826. Major Locker calculated that his men had burned about 100 bushels of oyster shell to make building lime-cement in their first

⁷³ Kendrick, G.W. and Morse, K. "An Aboriginal shell midden deposit from the Warroora coast, north western Australia," *Australian Archaeology*, 14, (1982), pp.6-12; Kendrick, G.W. "Fossils from the Hershell Limestone in the collection of the Western Australian Museum," attached to Playford, P.E. and Leech, R.E. "Geology and hydrology of Rottnest Island," *Geological Survey of Western Australia: Report 6*. (1977); Dortch *et al.*, (1984), *op. cit.*

⁷⁴ Goto, *op. cit.*

⁷⁵ Ferguson, W.C. (1987), "Mokare's domain," in Mulvaney and White, *op. cit.*, p.144.

⁷⁶ Vancouver G. *A Voyage of Discovery to the North Pacific Ocean and Round the World: 1791-1795*, London: Hakluyt Society, 1984), vol. 1. p.338.

month.⁷⁷ (One bushel equals 36.4 litres) Shell deposits elsewhere were also converted into cement. For example at Rottnest Island Aboriginal prisoners were used for the task in 1838.⁷⁸

A few archaeological sites between Israelite Bay and Esperance have produced evidence of mollusc exploitation in the form of small middens. The chronology of these sites is confused. Only one, at Sandy Blight Creek is accurately dated, and is less than 100 years old. Another at Rossiter Bay is mixed with cultural material of European origin, which suggests post-settlement age. The shell types found in these sites are represented by at least seven species, *Patellalaticostata* (limpet), *Patelloidanigrosulcata* (limpet), *Turbo torquata* (turban shell), *Haliotis laevigata* (abalone), *Nerita atrimentosa* (Nerite), and *Thais orbita* (whelk). Gastropods are the most abundantly available shell type along the coast, but cannot be said to have been a major Aboriginal food resource.⁷⁹ The localities mentioned are shown below in Fig. 4.1.

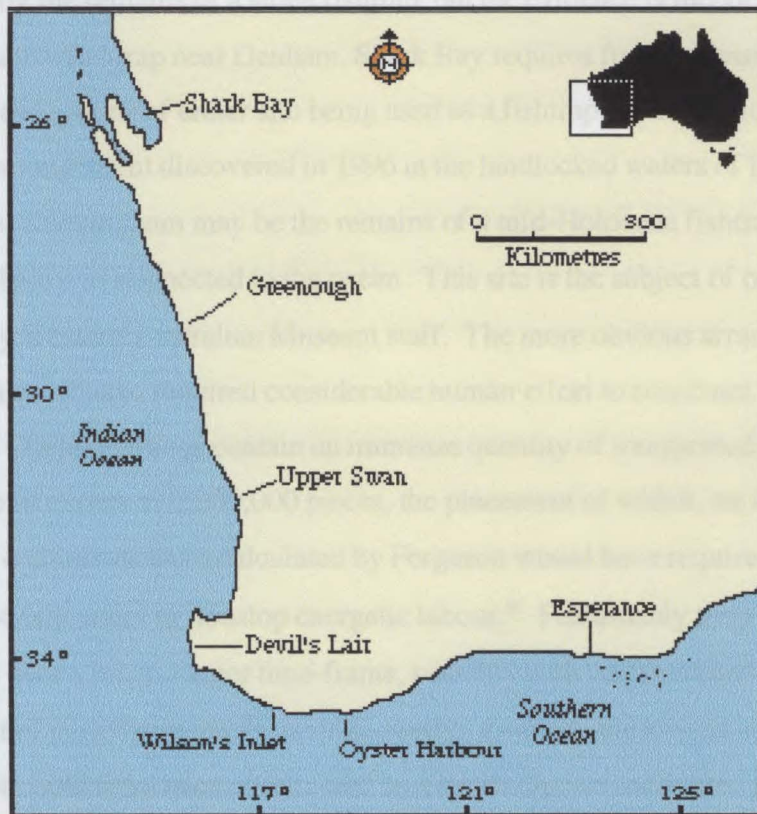


Fig. 4.1 Sketch map of archaeological localities mentioned

⁷⁷ Historical Records of Australia (HRA), VI., "Journal of E. Lockyer...", pp.499, 493, 496, 499.

⁷⁸ CSR., vol.62, 28/12/1838, p.298.

⁷⁹ Smith, M. (1993), *op. cit.*, p.261-263.

4.5 Fishtraps and fishweirs

In the sheltered estuaries along the south coast there are the scattered remnants of more than 40 stone fishtraps. Aboriginal usage of all these tidally reliant structures appears to have ceased prior to European settlement. The two known reports of their being used since settlement are vague. Barker assumed Aborigines had been using one at Oyster Harbour in 1830,⁸⁰ and a twentieth century oral-history interviewee of Benson-Lidholm said he had met early fishermen in the region who had witnessed their use.⁸¹ The fish traps of the south coast have been archaeologically surveyed, but this has not resulted in any substantive hypothesis about their origins or usage.⁸²

No firm evidence of stone fishtrap arrangements is known in any of the existing sheltered waters or estuaries along the west coast between Cape Naturaliste and Shark Bay. Scattered rubble on a sand bank in the Swan River near Como has been suggested as possibly being the remains of a stone fishtrap, but the evidence is inconclusive.⁸³ Similarly a putative fishtrap near Denham, Shark Bay requires further consideration.⁸⁴ No historical descriptions of either site being used as a fishtrap have been identified.

A stone arrangement discovered in 1996 in the landlocked waters of Lake Richmond, near Rockingham may be the remains of a mid-Holocene fishtrap, set out at a time when the lake was connected to the ocean. This site is the subject of ongoing investigation by Western Australian Museum staff. The more obvious arrangements along the south coast have required considerable human effort to construct. Those at Lower King in Oyster Harbour contain an immense quantity of transported stone estimated to be in excess of 2,000,000 pieces, the placement of which, on a hypothetically continuous basis calculated by Ferguson would have required an approximate 14,000 hours of nonstop energetic labour.⁸⁵ Presumably they would have been produced over a much longer time-frame, possibly with additions and adjustments being the result of periodic inspiration, or necessity. Even so, the largest structures at Oyster Harbour could have been constructed by a relatively few motivated people within the span of a generation. This effort has certainly taken place since about 5,000 to 6,000

⁸⁰ Barker, in Mulvaney and Green, *op. cit.*, p.347

⁸¹ Benson-Lidholm, *op. cit.*, p.29.

⁸² Dix, W.C. and Meagher, S.J. "Fish traps in the south-west of Western Australia," *Records of the Western Australian Museum*, 4. (1976), pp. 171-188.

⁸³ Strawbridge, *op. cit.*

⁸⁴ See Bowdler, 1990, *op. cit.*, ("Before Dirk Hartog..."), p.50.

⁸⁵ Ferguson, (1985), *op. cit.*, p.167

years ago when ocean levels were approaching their present level, but more precise timing is yet to be established.

The archaeological record does not yet suggest whether stone fishweirs reflected an abundant fishery resource or an impoverished one, the latter seeming the most unlikely of the two because it would seem illogical to stimulate such effort from peoples presumably with an adequacy of terrestrial choices. However in the light of the example provided by the fishweir at Barragup the presence of stone fishweirs may not have been based purely solely upon subsistence strategies. Certainly when the target resource was abundant, such developments had the potential to provide a very high status and economic advantage to those who maintained and controlled them. It may be that status reinforcement was a factor which stimulated the building and operation of the stone fishtraps. As to how this may have related to the state of terrestrial resources at the time is moving beyond the scope of this dissertation, however it is probably fair to say diversity does not necessarily equate to abundance. Possible reasons for the total cessation of stone fishtrap usage are further discussed within Chapter Five.

Timber and stick fishweirs were located upstream in several southwest rivers and operated in the post-settlement period.⁸⁶ One at Barragup on the Murray River was culturally important for the groups inhabiting the Swan Coastal Plain, and it will be recalled complex aspects of the mythology and associated activities involving this structure were discussed in Chapter Three.⁸⁷ Remains of an apparently similar structure have been reported in a creek near Point d'Entrecasteaux on the south coast, but whether or not it is of Aboriginal origin is uncertain.⁸⁸ Other temporary structures have been reported in the historical literature at the mouths of southwest rivers.⁸⁹ These were quickly constructed from brushwood at high water, but archaeological evidence of these devices appears not to have survived. Recent Aboriginal oral tradition has it that a fishtrap also existed in association with wetlands in the upper reaches of the Swan River

⁸⁶ Bussell, J.C. "Mr Bussell's Journal of an Expedition to the River Vasse, from the Blackwood," in Cross, J. (Ed.), *Journals of Several Expeditions...*, (Nedlands: Royal Historical Society of Western Australia (RHSWA), 1980 facsimile), pp.186-203. (192,197).

Shenton, W. and Wells, R. "Excursion to the Collie and Brunswick Rivers...", *PGWAJ.*, 5 No. 260. 1837, pp. 1029-1030.

Bunbury, *op. cit.*, p.87.

Ward, *op. cit.*, p.30.

⁸⁷ Gibbs, (1987), *op. cit.*; Weaver, *op. cit.* pp.20-25.

⁸⁸ Dortch and Gardner, (1976), *op. cit.*

⁸⁹ Philips, J. "The Aboriginal natives of King George's Sound," *Swan River News*, 1/4/1845; Bunbury, *op. cit.*

near Guildford, but no historical or archaeological material to corroborate this claim has been identified. Timber fishtrap technology, and other fish catching methods used by Aborigines will be discussed in greater detail in Chapter Five.

4.6 Larger sea animals

Some dugong and turtle remains appear in the Shark Bay archaeological record at about 1,000BP. It has been suggested that this presence may have represented the arrival of marine craft, either rafts of canoes. Such craft were known further north but archaeological evidence of their use at Shark Bay or further south is yet to be discovered.⁹⁰

Conspicuously absent from the southwest archaeological record are whales and seals, and yet the nineteenth century historical record contains many references to the proclivity of southwest Aborigines to include these animals in their diet when the opportunity arose.⁹¹ Certainly whales and adult seals would have been too large to transport to so-called occupation sites, instead being butchered, cooked and eaten on the spot. Nevertheless it seems odd that the occasional tooth or bone does not appear in the southwest archaeological record. It raises the question of whether these animals been present along this coast in only comparatively recent times.

4.7 Coastal mythology and archaeological sites

Prehistory studies in the southwest tend to draw heavily on historical ethnography when it is available to corroborate findings, but attention to the small body of mythology contained in the record has been minimal.

Oral Aboriginal accounts of a rising sea level in the southwest region were known to settlers occupying the Swan coastal plain in the 1830s. George Fletcher Moore reported the belief that a long time previously a sudden inrush of water coinciding with fire and seismic activity had occurred, which he cautiously attributed to a volcanic event.⁹² In the early 1900s Daisy Bates reported this belief was still widespread amongst Aborigines in the Perth, Fremantle and Rockingham regions.⁹³ There is no evidence of recent volcanic activity, but core samples from a swamp on Rottne Island show an

⁹⁰ Bowdler, (1990), *op. cit.*, (“Before Dirk Hartog...”), p.54.

⁹¹ For example: King, *op. cit.*, vol.2, pp.126-128; Nind, *op. cit.*, p.34; Grey, *op. cit.*, vol.2, pp.276-278; Moore, *op. cit.* p.53.

⁹² Moore, *op. cit.*, (“Descriptive vocabulary...”), p.8.

⁹³ Bates, D. Notebook 23B p.162, (ND), BL.1212B

abundance of charcoal was deposited in the mid-Holocene, between about 5,500 and 6,800 years ago.⁹⁴ The cause of this has not been determined but the propensity of Australian Aborigines to fire the undergrowth is well known.⁹⁵ The period loosely correlates with previously mentioned estimated population increases and marked climatic changes in the southwest. However the archaeological evidence for corresponding prehistoric activity on Rottneest and Garden Islands is scant, with only a few stone artifacts being identified, and these are associated with the late-Pleistocene. There is no prehistoric evidence that Aborigines used the islands after their separation from the mainland during the mid-Holocene.⁹⁶

Another Aboriginal account of rising ocean waters was related to Captain Collet Barker, the Commandant at King George Sound in 1830:

19 June: Mokarè related to me today that a very very long time ago, the sea came in & covered all the country for a long way. Porongorup was under water. Mt. Lindsay & Mt. Many Peak remained small specks, little islands. Mt. Hallowell was completely covered. The sea went back with a North wind. No black fellow had been drowned, all having run in.⁹⁷

Southwest Aborigines routinely used winds as directional references, and presumably the north wind, or as it was known, *youler*, was being used in this context. Ethel Hassell, a settler in the same region in the 1870s also reported a catastrophic flood account. In the version related to her rising waters forced people to take refuge on a mountain but many were drowned. Prior to the event people had been physically larger and stronger but the flood brought on a shortage of food. Animals became scarce and edible roots rotted in the ground because of the higher moisture level. People subsequently became smaller and thinner and this was accompanied by a higher child mortality, something which particularly affected females.

A man who survived the flood, but was deprived of wives, became the supernatural being *Coombar Jannock*, who made the forest his domain and was ever on the lookout for unwary males to kill in a jealous act of revenge.⁹⁸ It would be convenient to accept aspects of such accounts as having core origins in fact, because it might help in

⁹⁴ Backhouse, J. *A Narrative of a Visit to the Australian Colonies*, (London: Adams & Co. 1843).

⁹⁵ See: Jones, R. "Fire-stick farming", *Australian Natural History*, 16,7, (1969), pp.224-228. Hallam, (1975), *op. cit.*; Flood, *op. cit.*, p.214.

⁹⁶ Dortch, (1991), *op. cit.*, pp. 38-43; Dortch and Hesp, *op. cit.*

⁹⁷ Barker, in Mulvaney and Green, *op. cit.*, p.308; Le Souef, *op. cit.*, p.41.

⁹⁸ Hassell and Davidson, *op. cit.*, p.687; Hassell, E. *My dusky friends*, (Perth: C.W. Hassell, 1975), pp.187-189.

part to corroborate the apparent population reduction which has been suggested by Ferguson for the southwest.⁹⁹ This writer also noted the conspicuous lack of historical observations of Aboriginal activity in the heavily timbered regions of the south west and cited difficulty of traversing, the generally lesser availability of game and the thickness of undergrowth restricting hunting strategies.¹⁰⁰ Furthermore the southwest timber forests can be quite dangerous places, to the extent almost any modern bushwalker would be able to relate stories of enormous dead branches being seen or heard crashing to the ground without warning. It is not difficult to imagine such events being translated into the realm of the supernatural.

Temporal variation in group stature has been observed amongst desert Aborigines at Yuendumu in central Australia and is thought most likely due to dietary shifts. For example children who survived a period of food deprivation during the great drought of 1926-9 had impaired growth, while those living in the shadow of settlements were not so adversely effected. Malnutrition can also offset menarche and affect fecundity, but to what extent this occurred at Yuendumu is unclear.¹⁰¹

There may be another as yet undetermined reason for southwest depopulation. It was claimed in 1852 that coastal Aborigines in the Geraldton-Greenough region had noticeably more children than their counterparts further south.¹⁰² The content of the *Coombar Jannock* myth particularly contains elements which could reasonably be expected to occur in the aftermath of a catastrophic environmental event.

Logically there must be a germ of truth in such accounts, but it is arguable how long such stories can survive without embellishment. For example, could that other celebrated mid-Holocene flood, supposedly experienced by Noah have partially coloured Hassell's interpretation? It is difficult not to ignore the Biblical connotation when she wrote some Aborigines on the south coast "were of a decided Jewish type of countenance."¹⁰³ That settlers wondered if Australian Aborigines represented one of the Lost Tribes of Israel is well enough known, and other comparisons between biblical stories and southwest observations occurred. For example John Wollaston wrote that pelicans on southwest estuaries always reminded him of the "Miraculous Draft of

⁹⁹ Ferguson, (1985), *op. cit.*

¹⁰⁰ *Ibid.* p.47-8.

¹⁰¹ Brown, T. and Barrett, M. J. "Growth in central Australian Aborigines: stature," *Medical Journal of Australia*, 2, (1971), 29-33; Kirk, *op. cit.*, p.146-7.

¹⁰² *PGWAJ.* 5/3/1852.

¹⁰³ Hassell, *op. cit.*, p.12.

Fishers” cartoon by Raphael.¹⁰⁴

Neither is the account from Barker above suspicion. The book of Genesis relates that Noah’s flood also receded rapidly after a wind.¹⁰⁵ Such coincidences highlight the difficulty in determining whether recorded myths such as these can be accepted as being regionally authentic, or are they instead the result of recent intercultural syntheses by the informants and some former evangelist; or for that matter even the result of biased questioning by the interrogators. Folk legends relating to ancient floods occur in many places throughout the world, and some are believed to possibly involve eustatic events in the mid-Holocene.¹⁰⁶

Nevertheless, the potential for some correlation with the archaeological record exists within recorded mythology. For example a story relating to the creation of Oyster Harbour near Albany involves a dog scratching out the lagoon.¹⁰⁷ There is even a very large granite boulder shaped like the head of dog nearby which is now a popular tourist attraction. Assuming that the southern estuaries formed since about 6,000 years ago this myth must have developed much more recently because dingoes are not represented in the Australian archaeological record beyond about 3,500 BP.¹⁰⁸ Their arrival may relate to the Daly Line, whereby ocean levels were temporarily higher around the Australian coast, about 3,000 to 3,500 years ago.¹⁰⁹ Higher water levels may have obliged the greater use of water craft for people to the north of the continent. There is a rich legacy of Aboriginal mythology relating to dingoes, which in one case in the southwest casts back to *Nytting*; “the cold times long ago.”¹¹⁰

¹⁰⁴ Wollaston, J.R. *Wollaston’s Picton Journal (1841-1844)*, (Perth: Patterson Brokensha N.D.), p.144.

¹⁰⁵ *Genesis* 8:1

¹⁰⁶ Lamb, H.H. *op. cit.*, pp.2-3.

¹⁰⁷ Barker, in Mulvaney and Green, *op. cit.*, p.361.

¹⁰⁸ Flood, *op. cit.*, p.194.

¹⁰⁹ Twidale, R. *Geomorphology, with a Special Reference to Australia*, (Melbourne: Thomas Nelson, 1968), p.284.

¹¹⁰ See Bates, (1992), *op. cit.*, pp.177-183.

Chapter 5 Fishing strategies and technology of southwest Aborigines

5.1 Early European observations about southwest fishers

Numerous European visitations to the southwest maritime region occurred between the early seventeenth century and the commencement of settlement in 1827.¹ No commentary on Aboriginal fishing appears until January 1697 when a Dutch expedition led by Willem de Vlamingh landed at the Swan River and carried out superficial explorations. Aborigines kept themselves out of sight, but the visitors found many fresh footprints of children and adults near hastily abandoned camp sites, and indications that fishing activities occurred:

About the huts hot coals or burning wood were seen with fish lying on or near to it to be cooked, and also some fish of which someone had eaten and had left the bones, so that the people must have recently left it.²

The Dutchmen sighted many shoals of fish in the river, which at that time was more saline than the ocean. Wishing to determine the primary food source of the local inhabitants, the Dutch sailors closely examined several human faeces and concluded that despite the abandoned fish, their diet was predominantly derived from plants.³

Almost a century after Vlamingh, a British expedition led by George Vancouver visited the south coast in September 1791. At King George Sound one of the landing parties came across a recently vacated Aboriginal shelter positioned to provide maximum protection from the wind. On top was the fresh skin of a leatherjacket. These scaleless fish have a rough-textured skin which when dried can be used as an abrasive to finish wood artifacts. Other fish species can also be used in this manner. For example it has been reported that in Queensland, shark skin was routinely used to shape dog teeth into wood carving tools.⁴

Other nearby shelters at King George Sound showed no signs of recent

¹ For example: *Harmony* 1616; *Amsterdam* 1619; *Leeuwin*, 1622; *Vergulde Zeepaard* 1627; *Vergulde Draeke*, 1656; *Roebuck* 1699; *Le Gros Ventre* 1772; *Recherche & Esperence* 1791; *Asia & Alliance* 1792. Chapter Six contains a further checklist of more than 50 pre-settlement voyages.

² Witsen, N. "Noord en Oost Tartarije," (1705), (extract), in Robert, W. (Ed.), *The Explorations, 1696-1697, of Australia by Willem de Vlamingh*, (Amsterdam: Philo Press, 1972), p.218.

³ *Ibid*, p.177.

⁴ Brierly, O.W. in Moore, D.R. (Ed.), *Islanders and Aborigines at Cape York...*, (Canberra: Australian Institute of Aboriginal Studies (AIAS), 1979), p.205.

occupation.⁵ Like Vlamingh's men, the British too looked for tell-tale faeces but could only find those from dogs. The absence of people was not due to lack of food resources. Vancouver wrote of the nearby Kalgan River: "In it were an abundance of very fine fish, and on its banks were many black swans, ducks, curlews, and other wild fowl."⁶ Although no Aborigines were sighted Vancouver made some pertinent deductions about their lifestyle which have been echoed in the various European writings about subsistence strategies of southwest Aborigines ever since:

Destitute [as they seemed] of the means, and totally ignorant of every mode of embarkation, it is not likely that they place much dependence on marine productions for their subsistence; yet it was evident from the wears (sic) on the shores, and from the mouths of the brooks near the villages being stopped up, that they sometimes resort to the rivulets and to the sea for provisions. On this account, it was considered rather extraordinary, that the bones of the fishes on which they had fed were no where to be found; and this led to a supposition that those which their endeavours enabled them to procure were very small. It appeared still more extraordinary that, since they drew a certain proportion of their food from the sea, they should not have discovered so excellent a part of its produce as oysters and clams; notwithstanding that the latter show themselves on the beaches over which they must frequently walk; and that the former at low water require only wading half-leg deep on the shoals that extend from the main land to gather in a few minutes a day's subsistence. Neither did it appear that they had any knowledge of these, the limpets, nor any other shell fish found amongst the rocks; or if they had, for some reason not easily imagined, they certainly made no use of them; otherwise their shells in all human probability would have been seen near the places of their resort. Hence it may naturally be inferred, that the land principally supplies their wants, or hunger would have long since have conducted them to such excellent resources.⁷

In December the same year a French expedition under command of Bruny D'Entrecasteaux went ashore in the Esperance region. Despite diligent searching for evidence of Aboriginal fishers they too found none.⁸

⁵ Vancouver *op. cit.*, vol.1, pp.336, 351.

⁶ *Ibid.*, p.340.

⁷ *Ibid.*, pp.354-355.

⁸ Marchant, *op. cit.*, p.96.

5.2 Estuarine stone fishtrap arrangements

The remains of more than forty stone fishtrap arrangements exist on the tidal flats of several estuaries along the southern coast, with conspicuous arrays located at Oyster Harbour, Wilson's Inlet and Broke Inlet.⁹ These structures have attracted considerable interest since Vancouver's visit, but no reliable descriptions of Aborigines actually using them have been identified.

After settlement non-Aboriginal fishermen were curious about this form of Aboriginal technology but did not recognise how it should be used. During the 1930s a professional fisherman at Wilson's Inlet regularly inspected a stone arrangement over several years and only once discovered a trapped fish, a lone yelloweye mullet (*Aldrichetta forsteri*).¹⁰ A reasonable conclusion is that human intervention of some form was always required for successful catches. Unattended stone arrangements are not efficient traps. While there are no reliable historical descriptions of usage, the comments of Midshipman Menzies, a member of the 1791 Vancouver expedition provides an insight into the method:

We saw some rude fish wares which did not bespeak much ingenuity in the contrivers.

They consisted of a row of small boughs of Trees stuck close together in the sand about two or three feet & kept close at the top by cross sticks along both sides fastened together with small withes & along their bottoms some stones sand & gravel was raised up behind to prevent the fish escaping.¹¹

This suggests the stone walls by themselves are generally not high enough to prevent small fish escaping with the receding waters. Therefore an essential arrangement for minimising this was the ancillary installation of the vegetation fence on the inside of the stone perimeter. The much lower stonework and sand must have in the main served as a protective buttress against wave action, although in some places the stonework may be better described as a wall because it is three or four courses high, reaching a maximum height of about 40cm.¹² The vegetation barrier which was evident to Menzies in 1791 has long since gone, and the sand which was once manually packed or scooped over the stones has found its natural level. The general outlines of the largest structures remain visible, but numerous stones are now scattered. Stone fish traps appear to require regular

⁹ Dix and Meagher, *op. cit.*, p.1.

¹⁰ Benson-Lidholm, *op. cit.*

¹¹ Menzies, A. in, Vancouver, *op. cit.*, p.340.

¹² Dix and Meagher, *op. cit.*, p.174.

maintenance. For example at Brewarrina in New South Wales, boulders sometimes weighing more than 50 kg had to be periodically repositioned in fish traps after flooding. These arrangements were specifically intended to catch large fish swimming upstream.¹³

More similar to the southwest situation are the many stone fishtraps located along the eastern seaboard, on some of its offshore islands. Coinciding with mid-Holocene dune deposition in the vicinity of Point Plomer, New South Wales, two stone-trap arrangements nearby are thought to date to that time.¹⁴ It should not be automatically assumed that all stone fishtraps are of Aboriginal origin. Two identified at Freycinet Peninsular in eastern Tasmania are believed to have been constructed by European settlers.¹⁵

It is possible that the arrangements on the south coast were used primarily for the purpose of catching shoaling fish of a size generally too small to spear in abundance when free swimming. As described in earlier chapters, southwest estuarine waters provide ideal nursery conditions for many fish, and the prospect of consuming seasonal aggregations of species such as juvenile sea mullet could attract people from a considerable distance. Because small fish can be eaten whole when cooked it is not surprising that there is no record of them in the archaeological record.

The following generalised 1830s description of fishtrap usage by Bunbury appears to involve temporary pen-like fish fences constructed solely from vegetation. This may for example have included the woody-shafted flower stem of the “blackboy,” (*balga*) or grass tree (*Xanthorrhoea spp.*) which is reported by Bussell to have been used in this sort of application.¹⁶ The state of the tide was an essential ingredient, and such weirs needed to be opened and closed accordingly. Overall control was apparently by men, and when tides did not ebb sufficiently for fish to be trapped or stranded it became the role of women to herd them into shallows for collection. According to Bunbury,

Mullet are also caught by the Natives in immense numbers at the mouths of little salt creeks by means of weirs which are left open for the tide to rise. With the tide vast shoals of mullet, principally small fry, enter, and, the weir being suddenly stopped up, they are

¹³ Dargin, P. *Aboriginal Fisheries of the Darling-Barwon Rivers*, (Brewarrina: Brewarrina Historical Society, 1976), p.38.

¹⁴ Campbell, V. “Two fish traps located on the mid-north coast of New South Wales,” in McBryde, I. (Ed.), *Records of times past...*, (Canberra: AIAS., 1978), pp.122-134.

¹⁵ Colhoun, E.A, and Piper, A. “Stone fish traps at Cooks Corner, Freycinet Peninsular, Eastern Tasmania,” *Australian Archaeology*, 14, pp.115-118.

¹⁶ Bussell, *op. cit.*, p.197.

either caught as the water filters off with the ebb, or, more often, the women are sent in to drive the fish with their hands into corners where they are easily taken. I know nothing sweeter than these fish are in April or May when they are caught in this way and cooked, native fashion, on hot ashes, the small fry bolted whole.¹⁷

Human attendance was needed to maximise catches, otherwise fish which are trapped become highly vulnerable to gulls and other birds.¹⁸ There seems little doubt that stone fishtrap usage had ceased by the time a military garrison was established on the south coast in 1826, but as to why this should be so is enigmatic. A clue may be had from the journal of Collet Barker, Commandant of King George Sound in 1830. He noted Aborigines were particularly reluctant to enter the Southern Ocean waters because of the cold, even when there was the prospect of sharing a substantial catch.¹⁹

It has been suggested that in the late-Holocene there was a northward movement of cold Southern Ocean waters in sympathy with the glacial expansion event known as “The Little Ice Age.” This phenomenon occurred with polar waters in both hemispheres but was asynchronous, in the northern hemisphere it appears to have been centred on the 14th and 19th centuries.²⁰ Such changes began much earlier and are known to have influenced fish, and in turn, human behaviour. For example thermal decline in sea water temperatures about 1,000 years ago are believed to have caused the herring which was formerly abundant off northern Gaul to move to the Dogger Bank in the North Sea. The shift coincided with the fortuitous Basque discovery of the great cod fishery off Newfoundland.²¹

In Australia “The Little Ice Age” is thought to have been a cold and stormy period which peaked about 1,000 years ago.²² Even so the cooler temperatures appear to have persisted for some time. The French Scientist Buffon travelling on *Le Gross Venture* which stopped over at Flinders Bay in 1772 had determined on his voyage that the southern hemisphere was still colder than the northern hemisphere.²³ It will be recalled

¹⁷ Bunbury, *op. cit.*, pp.87-88.

¹⁸ Lindsay, H.A. “Blackfella Fishing - trap and spear can feed many men,” *Salt*, 5, 13, (1943), p.17.

¹⁹ Barker, in Mulvaney and Green, *op. cit.*, p.248.

²⁰ Mannion, A.M. *Global Environmental Change*, (Harlow: Longmans, 1991), pp.61, 67.

²¹ Toussaint-Samat, M. *The History of Food*, (Cambridge: Blackwell, 1992), pp. 317, 319.

²² Thom, *op. cit.*, p.210.

²³ Marchant, *op. cit.*, p.351.

from Chapter Three that the opposite is the case at present.

It will also be recalled from the discussion in Chapter Three that some highly desirable fish species such as the Australian salmon prefer colder waters in their westerly coastal migration. In the past when temperatures were lower the construction of permanent stone traps with a semi-permanent vegetation fence could well have offset the need for fishers to enter cold water so frequently. The stones may have enabled inter-seasonal operation with a minimum of maintenance. An added advantage would have been that in their lee they would have provided improved visibility for aquatic hunters, and may well relate to a time when strong winds and wave-chop caused water visibility to be a significant problem.²⁴ It is by no means clear if all the stone arrangements along the the south coast were in use continuously, or at the same time, or if instead they represent changing phases of opportunity, being built and operated in sympathy with the closing and opening of the various estuaries to the ocean. A disadvantage of stone structures over time is the threat of burial from silt deposition. An indication of their vulnerability can be seen from the location of the recently discovered arrangements at Lake Richmond on the west coast, which is now separated from the ocean by about half a kilometre of sand.

The evolution from permanent stone structures to temporary stick structures possibly occurred soon after the climatic emergence from the so called Little Ice Age. The effect on aquatic species is not clear, but a warming trend and generally calmer weather could have diverted focus from the permanent structures and encouraged people to enter the water elsewhere. That wind was of concern to Aboriginal fishers was reported by Leigh in the Sydney region in 1821. There fish were not prepared or cooked in the dark for fear of encouraging unfavourable winds the following day.²⁵ The lesser use of stone structures between Cape Naturaliste and Shark Bay may be due to warmer air temperatures and the thermal influence of the southward flowing Leeuwin Current, both which will be recalled from the discussion in Chapter Two are progressively warmer towards the northern latitudes. Differences in wind patterns between the two coasts may be an added factor. These are discussed further on in this chapter.

²⁴ For example wading for crabs is a favourite contemporary recreational fishing activity in southwest estuaries becomes difficult in windy and overcast conditions because of reduced visibility.

²⁵ Leigh, S. "Account of the Aborigines in New South Wales...", in Gunson, N. (Ed.), *Australian Reminiscences & Papers of L.E. Threlkeld*, (Canberra: AIAS, 1974), vol. 2, p.335.

There is a confounding factor about south coast fish catching strategies which comes from the writings of Captain George Vancouver. When his expedition visited the south coast in 1791 it was noticed that the remains of some Aboriginal fish weirs in the banks of the Kalgan River were well above the high water mark.²⁶ He felt that they may have been built when the river flooded and this view has generally been unchallenged to the present. That people would bother to build such structures on a river during a swift flowing, and relatively short lasting unpredictable peak flood seems improbable. A possible explanation is that they remained from the brief period when ocean levels were higher during the mid to late-Holocene 3000 to 3,500 years ago reaching the so called Daly Level.²⁷ The reason for the subsequent fall in ocean levels might be thermal contraction in sympathy with The Little Ice Age. According to Thom a lowering of ocean levels was apparently still occurring between the 16th and 18th centuries,²⁸ although they are now generally accepted as being on the rise again.

As mentioned in Chapter Two it is also known that strong westerly winds cause a rise in water levels along the south coast,²⁹ and that this can be further increased if the Leeuwin Current is strong as a result of an ENSO cycle. Unfortunately the evidence of the elevated fishweirs and their exact positions is no longer visible.³⁰ However the existence of the stone arrangements at land-locked Lake Richmond tends to suggest that this type of technology may have been in use as far back in time as the mid-Holocene.

5.3 Riverine fishweirs

Riverine fishweirs can be considered in three categories; permanent stone structures laid in association with naturally occurring stone formations in the river beds, temporary trap arrangements of sticks and brushwood which were installed on mudbanks in or near the entrances to creeks and rivers, and semi-permanent structures built of timber and vegetation which all but blockaded the narrower upper reaches.

Stone weirs were located upstream in the Kalgan River (French River), which flows into Oyster Harbour. French navigator Nicholas Baudin reported during his visit in 1803 that at least eight of these “dikes” had been found carefully constructed in

²⁶ Vancouver, *op. cit.*, p.340.

²⁷ Twidale, *op. cit.*, p.284.

²⁸ Thom, *op. cit.*, p.210.

²⁹ Australia Pilot, (1973), vol.1, p.33.

³⁰ Personal communication with Dr. Luke Penn, Albany Waterways Management Authority. (19 April 1993).

association with natural stone formations. They had formed a succession of pools along the river, and the walls of each contained a funnel-like embrasure which encouraged fish moving upstream, but restricted their return.³¹ The principle of the embrasure appears to be an ancient human invention. They were commonly used on fishweirs and traps in northern and eastern Australia as well as on all other continents. While tempting to apply a diffusionist argument, the stone weirs on the Kalgan River appear to be unique in the southwest, and none apparently had the complexity of the maze-like structures which existed on the Upper Darling near Brewarrina, New South Wales.³² There, several hundred structures were each individually named and existed under the jealously guarded stewardship of a particular family who periodically permitted access to others with agnatic ties,³³ but to what extent this might have occurred on the Kalgan is unknown.

As with the stone tidal arrays at Oyster Harbour, no eye-witness descriptions of stone fishweirs in the southwest actually being used have been identified, but Colett Barker recorded the following journal entries

29 December.. Nakinah, Tringole...were now at King's river, where they expected plenty of fish. Tulicawalè was to watch the weir all night to prevent the fish escaping when the tide ran out & at a certain period to stop up the entrance with bushes. All the rest to sleep.
30 December.. Natives an abundance of fish last night, or rather this morning. Tatanine had watched as well as the other one, not being able to keep control of the whole weir.³⁴

In contrast many nineteenth century observers noticed the use of temporary vegetation structures at various river mouths on the south and west coasts.³⁵ These were designed to catch aggregations of small-fry and in particular juvenile mullet. The main advantage was that they could be quickly set up wherever there was shallow water, and if subsequent flooding or sand-bar movements destroyed them they were easily replaced.

In the upper reaches of some rivers it was practical to construct more permanent structures. The Aboriginal name for these type of fishweirs was *mungah*, which also translates as birdnest. *Mungahs* were constructed in river narrows from tree branches, and interspersed with brushwood filling the gaps. One such place was observed by

³¹ Baudin, N. *The Journal of Post Captain Nicolas Baudin, Commander-in-Chief of the Corvettes Géographe and Naturaliste... 1800-1803*, Cornell, C. (Trans.). (Adelaide: Libraries Board of South Australia, 1974), p.487.

³² Worsnop, T. *The Prehistoric Arts, Manufactures, Works, Weapons, etc., of the Aborigines of Australia*, (Adelaide: Government Printer., 1897), p.102.

³³ Dargin, *op. cit.*, p.32.

³⁴ Barker, in Mulvaney and Green, *op. cit.*, p.376.

³⁵ King, *op. cit.*, vol.1 p.16; Bunbury, *op. cit.*, pp.87-88; Bussell, *op. cit.*, p.197

explorers Shenton and Wells in 1837 at the junction of the Collie and Brunswick Rivers.³⁶ The timber remains of another have been discovered in a 5.5 metre wide tributary of Blackwater Creek near Point d'Entrecasteaux. However, whether or not this structure is of Aboriginal origin is arguable, because the site is not far from the milling town of Northcliffe and the timbers were cut with a steel axe. Claims that other fishweirs of Aboriginal origin existed in the Northcliffe area have not been substantiated.³⁷ Another *mungah* which was located at Barragup on the Serpentine River has attracted the attention of several writers.³⁸ This site was discussed in the context of its mythology in Chapter Three.

A local *melaleuca* species commonly known as ti-tree was readily available to the builders and was apparently the favoured material. The 3-5 cm thick stems which still grow close by in dense clumps can reach a height of about five metres. They have a negative buoyancy when fresh and will sink immediately if stripped of leaves.³⁹ The *mungah* at Barragup apparently also had a main supporting structure of larger diameter tree branches which could remain in place for several seasons, however spaces between were taken up with a dense network of brushwood and sticks which required seasonal maintenance. Stems were said also to be laid as a carpet on the upstream side of the weir in such a way as to direct any fish towards a shallow, narrow aperture which formed a race. People waiting by the race caught the passing fish by hand, killed them with a bite to the back of the head, then tossed them ashore.⁴⁰

A sketch of what is thought to approximate a basic southwest *mungah* design is provided in Fig. 5.1. It is a synthesis based on descriptions by four writers⁴¹ It should be regarded only as a schematic diagram. Regional variations dependent on available materials, expertise and innovative talents of the builders must have occurred, but no comparable historical reports of similar structures have been identified. While timber

³⁶ PGWAJ., 23 Dec. 1837.

³⁷ Dortch and Gardner, *op. cit.*

³⁸ Patterson, C.A. "Notes about the tribes inhabiting the coastal district from Geraldton to Albany, and those of territories nearest adjoining them," in Helms, R. (Ed.), *Anthropology. Transactions of The Royal Society of South Australia*, XVI, 3, (1896), pp. 237-332, (288); Bates, (1985), *op. cit.*; Hammond, *op. cit.*, p.46; Dortch and Gardner, *op. cit.*, p.276; Gibbs, (1987), *op. cit.*; Weaver, *op. cit.*

³⁹ The buoyancy characteristics of freshly collected samples of *Melaleuca* sp. sticks and foliage collected from Barragup were confirmed in static tests on 26 July 1993.

⁴⁰ Patterson, (1896), *op. cit.*, p. 288; *The Western Mail*, (WM) 22/10/1897, p.13.

⁴¹ Patterson, (1896), *op. cit.*; WM, 22/10/1897; Bates, (1985), *op. cit.*; Hammond, *op. cit.*

structures have been noted across waterways elsewhere in the southwest, generally the descriptions of their usage are vague, and none are known for the southwest rivers north of the Serpentine.

Comparable principles were utilised on the Glyde River in Arnhem Land, northern Australia. There a steam which drained a summer swamp was barricaded with a *gorl*, and a funnel device constructed to direct fish to a wicker sieve. Such was the efficiency, that as at Barragup, only the smallest fish escaped. Usage on the Glyde River occurred seasonally, particularly when the proliferation of long tropical grasses impaired the hunting of terrestrial game.⁴²

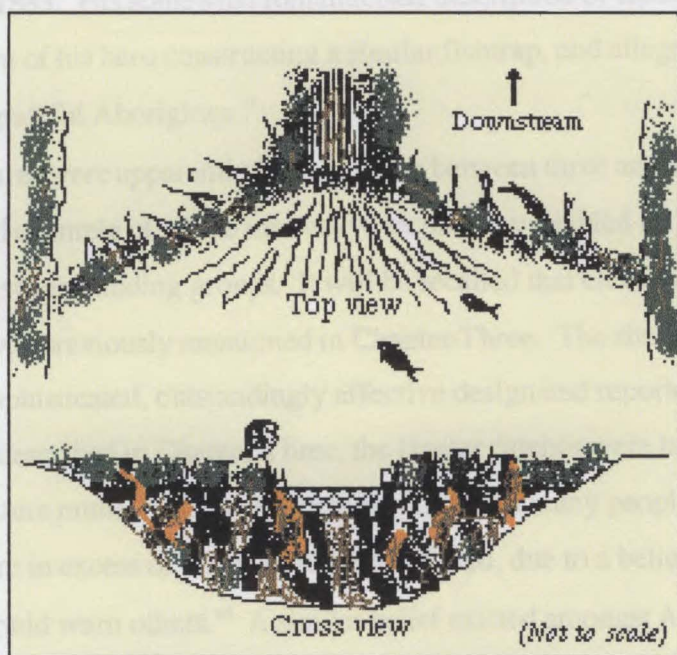


Fig. 5.1 Schematic design for a *mungah*

Hammond's "mungur" is at variance with the above schematic inasmuch as he has indicated a woven European style wicker fence existed across the entire face of the weir. He also shows standing platforms with a geometric configuration on either side of the race.⁴³ Both features are not consistent with what is reported of southwest Aboriginal structural technology. Angular and linear concepts seemingly had no place in the *Nyungar* world-view, where instead everything was interpreted or designed in terms of its roundness.⁴⁴ This was not the case in eastern and northern Australia where symmetrical design was clearly apparent in netmaking, weaving and some aspects of

⁴² Blainey, (1975), *op. cit.*, pp.140-141.

⁴³ Hammond, *op. cit.*, pp.46-47.

⁴⁴ Hassell and Davidson, *op. cit.*, p.687.

fishweir construction.⁴⁵ Hammond's original observations were apparently made during his childhood between 1863 and 1868 and he was recalling them more than half a century later. It seems probable he may have consulted other ethnographic material, although oddly this is expressly denied in the preface of his 1933 book, *Winjan's People*. It is not known if he read the purported adventures of William Buckley in the wilds of Victoria, written up posthumously by journalist John Morgan and published in 1852, but it is tempting to suspect that he had.⁴⁶ Interestingly Morgan had been a former government storekeeper and community confidant at Swan River Colony before he departed for Van Diemens Land in 1833. His somewhat romanticised description of Buckley's life contains an account of his hero constructing a similar fishtrap, and allegedly passing the technology on to grateful Aborigines.⁴⁷

Such structures were apparently built in water between three and six feet in depth.⁴⁸ Barragup is a good example of where innovative technology enabled its builders to attain high status amongst surrounding groups. It will be recalled that elevated status through resource control was previously mentioned in Chapter Three. The shallow race at Barragup was a sophisticated, outstandingly effective design and reportedly few fish escaped. As also described in Chapter Three, the largest catches were taken in autumn when sexually mature mullet swam downstream. Although many people gathered at this place, catches were in excess of what could be consumed, due to a belief that any fish which escaped would warn others.⁴⁹ A similar belief existed amongst Aboriginal people who controlled the previously mentioned stone fishweirs at Brewarrina on the Darling-Barwon River system in eastern Australia.⁵⁰ Stick fish traps were also constructed seasonally on streams which flowed from swamps into the Darling and were so effective that reportedly thousands of unwanted fish were discarded on the nearby shorelines.⁵¹

During the fishing season at Barragup the *Kalyute* people watched over their fishweir day and night. In the case of the latter, capture was assisted by listening for the

⁴⁵ As depicted in, for example, Brough-Smyth, *op. cit.*, and Worsnop, *op. cit.*, p.47

⁴⁶ Morgan J. *The Life and Adventures of William Buckley*, (Melbourne: Heinemann, 1967 facsimile ed.)

⁴⁷ *Ibid.* pp.64-67.

⁴⁸ Worsnop, *op. cit.*, p.102.

⁴⁹ Throssell, G. *Report on the Marine Fisheries on the South and South-Western Coasts of the Colony of Western Australia*, (Perth: W.A. Parliament., 1898), p.4.

⁵⁰ Dargin, *op. cit.*, p.45.

⁵¹ Blainey, (1975), *op. cit.*, p.140.

sound of the fish struggling through the shallow water in the race.⁵² The *Kalyute* would not allow visitors into the water near the *mungah*, ostensibly because of their smell, “Because they eat the noomar and joobuck (a mushroom type fungus and edible root), the fish will not come where they smell noomar.”⁵³

Europeans were also prohibited from approaching on the grounds that their smell would be detrimental to the fishing. Nor were fires allowed to be lit where the smoke would drift over the *mungah*, and in later years this ban was extended to include tobacco smoke.⁵⁴ It is probable these pseudo-scientific notions were part of the strategy to maintain control of the resource, but they possibly also coincided with an awareness that catches were declining. Reductions of sea mullet numbers in this river during the late nineteenth century are discussed in greater detail in Chapter Six. Nevertheless assumptions about the need to respect the olfactory sense of fish were not unique to the *Kalyute*. Aboriginal taboos on burning and smoke generation near freshwater fishing locations also existed with the *Yiraldi* near Encounter Bay in South Australia.⁵⁵ Neither was the belief confined to Aboriginal fishers. In England river fishermen at least since the times of Izaak Walton had also understood it was an important consideration for maximising catches.⁵⁶ Later, and as more settlers arrived in the Mandurah-Pinjarra region Aborigines controlling the Barragup fishweir bartered fish for commodities such as tobacco, and the purported practice of throwing dead fish back into the river after a few days was evidently abandoned in favour of burning:

The natives, after supplying all their own wants and bartering as much as possible to the settlers, used to burn tons of fish on the bank, owing to a superstition that fish thrown back into the water would communicate with other fish in the estuary, and that these would no longer breed in the river.⁵⁷

By the early 1890s this practice was further modified, and local farmers were

⁵² Bates, D. (ND) Notebook V 1c pp.13-14 Acc.1212A.

⁵³ *Ibid.*

⁵⁴ Stranger, R. “Correspondence to WA Museum on Barragup Mungah.” (Western Australian Museum records) 11/3/1972.

⁵⁵ Berndt and Berndt, (1993), *op. cit.*, p.562.

⁵⁶ Walton, Izaak, *The Compleat Angler*, (orig. pub. 1653), (London: Henry Bohn, 1856), p.184.

⁵⁷ WAPD, 1902, 22:2796.

Also in Richards, R. *Murray and Mandurah: A sequel history of the old Murray district of Western Australia*, (Mandurah: City of Mandurah, 1993), p.172.

purchasing the surplus fish for use as agricultural fertiliser.⁵⁸ The demands of Mandurah canneries provided Aborigines with another market, which paid cash, and at the prevailing rate. This effectively brought them into direct competition with non-Aboriginal fishermen, who faced with declining catches in the estuary, and banned from netting in the river and upstream lakes, saw the Barragup fishweir as the cause of their problems. As a result it was partially destroyed on at least two occasions to allow fish to move downstream unhindered, and into the nets of waiting poachers.⁵⁹

In October 1897 Governor, Sir Gerard Smith visited Mandurah and received a deputation of three disgruntled Aboriginal men led by one Billy Dower, the event being reported in *The Western Mail*:

His Excellency then addressed a few words to the blacks who had been waiting with respectful attention for a hearing. Sir Gerard pointed out that the aborigines were subjects of Queen Victoria just the same as the white population and that Her Majesty's swarthy lieges had only to obey the laws and be industrious citizens in order to receive the protection of those laws and justice at the hands of those who were charged with maintaining the well-being of the community. Billy Dower saw his chance and took it with the aptness of a lawyer claiming judgment. In excellent English and in a lucid phrase he came right to the point that the fishing mungah of his tribe had been broken down by white fishermen. The fish had been allowed to escape, and he, after losing his plowing season in order to build up the mungah, which had been used by his people for generations, had been unable to make a living. He asked on behalf of himself and his companions that the white man, after taking the blacks' patrimony and after depriving them of their hunting grounds to make pastures for their cattle should not be allowed to despoil them of the method for the capture of fish, by which they had subsisted, and which it required much labour to create.⁶⁰

The Barragup Aborigines were under the distinct impression that their traditional rights to the fish resource were officially recognised, and that continued occupation of the Barragup site had been guaranteed to them in the past. Governor Smith later visited Barragup and applauded the efforts of its Aboriginal owners and according to a press report in the same newspaper he was, "Highly pleased with the labour and ingenuity that

⁵⁸ *Report of the Joint Select Committee Appointed to Enquire Into the Fishing Industry, Western Australian Parliament, 1906, p.95; Hammond, op. cit., p.46.*

⁵⁹ *WM.*, 22/10/1897, p.7.

⁶⁰ *WM.*, 17/9/1897, p.12.

had been bestowed upon the mungah.” He said patronisingly that it showed, “how admirably a savage race had adapted itself with primitive appliances to encompassing the fish that were so necessary to them for food.”⁶¹ Smith afforded the Aboriginal fishers appropriate sympathy, added he was relatively powerless to intervene, and promised to pass their complaints to the Chief Inspector of Fisheries, Lindsay Thompson. The local Native Protector George Patterson then passed out some tea and sugar, tobacco, and flour. It was subsequently reported that, “overflowing with gratitude the dusky men of the soil cheered louder than ever in a special salvo of their own.”⁶²

Inspector Thompson was hardly sympathetic to their cause and later said:

I was told that the aboriginals had some kind of prescriptive right to maintain the engine in its place...if the aborigines really possess a right to maintain it, steps should be taken to secure the abrogation of that right..⁶³

This right apparently originated from an 1850 Order in Council issued to protect Western Australian Aborigines from the excesses of pastoralists. It read, “Nothing contained in any pastoral lease shall prevent the aboriginal natives of this colony from entering upon the lands comprised therein, and seeking their subsistence therefrom in their accustomed manner.”⁶⁴ Using slightly modified wording the fate of the *mungah* was sealed by the *Fisheries Act 1899*, which proclaimed: “THIS Act shall not apply to fish obtained for food by the aboriginal inhabitants of the Colony in their accustomed manner, otherwise than by means of any weir or hedge.”⁶⁵ Perhaps importantly the section was only concerned with technology. No attempt seems to have been made to extinguish actual Aboriginal right of title to the waterway and its resources.

The banning of the fishweir had the effect of enabling ready passage of non-Aboriginal fishermen to the upstream lakes, where in spite of restrictions they indiscriminately commenced netting the immature mullet.⁶⁶ The late Alexandra Hasluck recalled seeing the timber remains of the fishweir as a child, which would have been

⁶¹ *WM.*, 22/10/1897, p.13.

⁶² *WM.*, 22/10/1897, p.12.

⁶³ *WM.*, 17/9/1897, p.8.

⁶⁴ *GG.*, 17/12/1850, p.4.

⁶⁵ *The Fisheries Act, 1899*, Section 11.

⁶⁶ *WAPD.*, 19/12/1902. pp.2795-6.

about 1916, but no traces are now evident.⁶⁷

5.4 Brush seining and driving of fish

Brush seining is a term used to describe the encirclement or herding of fish shoals by a group of people using branches of bushes. The fish are then driven into a more vulnerable position where they can be speared or flicked ashore. The technique was commonly used in the southwest, and similar methods were reported from the South Australian coast, in the vicinity of Port Lincoln.⁶⁸ Group co-operation was essential to maximise success, as revealed by an 1834 Perth newspaper report:

On the 24th October, at sunrise, my curiosity was excited by a hubub in the Settlement among the natives, and having gone out to see whence it arose, several of them were running at full speed to the beach and into the water, whilst others were taking different and opposite directions, and calling on others to inform them of what was going forward. I soon learnt that a shoal of fish was on the shallows of the harbour: that those who made such haste to it were going to keep the shoal from getting into deep water, and that the others were running for their spears and warning their comrades. As soon as the first party, consisting of two or three, got the fish at bay, the others took it coolly, and having arrived at the beach, commenced forming a pen or fold, if I may call it, by laying bushes out in two nearly parallel lines from the beach into the harbour where the fish were. Those lines or sides of the fold were about 12 yards apart, and were continued about 20 yards, and then inclined to each other nearly at right angles to the first direction, and shut in so as only to leave a small space or gate open.

All this was done very leisurely without testifying any alarm, that the fish in the mean time might escape from their keepers. These latter seemed to have complete and easy command of their flock, keeping them in play and directing them in their progress with the utmost certainty, by beating the water with their spears.

The pen or fold being completed as mentioned, those who had been employed in its construction went to assist the fish herds to drive the shoal into it; and no shepherd and his dogs could have more readily penned its flock of sheep than those fishermen drove their finny prey into the inclosure (sic). No sooner was this effected that the gate was closed by

⁶⁷ Hasluck, A. "Yagan the patriot," *Early Days*, 5, 7, 33–48; *Portrait in a mirror*, (Melbourne: Oxford University Press., 1981?), p.63. (N.B. The author's son Nicholas referred to memories of the fishtrap remains as being significant for his mother, a respected Western Australian historian, during her funeral eulogy in 1993.)

⁶⁸ Brough Smyth, *op. cit.*, Vol.1 p.199.

bushes from either side, and a general contraction of the fold was made from this and towards that of the beach. As this proceeded they became more and more active, until they had reduced its interior to a few yards in extent and huddled the fish so close together that, getting alarmed they began to bound over the bush fence, when the natives, now knowing that further delay in the work of the destruction would be a certain loss, speared and cast them on shore with an alacrity that shewed (sic) what agility and expertness they were masters of when required to be called forth.⁶⁹

It can be appreciated that brush seining offered numerous advantages over permanent arrangements, provided enough people were available to help. It was quick to set up wherever shoals of fish were sighted, and suitable materials were usually always available, unless there had been recent burning-off of shoreline vegetation. The method was controllable inasmuch as it could be contracted inwards at any time much like a seine-net in order to concentrate the fish. A favoured time for fishing was early morning, when in fine weather, southwest estuaries are often mirror calm.

In 1846 Chauncy reported Aborigines on the south coast were still catching fish by this method:

At King George's Sound I have seen them take a quantity of whiting in the following manner: — Two or three women watch the shoal from the beach, keeping opposite to it, while the twenty or thirty men and women take boughs and form a semicircle out in the shallow bay as far as they can go without swimming, and then, closing gradually in, they hedge the fish up in a small space close to the shore, while a few others go in and throw them out with their hands. By this primitive method, skilfully executed, I have seen a large quantity of fish caught.⁷⁰

There are five species of whiting (*Sillago spp*) now present in the southwest.⁷¹ The most probable species observed at King George Sound would have been the school whiting (*Sillago bassensis*), or the yellow finned whiting (*Sillago schomburgkii*). These fish are not large, the biggest reaching a length of about 40 cm and weighing a little over half a kilogram, but generally they are smaller. Both species are found in southern

⁶⁹ PGWAJ, (1834). p.335. "Anecdotes and remarks relative to the Aborigines at King George's Sound," (Attributed to Alexander Collie, Government Resident at King George Sound).

Meagher, *op. cit.*, p.66.

⁷⁰ Chauncy, P. 1876, "Notes and Anecdotes of the Aborigines of Australia," in Brough-Smyth, *op. cit.* vol. 2, p.248.

⁷¹ Hutchins and Thompson, *op. cit.*, p.34

estuaries and are relatively common. Major Lockyer commented in 1827 the whiting were particularly abundant at King George Sound.⁷² This was also confirmed in the large catches recorded by Barker in 1830-31.⁷³ It is tempting to consider they may have been one of the target species for the stone fishtraps in nearby Oyster Harbour. Chauncy's observation of the readiness of Aborigines to pursue fish in waste deep water contrasted with Barker's observations, mentioned earlier.⁷⁴ The time of year may have been different.

On June 28, 1840, overland explorer Edward John Eyre and his Aboriginal companion Wiley had seen people brush seining approximately 200 km north-east of King George Sound at Culham Inlet, in what is now the Fitzgerald National Park.⁷⁵ Eyre and Wylie had initially been alerted to the Aboriginal presence after seeing smoke rising from camps along the edge of the 'lake.' Eyre wrote, "Soon afterwards we saw them in the midst of the lake carrying boughs, and apparently fishing."⁷⁶

Sometimes larger fish could be caught by herding methods, several decades later P. Chauncy reported, "At Swan River, I have watched them drive a shoal of large schnappers into water too shallow for them to swim in, and spear and catch a great number of fish weighing from ten to fifteen pounds each."⁷⁷ The fish sizes appear not to be an exaggeration. A past Fremantle resident Tom Briggs recorded that large snapper were commonly caught from rocky outcrops in the Swan River during the nineteenth century.⁷⁸ Unfortunately snapper of this size no longer shoal in the Swan River, although in the past few years juveniles of about half a kilogram have become relatively common two to three kilometres from the river mouth. It will be recalled from Chapter Four that large snapper were one of the predominant species said to have been recovered from an archaeological excavation at Katelaysia Rock Shelter at Wilson's Inlet. According to an early newspaper report, these fish were particularly abundant in that estuary in 1842.⁷⁹

It may, or may not be significant that brush seining had its terrestrial counterpart whereby bushes were arranged in a similar manner to divert animals into ambush or pit

⁷² *HRA.*, III, VI. "Lockyer to MacLeay." p.467.

⁷³ Barker, in Mulvaney and Green, *op. cit.*, pp.283, 301.

⁷⁴ Barker, in Mulvaney and Green, *op. cit.*, p.248.

⁷⁵ 33°55'S. 120°02'E.

⁷⁶ Eyre, *op. cit.*, vol.2 p.97.

⁷⁷ Chauncy, in Brough-Smyth, *op. cit.* pp.248-249.

⁷⁸ Briggs, T.J. *Life and Experiences of a Successful West Australian*, (Perth: Sands and McDougall, 1917), p.20.

⁷⁹ *PGWAJ.*, 1 Oct. 1842.

traps.⁸⁰ As to whether one method inspired the other may be impossible to assess.

5.5 Spearing fish

The spear is possibly the oldest and most widespread of all types of fishing technology. It has long been used by peoples on every continent, from tropical through to polar regions. Aborigines routinely speared fish in all parts of the Australian continent with a skill which astounded Europeans.⁸¹ For example in the southwest on Swan River in 1829 Captain Fremantle had seen spear wielding Aboriginal fishermen leaping through thigh deep water at a speed faster than his men could row.⁸²

Spears were made to many different designs and each had its specialised use. Those with detachable heads, and multi-pronged fish spears, both which had common usage in eastern and northern Australia, were absent from the southwest inventory, as was the case with watercraft, woven nets and fishhooks.⁸³

In the southwest fishing spears or *gidgees* comprised a single shaft, and were often barbless and relatively short.⁸⁴ In comparison those used for fighting or hunting terrestrial game were long, thin and barbed, and were generally used in conjunction with a *mirru* or spear thrower.⁸⁵ Barbless fish spears were also used for fishing in south-eastern Australia at Encounter Bay and the lakes of the Lower Murray,⁸⁶ and Threlkeld recorded that in the Sydney region there were distinctive differences between fishing spears and those used for terrestrial purposes.⁸⁷

Just as access to specific resources such as ochres, stone quarries or fisheries were controlled by individual groups, so too were woods for spear making. Women could be involved in manufacture of spears by doing the laborious scraping and straightening, but

⁸⁰ Helms, R. "Anthropology," *Transactions of the Royal Society of South Australia*, XVI, 3, (1896), pp. 256, 293, 295.

⁸¹ Grey, *op. cit.*, v.2 p.275; Moore, *op. cit.*, pp.28-29; Calvert, *op. cit.*, p.26.

⁸² Fremantle, *op. cit.*, p.39.

⁸³ Threlkeld, *op. cit.*; Massola, A. *op. cit.*, Anell, B. "Hunting and Trapping Methods in Australia and Oceania," *Upsaliensa*, (Upsala: Studia Ethnographica, 1960) vol. XVIII; Lawrence, R. (1968). "Aboriginal habitat and economy," School of General Studies Occasional Paper No 6. (Canberra: Australian National University, 1968).

⁸⁴ Bunbury, *op. cit.*, p.190.

⁸⁵ Often known as a woomera, an English derivative of an Aboriginal word first recorded in New South Wales. Threlkeld, *op. cit.* p.68., reported that the *wom-mur-rur* had multiple uses, including as a tool for opening oysters.

⁸⁶ Worsnop, *op. cit.*, p.93.

⁸⁷ Threlkeld, *op. cit.* p.67.

men did the fine tuning, and when necessary, the addition of barbs.⁸⁸ After shaping the spears were seasoned by baking in hot ash, then greased with fat.⁸⁹

The fishing spears or *gidgees* made by the Pinjarra-Murray district people had a reputation for quality and strength amongst neighbouring Aboriginal groups, and also among settlers.⁹⁰ Measuring up to 3.6 m long they were much heavier and longer than the usual fishing spear.⁹¹ It is probable that all the other clans and groups had access to some type of spear making material of their own, and could have made long heavy spears themselves if they wished. The desire for Murray *gidgees* may have relate to the reputed larger physical prowess of their makers and a wish to identify with them.⁹²

Shorter *gidgees* were well suited to stabbing fish such as cobblers (*Cnidoglanis macrocephalus*). These were said to be the most important summer species in the southwest, and body girth on large specimens could be as thick as a man's thigh.⁹³ As with catfish species in other parts of Australia, cobblers have serrated, mucous coated spines hidden in the dorsal and pectoral fins which can cause serious injury when trodden upon or handled. The absence of a barb on the *gidgee* enabled safer handling of this species. Stingrays also posed a similar risk. Nevertheless Aboriginal fishers occasionally received a painful gash.⁹⁴ Fish spearing was done in estuaries and the ocean. Stabbing without releasing the spear was a common method of use, but *gidgees* could also be thrown. Because detachable spear heads were unknown there was always a risk that a spear might be lost in open water because of the reluctance of the owner to swim after it, as an 1830 entry in Barker's journal illustrates:

20 March: Took Mocarè in the Jolly boat to the bay near Point Possession but could see no salmon, the boat probably alarming them. On landing, however, he soon speared one. We got two more by crossing over to shore on the Sound side, which he speared in the long sandy bay near Mistaken Island, but would have lost one & all his spears if I had not been there to swim after them, as he could not venture far into the water. There were plenty of salmon here & several sharks looking after them, but little danger was to be apprehended

⁸⁸ Brockman, in Meagher, (1973), *op. cit.*, p. 187.

⁸⁹ Hassell, E. "Notes on the Ethnology of the Wheelman Tribe of South-Western Australia," *Anthropos*, 31, (1936), pp.679-711, (692).

⁹⁰ Bunbury, *op. cit.*, pp.86-87; Hammond, *op. cit.*, p.33.

⁹¹ Bunbury, *op. cit.*, p.86.

⁹² Moore, *op. cit.*, p.286.

⁹³ Hammond, *op. cit.*, p.19.

⁹⁴ Barker, *op. cit.*, p.403.

from the latter, the white sandy bottom enabling us to see them at a considerable distance.⁹⁵

Lost spears must have been one of the constant risks for beach fishers. Several years earlier in 1801 Matthew Flinders reported his crew found a seal with a broken spear inside a large shark. On another occasion Barker had found two spears washed up on a beach and theorised that they must have drifted from across the bay. While the full story of those two spears is unknown, such finds had the potential to signify tragic accidents. Barker recorded at another time that an elderly Aboriginal man trying to land a large fish he had speared opposite Eclipse Island had drowned after the backwash from a wave dragged him into deep water.⁹⁶

Even in the quiet, narrow rivers of the southwest, losing spears was still possible. Jesse Hammond stated that in 1856 on the Murray River the largest “kingfish,” (probably *Argyrosomus hololepidotus*) he had ever seen was speared by an Aborigine. The fish had swum off with the spear but had later been recovered when the hunter located a stream of rising bubbles and dived for it.⁹⁷ There was a particular strategy for catching this species, which has also been known as Jew-fish, and is now commonly known as mulloway. The hunters would initially keep watch from a favoured position for these fish moving upstream, and then upon sighting, set an ambush further on.⁹⁸ The species usually appears in rivers during spring to early summer, and large specimens have been recorded in excess of 70 kilograms. It has been claimed specimens five feet long (1.52m) were caught in the Swan River by fishers during the nineteenth century but such large fish are now rare.⁹⁹ Understandably they would require a strong, heavy spear such as those produced by the Murray men to be taken.¹⁰⁰ A superb watercolour of this style of fishing exists in the collection of the Western Australian Art Gallery. “Fishing” by Joseph Ffarington (*circa* 1850) depicts a lone male fisher standing on the branch of a half submerged tree on a river bank. He is gazing intently into the water, a long spear poised ready to hurl, and a spear thrower has been fitted, to increase the velocity.¹⁰¹

There also exists a painting in the Western Australian Art Gallery, “Spearing Fish,”

⁹⁵ *Ibid.*, p.275.

⁹⁶ *Ibid.*, p.286.

⁹⁷ Hammond, *op. cit.*, p.47.

⁹⁸ *Ibid.*, p.46-48.

⁹⁹ Briggs, *op. cit.*, p.20.

¹⁰⁰ Hutchins and Thompson, *op. cit.*, p.81.

¹⁰¹ Also reproduced in Tilbrook, L. *Ffarington's Folio*, (Perth: Art Gallery of Western Australia, 1986), p.17

by James Walsh, which depicts Aboriginal men fishing in the middle reaches of the Swan River during the 1860s. The waders are using short stabbing spears.¹⁰² As well as providing for themselves, at about this time Aborigines were engaged in the occasional selling or bartering of surplus fish with settlers.

Fish were a valued dietary addition for Europeans, but fishing success in the Swan River for them was marginal, as was reported by an 1833 English newspaper: “Shooting and fishing are precarious; and the natives only are adept in the latter, and monopolise most of it.”¹⁰³ Rosendo Salvado, the founder of a monastery and Aboriginal mission at New Norcia recorded a cooperative group strategy for spearing fish in the Swan River:

Once when I was in Perth I saw natives display great skill and cunning when fishing in the Swan River. There were nine of them, and they carried their *gidjis* high in their left hands, but without the *miro*. From time to time one of them halted, and the others formed a perfect circle, with some fish in the middle. They narrowed the circle, and then suddenly broke it, running in different directions through the water, each after his own catch. Finally I saw that they had speared a number of fish about four pounds each in weight. They can skilfully pierce the fish at a depth of three feet in the water.¹⁰⁴

The circling strategy is very similar to that used by groups of pelicans (*nirimba*) to herd fish. It is possible that the birds’ strategy may have provided inspiration for Aboriginal fishers in the past.¹⁰⁵ Fish spearing could be a group or individual activity, and lone male fishers were often sighted spearing fish while wading in enclosed waters, and in the ocean. These sightings had commenced with the Baudin expedition noting an elderly man carrying three spears, and fishing alone in the ocean, near the Vasse River in May 1801¹⁰⁶

Near the same place in March 1827, Thomas Kepple on the *Success* recorded that some Aborigines they met in mid summer, “...devoured most ravenously a raw fish

¹⁰² Reproduced in Chapman, B. *The Colonial Eye*, (Perth: Western Australian Art Gallery, 1979), p.77.

¹⁰³ *MLAI.*, 598, 6/4/1833, p.221.

¹⁰⁴ Salvado, R. *The Salvado Memoirs: Historical Memoirs of Australia and Particularly of the Benedictine Mission of New Norcia and of the Habits and Customs of the Australian Natives*, (1851), Stormon E.J. Ed. and Trans., (Nedlands: University of Western Australia Press, 1977), p.159.

¹⁰⁵ The numbers of fish eating birds on the Swan River are apparently much less than in the early nineteenth century. The Baudin expedition in June 1801 had observed pelicans in an “amazing number.” Few are now seen.

¹⁰⁶ *Ibid.*, p.59-60.

which we had just caught.”¹⁰⁷ The D’Urville expedition to King George Sound in October the previous year commented that Aborigines liked their meat cooked very rare and, “We have occasionally seen them devour with the same relish the fish intestines that our sailors threw away.”¹⁰⁸ The observation that southwest Aborigines ate raw fish ravenously is unusual and it begs the question as to what was the general state of food resources in the Vasse at that time, but unfortunately there is no clear answer. Certainly in the immediate post-settlement period the region had abundant fish resources and was particularly attractive to Aborigines, as reported by Nathaniel Ogle: “This neighbourhood has always appeared more thickly peopled with blacks than any other part of the coast, affording great facilities for the construction of their rude weirs, or fish traps.”¹⁰⁹ It will be recalled that indigenous mythical associations believed to have related to the fishery resource in this vicinity were discussed in Chapter Three.

5.6 Night fishing

Fish spearing took place in rivers, estuaries and along the ocean shoreline and could be undertaken in daylight or at night, depending on the species being sought. Night fishing was a widespread Aboriginal activity in the southwest. Many types of estuary dwelling fish such as flounder (*Ammotretis rostratus*), and cobbler (*Cnidoglanis macrocephalus*) could be speared on estuarine sandbanks at night. Both species may submerge themselves in the sand, making location more difficult, but in the case of flounder, their eyes protrude and reflect light. Catching could also be assisted by feeling for them with bare feet.¹¹⁰

While surveying the Swan River in March 1827 James Stirling noted, “On our course we observed several Natives on the banks fishing by torch light...”¹¹¹ Another observer in 1835 stated categorically of Aboriginal fishers, “They have most success at night...”¹¹² Henry Bunbury in 1836 described three differing methods of fishing with firelight; firstly fires on the edge of estuaries to attract fish close to shore, secondly fishers wading in deeper water with hand-held torches, and thirdly the lighting of large

¹⁰⁷ *Journal of Thomas Keppel, H.M.S. Success, 1827*, BL 1585A; Also in Green, (1984), *op. cit.*, p.46.

¹⁰⁸ Quoy and Gaimard, in D’Urville, *op. cit.*, vol.1, p.43

¹⁰⁹ Ogle, *op. cit.*, p.234.

¹¹⁰ Neill, *op. cit.*

¹¹¹ HRA., III, VI, “Stirling to Darling,” p.561.

¹¹² Irwin, F.C. *The State and Position of Western Australia; Commonly Called the Swan-River Settlement*, (London: Simpkin Marshal, 1835), pp.22-23.

fires alongside the deeper reaches of rivers to illuminate larger fish which were speared from the banks:

Soon after dark I was attracted by the appearance of numerous lights, gleaming and flashing in various directions along the borders of the inlet...the numerous lights I saw along the water's edge were for the purpose of attracting the fish, which are speared by this means in great numbers both in the shoal water of the flats, where the natives wade out carrying firesticks to spear Mullet and Cobblers, and also on the banks of the river, where fires on a large scale are made where the water is deep close to and several natives watch the approach of the fish with their spears. Cobblers especially are thus taken in great quantities as well as larger fish such as Jew fish, (mulloway) Taylors, and Black Snappers. (Black bream).

Calm water was essential for night fishing.¹¹³ This was facilitated by the diurnal breeze cycle which is most obvious in summer. On the west coast an offshore easterly breeze occurs in the mornings, but swings to an onshore southwesterly from about midday as the inland region warms. This often drops to a dead calm soon after sunset and remains so until morning when the easterly again picks up. The predominant oceanic wind pattern on the west coast, south of 35°S varies between the SW and NW throughout the year.¹¹⁴ A diurnal offshore/onshore breeze cycle also aligns itself with the configurations of the south coast, but is complicated by predominant seasonal wind patterns which tend to come from between the south and east during the summer months and from between the north and west in winter. In addition to tidal and current effects on the south coast mentioned in previous chapters, westerly winds contribute to raising the water level and easterlies tend to lower it.¹¹⁵ Overall a greater number of calms can be expected on the warmer west coast than along the south each year.¹¹⁶ In the Vasse Nathaniel Ogle wrote: "The practice of the natives to wade out with torches by night to spear fish, may convey an idea of the tranquillity of the beach, and its freedom from surf."¹¹⁷ A nineteenth century depiction of such a night fishing scene is reproduced in Fig. 5.2. The presence of Europeans is left to the interpretation of the reader.

¹¹³ Nind, *op. cit.*, pp.32-34.

¹¹⁴ *Australia Pilot, North, North-west, and West coasts of Australia...* vol. 5, (1972), p.16.

¹¹⁵ *Australia Pilot*, (1973), *op. cit.*, vol. 1, pp.12, 33.

¹¹⁶ Based on a comparison of wind frequency data in *Australia Pilots, op. cit.*, vols.1 & 5,

¹¹⁷ Ogle, N. *The Colony of Western Australia: A Manual for Emigrants*, (1839), (St. Ives: John Ferguson, 1977), p.234.



Fig. 5.2 Aborigines fishing at night

Night fishing activities depended on a state of general social harmony prevailing amongst the population but this was not always the case. Retributive spearings and murders were at such a level amongst the Aboriginal groups in the King George Sound region in 1830 that night fishing activities totally ceased. Barker noted after a large haul of mullet had been brought ashore in a seine net Mocarè told the English fishermen that if it were not for the danger of his being speared that he would obtain plenty by lighting a fire on the beach at night.¹¹⁸ Threlkeld noted that the fishing peoples on the eastern seaboard also lived in constant dread of attack by their neighbours¹¹⁹ Neither were the dangers only from Aboriginal spears. In May 1833 night fishing had become a risky business for Aborigines on the banks of the Swan River due to the actions of mounted groups of European vigilantes.¹²⁰

5.7 Swimming and sharks

Hammond's report, mentioned previously in this chapter, that a hunter had dived to recover speared fish from deep water in a river is intriguing, because southwest Aborigines were assumed by settlers not to have been swimmers, and certainly not divers. This in part was due to the belief that deep water and rising bubbles could signify

¹¹⁸ Barker, *op. cit.*, p.284.

¹¹⁹ Threlkeld, *op. cit.* p.67.

¹²⁰ PGWAJ., 18 May 1833.

the presence of the creation period spirit water snake *Waugal*, which according to belief inhabited many such places throughout the southwest and had no hesitation in taking Aboriginal people who offended it.¹²¹

There is little doubt that some *Nyungar* people could swim but it was not a skill attained by all. Sometimes swimming was assisted by the use of something which floated, such as a log.¹²² The Advocate General at Swan River in the 1830s, George Fletcher Moore, recorded a belief that if after giving birth a mother threw the severed umbilical cord into a waterway the baby would become a good swimmer or *bilyigadak*. Positive identification by the wider community of a person with swimming skills could be made in later life if a larger than usual navel (*bilyi*) was evident.¹²³ It follows that people with small *bilyi* probably did not believe they could swim well, and probably always tried to avoid deep water. Another possibility is that the appearance of the navel alters on the distended stomachs of bloated corpses washed ashore. In a society where every death must have an explanation the discovery of such empirical evidence relating to an otherwise inexplicable death overcomes the need for retributive actions against other people.¹²⁴

Even when unable to swim it seems there are always risk takers who become lulled into a false sense of security by the prospective excitement and prestige of catching a big fish. Since settlement the southwest coast has gained a notorious reputation for drowning European fishermen, but as Barker recounts, *Nyungar* fishermen were also vulnerable in the same way:

Wannewar & Numal were just arrived, bringing an account of Petyet's death. It had happened about noon today. He had speared a large fish in the bay opposite Eclipse isld & being in the water a heavy wave rolled in & broke over him. The returning wave carried him out into deep water where being unable to swim, he was drowned. His body was not washed in.¹²⁵

The poor swimming skills of *Nyungars* noted in historical sources might still exist. A study of drownings involving shore based fishermen in Western Australia between

¹²¹ A more comprehensive compilation of anecdotal evidence relating to *Waugal* is contained in Vinnecombe, *op. cit.*, and Ansara, M. *The Old Swan Brewery Dispute: Always Was Always Will Be - the Sacred Grounds of the Waugal* - King's Park, Perth WA., (Perth: Uniting Aboriginal and Islanders' Congress, 1990).

¹²² Hassell, *op. cit.*, p.692.

¹²³ Moore, *op. cit.*, p.9.

¹²⁴ Berndt and Berndt, (1964), *op. cit.*, pp.387-389.

¹²⁵ Barker, *op. cit.*, p.286.

1979 and 1982 indicated that the mortality rate was approximately four times higher for Aborigines. Poor swimming ability was a contributing factor, with eighty five percent of Aboriginal drownings involving males.¹²⁶

There is good reason to surmise why swimming was not a regular part of the regular fishing strategy for southwest Aborigines in the past. At least 15 different species of dangerous sharks are known to frequent the coastal region between the aptly named Shark Bay in the north, and Cape Arid in the east. Some types such as the Swan River whaler or bull shark (*Carcharhinus leucas*) can tolerate fresh water conditions and will travel considerable distances up rivers.¹²⁷ Several unprovoked attacks on people wading or swimming in estuaries are known to have occurred by this species since settlement. In May 1829 Captain Fremantle wrote of the risk at the proposed site for the Swan River: "The sharks actually came on the beach within the length of a boat hook about 7 & 8 feet long; they are most numerous and voracious, which renders it very disagreeable, as to bathe even from the beach is hazardous."¹²⁸

Collet Barker mentioned on a number of occasions in 1831 that unprovoked sharks attacked people at King George Sound. Occupants of small boats and waders were particularly at risk. In January 1831 two convicts under his charge, Crawley and Craggs were attacked while gathering shells but were able to save themselves.¹²⁹ Also at King George Sound in 1833 Baron von Hügel wrote "The bay is chock-full of sharks, which did nothing to enhance the prospect of overturning the boat."¹³⁰ The shark danger was further exacerbated in the vicinity of seal colonies along the south coast because of larger predators such as the white pointer shark (*Carcharodon carcharias*). Aborigines appreciated seal meat and were prepared to kill any animals unwitting enough to come ashore on the mainland, but those on the distant offshore islands generally remained safe from humans until the arrival of commercial sealers. Spears might seem effective killing weapons but unless a vital organ is struck, death is not usually instantaneous for a large animal. Clubbing or some other means is usually required to finish them off. Upon confrontation seals can be dangerous to humans, and more so when wounded. Speared seals might escape to the water but were then highly vulnerable to sharks, and it would be

¹²⁶ *Western Australian Recreational and Sportfishing Council*, (1989), pp.15-18.

¹²⁷ Hutchins and Thompson, *op. cit.*, p.14.

¹²⁸ Fremantle, *op. cit.*, p.44.

¹²⁹ Barker, *op. cit.*, p.387.

¹³⁰ von Hügel, C. *New Holland Journal, November 1833-October 1834*, Clark, D. (Trans.), (Melbourne: Melbourne University Press, 1994), p.86.

a foolish hunter who would try to follow. In 1801 Matthew Flinders discovered evidence of this interplay between hunters, seals and sharks near Esperance:

After some attempts we succeeded in taking one of them; [a shark] but to get it on board required as much preparation as for hoisting the launch. The length of it, however, was no more than twelve feet three inches, but the circumference of the body was eight feet.

Amongst the vast quantity of substances contained in the stomach, was a tolerably large seal, bitten in two, and swallowed with half of the spear sticking in it with which it had probably been killed by the natives.¹³¹

Not all sharks swallow their prey whole. John Wollaston reported that sharks at Australind had reduced the body of a drowned man to almost a skeleton in 1842.¹³² Black people generally were supposed to have some immunity from shark attack. Brough-Smyth claimed that Aborigines enjoyed such protection off the coast of Victoria where they would swim amongst large migratory schools of "schnapper," which were always followed by many sharks. The schools were said to have often extended a mile each way so the species more probably was salmon or small baitfish such as pilchard. He also claimed he had known Aborigines to swim around the carcass of a stranded whale in order to get at more desirable coarse meat, "...when the sharks have been almost as thick round it as flies..."¹³³ However while modern divers have confirmed that it is possible to swim amongst some types of large sharks and emerge unscathed, great caution is always required. Southwest Aborigines certainly did not take such risks. In marked contrast to Aborigines in Tasmania there is no evidence of them ever establishing small communities on offshore islands, or visiting any by any means other than wading. Pre-settlement Aboriginal cultural material on southwest islands was deposited prior to their isolation between the late-Pleistocene to mid-Holocene, perhaps ten or twelve thousand years ago.

The Tasmanian situation provides some useful clues to what may have contributed to the southwest scenario since. According to Jones, islands beyond 13 km from the Tasmanian mainland were too far to be safely visited, while islands which were accessible needed to exceed 70 km² in order for the extant resources to support even a small permanent population.¹³⁴ Even though seasonal visits to small offshore islands took

¹³¹ Flinders, M. *A Voyage to Terra Australis*. (1814), (Adelaide: South Australian Government Printer, 1989), Vol.1. p.82.

¹³² Wollaston, (1842), *op. cit.*, p.96.

¹³³ Brough Smyth, *op. cit.*, vol. 2. p.315.

¹³⁴ Jones, (1977), *op. cit.*, pp. 317-86.
Kirk, *op. cit.*, p.35

place, the resources were secondary in importance to those available on the mainland.

In the southwest there are few islands in excess of this size, and those which are lie too far offshore. All can be considered as arid, with a limited range of terrestrial food resources. As such, island visitations in the southwest were entirely restricted to those accessible by wading. This is not to say more distant islands were not considered. Daisy Bates reported that on the west coast near Swan River a story existed that an Aboriginal man had once swum to Rottneest Island and discovered that, "the place was full of sharks." Since then no one else had bothered.¹³⁵ A competent and very fit swimmer can make the distance, and many have done it in the twentieth century without being eaten, so the Aboriginal story cannot be completely dismissed.

Nevertheless it seems reasonable to assume the numbers and voraciousness of the southwest sharks may well be one of the most important factors which inhibited the development of Aboriginal swimming skills. Similar discouragement may have existed for the utilisation of rafts and canoes or even rudimentary flotation devices as part of their normal aquatic and fishing strategies.¹³⁶ There have certainly been cases of small boats being attacked during the nineteenth century, and several incidents during the twentieth. Such is the hunting temperament of these fish that they present a real risk to people who venture unwittingly into their territory.

5.8 Fish and whale oil, utilitarian cosmetics

Europeans ate shark and ray meat but southwest Aborigines generally rejected it, although they appreciated cosmetic qualities of the oily livers. At King George Sound in January 1827 Lockyer remarked on how, "Four young men all painted and their hair Clubbed and daubed all over with a red Ochre and fish or seal Oil..."¹³⁷ In December 1830 Barker boiled down some stingray livers for oil. It was too strong in flavour for him so he presented to the local Aborigines. His journal reads, "Many of them begging for the Sting ray oil to be put on their heads. Magnet's complacent look while being anointed, grounds & all."¹³⁸

Oil from fish and other species had widespread use amongst Aborigines as a

¹³⁵ Bates, *op. cit.*, p.253.

¹³⁶ Sharks are apparently less numerous along the coast in the late twentieth century than they were in the nineteenth. This may be due to intensive exploitation by commercial and amateur fishermen and the slow rate of reproduction.

¹³⁷ HRA ., III, VI, "Lockyer to Macleay," p.465.

¹³⁸ Barker, *op. cit.*, p.371.

thermal insulating agent and insect repellent. It also effectively cleaned and moisturised the skin and prevented chafing.¹³⁹ Mosquitoes are endemic in the southwest and the winter climate is very cold, so there were practical reasons involved, but the description from Barker creates speculation that fish oils might have also been appreciated for their sensual and even aromatic qualities. Cultural preferences obviously differed, because Europeans have frequently noted with revulsion how Aborigines enthusiastically rubbed themselves over at every opportunity with oily blubber obtained from stranded whales which were on the point of putrefaction.¹⁴⁰

The custom of rubbing fish and whale oil all over the body undoubtedly had its advantages but may have also provided a further discouragement to take up swimming. Whale oil is a well known fish attractant, and stingray-liver oil in particular is known to attract sharks from long distances in southwest waters.¹⁴¹

Another important source of fish oil was from the large mullet *Mugil cephalus*. Wilson's Inlet, west of King George Sound was particularly favoured with visits from this pelagic species and Aboriginal people from surrounding areas would congregate there by invitation of the traditional owners. It was most abundant during the winter months and a fat specimen could produce three quarters of a pound (340 g) of oil, which was also rubbed into peoples' hair and skin.¹⁴² Fish oil is also an excellent source of Vitamin A, so there would have been some nutritional advantages. Nevertheless participants at this prolonged gathering were observed to eventually break out in sores, which suggests that a balanced diet might have been lacking for the period of the fish aggregation.¹⁴³

No similarly detailed ethnographic descriptions have been identified of Aboriginal fishing activity between the Shark Bay region and Perth. However it is probable that similar activities occurred, especially in sheltered embayments and near river mouths. Archaeological evidence previously discussed in Chapter Four tends to support this view. As mentioned in Chapter One, in the Shark Bay region there were possibly five language groups sharing its abundant shores,¹⁴⁴ but while these people experienced severe cultural

¹³⁹ Low, T. *Bush medicine, a Pharmacopoeia of Natural Remedies*, (North Ryde: Harper Collins, 1990), pp.128-134.

¹⁴⁰ Grey, *op. cit.*, pp. 276-278.

¹⁴¹ Watson, E.J. "Rottnest its Tragedy and its Glory," unpublished M/S, 1935, p.154. BL.

¹⁴² Neil, *op. cit.*

¹⁴³ *Ibid.*

¹⁴⁴ Oats and Oats, *op. cit.*, pp.50-51.

disruption through pearling and pastoral activities in the latter half of the nineteenth century, little was recorded about them.¹⁴⁵ Even less material has been identified regarding Aboriginal activity at Cape Arid, which is at the other geographical extremity of this study. Abundant evidence of a former presence exists in the form of surface stone artifact scatters, and whatever answers are to be had regarding the former lifestyle will, for the most part be dependent on future efforts of archaeologists.

5.9 Strandings

Marine species including fish and mammals were occasionally stranded and provided a welcome addition to the Aboriginal diet. In the case of whales, they especially provided a commercial opportunity for settlers.¹⁴⁶ Strandings are always the result of some unpredictable circumstance. These may involve storm surges, changed water levels due to seismic activity, drying out of landlocked waters, and animals beaching themselves because of illness, misadventure or other unspecified causes. All these type of events have occurred in the southwest since settlement, and continue to do so. For example in 1993 and 1994 small schools of dolphins chasing fish became trapped in shallow waters associated with the Peel Inlet, and strandings of various species of whales occur almost every year elsewhere on the southwest coast. It is unclear if these events are any more frequent than during the nineteenth century or earlier.

As discussed in Chapters Two and Three, southwest estuaries were subject to closures, and through environmental factors could remain sealed off from the ocean for an indeterminate time, with a resultant detrimental effect on species contained. According to Kalgaritch, an Aboriginal informant of Daisy Bates, Aboriginal people in the Vasse region collected, “plenty *nemmat*, *deeda*, *wardan*, *ngoomat*, *moyurt*, and other little fish...when the water dried up.”¹⁴⁷ *Moyurt* is the usually abundant estuarine catfish *Cnidoglanis macrocephalus*, now commonly known as cobbler. These can grow to a weight of about 2.5 kg. and are mentioned as popular species with southwest Aborigines. According to Hammond they were the principal summer species exploited.¹⁴⁸

Sharks and rays are thought not to have been eaten in the southwest, but they were almost certainly killed if the opportunity arose. George Grey reported that he disturbed

¹⁴⁵ WAPD., 1870, p.41.

¹⁴⁶ PGWAJ., 13 Aug. 1836.

¹⁴⁷ Bates, D. II 3d, ii Notebook 15 p.124. Acc. 1212A.

¹⁴⁸ Hammond, *op. cit.*, p.19.

two Aborigines who had killed a large shark stranded in a pool near the mouth of the Gascoyne River, slightly north of Shark Bay.¹⁴⁹

Stranded whales were quite a different matter, and were enthusiastically appreciated by Aborigines all over Australia. Perhaps most importantly they facilitated important social interaction between otherwise distant groups. Europeans, attracted by curiosity or the prospect of a quick profit had no hesitation in interfering on such occasions, sometimes with a violent reaction, as happened in 1790 when Governor Philip was speared at Manly Cove in New South Wales when he insisted on imposing himself upon a feasting group.¹⁵⁰

On the west coast a settler, Thomas Peel, noticed a group of Aborigines feasting on a cast up whale as he sailed along the coast between Mandurah and Fremantle. He immediately returned to his home and gathered together some makeshift equipment to render the whale, an act coinciding with the Aborigines' departure. Peel's success played a significant role in stimulating interest in commercial bay whaling in the region and subsequent whales which washed ashore became the objects of vigorous bickering between interested parties. Aboriginal interests in this type of resource became irrelevant to those of the commercial entrepreneurs.

Stranded whales were possibly more numerous in the early nineteenth century because commercial exploitation was in its infancy in the region. In 1803 Baudin remarked that his men had "only" come across three dead whales while exploring the west coast.¹⁵¹ Depending on the wind, currents and shoreline configuration some places may have been more favourable for strandings than others. For example James Stirling noted the shores of Geographe Bay strewn with the debris of many whales in 1827.¹⁵² As recently as August 1996, some 300 pilot whales beached themselves here, although most were subsequently rescued by volunteers. The bay was much favoured by American whalers during the nineteenth century, and this and the subsequent effects on Aboriginal people are discussed further in Chapter Six.

¹⁴⁹ Grey, *op. cit.*, vol.1. p.356.

¹⁵⁰ Barnard-Eldershaw, M. *Philip of Australia*, (Sydney: Angus and Robertson, 1972), p.180-181; Colwell, M. *Whaling around Australia*, Sydney: Rigby, 1969), p.14-15.

¹⁵¹ Baudin, *op. cit.*, p.512.

¹⁵² *Quarterly Review*, 39, (1829), pp.315-344.

5.10 Historical images of southwest Aboriginal fishing activities

There are many pre-twentieth century paintings depicting southwest Aborigines in connection with fishing, but perhaps without exception all depict a male fisher, spear poised over some form of waterway and ready to strike. There are also paintings of stone fishweirs near King George Sound, but alas, no people using them. There do not appear to be paintings of any of the other varied types of fishing activities which this thesis has described. The early scientifically orientated paintings of fish and pinniped, especially from the Baudin expeditions 1800-1804 are varied, and spectacular, and there are some depictions of indigenous maritime related activity on the eastern seaboard, but they offer little elucidation about any Aboriginal exploitation of the southwest fishery.¹⁵³

The photographic record is similarly disappointing. Although there are many photographic portraits of nineteenth century southwest Aborigines in various poses, the photographic record of any form of subsistence activity or technology may be non-existent. A published photograph from the Western Australian Museum collection purportedly taken on the upper reaches of the Swan River shows hand-fishing nets similar to Queensland technology, and a photograph from the Berndt Museum of Anthropology collection which purportedly is of fishers on the Serpentine River, is actually a reversed copy of an image in the same collection taken at Hall's Creek in the Kimberley region in 1922.¹⁵⁴ Neither can it be absolutely certain that an image in the collection of the Western Australian Museum of the remains of a fishweir which is used in many of their leaflets and displays was actually located on either the Serpentine or Murray Rivers. Unfortunately none of the original prints of these images have any supporting documentary evidence for the claims made of them. The locations of the original negatives are unknown in all cases, as are the identities of the photographers. Brief pencilled notations on the back of the prints appear to have been added by unknown persons at a later time.

¹⁵³ See, Bonnemains, J., Forsyth, E. and Smith, B., (Eds.), *The Artwork of the French Voyage of Discovery to the Southern Lands 1800-1804*, (Melbourne: Oxford University Press, 1988).

¹⁵⁴ The "Swan River" photo is reproduced in Bates, (1992), *op. cit.*, p.134. The "Serpentine River" photo is reproduced in McNair, W. and Rumley, H. *Pioneer Aboriginal Mission: The Work of Wesleyan Missionary John Smithies in the Swan River Colony 1840-1855*, (Nedlands: University of Western Australia Press, 1981), p.18. The photograph of what is believed to be a fish trap on the "Murray River" is reproduced in Dix and Meagher, *op. cit.*, p.173.

Chapter 6 Whalers and fishers

6.1 Pre-colonial mariners in the southwest

There has been speculation that Portuguese navigators visited the southern and eastern coasts of Australia as early as 1521.¹ However, convincing evidence that this occurred has yet to be identified. Nevertheless subsistence exploitation of maritime resources by Europeans has definitely taken place in the southwest since 1616, when Dutchman Dirk Hartog called at Shark Bay.² Other navigators soon followed, and by 1644 sufficient data had been compiled to allow a reasonably accurate profile of most of the southwest coastline and the approximate locations of offshore island groups to be published.³

Subsequently, and well prior to the establishment of a permanent British presence at King George Sound in 1826, more than sixty Dutch, British, French and American vessels visited various parts of the southwest coast, and during these visitations, many exploited the maritime resources in some manner. A list of these vessels is shown in Fig. 6.1, and as the maritime history of Western Australia is further developed, it is probable others will be added. Early maritime contacts with the Australian mainland north of Shark Bay, and east of Cape Arid are excluded.

The total number of people who sailed into southwest waters prior to settlement was probably well in excess of 2,000, and those who came ashore certainly numbered in the several hundreds. There were a variety of reasons for their ships being in the region. Dutch vessels were associated with commercial trade, mostly voyaging from Holland, via the Cape of Good Hope to Batavia. Some preliminary south coast exploration was carried out by one of their vessels *Vergulde Zeepaard* in 1627, but the Dutch presence was mostly felt on the west coast, and was primarily due to accident through navigation errors, or as a result of searches for missing vessels. Some seamen recorded useful observations relating to southwest Aboriginal fishing activities, and a selection of these have been mentioned in Chapter Five.

¹ Major, R. *Early Voyages to Terra Australia, Now Called Australia*, (New York: Burt Franklin, ND.); Fitzgerald, L. *Java La Grande, the Portuguese Discovery of Australia*, Hobart: Publishers Ltd. 1984).

² The name Shark's Bay appears in early works dating from Dampier's visit but the orthographic convention is now Shark Bay. The same applies to King George Sound.

³ Perry, T.M. *The Discovery of Australia: The Charts and Maps of the Navigators and Explorers*, (Melbourne: Thomas Nelson, 1982), pp.34-41.

<u>Year</u>	<u>Nationality</u>	<u>Command</u>	<u>Ship</u>	<u>Landfall</u>	<u>Persons</u>
1616	Dutch	Hartog	<i>Eendracht</i>	Shark Bay	
1616			<i>Harmony</i>	West coast?	
1618	Dutch	Jacobsz	<i>Mauritius</i>	Dirk Hartog I.?	
1618	Dutch	de Houtman	<i>Dordrecht</i>	Abrolhos - west coast	
1619	Dutch	Cornelisz	<i>Amsterdam</i>	West Coast	
1622	Dutch	?	<i>Leeuwin</i>	Cape Leeuwin	
1627	Dutch	Thijssen	<i>Vergulde Zeepaard</i>	South coast	220
1629	Dutch	Pelsaert	<i>Batavia*</i>	Abrolhos	300
1629	Dutch	Pelsaert	<i>Sardam</i>	Abrolhos-west coast	26
1656	Dutch	Albertsz	<i>Vergulde Draeck*</i>	Cervantes	193
1656	Dutch	?	<i>Goede Hoop</i>	Cervantes-west coast	11 lost ashore
1657	Dutch	?	<i>Vinck</i>	Cervantes-west coast	
1658	Dutch	Volkersen	<i>Waeckende Boey</i>	West coast	40
1658	Dutch	Jonk	<i>Emeloort</i>	West coast	25
1658	Dutch	Peerbroom	<i>Elburg</i>	West coast	
1694	Dutch	?	<i>Ridderschap van Holland*</i>	West coast?	325
1696	Dutch	Vlamingh	<i>Geelvinck</i>	West coast	134
1696	Dutch	Collaert	<i>Nijptang</i>	West coast	50
1696	Dutch	Zeeman	<i>Weseltje</i>	West coast	14
1699	British	Dampier	<i>Roebuck</i>	Shark Bay	
1712	Dutch	Jorisz	<i>Zuytdorp</i>	Zuytdorp Cliffs	300>
1727	Dutch	Steyns	<i>Zeewijk*</i>	?	209
1772	French	St Alouarn	<i>Le Gros Ventre</i>	Flinders Bay	120
1790	American	Whiphey	<i>Caroline du Sud</i>	Shark Bay	
1791	British	Vancouver	<i>Discovery</i>	South coast	
1791	British	Broughton	<i>Chatham</i>	South coast	
1792	French	D'Entrecasteaux	<i>Recherche</i>	South coast	113
1792	French	Kermadec	<i>L'Esperance</i>	South coast	106
1792	American	Bartlett	<i>Asia</i>	Shark Bay	
1792	American	Coffin	<i>Alliance</i>	Shark Bay	
1792-3	American	Gardner	<i>Edouard</i>	West coast	
1792	British	Moorhead?	<i>Canada</i>	West coast?	
1800	British	Dixon	<i>Elligood</i>	King George Sound	
1800	British	Dennis	<i>Kingston</i>	King George Sound	20
1800	British	Grant	<i>Lady Nelson</i>	South coast	
1801	British	Flinders	<i>Investigator</i>	South coast	
1801	French	Baudin	<i>Geographe</i>	West coast - Shark Bay	
1801	French	Hamelin	<i>Naturaliste</i>	West coast - Shark Bay	
1803	American	Pendleton	<i>Union</i>	South coast- Two People Bay	
1803	French	Baudin	<i>Geographe</i>	South and west coasts	
1803	French	Freycinet	<i>Casuarina</i>	South and west coast	
1809	British	Smith	<i>Eliza</i>	South coast	
1815	British	Forster	<i>Emu</i>	South coast	
1818	British	King	<i>Mermaid</i>	South coast	
1818	French	Freycinet	<i>Uranie</i>	West coast	
1821	British	King	<i>Bathurst</i>	South and west coasts	
1822	American	?	? (schooner)	South coast	
1824	British	Bremer	<i>Tamar</i>	South coast	
1824	American	?	<i>San Antonio</i>	South coast	
1824	British	Lee	<i>Belinda*</i>	South coast	
1824	British	Swindles	<i>Nerius</i>	South coast	
1825	Colonial	Randall	Whaleboats	South and west coasts	
1826	French	D'Urville	<i>L'Astrolabe</i>	South coast	
1826	British		<i>Hunter</i>	South coast	
1826	French	Jacquinet	<i>La Zeke (Zelée?)</i>	South coast	
1826	British	Lockyer	<i>Amity</i>	South coast	
1827	British	Stirling	<i>Success</i>	South and west coasts	

* wrecked.

Fig. 6.1 An inventory of pre-settlement voyages to southwest Australia⁴

⁴ Contributing sources: King, (1827), *op. cit.*; Bateson, C. *Australian Shipwrecks, including vessels wrecked en route to or from Australia and some strandings*, (Sydney: Reed, 1972); Sigmond, J.P. & Zuiderbaan, L.H. *Dutch discoveries of Australia*, (Adelaide: Rigby, 1976); Yarrow, Stephen. (1980). *We Discovered an Island*, Perth: Regency Publications, 1980), Richards, R. "The cruise of the Kingston and the Elligood in 1800 and the wreck found on King Island in 1802," *The Great Circle*, 13, 1, (1991), pp. 35-53.

Voyages to the south coast, led by Vancouver in 1791 and D'Entrecasteaux in 1792 have provided rich collections of environmental and ethnographic data. These were reinforced by Baudin and Hamelin's visits in 1801, and by D'Urville's in 1826. British and French sailors were in the main participating in exploratory expeditions, with their intelligence gathering activities reinforced by scientifically based methodology.

American entry into southwest waters has been less well publicised, but came soon after the political reorganisation of north America through the War of Independence. The resultant peace treaties signed in Paris in 1783 still left Britain in control of what were then North America's two richest resources, the fur trade and the Great Fishery of the north-west Atlantic.⁵ During the war, Welsh-American whalers abandoned their American homes and took their vessels to Belgium where they resettled. Being Quakers their religious philosophy did not allow them to participate in war. From Belgium they projected their whaling operations towards the south Atlantic, but by the 1790s the entire Atlantic became a highly competitive region, with markedly declining catches.⁶ This stimulated the entry of whaleships into the Indian Ocean, which was soon discovered to be a significant whaling region, but which imposed new logistical problems.

The *Caroline du Sud* out of Dunkirk, and under command of American James Whippey visited Shark Bay in an unsuccessful search for fresh water during December 1790.⁷ In May 1792 two Nantucket whalers, *Asia* sailing under Captain Bartlett, and *Alliance* under Captain Elijah Coffin anchored there for several days to shelter from bad weather. As has been discussed in previous chapters, apart from fresh water, Shark Bay was resource rich, as the logkeeper of the *Asia* wrote: "Sent our boat on Shore after some fish. She returned with plenty."⁸ The captain and crew also collected bird eggs, while those crewmen from their consort managed to kill a "sea hog," which would have been either a dugong or a dolphin. No mention was made of Aborigines.

Regardless of their original purpose for being in the region, all ship captains would have been interested in taking on fresh water and other subsistence resources when local conditions were safe. Most ships would also have carried some form of fishing

⁵ Meinig, D.W. *The Shaping of America: A Geographical Perspective on 500 years of History. Vol. 1. Atlantic America, 1492-1800*, (New Haven: Yale University, 1986), pp.323-324.

⁶ Jones, A. "The British Southern Whale and Seal Fisheries," (1981a), *The Great Circle*, 3, 1.(1981), p.1.

⁷ Richards, R. "The cruise of the *Kingston* and the *Elligood* in 1800 and the wreck found on King Island in 1802," *The Great Circle*, 13, 1, (1991), pp. 35-53, (39).

⁸ *Asia log*. (1792-4) PMB microfilm 228.

equipment, either in the form of hooks and lines, or nets. For instance several examples of hooks and sinkers recovered from seventeenth century Dutch shipwrecks can be viewed in the Fremantle Maritime Museum.

Contained within numerous other journals are descriptive passages relating to subsistence fishing by crews, and occasionally included are brief remarks about Aboriginal fishing activities. For example William Dampier particularly stated the value of fishing to his crew at Shark Bay in August 1699. "Of the sharks we caught a great many, which our Men eat very savourily."⁹ They also caught and ate marsupials, turtle and birds, and according to Dampier, the general health of the crew improved noticeably from these dietary additions. Many whales were sighted, but the ship was not equipped to take them.¹⁰

In March 1792 on return from the Antarctic, French explorer St Alouarn anchored *Le Gross Ventre* in what was later named Flinders Bay. Many sharks were observed and one very large specimen was caught, but the crew mostly ate smaller fish, including the Australian herring (*Arripis georgianus*). Eventually the ship proceeded northwards to Shark Bay, where more fish were caught.¹¹

Other accounts of subsistence activities by Europeans are more detailed, as for example occurred in September 1791 when H.M.S. *Chatham* and H.M.S. *Discovery* visited the south coast. *Discovery* carried a seine net so large it required three boats to be used effectively, but in King George Sound their hauls were disappointing. Vancouver attributed this to lack of experience rather than the lack of fish. More success was had using hook and line, and the fish were described by familiar English names such as mullet, herring, mackerel and snook.¹² Vancouver's men found large numbers of oysters (*Ostrea angasi*) in the estuarine bay they subsequently named Oyster Harbour. The entire crews of both ships were fed several meals of these during their stay, resulting in enthusiastic reports which were carried far and wide by the published memoirs in 1798, and within several of at least twenty five individual logs and journals associated with the expedition.¹³ No doubt too, scuttlebutt played a role when sailors eventually took their leave. In 1826 Dumont D'Urville entered Oyster Harbour and wistfully observed, "Piles

⁹ Dampier, W. *A Voyage to New-Holland.... In the Year 1699*, (London: Argonaut Press, 1939), p.87.

¹⁰ *Ibid.*, pp.88-89.

¹¹ Marchant, *op. cit.*, p.61.

¹² Vancouver, *op. cit.*, vol.1, pp.352-353.

¹³ *Ibid.*, vol. 1, pp.xix-xx.

of oyster shells proclaimed the former existence of these molluscs, but I did not find a single one on the rocks.”¹⁴

Naturalist François Péron wrote that the crew of the French ship *Geographe* had also experimented with sea-bird eggs at Shark Bay in late June 1801 but found them unpalatable. Of fish he remarked, “Probably no country in the world abounds with fish so much as in the great bay of Sea-dogs;”¹⁵ Sea dogs, or *chiens marins* in this case being sharks. The previous month the crew had fished in the Vasse River near Cape Naturaliste and discovered the local fish were too powerful for their fishing lines.¹⁶

In August 1800 the British whalers *Elligood* and *Kingston* put into King George Sound. The skipper of the *Elligood* had been ill, died soon after arrival and was buried ashore. “Delightful weather” was experienced during their subsequent 25 day stay, and in between catching the occasional whale they fished and ate oysters from Oyster Harbour, where they had also chased whales. No Aborigines appear to have been sighted during their stay.¹⁷

Sharks were viewed as the common enemy of all sailors, and investigating the stomach contents of large specimens always evoked much interest and amusement. Those on the south coast could be very large, and required a considerable amount of expertise and effort to bring them aboard. Upon hooking and bringing alongside, a noose was slipped over the head, worked along the body to be secured round the tail, thus allowing the fish to be safely hauled aboard. The crew of the *Investigator*, under Matthew Flinders, caught a large shark in this manner while exploring the Recherche Archipelago in 1801. The fish which was probably a white pointer (*Carcharodon carcharias*), contained a dead seal, with Aboriginal spears embedded.¹⁸

A miscellany of other visits by whalers and sealers occurred from the beginning of

¹⁴ D'Urville, J.S.C. Dumont, *An Account in Two Volumes of Two Voyages to the South Seas by Captain Jules S-C Dumont D'Urville...* Vol. 1: Astrolabe 1826-1829...Rosenman, H., Trans., (Melbourne: University of Melbourne Press, 1987), vol.1, p.29

¹⁵ Peron, M.F. *A Voyage of Discovery to the Southern Hemisphere, Performed by the Order of The Emperor Napoleon, During the Years 1801, 1803, and 1804, (1809), (North Melbourne: Marsh Walsh Publishing, 1975) p.95.* (Shark's Bay was by named by Dampier in 1699. It appeared as *Baye des Chiens Marins* on Bellin's 1753 map of New Holland and then continued to be known by that name on French charts.

¹⁶ Peron, *op. cit.*, p.76.

¹⁷ Dennis, T. *Journal kept on board the London whaleship Kingston, 1801*, (Sharon: Kendall Whaling Museum,) PMB microfilm 824. Richards, *op. cit.*, p.39.

¹⁸ Flinders, *op. cit.*, vol. 1, pp.82-83.

the nineteenth century, and it is probable that there were more than are listed in Fig 6.1. Sealers and their activities, including their role of being suppliers of fresh fish to visiting whalers are discussed in Chapter Seven.

The largest catches of fish by visiting sailors appear to have occurred from *HMS Challenger* in Cockburn Sound in 1829 when the new settlement at Swan River was being established. It seems possible their efforts were motivated by a desire to distribute fish amongst settlers. Eliza Currie wrote in her diary on 19th August 1829, "An extraordinary haul of kingfish by the *Challenger*, 2 or 3000."¹⁹ It was an ominous precedent for the over-exploitation of local fish stocks, nevertheless, not all sailors caught fish at every opportunity. On board *HMS Alligator* in 1833 Austrian botanist Carl von Hügel observed that seamen on board enjoyed eating fresh fish when provided, but they rarely could motivate themselves to catch them.²⁰ In contrast the crew of *HMS Beagle* appear to have excelled in their fishing efforts. While off the southwest coast, their Captain, John Lort Stokes, referring to them as "salt water Waltonians" in honour of the author of the famous English fishing treatise.²¹

6.2 The whaleships

The earliest indication of potential whaling prospects in the southwestern waters came as a result of Dutchman Abel Tasman's voyages in 1644. Tasman did not sight the southwest coast as he voyaged eastward, but crossed the whales' northern migratory route which passed by Cape Leeuwin. As a result the presence of whales south of Cape Leeuwin was indicated on the Bonaparte (Tasman) map, which is believed to have been drafted under his direct supervision.²² Wider notice of these prospects was given with the publication of the observations of Englishman William Dampier, who visited the Shark Bay region in 1699. He wrote, "The sea is plentifully stocked with the largest whales that I ever saw..."²³

The first whaleship to enter southwest waters appears to have been the previously

¹⁹ Currie, Jane, Eliza. "Diary of incidents in the early settlement of the Swan River, 1829-1832," typescript, BL, p.3.

²⁰ von Hügel, *op. cit.*, p.86.

²¹ Stokes, J. L. *Discoveries in Australia: With an account of the coasts and rivers explored and surveyed during the voyage of H.M.S. Beagle in the years 1837-38-39-40-41-42-43*, (1846), (Adelaide: Libraries Board of South Australia, 1969). vol. 1, pp.104-5.

²² See Perry, *op. cit.*, p.36.

²³ Dampier, *op. cit.*, p.106.

mentioned *Caroline du Sud* which called at Shark bay in December 1790.²⁴ Two Nantucket whalers, *Asia* and *Alliance* made their landfall at Shark Bay two years later. The log of the *Asia*, reveals that several whales were taken in the region.²⁵ Noticeably absent in its daily entries is the exciting sense of discovery, as for instance is apparent in the detailed records of the D'Entrecasteaux visit to the southwest the same year, or those relating to Vancouver's slightly earlier visit to King George Sound in 1791. For the Americans, the stopover on the west coast of New Holland was no more than one of brief rest and recreation while awaiting better whale hunting weather. Nevertheless news of these early visits probably spread quickly. According to Herman Melville, none were more willing to exchange whaling intelligence with each other than were American whalers, and so called "gams" often occurred when ships met in mid-ocean.²⁶ Not long after departure they met up with another whaler the *Edouard* out of Dunkirk and paused for such a gam. This ship then also tested the whaling prospects off West Australia and in July 1793 arrived in New Bedford with 1,500 barrels of oil partly taken from New Holland waters.²⁷ No evidence identified in this study suggests that any of these very early American whaleships explored southern coastal waters east of Cape Leeuwin, or engaged in any bay-whaling operations prior to settlement.

Prior to 1798 British whalers were restricted by law from taking whales south of latitude 15°S and between longitudes 51°E and 180°E. This meant that the waters of much of the Indian Ocean and southwestern Australia were out of bounds. The Napoleonic Wars brought about increasing losses of British whaleships to Spanish and French privateers in the Atlantic, and it was not until the Congress of Vienna in 1815 marked the end of the Napoleonic Wars and allowed the beginning of a substantial increase in whaling activity in the Indian Ocean. Many Indian Ocean outposts were controlled by Britain and this afforded a political stability in the region hitherto unknown. The risk of navigational disaster which so terrified the Dutch traders had also been markedly reduced by the fact that the Indian Ocean had been systematically charted.²⁸ While the removal of restrictions had enabled British whaleships to venture into southwest Australian waters if they wished, few did because of a preference for sperm

²⁴ Richards, *op. cit.*, p.39.

²⁵ *Asia log.* (1792-4) PMB microfilm 228; Heppingstone, (1969), *op. cit.*

²⁶ Melville, H. *Moby Dick*, (1851), (London: Dean and Son, ND.), p.109.

²⁷ Richards, *op. cit.* p.35.

²⁸ Wray, P. and Martin, K. *Historical whaling records from the western Indian Ocean*, (Oxford: International Whaling Commission, 1980), p.3.

carried out repairs to their ship. In that same year two vessels processed 30 whales there, and in 1840 two other ships caught 31, in all cases without leaving the bay.³⁴

On the west coast at Geographe Bay whaleboats would chase their quarry down as they passed northwards, then tow them back to the mother vessel for shipboard processing. When possible the flensed carcasses were then towed back out to sea and cast off so as not to annoy settlers.

As a result of the British whalers' attention to sperm whales and a focus on the European market, the more pragmatic Americans were able to dominate the southwest whaling scene through to the mid-nineteenth century, much to the chagrin of the British residents of the Swan River colony.³⁵ Impoverished settlers needing lighting fuel tended to buy the lesser grades of "black oil" originating from local species, but this was the cause of much dissatisfaction because it smoked and flared, and was difficult to keep alight.³⁶

The American whalers also became synonymous with smuggling and provided a conduit for spirits and other generally hard to get merchandise into the colony. These activities were facilitated by trading arrangements with settlers living at a distance from the main settlements.³⁷ Whalers had provided a similar service in Madagascar,³⁸ and probably did so in the Pacific. Fresh produce was a common bartering medium, but hard currency and gold could also be demanded. Understandably whaleships tended to lay-over at isolated coastal locations to avoid port fees and official scrutiny.³⁹ In frustration at their activities, Governor Stirling at Swan River appealed to the Colonial Office in London for a naval vessel to patrol the coast, but this was declined because of a risk of endangering relationships with the American government.⁴⁰ Understandably the success of Americans was of substantial annoyance to local bay-whalers. In 1844 James Witt complained to the Governor that American whale ships stationed in the lee of Cape Naturaliste were usurping a resource which rightly belonged to the colony.⁴¹ Ultimately a

³⁴ *Inq.*, 3/8/1842.

³⁵ *Inq.*, 10/2/1841, 24/3/1841; Battye, J.S. *Western Australia, a history from its discovery to the inauguration of the Commonwealth*, (1924), (Nedlands: University of Western Australia Press, 1978), p.143.

³⁶ Wollaston, *op. cit.*, p.158.

³⁷ Day, D. *Smugglers and Sailors: The Customs History of Australia 1788-1801*, (Canberra: AGPS, 1992), p.345.

³⁸ CSR 73/75 17/11/1839; Wray and Martin, *op. cit.*, p. 11.

³⁹ Day, *op. cit.*, p.345.

⁴⁰ PGWAJ., 18/4/1837; CSR 18/25-14/7/1840; CSR 73/75 17/11/1839.

⁴¹ CSO, Bunbury, 7/5/1844.

compromise was reached whereby the Americans offered to allow the locals to try-out any whales caught aboard the American vessels, thus allaying the establishment of a new shore station.⁴² A scene aboard a nineteenth century whaleship in Australian waters is reproduced in Fig. 6.7 at the end of this chapter.

Pelagic whaling in the southwest was not an exclusively American business. During an east-west overland exploration in June 1840 Edward Eyre and his Aboriginal companion Wylie came across two French whaleships anchored near Cape Le Grand. The parent vessel *Mississippi* was anchored in what Eyre subsequently named Rossiter Bay in honour of the captain. Rossiter disclosed they had been in the area for three weeks and that it was their first season out, and they were nervous about the sensitive political relationship which existed between Britain and France. They were not expecting the whale species they sought to become available until June or July. Fin-back whales (*Balaenoptera physalus*) which came into that section of coastline were not considered economically worthwhile, and humpback whales which predominated in the post-settlement catch records of southwest bay-whalers were apparently regarded by them with similar disdain. The crew had established a vegetable garden near a stream on the mainland and were growing potatoes and peas, and on a nearby island they had set loose their livestock, which included pigs, fat tailed sheep and two Madagascan tortoises.⁴³

In the early 1840s such tranquillity soon vanished and a claim was made in a Swan River newspaper that as many as 150 American vessels were visiting the southwest coast every season.⁴⁴ This appears to have coincided with the approximate peak of known global whaling activity during the nineteenth century. A chart showing the numbers of American whaleships embarking for the Indian Ocean between 1828 and 1891 is shown in Fig. 6.3. The subsequent decline after 1844 coincided with the increasing use of kerosene as coal gas as fuels, but was probably also reflective of an increasing scarcity of whales. There is also a significant dip in activity coinciding with the start of the American Civil War, which took place between 1861 and 1865.

⁴² CSO, Bunbury, 26/6/1844; McIlroy, *op. cit.* p.5.

⁴³ Eyre, *op. cit.*, vol. 2, pp.65-74.

⁴⁴ *Inq.* 1/9/1841, no.57.

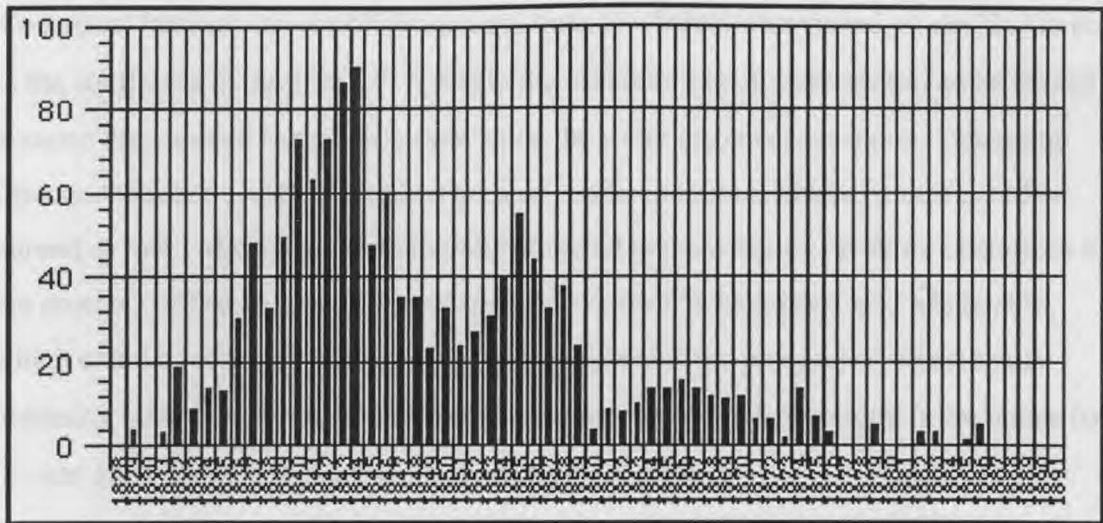


Fig. 6.3 American whalships embarking for the Indian Ocean 1828-1891⁴⁵

Prior to 1843, the operational plan of most American whalers appears to have involved an initial visit to the north Atlantic during the northern hemisphere summer, thence to the South Atlantic and into the Indian Ocean via the Cape of Good Hope to hunt for sperm whales through the summer months there. They would then eventually arrive off the southwest coast of New Holland (Australia) in the winter months of June and July and engage in bay whaling for right-whales until about about October, after which they would move westwards back into the Indian Ocean, hunting sperm whales through the following summer. Eventually they returned via the Cape of Good Hope to their home ports on the eastern seaboard of north America.⁴⁶ An approximate plot for a pre-1843 voyage of a Nantucket whaler is shown for clarification in Fig. 6.4.

After 1843 American whalships discontinued beating back into the Indian Ocean and instead continued through to Van Diemen's Land (Tasmania). From there they would enter the south Pacific for the summer season and then continue on to Alaskan waters, thence to their home ports via Cape Horn.⁴⁷ It has been estimated by Bannister that 266 right-whales were caught in the coastal waters of Western Australia between 1836 and 1866.⁴⁸ This does not seem very many animals in consideration of the number of whalers visiting over time.

Visiting whalers appear to have had reasonably amicable relationships with settlers and Aborigines along the south and west coasts, and today numerous southwest

⁴⁵ Sources: Townsend, *op. cit.*; Wray and Martin, *op. cit.*

⁴⁶ Wray and Martin *ibid.*, Bannister (1986) *op. cit.* p.257.

⁴⁷ Bannister, *ibid.*

⁴⁸ *Ibid.*, p.255.

Aboriginal families can establish ancestral links to whalers who visited, or decided to stay in the southwest in the 1840s.⁴⁹ It was in the best interests of these visitors to be friendly because they needed to regularly draw upon the water resources on shore. Obtaining firewood was not usually a problem because rendered blubber-tissue (scrap) could be burned as fuel. Aborigines were initially attracted to the whalers' on-shore operations by the prospect of feasting on discarded meat or so called "whale-beef" and whale-skin, which could be crackled like pork rind. There was also the prospect of occasionally obtaining other commodities such as tobacco, and bread or ship's biscuit in exchange for favours such as carrying letters to settlements.⁵⁰

While the visits of American whalers were enjoyed in certain quarters, the protests of colonial bay-whalers eventually obliged the Western Australian Legislative Council to pass an ordinance in 1860 which prohibited foreigners from taking whales in Western Australian coastal waters.⁵¹ By then it was far too late because there were few whales left, and the demand for whale oil was rapidly falling away as other fuels became available. This preferential switch had been noticed in Britain as early as 1836 and was attributed there to the spread of reticulated coal-gas in the major cities.⁵² While whale oil still retained some value, the numbers of whales decreased to the extent American whalers had abandoned the Indian Ocean region entirely by the late 1880s.⁵³

⁴⁹ Erickson, R. (Ed.), *The Bicentennial Dictionary of Western Australians pre-1829-1888*, (Nedlands: UWA Press, 1988), p.1601.

⁵⁰ Eyre, *op. cit.*, vol.2, p.71; Haley, *op.cit.*, pp.51-52.

⁵¹ 24 Vict. 12., (1860).

⁵² *Saturday Magazine*, April 23 1836, p.156.

⁵³ Wray and Martin, *op. cit.*, p.3.

visible evidence remaining of these operations, but archaeological scrutiny in the future will inevitably shed further light. A sketch map of known bay-whaling locations in the southwest is shown in Fig 6.5. Most information is known of operations close to the main settlements. In August 1830, a year after the colony at Fremantle was established an influential settler, George Fletcher Moore wrote:

Nothing remarkable has occurred within the last two days, except the appearance of seven spermacetti-whales from Fremantle, and that the people have been smitten with the mania for whale fishing; but unfortunately there is no suitable fishing tackle for an attack on these monsters of the deep, which would otherwise (and will at a future time) have a successful result.⁵⁶

The identification of sperm whales is probably an error. Because these were the most valuable species and were mostly seen in deep water, the account probably involved some wishful thinking. Starting up a bay-whaling enterprise was not so easy as acquiring suitable tackle. Whaling was a dangerous occupation which required men to have strength, endurance, courage, guile and skill. Successful operations in the southwest were expensive, and usually involved more than a dozen men and a cook. In addition much specialised equipment was necessary, which could include at least two fast boats, harpoons, ropes, flensing knives, blubber cutters, mincers and try pots for rendering.⁵⁷ All were useless without a good supply of casks for storing the oil. Casks presented a particular problem because it was discovered that Australian hardwoods suitable for general cooperage purposes tended to be porous to some seal and whale oils.⁵⁸

Colonial shore-based whaling eventually commenced at Fremantle in 1837 with surplus equipment being purchased from American whaleships. The first whale was harpooned by two competing companies, one operating from Fremantle and one from nearby Carnac Island. The Carnac boat was obliged to cut itself adrift as the sounding whale was about to tow it under.⁵⁹ That the line was secured to the boat is an indication of the inexperience of the colonial whalers. According to Herman Melville, who was perhaps the greatest recorder of nineteenth century whaling lore, American whalers'

⁵⁶ Moore, *op. cit.*, p.57.

⁵⁷ The Fremantle Museum has a permanent display of locally used 19th century whaling implements. There is also whaling museum at Albany, "Whaleworld".

⁵⁸ Henderson, J. *Observations on the Colonies of New South Wales and Van Diemens Land*, (1832), (Adelaide: SA Libraries Board, 1965), p.136.

⁵⁹ *PGWAJ.*, 10/6/1837, p.916.

harpoon lines were never tied off because of this danger.⁶⁰ A similar accident happened to bay whalers in Geographe Bay in 1851, “So sudden was the onslaught that there was no time to cast loose. The boat to which it was attached was dragged down, leaving the crew swimming...”⁶¹

Colonial whaling entrepreneurs also discovered that their teams were reluctant to work without pay.⁶² The promise of a generous lay (share) was irrelevant if there were long gaps between whales. The men operating at Fremantle were probably fortunate to catch the whales they did because of the intensive efforts of American whaleships further south, which intercepted the northward migrations. Lack of prospects caused dissatisfaction and walkouts amongst whalers, resulting in legislation being enacted in 1847 to provide imprisonment and a fine for those who breached an employment contract.⁶³

At Flinders Bay the skipper of the *Mentor* set up a temporary tryworks in 1839 and during operations employed Robert Heppingstone, a youth from the nearby settlement. Buoyed by this experience, a few years later Heppingstone established his own successful bay-whaling operation at Castle Bay, near Cape Naturaliste. In 1851 an innovative technical change occurred when Captain Brown of the American whaleship *North Star* arrived in Geographe Bay and began selling harpoon guns which he had invented. These removed the necessity for the whalers to get in so close to the whales, which by this time had become extremely nervous. Twenty or so were sold to other whaleships in the vicinity, and to Heppingstone. Nevertheless whaling remained a dangerous occupation and Heppingstone and an Aboriginal pullhand were eventually drowned when their whaleboat was overturned by an unexpected “king” wave in 1854, a fate similarly met by Heppingstone’s father at Flinders Bay in 1835.⁶⁴

The southern right-whale has a high oil content, and unlike many other whale species, floats after death.⁶⁵ This natural buoyancy was of great importance to bay-whalers because unless the harpooner struck his “iron” into a vital spot wounded whales might drag the small boats long distances before succumbing. The oarsmen, or “pullhands” would then have to row the whale back to the tryworks for flensing. The

⁶⁰ Henderson, *op.cit.*; Melville, *op. cit.*, p.131.

⁶¹ *Inq.*, 24/10/1851

⁶² *PGWAJ.*, 31/11/1839.

⁶³ 10 Vic. 16., (1847).

⁶⁴ Heppingstone, (1993), *op. cit.*, pp.462, 467.

⁶⁵ McIlroy, *op. cit.*, p.2.

return could take a long time at a speed of no more than one or two kilometres per hour, and longer if the wind was against them. The best times for sighting and harpooning humpback whales was when a breeze was blowing from offshore, which facilitated a rapid pursuit.⁶⁶ Sometimes chase-boats had a gaff-rigged sail to assist. The whales might still escape, either because the iron “drew,” or the rope parted. It was not uncommon for whales to carry the metallic evidence of former encounters. Even when a whale was safely secured, bay whalers had to contend with the predations of the local shark population, as reported by one observer, “To the southward, our whalers are sadly bothered by the sharks which crowd round the whale in such numbers while the boats are towing it in, that the fish often reaches the shore almost a skeleton.”⁶⁷ Sometimes too, killer whales would attack a carcass, usually seeking out the huge tongue.⁶⁸

A few southwest bay-whalers originated from Tasmania in the mid-1840s after unsuccessfully testing their luck at mainland locations on the south-eastern coast, and at Kangaroo Island. One of these, John Thomas, established a bay-whaling operation on Middle Island, near Cape Arid. His boat *Harpentine* (*Harpenture?*) was used to convey oil and provisions between his base and Albany before he eventually reestablished operations at Cheyne’s Beach, which was much closer to the port. According to Captain James Sale, Thomas was responsible for teaching many Western Australians the skills of whaling and was regarded as a leader in the industry.⁶⁹ In 1864 Thomas was also engaging in sealing operations on the south coast using the *Mary Anne*, and was said to have circumnavigated the Australian coast several times in his coastal pursuits.⁷⁰

Another relatively successful bay-whaler was John Andrews, who set up shore operations at Two People Bay, between 1842 and about 1845. His ship *Vulcan* apparently had four whale boats and about 30 men, many of whom were ex-convicts. Andrews was to become a major lobbyist for the previously mentioned protectionist measures to be taken against American whalers. Another bay-whaler, John Sinclair operated from Migo Island, near Torbay with the *Julian*.⁷¹

⁶⁶ Wray and Martin, *op. cit.*, p. 10.

⁶⁷ *SRNWAC.*, 1/2/1846.

⁶⁸ *Inq.*, 24/10/1851.

⁶⁹ Sale, James. (ND). Typescript, BL 2301A.

⁷⁰ *RWAHS 1977/3/Box 31.* (Heppingstone collection).

⁷¹ Garden, *op. cit.*, p.77; McIlroy, *op. cit.*, p.13.

southwest after the 1880 season, when operator John Bateman was unable to record a single whale.⁷⁵ This coincided with the total withdrawal from the Indian Ocean region by American pelagic whalers.⁷⁶

6.4 Aborigines and whalers

Bay-whaling operations quickly attracted Aborigines. At Fremantle John Lort Stokes, commander of the survey ship *HMS Beagle* wrote, “The revelry then going on amongst the natives at Freemantle, (sic) where, at this period of the year, they assemble in great numbers to feast on the whales that are brought in by the boats of a whaling establishment...”⁷⁷ This also happened elsewhere as whaleships established temporary shore operations when safe anchorages and near-shore supplies of whales were available.⁷⁸

Occasionally American whalers ingratiated themselves with the colonial authorities and settlers at the expense of coastal Aborigines. In February 1841 a settler, George Layman was killed by an Aborigine named Gayware in a spearing incident at Wonnerup near the Vasse. Reprisal expeditions led by the government’s resident magistrate, Captain John Molloy killed several Aborigines,⁷⁹ but three sons of Gayware escaped. Molloy solicited the services of Captain Plaskett of the American ship *Napoleon* to capture the fugitives, who were known to be hiding in the vicinity of Toby's Inlet, located at the mouth of the Lennox River. Toby’s Inlet appeared insignificant to the needs of settlers because of its relatively small size, but it was very rich in fish and attracted many Aborigines.⁸⁰

If the arrangement with Plaskett succeeded, and provided the men were transferred to the authorities at Fremantle, he would be rewarded with £25, a substantial sum. The whaler soon found the men and invited them on board to take part in a feast of wild ducks his men had shot. One Aborigine, Mungo, was released because of an alibi and his young age, but the other two, Kenny and Woolerdung, were taken to Fremantle by Plaskett where they were handed over to the authorities. Molloy was taken to task by the

⁷⁵ Gibbs, *op. cit.*, p.4.

⁷⁶ Wray, and Martin, *op. cit.*, p.3.

⁷⁷ Stokes, *op. cit.*, vol. 1, p.228.

⁷⁸ Turner, *op. cit.*, p.138.

⁷⁹ Suspicion that a large-scale massacre by vigilantes persists amongst southwest Aborigines. The circumstantial evidence for this is discussed in Hasluck, A. *Portrait with background*, (Melbourne: Oxford University Press, 1955), pp.261-263.

⁸⁰ Ogle, *op. cit.*, p.234.

Colonial Secretary, both for the way retaliatory events unfolded after the spearing of Layman, and for setting a precedent by inducing a foreigner to carry out colonial business. The government feared it could provide an incentive for Americans to interfere in colonial matters in the future.⁸¹

Clearly pelagic whalers were able to exploit situations involving Aborigines that settlers were not. The abuse of a trust meant nothing when dealing with them, and unlike settlers, whalers had little to fear in the way of reprisals if and when they returned years later. Nelson Cole Haley, a young harpooner on the *Charles W. Morgan*, visited Two People Bay on the south coast in 1849 and wrote that his skipper had told him how years earlier this place had been used by whalers in their pursuit of right-whales:

Wandering bands of natives from inland used to come here in the whaling days and feast on the carcass of any whale that had drifted on shore, and would gorge themselves on it even if it smelt a mile a minute.⁸²

Haley's ship, and a photograph of him in later years are reproduced in Fig. 6.6. The ship was but one of a American fleet of 736 vessels in the 1840s, and the design was typical for a purpose built whaler of the time. Crews averaged 33 men per voyage and at least 21 of the many masters who commanded the ship during its 80 years of service took their wives and children with them. The tryworks was located aft of the foremast. Whales were flensed from an outrigged platform called the "cutting stage" and the blubber was stripped in one continuous length called the "blanket piece from the whale, which remained in the water." The blanket piece was gradually winched aboard into the "blubber room" where it was chopped then tried, or rendered. The oil was stored below decks in barrels, and topsides if necessary. On the maiden voyage in 1841 the ship returned to New Bedford with 2,400 barrels of oil and 10,000 pounds of baleen.⁸³

⁸¹ *Inq.*, 10/3/1841; *PGWAJ.*, 13/3/1841; Hasluck, (1955), *op. cit.*, pp.216-224; Shann,*op. cit.*, p.119.

⁸² Haley, N.C. *Whale hunt, the Narrative of a Voyage by Nelson Cole Haley Harpooner in the Ship Charles W. Morgan 1849-1853*, (1849), (London: Travel Book Club Edition, (ND) circa. 1948), pp.50-51.

⁸³ Information provided by Mystic Seaport Museum, Connecticut.



Fig. 6.6. Charles W. Morgan, with Nelson Cole Halley inset⁸⁴

Aborigines were the subject of fascination and revulsion amongst the Americans, in 1849 and Haley was of the opinion that, “These natives no doubt are down to the keelson in the scale of humanity. There is nothing that has life in it but what they will eat, not excepting cockroaches, which they prefer roasted.”⁸⁵ The statement was erroneous because there were many things that southwest Aborigines did not eat, including tainted meat, which according to von Hügel they were always particularly careful to avoid.⁸⁶ Aspects relating to avoidance of certain types of food have been discussed in previous chapters. In the case of whale meat which “smelled a mile a minute,” Europeans undoubtedly overlooked the fact that the preserving qualities of the oil and blubber could delay aerobic induced purification in some parts of a carcass, particularly during cool weather. The olfactory qualities of the parts of the carcass which had deteriorated undoubtedly overwhelmed the sensitivities of Europeans, and they therefore kept their distance, not appreciating the finer points of meat selection.⁸⁷

⁸⁴ Images courtesy of Mystic Seaport Museum, Connecticut.

⁸⁵ *Ibid.*, pp.50-51.

⁸⁶ von Hügel, *op. cit.*, p.38.

⁸⁷ A whale carcass examined near Fremantle in 1996, estimated to have been dead for several weeks old had unputrified meat in some muscular areas.

Anglican Minister, John Wollaston reported on an “immense whale” which had come ashore at Vasse in August 1842, and wrote: “This will be a feast for the natives for many weeks.”⁸⁸ He would not have been exaggerating. In conditions where aerobic exposure is reduced, such as by burying in beach sand, oil-rich whale meat and blubber can maintain a state of preservation for many months.⁸⁹ No evidence of Aborigines actually preserving whale meat or blubber has been identified, their activities instead being confined to opportunism.

Explorer George Grey wrote a generalised account of whale eating by Aborigines which apart from its Eurocentric bias is revealing in several aspects:

A whale is the greatest delicacy that a native can partake of, and whilst standing beside the frame of one of these monsters of the deep, he can only be compared to a mouse standing before a huge plum cake; in either case the mass of food compared to that of the consumer is enormous. It is impossible for a civilized man to enter into the feelings of the savage under these circumstances, for he has never been similarly situated, - he has never had such a quantity of food that he doats (sic) on placed at once before him; hence, when a native proprietor of an estate in Australia finds a whale thrown ashore upon his property, his whole feelings undergo a sudden revulsion. Instead of being churlishly afraid of the slightest aggression on his property, his heart expands with benevolence, and he longs to see his friends about him; so he falls to work with his wives, and kindles large fires to give notice of the joyful event.

This duty being performed, he rubs himself all over with blubber, then anoints his favourite wives, and thus prepared, cuts his way through the blubber into the flesh or beef, the grain of which is about as firm as a goose quill, of this he selects the nicest morsels, and either broils them on the fire, or cooks them as kabobs, by cutting them into small pieces, and spitting them on a pointed stick.

Bye and bye other natives come trooping gaily in from all quarters: by night they dance and sing, and by day they eat and sleep, and for days this revelry continues unchecked, until they at last fairly eat their way into the whale, and you see them climbing in and about the stinking carcass, choosing tit-bits. In general the natives are very particular about not eating meat that is fly blown or tainted, but when a whale is in question, this nicety of appetite vanishes. I attribute this to their disliking in the first instance to leave the carcass,

⁸⁸ Wollaston, *op. cit.*, p.94.

⁸⁹ Personal communication with J. Stuart, taxidermist, Western Australian Museum, (November 12, 1992).

and then gradually getting accustomed to its smell; but whatever may be the reason, they remain by the carcase for many days, rubbed from head to foot with stinking blubber, gorged to repletion with putrid meat, - out of temper from indigestion, and therefore engaged in constant frays, - suffering from a cutaneous disorder by high feeding, and all together a disgusting spectacle. There is no sight in the world more revolting than to see a young and gracefully formed native girl stepping out of the carcase of a putrid whale. When at last they quit their feast, they carry off as much as they can stagger under, to eat upon the way, and to take as a rarity to their distant friends.⁹⁰

On the basis of this description it seems clear that dead whales could provide an unscheduled opportunity for reaffirmation of relationships with neighbouring groups and a placating of tensions. It also suggests that within an occupied coastal territory the food resources within it were coveted. The initial discovery of a cast-up whale was always by chance, and was an exciting and welcome bonus in the hunter-gatherer subsistence pattern. No accounts of beaches being deliberately patrolled, or movements of people from inland to coastal regions, timed specifically to coincide with the seasonal movements of whales have been identified. Initial indicators for the presence of a cast-up whale may have included the observation of circling sea-birds or smell.⁹¹ According to Grey the news of a cast-up whale was then transmitted to neighbouring groups simply by lighting larger than usual fires on the beach. The smoke was probably discoloured from time to time by burning oil as the meat and skin was roasted. For example at Vasse in May 1837 people set alight large chunks of whale flesh, and when judged to be sufficiently cooked, beat out the flames with branches.⁹²

Whales moved along the coast before the summer bush-firing season commenced and other Aboriginal groups in the region would probably have had no trouble in recognising such subtle visual cues from lookouts located even at considerable distances, perhaps as much as 30 or 40 km. On clear days the western coast is clearly visible from the Darling Escarpment at these distances. Preconditioned expectation might well have been an important factor in the interpretation of such smoke.

It has been claimed that "message sticks" bearing invitations were dispatched by

⁹⁰ Grey, *op. cit.*, Vol. 2, pp.276-278.

⁹¹ The reaction of birds is unclear, in the case of the previously mentioned carcase in observed 1996, there was a noticeable disinterest by seabirds. As scavengers, perhaps the nearby urban scenario provided for their needs.

⁹² Shann, *op.cit.*, p.96.

runners to neighbouring southwest groups to announce the news of a cast up whale.⁹³ These sort of mnemonic devices which were described in various ethnographic works of the late 19th century appear in the main to have been associated with far more complex occasions involving ritual and ceremony, to which participants were attracted from great distances. They had use in eastern and north-eastern Australia, as well as the southwest.⁹⁴ Claims that they were used to transmit urgent news of dead whales would seem to trivialise their function, and to disregard the linguistic capability of neighbouring groups of Aborigines to communicate with each other.

The skin and the red meat (whale beef) was eaten at these feasts, but the oil laden blubber was not, unless it had been rendered to “scrap” by a bay whaler. Use of blubber as a skin conditioner, as protection from the cold and as a mosquito repellent seems probable, and its sensual, cosmetic and medicinal qualities should not be overlooked. For example in the Vasse region it was used as a treatment for rheumatism.⁹⁵ Oil from other species was also much appreciated. At King George Sound in 1831 Barker recorded how Aborigines begged him to anoint them with oil he had rendered from stingray livers. They experienced considerable sensual pleasure when he obliged.⁹⁶ Such activities could also have a place in the spiritual life. *Nyungar* people in general were said to rub grease over themselves so that the water-bound spirit-snake *Waugal* could not catch them.⁹⁷

The reaction of southwest people to cast-up whales was not dissimilar to people who lived along the coastal parts of western north America. There people were attracted from all directions, particularly by the prospect of obtaining an almost unlimited quantity of grease. According to Levi-Strauss, the smell too was considered pleasing to the gods because whale meat was the richest of all foods.⁹⁸

Rudimentary cooking methods were utilised in the southwest for whale meat. It was either skewered on sticks, or part roasted in chunks thrown on a fire. Men, women and children apparently participated in the feast equally. In spite of the olfactory evidence

⁹³ Hammond, *op. cit.*, p.61; Bindon, P. and Walley, T. “Hunters & Gatherers,” *Landscape*. 8. 1, (1992), pp.27-35.

⁹⁴ For example: Brough Smyth, *op. cit.*, vol.1. pp.355-4; Worsnop, *op. cit.*, p.49. Curr, *op. cit.*, vol. 3. p.176.

⁹⁵ WA., 9/10/1937.

⁹⁶ Barker in Mulvaney and Green, *op. cit.*, p.371.

⁹⁷ Bates, D. (ND). Notebook 23B, p.125. 1212B,

⁹⁸ Levi-Strauss, C. (1981). *The Naked Man: Introduction to a science of mythology*. (London: Jonathan Cape), vol.4, p.572.

of bacterial activity which so offended European noses, it is apparent parts of a carcass could safely be consumed for many days after a whale died, and while no systematic trade with other groups was generated, pieces of whale could be transported from the site. Grey too mentioned the aversion to tainted meat. He was under the impression this did not actually apply to cast-up whales, but noted that people were always fastidious in selecting the “nicest morsels.”⁹⁹ Aboriginal people known as *Cungert* who ranged along the south coast between the Blackwood and Deep Rivers regularly moved across to the Vasse to exploit cast-up whales, and if opportunity presented, settlers’ livestock. As a result there were bloody encounters and loss of life, with the *Cungert* frequently being chased back by settlers for distances of as much as 100 miles.¹⁰⁰

Little mythology relating to whales has been identified for the southwest. In the early twentieth century Daisy Bates was informed that peoples in the Flinders Bay - Cape Leeuwin region which she wrote had been known as *Mammang borungur*, had whales as totemic animals. “But with the departure of the whales, their human totemic kin also disappeared. The last *Mammang borungur* died about forty years ago.”¹⁰¹ This coincides approximately with the cessation of commercial whaling in the region. Bates wrote that whales apparently did not carry the same totemic significance as fish species in strandings. Whales could be eaten by all, regardless of totemic affiliations. In comparison cast up fish were always regarded as having an association with a death somewhere amongst their respective mortal kin.¹⁰² In comparison, Aborigines living on the northwest coast had much stronger totemic affiliations to the extent that the extensive cicatrication was performed in emulation of the ridges on whale bellies.

A possible interpretation of these factors in relation to the southwest is that prior to the advent of commercial whaling, beached whales were much rarer events than has been generally supposed, and because there was so much food available when they did occur, social constraints, or totemic restrictions were quite unnecessary. The apparent proliferation of beached whale carcasses, possibly because of nineteenth century commercial activities, and more particularly the declining numbers of whales at sea, was a rapid transition which perhaps the *Mammang borangur* were unable to adjust. Because totemic affiliation was regarded as an extension of the self, the increased Aboriginal

⁹⁹ Grey, *op. cit.*, Vol. 2, pp.277-278.

¹⁰⁰ CSR. 225, 26/7/1851.

¹⁰¹ Bates, (1985), *op. cit.*, p.198.

¹⁰² *Ibid*, p.198.

mortality through introduced diseases to the Flinders Bay region in the 1850s could well have provided a culturally appropriate explanation in parallel with the noticeably increased mortality of whales.¹⁰³ In a similar light to the previously discussed extinction of myth when sites of significance are obliterated, and which was discussed in Chapter Four, the extinction of a species with significant socio-religious connotations may have resulted in the inevitable demise of the *Mammang borungur*, a peoples already severely debilitated by the introduced diseases.

Such reasoning might also be applied to other traditional relationships on the Australian littoral. For example in Turbit's study of Aborigines in the Sydney region, it was determined dependence upon fish was such that people experienced severe dietary stress when there was a seasonal shortage, terrestrial meat resources apparently being insufficient, or severely depleted due to European predation. Furthermore for undetermined causes, important fish species were believed to have declined since colonisation.¹⁰⁴ At face value these factors might be considered sufficient to force adaptation of the new; but by and large, adaptation to European ways was unsuccessful for people of direct descent. This may have been because a complex religio-mythical belief system between the fishers and their prey existed which was too strong to be altered quickly. For the traditional hunter, one could not exist without the other and as the fish declined, so too did the fishers.

Such cultural trauma could be postponed when recognisable cultural parallels were offered. In many places in Australia Aboriginal men were successfully encouraged to participate in bay whaling operations, which were of course a form of hunting:

Wherever whaling stations have been established, the natives have proved themselves to be very valuable assistants. They make the best of "look-out" men. I have known a native to sit day after day on a promontory in the keen wind or burning sun looking out to sea for a whale. They enter heartily into the sport, and make excellent "pull away hands" in the whale-boats.¹⁰⁵

At Encounter Bay in South Australia,¹⁰⁶ Twofold Bay on the eastern seaboard,¹⁰⁷

¹⁰³ Wollaston noted an increased Aboriginal mortality in this region towards the 1850s. See Wollaston, J.R. *Wollaston's Albany Journal*, (1851), (Perth: Patterson Brokensha, ND), p.116.

¹⁰⁴ Turbit, *op. cit.*

¹⁰⁵ Brough-Smyth *op. cit.*, p.244.

¹⁰⁶ Pope, A. "Aboriginal adaption to early colonial labour markets: The South Australian experience," *Labour History*, 54. (1988), p.9.

¹⁰⁷ Threlkeld, *op. cit.* p.167.

King George Sound and other places on the south and west coasts, Aborigines found employment as pullhands. Not only could they regularly participate in an exciting hunt, but they could get paid. Initially this was in-kind with tobacco, flour and sugar, but by 1850 skilled men could demand and get the same “lay” or share-payment as their white counterparts.¹⁰⁸ One group of nine men at King George Sound received fifty pounds shared amongst them at the end of the season, which was a substantial sum.¹⁰⁹ Another, Jack Crow split his time working as a native policeman and as a pullhand at Bunbury. He received two shillings and sixpence (2/6) for each whale landed and a pound at the end of the season.¹¹⁰ Whaling was a risky but potentially rewarding occupation and any who participated could enjoy considerable status. According to John Wollaston one Aboriginal man Lindol was, “very expert as a whaler.”¹¹¹

North American Indians had responded in a similar manner to the needs of commercial whalers since the sixteenth century. Axtel comments that such hunting roles accommodated the pride of Indian men obliged to submit to the new colonial order. The role of harpooner was particularly attractive, and experienced men could command a good lay.¹¹²

In Nantucket it was said that a man could not get a wife unless he had proved himself in the most important whaling jobs, usually as harpooner or steersman. At King George Sound Aboriginal men came under similar pressure. In 1858 the *Inquirer* reported, “The black ladies now declare they will accept no husbands except they will go fishing.” (whaling).¹¹³ Another commentator wrote:

I know at least one boat at King George's Sound in which the headsman and all the crew were Aborigines. In this dangerous employment they evinced great enthusiasm and considerable power and endurance. Of course their energies were stimulated by the prospect of the feast they would have if successful; but it must be confessed that the manner in which they gorged themselves when a whale was captured was very disgusting.¹¹⁴

Aboriginal whalers incorporated these events into their own cultural setting through

¹⁰⁸ *Inq.*, 6/11/1850, 4/12/1850, 29/5/1850.

¹⁰⁹ *Inq.*, 4/12/1850.

¹¹⁰ *Inq.*, 29/5/1850.

¹¹¹ Wollaston, *op. cit.*, p.74.

¹¹² Axtell, J. *Beyond 1492: Encounters in Colonial North America*, (New York: Oxford University Press), pp. 114-115.

¹¹³ *Inq.*, 29/10/1858

¹¹⁴ Brough-Smyth, *op. cit.*, p.244.

song lines. Bates met an old man, Nebinyan (Nebin) from Two People Bay, who had taken part in nineteenth century commercial whaling activities at Albany. He described how these songs had incorporated what were the most significant emotional aspects of whaling for Aboriginal men. Included was the trepidation felt as they pulled away from the shore, the stealthy approach upon an unsuspecting whale, and survival of the furious, and invariably dangerous reaction from the creature as the harpoon found its mark. When it succumbed, then came the long tow back to land. Far from being an onerous task, this was regarded as the triumphant procession of the mighty hunters, who had been to the brink and returned. The unrestrained feast which followed consolidated their high status among those who had stayed behind. Later the songs were composed and sung in the company of men. Each song sequence could be accompanied by theatrical reenactment, to which others might occasionally join in chorus at favourite places. While the content of a song might become recited within the group many times throughout the night, innovation and revision by the original composer was also encouraged.¹¹⁵ These activities served to enhance reputations, and no doubt provide inspiration and instruction for future young hunters. Importantly the songs were reflections of the deeds of the people who sang them, and probably were making the transgression into myth. The composing and acceptance of the songs demonstrates how readily Aboriginal people were able to accommodate foreign technology and ideas within their own cultural context if they wished. As had happened at Flinders Bay, an extinguishment of the hunted species took place. By the end of the century the south coast songs and their relevance were virtually forgotten.

Whaling was a major source of employment for the poorer classes in the Albany region and Aboriginal whalers were obliged to compete with non-Aboriginal labourers for the positions. The seasonal nature of the work necessitated all whalers to turn to other itinerant activities. These included timber cutting, sandalwood pulling, and hunting kangaroos. For example in 1847 some 8,000 kangaroo skins were exported from the colony.¹¹⁶ The pressure on Aborigines' traditional food resources by European hunters was first noticeable in the areas nearest the main settlements. As hunters extended their range this effect spread. Understandably there was a certain attraction for some people to move to the vicinity of European activities where an easy meal might be had, such as at a bay-whaling station. Long-term encampments were unwelcome because of the

¹¹⁵ Bates, *op. cit.*, p.342.

¹¹⁶ Garden, *op. cit.*, pp.78, 82-83.

unhygienic conditions which had the potential to develop.

Poisoning was a strategy ostensibly used to control vermin at the bay-whaling establishment at Cape Riche, about 90 km east of King George Sound, or Albany. In the following 1852 newspaper extract there appeared to be a tacit message that vermin were not the only targets:

The proposal of Mr. Clifton, and its adoption by the Council, of the purchase of a supply of strychnine to be forwarded to several Residents for distribution, is an act for which the proposer deserves the thanks of settlers. The deadly extract has been employed for two years at Cape Riche, with singular success, by Mr. Cheyne, not only in destroying native dogs, but hundreds of crows....He is now never troubled with either dog or crow.¹¹⁷

It was pointed out in Chapter Three that both dogs and crows were significant in Aboriginal culture along the south coast, and that people in one of the moieties identified themselves as crows. It is possible that the crows mentioned in the extract were of the avian variety, but (Jim) Crow was also a derogatory name for black people. In the Albany and Vasse regions in the 1850s Crow was a surname applied to some Aborigines by Europeans.¹¹⁸

George Cheyne had in 1951, complained to the Colonial Secretary about Aborigines interfering with his sheep farming interests near the Pallinup Estuary, and in a manner reminiscent of the Pinjarra massacre less than twenty years earlier, called for eight or ten leading Aborigines to be shot as an example.¹¹⁹ The proposal was rejected. Even so, most Europeans seem to have resented a prolonged Aboriginal presence near them, and even the sub-Guardian of Aborigines at Albany sanctioned the periodic driving away of Aborigines from the town at about that time.¹²⁰

Green, in his dictionary of Aborigines of the Albany region, notes that in this period there is a greater number of males than females listed in official records and suggests the imbalance is because men were more likely to come to the attention of the authorities.¹²¹ It will be recalled Bates recorded that Aboriginal men generally tested unfamiliar European

¹¹⁷ Garden, *op. cit.*, p.83.

¹¹⁸ PG., 7/3/1873.

¹¹⁹ CSO 210. 7/7/1851. Bignell, M. *The Fruit of the Country*, (Nedlands: UWA Press, 1977), p.65.

¹²⁰ Gilies-Ross, W. "Whaling and the decline of native populations," *Arctic Anthropology*, XIV-2, (1977) pp.1-8.

¹²¹ Ray, *op. cit.*

foods on their womenfolk before trying it themselves.¹²² The imbalance may not have been totally due to zealous policing.

If Aborigines were not the primary object of the whaler's poisonings, which apparently commenced about 1849, they usually had dogs in their company and would probably have avoided the locality in order to protect them. One report claimed that a party of 100 Aborigines were moving about the region with about 500 dogs in company.¹²³ Unfortunately a substantial portion of Cheyne's diary relating to his activities in the region is missing. To his credit, at least one Aboriginal man, Wylie, the former companion of overland explorer Edward Eyre, was employed at Cheynes Beach in 1853.¹²⁴ Probably it was he who was the target when a cook allegedly declared "...he did not sign on to wait on niggers."¹²⁵ Even if an isolated remark, a mid-1990s archaeological examination of this former bay-whaling station by Gibbs failed to provide convincing evidence that other Aboriginal visitations, if they occurred at all, were anything other than sporadic.¹²⁶

6.5 Whalers and epidemics amongst indigenous coastal dwellers

The close contact with nineteenth century whalers had the potential to expose Aborigines to new forms of disease. The many whaleships which called into the southwest coast did so during global circumnavigations which coincided with whaling seasons in different places. Stops could be made in South America, southern Africa, Madagascar and Ceylon, which enabled the crews to acquire an assortment of infections.

Venereal diseases and tuberculosis undoubtedly had an impact on Aboriginal populations, but while serious, an infected person might survive for many years. It has been claimed by Garden that whalers were particularly responsible for introducing venereal disease to the Aboriginal population in the Albany region.¹²⁷ Whalers were also accused the nineteenth century press of having introduced venereal diseases to Aborigines in north-west Australia.¹²⁸ Of a more devastating nature were the rapidly debilitating diseases such as influenza, typhus, smallpox, whooping cough, measles, and typhoid,

¹²² For a listing of nineteenth century epidemics affecting SW Aborigines see, Green, (1984), *op. cit.*, pp.235-236.

¹²³ Wollaston, *op. cit.*, p.116.

¹²⁴ CSR 255, 7 March 1853; Green, N (1989). *op. cit.* p.207.

¹²⁵ Gibbs, *op. cit.*, p.91.

¹²⁶ *Ibid.*

¹²⁷ Garden, *op. cit.*, p.83.

¹²⁸ PG., 7/3/1873.

all which had the potential to quickly wipe out an entire group. It has been proposed by Gilies-Ross that whaleships were responsible for introducing these type of illnesses amongst Eskaleut populations of Alaska, with a resultant high mortality.¹²⁹ Nineteenth century fur traders have also been identified by Ray, for the diffusion of disease amongst native populations in Canada.¹³⁰ Gibson's important account of fur trading in northwest America also describes how many indigenous populations were decimated by disease following visitations by foreigners, but also points out that introduced alcohol and other dietary factors played a role.¹³¹

These type of events are generally not well documented in the earliest periods of contact, and for the most part the connections linking whalers and indigenous peoples in north America have been based on circumstantial, but nevertheless convincing evidence. Gilies-Ross noted that some groups were overtaken by unspecified, but usually fatal diseases with such rapidity that they attributed this to sorcery directed from other indigenous groups. The tendency of normally nomadic Eskimo groups attracted to the vicinity of semipermanent whaling stations was probably a significant factor in their exposure to disease, and the resultant extremely high mortality.¹³²

At various times during the nineteenth century the Aboriginal population in southwest Australia experienced high mortality from introduced diseases, sometimes of an unspecified nature. Due to the geopolitical isolation of the region, all these illnesses had to be initially shipborn and could arrive by carriers through the few established ports via almost any vessel, but some outbreaks occurred at other places particularly favoured by whalers. The Government Resident at King George Sound complained to the Colonial Secretary that whalers had little hesitation in putting sick men ashore when it suited.¹³³

The Rev. John Wollaston wrote that such was the impact from introduced disease amongst Aborigines at Flinders Bay that survivors abandoned the region in early 1851. Much unspecified sickness also occurred along the west coast in the vicinity of Geographe Bay, which was another favoured whalers' haunt at about this time.¹³⁴ Aborigines also moved to the vicinity of colonial southwest whaling stations, but no

¹²⁹ Gilies-Ross, *op. cit.*

¹³⁰ Ray, *op. cit.*

¹³¹ Gibson, *op. cit.* p.272-277.

¹³² Gilies-Ross, *op. cit.*

¹³³ CSR 36, 73/75, 17/11/1839.

¹³⁴ Wollaston, *op. cit.*, p.116.

direct evidence of epidemics associated with these places has been identified. While there is a strong temptation to attribute southwest epidemics to foreign whalers, the evidence is nevertheless, like in North America, largely circumstantial. There were other colonial vessels moving back and forth from the main settlements to these regions, as well as people regularly travelling over land between the few settlements, and they too could have easily been the vectors.



Fig. 6.7 Whaling off the Australian coast during the nineteenth century

Chapter Seven Sealers and mutton-birders

7.1 Origins

The first record of seal exploitation in the southwest appears to have been in 1658 by 14 crew members from the Dutch vessel *Waeckende Boey*. They damaged their small boat when landing on the west coast and after 24 hours were abandoned by their skipper. In desperation they caught and ate some hair-seals, and used the skins to repair their boat, enabling eleven survivors to eventually reach Java.¹ Numerous other mariners who visited the region prior to colonisation killed the occasional seal for meat and oil, and sometimes, as with the case of Captain Fremantle and his crew on HMS *Challenger* in 1829, for sport.²

Commercial sealing took place from 1803, when the American brig *Union* under James (Isaac) Pendleton worked its way along the south coast with the stated intention of amassing twenty thousand seal skins for the China market. The previous year he and his ship had visited South Georgia in the Falklands but found the seal populations there severely depleted.³ Pendleton came to the southwest on the basis of information gleaned from Vancouver's 1791 visit and had a celebrated meeting with a French scientific expedition under command of Baudin at Two People Bay. The French had also been influenced by Vancouver.⁴ Had Pendleton been aware of surveys by Matthew Flinders from HMS *Investigator* in 1802 he may not have come to the region. Flinders was in the business of making accurate charts and other observations and noted that while hair-seals were seen on most of the rocky outcrops, fur-seals were relatively few and in any case had coarse, reddish coats. He doubted if the numbers in the Recherche were sufficient to raise any European interest, and that in any case the quality of pelts would be unsatisfactory even for the China market, which was less demanding. This was reflected in the way skins were prepared for each destination. Those bound for London were laboriously salt cured, while skins destined for China were simply pegged on a beach and dried.⁵ Flinders regarded the Recherche Archipelago as very dangerous for any boats,

¹ Major, *op. cit.*, p.81.

² See for example Flinders, *op. cit.*, vol. 1, pp.82-83; Fremantle, *op. cit.*

³ Dickinson, A.B. "Early Sealing in the Falkland Island Dependencies," *The Great Circle*, 15, 1, (1993), pp. 1-17. (3).

⁴ Baudin, 1803, *op. cit.*, p.488.

⁵ McDonald, J. "Oral evidence of J. McDonald," in Ritchie, J. (Ed.), *The Evidence to the Bigge Reports*, (Melbourne: Heinemann, 1971), vol. 1, p.110.

and that disaster was likely, particularly with strong southerly and westerly winds.⁶

The most lucrative Australian sealing grounds were in Bass Strait, which is the wide waterway further east, between Tasmania and the Australian mainland, and an understanding of events there is necessary in order to appreciate what eventually occurred in the southwest. It is arguable whether the Bass Strait region first received attention from sealers as a result of reports by survivors from the wreck of the *Sydney Cove* on Preservation Island, near northeast Tasmania in 1797,⁷ or because of a survey by Bass and Flinders in 1798.⁸ Irrespectively, intensive sealing began in Bass Strait soon after, with Americans quickly becoming major participants. Americans were well experienced in the slaughter of the fur animal populations of north America and ever on the lookout for new opportunities.

Three pinniped species were hunted off southern Australia: the large elephant seal, (*Mirounga leonina*), the hair-seal or sea lion, (*Neophoca cinerea*), and the fur-seal, (*Arctocephalus doriferus*), (*A. forsteri*). The slaughter which ensued during the following decade was intense and indiscriminate, with many ships returning to Sydney with huge cargoes of skins and oil. Even as late as 1809 the ships *Governor Bligh*, *Fox* and *Pegasus* each took in excess of 10,000 fur-seal skins.⁹ American vessels may well have taken similar cargoes direct to Canton. Such a catch rate could not be sustained, and by the summer of that same year the search had begun for fresh prospects. The colonial sloop *Eliza*¹⁰ under Captain Thomas Smith conducted a sealing expedition along the southwest coast, but his gangs only managed to kill 500 seals. In the face of what was considered a very poor catch they went ashore and took about 1,000 less valuable kangaroo skins before returning to Sydney in April. While the voyage of the *Eliza* was indicative that the Bass Strait seal populations were fast approaching extinction, it also revealed that prospects to the west were poor. The results of this voyage were published in the Sydney press, and appear to have discouraged others from further bothering with the southwest for at least a

⁶ Flinders, *op. cit.*, vol.1 pp.91-92.

⁷ Blainey, G. *The Tyranny of Distance*, (Melbourne: Sun Books, 1982 revised ed.), p.74.

⁸ Bass and Flinders were accompanied for the first part of their voyage by a friend, Charles Bishop in the brig, *Nautilus*. Bishop left some crew on Cape Barren Island to hunt seals, and briefly returned to Sydney. His crew had accumulated about 9,000 skins when they were collected two months later.

⁹ *SGNSWA.*, 13/3/1809; 19/3/1809.

¹⁰ Not to be confused with an American brig of the same name which was wrecked in June 1808. (See *SGNSWA.* 23/10/1808)

decade.¹¹ It is worth noting that statistics collated by Gibson for American vessels unloading fur-seal skins at Canton show that numbers fluctuated from year to year, but significantly decreased after 1809.¹²

Nevertheless in Bass Strait enough seals remained for itinerant gangs operating with small, minimally equipped whaleboats from island camps. Their efforts were initially encouraged by a Sydney merchant John Campbell, who guaranteed to purchase all skins and oil in exchange for cash, rations or liquor, of which he was the leading clandestine importer.¹³ Payment for a gang member was low, and based upon a catch share, or “lay.” A novice received a 75th lay, the equivalent proceeds of one skin in every 75. More experienced men might negotiate a 60th lay.¹⁴ A sealer who operated independently with his own boat and was able to make alternative labour arrangements could have it all.

Much of what has been recorded about sealers involves perceptions of their lawlessness and alleged negative impact upon Aboriginal people, particularly those ranging near Encounter Bay in South Australia, in northern Tasmania and to a lesser degree in southwestern Australia.¹⁵ Kangaroo Island had been a haven for sealers from as early as 1805, although no Aboriginal women were observed with them at that time¹⁶ The situation soon changed, and by 1831 the skipper of the *Elizabeth* was able to record the existence of a small unofficial colony of eighteen men, their Aboriginal wives and presumably, some children.¹⁷ Many of these women undoubtedly originated from adjacent Encounter Bay, but some may also have come from Tasmania, which had been the source of women for sealers in Bass Strait.

There are many harrowing tales of atrocious acts against Tasmanian Aborigines by sealers and others,¹⁸ but those women who arrived at an understanding with a sealer routinely had access to firearms, and relieved of their former obligatory kinship sharing roles they had access to an almost unlimited, and unprecedented quantity of high protein

¹¹ *SGNSWA.*, 16/4/1809.

¹² Gibson, *op. cit.* p.315.

¹³ Steven, M. *Merchant Campbell 1769-1846: A study of colonial trade*, (Melbourne: Oxford University Press, 1965), pp.103-107

¹⁴ McDonald, *op. cit.* p.111.

¹⁵ Barker in Mulvaney and Green, *op. cit.*, pp.25-26.
Berndt, and Berndt, (1993), *op. cit.*, p.291.

¹⁶ *SGNSWA.*, 23/4/1809.

¹⁷ Colwell, M. *Whaling around Australia*, (Sydney: Rigby, 1969), p.33.

¹⁸ See, Robson, L. “The Destruction of the Aborigines,” in *A History of Tasmania*, (Melbourne: Oxford University Press, 1983), vol.1, pp. 210-253.

food which included seal meat, sea birds, fish, shellfish, terrestrial plants and marsupials. Life with a sealer could have its advantages, and as consolidation took place, so did the pattern of a new maritime society begin to emerge. As pointed out by Ryan, Aboriginal women were inadvertently becoming its primary social motivators and economic exponents.¹⁹ Through their survival, they also ensured that the Tasmanian Aboriginal peoples were not totally destroyed.²⁰

By 1820 about 50 sealers with a hundred or so Aboriginal women and their children were estimated to be living on various islands of Bass Strait.²¹ A decade later in 1830 Christian philanthropist George Robinson reckoned that many adult women had been with sealers since they were 8 years old.²² If so, these practices would appear to have commenced between about 1810 and 1820 when the Bass Strait seal populations were in serious decline, and the abductions may well have been a rationalisation strategy. It is unlikely successful diversification into alternative resources such as dried fish, bird feathers and salt-preserved mutton birds (*Puffinus tenuirostris*) could have occurred without the contribution of Aboriginal women, and ultimately their children.

Even though of low economic value compared to seals, there would have been guarded competition for these resources, and family ties enabled greater solidarity in their defence. However because the new maritime population was increasing, so was the risk of greater anarchy. Towards the mid 1820s the Van Dieman's Land government began a campaign to force sealers out of Bass Strait, and by 1826 their numbers were substantially reduced.²³

7.2 The move to Western Australia

In the face of depleted Bass Strait resources and an increasingly hostile government, the logical alternative for some sealers was to examine the southwest and by the mid 1820s small parties had begun crossing the Great Australian Bight.²⁴ The initial voyage of some 1,600 kilometres to the Recherche could be made by hugging the coast, but in a style reminiscent of the earliest days of sealing, small boats were also transported

¹⁹ Ryan, L. *The Aboriginal Tasmanians*, (St Lucia, University of Queensland Press, 1981), p.69.

²⁰ *Ibid*, p.71.

²¹ Ryan, *op. cit.*, p.69.

²² Adam-Smith, P. and Powell, J. *Islands of Bass Strait*, (Adelaide: Rigby, 1978), pp.19-20.

²³ Ryan, *op. cit.*, p.70.

²⁴ *HRA*, III, VI. "Lockyer to MacLeay," pp.471-472.

across on larger vessels, which could safely sail further offshore.

Hundreds of islands and rocky outcrops had long been known to exist along the southwest coast, and Flinders had accurately surveyed those between Cape Leeuwin and Cape Arid in 1802, with the relevant charts being published in 1814. Larger vessels would probably have acquired these fairly quickly, but as to whether or not they were necessary for operators in small boats is arguable. Certainly in the case of Bass Strait and Kangaroo Island sealers, the difficulties and dangers would have been considerable, but probably routine. For them even the most detailed chart was no substitute for experienced seamanship. A nineteenth century engraving of Australian sealers at work is reproduced below in Fig. 7.1 to illustrate the dangers.

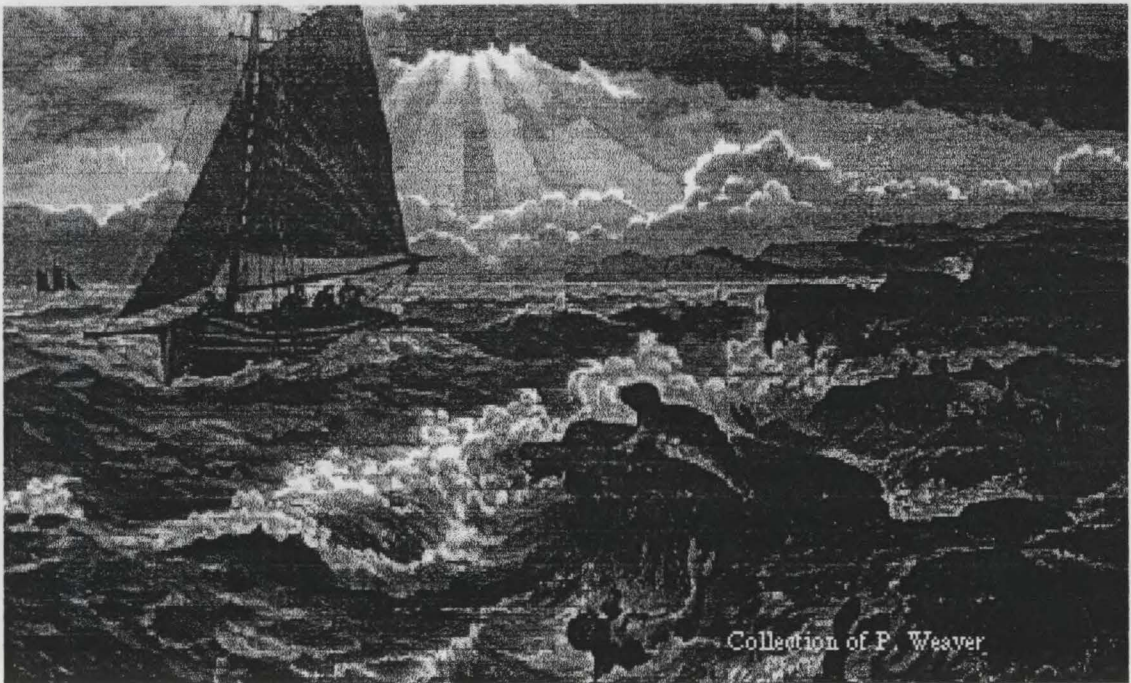


Fig. 7.1 Sealing off the south coast of Australia

Dumont D'Urville, the leader of another French scientific expedition in 1826 commented on the presence of such a gang at Breaksea Island near King George Sound. In contradiction of the 1802 opinion of Flinders, their employer had departed with a load of skins for the China market in the schooner *Hunter* seven months previously, however his return was well overdue. The members of this gang were of various ethnicities, and besides Europeans included Tasmanian Aborigines and a Maori man who had been a member for at least eight years. Of the Tasmanian women, D'Urville wrote:

These women are indeed useful... in getting sustenance for them, either by catching fish,

shellfish, lizards and so on, or by hunting with the dogs or even with guns. They quickly become very skilled with the latter. Once these unfortunate women have forgotten their state of freedom, in which they are ill treated by their husbands anyway, they can only find pleasant the lives they lead with the Europeans who treat them far better. We had from several of the sealers who had been abandoned by their ships far longer than they expected, that the women were an enormous help, and that without them they would perhaps died of starvation...These women through skill and industry were extremely useful to the Englishmen; it was they who did the fishing, went hunting with a gun, or after kangaroos with the dogs, and they went diving to bring us oysters and other shellfish...²⁵

He also remarked the women were possessed with, "very well developed, even obese, extremities."²⁶ In comparison the local Aboriginal women were "thin and emaciated," much more so than the southwest Aboriginal men who, were apparently better served by the customary food redistribution system. Nevertheless, and in spite of their relative independence and appearance, the Frenchmen regarded the Tasmanian women as abject slaves.²⁷

The adoption of native foods into the sealers' diets was in part a consequence of their not being regularly resupplied, but was also a matter of common sense, and similar events happened elsewhere. For example Russian sealers on the Aleutian Islands in Alaska are known to have adopted Aleut foods and in some cases started families with Aleut women as a result of long periods of abandonment by their employers.²⁸

Catastrophe was not unknown in sealing voyages to the southwest. Many of the islands are extremely dangerous for landing due to the sheer nature of the granite slopes.²⁹ The brig *Belinda* under Captain J. Lee was wrecked on Middle Island in the Recherche in July 1824, and survivors attempted to sail two small boats back to Sydney for help, but after hugging the coast for 200 miles, one was swamped and destroyed. The occupants turned back, walking along the shore with the other boat standing by. Courage was lacking for another attempt, and twenty-six survivors were finally rescued in an extremely distressed condition by another sealship, *Nerius*, the following December.³⁰

²⁵ Quoy and Gaimard, "The Natives of King George Sound," (1826), in D'Urville, *op. cit.*, vol. 1, pp.45, 50.

²⁶ *Ibid.*, pp.42-43.

²⁷ *Ibid.*, p.46.

²⁸ Black, *op. cit.*, p.98.

²⁹ Bechervaise, J. "The Archipelago of the Recherche", in *Walkabout*. 1/4/1951. pp.10-17.

³⁰ Bateson, *op. cit.*, p.66.

Worse could happen to sealing ships which conveyed skins to the Asian market. In 1827 the entire crew of the *Governor Brisbane* had died of “fever” in Java and the ship was then sold by the Dutch to recover debts.³¹ The fate of the previously mentioned *Hunter* is undetermined.

Shortly after D’Urville’s visit a British military outpost was established at King George Sound under command of Major Lockyer. On 26 December 1826 his men discovered the body of an Aboriginal man, allegedly murdered by a party of sealers on Green Island, in Oyster Harbour. Four other Aboriginal men were rescued from the adjacent Michaelmas Island. The sealers involved had apparently offered to take them birding, but marooned them instead so as to molest some women waiting on the mainland.³²

But for their timely rescue, they presumably would have perished. Michaelmas Island is arid and located a few kilometres from shore in deep, shark-infested waters. Gratitude was not exactly forthcoming and Lockyer later attributed the spearing of a convict as retaliation for this incident in the following camp-order:

The natives having, without any offence been offered to them by any individual of the expedition, committed an act of hostility, by watching an opportunity, and throwing their spears on a water party employed filling water casks for the brig, and by which one of the prisoners of the Crown, Dennis Dineen, was most severely wounded, in a circumstance most sincerely to be regretted; as it is but too certain that they have been driven too it, by acts of cruelty committed on them by some gang or gangs of sealers, who have lately visited this place.

The fact of these miscreants having left four natives on Michaelmas Island, who must have inevitably perished, if they had not been taken off by the boat sent from the *Amity*, that brought them to this harbour, when one of them exhibited three deep scars on his neck and back, that they had been inflicted by some sharp instrument, sufficiently proves that they have suffered injuries from white men; and it is not to be wondered at, that they should, as people in a state of nature, seek revenge; it is, therefore, necessary to act with the greatest caution and vigilance to prevent surprise on individuals straggling, and the parties employed in the bush, in cutting down wood for the use of the settlement... the ill usage they have

³¹ O’May, H. *Hobart River Craft and Sealers of Bass Strait*, (Hobart: Government Printer., 1973), p.17.

³² *HRA.*, III, VI, “Lockyer to MacLeay.” pp.466-469, 474, 481; *HRA.*, III, VI, “Journal of E. Lockyer.” pp.498-499; Green, N. (1989), *op. cit.*, p.x.

received, from the unprincipled persons, is reprobated, and will not be permitted to occur again.³³

The sealers were anathema to Lockyer, not so much because they committed outrageous acts on Aborigines, but that they were perceived to be the root cause of Aboriginal attacks on garrison activities. It does not appear to have occurred to him that his party may have also caused offence by the blatant felling of trees and exploitation of other local resources without negotiating with the traditional owners.

In one respect the sealers' atrocities were fortuitous for Lockyer because it provided local justification for the presence of the garrison. Simply put, the British Crown would protect Aborigines from the predations of sealers and anyone else. Convinced of the villainy of sealers, Lockyer wrote to his superiors:

From the lawless manner in which these Sealers are ranging about requires some immediate measures to control them as, from what we know, as also from what I have learnt from themselves, they are a complete set of Pirates going from Island to Island along the southern coast, from Rottenest (sic) Island to Bass's Strait in open Whale Boats, having their chief resort or Den at Kangaroo Island making occasional descents on the main Land and carry off by force native women...³⁴

His opinions of their low character were typical of the time and have echoed ever since.³⁵ The sealers appear to have left no written record; however their anecdotal accounts provided Lockyer with new intelligence about the southwest coast.

This particular gang had their main camp on Mondrain Island in the Recherche where they had stockpiled about 700 fur-seal skins.³⁶ The comparatively low number was no where near as valuable as it would have been in previous years. Until 1819 a top quality fur-seal skin from the Southern Ocean could fetch 128 shillings (£6/8/0) in London, but then an oversupply of skins from New South Shetland Island, off Cape Horn, coupled with a deflationary trend in the British marketplace had forced the price

³³ *HRA.*, III, VI, "Lockyer to MacLeay," (22/1/1827), p.471; The same text was posted as part of a general camp order at KGS in January 1827 and was of sufficient interest to be reproduced in Wilson, M.D. *Narrative of a voyage round the world...*, (London: Sherwood, Gilbert & Piper, 1835), p.235.

³⁴ *HRA.*, III, VI, "Lockyer to MacLeay," pp.471-472.

³⁵ For example: Moore, *op. cit.*, Albany Resident magistrate (17/11/1839) CSR 73/75 ; Hassell, (1975), *op. cit.*, p.12; Garden, *op. cit.*, pp.13.32

³⁶ *HRA.*, III, VI, "Journal of E. Lockyer," p.499.

down to about five shillings by the mid 1820s.³⁷ The sealers in the southwest were at the end of the commercial line, and would therefore have realised much lower prices, more so for those indentured with an ungenerous lay.

Places such as Boat Harbour, Nornalup Inlet and Deep River are all known to have initially been explored by sealers.³⁸ In addition all the major inlets and islands at least as far north as Swan River are believed to have been visited by them prior to settlement.³⁹ On the Serpentine River which runs into Peel Inlet, and where it will be recalled the Barragup fishweir was located, sealers were met with apparent hostility by Aborigines:

The natives on its Bank were in great numbers and appeared extremely hostile as they stood on the Banks and held their Spears in a menacing attitude and were very clamorous, shouting and making a great noise.⁴⁰

An oral account of another clash with sealers was collected from Swan River Aborigines soon after settlement and appears to have occurred at about the same time.⁴¹ These early events probably involved John Randall⁴² who was one of the sealers involved in the 1826 marooning incident at Green Island. He had been exploring the southwest region since at least May 1825.⁴³

The uninvited carnal predations of these maritime hunters may have caused land bound Aboriginal men to take precautionary measures. Thomas Kepple who was on HMS *Success* during Stirling's 1827 survey of the southwest coast remarked, "...we never saw a native woman,"⁴⁴ and Charles Fremantle in 1929 commented that the Aboriginal tribesmen he encountered at Swan River took care to keep the women and children out of sight.⁴⁵ However such inhibitions appear to have vanished soon after settlement.

In keeping with what had occurred in Bass Strait, Lockyer wanted the sealers out of the southwest quickly and issued orders for the detention of as many as possible until

³⁷ Jones, A. "British Sealing on New South Shetland 1819-1826," *The Great Circle*, 7, 1, (1985), p.20.

³⁸ *PGWAJ.*, 30/7/1842, 24/9/1842.

³⁹ *HRA.*, III, VI, "Journal of E. Lockyer," p.499.

⁴⁰ *Ibid.*

⁴¹ *PGWAJ.*, 29/10/1836.

⁴² Green, (1984), *op. cit.*, p.46.

⁴³ *HRA.*, III, VI, "Journal of E. Lockyer," p.499.

⁴⁴ Journal of Thomas Kepple, HMS *Success*, (1827). Battye, 1585A; Also in Green, (1984), *op. cit.*, p.46.

⁴⁵ Fremantle, *op.cit.*, p.41.

arrangements could be made for their shipment.⁴⁶ Perhaps because of the coastal information provided, the evidence against Randall and most of the others was deemed too flimsy for serious charges to be laid, and Randall and another man managed to sign on as crew on *Success* when it briefly called into King George Sound during its return voyage to Sydney. Green points out that there were also legal difficulties, because the offences occurred prior to the date of formal British possession.⁴⁷ Fourteen other sealers, including some Tasmanian and South Australian Aboriginal women, and a seven year old girl were eventually sent to Sydney on the *Anne*.⁴⁸

The fate of their stockpiled skins in the Recherche has not been determined, but based on figures recorded by D'Urville there were some twenty sealers, plus at least five non-local Aborigines operating in the King George Sound region in 1826, so it seems some of these people were overlooked by Lockyer in his roundup.⁴⁹

Lockyer appears to have been a pragmatist with little sympathy for Aborigines in spite of his expressed outrage at the actions of sealers. Presuming that those in the soon to be settled Swan River region would be hostile to settlers he surmised, "Force will have to be used to drive them away and quit that part of the coast."⁵⁰ Lockyer also recognised the commercial worth of the sealing resource and being fully aware of the indiscriminate slaughter which had occurred in Bass Strait, became the first person to propose rigid species conservation measures in the southwest:

I should recommend the attention of the Government to a most important and valuable branch of Trade, which, if some measures are not almost immediately resorted to, must be irreparably injured, if not altogether destroyed. The Islands along the Southern Coast of this immense one are more or less frequented by the Black or Fur Seal, which if protected would not only afford a good Revenue to the Government but would also prove to be a Nursery for Seamen; I would suggest that a prohibition should be immediately issued to prevent any Individuals taking the Seals or going at all to the Islands on pain of seizure, if found without a licence.

Once in three years the Government should farm the Islands out for the Season from

⁴⁶ Green, (1984), *op. cit.*, p.47.

⁴⁷ *Ibid.*

⁴⁸ HRA., III, VI, "Wakefield to MacLeay," p.508.

⁴⁹ D'Urville, *op. cit.*, pp.31-35.

⁵⁰ HRA., III, VI, "General remarks by E. Lockyer on Swan River," p.606

November to the end of April following, or other such Months as would be found not to interfere with their breeding or the Time they shed their fur, And a Severe Penalty to be attached for Killing Pups.⁵¹

The far sighted measures were not adopted because over such a huge area it would have been impossible to police, however Lockyer imposed a local ban which provided brief respite from the slaughter.

The third commandant of the garrison George Sleeman was not so conservation minded and overturned the restriction in 1828 by allowing the killing of twelve fur-seals, eleven hair-seals and 23 seal-pups. The convict labourers were supplied with seal skin caps and a local Aboriginal called Mokare who had sided with the soldiers was provided with a jacket and trousers made from seal-pup skins. The most valuable fur-seal skins were set aside for what Sleeman termed as his own "personal use."⁵²

Mokare told Sleeman's successor Collet Barker that sealers had become quite active during 1829, and had wintered over in the vicinity of King George Sound because of bad weather.⁵³ In January 1831 increased numbers of sealers were moving about the south coast with impunity.⁵⁴ In 1833 the aptly name schooner *Defiance* was wrecked whilst "laden with provisions for trade with Sealers on the Islands on the South Coast."⁵⁵ Other vessels known to have been connected to post-settlement sealing activities in the region were the *Governor Hunter*, *Madeira*, and *Fanny*, the latter being owned by a Tasmanian operator who reestablished his main camp at King George Sound.⁵⁶

Bona-fide Western Australian settlers were slow when it came to commercial seal exploitation. An influential settler and lawyer, George Fletcher Moore excitedly noted in his journal he had seen quantities of fur-seals on some of the 34 small islands in the vicinity of Augusta and Cape Leeuwin in 1833. This marks the western range of this species, which tends to prefer exposed rocky situations adjacent to high energy waters.⁵⁷ During the twentieth century occasional specimens have been reported on the west coast,

⁵¹ *HRA.*, III, VI, "Lockyer to MacLeay." p.505.

⁵² Stephens, R. "Possessory Lien - The first European settlement, King George's Sound, New Holland (1826-1831)," *Early Days*, 6, 1, (1962), pp.23-59, (50).

⁵³ Barker, in Mulvaney and Green, *op. cit.*, p.313.

⁵⁴ *Ibid.*, p.387.

⁵⁵ Albany Courthouse Records, 13/8/1835; Bignell, *op. cit.*, p.9.

⁵⁶ Bignell, *op. cit.*, pp.8-9.

⁵⁷ Serventy, V. "A Zoologist in the Recherche Archipelago," in *Walkabout*, 1/5/1951, pp. 29-32.

as far north as the Beagle Islands, near Dongara, but the significance is unclear. Serventy noted that when an expedition from the Australian Geographical Society visited the Recherche in November 1950 that hair-seals predominated, with only one small colony of fur-seals being sighted on an exposed outcrop. Furthermore he remarked problems existed for the untrained observer to differentiate between hair-seals and fur-seals unless at very close quarters.⁵⁸

On the west coast the hair-seal *Neophoca cinerea* was the main species during the nineteenth century, its predominance apparently reflecting the generally warmer maritime climate. (The most easterly range of this species is at present the Pages Islands in South Australia.)⁵⁹ In contrast to the bleak preferences of the fur-seal, it enjoys lounging on sheltered sandy beaches. Because of a coarse pelt it was of lesser economic importance, something which inadvertently provided it some protection.⁶⁰ For example a well prepared hair-seal skin could be sold at Albany in 1842 for no more than four or five shillings whereas the fur-seal skins sold for about fifteen shillings. At that time skins were sold onwards in London for a top price of two guineas, or forty two shillings,⁶¹ a substantial sum for the times, but still much less than in 1818. All seals yielded valuable oil, and while always the potential target of hunters, hair-seals could be found on various islands off the west coast through much of the nineteenth century. The species maintains an approximately eighteen month breeding cycle, which is unique amongst the world's pinnipeds.⁶² Lactation also lasts for about eighteen months, which implies a hormonal restraint exists on fecundity. As to whether trophic or climatic factors are also involved is uncertain. Neither is the five month long breeding season on Kangaroo Island in South Australia synchronised with the west coast, where according to the latitude of various island nurseries, there is a subtle but differing commencement of pup-birthing seasons.⁶³

The large bull seals on the west coast spend much of their free time in bachelor groups on islands in a cooler marine environment to the south, near Swan River, but seasonally move northwards to mate with aggregating females on several of the thirty-six

⁵⁸ Serventy, *op. cit.* (The author reported that in the post-WW2 years hair-seals in the Recherche had become the targets of fishermen, who viewed them as competitors.)

⁵⁹ Gales, N.J., Cheat, A.J., Pobar, G.J., and Williamson, P. "Breeding Biology and Movements of Australian Sea-lions, *Neophoca cinerea*, off the West Coast of Western Australia," *Wildlife Research*, 19, 4, (1993), pp. 408-416. (405).

⁶⁰ Moore, *op. cit.*, p.167.

⁶¹ *PGWAJ.*, 3/9/1842.

⁶² Gales *et al.*, *op. cit.*, p.405.

⁶³ *Ibid.*, p.406.

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⁶⁰ Moore, *op. cit.*, p.167.

⁶¹ *PGWAJ.*, 3/9/1842.

⁶² Gales *et al.*, *op. cit.*, p.405.

⁶³ *Ibid.*, p.406.

small limestone islands in the Lancelin-Dongara region. Because of the eighteen month cycle the pups are born alternatively during either the periods, spring to summer, or summer to autumn, with a significantly higher mortality in the latter.⁶⁴ The cycle was a peculiarity which had the potential to confound hunters and zoologists, but interestingly the three year protection period proposed by Lockyer at King George Sound in 1826 would have safely covered both variations.

Colonies of hair-seals have long existed on the Abrolhos Islands, an approximately 90 km long chain comprising three main groups of islands some 55 km offshore, parallel to the coast between Geraldton and Hutt River. The position of this group is shown in the sketch map, Fig. 7.2

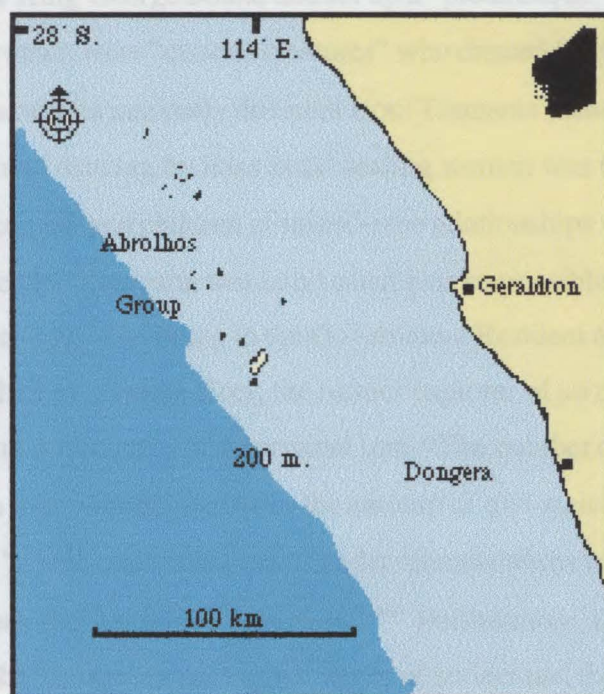


Fig. 7.2 The Abrolhos Islands

The seals were first attacked in this group by survivors of the *Batavia*, wrecked in 1629 and then by survivors of the *Zeewyk* in 1727. In the mid-nineteenth century there were still large numbers of seals in the Wallabi Group.⁶⁵ A relationship between Abrolhos seals and the breeding grounds near Dongera seems likely, but is yet to be scientifically determined. Lying in the flow of the warm Leeuwin Current, the islands are

⁶⁴ *Ibid.*, p.408, 411.

Thompson, C. and Pobar, G. "Seagrass, surf and sealions." *Landscape*, Winter, 1993, pp.21-26.

⁶⁵ *Inq.*, 19/4/1843.

rich in fish and other marine species, conditions which are ideal for juvenile seals.

The breeding grounds in the Lancellin-Dongara region did not escape the attention of Aborigines who reported their existence to settlers. A commercial whaling operation on the verge of economic collapse at Fremantle in 1837, promptly sent its five best men on a sealing expedition northwards, but the move was a disaster. Their boat was wrecked and one man drowned. Three survivors became stranded on an island, but a fourth managed to swim to the mainland and walked back to Swan River for help.⁶⁶

More experienced sealers were still arriving from the east to examine the prospects along the south coast. Ann Turner, an Augusta resident recorded in January 1839 that a party of men, each with an Aboriginal wife had arrived at Flinders Bay in a small boat from the direction of King George Sound and set up a “picturesque” tent on the beach. She wrote that the women were “curious creatures” who danced for the men into the night.⁶⁷ Her impression was markedly different from Tasmania missionary George Robinson, who claimed dancing by Bass Strait sealing women was the most obscene which could be conceived, and children of mixed-race relationships were fathered by the devil.⁶⁸ It will be recalled Robinson was in no small part responsible for many other allegations against sealers. According to the Government Resident at King George Sound, none other than Lt. George Grey, the former explorer of so much of near-coastal Western Australia and documenter of Aboriginal lore, “The number of these men increase every year, and with their number increases the amount of evil which they effect...” Their children were “a half caste breed raised under circumstances which must render them the most lawless and worthless characters...”⁶⁹ Furthermore, there was an expressed fear that the Tasmanian Aboriginal wives of sealers had the potential to subvert local Aborigines,⁷⁰ which tends to suggest they enjoyed degree of autonomy differing from that of a battered wretch, which has so often been the image portrayed of these women. Grey was a man of some influence, and a reputed favourite of Queen Victoria. He later became Governor of South Australia, New Zealand (twice) and Cape Colony in South Africa.⁷¹

Seals which occasionally came ashore in the Augusta region had long been the

⁶⁶ *PGWAJ.*, 6 Jan. 1838.

⁶⁷ Turner, *op. cit.*, p.130.

⁶⁸ Robson, *op. cit.*, vol.1, p.234.

⁶⁹ CSR 73/75.

⁷⁰ CSR 73/75 17/1/1839.

⁷¹ Erickson, (1988), *op. cit.* vol. 2, p.1276.

subject of enthusiastic predation by settlers in the interests of subsistence. Nathaniel Ogle who had lived there for four years in the 1830s wrote:

There is not a rock upon which man may set his foot, that I have not frequented with sealing-club or fishing-line, or ransacked for sea-birds' eggs; nor a creek or bay within Hardy's Inlet, that I have not persecuted with nets and guns in time of dearth.⁷²

Beach camping was a common practice when sealers operated at extended distances from their more permanent island camps. As well as skin tents, both the men and women in these type of operations protected themselves from the elements with heavy great-coats made from kangaroo skins. Their boats were covered-in with a tarpaulin of skins to prevent swamping in heavy weather.⁷³ They also had to carry salt for curing, because considerable time could be involved in stockpiling, and cured skins lasted longer. Kangaroo Island had long been a source of curing salt, but in the southwest it was readily obtained in the lower rainfall regions east of Albany, with a particularly reliable source from a shallow lake on Middle Island in the Recherche, about 10km off Cape Arid.⁷⁴ (See map in Fig 2.4). Flinders had remarked on this lake in 1802.⁷⁵ Westward in the higher rainfall region near Cape Leeuwin salt was not so easily obtained, but if sealers ran short, settlers at Augusta were always willing to exchange some for seal oil.⁷⁶

Major Lockyer had identified Kangaroo Island in South Australia as the origin of sealers,⁷⁷ but the larger islands of the Recherche soon became their stronghold. A map of locality is in Chapter Two. Because of the intimate knowledge they developed of these coastal waters, they became unofficial pilots for the increasing numbers of visiting whaleships, which it will be recalled from Chapter Six, peaked in the 1840s. As ships' provedores sealers also negotiated contracts with whalers to supply fresh kangaroo meat and surprisingly, fish. Such was the value of these services that captains were prepared to pay retainers of as much as £50 to have them on call.⁷⁸

Arguably the most notorious of the Recherche sealers was "Black Jack" Anderson, said to be a "powerfully built" ex-whaler with African ancestry who ruled over a gang on

⁷² Ogle, *op. cit.*, p.231.

⁷³ Stokes, *op. cit.*, pp.264, 272.

⁷⁴ HRA., III, VI, "Lockyer to MacLeay." p.472.

⁷⁵ Flinders, *op. cit.*, vol. 1, p.88.

⁷⁶ Turner, *op. cit.*, p.130.

⁷⁷ PGWAJ., 7/10/1842.

⁷⁸ *Ibid.*

Mondrain (Manduran) Island.⁷⁹ It is probable that these people also camped at times on Middle Island to collect salt. Now uninhabited and part of a gazetted flora and fauna reserve, the islands of the Recherche, and especially the ones to the east of the group are still very isolated. In Anderson's time it was more so, sometimes with years elapsing between contacts with the settlement at Albany. Anderson apparently sold most of his skins directly to passing vessels. He was reputed to be so violent that other sealers in the region viewed him with dread. Such rumours would no doubt have assisted him to assert territorial rights over what was an endangered resource. Had there been any firm evidence to substantiate the rumours it is highly probable that the authorities would have acted swiftly. He had at least two Aboriginal wives with whom he had fathered a number of children. In keeping with the popular perception of sealers' brutality towards Aborigines, it was alleged that he had kidnapped the women after killing their husbands.⁸⁰ Like so many lurid allegations about sealers, the claims about Anderson cannot be substantiated.

When the schooner *Defiance* was wrecked on Cape Howe Island in September 1833, some people were rescued by Anderson. Later he played the same role with the wreck of the *Mountaineer*. The sealer was disinclined to make a special trip to King George Sound to drop the survivors off, no doubt assuming that another vessel would soon pass, but eventually he agreed to land two men, one from each wreck, on the adjacent mainland in June 1835 so they could attempt the long walk west to King George Sound. A white woman, Dorothy Newell, another survivor of the *Mountaineer* chose to remain with Anderson, and later helped to acquit him in an Albany court on a charge of stealing from the wrecks.⁸¹ There was an unsubstantiated belief in official circles that sealers in the Recherche engaged in wrecking by enticing passing vessels into dangerous waters.⁸² The men Anderson put ashore succeeded with their trek, but it took them 48 days, and they might have perished had they not been discovered by Aborigines near King George Sound.⁸³ Perhaps understandably they had little good to say about Anderson.

Neither have subsequent historians been kind. Uren and Stephens make him out to

⁷⁹ Nairne-Clarke, W. in *PGWAJ.*, 7/10/1842; Uren, M. and Stephens, R. *Waterless Horizons*, (Melbourne: Robertson and Mullens, 1941), pp.147-148.

⁸⁰ *PGWAJ.*, 7/10/1842.

⁸¹ Harris, Alex. "The once and only pirate", *WA*, 20/7/1974.

⁸² CSR 73/75.

⁸³ *Ibid.*

be a swashbuckling pirate who wore a brace of pistols and had a tendency to cut throats “from ear to ear.”⁸⁴ Moorehead who generated substantial public interest in Australian frontier history from the 1960s with his popular book *The Fatal Impact* revealed a racist slant when he described Anderson as “a savage and ridiculous negro...with his harem of grubby wives.”⁸⁵ An official history of the Shire of Albany described him as, “half sealer - half pirate and, by all accounts, all bad.”⁸⁶ Anderson, was reputed to have amassed a small fortune from his sealing exploits, also unsubstantiated, and was allegedly murdered, along with one of his wives, by an unnamed sealer some time before 1842. The subsequent fate of the rest of Anderson’s family has not been determined. News of the killings was disclosed some time after the event by another sealer and former member of Anderson’s gang, Bob Gemble, who lived with his Aboriginal wives and children on Bald Island near Two People Bay.⁸⁷ Unlike his black counterpart he has been described as, “a gentleman sealer exhibiting no roughness.”⁸⁸ Perhaps however he was escaping from his past. In 1832 a sealer named Bob Gamble and another by the name of Edward Mansell had been involved in a brutal incident which prevented Tasmanian Aborigines from escaping *en masse* from the notorious concentration camp on Flinders Island.⁸⁹

Throughout the 1830s there had been a concern in Albany that the growing numbers of sealers would ultimately unite in opposition to authority, and the rumours involving Anderson may have contributed to this. In November 1839 the Government Resident at Albany wrote to the Colonial Secretary in Perth expressing fears of being unable to control their growing numbers, especially those in the Recherche. Of possible interest to the current Land Rights debate was his opinion that if the situation was left unattended, the sealers’ children might have a case for title to some of the islands by right of birth.⁹⁰ His concerns were taken seriously.⁹¹ The Colonial Secretary then wrote to his counterparts in New South Wales, Van Dieman’s Land and South Australia in February 1840 outlining the growing problem:

⁸⁴ Uren, and Stephens, *op. cit.*, p.147.

⁸⁵ Moorehead, A. *The Fatal Impact, an Account of the Invasion of the South Pacific, 1767–1840*, (1966), (Ringwood: Penguin Books, 1987 illustrated ed.), p.242.

⁸⁶ Johnson, L. *Love Thy Land: A study of the Shire of Albany, Western Australia*. (Albany: Shire of Albany, 1982), p.95.

⁸⁷ PGWAJ., 7/10/1842.

⁸⁸ Uren and Stephens, *op. cit.*, pp.147-148; Bignell, *op. cit.*, p.9.

⁸⁹ Ryan, *op. cit.*, p.162.

⁹⁰ CSR 73/75, 17/11/1839.

⁹¹ CSR 73/75, 17/11/1839.

Urgent representations having been made to the Government of Western Australia of the rapid increase that has lately taken place on the South Coasts of the Colony, in the number of lawless characters whose only ostensible mode of living is by sealing, and of the fear which may be reasonably entertained that when this means fails them they may be emboldened by their numbers and driven by want to seek support in some desperate pursuit, perhaps as pirates or Buccaneers for which the numerous islands along the shores of the Great Australian Bight are particularly favourable.⁹²

It seems clear that the government viewed the total extinction of the seal population along the entire southern coast as inevitable, and that the increasing amount of colonial shipping would create avenues for unwanted diversification by the hunters. As a counter measure it was proposed that it was in the mutual interest of the four colonies to establish common port procedures involving registration of all sea going boats and the obtaining of a bonded surety from the owners that they comply with good behaviour towards the colonial governments. The name of each boat and its home port was to be conspicuously displayed and owners were to be obliged to provide port authorities with details of crew, and the objects of voyages. Colonies would share intelligence about shipping movements and any serious misbehaviour by crews beyond their home port.⁹³ It marked the end of an era, but some settlers were nostalgic for the alternative lifestyle sealers had created for themselves, as evidenced by the following 1842 newspaper report.

Rather than be at the expense of living in the settlement, and going to work, some of these men prefer leading an idle life on one of the islands with their black women and children, entirely excluded from human society, and sleeping away their existence. They only require a little flour, all the rest being plentifully supplied to them by the bounty of nature. *Bald Island*, about twenty miles eastward of the Sound, has been inhabited frequently by them on account of the number of wallabees that abound on it. One of the sealers named "gemble" or familiarly "Bob Gemble," originally from Van Diemen's Land, used to reside there with his black gins and children for months together, and for aught that I know, he may be either there, or somewhere in the Archipelago to this day.⁹⁴

Commercial sealing continued in a sporadic way through to the twentieth century and some recovery of seal populations appears to have taken place, because in 1891 two

⁹² CSO 117, 26/2/1840.

⁹³ CSO 117, 26/2/1840.

⁹⁴ *PGWAJ.*, 7 Oct. 1842.

boats obtained 3,000 skins between them.⁹⁵ At the prevailing commercial rate they would have been worth about £1,000. The setback to the species appears to have been significant. The following year seal skins only to the value of £170 were exported.⁹⁶ The indiscriminate slaughter of 1891 in part prompted creation of *The Game Act, 1892*.⁹⁷ This enabled a closed season to be applied in the breeding season between November and March.⁹⁸

The last nineteenth century commercial sealing operation in the Recherche is thought to have been by *Kia-Ora*, a fifty foot ketch specially constructed at Fremantle for the purpose, however the venture quickly became uneconomical and the boat was sailed to Geraldton and converted for fishing the offshore Abrolhos Islands.⁹⁹

7.3 Mutton birds

As had occurred in Bass Strait when seal numbers fell, the southwest sealers diversified into other resources such as kangaroo skins and mutton-birds. In Bass Strait mutton-birds were the young of the short-tailed shearwater (*Puffinus tenuirostris*). These are rarely seen in the southwest, which was frequented more by the sooty shearwater, or king mutton bird (*Puffinus griseus*) and the great-winged petrel or common mutton bird (*Pterodroma macroptera*), with the latter being predominant on many of the islands between Albany and Cape Arid. This bird is a winter breeder and lays its eggs in burrows about 600 mm deep. The plump nestlings which are the target of the hunters must be taken before late October, when they are fully fledged and almost ready to fly.¹⁰⁰ Other species of shearwater may have been included. To the west of Albany a favoured place of sealers for taking mutton birds was Sandy Island, which lies a few kilometres southeast of Point D'Entrecasteaux. This island had formerly carried a large population of fur-seals.¹⁰¹ Mutton birding required laborious teamwork, and a sealer with several wives and children was at a distinct advantage. The fledglings were collected by pulling

⁹⁵ WAPD., 7/1/1892. p.194.

⁹⁶ Saville-Kent, W. "Fish and Fisheries of Western Australia," in Western Australia Yearbook, 1893-4.

⁹⁷ WAPD. 7/1/1892, pp.194-5.

⁹⁸ GG. 9/6/1892. p.423.

⁹⁹ Kerr, 1985, *op. cit.*, p.221; Cooper, R. *The Way it Was: Midwest Fishermen and Their Boats from 1894*. (Geraldton: L.G. Cogan, 1996). p.5.

¹⁰⁰ Serventy, D.L. and Whittell, H.M. *Birds of Western Australia*, (Nedlands: UWA Press, 1976),

¹⁰¹ PGWAJ., 3 Sept. 1842.

them from their burrows and wringing (breaking) their necks. When sufficient numbers were collected they were dipped in boiling water to loosen the feathers, then plucked and gutted. The carcasses were rubbed inside and out with salt and placed in tubs to cure, then dried over several days in the sun and wind, after which they were ready to be bundled and sold. It was claimed that mutton birds prepared in this way would last for several years and could even be kept in hot climates.¹⁰²

The market for birds processed on the south coast was in Albany, where they were purchased for local consumption and for export. Sealers obtained four pence per preserved bird in 1842. Eggs from other seabirds were also collected seasonally and sold in Albany during October and November for between sixpence and one shilling per dozen. According to William Nairne-Clarke, south coast Aborigines played a significant role in the collection of birds and eggs on behalf of sealers:

The natives are far more dexterous than Europeans, either in hunting for birds on the Islands or finding their eggs, and a sealing boat is seldom seen without some of them, either male or female.¹⁰³

As was the case with seals, the provisions within *The Game Act, 1892* enabled restrictions to be imposed on these activities. Serventy noted that there was a proposal to reactivate the Recherche mutton bird trade in the mid-twentieth century, but the numbers of birds surveyed were considered uneconomical.¹⁰⁴

7.4 The traditional relationship between Southwest Aborigines and seals

Unless there was an interconnecting shoal, southwest Aborigines did not have access to offshore islands until after the arrival of Europeans. As has been previously mentioned, islands which were accessible were raided for seal pups in the breeding season.¹⁰⁵ In 1836 a Perth newspaper carried a report that Aborigines had spoken of seals on an island which they called *Yulgarin*, three or four days walk north of Swan River.¹⁰⁶ This was in the Lancelin-Dongara region, and may have been Wedge Island. Aborigines were able to get on to the island by wading and swimming across a shoal, and seal pups or *muggoorang* were killed then brought back to the mainland. Apart from the dangers of

¹⁰² *PGWAJ.*, 1 Oct. 1842.

¹⁰³ *PGWAJ.*, 24 Sept. 1842.

¹⁰⁴ Serventy, *op. cit.* (1/6/51), pp.17-18.

¹⁰⁵ *PGWAJ.*, 13 Aug. 1836.

¹⁰⁶ *PGWAJ.*, 13 Aug. 1836.

crossing the shoal, the female hair-seal is highly aggressive during pupping and will make a persistent attack on humans if a threat is perceived.¹⁰⁷ Bass Strait Aboriginal women were known to douse their skins with salt water and by imitating seal mannerisms, gradually approach them over rocky shorelines, but no examples of this hunting method have been identified amongst southwest Aborigines.

Thirty kilometres to the south of Fremantle, Penguin Island also carried a small hair-seal population in the 1830s.¹⁰⁸ It too is easily accessible by wading, but in keeping with the known dispersal habits of hair-seals, only large bulls may have been found. There is no evidence that Aborigines pursued them. The unusual eighteen month breeding cycle which was previously discussed in this chapter did not correlate with the normal terrestrial seasonal changes which enabled approximate predictions of other maritime resources such as fish, birds or whales. Therefore a much greater degree of unpredictability existed when it came to hunting seals, and this may account in part for the absence of mythological associations in the historical ethnography, and possibly too in the archaeological record. Nevertheless, a variety of Aboriginal names for seals were recorded by settlers. Near Swan River hair-seals were known as *manyini* or *manyeen*.¹⁰⁹ Further north they were known as *muggoorang*.¹¹⁰ In the King George Sound region the word *balard* was recorded.¹¹¹ Other derivations are *balgart* and *balkut*.¹¹² It is probable that minor variations between word lists are due in part to the orthographic technique adopted by the original recorders. Other names may also have existed. Unfortunately most southwest Aboriginal word lists tend to be superficial, and reveal almost nothing of the contextual usage of such names, or for that matter the profound richness of the cultures from which they are extracted.

Few islands or offshore outcrops along the south coast created since the mid-Holocene can be accessed by shoals, thus making the indigenous access to seal colonies minimal. Seals which came ashore on the mainland were highly vulnerable to a stealthy hunter and could be clubbed or speared, but still might escape, as demonstrated by the example of the remains of a seal with part of an Aboriginal spear embedded when the

¹⁰⁷ Gales, *et al*, *op. cit.*, p. 407.

¹⁰⁸ PGWAJ, 3 Sept. 1842.

¹⁰⁹ Moore, *op. cit.*, p.110; PGWAJ., 23/3/1833.

¹¹⁰ PGWAJ., 13/8/1836.

¹¹¹ Ogle, *op.cit.*, p.72.

¹¹² Bindon and Chadwick, *op. cit.*, p.369.

crew of HMS *Investigator* disembowelled a large shark in the Recherche.¹¹³ Other attacks on stray seals along the mainland shoreline are recorded in the nineteenth century writings of King, Grey, and Ogle.¹¹⁴ While seal meat was readily eaten by Aborigines when opportunity permitted, the skins were not valued as garments, people preferring instead to make their cloaks or *bukkas* from the much lighter kangaroo skins. The example previously mentioned of King George Sound Aborigine Mokare wearing trousers and a jacket made from seal-pup skins in 1829 probably more reflected desire to associate as closely as possible with Europeans and their exotic customs.¹¹⁵

¹¹³ Flinders, *op. cit.*, vol.1. p.82.

¹¹⁴ Ogle, *op. cit.* p.231; King, *op. cit.*, vol.2, pp. 126-8, 140; Grey, *op. cit.*, p.278.

¹¹⁵ Mokare associated with many visiting Europeans before and after the garrison was established at KGS in 1826. See Green, N. *Aborigines of the Albany Region, 1821-1898*, (Nedlands: University of Western Australia Press, 1989), pp.15-29.

Chapter 8 Oysters and pearls

8.1 Culinary delights

Several species of oysters from the families *Pteriidae*, *Malleidae*, *Isognomonidae* and *Ostreidae* can be found on various parts of the coast covered by this study.¹ Not all produce pearls, but all are edible and as discussed in previous chapters the varieties such as *Ostrea angasi* at King George Sound have attracted the attention and compliments of numerous pre-colonial European explorers. As has also been discussed elsewhere, molluscs were little exploited by Aborigines as a food resource.

The intensive efforts of early European gastronomes may have contributed to French explorer Dumont D'Urville being unable to find any by the time he arrived in 1826.² It seems probable that by this time all the oysters in shallow water had been taken by Europeans. However substantial numbers probably existed in deeper waters. Later the same year Major Lockyer, the commander of the newly established garrison at King George Sound had likened the quality of *O. angasi* to those he had eaten from the renowned Torical Bay on the French coast opposite Jersey, thus inadvertently ensuring that intensive interest in the species by visiting Europeans continued.³

They were still being obtained in 1844, and elsewhere according to a widely disseminated newspaper report,

Oysters - in various forms, from the native state to the improved pickled and potted, have been received from King George's Sound. These are esteemed here a great luxury, most approvedly so; but remember this! Beds of oysters may be found much nearer our port. At the Murray, fine oysters may be obtained; between this and Fremantle, abundance of rock oysters may be collected, of delicious flavour. If there be amongst us men who understand the laying down of oyster beds, they may find abundant situations in the vicinity of the port for the exercise of their practical knowledge.⁴

It is possible the species near Fremantle could have been either *O. angasi* or *Saccostrea cucullata*, although on the west coast the latter were more common.⁵ In some southwest estuaries such as Swan River, massive accumulations of fossil oyster shell

¹ Wells and Bryce, *op. cit.*, pp.154-162.

² D'Urville, *op. cit.*, p.29

³ Stephens, *op. cit.*, p.48.

⁴ *SRNWAC*, 1/7/1845, originally in *PGWAJ*, 21/9/1844.

⁵ Wells and Bryce, *op. cit.*, p.162.

provided evidence that significantly large populations had been present in the past. They initially provided expectation that a major industry might be established,⁶ however such hopes failed to recognise the environmental requirements of Australian oysters, which for the most part were little understood scientifically.⁷ For example, at the behest of Governor Robinson, the King George Sound species became the subject of an aquaculture experiment on Rottnest Island in the early 1880s by Frenchman A.H. Conderot (Tonderot?). Robinson had an official summer residence on the island and hoped they would acclimatise in an enclosed reef-pool near Geordie Bay, then popularly known as "the bath of Venus." (the Basin?) If successful they would ultimately grace his table along with other acclimatised species such as pheasant and peafowl, but marine environmental conditions were quite different to King George Sound and not surprisingly the experiment failed.⁸

Throughout the latter half of the nineteenth century, and in the face of dwindling indigenous stocks, there were other unsuccessful attempts to acclimatise oysters at various places further north, for example at Broome, the Monte Bello Islands, Shark Bay and in the A brolhos, but these, all involving pearl producing species, had limited success.⁹

Fisheries advisor W. Saville-Kent, who had particularly noted similarities of conditions between Shark Bay and Queensland, and with the blessing of the Western Australian government conducted rudimentary experiments. Unfortunately the long period between introducing spat and harvesting mature oysters discouraged commercial involvement.¹⁰ Some live shell was also brought from the Lacepede Islands, off the northwest coast, but it readily hybridised with the dominant Shark Bay species, rendering the experiment a failure.¹¹

While oysters at Shark Bay and elsewhere in the southwest were readily accessible from the shorelines prior to European arrival, there is no indication in either the

⁶ A large deposit of oyster shell in the middle portion of the Swan River system, near Perth, has been intensively exploited for cement manufacture in the past. Reminders of this deposit on Herrison Island, adjacent to the Causeway are visible above the present mean tidal water level.

⁷ *WAPD.*, (1892), pp.309-310.

⁸ *Watson, op. cit.*, p.122.

⁹ Stanbury, M. "Mother-of-pearl shell cultivation: An early 20th century experiment in the Monte Bello Islands, Western Australia," paper distributed at conference, *New Directions in Maritime History*, Fremantle, 6-10 December 1993. pp.1-27.

¹⁰ *Saville-Kent, (1897), op. cit.*, pp.138-139.

¹¹ *WAPD.*, (1912), vol. 43, p.11196.

archaeological or ethnographic record that oyster meat ever formed a significant part of the traditional diets of any southwest Aborigines. Similarly, pearls appear to have been sought only after settlement in order to satisfy the demands of non-Aborigines.

All pearl oysters in Australian waters belong to the family *Pteriidae* and are generally considered tropical species.¹² In Western Australia their distribution does not extend far south past Shark Bay, which is approximately 230 km south of the Tropic of Capricorn. Therefore as a marine resource they are not encountered in most of the coastal region encompassed by this study.

Their presence at Shark Bay was first recorded by William Dampier when he wrote in August 1699, "Of Shell-fish we got here Muscles, Periwinkles, Limpits, Oysters, both of the Pearl-kind and also Eating-Oysters."¹³ The pearl species seen by him may have been either *Pinctada imbricata*, which is a small, relatively fragile oyster common in Shark Bay, or the much larger, thick-shelled *Pinctada maxima* which existed in abundance further north. The latter has been notable for its Aboriginal religious usage in northwest Australia as an engraved item for male pubic and chest adornment. Through customary exchange routes the shell was distributed throughout much of the northern and central continent, but not to the southwest.¹⁴ The "eating" oyster noted by Dampier may have been *Saccostrea cucullata*, abundant on many parts of the mid-west coast and offshore islands.

The non-Aboriginal exploitation of pearls and pearl shell in the southwest differed from the whaling and sealing industries inasmuch as the initial activity mainly came from within the colony well after its foundation. The first commercially orientated activity is attributed to Fremantle Harbour Master Daniel Scott, who having heard from visiting sailors about beds of *P. imbricata* at Shark Bay, took leave in 1849 to investigate.¹⁵ Conversely the first harvesting of *P. maxima* came much later in 1861 and was associated with F.T Gregory's exploration further north at Nickol Bay, where several tons of shell were gathered with the help of local Aborigines.¹⁶

The pearls from Shark Bay were small, fragile and of a yellowish colour

¹² Wells and Bryce, *op. cit.*, p.155.

¹³ Dampier, *op. cit.*, p.86.

¹⁴ See: Mulvaney, (1975), *op. cit.*; Akerman, K. and Stanton, J. *Riji and Jakoli: Kimberley pearlshell in Aboriginal Australia*, (Darwin: Northern Territory Museum of Arts and Sciences, 1994), p.14; Bain, M.A. *Full Fathom Five*, (Perth: Artlook Books, 1982), p.14.

¹⁵ Bain, *op. cit.*, p.14.

¹⁶ *Ibid.*, p.15.

inconsistent with those of a more silvery lustre which traditionally commanded the highest prices. Nevertheless, as news spread, their value was sufficient to attract speculators from nearby pastoral stations and southwest coastal settlements. Commercial shell gathering in Shark Bay waters initially involved wading from the shore, but as these stocks became depleted it was dredged from small boats usually requiring two men. This was a particularly destructive method and invariably brought up large quantities of juvenile spat which could be as much as five years from maturation.¹⁷ The shell was processed and sorted at shore camps, but pearls were comparatively rare. An official estimate in 1890 was that 1,000 tons of Shark Bay shell approximately yielded 1,000 ounces of pearls.¹⁸ This was substantially less than an 1851 test of two thousand oysters by HMS *Champion* which yielded 80 pearls.¹⁹

Rather than search through the flesh of each oyster for pearls it was usually dumped into “pogey-pots” to decompose, sometimes for a year or longer, with the pearls accumulating on the bottom. According to Saville-Kent the overpowering stench from these pots became synonymous with the Shark Bay fishery:

The pogee tub is, moreover, a power in the land for the adjustment of social differences. If the wind is in the right direction, an aggrieved party can inflict the most condign punishment on an offending next door neighbour.²⁰

In reality the shell was the mainstay of the Shark Bay operations, the pearls, a bonus. Depending on quality, Shark Bay shell could command a price of between six and sixty pounds per ton, with an average price of about fifteen pounds per ton.²¹ Inferior shell was used for button making, with blanks sometimes being cut from shell on shore. Drilled out shell can still be seen scattered on the surface of abandoned camp sites. Better quality shell was sorted, bagged and sold on. Sacks of sorted shell and weighing scales can be seen in the photograph in Fig. 8.1. Another photograph of this same camp, but not reproduced here shows that at least six Aboriginal women were engaged in working on the pile of shell in the foreground.

As discussed in Chapter Three, Aborigines in this region were substantially

¹⁷ *Report of the Commission Appointed by his Excellency the Governor to Report on the Pearl Shell Fisheries of the Colony*, (Perth: Western Australian Government, 1880), p.4.

¹⁸ *General Report on the Pearl Fishery in Sharks Bay*, (Perth: Western Australian Government, 1890), p.4.

¹⁹ *PGWAJ.*, 7/2/1851.

²⁰ Saville-Kent, (1897), *op. cit.*, p.212.

²¹ *Report ...Pearl Shell Fisheries ...*(1880), *op. cit.*, p.4.

traumatised by post-settlement events, and there is little evidence to suggest they were treated well by either pastoralists or pearlers. As with the other resources previously discussed, the key to economic success in pearling was a source of cheap labour and in this respect Aborigines became particularly desirable. An 1875 newspaper correspondent reported, "Ten good native boys, or men, (were) equal to twenty Malay divers...regarding expense, the native is comparatively nothing against the Malay."²² Two decades later W. Saville-Kent, who carried out a scientific survey of marine life and the pearl fishery at Shark Bay, wrote of the past:

These were the days when the Pearl-sheller could rapidly make his pile, effecting a grand coup perhaps in a single day by the purchase of a pickle bottle full of pearls from the unsophisticated natives for no more consideration than a pound of bad tobacco.²³

Ostensibly protective legislation was passed in 1881 making the official daily ration for an Aboriginal employee at Shark Bay two pounds of wheaten flour; half an ounce of tea; two ounces of sugar; half a pound of cooked meat without bones, and a two ounce plug of tobacco each week. A serge shirt and a serviceable blanket were to be provided during the pearling season, which might run for six months. In return the "employee" could be expected to work at least eight hours a day on or in the water, or ashore as required with a break every four hours.²⁴ The regulations were rarely adhered to the letter.²⁵ Oyster meat was regularly included in the diet of indentured employees at Shark Bay, it being first hung to dry, then used as required in soups, curries and stews.²⁶ However as has been pointed out in Chapter Four, marine molluscs were relatively low in nutritional value compared to fish and land animals, and a prolonged diet of this would have been unhealthy.

Some pearlers also had pastoral leases and Aborigines were moved perpetually between them and the pearling grounds in a labour situation which was akin to a form of slavery, an allegation which ultimately focussed the unwelcome attention of humanitarians and the increasingly strong trade unions upon questionable activities of the ruling elite elsewhere in the colony.²⁷

²² *Inq.* 28/4/1875.

²³ Saville-Kent, (1897), *op. cit.*, p.203.

²⁴ Pearl shell fishery regulations, (1881). p.4.

²⁵ *Report by the inspector of Pearl Shell Fisheries for the season 1883-84*, (Perth: Western Australian Government, 1884).

²⁶ Saville-Kent, (1897), *op. cit.*, p.212.

²⁷ Haebich, A. *op. cit.*, p.71-72.

In 1870 wealth Scott Francis Cadell imported 50 “Malay” divers from the Alor and Solor Islands, which are located north of Borneo. Described by historian Mary Albertus Bain as an “outstanding blackbirder,”²⁸ Cadell gained notoriety for mistreatment of his employees and eventually left the colony.²⁹ The term “Malay” encompassed a diverse range of people during the nineteenth century who were distributed over the peninsula of Malacca, the islands of Java, Borneo, Sumatra, the Celebes, and the Moluccas.³⁰ Many other people loosely identified as “Asiatics” were later brought in by other pearlers under questionable circumstances which in turn contributed to one of the most violent and ruthlessly exploitive epochs in Australian history.³¹

The discovery of gold in Eastern Australia had resulted in the arrival of unprecedented numbers of Chinese from 1853, with Victoria bringing down the first restrictions two years later. South Australia followed in 1857 and New South Wales in 1861. Western Australian authorities did not act with quite the same urgency because the first gold discoveries came much later, in north-western Australia in 1882, and at Coolgardie-Kalgoorlie in 1892-93.

Nevertheless, the uncontrolled arrival of Asian peoples, albeit in far lesser numbers, to work in the pearling industry was of sufficient concern to result to bring in a series of labour registration acts from 1874. Ostensibly these protected the interests of indentured employees, but they also marked the beginning of tighter reforms in the colony as to whom could permanently settle. For example the *Imported Labour Registry Act, 1884*, which was the third in a series, required pearlers to enter into written contracts with employees or their agents in the country of origin. In an attempt to guard against forceful abductions, but perhaps also to impose bureaucratic inconvenience, the contracts were to be verified by a colonial magistrate upon arrival of the employees.³² The legislation also required that culturally appropriate food be available, which in effect amounted to large quantities of imported rice, supplemented by local resources, which in turn translated as oyster meat and fish. Under the Act pearlers were also obliged to provide adequate health care, unless illness or injury could be attributed to the negligence of the individual. Even so, many Malays at remote places died from a variety of causes.

²⁸ Bain, *op. cit.*, p.28.

²⁹ *Ibid.*, p.31.

³⁰ Figuiet, L. *The Human Race*, (London: Cassell, 1893), p.418.

³¹ Bain, *op. cit.* provides a descriptive account of many of these lurid incidents.

³² 48 Vic. 25, Section 14.

including poor nutrition and berri berri, which is now known to be caused by a sustained diet of polished rice.

In the unending search for the cheapest possible labour, another entrepreneur Charles Broadhurst applied for, and was allocated three southwest Aboriginal prisoners from Rottnest Island for use as divers.³³ He quickly discovered they were not very good at this, to the extent they “appeared to be thoroughly frightened of salt water.”³⁴ On shore he tried to make them work alongside local Aborigines opening shell but this too failed and they were returned to the prison. On another occasion he acquired several Rottnest prisoners originating from the Champion Bay (Geraldton) region. *En route* five escaped when his vessel called at Champion Bay and a few weeks later the remainder escaped at Nichol Bay and began a long walk homewards.³⁵

Like Cadell, Broadhurst also acquired a notorious reputation for his mistreatment of Malay divers at Shark Bay, whose diving skills he concluded were not much better than the southwest Aborigines. Broadhurst later became a member of parliament until he was forced to resign from the Legislative Council over unsatisfactory past activities involving Malay divers.³⁶

Cadell and Broadhurst were not alone in their mistreatment of Aborigines and Malays. Charles Tuckey as master of *Argo* is alleged to have rounded up and kidnapped Aborigines to use as forced labour in his pearling operations.³⁷ Broadhurst and Tuckey later separately became pioneers in the fish-canning business at Peel Inlet, a matter discussed in Chapter Nine. Colonial Secretary’s records reveal numerous other Aboriginal prisoners from the southwest and inland regions were sent via Rottnest prison to work for other pearlers.³⁸ They frequently had no experience with swimming or diving, and it is hardly surprising they absconded because of their inherent fear of water.³⁹ Reasons for this aversion were discussed in Chapter Five.

Numerous examples exist of pearlers committing appalling atrocities, including

³³ Erickson, R. (1978), *op.cit.*, pp.110-118

³⁴ CSR 697:110 14/4/1871.

³⁵ McCarthy, M. “Charles Edward Broadhurst (1826-1905). A Remarkable Nineteenth Century Failure,” unpublished M.Phil. thesis, (Murdoch University, 1989).

³⁶ Erickson, R. (Ed.), *The Bicentennial Dictionary of Western Australians pre-1829-1888*, (Nedlands: UWA Press, 1987), vol. 1, p.319.

³⁷ Henderson, G. and K. *Unfinished voyages: Western Australian Shipwrecks 1851-1880*, (Nedlands: U.W.A. Press, 1988), p.70.

³⁸ For example CSR 664:99 25/9/1870; CSR 665:194 28/10/1870. CSR 697:114 18/4/1871; CSR 665:209 8/12/1870; CSR 696:141 22/5/1871.

³⁹ CSR 665:209 8/12/1870.

murders of indentured employees. The bulk of these incidents tend to be associated with deeper shell beds of *P. maxima* located further north of Shark Bay.⁴⁰

It would be erroneous to conclude that all Aboriginal people involved in the pearling industry were subjected to kidnappings, abductions or extensions of prison sentences. As had happened all over colonial Australia, Aboriginal people were attracted to the fringes of European activities and were prepared, initially at least, to enter into agreements with whites in return for otherwise unavailable commodities such as tobacco or flour. Similarly women who found their menfolk abducted, imprisoned or murdered were obliged to adopt appropriate strategies to ensure their own survival. The photograph in Fig. 8.1 shows Aboriginal women working in a Shark Bay camp.

Becoming indentured was supposedly a two-way arrangement, although it is unlikely any employee was ever in a situation where they could truly negotiate. If Aborigines tired of the situation to which they had committed themselves they “absconded” and then had police, pastoralists other pearlers and Aborigines alien to their own region set after them. Coupled with this was the very real prospect of being murdered, or sent to prison for long periods.⁴¹ Conversely if a pearler reneged on the contract he might, if he was very unlucky, get fined five pounds.

Sometimes absconding might simply involve a more interesting seasonal diversion such as hunting. For example a pearler at Shark Bay complained in December 1881 that two men who had been engaged with him for some time suddenly left with a boat to hunt dugong and turtle on distant Faure Island.⁴² This place, and other Shark Bay islands mentioned in this chapter, and the extent of the associated pearling grounds are shown in Fig 8.2.

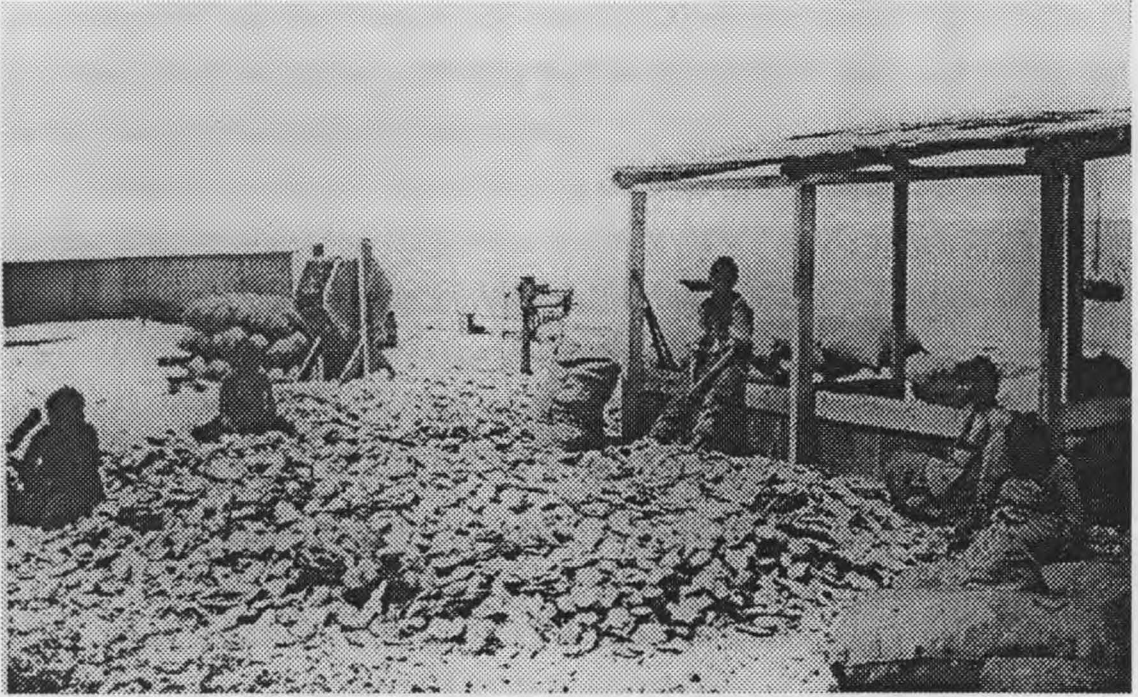
The size of the labouring population in the pearling industry could quickly change according to economic conditions. For instance in 1875 there were 989 Malays on the pearl coast, but in that year the Dutch authorities in Batavia enacted legislation requiring a substantial licence fee for each employee. Coupled with a declining price for pearlshell, the numbers of Malays in Western Australia had dropped to twenty-four, three years later.⁴³

⁴⁰ For example, CSR 1881/1444-13; CSR 1882/1444-89; CSO 1884/4364.

⁴¹ *Inq.* 2/10/1878.

⁴² *Inq.* 21/2/1872.

⁴³ Bain, *op. cit.*, p.29.



8.1 Aboriginal workers in a Shark Bay pearling camp⁴⁴

Later the numbers of Aborigines engaged in the Western Australian pearling industry also dropped rapidly. Fisheries Department records show that 528 were engaged in 1886, but two years later there were only sixteen. This dramatic change coincided with the introduction of “hardhat” diving technology which suddenly allowed access to shell in deep water.⁴⁵ Other more significant factors may have been a continuing drop in the price of shell, for example the ongoing development of the northwest pastoral industry, which also required Aboriginal labour; and the implementing of *The Aborigines Protection Act 1886*, which besides stipulating better treatment of Aborigines by pastoralists, also had a provision whereby warrants and summonses could not be served on absconders beyond a thirty mile radius, unless by special order of a magistrate. In sympathy with the labour requirements of pastoralists this latter provision was repealed in 1892.

As with the pastoral industry, the poor industrial record of the pearling industry was in reality of little concern to those who stood most to gain. What mattered most was profit, but it is difficult to place an accurate figure on how much profit was made from Shark Bay. A report to the Colonial Institute in London estimated that the value of

⁴⁴ Source: Saville-Kent, (1897), *op. cit.*

⁴⁵ Miller, R. “From dark hands to white pockets: A chronology of Aboriginal and non-European involvement in the pearling industry,” paper distributed at, *New Directions in Maritime History* conference, Fremantle. 6-10 December 1993.

exported pearls from the colony in 1893 was £30,000 and pearl shell £59,254.⁴⁶ This was based on official figures. A thriving black market in “snide” pearls and shell existed, so the true figure was probably much higher.⁴⁷

European pearlmasters predominated in the Shark Bay region in 1870, but the number of non-European operators began to increase. By 1886 there were 23 “Asian” boat owners, plus Malay employees. Although Europeans still dominated the industry they were fearful they would lose this position.⁴⁸ In reality they provided threatening competition for an obviously limited resource. It was alleged Asians were taking all shell regardless of size, and as a result were destroying the industry.⁴⁹ They were automatically assumed to be actively involved in illicit activities involving the sale of shell and pearls.

Another persistent and longer-lasting theme was that Aboriginal women all along the pearling coast were being procured by Asians for immoral purposes.⁵⁰ Linked to this were allegations of Aboriginal women being abducted for longer periods for the pleasure of Asian crews.⁵¹ There is no evidence that Europeans were less involved in this respect than Asians. Quarrels and arguments over women were not uncommon, sometimes with violent reactions which threatened to overturn the arguable stability of the pearling communities.⁵² *The Pearl Shell Fishery Regulation Act 1873* specifically prohibited the presence of Aboriginal women on pearling boats. Davidson, in his classic study of Hanson’s disease (leprosy) in Western Australia, reveals such concessive arrangements with pearlmen continued well into the twentieth century.⁵³

The allegations of resource over-exploitation and duty-dodging carried more weight. As a result the non-Asian pearlmen at Shark Bay successfully lobbied for

⁴⁶ Robinson, W. “Western Australia,” *Proceedings of the Royal Colonial Institute 1894-95*, p.359.

⁴⁷ Saville-Kent, (1897), *op. cit.*, p.196; *Report on the Pearling and Turtling Industry by the Chief Inspector of Fisheries*, (Perth: Western Australian Government, 1901), p.3; Bartlett, N. *The Pearl Seekers*, (London: Andrew Melrose, 1954), pp.18.20; Bain, *op. cit.*, pp.251, 291.

⁴⁸ Atkinson, A. “Chinese labour and capital in Western Australia, 1847-1947,” unpublished Ph.D thesis, (Murdoch University, 1991), pp.91-96.

⁴⁹ *WAPD*. 30/6/1888.

⁵⁰ *PG* 7/3/1873.

Bartlett, *op. cit.*, p.40; Elkin, A.P. “Aboriginal European Relations in Western Australia - An Historical and Personal Record,” in Berndt, R & C. (Eds.), *Aborigines of the West Their Past and Present*, (Nedlands: UWA Press, 1979), p.294.

⁵¹ *WAPD* (1870)., p.41.

⁵² *Ibid.*

⁵³ Davidson, *op.cit.*, pp.12-14.

increased controls favouring themselves. The resultant *Shark Bay Pearl Fishery Act 1886* became the tool for effectively ending Asian participation, in favour of European interests.⁵⁴ The legislation did not specifically mention Chinese, or any other Asians, but the issuing of licences was done at the discretion of the Commissioner of Crown Lands who acted in accordance with the wishes of government. The government of the time had a mandate to exclude Asians in sympathy with the prevailing sentiment amongst the most influential European pearlers, a sentiment which also became strongly instilled into the thinking of the fisheries bureaucracy by the end of the century.⁵⁵

Exclusion was compounded by the fact that leasing of the pearling banks and regulating access to them was placed under control of an association formed by European pearlers. Asian pearlers were forced to sell up their equipment, then leave, a neutralising strategy which was completed by November 1886.⁵⁶ So called trustees of the Shark Bay area were then allowed large, three year leases for the sum of £1,000 per year. Portions of these in turn were sub-let to others, but this was to become the cause of considerable dissatisfaction to new-comers.

The exclusion of Asian pearlers was dependent on the interpretation of the of the 1886 Act, and only occurred because of the continuing tacit concurrence of the government. In 1889 when the *Pearl Shell Duty Reduction Bill* was being discussed in the Legislative Council the Colonial Secretary, Sir Malcolm Fraser revealed something of this conspiracy:

...they wished to have an (continuing) assurance from the Government that no licences would be given to coloured men owning vessels. If members will look at the 4th clause of the bill they will see how cleverly and skilfully my hon. and learned friend has framed that clause to deal with this part of the subject.⁵⁷

The devious clause provided for the Governor to direct, “the granting or refusing, renewing or non-renewing of any such licence to any person or class of persons whatsoever.” The discreet wording suggests that there was some sensitivity about coming straight out and saying Chinese or any other type of Asian were banned, as had happened in the *The Goldfields Act 1886*, and that the government was treading more warily.

⁵⁴ *General Report ...Pearl Fishery ...Sharks Bay*, (1890), *op. cit.*, p.2

⁵⁵ *Report ...Pearling and Turtling Industry...*(1901). *op. cit.* p.4

⁵⁶ *Ibid.*, pp.3-4.

⁵⁷ *WAPD.*, 19/11/1889, p.163.

The short-term leasing arrangements and the exclusion of racially undesirable pearlery under the *Shark Bay Pearl Fishery Act 1886*, was followed by a reduction of duty on pearl shell. Understandably this did nothing for the conservation of the shell beds, which by 1892 were almost totally destroyed.⁵⁸ These shortcomings were recognised in the *Pearl Shell Fishery Act 1892* which returned management of the shell beds to the government, and provision was made to replace the short-term leases with “exclusive” fourteen year leases, payable in advance, on the assumption that pearlery with a longer term outlook would develop long term conservation strategies, and hopefully might even diversify into cultivation of culinary oysters for the Perth market.⁵⁹ To placate those who would inevitably be omitted from this grand scheme, areas not covered by exclusive licences could be fished by holders on an inferior “general” licence. The 1892 Act also provided for regulatory conservation measures involving closure of shell beds and restrictions on shell size when deemed necessary.

Had this legislation come earlier it may have had some effect. Saville-Kent who had advised the government on West Australian fisheries and the framing of the 1892 Act based upon the Queensland experience was of the opinion that there was little hope for the Shark Bay pearl fishery by the mid-1890s:

The one remedial measure for the untoward condition of affairs is undoubtedly that of artificial cultivation. The expedient may not perhaps recommend to the generality of reapers of today, to where the outlook for the harvesters of the morrow is a matter of supreme indifference.⁶⁰

Officially, the pearling grounds included all the semi-enclosed waters of the Shark Bay region. However the main oyster banks were associated with the shallow waters of Freycinet Reach and on either side of Peron Peninsular. Pearlery camps were located on the shore adjacent to these, which is shown in the sketch map in Figure 8.2.

⁵⁸ WAPD., 7/9/1882, pp.192-194.

⁵⁹ WAPD., 7/9/1882. pp.192-194.

⁶⁰ Saville-Kent, (1897), *op. cit.*, p.203.

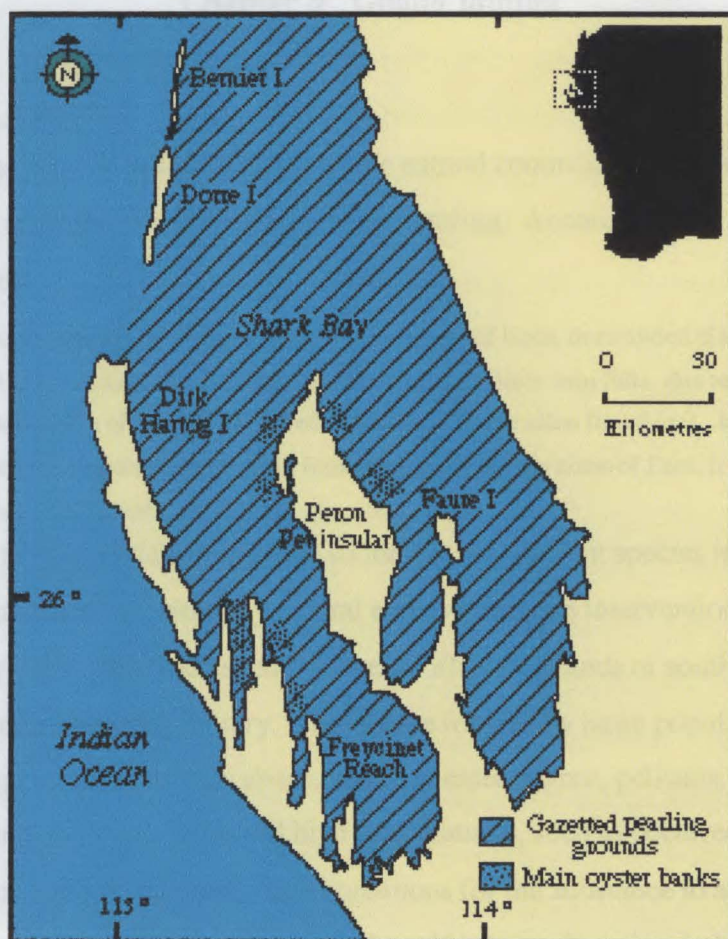


Fig. 8.2 The Shark Bay pearly grounds⁶¹

(*Phalacrocorax varius*). 'The main rookery was on Middle Island in the Recherche; but winter storms being there was not a significant accumulation of guano.'

The deepest deposits along the west coast were located on the comparatively arid islands of Shark Bay, where noiling lasted from autumn to early winter.⁶² Some islands thus yielded only a few hundred tons, while others were thousands. The precise age of the shag rookeries is unknown. Because of various long-term climatic and associated marine changes which were discussed in Chapter Three, it is unlikely any were older

⁶¹ *Lloyd's Encyclopaedic Dictionary*, (London: Edward Lloyd, 1805), p.76. (The term guano is also used to describe dung accumulation of other species such as bats. William Dampier (1699) also used the word as the name for a type of mudstone found at Shark Bay, which may have been a shag.)

⁶² For an explanation of rainfall patterns, see Chapter Two.

⁶³ Serventy and Whittell, *op. cit.*, p.114.

⁶¹ Sources: Carmody, R.W. "Shark Bay - Its Story 1616-1969," unpublished typescript, 1970, BL Q994.13/SHA; The Sharks Bay Pearl Fishery Act (1892). Section 13.

Chapter 9 Guano mining

9.1 A strategic resource

Guano has been one of the most valuable natural commodities of the modern age due to its use in agriculture and chemical manufacturing. According to a nineteenth century dictionary:

Guano is formed by the multitudinous droppings of birds, in secluded places where they have been undisturbed for ages. If, in any locality, little rain falls, this tends to the rapid accumulation of guano. The dried bodies of birds are often found in it...Immense quantities have been imported into Britain from the islands off the coast of Peru, it being an exceedingly valuable manure.¹

Guano is an accumulating resource so long as the relevant species in the biological food chain are undisturbed, either by natural events or human intervention. Guano deposits of varying size also occurred on several offshore islands of southwest Australia in the early to mid-nineteenth century. These were formed by large populations of surface roosting sea-birds, mainly shags, and to a lesser degree, pelicans. The prevailing climatic conditions of low rainfall and high temperatures, such as occurred at Shark Bay and the Abrolhos Islands, provided ideal conditions for the substance to accumulate.²

Of the five species of fish-eating shag found in the region, the pied cormorant, (*Phalacrocorax varius*) was the principal depositor of guano on many small islands along the west coast.³ Serventy reported that two species were found along the cooler south coast. The main rookery was on Middle Island in the Recherche, but winter storms ensured there was not a significant accumulation of guano.⁴

The deepest deposits along the west coast were located on the comparatively arid islands of Shark Bay, where nesting lasted from autumn to early winter.⁵ Some islands there yielded only a few hundred tons, while others many thousands. The precise age of the shag rookeries is unknown. Because of various long-term climatic and associated eustatic changes which were discussed in Chapter Three, it is unlikely any were older

¹ *Lloyd's Encyclopaedic Dictionary*, (London: Edward Lloyd, 1895), p.76.

(The term guano is also used to describe dung accumulation of other species such as bats. William Dampier (1699) also used the word as the name for a type of marine bird he saw at Shark Bay, which may have been a shag.)

² For an explanation of rainfall patterns, see Chapter Two.

³ Serventy and Whittell, *op. cit.*, p.114.

⁴ Serventy, V. "Birds of the Recherche Archipelago," in *Walkabout*, 1/6/1951, pp. 17-20, (19).

⁵ Serventy and Whittell, *op. cit.*, p.114.

than the mid-Holocene. The deposits mined in the nineteenth century were friable once disturbed, and less than four metres deep.⁶

The existence of the guano became widely known from March 1850 when the fishing schooner *Pelsart* returned to Fremantle with samples, which were then sent on to Mauritius for analysis. The subsequently favourable report generated an entrepreneurial rush with ships being immediately dispatched from as far away as Liverpool. This urgency reflected a recognition of the finite size of such deposits and was not dissimilar in its zeal to the assaults on Australian seal colonies a half century earlier.

The desire to take as much as possible before tariffs could be established was also a motivating factor.⁷ Towards the end of 1850 as many as ten ships had mined about 4,000 tons from various island deposits, mostly without paying royalties. A small experimental shipment was also taken to Swan River on the *Pelsart* and sold for £5 per ton.⁸ The potential loss of revenue through the clandestine exports was immediately recognised by the government at Swan River, and by October a military detachment from the 99th Regiment had been established by HMS *Champion* on Dirk Hartog Island.

When dry, the loading created substantial waste through wind-borne dust, which, to the frustration of government officials, drifted away to eventually settle in the water. Similarly wasteful were skippers who urged their crews to seek only the purest quality guano, a strategy which resulted in much of the rejected secondary quality deposits being rendered useless as they intermixed with coral and shell. Cyclonic rains temporarily prevented loading in February 1851. The revenue collecting detachment stayed on station for twelve months, by which time the bulk of the deposits had been removed.⁹

The final export shipments sent to Mauritius were so poor they could not be sold.¹⁰ Nevertheless, sporadic small-scale exploitation continued to supply the domestic market at Swan River until 1888.¹¹ During this time some recovery of the deposits took place. F.L. von Bibra, who became the licensee of the guano concession between 1880 and 1888, estimated that the renewal rate by shags was about 80 tons (81,280 kg)¹² per year

⁶ PGWAJ., 7/2/1851.

⁷ PGWAJ., 22/11/1850.

⁸ PGWAJ., 20/9/1850.

⁹ PGWAJ., 7/2/1851.

¹⁰ PGWAJ., 15/8/1851.

¹¹ Serventy and Whittell, *op. cit.*, p.115.

¹² One long ton comprises of 2,240 pounds weight. 1 pound equals 0.4536 kg.

with pelicans annually adding a further 15 tons (15,240 kg).¹³

Commercially viable deposits of guano also existed on some of the Abrolhos Islands which lie off Geraldton, namely Gun, Rat, Pelsaert and Egg Islands.¹⁴ The deposits had first been brought to public notice as a result of the *Beagle* explorations under Captain Stokes in 1840.¹⁵ Because of their aridity the islands were regarded by the government as wastelands.¹⁶ As occurred with seal breeding, which was discussed in Chapter Seven, the nesting seasons differed there from the near-shore islands of the mainland. The pied cormorant nested on the Abrolhos from late winter to spring, but as mentioned earlier, the nesting season at Shark Bay commenced in Autumn.¹⁷

It may seem surprising that these island deposits were not exploited immediately. The sandy soils of the Swan coastal plain lacked certain trace elements and had a low nitrogenous level, therefore presenting significant problems for crops. As a result the need for fertiliser had been recognised almost from the beginning of settlement.¹⁸ In 1846 *The Swan River News and Western Australian Chronicle*, a monthly journal published in London remarked surprisingly that an official report on the *HMS Beagle* discoveries released in 1844 had still not stimulated any reaction in the colony.¹⁹

This reticence was due to two factors. Firstly an official desire that guano deposits form the basis of a tariff-earning export market which would bring greater income to the colonial government. If the guano was sold locally no royalty was applicable. Secondly there was an urgent strategic need for phosphate fertiliser in Britain to the extent the Colonial Office sent an instruction that certain British companies were to be provided every facility without monopoly to ship guano there, and that the local export royalty payable by them be reduced £1 per ton, half of what less favoured operators were prepared to pay. Understandably this caused local outrage, but the desire of the Colonial Office to cater to the strategic needs of England were to prevail for as long as possible.²⁰

Undeterred James Dempster applied to the Colonial Secretary on 10 April 1849 for a lease and a licence to fish on the Abrolhos Islands. He claimed that he had made

¹³ Serventy and Whittell, *op. cit.*, p.115.

¹⁴ McCarthy, *op. cit.*, p.386.

¹⁵ Stokes, *op. cit.*, p.138.

¹⁶ 40 Vic., IX. (1876). p.3.

¹⁷ Serventy and Whittell, *op. cit.*, p.114.

¹⁸ Wollaston, (1842), *op. cit.*, p.122.

¹⁹ SRNWAC, 1/9/1846. no.33 p.69.

²⁰ Wells, B. *Important Events and Developments in the Fertiliser Industry of Western Australia since 1850*, typescript, (ND), B.L. p.6.

arrangements to export cured fish to Mauritius, where they would command a price ten to fifteen percent more than similar products from Capetown. It was suspected Dempster planned to quietly mine the guano deposits and his application was rejected.²¹ An associate of Dempster, Daniel Scott, who was also the Fremantle Harbour Master, privately hired a vessel in early 1850 to explore the Abrolhos Islands group. On return he applied for a year's leave-of-absence and the lease of Egg Island, which had the richest guano deposits.²² In the light of the escalating activities at Shark Bay his application was successful, but as if to try to discourage him he was obliged to resign from the security of his official post before taking up the lease.²³ To raise extra capital he sold some whaling equipment to Dempster in July 1850, who promptly put it to use on Rottneest Island.²⁴ In less than a year Scott had stripped all the guano from his lease.²⁵

Clandestine mining undoubtedly occurred wherever there was no official representation. The extent to which this occurred has not been estimated, but was sufficient enough to be of concern. *The Guano Regulating Act 1876* was intended to overcome these problems but with limited policing resources the government also became obliged to issue more licences to colonial companies, ostensibly to supply a growing local demand for fertiliser. In so doing they would naturally be interested in protecting the deposits from further clandestine activity.²⁶ Support for this came with the punitive provisions of the 1876 Act and the advertised intention of the government to follow through in the prosecution of offenders.²⁷ This provided for the forfeiture of ships and their cargo when caught in illicit trading in Western Australian guano. The severity of the Act may account for the marked rise in declared exports shown in Fig. 9.1 for the three years immediately following 1876. However at about this time there was also considerable guano mining activity to the north, on the Lacapède Islands, which are located outside the region covered by this study.²⁸

Another notable Abrolhos guano miner was Charles Broadhurst who had formerly

²¹ Erickson, (1978), *op. cit.*, p.55.

²² Not to be confused with the Egg Island at Shark Bay.

²³ Erickson, (1978), *op. cit.*, p.58.

²⁴ "Diary of Captain James McLean Dempster, Superintendent Native Penal Settlement at Rottneest," (4 July, 1850), BL 1197A.

²⁵ CSO., 13/8/1851.

²⁶ *Inq.* 9/8/1876; 18/10/1876.

²⁷ *GG.*, 10/5/1876.

²⁸ Lacapède Islands: 16°52'S. 122°08'E. Approximately 120km north of Broome.

been involved in pearling at Shark Bay.²⁹ In partnership with another man he transferred his operations to the Abrolhos in 1883.³⁰ Broadhurst and his associates ultimately gained control over some twenty guano leases and allegedly made a fortune through their monopoly. Much of their guano was sold as fertiliser through the adjacent port of Geraldton over the next two decades, with substantial quantities being exported to Germany.³¹

The value of declared guano exports from Western Australia between 1857 and 1900 is shown in Figure 9.1. The reason for the peak in 1886 has not been identified, but may involve a prudent reaction to *The Pearl Shell Fishery Act 1886*, which provided revenue inspectors with increased powers to stop and search any suspicious vessels. The 1850 rush at Shark Bay is conspicuously absent from the officially based figures which provided the data for this chart. Not shown of course are the undeclared exports by unscrupulous operators, ever on the lookout for ways to maximise profits by avoiding duty.³²

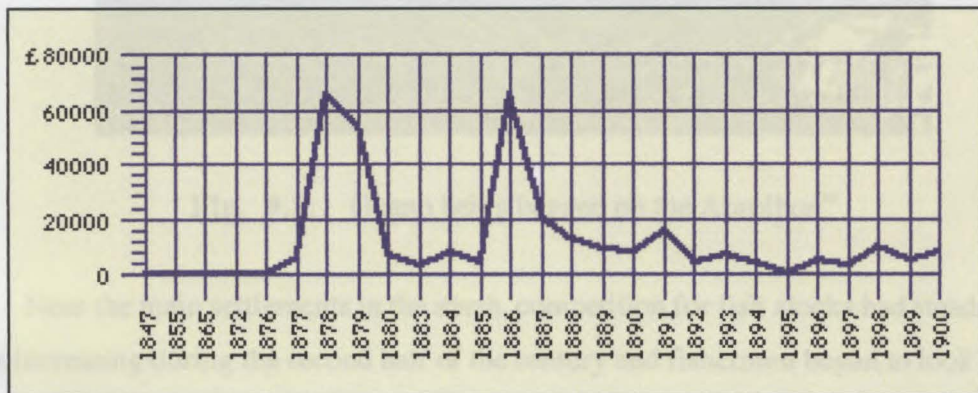


Fig. 9.1 Declared guano exports from Western Australia 1847-1900³³

During the late 1880s demand for local guano fell in the face of cheaper imported fertilisers. This led to the abandonment of Von Bibra's concession at Shark Bay.³⁴ Legislation in the form of the *Fertilizer and Feeding Stuffs Act 1895* brought some relief

²⁹ Lourens, R. "1829-1901," in Firkins, P. (Ed.), *A History of Commerce and Industry in Western Australia*, (Nedlands: University of Western Australia Press, 1979), p.18.

³⁰ *Votes and Proceedings Legislative Council, 1901-2*, vol. 4, no. A21; Erickson, (1987), *op. cit.*, p.319.

³¹ Erickson, (1978), *op. cit.*, pp.117-118; Lourens, *op. cit.*, p.19.

³² The weight of guano was effected by moisture content and inspired estimations of those involved. Therefore tonnages provided should be viewed with appropriate caution.

³³ Source: Battye, (1924), *op. cit.*

³⁴ Wells, *op. cit.*, p.15.

to the Abrolhos producers by requiring importers of manufactured fertilisers to provide a detailed chemical analysis of their product. Natural guano which had not undergone any manufacturing process was exempt. Nevertheless the rapid development of the agricultural sector soon made the act redundant and it was repealed in 1904.³⁵

An undated photograph of Guano being bagged on the Abrolhos is reproduced in Fig. 9.2.



Fig. 9.2. Guano being bagged on the Abrolhos³⁶

Near the main settlements in the south, competition for fish stocks had steadily been increasing during the second half of the century and fishermen began to look for scapegoats for their declining catches. The pied cormorant which could regularly be observed swallowing fish was perceived as a major competitor and thus killed whenever the opportunity offered. Von Bibra at Shark Bay immediately saw this trend as a threat to his guano concession and in 1887 had successfully lobbied for the species to be protected during its breeding season. However his influence was short-lived and insignificant compared to that of the fishing lobby. *The Game Act, 1892* allowed regulators to “declare a scale of rewards, and the conditions for the payment thereof, for the destruction of cormorants, pelicans, and other such birds as by such proclamation may be declared hostile to fish life.”³⁷ Protection of cormorants had specifically been omitted

³⁵ 59 Vic., no. 16.

³⁶ Source: Brady, E. *Australia Unlimited*, (Melbourne: Robertson, 1926). p.25, (Collection P. Weaver.)

³⁷ *Fisheries Act*, (1899), section 7.

because according to Legislative Assembly member R.F. Scholl, "This bird was neither useful nor ornamental, and it caused a great deal of destruction among the fish in the rivers."³⁸ In 1898 a bounty of three pence per head was offered for any species of shag or cormorant caught south of the Moore River.³⁹ *The Fishery Act, 1899* replaced *The Game Act 1892* resulting in the bounty being doubled to sixpence.⁴⁰ With still declining fish stocks the bounty scheme was expanded in 1906 to include pelicans.⁴¹ The strategy was misguided because ornithological studies have subsequently shown that these species are not a major threat to the viability of commercially important fish species.⁴² Chapter Ten discusses in greater detail the reasons for declining catches in the fishing industry.

³⁸ *WAPD.*, p.152.

³⁹ *GG.*, 19/1/1898. p.534.

⁴⁰ *GG.*, 10/11/1899. p.3716.

⁴¹ *GG.*, 23/3/1906. p.952.

⁴² Serventy and Whittell, *op. cit.*, p.116; *Western Australian Year Book.*, (WAYB) (Perth: Western Australian Government, 1971), p.66.

Chapter 10 Fishing in the Colonial period

10.1 Usurpation of a resource

It has been shown in previous chapters that during the immediate post-settlement period, fish exploitation was a widespread activity by southwest Aborigines and that in certain locations this had the potential to elevate the socioeconomic status of controlling groups. As to how long fish have been part of the Aboriginal subsistence diet remains uncertain. While the present marine and estuarine environment appears to have been created approximately 5,000 to 6,000 years BP there is little evidence in the archaeological record that intensive exploitation of fish took place beyond approximately 2,000 BP.

The richest fisheries available to Aborigines were in the estuaries, and it will be recalled this richness correlated with how regularly they were recharged with ocean water. Estuaries with large rainfall catchment tended to be more expansive and opened to the ocean more frequently and for longer periods. Those in more arid extremities of the study region were subject to very long cycles of closure with associated aquatic-faunal poverty.

Early European occupation occurred at King George Sound in 1826, and at Swan River in 1829. Augusta on the Blackwood Estuary was settled in 1830. While strategic considerations facilitated these choices, all were adjacent to rich estuarine fisheries, coincidentally much favoured by Aborigines. A similar pattern occurred with the establishment of later coastal settlements. Notably there was never any formal negotiation with the indigenous peoples when their land and resources were appropriated, as had for example occurred in North America. There according to Axtell, a drawn out process of treaties, negotiated sales and other arrangements enabled many indigenous Americans to retain their autonomy for a century and a half after the arrival of the first colonists.¹ While these events might not be described as fair and equitable, they were vastly superior to what was offered to the native peoples occupying southwest Australia; which was nothing.

From the outset fish became an integral part of the diet of southwest soldiers and civilians. At King George Sound in 1827 a recommendation was made by the garrison commander Major Lockyer to replace the standard meat ration with locally caught fish on

¹ Axtell, (1992).*op. cit.* pp.112-113.

two days per week.² Soldiers and convicts regularly caught fish in this and subsequent commands with a seine net, and according to Captain Barker in 1830, sometimes with the assistance of local Aborigines.³ Fish did not become a staple for the British inhabitants of King George Sound, according to Captain Robert Fitzroy of *HMS Beagle* in 1836. He wrote, "During our stay at this place we caught plenty of fish of twenty different kinds, with a seine; yet with such an abundant supply close at hand, the settlers were living principally on salt provisions."⁴

Earlier, in December 1826 Captain James Stirling put forward a suggestion to the New South Wales Governor that a colony at Swan River had the potential to become an important strategic addition to the existing network of British controlled Indian Ocean ports.⁵ At this time the knowledge of the west coast was derived solely from previous Dutch and French visits. Gaining approval in March the following year Stirling led a survey of the southwest coast, paying particular attention to Swan River and its environs. By intention, his subsequent report generated enthusiasm for the establishment of an agricultural based colony, and included cautious comments on the potential of the offshore fishery:

A Bank of 20 or 30 Leagues in breadth composed principally of Lime, Clay and Sand fronts this coast, and may be found a good fishing station. Whether fish would prove capable of being cured for exportation, I cannot positively say...Sharks' fins, which are much in demand in China, might be procured in quantity...⁶

In the Swan-Canning estuary he remarked, "Fish we saw in abundance, but had no time to spare for their capture."⁷ Stirling's involvement was hardly accidental, his father-in-law James Mangles was a director of the British East India Company which had a vested interest in the ongoing development of commerce in the Indian Ocean region.⁸ Stirling optimistically envisaged that a colony at Swan River would service the China trade, and provide strategic support for India, the Malayan archipelago and the other Australian colonies.⁹ After substantial lobbying at the highest political levels, the colony

² *HRA.*, III, VI, p.482.

³ See Barker, in Mulvaney and Green, *op. cit.*

⁴ Fitzroy, R. *Narrative of the Surveying Voyages of His Majesties Ships Adventure and Beagle between the Years 1826 and 1836*, (London: Henry Colburn, 1839), p.628.

⁵ *HRA.*, I, XII, pp.777-780.

⁶ *HRA.*, III, VI, pp.576-577. (A league is approximately three miles.)

⁷ *HRA.*, III, I, pp.553-557

⁸ Hasluck, *op. cit.*, p.20.

⁹ Cameron, J.M.R. *Ambition's Fire*, (Nedlands: UWA Press, 1981), p.15.

was founded two years later, with Stirling as Lieutenant-Governor.¹⁰

Stirling's original report was an important factor in convincing a nervous British government and speculators alike that the risks were minimal. The contents were selectively disseminated in the British press, and the potential of the fishery further embellished. For example *The Annual Review* reported in 1828:

It is not too much to look forward to the time when a valuable fishery may be established on these shores. Even now, a boat with one or two men might be filled in a few hours.

The island of Buache (Garden Island) is admirably adapted for a fishing town.¹¹

Readers of another periodical, *The Quarterly Review* were tantalisingly reassured, "Captain Stirling's party procured three or four kinds of good esculent fish."¹² The tacit implication of these statements was that whatever hardships were encountered in establishing agricultural enterprises, the fishery could always be depended upon for emergency sustenance.

Upon approval for the colony, an association of investors led by Thomas Peel, a cousin of the Home Secretary, recognised that a new colony would need an infrastructure of skilled labour. Amongst numerous trades they advertised for fish curers at three shillings per day, with the promise of 50 acres of land after three years service.¹³

Fishermen were required, but the 1829 General Muster Book for Swan River does not actually show any amongst the listed occupations of the first wave of settlers.¹⁴ Nevertheless they were present because a letter written on 12 August 1829 by another immigrant John Morgan remarked, "We have a great abundance of fish, and by the *Calista* a regular fisherman has come out, who will make a handsome income."¹⁵ There actually were two fishermen on board the *Calista*, twenty three year old John Nye and eighteen year old Alexander Forbes. Both men were dead within twelve months, Forbes being drowned when his boat was overturned during a winter squall in June 1830 on the Swan River, at Freshwater Bay,¹⁶ and Nye meeting a similar fate the following

¹⁰ *HRA.*, I, XIII, p.307.

¹¹ *Annual Review*, (1828), p.515.

¹² *Quarterly Review*, 39, (182) pp. 315-344.

¹³ Hasluck, (1965), *op. cit.*, p.3.

¹⁴ British Parliamentary Papers - Colonies - Australia, vol. 3, sessions 1816-13, (1829). pp.8-18; *HRA.* III. VI. pp.622-640.

¹⁵ Letter of John Morgan, (11 Aug. 1829), BL. 3992A

¹⁶ Berryman, I. *A Colony Detached: The first Census of Western Australia, 1832*, (North Perth: Creative Research, 1979).

November.¹⁷ While their fishing endeavours were short-lived it is likely they deserve credit for having commenced the colony's first primary industry.

Another 1829 arrival was William Bolton on the *Lion* from Van Diemens Land. He proposed he be allowed to operate a "fishing station" on Rottnest, but this did not proceed and he soon left the colony.¹⁸ Fishermen Clark Gordon and his son George arrived from Northamptonshire on the *Britannia* in August 1829, but their subsequent movements have not been determined.

No restrictions applied as to who could fish. Jane Curry, the wife of a colonial official wrote soon after her arrival in 1829 the crew on *HMS Challenger* caught, "an extraordinary haul of kingfish ...2 or 3000."¹⁹ The species may possibly have been the snapper (schnapper), *Chrysophrys auratus*, which aggregates for spawning in Cockburn Sound from about October. Presumably the catch was distributed to settlers, including Mrs Curry.

George Eyre, a 24 year old fisherman from London arrived on his own account on the *Egyptian* in 1831. It is not known how successful he was. A guide book published in Britain the same year for prospective immigrants stated:

Fish is caught here in great plenty - they use a large net of nearly 100 yards (91.44 m.) in length, and this they draw across the river, and take a large quantity at a haul; you may purchase a great lot of them for a shilling.²⁰

At this time a net of such size could only be used in the lower reaches of the river which contained wide tidally submerged sand banks. Upper sections of the river were narrow and contained many snags.²¹

Certainly circumstances expected in the new colony did not equate reality, with people often having to revise their plans quickly to survive economically. Charles Farmer a "shipwright and fish curer" took up grants of ten acres on Rottnest, and 200 acres on the waterfront in South Perth. Fish curing apparently did not bring him and his family sufficient income, because he also worked as a gardener, an occupation which saw his

¹⁷ Erickson, (1988), *op. cit.*, pp. 1087, 2340.

¹⁸ Berryman, *op. cit.*, p.107.

¹⁹ Currie, *op.cit.*, p.3.

²⁰ Powell, G. J. *The Narrative of a Voyage to the Swan River with an Account of That Settlement from an Authorative Source Containing Useful Hints to Those Who Contemplate an Emigration to Western Australia*, (London: F.C. Westerly, 1831), p.26.

²¹ Moore, *op. cit.*, pp.106, 34.

premature death in 1845 when he contracted tetanus.²²

Colonial immigrants having endured a long, often arduous journey subsisting on cheese, bread, tea and “salt junk” (pickled meat) could for a while become eager customers of fishermen after arrival at Australian ports. One early observer wrote:

The first thing that emigrants generally do on landing is to make themselves ill by jollification, followed by stuffing in fish and fruit for a week or two, and then to fall into very desponding spirits, and write home despairing letters.²³

For the immigrant, Australia was a place where food was cheap enough, but money was generally scarce, and residents were more than willing to relieve the newcomers of their funds.²⁴ The Swan River Colony particularly suffered in this respect because initially the size of land grants was geared to the value of imported goods and indentured labour. Money held in reserve did not enhance the size of grants and therefore tended to be converted before departure from Britain to physical assets. As a result there was a minimal cash flow in the colony which confined development of a domestic goods and services market.²⁵ While local fishers might draw some income from new arrivals, this patronage quickly diminished as people either ran out of money or turned to their own devices. Food shortages were becoming serious in 1830, particularly relating to grain. Lack of credit with Indian Ocean sources obliged Stirling to obtain emergency supplies from Van Dieman’s Land with bills drawn on the British Treasury; however these could not be distributed freely, and those people most in need lacked the means for purchase until a barter system was devised to allow repayment-in-kind with labour.²⁶

Stirling remarked in a January 1830 despatch presented to the House of Commons, “Fishing has been much and successfully practised. The rivers abound in fish and great supplies have been drawn from that source.”²⁷ The statement was intended to allay Colonial Department fears that settlers were starving. Ever since the first proposals for the colony it had been made clear that under no circumstances would the British government provide subsidies if the colony

²² Crowley, F. K. *A History of South Perth*, (Perth: Rigby, 1962), p.23; Erickson, (1988), *op. cit.*, vol.2 p.1011.

²³ Sidney, S. *The Three Colonies of Australia...*, (London: Ingram, Cooke, 1852), p.269.

²⁴ *Ibid.*, p.223.

²⁵ Statham, P. “Swan River Colony 1829-1850,” in Stannage, C.T. (ed.), *A New History of Western Australia*, (Nedlands: U.W.A. Press, 1981), p.184.

²⁶ Statham, *op. cit.*, p.188.

²⁷ “Stirling to Murray, 1829”, British Parliamentary Papers - Colonies - Australia, vol. 3, sessions 1816-13, (1829), p.3.

founded.²⁸ In the worst-case situation of total economic collapse it would be abandoned, with the original proposers facing the ruinous prospect of repatriation of everyone.²⁹

Settlers with foresight brought their own fishing equipment. For example in 1829 George and Mary Dunnage arrived with two hoop nets, a trammel net, a casting net, and a seine net measuring 30 fathoms long (180 feet) and ten feet deep.³⁰ Nevertheless, their agricultural endeavours failed and within two years they sold up and returned to England.³¹ Other settlers placed a greater emphasis on weaponry, presumably for hunting, and defence against Aborigines. The Turner family who settled at Augusta in 1830 had some fishing tackle but this was surpassed by their sundry pistols, three rifles, three shotguns, 1 cwt. (50.8 kg) of gunpowder and a half a ton (508 kg.) of lead shot. In comparison their neighbours, the Bussells imported 20,000 “French” fish hooks, which must have ensured they did not run short.³² Another settler, Henry Tanner arrived in 1831 with fishing tackle and nets to the value of £9/16/4, and arms to the value of £24/8/0.³³

At Swan River the seat of government was established at Perth, located approximately 15 km upstream from Fremantle on the coast. Most of the first settlers who took up agricultural land grants did so along the shores of the Swan-Canning river system, and initially used the waterway as the main route of communication. A professional boat builder was amongst the first 650 immigrants to Swan River, but clearly other people possessed boat building skills.³⁴ By Stirling’s account more than forty small boats were constructed during the first few months.³⁵ The primary function would have been transport, but many people had hand fishing lines and used them opportunistically. According to settler John Bussell line fishing was “time-swallowing”

²⁸ “Twiss to Peel”, (5/12/1828), British Parliamentary papers - Colonies - Australia. vol. 3. Sessions 1816-13, (1829), pp.10-11.

²⁹ *Ibid.*, p.11.

³⁰ CSR 4/9.

³¹ Erickson, (1988), *op. cit.*, vol.2, p.918.

³² Shann, *op. cit.* p.89.

³³ Statham, P. *The Tanner letters. A pioneer saga of Swan River and Tasmania, 1831-1845*, (Nedlands: University of Western Australia Press, 1981); Weaver, (1991), *op. cit.*, pp.67-68.

³⁴ Extracted from “Statistical Register” reproduced in Battye, (1924), *op. cit.*, p.481.

³⁵ British Parliamentary Papers - Colonies - Australia. vol. 3. Sessions 1816-13. (1829). p.3. Stirling to Murray. (Some of these boats may have been brought out in kit form, as were some houses.)

and “paralysed progress on many a location...”³⁶

As has been mentioned, some of the early settlers along the Swan River had access to seine nets, with several experimental fish curing attempts taking place.³⁷ The seine was capable of taking an enormous number of fish, and George Fletcher Moore wrote in 1832 that 10,000 trumpeters (probably *Amniataba caudavittatus*) had been taken from a single haul.³⁸ Processing a catch of this size was impossible. There was of course no refrigeration at this time, and the species is small and bony, with a soft flesh not particularly suitable for curing. Unless living fish were returned to the water, it is likely most were wasted.

Undoubtedly fishing was a time consuming activity for people with priorities such as building houses, clearing land and bringing farms into production. Opportunity existed for those with some spare capital to supply the wants of others. Agriculturalist Robert Partridge from Suffolk who disembarked from the *Marquis of Anglesea* in 1829 was by 1832 employing several people to supply fish to Perth.³⁹ He appears to have ceased these operations not long after, because in 1833 a Perth newspaper began lamenting the lack of a regular supplier. It complained of a Mr Willey, a fishermen resident in Fremantle, and apparently the only one, could not be persuaded to make the long trip upstream with his catch, primarily because he enjoyed such a thriving trade providing fresh fish to those on visiting ships.⁴⁰

It will be recalled ship providoring was a lucrative role first developed by sealer fishermen on the south coast, and one which became increasingly important as the colony developed. This especially was the case at Albany after a coal bunkering facility was built in 1852 and the town became the principal mail port for Western Australia.⁴¹ Visiting ships servicing the pearling and pastoral industries also became important customers for fishermen at Shark Bay during the late nineteenth century.⁴²

For pioneer settlers living at a distance from the main settlements, fish became an important subsistence resource. By 1830 a few families had become established at the

³⁶ In Shann, *op. cit.*, p.70

³⁷ Moore, *op. cit.*, p.136.

³⁸ *Ibid.*, p.136.

³⁹ CSR. 23/57.

⁴⁰ PGWAJ., 15/6/1833.

⁴¹ Garden, *op. cit.* p.110-116.

⁴² Aldrich, F. *Report of the Select Committee of the Legislative Council appointed to enquire into the fishing industry and the operations of the Fremantle Fish Markets*, (Perth: Western Australian Government, 1922), p.4.

mouth of the Blackwood River, adjacent to Flinders Bay. They were confronted with formidable obstacles creating farms. With an average annual rainfall of some 1,000 mm a year it was one of the the coldest and wettest parts of the southwest.⁴³ In addition the landscape was dominated by heavy timber often measuring several metres at the base, making the task of creating productive farms impossible within the time constraint imposed by their imported rations.⁴⁴ Fishing saved them from starvation, but hand lines were inadequate. The Bussell family with their 20,000 hooks sent an urgent request for a seine net to an English relative. After arrival it proved indispensable to the entire Augusta community:

The fishing net sent us from England proved an instrument in the hands of Providence to save not only ourselves but many of our fellow colonists from absolute starvation. Our subsistence has been grass and fish, for the latter of which I have been toiling. Constant employment, gutting, scaling, salting, smoking, hours spent wading about shoals, hauling the seine during a rainy and miserably cold month, conveying the produce of my "swink and moil" to my brothers in the bush, where they with a soldier remained to guard our little retreat from the savage rangers of the forest...⁴⁵

Occasionally onlookers might enthusiastically join in the haul. An unofficial lay system existed and if there were many helpers then the unspoken rule was one third of the catch to the net (owner) with the remainder shared amongst the helpers.⁴⁶ Similarly if the net was borrowed then a portion of the catch was expected to accompany its return.

The Augusta settlers' livestock also came under great stress from lack of suitable grass and were fed seaweed to keep them alive.⁴⁷ The Bussells eventually gave up their efforts to establish a viable farm on the Blackwood and moved northward to settle on the the Vasse. Their story ultimately became one of success, but for others survival remained precarious, with the use of hand lines common, and time consuming, as noted by Anglican minister John Wollaston at Leschenault Inlet in 1842:

I was obliged to fish yesterday also to get some food. I obtained a dish which sufficed us, but today have been unsuccessful and have so far lost my time...Fishing takes up a deal of valuable time and except with a flowing tide is often lost pains. If I had but a seine I could

⁴³ WAYB., (1981), p.55.

⁴⁴ Shann, *op. cit.*, p.79; Hasluck, (1955), p.94.)

⁴⁵ Bussell, J. in Shann, *op. cit.*, pp.70-71.

⁴⁶ *Ibid.*, p.72.

⁴⁷ *Ibid.*, p.79. (Also in Hasluck, A. (1955). p.94.)

in half an hour, by moving out on the shallows, catch buckets full. As to river fishing, except at night and at certain seasons when the large fish come up, it is not worth the trouble.⁴⁸

It was wishful thinking. Wollaston did not appreciate that had he owned a net, he would have had far more work. The seine net was the basic apparatus by which commercial quantities of estuarine fish were caught throughout the nineteenth century.⁴⁹ Because of the size of the nets they were labour intensive, and as already stated were only suitable for use in wide bodies of water free of underwater obstructions. Attempts to use them in the upper reaches of southwest rivers where there were often plenty of fish inevitably failed, both because of the encroaching vegetation on the steep banks and because of underwater snags, mainly in the form of submerged tree branches.⁵⁰ A small boat was usually needed to lay out and encircle fish, but taking consistently large catches required specialised knowledge. For enthusiastic amateur and professional alike, setting nets speculatively more often than not brought disappointing results.⁵¹

Other well known nineteenth century fishing methods such as the “trammel-net,” which was particularly suited to catching bottom dwelling species, floating “long lines” several kilometres in length with baited hooks every few metres, and drift nets, which have become so notorious in the Pacific in the latter part of the 20th century for the efficient ability to catch almost any marine species, were not deployed in the southwest because of the belief that they would catch too many sharks.⁵²

Most settlers with land grants had indentured servants whom they were obliged to provide with food and shelter. In March 1830 Stirling issued a proclamation relating to servant’s rations. Fresh meat was a priority, but salt meat and fish could be substituted in its absence. An adult was entitled to 7 lbs (3·1 kg.) of fresh red meat or 5·25 lbs (2·38 kg.) of salted pork or beef a week. Alternatively 2 lbs (·9 kg.) of fresh or salt fish could be provided. Prices for 1830 are not available. In 1833 kangaroo was the cheapest fresh red meat and appears regularly in newspaper market quotations with a retail price of 1/- per lb. This would have meant an expenditure of 7/- per adult per week for those

⁴⁸ Wollaston, (1842), *op.cit.*, p.93.

⁴⁹ Gale, C.F. Evidence attached to Report of Joint Select Committee appointed to enquire into the fishing industry, (Perth: Western Australian Parliament, 1906,) p.9.

⁵⁰ Moore, *op. cit.*, pp.106, 34.

⁵¹ Shann, *op. cit.*, p.71.

⁵² Gale, *op. cit.*, pp.8-9; Aldrich. F. *Net Line Fisheries— Present and Potential*, (Perth: Minister for Fisheries, 1929), p.6.

employers adhering to the rules. Salt meat was much cheaper and based on 1833 prices the weekly allowance would have cost an employer about 4/- per week for beef, and about 5/3 for pork when it was available. Undoubtedly fish were much cheaper. The market price the same year was three pence per pound, equating to a maximum expenditure of 6d per adult servant per week.⁵³ As to whether this was acceptable to servants was another matter, and in any case transportation of fish to agricultural regions where there were many indentured workers was impractical because of the rudimentary transport network.

The high cost of wages and rations for English labour generated a demand for Aboriginal employees who were not covered by the regulations. Remarkably some southwest Aboriginal people were employed within two years of the commencement of settlement, usually for payments of rice.⁵⁴ Later developments in the labour market saw some people obtain the rights to eat the feral mice in the barn of at least one settler.⁵⁵

In order to create greater influence over, and have more regular communication with Aborigines at Swan River in 1833, acting Lieutenant Governor, Captain Irwin instructed the "Superintendent of Native Tribes" to periodically issue bread from the Government Store. It was a ploy which succeeded but the handouts soon ceased. In a dispatch to his superior Lord Goderich, Irwin revealed there had been an ulterior motive:

To prevent any disappointment from the discontinuance of the issues the Superintendent was instructed to encourage the natives to bring in fish, of which they can obtain a plentiful supply with facility, and by barter to obtain from the inhabitants of the town the bread before issued from the Government store. The plan has so far succeeded.⁵⁶

This occurred approximately at the time Perth citizens found themselves without a regular fisherman. Irwin's manipulative scheme appears to have been communicated to the British press a few months later, with some obvious embellishments:

The wants of the colonists are stated to be fish, kangaroos, and land; all of which may be obtained easily from the natives, by granting them biscuits, and blankets in winter; if such a system of barter were adapted generally, accompanied by a demonstration of power sufficient to awe them, and suppress their eagerness for plunder.⁵⁷

In fact Aborigines only brought in fish when it suited them, and settlers did not

⁵³ Weaver, (1991), *op. cit.*, p.73.

⁵⁴ Moore, *op. cit.*, p.88; *SRNWAC* 1/3/1844.

⁵⁵ Moore, *op. cit.*, p.268.

⁵⁶ Hasluck, (1955), *op. cit.*, p.119.

⁵⁷ *MLAI.*, 6/4/1833. p.222.

necessarily welcome what essentially amounted to a more sophisticated form of cadging. If a fish was presented then reciprocity was obligatory. Failure to oblige had the potential to generate ill-feeling. Undoubtedly by this time Aborigines had acquired a healthy respect for firearms, and settlers, especially those living in isolation were only too aware that threats uttered by themselves or a neighbour might bring later retaliation. As Barker had noted many times at King George Sound, southwest Aborigines had long memories when it came to past injustices and threats, and taking the life of a perceived enemy could be obligatory, and performed without remorse.⁵⁸

Soon after Stirling's massacre of Aborigines at Pinjarra in 1834, he authorised the establishment of a "native institution" on the edge of the Swan River at the foot of Mount Eliza near Perth.⁵⁹ A small boat and limited fishing equipment was supplied with the intention of their becoming fish suppliers to the town.⁶⁰ The attempt was futile. That it failed was testimony to Stirling's belated attempt to patronise Aborigines after one of the most ignominious events in the colony's history, and was indicative of his lack of understanding of Aboriginal cultural and economic priorities. For example as was described in Chapter Three this same place, *Goonininup*, was of particular Aboriginal significance because of the presence of the dangerous spirit ancestor *Waugal* in the deep near-shore waters. It is not difficult to imagine the Aborigines' reaction to the suggestion they adopt European technology and fish there.

The lack of compliant labour in the colony ultimately caused some 10,000 convicts to be brought to Western Australia between 1850 and 1868. They were to be fed in the most economical way, although this did not generate a boom for local fishermen. When a suggestion was made to an 1854 Board of Enquiry to include fish in prisoner's diets it was dismissed by Thomas Dixon the superintendent of the Fremantle convict establishment:

We have no means of cooking fish; besides, the uncertainty of supply would interfere with the contract....I think oatmeal should be used, that which comes out in convict ships. This is sold at present; it fetches a fair price.⁶¹

Because the convict ships were private vessels under charter to the British

⁵⁸ Barker, in Mulvaney and Green, *op. cit.*

⁵⁹ The Native Institution was near Kennedy Fountain, adjacent to the "old Swan Brewery."

⁶⁰ Kimberley, *op. cit.*, p.99; McNair, W. and Rumley, H. *Pioneer Aboriginal Mission. The work of Wesleyan Missionary John Smithies in the Swan River Colony 1840-1855*, (Nedlands: University of Western Australia Press, 1981), p.14.

⁶¹ *Convict System*, 1854. 6:134.

government there was a temptation to corruptly withhold shipboard rations from prisoners in order to sell them at Fremantle. Parsimonious economics prevailed in maintaining prisoners after arrival and it is more likely this lay behind the answer than an inability of local fishermen to comply.⁶²

Not all early professional fishermen at Swan River were British or Aboriginal. For example Charles Tondut (Tondut) from Macon deserted from a French whaler at King George Sound in 1835, then walked overland to Perth. It is known he married and professionally fished from the South Perth foreshore and was supplying Perth during the early 1840s. He and his wife raised several sons who also professionally fished the Swan River. During the two decades following Tondut's naturalisation in 1851 he employed some 23 ticket-of-leave men, sometimes as fishermen, and sometimes as general servants, or labourers on his nearby vineyard.⁶³

In excess of 200 men with tickets-of-leave were engaged by various other employers for water-borne activities on the Swan-Canning estuary from the late 1850s. Sometimes their job descriptions changed as they moved between employers; a fisherman in one place, a boatman in another. Names such as Giuseppe Exposito, Serafine Galate, Narcisco Ramos and Marchelino suggest that not all were of British origin.⁶⁴ Some ex-convicts became hawkers in the increasing network of Perth streets, selling crayfish, cooked prawns, "periwinkles" and a local version of smoked kippers.⁶⁵ According to Saville-Kent the species most used for this was the Australian herring, *Arripis georgianus*.⁶⁶

In the estuary, fishing was for the most part carried out on the sand bars in the open stretches of river known as Perth Water and Melville Water with seine nets. The catches were returned to Mill Point in South Perth, or Claremont, which is located between Perth and Fremantle. One of the most favoured netting species was mullet which was generally available from January to about the beginning of May.⁶⁷ Cartilaginous fish such as sharks and rays were considered vermin to be destroyed whenever possible, the logic being that

⁶² Weaver, P. "Robert Small and Phoebe Dunbar," in *Irish Convict Lives*, Reece, R., (Ed.), (Sydney: Crossing Press, 1993). pp.231-255.

⁶³ Erickson, (1988), *op. cit.*, vol. 4. pp.3079-8.

⁶⁴ Erickson, R. "Collection of biographical index files," (ND), BL3710A (microfilm).

⁶⁵ *WM.*, 1/2/1940.

⁶⁶ Saville-Kent, (1897), *op. cit.*, p.178.

⁶⁷ Willis, J.W. (evidence), *Report of Joint Select Committee Appointed to Enquire into the Fishing Industry*, (Perth: WA Parliament, 1906), p.39.

if returned to the water they would compete with the fishermen.⁶⁸ Crabs, (*Portunus pelagicus*) which were prolific in most southwest estuaries during the summer were also considered vermin by fishermen, although some selling did take place by hawkers. The low price they commanded was probably due to their poor keeping quality in warm weather, and the fact that amateurs could readily catch them by wading.

The 1870 census revealed the Western Australian population had more than doubled since 1854, rising from an estimated 11,743 to 24,785 persons and was steadily increasing.⁶⁹ Supply of fish in Perth had ceased to be a problem because several families who had established permanent fishing operations along the Swan River, at Claremont and South Perth.⁷⁰ The most significant factor which stimulated growth and expansion of the fishing industry was yet to come; – gold. The first discoveries occurred in the northern part of Western Australia in 1882.⁷¹ The subsequent discovery of gold at Coolgardie in 1892 and nearby Kalgoorlie the following year caused an unprecedented rush. In eastern Australia in the 1890s there was a severe economic depression, and for many the naive prospect of immediate wealth was too much to resist. There was also substantial immigration from the British Isles, southern Europe, the Americas and Asia. In the decade between 1890 and 1900, the non-Aboriginal⁷² population of Western Australia increased from about 48,500 to about 180,000 persons and stimulated unprecedented economic growth.⁷³

This provided boom times for Western Australian fishermen. The rush also brought more competitors, realistic enough to recognise that there was more certainty in continuing their traditional occupation than scratching for nuggets. For example the the Mouchmore family from Victoria arrived in Albany (King George Sound) in 1896 on a steamer with their two 26 foot fishing boats *Wildflower* and *WildWave* as deck cargo. Their decision to move was in part prompted by depressed Victorian prices, and catch quotas imposed by the Queenscliff Fishermens' Union in an attempt to control the

⁶⁸ Gale, C. (evidence), *ibid.*, p. 13.

⁶⁹ WAYB., 1969, p.124.

⁷⁰ Stone, F. (evidence), Report of Joint Select Committee Appointed to Enquire into the Fishing Industry, (Perth: WA Parliament, 1906), p.79.

⁷¹ Gibb-Maitland, A. *The Gold Deposits of Western Australia*, (1919), (Victoria Park: Hesperian Press., 1984), p.1.

⁷² Estimated numbers for Aboriginal persons in Western Australia exist from the first census in 1842, however they are contentious.

⁷³ WAYB., 1969, p.123.

market. In 1898 two slightly longer boats *Ada* and *Gannet* arrived in a similar manner.⁷⁴ In subsequent years other small Victorian fishing boats also sailed to Albany, as did the Bass Strait sealers three quarters of a century earlier.

The Victorian boats were not dissimilar in shape from the whaleboats used by sealers, but with refinements. Typically they were double ended, gaff rigged with light clinker (overlapping) planking above the waterline and heavier carvel (buted) planking below. They were well suited for use in sheltered waters such as Oyster Harbour and other estuaries where the bottom ooze obliged them to work their nets from the boats. Some Victorian boats were later imported by Western Australian fishermen, and in the early twentieth century Victorian design features began to appear in locally built craft.⁷⁵

Towards the end of the century the Western Australian fishing fleet had come of age. In 1899, there were 43 fishing boats employing about 116 men operating out of Fremantle. At Peel Inlet there were 25 boats and 40 men, at Vasse 20 boats and 40 men, while at Albany there were thirty boats and 50 men.⁷⁶ The figures for Geraldton and Shark Bay are uncertain because many Fremantle boats seasonally moved back and forth to these places. According to Cooper, at about this time Italian fishers also started working the Abrolhos Islands in small boats which were serviced by a mother-boat bringing the catch to Geraldton.⁷⁷ It is a good example of how cooperation was able to overcome logistical and technological problems a single operator would have found impossible.

Good quality fresh fish usually had a ready sale, and for fishermen not bound by a contract or indenture the main economic problem was in disposing of their catch at the best price to the middlemen who were determined to buy it at the lowest rate. All participants in the industry received a setback in 1900 when authorities disposed of a plague victim offshore near Fremantle and retail demand for fish suddenly dropped.⁷⁸ In that year there were 401 fishermen and 191 boats licensed throughout the colony.⁷⁹

No figures for the numbers of fishermen operating at this time on the Swan River have been identified, but in 1904 there were 26 small boats with 17 full time and 16 part

⁷⁴ Kerr. *op. cit.*, p.213

⁷⁵ *Ibid.*

⁷⁶ *WAPD.*, vol. X, (1899), p.1936.

⁷⁷ Cooper, R. *op. cit.*, p.18. (A similar strategy was adopted for servicing the crayfishing industry established on the many Abrolhos islands later in the twentieth century.)

⁷⁸ "The History of the Department of Fisheries and Wildlife," *FINS*, 17, 7, (1984).

⁷⁹ *Ibid.*

time fishermen operating. They and their families mainly lived along Mounts Bay Road in Perth and along the foreshore of South Perth.⁸⁰ Unlike the by-now larger polyglot fishing community at Fremantle and other ports, Perth fishermen were described as being exclusively of English or “Australian” origin and did not welcome outsiders.⁸¹ (The activities of fishermen from southern Europe are discussed in greater detail in 10.6.)

Regardless of ethnic origins no obviously wealthy nineteenth century fishermen have been identified in the region. When population rises increased demand, the appearance of entrepreneurial middlemen ensured low returns, to the extent in 1898 some fishermen preferred to dump their catches rather than accept the low terms.⁸² As Acheson noted in his study of northern hemisphere commercial fisheries, success was linked not only to the ability to catch fish, but to the ability to manipulate money and develop capital.⁸³ With the advent of middlemen the retail price of fish rose significantly and it started to become a status food for the wealthy. By no means did everyone get rich from the gold rush. According to government advisor Lindsay Thompson, substantial numbers of poor could be found in every town in the colony suffering through inflated fish prices.⁸⁴ Starving poor, in the view of the elite, had the potential to translate to increased crime and jeopardise the *status quo*, and was not unlike the fears expressed a half century earlier over sealers and ticket-of-leave men.⁸⁵ The lack of a central fish market where fish could be auctioned was viewed as a serious obstacle to achieving fairer prices for fishermen and controlling the excesses of the middlemen. A fish market had been included in the design of the colony’s infrastructure since 1831.⁸⁶ This was not to eventuate until 1919, at Fremantle.⁸⁷

10.2 Development into a major primary industry

While it has been shown that some commercial fishing activity took place from the outset of colonisation, and major developments followed the discovery of gold,

⁸⁰ Gale, *op. cit.*, p.12.

⁸¹ Abjornsson, A. (evidence), *Report of Joint Select Committee Appointed to Enquire into the Fishing Industry*, (Perth: Western Australian Parliament, 1906), p.26.

⁸² Thomson, L. *Report on the Marine Fisheries on the South and South Western Coasts, 1898*, (Perth: Western Australian Government), p.6.

⁸³ Acheson, J. “Anthropology of fishing,” *Annual Review of Anthropology*, 10, (1981), pp.275-317, p.292.

⁸⁴ *Ibid.*

⁸⁵ See Chs. 7 & 8.

⁸⁶ WACPG., 26/2/1831

⁸⁷ Gamba, *op.cit.*, p.8.

systematic data in any form involving professional fishing does not exist for approximately the first half century.⁸⁸ In all likelihood this is because the population was small, and the industry relatively insignificant in economic terms. Statistical data began to be generated only from the 1880s, and was in the main limited to annual productions published in the statistical registers, or “Bluebooks.” The information contained is minimal, being limited to exports and imports. The size or state of the domestic market is not shown, and attempts to locate the information elsewhere have been unsuccessful.

Insight into some of the professional fishing practices which took place from the mid to late nineteenth century can be obtained from evidence given to a 1906 Joint Parliamentary enquiry into the Western Australian fishing industry,⁸⁹ and a Select Committee report on the fishing industry in 1922.⁹⁰ Both investigations originated because of public health concerns resulting from prolonged storage of fish, and allegations of unfair price fixing as a result of discriminatory monopolies or “rings” being operated by southern European fishermen and their agents. It was anticipated that the inquiries would be able to determine a means of bringing better order into the industry under provisions in the 1899 Act, which would ostensibly provide the people of the goldfields with “a good cheap fish supply.”⁹¹

A significant factor which assisted economic development of commercial fishing in estuaries and ports distant from the main population areas was the establishment of railway lines. The first southwest lines were laid in the early 1870s and were associated with the timber industry, running into the forests from the coast at Rockingham and Busselton. The Fremantle-Perth line was completed in 1881, opening the way for more concerted competition between ocean and river fishermen, and necessitating agents or middlemen at the receiving end. During the 1880s and 1890s an extensive network of lines was laid throughout the southwest interconnecting all major regional centres and ports. The Kalgoorlie-Boulder and Murchison goldfields were interconnected to Perth, and thence to the ports of Geraldton, Bunbury and Albany by 1898. The Kalgoorlie-Boulder link was arguably the most significant because of the enduring richness of the

⁸⁸ *Report on the Marine Fisheries of the South and South-Western Coasts of the Colony of Western Australia*, (Perth: Western Australian Government, 1898), p.4.

⁸⁹ *Report of the Joint Select Committee Appointed to Enquire into the Fishing Industry*, (Perth: Western Australian Government, 1906).

⁹⁰ *Report of the Select Committee of the Legislative Council Appointed to Enquire into the Fishing Industry and the Operations of the Fremantle Fish Markets*, (Perth: Western Australian Government, 1922).

⁹¹ *PDLC.*, vol. X, (1899), p.1936.

associated goldfields.⁹²

Even so the logistics of getting fish to their final destination could be formidable. For example fish was regularly sent from Geraldton to Kalgoorlie via Midland Junction near Perth, but until the establishment of the Geraldton Ice Works the ice first had to be brought by rail from Perth.⁹³ According to Cooper, some early Geraldton boats were built with slatted wells for keeping large fish alive, but this required a special catching technique. When a large fish such as a snapper is hauled rapidly from the depths its air bladder expands like a balloon. Death normally follows due to asphyxiation. To offset this, the fishermen inserted a needle beneath the pectoral fin to rupture the bladder, then placed the fish in the tank.⁹⁴ The method worked well enough, but the increasing availability of ice enabled boats without wells to travel to the distant grounds, and to pack more fish into a smaller space on each trip. Furthermore the fish arrived at dockside in a pre-chilled condition which was conducive to the continuing journey by rail to distant destinations.

Unfortunately several days might elapse between the time the fish was caught at the Abrolhos Islands or at Shark Bay, packed in ice, and brought back to the railhead. The risk of spoilage was further compounded by the fact that the rail journey was often slow, and the region frequently very hot. To offset unexpected delays in warm weather unscrupulous traders adopted the bizarre practice of injecting fish with formalin.⁹⁵ Even in winter there were problems and middlemen at Geraldton consistently paid higher prices for snapper caught at the offshore Abrolhos Islands because the flesh texture and in turn keeping qualities were superior to the same species caught in Shark Bay. The condition of the Shark Bay fish was assumed to be connected with winter spawning of the species, which differed seasonally at the Abrolhos.⁹⁶

Fish were also sent by rail from the Vasse region near Busselton and from Pinjarra, the closest rail point to Peel Inlet, from 1893. The cost of freight and Perth agents' fees ensured there was little or no profit for the fishermen. For many there was little

⁹² This line is maintained to the present and is now part of the transcontinental rail system.

⁹³ Lee, C. (evidence), *Report of Joint Select Committee Appointed to Enquire into the Fishing Industry*, (Perth: WA Parliament, 1906), p.28.

⁹⁴ Cooper, R. *op. cit.*, p.5.

⁹⁵ *Ibid.*, p.32.

⁹⁶ Delaveris, T. (evidence), *Report of the Select Committee of the Legislative Council Appointed to Enquire into the Fishing Industry and the Operations of the Fremantle Fish Markets*, (Perth: WA Parliament, 1922), p.18.

alternative other than to accept the lower prices offered by cannery operators.⁹⁷ The situation changed with the completion of the Coolgardie – Kalgoorlie rail link and the demand from the goldfields for fresh fish.⁹⁸

A railway constructed between Albany and Denmark after 1889 to service the timber industry enabled fishermen at Wilson's Inlet to become major fish suppliers to the Kalgoorlie goldfields.⁹⁹ It will be recalled from Chapter Two that this 48 km² waterway was one of the richest estuarine fisheries in the southwest. An initial contract was secured to supply 6 tons of fish per week, and because catches of two tons per haul were not uncommon the order was filled without difficulty.¹⁰⁰ This provided unwelcome competition for the middlemen in Perth who had established a lucrative trade moving fish to the goldfields from Fremantle and Geraldton. In an attempt to eliminate the unwelcome competition the Perth Ice Works managed to purchase the Albany Refrigeration Company and close it down, but the Wilson's Inlet fishermen kept operating by having ice freighted from a Fremantle iceworks. They were ultimately defeated when the railway between Denmark and Albany closed in 1904 due to a lack of economically accessible timber.¹⁰¹ It was to reopen years later, and played an essential role in revitalising the Denmark fishery.

The railways were the key factor enabling expansion of the entire southwest fishing industry. By the end of the nineteenth century fresh fish were regularly being moved to the major population centres from the Blackwood Estuary, Princess Royal Harbour, Oyster Harbour, Wilson's Inlet, Peel Inlet, Leschenault Inlet, Swan River, and most of the offshore waters between Shark Bay and Cape Leeuwin.¹⁰² Not surprisingly the most commercially-successful fisheries were those with the most diverse marine biota, a matter which was discussed in detail in Chapter Two.

⁹⁷ Ward, S. (evidence), *Report ... Operations of the Fremantle Fish Markets*, (Perth: WA Parliament, 1922), p.37.

⁹⁸ Cox, J. in *Report of the Select Committee of the Legislative Council Appointed to Enquire into the Fishing Industry and the Operations of the Fremantle Fish Markets*, (Perth: WA Parliament, 1922), p.37.

⁹⁹ Gale, *op. cit.*, p.11.

¹⁰⁰ *Ibid.*

¹⁰¹ Garden, *op. cit.*, p.259.

¹⁰² Gale, *op. cit.*, p.12.

10.3 Salt-cured and smoked fish

Salt curing is an effective and cheap way of preserving fish, and is probably the most ancient of fish preserving methods. The purpose of salting is to quickly dehydrate the fish, and this is further accelerated by exposing it to wind and sun. Not all species are suitable, especially those with a high oil or blood content. These may be cured by smoking, but will not keep as well because of the much higher moisture retention and greater propensity for bacterial action. While salting is a relatively simple preserving method, the gutted and beheaded fish must still be thoroughly scrubbed inside and out. After salt is rubbed over all surfaces the fish must then be hung to allow air to flow, or if “butterflied” and laid on a flat surface such as a rock face or roof, regularly turned so that desiccation is as even as possible. “Stockfish” prepared in this way can last ten or twelve years if kept dry in storage.¹⁰³

There are several instances during the nineteenth century of salted fish being prepared and exported from Western Australia, using local salt from Rottnest Island. A salt harvesting operation from the lakes there was conceived by William Nairne Clark(e) in partnership with Charles Spyers.¹⁰⁴ Rottnest salt was being advertised in a May 1831 *Perth Gazette* and subsequent editions as “suitable for curing.”¹⁰⁵ In November the same year salted fish from Rottnest was also advertised as being available, “in any quantity” at sixpence per lb.¹⁰⁶ This operation eventually employed about eleven men, including a group of six immigrant fishermen, George Rees, Henry Luke, James Stewart, William Fraser, James Douglas and Peter Stewart.¹⁰⁷ Shipments of preserved fish from Rottnest were exported to Mauritius, and were well received.¹⁰⁸ Unfortunately the operators experienced problems with some unusually wet winters which interfered with the curing process, and with such a large number of dependent employees, the venture ultimately failed.¹⁰⁹

In August 1838 Aboriginal prisoners were transferred from Garden Island to Rottnest to commence building a prison. It was intended that they would support themselves by harvesting salt and catching fish, but seven had acquired sufficient nautical

¹⁰³ Toussaint-Samat, *op. cit.*, p.322.

¹⁰⁴ CSR. 13/211.

¹⁰⁵ *PGWAJ.*, 23/5/1831.

¹⁰⁶ *WAG.*, 12/11/1831.

¹⁰⁷ Listed in the 1832 census/muster. See Berryman, *op. cit.*, p.41.

¹⁰⁸ Watson, *op. cit.*, p.6., Erickson, (1988), *op. cit.*, p.2916.

¹⁰⁹ CSR., 18/39; CSR., 18/75.

skills to steal a boat soon after arrival, with all but one escaping safely to the mainland. Continuing development of the prison and fear of more escapes brought about a set of regulations in 1840 which effectively banned Fremantle fishermen from pursuing their activities in the vicinity of the island.¹¹⁰

For curing purposes Rottneest salt was claimed to be superior to salt being harvested from lakes inland, near the upper reaches of the Avon River, but why this would have been so is unclear. Local salt was certainly cheaper than the imported English variety and quickly gained acceptance.¹¹¹ It will be recalled from Chapter Seven that sealers on the south coast had been obtaining salt from an island in the Recherche since before 1826. This did not develop into a substantive industry after settlement. Instead salt production became synonymous with Rottneest Island to the extent in 1869 a more substantive refinery was constructed to remove impurities and increase output. This facility continued operation with the use of Aboriginal prisoners until the prison closed in 1903.¹¹²

From the 1840s numerous people in Fremantle were turning to fish curing with salt. This was exported through local merchants and according to the *Swan River Chronicle* the initial returns were sufficient to generate substantial enthusiasm for the trade amongst other settlers:

Snapper fishing is pursued with unabated spirit; in fact, Fremantle has been converted, within the last few months, into a regular fishing station; and the roofs of many of the houses are covered with the fish for the purpose of drying them sufficiently for export.¹¹³

The name snapper was applied to many large species throughout Australia in the nineteenth century, and therefore varied from place to place.¹¹⁴ In Fremantle snapper (schnapper) were possibly a pinkish fish *Chrysophrys auratus*, which can weigh as much as 20 kg. Their flesh has a firm, non-oily texture ideal for curing. About this time sharks also received a boost in economic status. In fulfilment of Stirling's 1826 prophesy,¹¹⁵ *The Swan River News* reported: "Sharks' fins are now prepared by Mr. Thompson of Fremantle, for the China Market, it being an article in great demand by the

¹¹⁰ GG., 1/9/1838; GG., 11/9/1840; Ferguson, (1986), *op. cit.*, pp.9-12.

¹¹¹ Erickson, (1978), *op. cit.*

¹¹² Ferguson, R.J. *Rottneest Island, History and Architecture*, (Nedlands: University of Western Australia Press. 1986), p.55.

¹¹³ SRNWAC., 1/7/1845

¹¹⁴ Saville-Kent, (1897), *op. cit.*, p.167.

¹¹⁵ HRA., 3. vol.6. pp.576-577.

bon vivants of the Celestial Empire.”¹¹⁶

Mauritius remained a favoured destination for salted fish because of the high prices which could be obtained. The *Alpha*, built at Augusta by the Turner family conveyed a shipment of dried fish and potatoes from Augusta in 1845.¹¹⁷ An 1846 consignment sent on the *Cumberland* prompted the following report: “The salt fish which is sold at the Swan for £8, fetched here £36 *per* ton; it is very much approved and in constant demand.”¹¹⁸

Nevertheless, preparation of salted fish in Fremantle could perhaps be best described as a cottage industry with individual fishermen preparing and selling their surplus fish to local merchants. Nearly forty years later it was still a cottage industry although fishermen were having to operate further afield. Such a fisherman was Joseph Cox from Mandurah, who in 1871 started curing large mullet and “kingfish” (*Seriola spp.?*) by salting, then sun-drying.¹¹⁹ Three years later he began fishing for snapper at nearby Safety Bay,¹²⁰ which was one of two known spawning grounds for the species, the other being near Cape Inscription at Shark Bay.¹²¹ Cox prepared his fish for John Bateman, a Fremantle merchant who exported them to Singapore and India.¹²² The following year two small fish preserving factories are known to have been operating in Fremantle, unfortunately their degree of success has not been identified. The combined exports of dried snapper for the colony that year amounted to 32 tons, with another 7 tons of other types.¹²³ The snapper season at Safety Bay ran from October to November, but perhaps as a result of Cox’s initial success, aggregations were virtually extinguished as a result of too many participants.¹²⁴ Similar over-exploitation of this species also occurred at Shark Bay.¹²⁵

As early settlers had discovered, successful curing of fish required time and care in preparation and specialised local knowledge. Seasonal conditions affected flesh texture

¹¹⁶ SRNWAC., 1/7/1845; PGWAJ., 21/9/1844

¹¹⁷ SRNWAC., 1/4/1845

¹¹⁸ SRNWAC., 1/8/1846

¹¹⁹ Cox, *op. cit.*, p.37.

¹²⁰ *Ibid.*, p.94.

¹²¹ Brown, J. (evidence), *Report...Select Committee...1922*, *op. cit.*, p.42.

¹²² Tuckey, C. (1906), *op. cit.*, p.96.

¹²³ *Blue Book*, (1872), p.77.

¹²⁴ Willis, *op. cit.*, p.40; Brown, *op. cit.*, p.41. Bell, (evidence), *Report...Select Committee...1922*.

¹²⁵ Brown, *op. cit.*, p.41.

and quality of ocean and estuarine species. For example the bony Perth herring could only be cured successfully between about April and July.¹²⁶ On Rottnest Island in 1850, when James Dempster operated the salt works, curing of large fish such as snapper took place between May and June.¹²⁷ As previously mentioned, the keeping quality of snapper also varied seasonally between fish caught at Shark Bay and in the Abrolhos Islands, due it was believed, to the differing spawning seasons. As the southwest fishing industry developed, fish from the Abrolhos became preferred over all other regions by wholesale merchants.¹²⁸ This appears to have been related to a generally better flesh texture, although the precise mechanisms involved have not been identified.

Some trepang fishing was carried out at the Abrolhos Islands with an experimental shipment being sent to Singapore in 1847, but the industry never developed. The Pelsaert Fishing Company also produced salted fish and isinglass, which was manufactured from the swim bladders of large fish and had a use as a clarifying agent in brewing.¹²⁹ Geraldton fishermen were apparently still collecting and drying fish bladders on their boats for the China market at the end of the century.¹³⁰

Dried, salt-cured fish does not ever appear to have been a popular commodity on the local retail market. Most was exported.¹³¹ Sometimes excess fish would be pickled in brine-casks but it usually returned too low a price to be economically worthwhile.¹³² Both products appear to have more been in the province of the non-British palate, a local marketing situation which did not change until after the gold rushes.¹³³ Neither were some species well regarded whether they were fresh or preserved. Ferdinand Tondut reported catching two to three tons of estuarine black bream in a single haul during the 1860s, but he found they were unsalable.¹³⁴

A few southwest species were smoke-cured as kippers or bloaters for the local market, and apparently were more akin to the British tastes. During the 1870s and 1880s

¹²⁶ Tondut, F. (evidence), *Report of Joint Select Committee Appointed to Enquire into the Fishing Industry*, (Perth: Western Australian Parliament, 1906), p.34.

¹²⁷ Dempster, J. "Diary of Captain James McLean Dempster, Superintendent native penal settlement at Rottnest, 1850," BL 1197A (microfilm).

¹²⁸ Delaveris, *op. cit.*, p.18.

¹²⁹ *Inq.* 3/11/1847; 10/11/1847; 29/12/1847.

¹³⁰ Burns, A. "Sailing into the past," (typescript) RWAHS 1179, box 13. (1974), p.18.

¹³¹ Cox, *op. cit.*, p.37.

¹³² Willis, *op. cit.*, p.43.

¹³³ Cox, *op. cit.*, p.37.

¹³⁴ Tondut, *op. cit.* p.35

a Perth hawker known as “Old Cheshire” is said to have sold smoked bony Perth herrings at eighteen for a shilling from a large box he carried balanced on his head.¹³⁵ Smoke curing can be completed with rudimentary equipment in a matter of hours, however it has a high moisture content and does not last long, especially in a region noted for its high summer temperatures. Estuarine fish smoking apparently also took place at the mouth of the Murray River in Peel Inlet, but the venture failed to develop into a substantial industry.¹³⁶

A fishing family by the name of Wellstead who fished on the south coast in the vicinity of Bremer Bay, Stokes Inlet and the Fitzgerald Estuary during the 1890s reportedly also smoked their catches before transporting them by horse and cart to settlements such as Albany.¹³⁷ In the absence of refrigeration or ice, the process effectively delayed deterioration for a few days. This family were constantly obliged to review their strategies in sympathy with changing environmental conditions. For example it will be recalled from Chapter Two that Welstead Estuary which carries their name was closed to the ocean for twenty years between 1860 and 1880.¹³⁸

As ice became available, fishermen discovered that some types of fish such as tailor and salmon took a cure better if they were first chilled.¹³⁹ This tended to lower the moisture content of the flesh. Nevertheless, construction of freezer plants at major centres, including at Mandurah, combined with the pressures of the burgeoning marketing infrastructure was forcing abandonment of older methods of fish preservation such as smoking. The impact of freezer works can be judged from a report of a January 1898 visit by a parliamentary delegation led by Premier John Forrest to the newly constructed Murray River Freezing Works:

Here there are tremendous trays of mullet, hard as a stone and in the candle light glistening like hoar frost. A little distance away some great pike, looking as much like novelties in walking sticks as they do like fish, are stacked like so much firewood; and there leaning in the corner, a few dozen gigantic kingfish, standing some on their tails and others on their noses. Big flathead and skipjack and taylor are hanging about the walls and from the

¹³⁵ *WM.*, 1/2/1940.

¹³⁶ Richards, *op. cit.*, p.173.

¹³⁷ Tull, M. “Profits and lifestyles of Western Australian fishers,” *Studies in Western Australian History*, 13, (1992), pp. 92-111, (95).

¹³⁸ Bignell, *op. cit.*, p.128.

¹³⁹ Aldrich, *op. cit.*, p.43.

ceiling, and herring and pilchard and trout have all places set apart for them.¹⁴⁰

It was a showpiece of modern technology, importantly enabling fish to be safely held over until required. Spoilage during transportation, or soon after arrival at a destination was virtually eliminated. This freezing works also had its own fishermen and therefore enjoyed an enormous advantage over others. Another Mandurah operation, the Murray Fish and Freezing Company, took things further by establishing a second freezer facility at Coolgardie to receive its consignments.¹⁴¹ Frozen fish once thawed had a ready public acceptance and inevitably the demand for preserved fish in any form declined.

10.4 Fish canning

Fish canning was a technological innovation which preceded freezing. As to when the first fish were canned in the southwest is uncertain. Charles Wedge may have conducted some early experiments at Fremantle between July 1869 and December 1870 when he employed two tinsmiths and two fishermen, all being ticket-of-leave men.¹⁴²

Charles Broadhurst, who was formerly mentioned in connection with pearling at Shark Bay dabbled in many other ventures involving maritime resources. In 1873 he had entertained the idea of setting up a fish preserving operation using indentured Malays on Dirk Hartog Island. In 1876 he applied for a licence to set up a “fishing station” on East Wallabi Island in the Abrolhos, but this appears not to have eventuated. Eventually in 1877 he established the Mandurah Fish Canning and Preserving Company at the entrance to the Peel Harvey Estuary. Within a few months his factory was producing 2,000 cans of fish per day.¹⁴³ In 1882, and prior to taking up guano mining on the Abrolhos, which was discussed in Chapter Nine, he sold out to A. Forbes who raised production sufficiently to employ 50 people in the busy season.¹⁴⁴ Forbes’ fishermen used seine nets and sailed to the far extremes of the estuary. According to an 1882 newspaper, “The haul sometimes equals several tons, and the boats return so heavily laden that the water is almost up to their gunwales.”¹⁴⁵ In 1880 Charles and John Tuckey had started another cannery in opposition.¹⁴⁶ Decades later Charles Tuckey was to maintain his was the first

¹⁴⁰ *WM.*, 14/1/1898. p.12.

¹⁴¹ *WM.*, 22/9/1897. p.12.

¹⁴² Erickson, R. “Collection of biographical index files,” (ND), BL3710A (microfilm).

¹⁴³ McCarthy, (1989), *op. cit.*, pp. 294-296.

¹⁴⁴ *Herald*, 18/2/1882.

¹⁴⁵ *Ibid.*

¹⁴⁶ Richards, *op. cit.*, p.163.

cannery set up anywhere in the colony.¹⁴⁷ Fish were obtained by the Tuckeys from the estuary and from the adjacent ocean using the *Ellen*, a converted lifeboat salvaged from the wreck of the *James Service* in 1878.¹⁴⁸

Fishermen at Peel Inlet had access to one of the best estuarine fisheries in the colony, but because of the logistics of transportation, were at a distinct disadvantage in getting their catch to the main marketplaces at Fremantle and Perth. The trip to Fremantle could be made by sailing boat in as little as four hours with a favourable south-west wind, although the shifting sand bar across the entrance of Peel Inlet frequently prevented safe passage to the ocean.¹⁴⁹ The route by land was more arduous, requiring at least two days for the return journey to Fremantle with a horse drawn wagon. Even when the railway was built through Pinjarra to the east, taking fresh fish to the rail and paying the freight brought only a minimal return, and sometimes if auction prices were low in Perth the fisherman would be left with a debt. The construction of the canneries provided a solution for disposal of the catch, and this would have been fine, except that the astuteness of the cannery operators still ensured returns to fishermen were kept low.

The most favoured canning species at Mandurah was mullet (*M. cephalus*), both because of its flavour and firm texture.¹⁵⁰ The Australian salmon (*A. esper*) which was so favoured by Aborigines does not appear to have been popular with Europeans during the nineteenth century. According to scientific fisheries advisor W. Saville-Kent it was “one of the poorest and coarsest of the Australian market species.”¹⁵¹ Conversely, a century later it has become one of the most popular varieties of canned fish.

When numbers and size of mullet began to noticeably decline in the late nineteenth century, experiments determined that the bony Perth herring (*N. vlaminghi*) was satisfactory as a canning species. The multitude of fine bones which normally rendered it unsuitable for marketing softened during the pressure-cooking process in the can, as happens with sardines.

The canning process was labour intensive and relatively complex. At Forbes' factory the fish were first weighed, then washed. After scaling the fins were clipped off

¹⁴⁷ Report...Marine Fisheries..., (1898), *op. cit.*, p.2.

¹⁴⁸ Honniball, J. “The Tuckeys of Mandurah,” *Early Days*, 5, 8, (1961), p.14.

¹⁴⁹ Hackett, J. (Evidence), *Report of the Select Committee of the Legislative Council Appointed to Enquire into the Fishing Industry and the Operations of the Fremantle Fish Markets*, (Perth: WA Parliament, 1922).

¹⁵⁰ Saville-Kent, (1894), *op. cit.*

¹⁵¹ Saville-Kent, (1897), *op. cit.*, p.178. (In contradiction with 19th century tastes, *Arripis esper* is a popular Australian canning species in the late 20th century).

and the heads and guts removed. Further along the line other workers scrubbed the fish inside out with brushes made from whale baleen, then a machine chopped the fish into the correct size. Prior to packing in the cans, the segments were lightly pickled in brine. The cans were rolled from sheet metal on a hand operated press and a skilled tinsmith could produce about 600 cans per day. After packing, cooking took place in two stages. Initial cooking took place in a pressurised brine solution at about 400°F. After removal, an expansion pinhole was sealed with a drop of solder to maintain a vacuum as the can cooled. The contents were then pasteurised. The final process involved painting the cans, applying labels and packing them into wooden crates, which were also made on the premises.¹⁵²

The gold rush provided boom times for the canneries. At Tuckeys in 1896 about 10,000 cans were filled with mullet caught at the nearby Aboriginal *mungah* at Barragup. Local Aborigines appear to have cooperated in this venture. However, any benefits were short lived. The following season the catch at the fishweir declined and provided fish sufficient to fill only 2,000 cans.¹⁵³

In a good summer season the cannery could expect to produce 200,000 cans of fish from all sources.¹⁵⁴ In 1898 production was about 1,524 kg of canned fish per week.¹⁵⁵ It was an output which kept several tinsmiths busy. Fish were not canned by Tuckeys in the winter months when fresh water was flowing into the estuary. It is not clear if this was due to a change in fish quality, or seasonally low catches. In winter the cannery switched to whatever fruit and vegetables were available.¹⁵⁶ In an attempt to keep costs down at Peel Inlet, Charles Tuckey, who had formerly been involved with the pearling industry, was able to contract some Japanese fishermen.¹⁵⁷ One of these apparently was Kino Okamoto who arrived in Western Australia from Kobe in 1896. He was still fishing at nearby Yunderup in 1941. Japanese fishermen are also known to have operated at Fremantle and Geraldton from about the mid 1890s. Little information about

¹⁵² *Herald*, 18/2/1882.

¹⁵³ Tuckey, C. *op. cit.*, p.95.

¹⁵⁴ Tuckey, H. (Evidence), *Report of the Select Committee of the Legislative Council Appointed to Enquire into the Fishing Industry and the Operations of the Fremantle Fish Markets*, (Perth: WA Parliament, 1922). p.39.

¹⁵⁵ Throssell, *op. cit.*, p.2.

¹⁵⁶ Tuckey, H. (1922), *op. cit.*, p.39.

¹⁵⁷ Gale, *op. cit.*, p.18.

them has been identified.¹⁵⁸ It is known Tuckey supplied his Japanese employees with accommodation, boats and nets, with a guarantee to purchase their catch; at his price. The relationship eventually soured when it was discovered they were secretly selling fish for a better price to Greek fishermen working at the opposite end of the estuary near Herron Point. The Greeks were carting the fish to Coolup rail siding, from where it was sent on to associates in Perth. As catches in the Peel-Harvey Estuary began to decline the Greeks became the target for allegations of poor fishing practices, including the alleged destruction of huge quantities of immature fish. The Japanese too had worn out their welcome for reasons already stated. Their ongoing relationship with the Greeks provided a degree of security against the mutually experienced violence and intimidation which periodically erupted, and which occasionally required police intervention.¹⁵⁹ According to Richards, in his history of the Murray district, most Japanese on the Peel Inlet eventually returned to Japan.¹⁶⁰ Four Japanese fishermen were still operating on Peel Inlet in 1922.¹⁶¹

A cannery known as the the Pleasant Grove Preserving Works commenced operations in about 1895 on the western side of the estuary.¹⁶² This was a small family concern headed by Louis Dawe, who was a former tinsmith with Tuckey. Dawe sold his products to grocery merchants in Fremantle.¹⁶³ A label acquired from one of his cans indicates that he had six boats supplying him, although this may have been an advertising exaggeration, as was the case with the dock and building. The coat of arms with a rising sun above possibly relates to the dawning of Federation, which occurred in 1901, but it also resembles that for New South Wales.¹⁶⁴ A motto, "Advance Australia," on the coat of arms suggests he was endeavouring to persuade the consumer to reject foreign imports. These, in the view of locals, had become a serious problem by that time.¹⁶⁵ The second label features the much esteemed sea-mullet, which was the species subjected to such former intensive exploitation at Barragup, upstream from the opposite side of the

¹⁵⁸ Atkinson, A. *Asian immigrants to Western Australia 1829-1901*, (Nedlands: UWA Press, 1988), p.367.

¹⁵⁹ Richards, *op. cit.*, p.109.

¹⁶⁰ *Ibid.*, p.428.

¹⁶¹ Ward, S. (evidence), *Report of the Select Committee...1922*, p.36.

¹⁶² The old factory site is near the "Dawesville Cut," a channel opened between the estuary and the ocean in 1993 in an attempt to improve tidal flushing. The cut can be identified on Fig. 3.6.

¹⁶³ Dawe, L. (evidence), *Report of Joint Select Committee...1906.*, p.100.

¹⁶⁴ The current Australian coat of arms differs from this design in several respects.

¹⁶⁵ Tuckey, C. *op. cit.*, p.97.

estuary. It states that the product received a silver medal at a Franco-British exhibition in 1908. Both these rare labels are reproduced in Fig. 10.1.

Another cannery was operated at the southern end of the estuary from about 1904 by William Hollingworth. He had previously fished with his brother in Victoria, and commenced fishing at Peel Inlet in 1896.¹⁶⁶

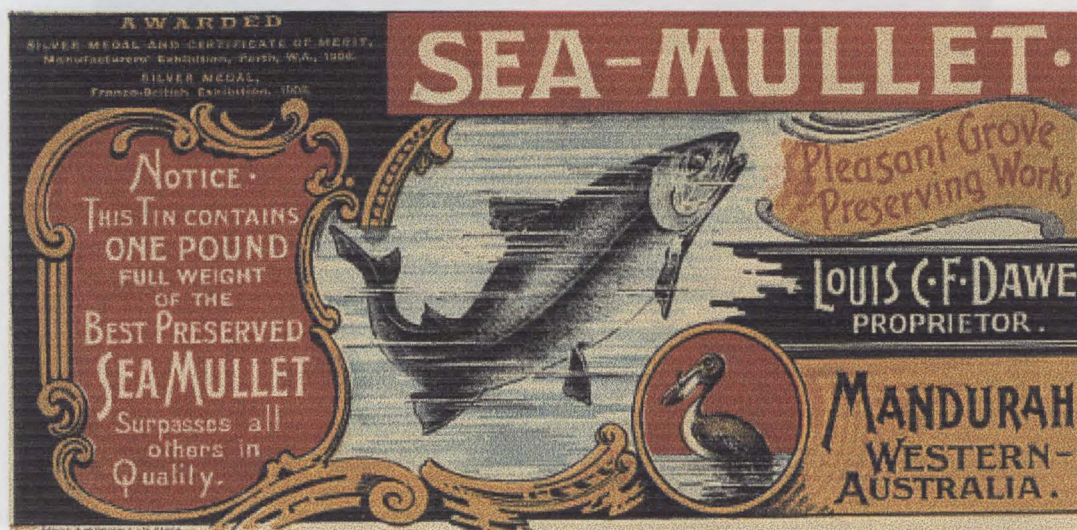


Fig. 10.1 Dawe's fish can labels¹⁶⁷

¹⁶⁶ Hollingworth, W. (evidence), *Report of Joint Select Committee...1906.*, p.103.

¹⁶⁷ From the collection of P. Weaver.

After Federation in 1901, opportunities for other fish canneries were thought to exist at Shark Bay, but the drawback by this time was that such an industry could not be developed using imported labour as had happened in the heydays of pearling, and with Tuckey's indentured Japanese fishermen at Mandurah. The only cheap locally available labour was from Aborigines, and in a country which by this time had developed a somewhat notorious reputation for its mistreatment of indigenous peoples, they were considered highly undesirable.¹⁶⁸

According to Hobart Tuckey, his family's canning operations at Mandurah eventually ceased specifically because of a shortage of fresh fish. He claimed that construction of the railway through Pinjarra enabled so many professional fishermen to come to Peel Inlet, then send their catches back to Perth that the waters became fished out. Added to this was the fact that Mandurah had become a favourite holiday resort for Goldfields residents, and according to Tuckey, they also caught too many fish.¹⁶⁹ A photograph of the sort of activity he objected to is reproduced below, in Fig. 10.2.

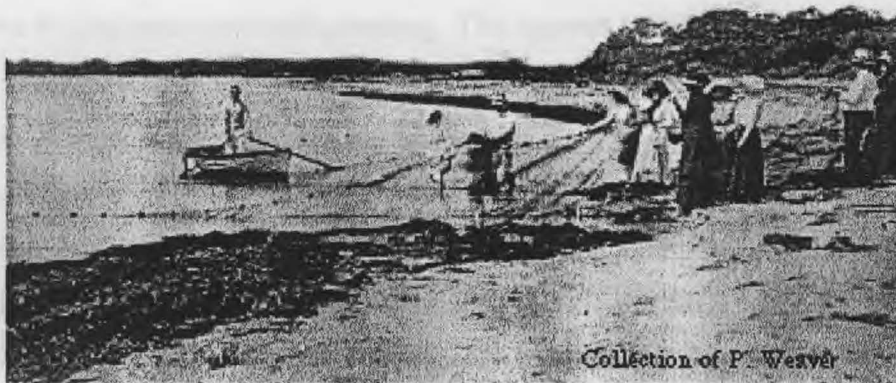


Fig. 10.2 The goldfields rush to Mandurah

A travel writer of the time, May Vivienne confirmed that some visitors were taking large catches during her description of a visit to Mandurah:

Across the ferry from the hotel is the Murray estuary, which is really teeming with fish...The goldfields people patronise Mandurah largely, and many huge catches of fish have been chronicled by them...Very large kingfish are frequently caught with hand lines...Black bream weighing 4 lb are a common catch...In two days a visitor caught 17 dozen whiting,

¹⁶⁸ Gale, *op. cit.*, p.18.

¹⁶⁹ Tuckey, H. *op. cit.*, p.39.

bream and mullet.¹⁷⁰

Tuckey's allegations of overfishing appear to have had some substance, but his family's intensive activities since 1882 may have been more to blame because of the quantities of mature roe-bearing fish which were processed, particularly in the first years of operation. The roe were canned separately and commanded a premium price. He wistfully lamented at the 1922 enquiry, "...in these days you do not see a roe."¹⁷¹ As Tuckey rightly pointed out the cannery had experienced stiff competition from the considerable increase in the numbers of fishermen. In the old days they had few options other than to sell to him. The increasing availability of ice enabled them to bypass him and negotiate with more competitive and distant buyers. Ice also enabled the buyers or middlemen to send fresh fish on to places where formally only canned fish would have been available. When the railway connected to Kalgoorlie in 1897 it stimulated unprecedented premium prices for fresh fish.¹⁷²

In addition the Mandurah canneries were labour intensive, and with every process being done by hand, change or closure was inevitable. The ominous signs that once favoured species were in decline did not justify major technological changes. Nor were the uncertain seasonal variations and periodic long term closures of the Peel Inlet bar conducive to long term economic planning. This appears to have been well recognised, because nowhere within any of the historical literature examined for this study has an optimistic view by participating fishers that catches would ever return to previous levels been identified.

Because mullet were the highest value canning fish their obvious decline caused substantial local concern. Worse was the increasingly significant competition from canned Alaskan salmon, which by no accident had appeared in the colony during the main gold rush period.¹⁷³ For example 187,907 kg arrived at Fremantle in 1894, and by 1897 the figure had risen to 774,156 kg.¹⁷⁴

Louis Dawe's belated appeal on his label to advance Australia by purchasing the local product was insufficient to resist the flood of imports. In view of the almost overwhelming transport problems being experienced by Peel Inlet fishers only a decade

¹⁷⁰ Vivienne, M. *Travels in Western Australia...*, (London: William Heineman, 1901). p.101-2.

¹⁷¹ Tuckey, H. *op. cit.*, p.39.

¹⁷² Cox, *op. cit.*, p.37.

¹⁷³ Tuckey, C. *op. cit.*, p.97.

¹⁷⁴ WAYB, 1896-7.

as a belated attempt to shift blame for the decline of the fishery away from excesses of the cannery operators, and the commercial non-Aboriginal fishermen.¹⁷⁷

10.5 Conservation strategies

Little mention of prawns has been identified in the historical literature. They were nevertheless apparently a popular food in colonial Western Australia. The previously mentioned hawker “old Cheshire,” is known to have sold them in Perth for a shilling a quart (1.13 litres) during the 1870s. Undoubtedly he was not alone because declining numbers prompted passing of *The Prawn Act 1876*, which resulted in a closed season. Because prawns grow quickly the success of this measure was apparent to legislators within a few years. Its success, coupled with the realisation that fish stocks were also coming under threat inspired *The Fishery Act, 1889*.¹⁷⁸

However, the first legislation specifically directed at fish conservation was *The Fisheries (Dynamite) Act* of 1879 which came about because of the increasing use of explosions to catch fish in the Swan River.¹⁷⁹ Dynamite was invented by Nobel only twelve years earlier, in 1867, and its unprecedented stability meant it was readily adopted by the mining and quarrying industries.¹⁸⁰ In the southwest it was also used for dislodging large tree stumps on land developments, a problem which it will be recalled had so frustrated early settlers and subsistence fishermen at Augusta. Dynamite was safe and easy to use, and would explode under water without any special provisions for the fuse and detonator. As such it was popular amongst those with little regard for the indiscriminate destruction of all types and sizes of fish. *The Dynamite Act 1879* had some effect in preventing this practice near main settlements, but the prospect of a heavy fine and potential jail sentence failed to deter those in more remote southwest waterways, where mullet were a particular target.¹⁸¹

Twenty years later *The Fishery Act, 1899* reflected an official realisation that the fishing industry had at last become economically important.¹⁸² Its primary object was to preserve the fishery as a food resource and eliminate wastage. Of concern were repeated

¹⁷⁷ 63 Vic. 47, Section 11.

¹⁷⁸ WAPD., vol. XVII. p.59.

¹⁷⁹ WAPD., vol. IV. p.31.

¹⁸⁰ *Encyclopedia Britannica*, (1947), vol.3. p.708.

¹⁸¹ Willis, *op. cit.*, p.40.

¹⁸² Throssell, *op. cit.*; WAPD., vol. XV, p.1932.

allegations of quantities of discarded fish being left on beaches.¹⁸³ The increasingly common usage of fish as agricultural fertiliser also caused concern.¹⁸⁴ Even so it was proposed in the second reading of the bill some species be exempt. Parliamentarian F.T. Crowder remarked, “Sharks make very good manure, and I presume you would not stop people catching them for that purpose.”¹⁸⁵ There had been legitimate uses of fish as fertiliser for some time, but there were major drawbacks. For example at Mandurah the canneries accumulated significant quantities of offal and this was allowed to ferment in large heaps until removed to farms. According to the complaining local schoolmaster the odour was fearful when the heaps were disturbed, and justifiably, he regarded the practice as a serious threat to public health.¹⁸⁶

To allow enforcement of regulations, the 1899 Act gave fishery inspectors unprecedented powers of seizure, which included the right to enter any premises, or board any boat without a warrant. Fishermen and fishing boats were required to be licensed, with registration numbers conspicuously displayed on the latter. It also reinforced the Game Act 1892 by allowing a scale of rewards to be set for the destruction of fish eating birds such as shags and pelicans, still believed to be detrimental to the fishery. They too were scapegoats.¹⁸⁷

Late nineteenth century perceptions of why fish stocks declined varied, and the consistent theme was to attribute blame, either to other species or to the actions of other people, especially if they were foreigners or an identifiable minority. Similarly people who exerted a degree of controlled access to a fishery were, regardless of their own cultural origin, generally mistrustful of outsiders and devised strategies by which the *status quo* could be maintained.

The 1889 Act had allowed inspectors limited powers to declare protected waters near river mouths. This proved inadequate. The subsequent 1899 Act allowed any waters thought necessary to be closed, and catered to the Waltonian belief that fish required a sanctuary where they could rest and recover from the hurly-burly of piscine life. For this reason the lakes and lower reaches of the Serpentine River which had

¹⁸³ WAPD., vol. XV. p.2085.

¹⁸⁴ WAPD., vol. XV. p.2373.

¹⁸⁵ WAPD., vol. XV. p.2375.

¹⁸⁶ Minutes and outward correspondence, Murray Board of Education. Acc.1203/298, BL.

¹⁸⁷ 63 Vic., no. 47.

facilitated the Barragup mungah were eventually closed to commercial fishing.¹⁸⁸

According to Foster Eaton, the local Inspector of Fisheries:

It is not only a breeding ground, but a resting ground. If the grounds were open to fishermen to net there would be no resting ground for the fish. With everything in nature there must be some quiet spot to go to, to rest.¹⁸⁹

Few would disagree with this philosophy, but it was based upon instinct, not science. Pollution of waterways was more readily identified as a contributor to fishery decline, and of course the pollution was always by others. Some fishermen were of the view that the increasing numbers of “oil launches” (boats with combustion engines) in the late nineteenth century were a significant cause. It was assumed that the new noises disturbed fish, and leaking oil polluted the waters and interfered with the developing embryo in fish spawn.¹⁹⁰ On the other hand steam powered boats which had been around for decades were not thought to cause a problem.¹⁹¹

Peel Inlet fisherman and cannery owner Charles Tuckey was of no doubt mullet spawning ceased locally during the latter part of the nineteenth century.¹⁹² As already mentioned, his family’s factory canned an immense quantity of mullet over the years. What was probably more significant was its specialty line of canned mullet roe, which commanded a premium price. It never seems to have occurred to Tuckey that this practice may have been creating serious problems for the future well-being of the species. While in other parts of this chapter it has been shown blame for declining fisheries has been directed at various quarters, in Tuckey’s case it was more convenient for him to blame sawmilling operations upstream at Jarrahdale. The mill was identified as a major polluter of the Serpentine River between 1891 and 1896 because the sawdust was discharged into the river rather than being burnt. The practice ceased after vigorous complaints by Tuckey, but perhaps not surprisingly the fish did not return in their previous abundance.¹⁹³

By the late nineteenth century the Swan and Canning River system near Perth was

¹⁸⁸ Cooper, J. (evidence), *Report of Joint Select Committee Appointed to Enquire into the Fishing Industry*, (Perth: W.A. Parliament, 1906), p.100.

¹⁸⁹ Eaton, F. (evidence), *Report of Joint Select Committee Appointed to Enquire into the Fishing Industry*, (Perth: W.A. Parliament, 1906), p.93.

¹⁹⁰ Tuckey, C. *op. cit.*, p.98.

¹⁹¹ According to Richards, *op. cit.*, p.226, the first steam powered vessel to visit the colony was HMS *Driver* in 1845.

¹⁹² *Ibid.*, p.98.

¹⁹³ *Ibid.*, p.95.

also considered by fishermen to be polluted by upstream activities. A particular problem was increased silting due to widespread agricultural clearing. The silt remained suspended in the waterways and significantly reduced the clarity of the rivers downstream. This was claimed to be having a detrimental effect on fish populations.¹⁹⁴

Ferdinand Tondut's (Tonduit) family had fished the Swan River since the late 1830s, and he personally had fished there since about 1859.¹⁹⁵ He claimed he had not seen a large roe bearing mullet after the mid-1890s.¹⁹⁶ Similarly the marked decline of another desirable species, the kingfish or mulloway (*Argyrosomus hololepidotus*), could be linked to probable over-exploitation, although this was not specifically admitted. Tondut claimed in 1906 that he used to take three or four boatloads of this species weighing 30 to 40 lbs each in a single haul on the Swan River, but that the last such catch occurred prior to 1880.¹⁹⁷ There has been no recovery of the species to enable catches of this magnitude. During the 1880s there had been concern that fish stocks had markedly declined to the extent that one parliamentarian, Mr Venn, informed the Legislative Assembly in 1899 that fish had become very scarce at Perth, Mandurah and Bunbury and this undoubtedly was due to the indiscriminate use of nets.¹⁹⁸ The resultant 1889 Fisheries Act was modelled on Victorian (the Australian colony) legislation and was immediately inadequate. The few species listed for protection were obscurely identified by colloquial names and provided with minimum weights which were very small. For example the schnapper (*Chrysophrys auratus*), which had been the subject of so much attention since the advent of settlement, had only to be 8 ounces (226 grams) to be legal.¹⁹⁹ It might fit nicely on a plate, but was well below breeding size.

Evidence presented in the 1906 enquiry suggests many fishermen in the southwest were well aware that fish stocks had been declining during the final two decades of the nineteenth century. Few, if any, were prepared on their own initiative to adopt any conservation measures. A view existed that "if it was big enough to catch it was big enough to sell and if it was big enough to sell, it was big enough to eat."²⁰⁰ By this reckoning almost any species or size was marketable. The presence of this attitude in

¹⁹⁴ Tondut, *op. cit.*, p.36.

¹⁹⁵ Erickson, (1988), *op. cit.*, vol.4, pp.3079-8.

¹⁹⁶ Tondut, *op. cit.*, p.34.

¹⁹⁷ *Ibid.*, p.35.

¹⁹⁸ WAPD., (1890), vol 17. p.59.

¹⁹⁹ 53 Vic. No. 4. (Schedule).

²⁰⁰ Abjornsson, *op. cit.*, p.24.

1906 further illustrates the ineffectiveness of the 1889 Act as a conservation measure.

Even when regulatory measures were accompanied by severe penalties such as confiscation of equipment there was no shortage of fishermen prepared to take the risk of breaching them. Frank Whitfield who began fishing on the Swan River about 1870 told the 1906 enquiry with surprising candour that poaching in closed waters and using small mesh sizes was essential to his economic survival.²⁰¹

Poverty appears to have been a constant companion of numerous estuarine fishing families. Some inspectors aware of the hardship a fine or net confiscation would impose, tended to overlook minor regulatory infringements by these people.²⁰² It is possible too they were cultivated as informants, because some fishers in the estuaries had no love for authority and it was believed would show little mercy to a lone fishery inspector trying to enforce regulations after dark. As a result inspectors always worked in pairs on the Swan-Canning River system at night.²⁰³ The risk was greater at places like Peel Inlet where there was only one inspector. As occurred elsewhere he was ill-regarded in relation to his duties and fishermen there conspired to keep each other informed on his whereabouts on the estuary by prearranged signals.²⁰⁴

Regardless of the endeavours of the inspectors they appear to have been largely ineffective. An estimation was made that as much as 95 percent of fish which reached the domestic market were poached from closed waters.²⁰⁵ Apart from revealing the general inadequacy of the fisheries management at the turn of the century, it is indicative that fish levels were such elsewhere in the estuaries that most fishermen felt within their rights to break the law to survive.

While many fishermen who gave evidence at the 1906 enquiry revealed they had engaged in activities which could be interpreted as not in the best long-term interest of the fishery, most blame for declining catches was directed at foreign fishermen, in particular Italians, or "Dagoes." It was a repeated theme in evidence presented to the 1906 enquiry, and a degree of concurrence with these views appeared in the final report. Minimum net mesh sizes for ocean fishing were introduced ostensibly to protect juvenile fish,²⁰⁶ however, it is possible this was also intended to inconvenience southern European

²⁰¹ Whitefield, F. (evidence), *Report of Joint Select Committee...1906*, p.37.

²⁰² Abjornsson, *op. cit.*, p.23.

²⁰³ Gale, *op. cit.*, p.12.

²⁰⁴ Richards, R. *op. cit.*, p.170.

²⁰⁵ *Report of Joint Select Committee...1906*, p.3.

²⁰⁶ Abjornsson, *op. cit.*, p.23.

fishers, who traditionally had favoured a smaller mesh.

The evident long-term damage to estuarine fish species through former nineteenth century practices of non-Italians was generally ignored in favour of the notion that with proper management there was “no end to the possibility of expansion of our fishing industry.”²⁰⁷ The report in effect advocated *laissez faire*, a policy of allowing ambitious private entrepreneurs to proceed with minimal interference by government.²⁰⁸ Events following the 1906 report are well outside the chronological limitation of this study, suffice to say there would be no serious attempt to recover what had been lost, and more than three quarters of a century would elapse before the finite nature of the southwest fishery began to be fully appreciated.

10.6 Southern European fishermen

The entry of Italians, the most significant group of non-British fishers into the Western Australian fishing industry, appears to have commenced in 1863 when Guiseppi Marselli, a ship’s carpenter, arrived from Tuscany and took on the role of boat builder and part-time fisherman at Fremantle.²⁰⁹ According to respected geographer Joseph Gentili, a myth has persisted amongst the Italian community in Fremantle that 200 Sicilian fishermen arrived from Grottaferrata, Sicily in 1847 to help Dom Salvado and his monks build the New Norcia Monastery. These men were said to have then founded the the Western Australian fishing industry at Point Peron. However there were no fishermen listed with Salvado and the belief is completely unfounded.²¹⁰

The story might have been originally devised to provide a cover for illegal immigration in the 1880s. About then a small colony of mostly Sicilian fishermen had established themselves at Point Peron, south of Fremantle. Exactly how and when they arrived is uncertain because they are not mentioned in official immigration records. An Austrian registered ship *Honor* which called at nearby Rockingham to load timber in 1883 and 1885 is suspected of being their carrier. Sailing under Captain F.G. Mareglia this ship also visited Spencer’s Gulf in South Australia on at least two occasions and is

²⁰⁷ *Report of Joint Select Committee...1906*, p.4.

²⁰⁸ *Ibid.*

²⁰⁹ Gamba, *op. cit.*, p.1; Mallabone, P. “Towards a Multi-cultural Society,” in, *On This Side: Themes and Issues in Western Australian History*, (Perth: Westralian History Group / Bookland, 1985), p.45.

²¹⁰ Gentili, J. “I pescatori Italiani nell’ Australia Occidentale: mito e realtà,” *Centro Studi Emigrazione*, XXI, (1984), 74. pp. 229-240.

believed to have landed Italian fishermen there.²¹¹ Because *Honor* travelled from the Mediterranean via Capetown it avoided the close scrutiny and passenger charges normally imposed by the British owned Suez Canal Company.²¹² Presumably too there was a risk of news of such movements filtering though to Australian colonial authorities.

The arrival of Italian fishermen in the southwest coincided approximately with the first discovery of gold in northern Western Australia in 1882,²¹³ although their arrival is thought to have been related to the collapse of the Sicilian tuna industry rather than gold.²¹⁴ Gamba in his 1952 study of Italian fishermen at Fremantle also points out that Sicily was politically unstable and poverty widespread at this time, with prices obtained for staple fishes such as sardines being extremely low.²¹⁵ The Sicilians brought *lampara* nets, which are intended for suspension under a light, and usually from a small boat. The nets were periodically lifted to remove small fry such as sardines, and rarely if ever take large fish. Not surprisingly, the method was quickly abandoned in Fremantle waters in favour of lines and seine nets.²¹⁶

As Acheson has pointed out, the maintenance of agnatic ties enables fishing families to withstand economic fluctuations and overcome difficulties in obtaining development capital.²¹⁷ This occurred with Italians in the southwest, with two distinct groups emerging, the Sicilians and the Apulians (Apuglia), the latter coming from the lower south-eastern coast of Italy facing the Adriatic. According to Gamba, Sicilians tended to live on the land, while Apulians preferred their boats, with each group strongly resenting the other.²¹⁸ For non-Italians, all were collectively known as “Dagoes.” Their poor command of English, visible frugality, apparent clannishness and presumed economic success, caused suspicion, jealousy and resentment amongst the British fishing community. It was also believed Italians avoided paying tax, and, probably correctly in the case of single men, sent much of their earnings back to their families. In these respects they were regarded even in parliamentary circles as, “far from being ideal citizens.”²¹⁹

²¹¹ *Ibid.*

²¹² *Ibid.*

²¹³ Gibb-Maitland, *op. cit.*, p. 1.

²¹⁴ Gentilli, (1984), *op.cit.*

²¹⁵ Gamba, *op. cit.*, p.2.

²¹⁶ *Ibid.* p.3.

²¹⁷ Acheson, *op. cit.*, p.280.

²¹⁸ Gamba, *op.cit.*, p.4.

²¹⁹ Daghish, H. (evidence), *Report of Joint Select Committee...1906*, p.4.

Occasionally there was violence. For example the Glorioso family who set up the Rockingham Fishing Company near Point Peron in the late 1800s to service inland timber mills had reportedly experienced so much hostility, including the burning of nets that they and others relocated to South Fremantle.²²⁰

The tendency to blame outsiders for declining maritime resources is a theme which has already emerged in this and previous chapters. At Fremantle when there was a noticeable decline in the size and availability of some commercial fish species in the 1890s the Italians were immediately blamed.²²¹ Evidence provided to the 1906 Parliamentary Select Committee revealed that these perceptions had become deeply entrenched in the non-Italian community.²²²

Italians generally favoured ocean fishing; however the confined waters of the estuaries such as at Swan River enabled easier exclusion of foreigners and this may have been an added factor. Nevertheless many British fishermen experienced difficulties and still blamed the Italians for declining catches. In particular it was claimed they used too small a mesh size and dumped the unmarketable small-fry on the beaches. At this time there were no restrictions on the mesh size of nets used for ocean fishing as there was for estuarine or inlet fishing.

Unfortunately no evidence was taken from Italian fishermen by the Select Committee. Therefore the veracity of the allegations against them needs to be treated with caution. They may well have used a small mesh on their seines, because the *lampara* style which they had been obliged to abandon typically had a small size mesh for sardines. Being impoverished, they would probably have woven their own nets to a mesh size they were most familiar. The 1906 enquiry agreed there was some substance to these long running allegations and recommended that a minimum mesh-size be introduced for ocean fishing, and that a further reduction be imposed for nets used in estuaries.

Not all had a poor view of Italians. John Noble, company secretary for The Northwest Fishing Company was of the opinion Italian fishermen tended to be far more efficient and reliable than their British counterparts:

²²⁰ Mallabone, *op. cit.*, p.45; Gamba, *op.cit.*, p.5.

²²¹ *Report of Joint Select Committee...1906*, p.2-5.

²²² Friction with Italian fishers continued through much of the twentieth century until a new wave of fishing immigrants appeared on the horizon. In the 1990s similar allegations of indiscriminate fishing have been directed against Asians, particularly Vietnamese. Scale fish, crabs, abalone, sharks, trepang and cockles have been involved at various times.

The Italians and Greeks would stay on the boat and never leave it, and the moment they came in they would start and clean up the boat and paint it. They always put everything in apple pie order. The Englishmen would go away and get drunk. They would go away and leave the boats to take care of themselves.²²³

Because of the comment about their preference to remain on board, Noble's employees were probably all of Adriatic origin. Italians were reported to have made up almost half of the 246 licensed fishermen by 1905,²²⁴ although the 1906 enquiry contradicted this figure by stating that only 183 out of the 545 or 33 percent of people engaged overall in the fishing industry were Italian.²²⁵

Besides British and Italians there were also some French, German and Slavic operators. However the non-British peoples who imposed the most substantial change on the southwest fishing industry were the Greeks, who began arriving at Fremantle from 1898. They saw an opportunity to take on the role of middlemen and quickly dominated the wholesale fish industry by making contracts with several fishermen to purchase their entire seasonal catch.²²⁶

Italian fishermen tended to be the main suppliers to the Greeks and thus quickly became locked into an unsatisfactory system where they received minimum returns. Gamba reported that a typical strategy used to negate the going rate of 2/6 per schnapper was to complain of the size and buy only on the basis of two for one, two for three, et cetera. As a result fishermen were always kept at a disadvantage.²²⁷ On the other hand the wholesalers disposed of fish at the maximum price the market would bear.²²⁸

Greek middlemen quickly became an important and highly competitive component of the burgeoning fresh-fish marketing infrastructure. In addition to their own retail outlets, they supplied hospitals, hotels and cafes, and through agnatic ties, formed strong partnerships to purchase fish at numerous coastal locations for redistribution in the goldfields, a matter which was discussed earlier in this chapter.

²²³ Noble, J. (evidence), *Report of Joint Select Committee...1906*, p.87.

²²⁴ Mallabone, *op. cit.*, p.45.

²²⁵ *Report of Joint Select Committee...1906*, p.4.

²²⁶ Manolas, D. (evidence), *Report of Joint Select Committee...1906*, p.59.

²²⁷ Gamba, *op. cit.* pp. 2-8

²²⁸ Manolas, *op. cit.*, pp.57-58.

Chapter 11 Conclusions

It was proposed as a thesis to demonstrate from the available record, and regardless of cultural origins, that the uncertain availability of southwest marine-estuarine resources has long been recognised, and as a result, the overriding priority involving all such exploitation prior to 1901 was to maximise effort at the most opportune times in order to augment the socioeconomic advantage. Any conservation measures, if they were at all perceived, were irrelevant in the face of this primary objective.

Previous work had led to the view that the historical information on marine/estuarine resource exploitation in the southwest prior to the twentieth century was relatively sparse, and that if a substantive study was to be undertaken, then it might be possible to generate otherwise unobtainable answers by integrating material from a variety of non-historical sources. It was felt that this could be better achieved by grouping significant species then tangentially addressing where, how and by whom they were exploited. It was also believed that the environment was a key factor in facilitating human exploitation of significant marine/estuarine species during the period under study. Therefore, acquiring a fundamental understanding of this, even from data collected in more recent times, would possibly allow a better interpretation of past human activities. This integrated approach distinguishes the study from other histories of the southwest region.

Historically, whaling and sealing were the first commercial endeavours to take place in southwest Australia. In both instances these activities were consequent to whale and seal populations being depleted elsewhere. Animals were taken when the opportunity presented, and the more the better. The hunters, recognising the finiteness of the resources, had no self-imposed restrictions, and the colonial governments lacked any formal inclination to intercede. Furthermore, the political, and by extension the economic situation between Britain and America, and to a lesser degree France, ensured that foreign whalers operated with impunity along the southwest Australian coast until whale populations were almost exterminated.

Itinerant sealers ranged sporadically along the entire south coast, and in the southwest their activities predated British settlement. Presumed unsavoury origins and anarchical lifestyle meant they were mistrusted by government authorities. In spite of this, they proved to be the most resourceful of all people engaged in the exploitation of

southwest marine resources, successfully taking seals, birds, fish, and later a few whales from carefully chosen coastal and offshore locations. Ultimately, their highly developed local knowledge and willingness to diversify enabled transference to various other marine related operations as the colony grew.

Operating in high energy waters carried significant dangers, and even sealers and whalers, in spite of their technology and skills, were not immune from tragedy. Similarly for mostly shore-bound settlers, and Aborigines, there are numerous accounts of people, particularly men, being lost when tempted to venture too far in pursuit of large fish, or other animals. Even in sheltered waters, some locations were better than others, being determined by the local physiography. The presence of burly-grinding depressions in safe places along the south coast, the total lack of water-craft and the general absence of swimming skills, suggest that prehistoric Aboriginal fishers placed a high premium on personal safety when they fished.

For both peoples, during much of the nineteenth century the most intensive fishing activity took place in estuaries or semi-enclosed waters, and while tragedies also happened to fishers in these places, the chance of fishing success was greater. Available technology played a role in this, but an examination of the coastal physiography revealed that there were significant environmental criteria which favoured fishing opportunities. The first, in regard to estuaries, was that their size could be correlated with seasonal rainfall in the adjacent drainage systems. The larger estuaries, or larger sheltered fish habitats, were those on the coastal sand plains nearest Cape Leeuwin. Correspondingly the diversity or range of species within them also increased. Most important was that the best estuarine habitats for fish were in those sandy-bottomed estuaries regularly flushed by ocean waters. This was facilitated by an adequate winter rainfall and winter ocean storm surges, which combined, kept the estuary entrances clear of sand-bars. The presence of marine seagrasses in some estuaries was an important indicator of the ecological well-being of the waterways, and successfully suggested in the initial research for this study where most evidence of intensive human fishing activity, at least in the recent past, might be expected.

In comparison, those estuaries in the drier areas further north and east of Cape Leeuwin became progressively less favourable as fish habitats, due to their being cut off from the ocean for longer periods. In some instances these closures were known to last for several decades, with the result that the waterways became hypersaline and most life

was extinguished. By this measure, human exploitation of fish from them had to be less intensive over time, although as is born out by the occasional observations of European explorers such as Grey and Eyre, it was by no means nonexistent.

Therefore, significant seasonal aggregations of fish took place in the proximity of estuaries most regularly opened to the ocean, and it is at these places that the bulk of historical descriptions of fishing by Aborigines, and by Europeans were recorded. In the nineteenth century, the chance of success at these places always had the potential to be confounded by long term seasonal variation, due in no small part to the then unknown vagaries of the Leeuwin Current and the drought imposing *El Niño*, originating in the distant Pacific Ocean.

It became apparent from the examination of the historical literature, that for both peoples, fishing was a very important subsistence activity. For Europeans, especially those who settled in coastal locations at a distance from the main towns, it became an essential task in order to alleviate shortages while new farms were brought into production. Even in estuaries with rich fish populations, specialised knowledge was still required, and for the unskilled it could be an extremely time consuming affair which almost always interfered with other priorities. For Aborigines, fishing served important subsistence requirements, and in some places acted as an important social catalyst.

Because people have ranged in the region since a little under 40,000 years ago it is tempting to believe that fishing has always been part of the indigenous lifestyle. It is by no means clear that this was the case. The oldest fish remains identified in archaeological excavations for the southwest are only about 2,000 years old, in association with the rich fishery at Wilson's Inlet. Unfortunately the site is conspicuous for its singularity. There are no similar fishing sites of this age or older revealed elsewhere in the archaeological record of the southwest.

It may be that coastal dwellers in more ancient times caught fish, but because of the rising of the oceans since the late-Pleistocene, potential sites are now submerged and located well out to sea. Nevertheless, there appears no valid reason to suppose that when global thermal conditions were so different, and ocean levels were so much lower, that marine faunal availability in the southwest was similar to the more recent past.

Stone structures, purported to be the remains of ancient Aboriginal fishtraps and located in the shallows of several southwest waterways are certainly no older than the mid-Holocene when ocean levels reached their present level. Cessation of their use

occurred prior to the arrival of Europeans and poses the intriguing question of why? This dissertation has proposed a general warming of the environment as a reason. The use of stones may relate to when conditions were thought to be colder and more stormy, particularly in relation to the climatic phenomena known as “the little ice age” which is believed to have peaked approximately 1,000 years ago. Conceivably, this was the cold time of *Nytting* in the Aboriginal oral record, rather than the Pleistocene. The question of whether the stone arrangements represent a paucity of fish, or otherwise remains moot.

Certainly other more temporary fish-trapping methods were widely in use after the arrival of Europeans, as born out by the descriptions of fishweirs and hedge-like constructions at strategic points in rivers, and more frequent stick and brush arrangements on shallow sand bars and river entrances. The latter seem to have primarily been used for the capture of smaller fry by mixed groups, with the large fish in deeper waters being the exclusive target of male, spear-equipped hunters.

For Aborigines in the historical period, those who controlled access to esteemed fisheries developed high status in a manner similar to what occurred elsewhere on the continent. Significant Aboriginal gatherings in association with fish aggregations occurred at Wilson’s Inlet, Capel, and at Barragup, and all were favoured by particularly suitable environmental conditions. In the case of the latter two locations, there survives in the unpublished field notes of Bates, insightful descriptions of some of the spiritual relationships which could be woven about a fishery. While there must have been much more involving these events than was salvaged by her, the record is sufficient to reveal that for southwest Aborigines in the past, fishing was far more than a simple subsistence activity. Instead it was deeply consolidated amongst a complicated matrix of beliefs which involved the self, the environment and its associated omnipresent supernatural world, complete with its various metaphysical beings.

Of course Aborigines did not have exclusive franchise in maintaining such a belief system. European fishers undoubtedly had their own, which they had conveyed from overseas, but in the nineteenth century Western Australian material examined for this dissertation, little information of substance about this has been identified. Indeed all the records relating to European fishing activity in the region prior to the twentieth century are relatively sparse, more so than for Aborigines.

The reason may be because Aborigines were so completely different, and apparently so primitive to European eyes. Until familiarity bred contempt, they were

regarded as exotic curiosities, and inspired many people to record matters of interest. In comparison, the activities of the generally impoverished working class, which included professional fishermen, were far more mundane and attracted little attention until after the end of the century, when fishing had become a highly competitive, and for some, a lucrative enterprise.

The term “conservation” was envisaged in this thesis as being a conscious strategy to prevent certain species being completely annihilated. It was not intended to be interpreted in a populist-esoteric sense as somehow having benevolent respect for another living creature, but instead as a means of ensuring a sustainable yield for future use. Such measures can be imposed through various methods of restriction or exclusion, which in the case of Europeans are often reinforced by some form of regulatory means such as licensing. Conservation attempts may also include aquaculture, but the descriptions provided of various unsuccessful attempts to acclimatise exotic species in the southwest are not regarded in that light here.

For Aborigines, exclusion appears to have been primarily a means to an end. Restrictive access could apply to entire neighbouring groups, except in times of abundant aggregations, which then facilitated amenable social interaction. The simplest way of determining the success or otherwise of such strategies is whether or not the *status quo* was maintained over succeeding seasons.

The historical and archaeological records pertaining to the Barragup *mungah* and other popular fishing locations are insufficient to reveal that they operated reliably year after year. The long-term vagaries of climate and the fluctuating seasonal effects on the local environment suggest this was not the case. That the stewards controlling access to the Barragup resource applied any restrictions were actions reflecting their uncertainty. They evolved from unhappy experiences of the past, in particular the disappointments of minimal catches, which if sustained over several seasons, had the potential to erode the group's, and particularly the mens' socioeconomic status. Poor results had to have a cause, and by the logic extant in the society, the influence of smoke on the water, visiting strangers, and women were some of the factors to be guarded against.

Gluttony and excessive catches feature occasionally in the historical narrations of Aboriginal marine-estuarine resource exploitation. The opportunistic group-reactions to cast-up whales are not dissimilar the rapacious events involving aggregating mullet at Wilson's Inlet; and the descriptions of fish being piled ashore at Barragup so they would

not inform others, appears at first glance to have been consummate waste. That people took such actions suggests an awareness that the event did not have the same degree of dependability year after year. Sometimes the catch was good, sometimes bad. Better to take and eat as much as possible when it was available, because the only thing which could be certain was that drought and leaner times were always ahead. Better too, to not let any fish escape in case they warned others to stay away. The belief provokes an unanswered question of how well fish can learn from such experience?

Moiety obligations were observed throughout Aboriginal society and were a set of rules which effectively excluded half the people from consuming, although not necessarily catching a particular species. At times of significant fish aggregations and enduring abundance, a singular option based upon species alone would seem to be a Eurocentric notion, and possibly was ineffectual. Alternatively, with southwest fishers, it is likely that perceptions of colour variation, even within the same species, allowed interpretations sufficiently flexible to benefit all. Importantly, interpretation and deviation could be the prerogative of the individual when uncertainty over moiety categorisation existed.

Uncertainty prevailed in many aspects of Aboriginal and European lives, and much of this was due to the chaotic environmental factors. The nineteenth century commercial cannery operators at Peel inlet, in spite of their own excesses with mullet, had noticed specific environmental criteria which enabled essential revitalisation of the estuary waters from the ocean. There is a certain profoundness in the realisation by those pioneer fishers that simultaneous, conversely flowing layers of salt and fresh water could take place at an estuary entrance and enhance the fishery. Unfortunately the technology of the times meant they were powerless to influence matters when less favourable conditions occurred. There was no machinery available to keep bars open and manpower was not up to the task. In persistent droughts the fish populations simply declined, and if the droughts lasted long enough, and they could do so for several years, then fishing for desirable species became untenable. No one knew, even with the benefit of a burgeoning scientific record, if there would be a drought next year; or how long the present one would last. Past experience revealed no identifiable patterns with floods or droughts which could be applied to the future. The most people could expect was there would always be both, at one time or other.

It has not been established how long the *manga* at Barragup existed. In the

traditional mode, it may be that the numbers of fish killed there and people involved were relatively insignificant in the greater scheme of things. Insignificant that is before the arrival of British colonists, who after establishing commercial operations, apparently had little trouble in persuading the indigenous custodians who had survived Governor Stirling's massacre to intensify their efforts and direct the catch surplus, including as many roe-bearing females as possible, to the canneries. While it seems obvious this was a serious factor in the decline of mullet, no one admitted to it at the time. More important for all parties had been the maximisation of the catch, and the anticipated economic return. When the resource failed, a new direction was taken. It was a consistent theme with all the resources examined.

Southwest Aboriginal groups did not maintain elaborate trading schemes involving marine or estuarine resources. In some respects their situation resembled that of the 'Negritos' in northern Luzon. Both peoples were relatively low in number and had little to offer any interlopers which they could not take themselves.

Certainly, reciprocity with foods and other non-perishable items existed, with the potential for the latter to be transported vast distances through various groups' territories as individual items of exchange. The social discourse which accompanied such actions was highly valued in the southwest, but even so, as the historical records of Barker and others reveal, homogeneity involving an abundant fishing resource could still be elusive.

Southwest Aboriginal groups did not undertake stockpiling of commodities in the mercantile sense for trade with other groups or foreigners. The latter never negotiated access to resources, but simply took what they wanted. Neither was there preservation of any marine or estuarine resources in order to cater for times of seasonal shortage, as for example was a widespread practice amongst the much more richly endowed and more populous native peoples of the Swahili coast, northwest America and Malaya.

Granting neighbours access to fisheries might bring gifts of fresh red meat, a few marsupial skins, or occasional artefacts originating from some distant location, but in the southwest these matters were relatively small-scale. They highlight the immediacy of Aboriginal marine/estuarine resource exploitation,

The Barragup fishweir is conspicuous in the region for the systematic technological exploitation of a resource and this uniqueness raises a question of how it originated. Admittedly, a few vague reports of other structures exist for elsewhere, but they do not appear to have been as successful, either with the catch-yield, or with the social

imperatives which developed. A major factor contributing to the success of Barragup was the physiographic environment, in particular the location of the convenient shallow lakes upstream which the sea mullet entered as juveniles, then after a number of years, returned downstream as fat, mature adults. It was the uniqueness of this aquatic environment which determined that the aggregation took place as it did, and in turn the development of the indigenous customs and rituals associated with the species. Extending beyond this was the dominant cultural influence of the stewards over surrounding groups. There is little doubt that their fortuitous position was due to the fishery resource they controlled, and this was environmentally determined. While acclaimed as an ingenious structure by numerous writers, it nevertheless reflected fundamental principles of entrapment employed throughout the Australian continent, and by peoples elsewhere. Barragup may well have been favoured uniquely in the environmental stakes. No other reported fishweirs appear to have attained similar status, and net-equipped European fishers did not try to emulate the method in other rivers, even when the domestic demand for fish escalated.

Importantly on a broader scale, there were no truly anadromous fish in the southwest which made long, exposed spawning runs en-masse up the southwest's many rivers for access by larger predators, and other indigenous peoples far inland, as for example occurred at many places with salmon species in the northern hemisphere. In the southwest there were no distant snow-capped mountains reliably feeding streams year-round. Instead the rivers were relatively shallow, flowing mostly over sandplains after unpredictable winter rains. The ever-uncertain status of estuary entrances was a matter hardly conducive to the fickle requirements of anadromous species. Furthermore, due to the shielding of cold nutrient-rich Southern Ocean waters by the Leeuwin Current, the offshore waters could not support a significant coastal fishing industry on a par with those of the Atlantic and northern and eastern Pacific Oceans. Consequently, the marine/estuarine resources of southwest Australia were meagre in comparison.

The relatively low European population in the colony for much of the century meant that there was little serious confrontation over natural resources and therefore little need for earnest conservation measures to be designed about them. The situation changed dramatically after the discovery of gold. By then the whales and seals were gone, but there arose in the burgeoning population an unprecedented demand for fish. This provided an outstanding opportunity for more fishermen; and the subsequent

development of the rail network enabled increasing numbers of them to operate permanently on some of the best, more distant estuarine fisheries. This also attracted fishers from declining fisheries elsewhere in Australia and overseas, and ultimately encouraged development of the more technologically based, but nevertheless, environmentally limited ocean-fishing industry.

Entrepreneurial businessmen buoyed by immediate successes, erroneously viewed the potential of the southwest fishery as infinite, provided a policy of *laissez faire* was adopted. The adage that there would always be plenty of fish in the sea was a myth. The lessons learned previously by the estuarine fishermen, and those earlier intensive exploiters of seals, pearls, guano and whales, that such resources were finite, were of little consequence. Indeed, the rapidity with which those industries developed; and then collapsed, can be taken as an indicator of a general awareness that such opportunities were not to be wasted. Maximum exploitation was always the imperative, for as long as there was an economic market. Latecomers were certain to be losers; as were those with sentimental outlooks.

A conspicuous theme in the accounts of nineteenth century fishermen is that fishing was better in the past. Indeed it may well be the universal constant among fishermen everywhere. As more people entered the southwest industry, so did competition for the resources increase. The old guard had no hesitation in attributing blame for lessening catches to minorities and newcomers. Those of differing cultural origins experienced discrimination, but it is apparent that ethnicity had little to do with excessive exploitation. Those who failed to keep ahead, either technologically, or in excluding others, by whatever means, paid the price. The reward for complacency, even for those with long-term experience, was vulnerability to lower catches, exploitative practices by others and most importantly, the erosion of socioeconomic advantage.

There is no doubt all the maritime resources discussed in this dissertation have produced epic tales of human effort in order to maximise life's chances. At the risk of being melodramatic, nature was always an enemy to be conquered, but never tamed, and certainly never served. Homage when it was given, always revolved about the desire to take more. Regardless of cultural origins, the uncertainty over continuing availability of these resources does appear to have long been recognised, and augmentation of socioeconomic advantage in its various forms was a priority for all peoples exploiting them prior to the twentieth century. Not that this should be unduly criticised. Life for

many of the actors was extremely hard, and could be very short, as so many of the historical records tragically reveal. Nor could many favours from others be expected, unless reciprocity in some manner was possible. Conservation measures when they have been identified, were for the most part implemented reactively and were disingenuous, more intended to serve vested interests than continuing maintenance of any species under threat.

In casting back though this study, there is a tinge of irony with the realisation that the relatively obscure *Prawn Act 1876* appears to have been the most successful conservation measure undertaken in the southwest of Western Australia during the nineteenth century.

Abbreviations

ARSFC	Amateur Recreation and Sport Fishing Council
BL	Battye Library
CSO	Colonial Secretary's office records - outward correspondence
CSR	Colonial Secretary's office records - received correspondence
GG	<i>Western Australian Government Gazette</i>
HRA	<i>Historical Records of Australia</i>
INQ	<i>Inquirer</i>
MLAI	<i>The Mirror of Literature, Amusement, and Instruction</i>
PDLC	<i>Parliamentary debates of the Legislative Council.</i>
PG	<i>Perth Gazette</i>
PGWAJ	<i>Perth Gazette and Western Australian Journal</i>
PMB	Pacific Manuscripts Bureau
RSWA	Royal Society of Western Australia
RWAHS	Royal Western Australian Historical Society
SGNSWA	<i>The Sydney Gazette and New South Wales Advertiser</i>
SRNWAC	<i>Swan River News and Western Australian Chronical</i>
UWA	University of Western Australia
WA	<i>The West Australian</i>
WACPG	<i>Western Australian Chronicle and Perth Gazette</i>
WAG	<i>Western Australia Gazette</i>
WAPD	<i>Western Australian Parliamentary Debates</i>
WAYB	<i>Western Australian Year Book</i>
WM	<i>Western Mail</i>

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