

**FISH SUSTAINABILITY INFORMATION SCHEMES: A GLOBAL COMPARATIVE ASSESSMENT AND THEIR IMPLICATIONS.**

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**ABSTRACT**

This paper presents the findings of an 18 months global review of organisations providing sustainable fisheries information to consumers and other channel intermediaries completed in December 2009\*. The project was managed by a consortium of nine organisations involved with seafood, the Fish Sustainability Information Group (FSIG), from around the world incorporating FAO. The review examined the key organisations that analyse, assess and provide data, guidance, disseminate and otherwise communicate on the sustainability of world fisheries and aquaculture to retailers, foodservice sectors, consumers and others. The methodology engaged through interviews the 17 organisations considered to be representative of those involved in leading seafood sustainability communications, in addition to web-site data gathered from a broader sample. Evaluation of the various respective communications was made regarding accuracy, scientific robustness and relevance. The data analysis presents a hitherto unique scope of comparison of the governance procedures and output of the world's most significant organisations supplying seafood sustainability information. The paper then considers the implications of this analysis noting the respective merits and demerits of the two key categories identified: certification schemes and recommendation lists. Particular emphasis is placed upon how such instruments might improve in future with respect to seven critical criteria identified. The findings are then contextualised within current and emergent policy measures in both capture fisheries and aquaculture. The paper concludes with some prospective consideration of how such communications might become more efficient and effective in an era of increasingly complex measures received by audiences subjected to evermore complicated market signals. \* A PDF of the full report is available at: [http://www.marketing.stir.ac.uk/News/FSIG\\_Report.pdf](http://www.marketing.stir.ac.uk/News/FSIG_Report.pdf)

**Keywords:** Markets, Sustainability information, Certification, Recommendation lists

**INTRODUCTION**

The benefits of sustainable fisheries and the need to mitigate the environmental and related impacts of fishing and aquaculture are increasingly in the public consciousness. With three-quarters of fish stocks being fully- or over-exploited (FAO, 2009), poorly implemented, government-run, command and control management schemes have often failed to curb fishing effort, prevent overfishing and avoid environmental degradation.

More recent market-based approaches that empower customer choice in seafood purchasing have shown promise in generating motivation for improved catching and culture practices. The past decade has witnessed a proliferation of national and supranational schemes designed to provide consumers and organisational buyers with more and better information to help make informed choices when purchasing

seafood which incorporates all kinds of fish and fisheries products including shellfish, aquaculture and those from fresh water (Phillips, B *et al*, 2003; Jacquet & Pauly, 2007). These schemes may provide, to varying extent, information on the condition of fish stocks, the environmental impacts of fishing and aquaculture practices, the effectiveness of fisheries management measures, animal health and welfare, and social, labour and ethical aspects. They take a variety of forms and embrace: third party certification schemes that include the option of labelling of products from specific fisheries and aquaculture operations; lists of 'good' and 'bad' fish species (in terms of buy or avoid) published by environmental NGOs; supermarkets and seafood brands providing advice directly to their customers on their sourcing policy and product lines; and standards and advisory services provided by national governments. Target recipients for these schemes range along the value chain and communicate to channel intermediaries through to end consumers.

For these approaches to work effectively, good quality information is required about the provenance of the fish being purchased. However, with the rapid increase in the number and type of schemes there has been little opportunity for harmonisation of methods and advice. Particularly in the fisheries sector there is sometimes conflicting advice presented by third party certification schemes and NGO sponsored recommendation lists about what is sustainable and what is not. In aquaculture certification, a more recent phenomenon, there has been greater movement towards standardisation and equivalence to counter this problem. A lack of consistency of approach and contradictory recommendations of the various schemes have the potential to confuse consumers, blur the differences between what is good and what is not, and erode the potential benefits of better information for purchasing decisions. Perceived inconsistencies will also tend to undermine trust and credibility of any future communications.











This paper presents the results of an objective review (FSIG & MRAG, 2010) of a selection of certification schemes and recommendation lists for both capture fisheries and aquaculture based on an evaluation commissioned by the Fish Sustainability Information Group, an international consortium representing a variety of national organisations concerned with seafood marketing and overseen by the UN Food and Agriculture Organisation (FAO). Through this review the intention is to develop a clearer picture of what constitutes best practice in a fish sustainability information scheme. Given the space constraints of this paper the full version of the report may be useful and is available at: [http://www.marketing.stir.ac.uk/News/FSIG\\_Report.pdf](http://www.marketing.stir.ac.uk/News/FSIG_Report.pdf). The basis adopted for this review was the guidelines developed by FAO for ecolabelling/certification of capture fisheries and aquaculture (FAO *Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries* (FAO, 2005a) and the draft FAO *Technical Guidelines on Aquaculture Certification* (FAO, 2008)). The FAO guidelines cover minimum substantive requirements (relating to the content of the standard against which fisheries or aquaculture operations are assessed) as well as institutional and procedural aspects such as governance, certification and accreditation procedures, transparency and stakeholder involvement.









This is a highly dynamic and rapidly-developing area. Although a number of reviews of fish sustainability information schemes, and of ecolabels in particular, have been carried out previously (Gardinier and Kuperan Viswanathan, 2004; Leadbitter and Ward, 2007; Monfort, 2007; Macfadyen and Huntington, 2007; OFIMER, 2008; Sainsbury, 2008; Washington, 2008, Roheim, 2008, 2009), the schemes are continuously improving and adapting their methodologies. As a result such reviews can become dated quite quickly; this review provides a snapshot of the current state-of-affairs of the sector.

## **Methodology**

A list of certification schemes and other organisations that provide guidance on sustainable fisheries and seafood was compiled totalling 29 schemes from which 17 were selected for detailed review as shown below. The selection aimed to cover a range of different types of scheme to provide representative and informative coverage, and includes those that provide certification and ecolabelling, organic certifiers, national standards and recommendation lists. The chosen schemes include aquaculture and capture

fisheries across a wide geographic range, and schemes developed by trade associations, private/independent organisations, NGOs and governments. In addition to the 17 schemes, a separate analysis of the approaches taken by three leading supermarkets was undertaken, together with a review of the presentation of fish sustainability information on twenty-five supermarket websites.

Certification Schemes		'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	
	Naturland	Species specific standards developed for carp/pond											Standards developed for capture fisheries				
	Global Aquaculture Alliance	Organisation founded															
	GlobalGAP	Founded as EurepGAP							Aquaculture certification initiated							Became GlobalGAP	
	Marine Stewardship Council	Organisation founded															
		Independent from WWF & Unilever															
	Thai Quality Shrimp	Initiative commences					Implementation commences										
	Australian Government: DEWHA	EPBC Act passed					First fishery approval										
	Soil Association	Organic aquaculture standards commence certification											Organic shellfish standard				
	Krav	Aquaculture standards developed															
		2001-05 development of standards for capture fisheries															
	Friend of the Sea														Organisation founded		Operations begin
	Marine Eco-label Japan	Organisation founded															

Recommendation lists & Information providers		'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	
	WWF	Discussions for MSC											Started developing methodology for assessing fisheries				Discussions for ASC
	Monterey Bay Aquarium	"What is a fish lover to eat?" produced for Fishing for Solutions exhibit 1997-1999															
		Seafood Watch' Initiated															
	Marine Conservation Society (UK)	Publication of the 'Good Fish Guide'; 2004 launch of 'Fishonline'															
	Fishwatch	Start to develop FishWatch															
	Goede VIS													Programme started by NSF			
	Australian Marine Conservation Society	Produced seafood guide															
	Greenpeace												Started developing methodology for assessing fisheries				Seafood campaign aimed at retailers launched
	Sustainable Fisheries Partnership														Organisation founded		

A framework was developed to provide structure for the collection of information. This covered: the scope and type of organisation administering the scheme; what they claim; how the scheme is implemented (including assessment methodology, information sources and system integrity); what the

results are in relation to claims of environmental, economic and social benefits; and organisational costs and funding. A basic list of questions under these five categories was developed for the scoping phase, and a more in-depth set of questions was generated to assess the schemes against the guidelines initiated by the FAO for certification of capture fisheries and aquaculture (FAO, 2005a; FAO, 2008).

The FAO guidelines for ecolabelling of fish and fishery products from marine capture fisheries specify three essential components of a certification standard (the minimum substantive requirements) against which a fishery is assessed: the management system; the stock under consideration; and ecosystem considerations. A fish sustainability information scheme covering capture fisheries should include all three of these components. Indicators of the performance of a fishery should cover the type, amount and quality of information available, the way a management system responds to different circumstances and, crucially, the outcome, i.e. the actual status of the target stock and the rest of the affected ecosystem.

The draft FAO guidelines on aquaculture certification cover four relevant areas: animal health and welfare; food safety and quality; environmental integrity; and social responsibility. In this case, however, the draft guidelines currently state that an aquaculture certification scheme may address one or all of these issues. This is reasonable, given the disparate nature of the four issues, and there is on-going debate about whether social responsibility should be included at all in the guidelines.

With regard to procedural aspects, the FAO guidelines for both capture fisheries and aquaculture consist of three main components: setting of standards, accreditation of certifying bodies and certification to verify compliance with the standard. Standard-setting should be carried out by a specialised body, or a technical committee of independent experts. The FAO guidelines are intended for ecolabelling and certification schemes only; there are no equivalent guidelines specifically for recommendation lists. Nevertheless, the guidelines have significant relevance for recommendation lists, particularly with respect to aspects of best practice such as transparency, independence and stakeholder consultation. The minimum substantive requirements are also applicable because lists provide assessments of sustainability.

Extensive searches of secondary data were undertaken through desk-based research, and were used to provide a foundation for the primary data gathered via questionnaires, direct interviews and consultations with the schemes to obtain up-to-date information. The principal sources of information were the organisations themselves. The review of the supermarkets, as a group analysis covering 25 different organisations, could not go into the same level of detail as the review of the other 17 schemes for reasons of resource; instead it was based on publically-available information and did not involve direct consultation with each company. Interestingly this approach is more akin to that which might be made by the regular enquirer.

## **Results & Discussion**

While certification schemes and recommendation lists function quite differently, they share the common purpose of trying to influence consumers and actors within the seefood value chain towards purchasing products that come from sustainable sources. The overarching goal is to modify market demand in a way that will support sustainability and ultimately benefit the environment.

The main markets for certified products are in Europe (Germany, Netherlands, UK, Italy, Switzerland and France), but the USA is also important for Thai Quality Shrimp (TQS), Marine Stewardship Council (MSC), GlobalGAP, Global Aquaculture Alliance (GAA) and the Australian Government Department of the Environment, Water, Heritage and the Arts (DEWHA). China and Japan are important markets for DEWHA-certified exports, and Japan is likely to be the main market for Marine Ecolabel-Japan (MEL-Japan) certified products. Schemes have had substantial success in increasing awareness of the issues associated with sustainable fishing and aquaculture within a limited number of mainly developed country

markets. However, inconsistent approaches and contradictory advice among the schemes have the potential to increase consumer confusion, industry concern, retailer guardedness, and reduce confidence.

The results of the review identify seven key attributes that all schemes should address in order to mitigate these problems: Scope; Accuracy; Independence; Precision; Transparency; Standardisation; and Cost-effectiveness. These key attributes align with FAO guidance and provide the structure for the discussion.

### **Conformance with FAO Guidelines**

Most of the schemes are currently improving their conformance with the FAO guidelines. In this regard, it is noted that the willingness of the selected organisations to participate in the review process was generally high. All of the certification schemes reviewed that apply to fisheries include the three minimum substantive requirements in their standards related to the Management system; the State of the stock and Ecosystem impacts. However there is significant variation in the way in which they assess performance: the extent to which the data used relate to the actual stock under consideration, how up-to-date the data are required to be, whether stock status reference points are explicitly considered and whether the stock assessment data are peer-reviewed to verify their quality and applicability. This has resulted, in some cases, in over-exploited stocks being certified, contrary to the FAO guidelines. Of the certification schemes, the MSC appears to make the most comprehensive, robust and transparent assessment of performance. In addition to the three components required by the FAO, Friend of the Sea (FOS) and Naturland both include social aspects in their standard for fisheries, while MSC and MEL-Japan do not. Because recommendation lists provide broader species coverage and in general do not assess on a stock-by-stock basis, they present less detailed information on individual stocks than certification schemes.

Aquaculture schemes are currently less consistent with the FAO guidelines than the fisheries schemes partly because the scope that aquaculture schemes should address is less clear than with fisheries and the FAO guidelines on aquaculture certification have not yet been finalised. The final version of these guidelines may not include all of the current substantive minimum requirements, indeed some may become optional. However the aquaculture certification schemes reviewed did address the four areas in the FAO guidelines albeit to different extents. Private sector and national standards for aquaculture certification cover food safety and quality most comprehensively, as might be expected for standards focussed on the export market. Recommendation lists cover all the minimum substantive requirements for fisheries, but not for aquaculture where they tend to focus on environmental issues.

The data gathered show that the main fisheries certification schemes comply with the procedural aspects in the FAO guidelines (on setting of standards, accreditation of certifying bodies and certification to verify compliance with the standard). However, the level of independence among recommendation lists developed by NGOs is generally lower than for certification schemes. With respect to the verification of compliance with the standard, there is also a clear difference between the certification schemes and the recommendation lists: assessments for the latter are generally conducted in-house by the creators of the scheme themselves and not by independent bodies. Nevertheless, during the course of this review there was an increasing tendency of the recommendation lists to seek greater conformance with the guidelines.

### **Drivers**

Certification schemes generally apply only to those fisheries/aquaculture facilities seeking to become certified. Most of the drive and initiative for improving sourcing policies has come from industry itself, including the fish catching sector, traders, processors, retailers (notably supermarkets), foodservice and their customers. Most sectors of the fishing industry are increasingly aware of issues related to overfishing and ecological impacts, and for some time have been making efforts towards sustainability. From the fishers' point of view, adopting responsible fishing practices can raise their profile, so that processors and retailers looking for sustainably and ethically-sourced products view them in a more

favourable light. Other factors for the industry as a whole include individual and generic brand reputations, a need to assure clients along the supply chain of the legality and sustainability of supplies, their own sustainability policies towards environmental responsibility, and also the fact that a sustainable company requires a sustainable supply of fish. NGO campaigns for sustainable seafood have increased the pressure on industry to act and source responsibly.

### **Accuracy**

The information used to conduct assessments for certifications and recommendation lists should be comprehensive, up-to-date and well-referenced, from published and peer-reviewed sources wherever possible. There are two key issues involved: firstly, the most recent and relevant information available must be used in the assessment of sustainability; and secondly there needs to be a clear procedure and timetable for updating the assessment as new information becomes available.

Recommendation lists involve much less detailed analysis of information than certification schemes and environmental NGOs may put wider campaign priorities ahead of fishery-specific, peer-reviewed outcomes from certification schemes. There is also significant variation in the way in which different certification schemes assess compliance with their standards, notably in the area of stock status. In some cases it has been found that seafood products are categorised differently by different organisations' recommendation lists, as well as having an ecolabel certification. Such situations clearly provide conflicting advice for consumers as noted in some high profile cases. For example, Alaskan Pollock was placed on Greenpeace's Redlist because it is a trawl fishery, yet MCS (UK) classify it in the middle (second choice) category, whereas Seafood Choices Alliance and Monterey Bay Aquarium (MBA) have approved 'wild' Alaskan Pollock, and the MSC have certified several pollock fisheries.

Certification schemes generally have a well-defined timetable for the certification, annual audits, overall duration of a certificate and the procedure for re-certification. Some NGO recommendation lists also review their information regularly, but others have a less rigorous updating procedure, meaning that information may continue to circulate after it has ceased to be accurate.

### **Independence**

Independence of fish information schemes is an important element of their credibility that applies at all levels of their development, governance and implementation. If they are to gain trust and credibility they should not be influenced by political or industrial interests, or wider campaign objectives. Providing it is available to all fisheries that meet the standard, without discrimination, the decision of a fishery to seek certification is an active and voluntary decision. The producers of recommendation lists, by contrast, are free to assess any fishery they chose and have the option of 'blacklisting' those that do not meet their sustainability criteria. In preparing recommendation lists, environmental NGOs may put campaign priorities (e.g. a global ban on bottom trawling) ahead of fishery-specific, peer-reviewed outcomes. Certification schemes consider the impacts of each fishery separately and have certified some fisheries that use bottom trawls. While the recommendation lists provide a simple message to consumers, the certification schemes' approach has greater scientific integrity, and produces a fairer and more independent result for the fishery.

To promote objectivity and independence (and in line with the FAO guidelines), certification schemes have de-coupled the certification process from the standard-setting, although in some cases the final certification decision still rests with the standard setter. Recommendation lists however, tend to be compiled unilaterally by each organisation, with assessments carried out in-house, and may be significantly driven by wider campaign objectives, hence introducing the potential for bias in the results.

### **Precision**

The issue of precision represents perhaps the clearest divide between certification schemes and recommendation lists. Certification is normally carried out on a clearly defined unit whereas recommendation lists in general do not assess on a stock-by-stock basis, but instead assess a fish species or group of species sourced from a region, and perhaps by an identified fishing or farming method. As a result recommendation lists present more general and less detailed information at lower resolution than certification schemes. Commonly this lacks precision and can mask variations amongst both well-managed and poorly-managed fisheries which can all become tarred with the same brush; in turn this may lead to advice that conflicts with certification scheme assessments. Such inconsistencies are unhelpful to information recipients and consumers and may have significant impacts on well-managed fisheries that should not be grouped together with other less-well-managed units. Certification schemes thus have the advantage of being able to drill down to the practices of a particular fishery or aquaculture facility and hence assess the sustainability of a clearly defined and distinct unit.

Another aspect of precision is that where the certification involves labelling of products, there must be a certified chain of custody that ensures only fish from the certified unit are labelled as such. Certification schemes usually include such a requirement, whereas recommendation lists generally cannot. This can make it unclear to consumers which fish products are included in a particular listing (good or bad). Furthermore, the information available to consumers on packaging at the point of sale often does not help with this distinction – for example there is often nothing specific about the ocean or region from which the fish were sourced and the precise species also may not be shown. From the consumer's perspective there is potentially great advantage in certification and ecolabelling because of its direct and unambiguous signal at the point of purchase (providing of course the scheme itself conforms to FAO guidelines).

### **Transparency**

To maintain credibility, there must be a high level of transparency at all stages in the process of developing and implementing the schemes. For certification schemes this includes publication of preliminary information on fisheries and aquaculture units to be assessed, so that stakeholders may provide timely input into the process, as well as the publication of assessment reports prior to the certification decision being taken. In the case of recommendation lists the full assessment (i.e. scoring against criteria) for fisheries should be made publically available for comment. However, it is generally more difficult to trace exactly how a particular conclusion has been reached for recommendation lists than for certification schemes. The latter usually have more transparent procedures and/or peer review processes.

### **Standardisation**

Different certification schemes certify different things, have different standards, and use different assessment methodologies. There has been little effort to date to seek equivalence between different, competing schemes, particularly in the capture fisheries sector. Whilst it is not realistic to expect all certification schemes to address exactly the same issues, where possible, greater standardisation and harmonisation between schemes should be encouraged. This would enable increasing recognition of equivalence between standards and would be a measure that would facilitate common understanding. This is already happening in the organics sector where certification under one scheme can lead to that product's 'organic' status being recognised by other organic labels.

Greater standardisation and harmonisation should be encouraged as a longer-term goal to work towards, and could lead to recognition of equivalence between schemes. This process should be greatly facilitated by the FAO guidelines. Likewise, for recommendation lists, the development and application of common methodologies for scoring and compiling the lists would help minimise the consumer confusion that already exists surrounding sustainable seafood. Within a scheme, quality control of certifications is necessary to ensure consistent application of the standard and its consistent communications to consumers.

### **Cost-effectiveness**

For certification schemes, there is a balance to be found between the scheme being comprehensive and robust, and the cost involved in assessing against a wide range of detailed criteria. A very complex scheme that requires a large amount of detailed information for the assessment may become too expensive to be accessible for the industry. On the other hand, a scheme which is very simple and has an assessment procedure that is quick and easy to implement, and is therefore less costly, may not be sufficiently robust to inspire and maintain the confidence of industry, retailers and consumers. Both will fail to achieve their objectives since they will not achieve the necessary uptake.

The costs involved vary, but certification processes are often time consuming and costly. The decision to seek certification is both active and voluntary; a fishery or aquaculture facility will generally choose one certification scheme to promote its environmental credentials, based on an assessment of potential costs and benefits involved, together with market recognition and how they can take advantage of this. Certification is primarily industry-funded, although other funding mechanisms exist. Governments have provided financial support to help fisheries go through private certifications, but this is not common. The industry generally bears the cost of preparing documentation and meeting any imposed conditions. Certification costs need to be kept under control to avoid costs becoming too high such that certain fisheries (e.g. small-scale fisheries or those in developing countries) are priced out of the system and cannot benefit from certification.

Certification of products coming from developing world fisheries and aquaculture operations is less frequent than from developed countries because of high costs and the production systems being more likely to be small-scale and data-poor. Certification schemes may therefore result in products being sourced preferentially (but unintentionally) from developed countries. Uptake of certification schemes in developing countries varies, but all schemes are seeking to improve this. There are varying approaches to making certification costs accessible to small-scale producers and to producers in developing countries, such as group certification, keeping audit costs low, or accessing public sector or grant funding.

### **Recommendations**

The FAO draft Guidelines for aquaculture should be completed and finalised as soon as possible. All fisheries and aquaculture certification standards and information schemes should voluntarily undertake to comply fully with the relevant FAO Guidelines (either capture fisheries or aquaculture as appropriate) and this compliance should be independently verified periodically.

Certification schemes and producers of recommendation lists (specifically NGOs) should enhance their consistency and credibility by seeking greater standardisation and harmonisation. Given the generally higher level of scrutiny provided by certification schemes, recommendation list owners should better align their lists with the outcomes of the schemes, providing the schemes conform well to FAO guidelines. Where conflicts between certification schemes and recommendation lists persist, recommendation lists should give clear justification for their difference of view. This will encourage increasing recognition of equivalence between certification standards and recommendation lists and will simplify procedures for industry; ideally complying with one sustainability standard should be sufficient, rather than having to go through the expense of numerous assessments against different standards. Greater equivalence is an achievable outcome as schemes align themselves better and more transparently with the FAO guidelines.

In line with FAO Guidelines, recommendation lists should have an independent standard-setting procedure and should distance themselves from undertaking assessments of fisheries and aquaculture operations against their standards, for example through having assessments conducted by independent



assessment bodies or groups of experts. The standard should be based on sound science and should not be biased by wider campaign objectives or the objectives of their funding bodies.

Certification schemes and recommendation lists should all ensure that the data they are utilising are as current as possible, and are appropriate to the fisheries or aquaculture units being assessed. Recommendation lists in particular need to improve their control of information, with specific indication of the publication date of each list and a clear procedure for updating when new information becomes available. In essence, each scheme must have a clear, scientific and documented procedure for accessing, processing, verifying, updating and presenting comprehensive and relevant information in a balanced, unbiased way. There is a clear need for recommendation lists need to define more explicitly the units of listing and make their work available for peer review.

With the growing number and variety of ecolabels, and consumers' general lack of awareness of labels and fish sustainability issues, retailers must increasingly take responsibility for selecting and promoting trustworthy ecolabels on behalf of their customers. They have an important role which is likely to increase in importance in the future. Supermarkets' own responsible sourcing policies are important and they should continue developing and coordinating these with existing schemes.

The market is increasingly demanding sustainable seafood products, but the volume of certified supplies is not sufficient to meet market demand. Certification schemes and recommendation lists should continue their efforts to improve the applicability of their schemes to products from small-scale and data-deficient fisheries and aquaculture operations (particularly those in the developing world) so that these products do not suffer unintentional market access barriers. The development of less data-oriented assessment methodologies and efforts to reduce the costs of certification are important in this respect. Initiatives that support fisheries improvement plans to bring these fisheries within the scope of certification should also be given a high priority. Similarly, transitional fisheries (fisheries that do not yet reach the required standards for certification schemes, but which wish to improve) should be encouraged and supported in their efforts to move towards sustainability.

Before committing to a certification scheme, industry and producers need to weigh up potential costs and benefits. The costs involved vary and the more demanding the certification requirements and standards are, the more expensive the conformity assessment process becomes, but the more robust and reliable the label itself is, generally. Consideration needs to be given to whether industry is in a position to undertake the work necessary to take advantage fully of the market recognition associated with certification and labeling.

### **Conclusions**

Fish sustainability information schemes cover a convergent, but still varied, range of forms of communication. Certification schemes generally provide a clear and unambiguous signal at the point of purchase regarding sustainability, and they are able to provide detailed information on particular stocks. However, recommendation lists fill an important niche because the number and availability of certified, labelled products is still relatively low. Recommendation lists therefore may help direct consumers towards a wider range of choices in their seafood purchasing decisions of uncertified/unlabelled products.

The scope of sustainability criteria used by certification schemes and recommendation lists is expanding. As our understanding of human impacts on natural systems improves, so the need for a more holistic approach to support genuinely ethical sourcing is increasingly recognised. Examples of new criteria include impacts of land based processing, labour standards, animal welfare and more dated measures such as food miles. As issues of climate change, carbon footprint, Life-Cycle Analysis (LCA) and Life-Cycle Costs (LCC) continue to gain prominence, additional criteria for labelling will arise and guidelines for certification will be needed. This is, however, a double edged sword, because additional criteria will

inevitably lead to greater complexity, and ways of communicating this to the consumer in a form that enables assimilation, rational response without adding to confusion will need to be found.

There is a high level of consensus in both commercial seafood firms and the NGO community regarding the importance of these schemes, and a strong level of commitment among all parties to a sustainable future for the oceans and seafood supplies. Uptake of these recommendations should help reduce consumer confusion surrounding which fish to eat and which to avoid and lead to a growth in confidence throughout the supply chain in the benefits of genuine sustainable sourcing. The challenge now is to maximise the value of fish sustainability information schemes in contributing to the overarching goal of a sustainable future for the oceans, by providing consumers and businesses with clearer, more accurate and more recent data, so that they can make properly informed choices about seafood.

## REFERENCES

- FAO, 2005, *Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries. Directives pour l'étiquetage écologique du poisson et des produits des pêches de capture marines. Directrices para el ecoetiquetado de pescado y productos pesqueros de la pesca de captura marina*. Rome/Roma, FAO (2005). 90p. Available at <http://www.fao.org/docrep/008/a0116t/a0116t00.htm>
- FAO, 2008, *Technical Guidelines on Aquaculture Certification. Fourth Session, Sub-Committee on Aquaculture, Committee on Fisheries*, Puerto Varas, Chile, 6–8 October 2008. COFI/AQ/IV/2008/Inf.7. Rome: Food and Agriculture Organization of the United Nations. Available at <ftp://ftp.fao.org/docrep/fao/meeting/014/ai770e.pdf>
- FAO, 2009, *The State of World Fisheries and Aquaculture 2008*. Rome: Food and Agriculture Organization of the United Nations.
- FSIG & MRAG, 2010, *Review of Fish Sustainability Information Schemes*. Final Report. London: MRAG Ltd. pp180.
- Jacquett, J.L., and D.Pauly, 2007, The Rise of Seafood Awareness Campaigns in an Era of Collapsing Fisheries. *Marine Policy*. 31: 308-313.
- Leadbitter, D. and T. J. Ward, 2007, An evaluation of systems for the integrated assessment of capture fisheries. *Marine Policy*. 31: 458–469.
- Gardinier, P. R. and K. Kuperan Viswanathan, 2004, *Ecolabelling and Fisheries Management*. Worldfish Center Studies and Reviews 27, 44.
- Macfadyen, G. and T. Huntington, 2009, *Potential costs and benefits of fisheries certification for countries in the Asia Pacific region*. Report prepared for the APFIC Regional Workshop on Certification Schemes for Capture Fisheries and Aquaculture, HCM City, Viet Nam, 18-20 September 2007. Poseidon Aquatic Resource Management Limited, Lymington, UK. 63p.
- Monfort, M.C, 2007, *Ecolabelling Schemes for Fisheries Products*. March 2007. MCM Consultancy.
- OFIMER, 2008, *Etude de Faisabilite de la Mise en Place d'un Ecolabel Dans la Filiere des Produits de la Peche Maritime*. Rapport Final au 08/02/08. Office National Interprofessionnel des Produits de la Mer et de l'Aquaculture (OFIMER) (2008). Etude réalisée par: Pôle Filière Produits Aquatiques et Bureau Vertias. Projet cofinance par L'Union Européenne.

- Phillips, B., T.Ward and C.Chaffee, 2003, *Eco-labelling in Fisheries: What is it all about?* Blackwall. 196.
- Roheim, C.A. 2008. The Economics of Ecolabelling pp. 38-57 In T. Ward and B. Phillips, (eds). *Seafood Ecolabelling: Principles and Practice*, Oxford, UK: Blackwell Publishing.
- Roheim, C.A., 2009, An Evaluation of Sustainable Seafood Guides: Implications for Environmental Groups and the Seafood Industry. *Marine Resource Economics*, 24:301-310.
- Seafish, 2007, *Consumers attitudes to sustainable seafood*. Edinburgh: Seafish Industry Authority..
- Sainsbury, K, 2008, *Review of Guidelines for Ecolabelling of Fish and Products from Capture Fisheries, and Recommended Minimum Substantive Requirements*. Report for the Expert Consultation on Ecolabelling Guidelines for Fish and Fishery Products, Rome, 3-5 March 2008. Rome: FAO.
- Washington, S, 2008, *Ecolabels and Marine Capture Fisheries: Current Practice and Emerging Issues*. April 2008. GLOBEFISH Research Programme, Vol. 91 Rome: FAO.
- WWF, 2008, *Evaluatie Leven in Zee2: 2006-2008*.