ESD and Fisheries: What, Why, How and When.

A Stakeholders Workshop

Proceedings

Edited by David C Smith and Ross Hodge

June 2001

FISHERIES RESEARCH & DEVELOPMENT CORPORATION

SCFA

Standing Committee on Fisheries and Aquaculture

Sustainable Fishing - Healthy Seafood
Seafood Industry Victoria Inc.

MARINE & FRESHWATER RESOURCES INSTITUTE

Natural Resources and Environment

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Geelong Performing Arts Centre
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Edited by [1]David C Smith and [2]Ross Hodge

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Introduction

ESD has become a major objective of the fisheries legislation of most jurisdictions. A key component is the need to measure and report performance against ESD objectives. Setting sustainable levels of fishing has, of course, been central to fisheries management and science for a long time. The concept of ESD, however, is far broader than the traditional focus on yields derived from target species. ESD attempts to balance the environmental, economic and social aspects of fisheries.

In 1998, Standing Committee on Fisheries and Aquaculture (SCFA) charged its Research Subcommittee with the task of developing guidelines for assessing fisheries against ESD objectives. In 1999, Environment Australia (EA) proposed changes to Schedule 4 of the Wildlife Protection Act. It was proposed that the general exemption of commercial fish species from Schedule 4 be removed. It will be a requirement that "species are taken in a manner that is demonstrably ecologically sustainable" before being given an exemption from the Act. EA has developed a set of criteria for assessing the sustainability of commercial fisheries. SCFA formed a Sustainability Indicators Working Group to coordinate a national response.

These national initiatives should also been seen within the context of international developments such as the FAO's 'Code of Conduct for Responsible Fisheries' and 'Guidelines for Developing Indicators of Sustainable Development for Wild Capture Fisheries', the Marine Stewardship Council's (MSC) 'Principles and Criteria for Sustainable Fishing' and ISO 14000.

It was against this background of major developments by a range of agencies, both national and international, that this workshop was held. The initial idea was for a small workshop to be held in conjunction with Geelong's Seafood Fair. However, the concept developed rapidly following SCFA support and substantial funding from FRDC.

The workshop program involved leading representatives from the commercial and recreational sector, conservation groups, science and government. It was attended by almost 200 delegates. The workshop presented a timely opportunity to ensure that all participants were aware of the issues, spoke the same language and took ownership of the process.

Many people contributed to the organisation of the workshop including Lyn Warn, Richard McLoughlin, Kelly Roffey, Diane Mahon and Peter Dundas-Smith. In addition, Diane Mahon was the text editor for these proceedings.

David Smith and Ross Hodge

June 2001

Opening and Welcome Address

Richard Rawson

Acting Secretary
Department of Natural Resources and Environment,
PO Box 500, Melbourne VIC 3002

Thank you for this opportunity to be here and open this very important conference. I would like to specifically welcome Frank Meere, Managing Director of AFMA, Connall O'Connor, 1st Assistant Secretary, Marine Group Environment Australia, Diane James, Chair Victorian Coastal Council and Russell Reichelt, Chair, Fisheries Research and Development Corporation. Welcome to representatives of other government agencies, fisheries managers, scientists, compliance officers, people in the education field and obviously representatives from the commercial industry sectors, aquaculture, conservation groups, and recreational and traditional fishers.

I understand that when the conference started the organisers expected about 50 to 80 people to attend, but in fact 200 have registered. This is a testament to the interest in the topic that is before you. Before going any further I have to make a confession; it's always helpful to get these things out in the open. I am a forester, and I know there are other foresters in the room. During the course of this workshop they might admit it. I say that because I can relate to some of the issues you will discuss and maybe there is some forestry experience that might help you.

I first became involved in fisheries about 11 years ago as a regional manager based at Bairnsdale. I started to learn what fisheries management was about. I guess my view at the time became (I am not sure whether people here would agree) that fish are really trees that swim. Similarities between the two areas are very profound and there are probably synergies here that people in this room might consider. Not, of course that I am saying forestry has got it all right. You would be aware that it never seems to be off the agenda or the front page of the newspapers.

From my experience in recent years, particularly in the regional forestry agreement process, I know it is hard to talk about ESD in a meaningful way. You get many perceptions and many points of view. It becomes very challenging to synthesise it. There is an enormous debate about what ESD really is. How do we implement it? How do we measure it? How can it be demonstrated?. From my experience, these aren't questions for which there are simple or ready answers. Any attempt to answer them will be dependent on the perspective and the background of the people involved in the debate and the argument. So there is a very powerful, social aspect to this that cannot be and should not be ignored. There is science and there is logic but this is no where near enough to win the day or win the debate. It is very much how people in a social and community sense see sustainable development as much as it is about what they will accept in terms of science and logic.

ESD is not a new concept. I am told it came into fashion about 30 years ago at the United Nations Stockholm Conference in 1972. In the Australian context, I assume many in this room were involved during the 1990s when the Commonwealth government started to look at ESD in a systematic manner. The areas covered

included: agriculture, energy, fisheries, forests, manufacturing, mining, tourism and transport. So even 10 or 12 years ago and there was a considerable push within Australia to really start addressing ESD. When it was commissioning studies into each sector, the Commonwealth asked the Fisheries ESD Working Group, in particular, to be guided by four particular goals to which the government was committed. These are important to revisit:

- The improvement of individual and community wellbeing and welfare by following a path of economic progress that does not impair the welfare of future generations
- The tradition of equity within and between generations
- The recognition of the global dimension
- The protection of biological diversity and the maintenance of ecological processes and systems.

We should keep these in mind as we go through this process.

Successive Victorian governments have a long commitment to ESD and I know the present government has confirmed its commitment to ESD in a number of ways. In pre-election policies, the current government said "It believes that our quality of life depends on properly managing our environment and protecting our precious natural heritage and further that the government will incorporate environmental and conservation considerations into all aspects of planning and government program delivery".

Just to come back briefly to the purpose of the workshop. Australia is one of the small number of countries that are clearly leading the world in sustainable fisheries management. The task of managing fisheries is complex and is set against a shifting social background and a changing scientific background with natural fluctuations in fish stocks and so on. Therefore it involves not only science and the natural situation but also the human impacts associated with technology change, and changing social acceptance of the way our managers of resources do things. There is a high level of responsibility and I think that to take a very important industry and natural resource forward in a ecologically sustainable way is fundamental to your roles either as managers of the resource or participants be it from a resource conservation or industry perspective.

The final two points, I would like make to go back to the forestry experience. Briefly, about 3 or 4 years ago, I attended a forum with a group of young people on a leadership course. Following talks by myself and a representative of the timber industry, questions were asked. One of the questions was 'Can you tell me the things you do are ecologically sustainable?' The representative from the timber industry said yes, we are sustainable. I said no, I can not prove to you that what we do is sustainable. The industry representative and I had a fine debate in the car after the meeting.

I justify this response and my position by the fact there is no end point to ESD. I have never seen the end point in the last 10 years with the debates I have been involved in. ESD is about a journey. Its about a process and system that keeps us moving forward

in accordance with the science and social issues that revolve around the management of the resource. Anyone who thinks that, out of this conference, we will have the answer will be wrong in my view. However, if you can get to the level of processes that continually take you forward, to continue to improve what you do then, I think, you are on the right track.

Finally, using the forestry example again, people often ask me to summarise what good forest management is about (and, I think, what good fisheries management should be about). My view has always been that it is about keeping the options open for future generations. Decisions aren't made today that people in ten to thirty years time will look back and ask 'why did they do that?' That is what good management is about, not getting in that position. It involves giving those in the future the ability and tools to continue forward.

So, welcome to Geelong. This is an important workshop. I am sure there will be terrific contributions from around this room. I look forward to seeing the outcomes because sustainable management of our natural resources is the responsibility of all of us.

Ross Hodge

Executive Director
Seafood Industry Victoria
South Yarra Square, Level 2/177 Toorak Road, South Yarra VIC 3141

Welcome to Geelong with a special welcome to Victoria to our speakers and delegates from interstate and thank you for supporting this

ESD and Fisheries: What why How and When. Stakeholders workshop.

We hope everyone enjoys their stay in Geelong.

I think most of us have second thoughts about why we take on certain tasks.

When David Smith Richard McLoughlin and I first mooted the idea of holding an ESD conference in Victoria it seemed like a good idea.

I have to be honest in the three months since SCFA provided their support and FRDC gave the green light to provide funding for this conference I have had a few moments of concern about what have we were actually letting ourselves in for.

Mostly due to the tight time frame.

However with more than 180 delegates from each state representing recreational, conservation, indigenous, aquaculture and commercial interests in fisheries management. Representation from science and fisheries agencies from each state and the commonwealth and add a few New Zealanders making the trip across the Tasman, the need to hold and the timing of this ESD workshop has been well and truly justified.

Originally we had anticipated an attendance of somewhere between 100-125 however the response with more than 180 delegates has been exceptional.

I would like to acknowledge the co-operation of all the guest speakers in making themselves available.

Many have re-arranged other commitments at short notice to be here for the two days.

I am confident that we will find all the speakers will have much to contribute to the session they have been asked to present too.

Combined all speakers will present a very comprehensive perspective of the role of ESD in fisheries.

The organisers are confident that the theme of the workshop being presented as the "what, why, how, when and where to now with ESD and Fisheries" will identify the major issues and establish priorities for setting future direction. This will enable all stakeholders to move forward with some common ground to ensure our fisheries are to be genuinely managed by the principles of ESD.

At the end of most sessions there has been time set aside for delegates to direct questions to the speakers and make comment.

The final session "Where to now", will also provide further opportunity for delegates to make comment.

Please use the workshop to interact with the speakers and other stakeholder groups.

Organising this workshop has kept a few people extremely busy putting in a lot of effort over some exceptionally long hours.

I would acknowledge the tremendous support from

Diane Mahon – MAFRI for the work on the registration and workshop papers, and chasing up the speakers to provide CVs and abstracts.

Kelly Roffey – SIV For co-ordinating all the registrations for the workshop, dinners and accommodation.

Lyn Warn – Lyn wears a few hats, from FWD abalone, Swan Bay Seafoods and Vice Chair of SIV.

Lyn has not only provided tremendous support for this Workshop in securing all the available accommodation but has also organised tonites Dinner at La Parrisenne, tomorrow nites seafood sensations and has made a significant contribution to the Launch of the National Seafood Training package on Saturday and the Geelong Seafood Fair.

I am bit concerned Lyn might wake up next Monday morning when everything is over and go into shock that its all happened and finished.

Once again welcome to Geelong and to the ESD and Fisheries: What Why, How and When Stakeholders workshop.

I am confident everyone attending will find the Workshop a valuable experience.

I would now like to introduce Mr. Peter Dundas-Smith to make an address on behalf of Fisheries Research & Development Corporation, the major sponsor of the workshop.

Peter Dundas-Smith

Executive Director
Fisheries Research & Development Corporation
PO Box 222, Deakin West ACT 2600

This conference will be a turning point for fisheries ESD

To see the way ahead we must know where we have been

FRDC has invested about $40m in ESD related projects over the past 4 to 5 years. Other investment has been even more say a total of $100m.

What do we have to show for it?

- the first MSC certified fishery in the world in western rock lobster
- the best managed fisheries in the world according to our own dogma

But what do others think? Do they know? What have we done to make them know? What do we have to show them for the $100m? Where are the transparent processes that underpin the ESD journey that Richard referred to? What does it look like, feel like, smell like?

(Dog 1) The problem is that for too long the 'scientific' tail has been wagging the 'stakeholders', dog. And why? Because stakeholders, particularly industry, have been hard to identify and hard and/or unwilling to engage. Biologists have been playing the roles of economists and sociologists. We have all under invested in communications.

Over past 2 - 3 years there has been a noticeable change with people like Bryan Pierce emerging who know how to engage stakeholders.

(Dog 2) So, how do we make a happy dog?

must put stakeholders in the driving seat
must identify who our customers are (like the environment government departments and NGOs)
must identify our customers needs
must identify how we are going to meet our customers needs

We need to develop an environmental certification framework. By 2020, all 140 fisheries will have some form of certification and management agencies too will need to have their processes certified through external audit.

Having a framework is like walking onto the field to play football. You only know what code you are going to play when you look at the style of goal posts at the end of the field.

We need to develop a customer agreed strategy for implementing ESD - underpinned by an R&D plan and most critical a communications plan working towards this is our goal for the nest two days.

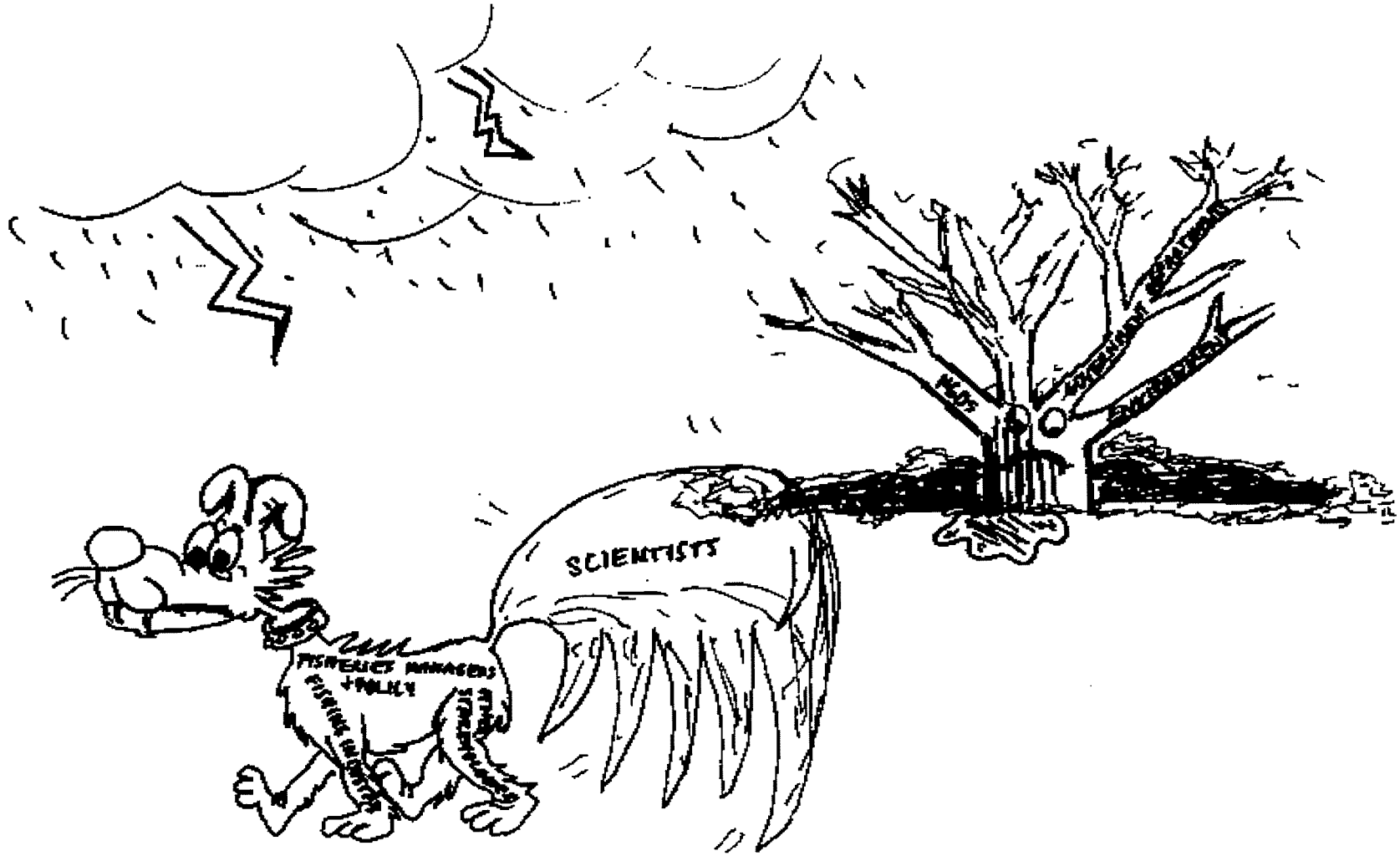

Figure 1.

Figure 2.

Session 1

What is ESD and its role in Fisheries?

Chair:	David Smith
Speakers:	Tor Hundloe
	Derek Staples
	Geoff Gorrie

Introduction to Ecologically Sustainable Development

Tor Hundloe

Professor of Environmental Management
The University of Queensland, St Lucia QLD 4072

Introduction

History will not recall a certain day in October 1987 as the day the stock market "crashed" (an event not comparable to the "crash" of 1929) but rather as the day sustainable development entered our collective consciousness. It was the day that the United Nations' World Commission on Environment and Development released its report "Our Common Future" (generally referred to as the Brundtland Report after its chair, Gro Harlem Brundtland, then Prime Minister of Norway).

Well before this event, sustainability – in its various forms – was important and something that some attempted to practice. For example, attempting to sustain productive soils has been a practical issue for decades; attempting to sustain ecological processes and biodiversity through a reserve system (that is, National Parks) has been undertaken in this country since the last century; and attempting to sustain jobs, regional or local communities, and lifestyles has been a preoccupation of humans since at least the industrial revolution.

But since 1987, and more recently in Australia with the work done by the Ecologically Sustainable Development (ESD) Working Groups and the acceptance of the principles of ESD, more focussed attention than previously applied has been given to practices which have the objective of moving society towards a sustainable future.

Many people tend to think of sustainable development as a substitute for environmental management; that is, about looking after rainforests and reefs, controlling pollution in cities, and so forth. It is about these things, but it is also about much more. It is about sustaining (managing, looking after) the planetary ecosystem and its component parts. It is about sustainable habitats for plants and animals. It is about sustaining human life. Now and into the future.

It is more. It is about improving degraded ecosystems and it is about improving human wellbeing and happiness. This is why the word "development" is there. Let us think about what this means.

At its most general and highest level, sustainable development is about making a better world, for human beings living today, for those who will in the future, and for the other animals with which we share the earth. The word "development" (not to be confused with "economic growth" as conventionally defined) explicitly recognises that human wellbeing — human health, living conditions, social and economic conditions — can, and for the poor of the world must be, improved.

To become a little more precise in defining sustainable development, the appropriate sources are "Our Common Future" and Brundtland herself.

The fundamental prescription for sustainable development laid down in "Our Common Future" is that the needs of the present generation should be met without

compromising the ability of future generations to meet their own needs. The Chairman of the Commission, Gro Harlem Brundtland, (quoted in Pearce, et al 1989 p174-175) has expanded on the concept and the necessary actions thus:

> "There are many dimensions to sustainability. First, it requires an elimination of poverty and deprivation. Second, it requires the conservation and enhancement of the resources base which alone can ensure that the elimination of the poverty is permanent. Third, it requires a broadening of the concept of development so that it covers not only economic growth but also social and cultural development. Fourth, and most important, it requires the unification of economics and ecology in decision making at all levels".

To elaborate on this quote, take the matter of poverty first. "Our Common Future" categorically states: "Poverty is a major cause and effect of global environmental problems" (p.3). There are over 1 billion poor in the world who, to feed their families today, are forced to destroy forests and reefs. This global perspective should not be forgotten. If we turn our focus to Australia, it is not argued that poverty is a cause of environmental degradation. However, the idea that a farmer (or fisher) who, as a consequence of a major drop in price for this products, becomes poor will put greater pressure on the environment should not be dismissed.

Next consider broadening the definition of development: no longer is GDP to be the measure of progress. Some critics of the Brundtland Report, conveniently, overlook that when the report calls for an increase in growth, the type of growth sought is qualitatively differ from conventional economic growth. Consider the notion of integration of economics and ecology. Without changing the meaning, this can be stated as to integrate ecology and its related sciences (such as biology and chemistry) with economics and its related social sciences (such as anthropology and psychology). Integration is about obtaining a comprehensive understanding of development, something a narrow disciplinary perspective does not provide. What will result from this process is an understanding of the inter-dependencies between the economy, society and the environment. A healthy environment is a prerequisite for a healthy economy, in the long term.

With regard to integration, the conventional perspective is that the "three e's" need to be integrated: ecology, economics and ethics. The ethical component is there because key principles of sustainable development (such as looking after the future and addressing poverty) are not "laws" of ecology or economics but statements of human intent.

An Ecological Perspective on Sustainability

Let us delve deeper into the interdependencies between the environment and the economy. A starting point is to note that existing ecosystems are a result of evolutionary processes, and these continue. Ecosystems have adapted to "disturbances" which have occurred through time. Some types of ecosystems are more vulnerable to disturbances than others; for example, tropical ecosystems (which have low variability in temperature and rainfall, and have relatively stable populations of fauna and flora) are vulnerable to changes such as large-scale forest clearing, while temperate ecosystems (having evolved in the face of much greater

range of climate variability, and having less stable populations) are more robust in face of large-scale human impact.

This difference between ecosystems is one reason why ecologists argue for the conservation of biodiversity. They understand that evolution operates by selecting from biotic systems those that are most suited to current conditions. And they understand that conditions change. The greater the diversity (biodiversity, genetic diversity) the wider the range of possibilities for a successful evolutionary response to human-induced changes. The fundamental thing that follows from this is that a concept of resilience characterises an ecological approach to sustainability.

While economists commence with human interests first, ecologists start with the properties of the ecosystem — and treat people as part of it. However, ecologists don't necessarily ignore human interests. Ecologists take sustainability to refer to the continuing existence of a functioning biosphere. They are, hence, interested in the patterns of behaviour of ecosystems.

I have already mentioned resilience and will say more about it. Before that we should note another concept, and that is stability. This is a propensity to return to an equilibrium following a disturbance. Some populations (say of animals) jump around a lot with disturbances (that is, result in big swings) while others exhibit more stable behaviour. A resilient system is one that stays functioning much the same way in face of a major disturbance (or shock to it). A system that is not at all resilient collapses in these circumstances.

It is important to note the resilience refers to the behaviour of the system not necessarily a particular population (say, a particular animal). It is not necessary for any particular species to survive for a system to be resilient.

A major problem is that we have no agreed indicators of resilience, something requiring much more research. Some argue that the more complex an ecosystem, the more stable it is — and hence complexity is "good" for ecosystem health in case of a disturbance.

Complexity is measured by the number of species in an ecosystem, and the interactions (such as links in the food chain) between them. The central idea is that the more linkages there are the less of a problem if one link is removed in a disturbance. We now understand that matters are more complicated than this. That stated, what is to be sustained is the process of ecological change: "Let nature have her way".

An Economic Perspective on Sustainability

There are a number of fundamental points to note before we work through what this means. The following draws on Commons' (1995) excellent work. First, by definition an economic perspective is anthropocentric (human-centred). This means the state of the biosphere is only of concern in so far as it meets human interests.

Second, human interests are viewed from the point of view of consumption. It does not have to be consumption of only material goods, but will include environmental amenity services. Economists can measure the dollar values people put on "consuming" an array of beautiful fish swimming amongst coral. The peace and quiet of sitting with a line in the water — without any real interest in catching a fish — is also an act of "consuming". However, given that the impact on the environment

results from the consumption of goods (eg. minerals, timbers, food) lets think about such as being the fundamental issue for the present discussion.

Third, and related to the second point, is the notion that consumption occurs because humans have the income to spend on it. What is going to be important, therefore, is to keep income on a per capita basis constant if it is to be sustainable. A famous economist, John Hicks, back in 1946 defined income to be the maximum amount that a person or a country could consume over some time period and still be as well off at the end of that period. Therefore, if income remains the same through time the result is sustainable consumption. Below we will relate sustainable consumption (or income) to a constant stock of capital, and we will differentiate between human-made capital, natural capital and social capital. Sustainable consumption requires sustainable income requires a sustainable biosphere!

Fourth, to formulate economic "rules" for sustainability will require us to make certain assumptions, because we don't know all there is to know and because making assumptions allows us to simplify the "rules". We'll spell these out as needs be. You will find one rule, the Hartwick rule, to be an "ideal" (or a model for behaviour) if we are to seek to move towards sustainability, rather than an empirical description of how present day economic behaviour works.

We are going to contrast two economic models. One is often called the "cake-eating model" while the other is the Hartwick model (or rule). Let's deal with cake-eating to start with. To make this as simple as possible, let's make some assumptions as we go. First, let's assume we have a finite (fixed) stock of a non-renewable resource. Second, assume recycling is impossible. Third, assume we humans directly live off this non-renewable resource, and that it is essential to life. Fourth, assume there is no population growth. Now, take our non-renewable resource — our cake. We have to divide it up amongst members of society. The question is: What is the largest rate of per capita consumption that can be maintained indefinitely. Or, if you like, what is the maximum sustainable rate of consumption? The answer is clearly "zero". There is no positive use rate for a finite non-renewable resource stock that can be maintained indefinitely. Sustainability is not possible in the cake-eating world.

This brings us to the Hartwick model. Again to simplify, let us make some assumptions. First, assume the non-renewable resource is not directly consumed; rather it is used to produce a good (or output) which can either be consumed or added to the stock of capital — and that stock is used to produce a good. Recall capital refers to machines, factories, etc which combined with labour and raw materials help us produce goods for consumption. Second, as before let us assume no change in population.

The question is: is sustainability possible in this situation? The answer depends on the substitution possibilities between the non-renewable resource and human-made capital. Obviously if the resource is absolutely essential in the production process, no human-made capital can substitute for it. However, if some degree of substitution is feasible and we are to make a rule about substitutability we get the Hartwick rule. We are going to need to have a time path to use (or extract) the non-renewable resource and we are going to have to save and invest at a particular rate. That is, the Hartwick rule is about how much output can be consumed in each period and how much must be saved and added to the human-made capital stock.

Let us make this rule more explicit. In each period the amount needed to be saved and invested is the amount by which the use of the non-renewable resource contributed to production of some good over and above the cost of extracting the resource (say, a mineral).

This amount (the difference between the costs of extracting the non-renewable resource and what the use of the resource adds to the value of the good being produced) is called rent. Put another way: all factors of production, labour, land, capital, entrepreneurship and natural resources earn a return (eg. labour gets wages, entrepreneurs get profit). What natural resources, in this case a non-renewable resource, gets is rent. The Hartwick rule says invest this rent (in each period) in some other productive economic activity. This means we will have constant capital (call it investment if you like) and as a consequence constant consumption — indefinitely, if substitution is feasible indefinitely.

Let us put this in simple English. If human consumption involves depletion of an asset (say, a mineral or fossil fuel) it is sensible to build up another capital asset to replace it. That is, if for example you are a major oil producing nation you would be smart to invest the rents (let us think of them as "profits") in, say, renewable energy technologies. In theory, when the day comes that there is no more oil, you have something to replace it — and per capita consumption remains the same in each period.

There are a couple of crucial assumptions here. First, the population has to remain constant, otherwise we are going to need technological progress (in terms of increased production per unit of input) to keep per capita consumption constant. Second, we are going to have to rely on our investment in alternatives to be successful. Some alternatives to fossil fuels are well-researched and ready to be brought on stream at the appropriate time, others are speculative dreams of inventors. If we consider the enormous range of economic goods and services which nature provides, little is known about the feasibility of substitution possibilities for most of them.

It was noted above if something is absolutely essential in the production of future income (or goods and services humans want to consume) the notion of substitution is not relevant. In particular, we can't substitute human-made capital for certain natural capital: there is no artificial environment capable of performing the functions of a mangrove swamp. The notion of keeping capital (and consumption) constant in this situation would require passing on to future generations the same amount of mangroves and the same amount of human-made capital as we have now.

All the essential life-support systems of the environment are critical natural capital. This leads to the concepts of "strong" and "weak" sustainability. The former requires that critical natural capital and the life-support functions of the environment are protected indefinitely: such natural capital stocks are to be held constant through time regardless of the amount of human-made capital available.

Weak sustainability is based on the assumption that there is perfect substitutability between natural and human-made capital and all that is required for constant income is that aggregate capital is held constant.

A realistic approach is to support strong sustainability: if something is essential for the future wellbeing of humans (say, natural capital such as good quality soil which is necessary for food production) make a decision that it is to be preserved; that is, set a

constraint (a safe-minimum standard) and only then allow market forces to come into play. In a fisheries perspective this is the principle applied in setting global quotas. Economists call this "constrained optimality".

The reason that the adjective "ecological" is used with "sustainable development" in Australia is made explicit the point that safeguarding critical natural capital is a prerequisite to sustainability. We can note in passing that much of the debate in this country is not about sustainable development per se but rather than about what is or is not critical natural capital. This should be a matter for science to solve. By applying a constraint, as argued above, the problem that arises with discounting the future, as is the convention in economic analysis, is also circumvented. We can also impose social constraints, and only then let the market determine outcomes, as discussed below.

A Brief Comment on the Ethical Perspective on Sustainability

Ecological analysis by itself cannot resolve environmental conflicts. Nor can economics. Arguments about facts only make sense if set in a context. That context is the ethical background of how we want to live.

We have already noted two big ethical principles underlying sustainability. The first is the notion that: "Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs "(Brundtland, 1987, p.43). This is what is called the intergenerational equity ethic (which is the sustainable income concept discussed above).

Add to the quote above the following statement in the Brundtland Report (1987, p.43): "Sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation". This is what is called the intragenerational equity principle (or how to be fair today and ensure the poor have an option other than degrading the environment).

Before seeing how ecology, economics and these ethics could be brought together for the purpose of pursuing sustainability, lets note that an additional range of ethical positions exists and attract different people. They are subject to considerable discussion and debate.

One ethical stance already mentioned is human-centred (or anthropocentric). The environment is valuable in so much as it is valuable to humans. But note this does not necessarily mean that only extractive uses (logging, farming, fishing, mining etc) are what humans value. What economists call "total economic value" comprises the value people living today put on their use of environmental goods and services, plus the use of the environment by people in the future, plus an "existence value" for the environment.

Another ethical stance is that of an animal-centred ethic. This defines other animals as "morally significant persons". As Henry Thoreau said: "every creature is better alive than dead" (quoted in Worster, 1994, 1.94). A third ethical stance is eco-centric. This argues that all aspects of the environment have inherent worth, that all nature is "alive". Aldo Leopold suggested the boundaries to include soils, water, plants and animals.

Bringing the Environment, Economics and Society Together

To sum up, just as we would want a healthy environment, so would we want a healthy economy. It is by pursuing what we call economic activity that we feed ourselves, provide clothing and shelter, have jobs, profits, generate the means of putting health-enhancing technologies in hospitals – and putting smoke in the air, chemicals in the oceans, and drugs on the streets.

The economy is people, and the machines, land and raw materials they work with. There are ecological constraints to what we can do. The laws of thermodynamics impose constraints. We must attempt to understand and deal with those wisely, However, there is the human dimension. We need to understand much better how some economies grow, why some falter or fail completely and people starve and die.

Certainly we do not want to sustain moribund economies. Humans change their minds as to what they want. This is certainly the case if they can go beyond simply providing food, clothing and shelter. Advertising, television and technological change mean that fashions change – for styles of housing, cars, food, entertainment and clothing. Firms and economies which do not, or cannot, change what they produce, are not sustainable. We want to sustain economic processes – just as we want to sustain ecological processes – but with clear end points in mind – the eradication of poverty, sustainable jobs, sustainable profits, and much more. Not only do we want our firms to meet the demands of the market place, but to do that within environmental and ethical limits.

I have briefly touched on the meaning of sustainable development in terms of ecology and economics. We also need to think about what it means in terms of sustaining social systems and sustaining cultures.

If we take a long historical perspective, cultures and social systems are not, in general, static. They change, they evolve, but usually slowly. However, increasingly throughout the world (even in remote villages) modern communications technology is spreading messages, showing images, creating dreams which are hard to resist. The transistor radio, television and maybe one day the internet, are having both desirable and undesirable impacts on culture. These human artefacts are speeding up the rate of social and cultural change.

Clearly all of us would want to sustain the good and the desirable aspects of our societies and cultures. We might sustain our social capital by making deliberate decisions to subsidise poor regional communities. By doing this we would over-ride the market (or economic efficiency) but in the long run we might have a society which is not only more cohesive but more productive. Maintaining regional communities is just one example of a vast array of things we could do so as not to further erode social capital.

We all want to be enriched by learning from cultures different from our own.

Just as there is hard work – research, scientific exploration, model building – involved in understanding what is meant by, and what is needed to achieve, ecological sustainability and economic sustainability, so there is hard work in pursuing the development of ideas on which cultures and societies are based, be they religious or philosophical.

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ESD - International Perspective

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History

- 1970s - *Limits to growth* (Club of Rome)
  - sustainable development
  - intergenerational equity
- 1987 - *Our common future* (Brundtland Report)
- - economic growth not sustainable
  - sustaining the environment and sustaining development
- 1992 - *Agenda 21* (UNCED)
  - integrated social, economic and environmental approach
  - long-term vs short-term
  - actions

Sustainable Development

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987)

Mistakes / Lessons

- Country spin
  - eg Ecologically Sustainable Development

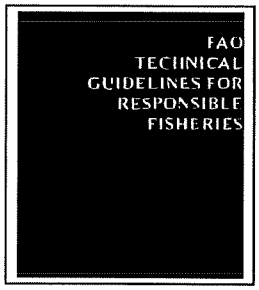
Development that improves the total quality of life, both now and in the future, in a way that maintains the ecological process on which life depends (NSESD,1992)

- Terminology
  - eg Sustainability = Sustainable Development
  - *Sustainable management*
  - *Sustainable ecology*
  - *Sustainable fishing/mining*
- Interpretation - scales and hierarchies
  - eg Global / regional / national / local
  - Contribution to SD or SD within the sector?
  - Human needs / legislation / agency / fishery / species
- Must develop indicators (Agenda 21)
  - eg OECD indicators based on P-S-R model
  - large array of indicators(economic/environment)

- Headline indicators (UK)
  - high level integrated set
  - more detailed subsets

Result

- **Development** that should be **sustainable**
  - improving human well-being (quality of life)
  - Adequate food and shelter
  - Reduced poverty
  - Improved health
  - Increased education
  - Gender equality



THE DEVELOPMENT AND USE OF INDICATORS FOR SUSTAINABLE DEVELOPMENT OF MARINE CAPTURE FISHERIES

Prepared by the Australian-FAO Technical Consultation
on Sustainability Indicators in Marine Capture Fisheries
(Sydney, Australia, 18-22 January 1999)

Food and Agriculture Organization of the United Nations
Rome, 1999

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Sustainable Development Reference System

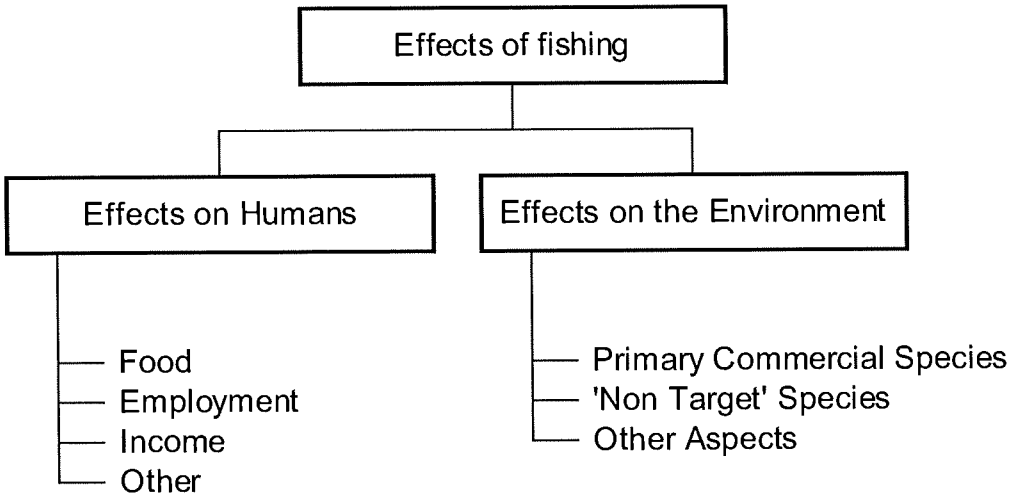
1. Specify the scope
2. Develop a framework
3. Specify criteria and objectives
4. Choose indicators and reference points
5. Specify aggregation and visualisation

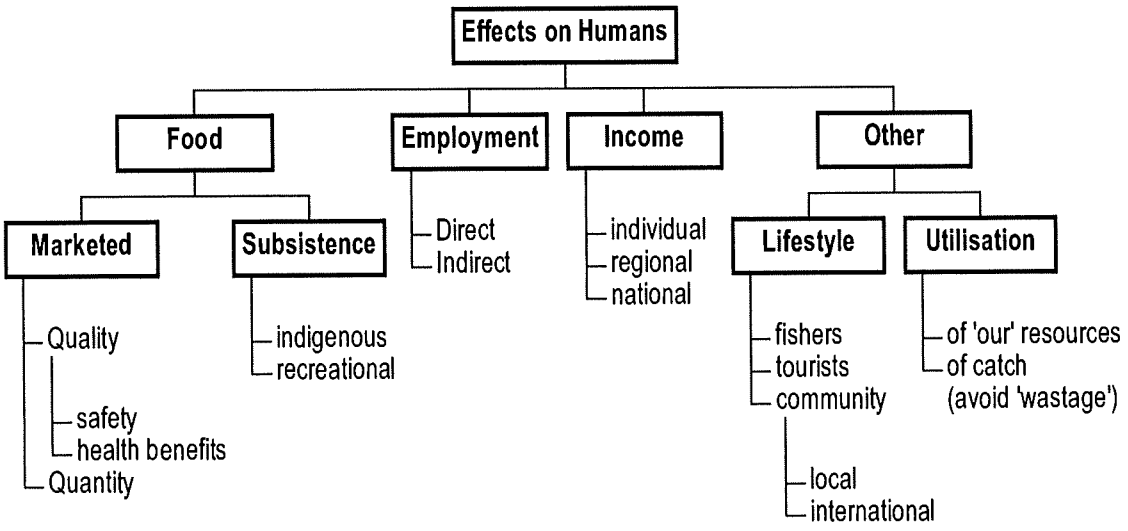
1. Scope

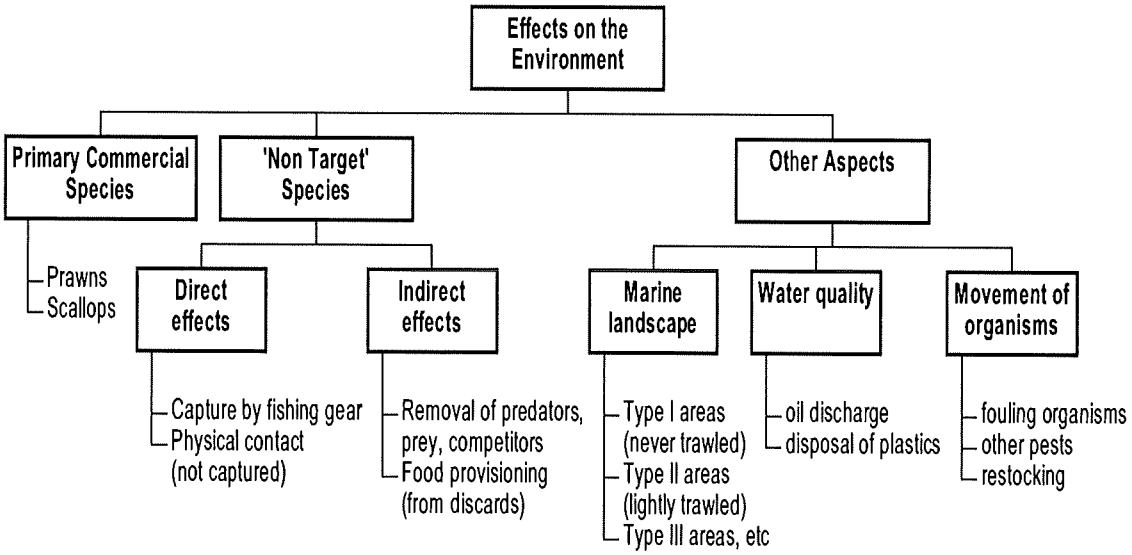
- Geographical boundaries
- Human activities
- Issues
- Sector / subsector
- Gears / species
  - Example: A commercial fishery

2. Frameworks

- Human/Environmental (WECD/BRS)
- Economic/Social/Environmental (CSD)
- Pressure-State-Response (OECD)







3. Specify criteria and objectives

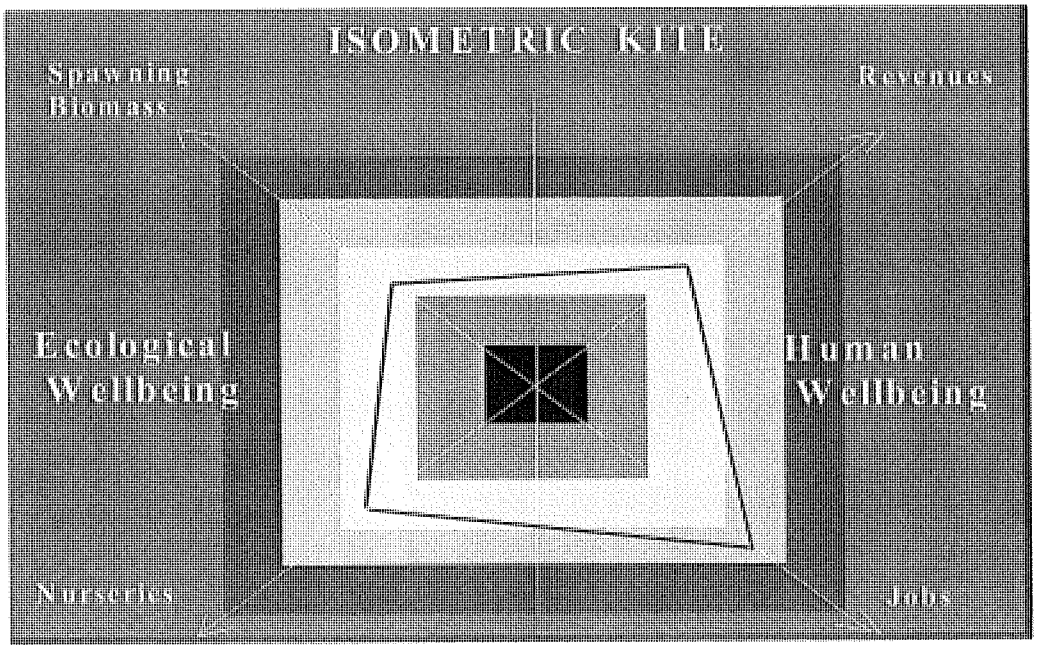
Example

- Criterion:
  - Effect of fishing on income
- Objective:
  - To maintain or increase income to fishers
- Indicator:
  - Profit
- Reference:
  - Upward trend

4. Choose indicators and reference points

Example

- Criterion:
  - Effect of fishing on the primary commercial species
- Objective:
  - To maintain population at acceptable level
- Indicator:
  - Estimated biomass
- Reference point:
  - 30% of virgin biomass



Summary

- Sustainable development is an integrated concept
- Development that is to be sustained
- Made too complicated
- Time to move forward and learn from mistakes of others
- FAO guidelines provide one opportunity

What is ESD and its role in fisheries? National context

Geoff Gorrie

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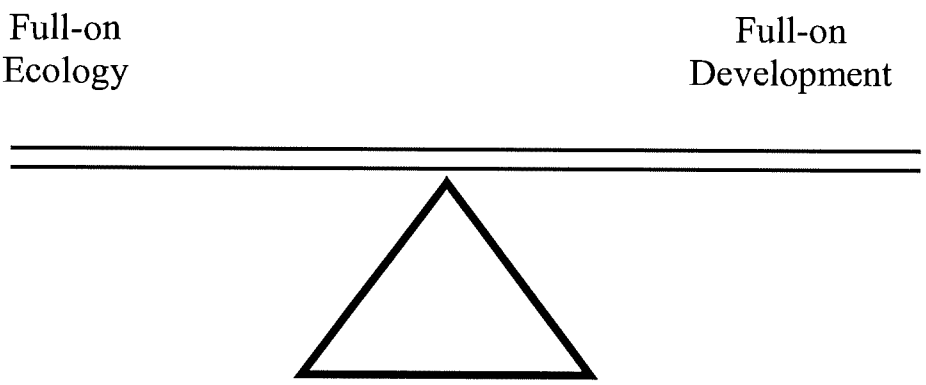
Australian context

- In 1992 a National Strategy for ESD endorsed by all Governments
  - 9 sectors were covered, including fisheries
- Focus is on the full range of societal values
  - Environment
  - Economics
  - Social
- The Strategy recognises that these values need to be considered as a package and that no value should predominate over others

What is ESD?

A simple way of looking at ESD



Overview of the ESD experience in Australia

- Variable progress in achieving sustainability objectives is being made in the forests, agricultural, water and fisheries sectors
- The approaches differ but they are characterised by three main elements
  - agree key objectives/values society wants to promote and/or protect (criteria/balances)
  - develop indicators to assess sustainability against these objectives, and
  - implement mechanisms for monitoring, reporting and auditing progress

The Forest Experience

- Australia is well advanced in developing criteria and indicators
- National and regional frameworks for criteria and indicators developed
- Aimed at progressively improving forest management

Forests - Seven national criteria

- biological diversity
- productive capacity
- ecosystem health and vitality
- soil and water resources
- global carbon cycles
- socio-economic benefits
- an effective legal, institutional and economic framework

Background to Commonwealth Fisheries

- "New directions" fisheries policy statement
- Fisheries legislation enacted in 1991
  - Australian Fisheries Management Authority (AFMA) was formed
  - included ESD objective

Why do we need ESD in Fisheries?

- The public are increasingly seeking assurances that natural resources are being sensitively and sustainably utilised and developed
- Fisheries managers and industry are required to demonstrate environmental credibility as required by their legislation
- Environment legislation also requires resource management to be carried out in an ecologically sustainable manner
  - environmental drivers include Schedule 4, regional marine planning, marine protected areas, EPBC Act
- People need to be confident they can invest in sustainable and competitive industries, which ESD will achieve

What more can we do in Fisheries?

- An agreed national framework for the application of ESD principles to fisheries and aquaculture
  - fisheries managers believe this is required

- The framework must be based on building consensus and ownership with all parties
  - a partnership involving all stakeholders who will contribute to all stages of developing the framework
- The national framework must be sensitive to the circumstances of individual fisheries
  - it must be a clear statement of objectives/values
  - strengthened with indicators
  - measures implemented to monitor/gauge success of the framework

Conclusion

- It is nearly 10 years since the beginning of ESD in Australia
- Many good things have been achieved in fisheries including
  - adoption of turtle excluder devices in Northern waters
  - threat abatement plan to reduce seabird bycatch
  - co-operation to allow the creation of marine protected areas
- However, much more needs to be done

Session 2

Why ESD and Fisheries?

Chair:	Ross Hodge
Speakers:	Conall O'Connell
	Nigel Scullion
	John Harrison
	Lindon Coombes
	Martin Breen
	Richard McLoughlin
	Margi Prideaux
	Melanie Fisher

Towards Sustainable Fisheries: Recent developments in Environment Policy and Legislation and their Implications for Fisheries. [1]: Environment Australia Perspective

Conall O'Connell

First Secretary
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Summary

The implementation of Australia's Oceans Policy, launched in December 1998 and the enactment of the *Environment Protection and Biodiversity Conservation Act* in June 1999 will result in increased scrutiny of the environmental performance of the fisheries sector.

- Regional marine planning will introduce a new framework for marine resource allocation decisions, to optimise economic, social and environmental interests;
- Legislative changes will require that fisheries management arrangements demonstrate ecological sustainability.

These changes should lead to improved environmental performance by fisheries and ensure maintenance of the integrity of our marine ecosystems.

Introduction

Fisheries management in Australia, whilst being well regarded internationally, has been the subject of increasing environmental attention in recent years. Concerns expressed by community and environmental organisations about the management of particular species, such as southern bluefin tuna, patagonian toothfish, orange roughy and eastern gemfish, have recently been broadened to include the impact of fishing activities on the whole marine environment including other fish species, marine wildlife and marine habitats.

In January 1995 the decision of the Federal Court on the application of *Environment Protection (Impact of Proposals) Act 1974* (the Gunns Case) prompted Commonwealth decision-makers, including Commonwealth fisheries managers, to reassess their obligations under that Act. Since the Gunns Case we have seen a significant increase in fisheries related references to the Department of the Environment for environmental advice and assessment.

In 1996 the Australian National Audit Office reported a number of serious deficiencies in Commonwealth fisheries management, particularly in the area of environmental sustainability (*Report No. 32 1995-96 Australian Fisheries Management Authority - Commonwealth Fisheries- Management Performance Audit).* While fisheries managers challenged the findings of the report,

[1] This paper was also presented at the ABARE Outlook Conference February 2000

environmental groups highlighted them very effectively at the 2nd World Fisheries Congress held in Brisbane that year.

In December 1998 the Commonwealth Government launched *Australia's Oceans Policy* which establishes the broad principles and planning and management approaches necessary for the ecologically sustainable development of our EEZ. The Policy contains a range of measures aimed at delivering ecologically sustainable fisheries that contribute to the social, cultural, environmental and economic well being of Australians.

Two particular commitments have significant implications for fisheries:

> the commitment to integrated and ecosystem based planning and management, to be implemented through the introduction of a major Regional Marine Planning process, and
>
> the commitment to remove the current blanket exemption of marine species from wildlife export controls, to ensure exemptions are available only for marine species harvested in accordance with sustainable and ecologically based management arrangements.

1999 saw a further significant Commonwealth initiative, which will impact on fishing in the marine environment. Following an agreement between the Prime Minister and the Premiers and Chief Ministers, the role of the Commonwealth in regulating for environment matters has been redefined. The *Environment Protection and Biodiversity Conservation Act 1999* gives effect to that agreement. The Act was passed by Parliament in June1999 and will come into effect on 16 July 2000. With limited exceptions, all actions and decisions which may have a significant impact on Commonwealth marine areas, including fisheries related activities, will require approval from the Federal Minister for the Environment.

Much of the preparatory work necessary for implementing the Oceans policy commitments and the *Environment Protection and Biodiversity Conservation Act 1999* has been undertaken over the past year. This paper examines these developments and their implications for fisheries in the coming years.

Australia's Ocean Policy

Australia's Ocean Policy is the world's first comprehensive plan to protect and manage ocean areas under national jurisdiction. The Oceans Policy's main outcome will be a new and integrated planning and management regime for our EEZ, which will be implemented through the regional marine planning process. Regional marine plans, based on large marine ecosystems, will integrate commercial interests and conservation requirements.

Regional planning is not a new concept, and has a considerable history in the terrestrial environment. Regional marine planning will make an assessment of the potential use of marine resources and, through consultation and negotiation, determine how to allocate them to the optimal economic, social and ecological balance. The private sector is then able to maximise the economic value within the planning framework and within sectoral management arrangements. While not intended as a tool to deliver property rights over fisheries resources, the Regional

Marine Planning process will assist the fishing industry by providing greater certainty about fisheries resources available for exploitation, and the conditions for access to those resources.

Agencies currently responsible for the management of individual sectors will be expected to give effect to the agreed planning outcomes. In the case of the Commonwealth Government's fisheries management regimes, the Australian Fisheries Management Authority will be expected to manage to achieve the planning outcomes that the regional marine plans specify for the fishing industry's interaction with other sectors.

The Oceans Policy makes a range of other commitments relevant to fisheries management, fisheries bycatch and environmental impact assessment. Related to the regional marine planning program is the commitment to pursue ecosystem-based management of the resources of our EEZ, aiming to ensure ecosystem integrity. Ecosystem integrity may be defined as the point where selected indicators of ecosystem health are regarded as being maintained within limits that are likely to avoid a significant risk of progressive or irreversible change or decline. Ecosystem management seeks to identify and address the direct and indirect effects on ecosystem components and to integrate planning and management activities across sectors within ecosystem-defined units or areas. This approach recognises that management based on arbitrary political or geographic boundaries may not achieve effective management of species across their entire range.

The Oceans Policy also acknowledges that there is sufficient community concern regarding the sustainability of fisheries to warrant a strategic approach to demonstrate that fisheries will be managed sustainably. The Policy commits to two mechanisms to achieve this: through strategic environmental impact assessment under the new *Environment Protection and Biodiversity Conservation Act 1999* and through marine species export controls under the *Wildlife Protection (Regulation of Export and Impact) Act 1982* (see below). Other Oceans Policy commitments include the finalisation of a Commonwealth Fisheries Bycatch Policy and the expansion of that policy into a national policy. The Ministerial Council on Forestry, Fisheries and Aquaculture released the National Policy on Fisheries Bycatch, in August last year.

The implementation of the Oceans Policy will be overseen by the National Oceans Ministerial Board, which consists of the Ministers for the environment, fisheries, industry, science, transport and tourism. A high level non-government National Oceans Advisory Group has also been established to advise the Board on regional marine planning and general Oceans Policy issues. The Advisory Group has a majority of members with industry and sectoral interests. Commercial fisheries interests are covered through the participation of the Australian Seafood Industry Council.

Export Control

To date most marine species caught and exported from Australian fisheries have been exempted from regulation under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982*. A list of species exempt from export controls is contained in Schedule 4 of the Act.

Concerns at the overall sustainability of Australian fisheries, and impacts on the marine environment, led to the change of this policy. Amendments to Schedule 4 of

the WP (REI) Act will remove this general exemption and require that any marine species that is exported, and the fishing operations involved in their capture, be assessed to determine if they are demonstrably ecologically sustainable. This type of assessment is conducted for most Australian native species that are taken from the wild and exported. Assessments are to be conducted over the next two years and until then current arrangements regarding export of marine species remain in effect.

Environment Australia has developed draft principles, objectives and guidelines for the assessment process, based on guidelines developed by the Marine Stewardship Council. A consultative process involving a period of public comment and the testing of the guidelines against some Australian fisheries has been used to refine these guidelines. The guidelines are grouped roughly into two broad categories: retained catch (target and by-product species), environmental effects (bycatch, ecosystem and habitat impacts) and relate to the existence of management arrangements.

Environment Australia recognises that not all of the objectives and guidelines will be critical to assessing the ecological sustainability of all fisheries and that the importance of individual guidelines may vary from fishery to fishery. The majority of the information required for assessments should already be held by fishery management agencies in the form of scientific assessments, annual reports, catch returns, scientific literature and other material. Environment Australia recognises that many Australian fisheries lack detailed information on aspects of the fishery including its environmental impact. Sustainability is not assured simply through high levels of information: adoption of precautionary management approaches can also play a significant role. In cases where information is limited Environment Australia will be looking for fisheries managers to demonstrate that safeguards have been put in place to reduce the risk of the fishery being unsustainable

It is expected that each fisheries management agency will prepare a submission to Environment Australia that sets out its case to demonstrate that the fishery is being managed ecologically sustainably in accordance with the guidelines. Environment Australia has responsibility for undertaking the assessment, taking into account the outcomes of a public consultation process, and making a recommendation to the Minister for the Environment.

If the fishing operations for a particular species are assessed to be demonstrably sustainable then that species will be exempt from export regulation for five years. If the operations are assessed as not being demonstrably sustainable then the species becomes subject to the Act. In these circumstances:

- The fishery management arrangements may be endorsed as an 'approved management program' under section 10 of the Act and authorities to export granted.
- Fishery's management arrangements may be assessed to result in a low risk of being unsustainable and export can be approved under section 10A of the Act. These approvals may include conditions designed to bring the management framework in accordance with the guidelines, so that the fishery can eventually be granted an exemption.
- In some circumstances the assessment may indicate significant concerns and that exports should not be permitted. Environment Australia does not expect many fisheries are being managed in such a manner that export approval

cannot be granted, and is conscious of the economic and social consequences of such an action.

Environmental Assessment

The marine environment is one of a range of matters of national environmental significance that are set out in the *Environment Protection and Biodiversity Conservation Act 1999*. With limited exceptions, all actions and decisions that have, or may have, a significant impact on the Commonwealth marine environment, whether that action takes place within or outside that area, will require approval from the Minister for the Environment. This will provide a new general environment protection regime for Commonwealth waters.

The new Act will introduce new assessment requirements for Commonwealth managed fisheries. Management plans or policies will need to be strategically assessed by the Minister for the Environment before they are finalised. This requirement applies to all Commonwealth managed fisheries that do not have an approved statutory management plan at the commencement of the Act.

The Act requires that agreements must be made for the strategic assessment of fisheries within five years of the Act's commencement. Two-thirds of relevant fisheries are to be covered by an agreement within three years. A strategic assessment agreement is essentially an agreement between the Environment Minister and the 'proponent' on the format and assessment process for the plan, policy or program under consideration.

If the Minister endorses a plan or policy examined by strategic assessment, the Minister must make a declaration that actions under the policy or plan do not need further approval in accordance with the provisions of the Act. A similar declaration will be required for fisheries already subject to a management plan prior to the commencement of the Act.

Conclusions

Through the Oceans Policy the Commonwealth Government has responded to widely held concerns about the ecological sustainability of fisheries in Commonwealth waters. The three initiatives described in this paper are complementary and designed to achieve demonstrably ecologically sustainable management of the fisheries sector.

The Regional Marine Planning process will examine the environmental, social and economic benefits of fishing within realistic and meaningful spatial areas. The outcome will be a planning regime that maximises Australia's returns on its resources. This process should reduce conflict over resource use and access and should deliver greater certainty to fishers in terms of long term access to fisheries and with respect to conditions for fishing.

Assessment of fisheries for export approval will help deliver management regimes which consider species across their entire distribution, rather than in isolation based on arbitrary jurisdictional arrangements. The assessment of export fisheries will complement the Commonwealth and National Fisheries Bycatch Policies by ensuring that there are appropriate management regimes in place to address all commercially caught species as well as bycatch species.

The strategic environmental impact assessment of fisheries management plans and policies will build upon existing activities being conducted by fisheries managers. Fisheries legislation in most jurisdictions in Australia has ecologically sustainable development as a primary objective for management and many fisheries agencies have adopted management approaches based on ecosystem objectives. Strategic environmental impact assessment will draw together existing information and make this available for public scrutiny. It will allow the effectiveness of existing management arrangements to be assessed in terms of broad environmental outcomes. Where weakness in any aspect of management is found, the process will precipitate management change, including changes in research focus, to address that weakness.

Obviously there is the potential for some overlap or duplication in the processes described above. Environment Australia is aware of this potential and is taking steps to ensure that the assessments are integrated and the outcomes can be used as broadly as practical. This combination of measures will result in greater consistency between terrestrial and marine planning and management approaches. It will address issues of resource access and environmental impact in a way that other major industry sectors regard as a normal way of doing business.

Commercial Fisheries Perspective

Nigel Scullion

Chair
Australian Seafood Industry Council
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The International Coalition of Fisheries Associations, hosted by Australia late last year, produced a 'Fremantle Declaration' which states that:

'Success in achieving sustainable management of fisheries resources is a direct responsibility for all stakeholders in fisheries'.

We can take heart from our role of global leadership in encouraging sound sustainable environmental practices – but of course there remains much more to be done. We need to identify further changes and improvements which need to be made. But we must do so in a planned, co-ordinated way which will yield optimal results.

I see a need for better data collection and an improved research effort. To identify future goals, we need to know that 'state of play' now.

As well, we need to embrace the full range of assistance and advice from stakeholders. That means encouraging the role of Fisheries Management Advisory Committees, or MACs. These people are there because they have the willingness and the capacity to deal with the needs of our fisheries, in a professional way.

Governments have tended to work without sufficient co-ordination and co-operation between agencies. This has to stop. It is the clear task of the Standing Committee on Fisheries and Aquaculture to oversee and manage the various efforts of government agencies.

In the past fortnight we've had some very positive publicity about a renewal of Wandering Albatross numbers, that coincides with ASIC's most recent initative, to trial a bird mitigation device capable of dropping bait from long line vessels some five metres below the surface before the bait reaches the bird interaction zone.

There is much we can – and must – do. The world is watching Australia's performance on sustainability. Our leadership can continue to influence nations across the globe, while ever we work towards common goals in partnership with one another.

ESD & Fisheries: What has Mt Kosciusko got to do with it?. Recreational Fisheries Perspective

John Harrison

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Good afternoon ladies and gentlemen. It is indeed a pleasure to be here and I have been asked to provide a perspective of ESD from the recreational and sport fishing sector of the fishing industry.

I will not provide a definition from our view as that has been done to death and we still really don't have an agreement on what the words are or mean. That debate will no doubt go on for many years as it has already. Besides, Territorians have their own dictionary as certain words such as "corrupt" have been attributed a different meaning in the NT

What we do have, however, is a greater awareness by the majority of people within the industry that there is an ever-increasing need to do something and do it quickly. The Community needs commercial fishing and it also demands the opportunity to fish recreationally and enjoy the outdoors and the relaxation that fishing provides.

So what can be done?

There is a growing realisation that the recreational sector is a major player in the fishing industry. This has come about through a wide variety of surveys and research into this sector. The first, and to date only, national survey was completed 16 years ago by Recfish Australia. – It has been a long time between drinks with the next national survey actually starting this month and results due towards the end of next year – that's only ten years after the ESD final report on fisheries where this recommendation was one of many made.

The Federal Government, both sides of the political equation, have been negligent and the lack of data has handicapped the management of a lot of fisheries. Unfortunately, the non-uniform nature of the various state surveys has made it impossible to aggregate these into a national picture.

Information on the recreational fishing sector is not comprehensive or rigorous. More knowledge and understanding of the impact that 4 - 5 million regular anglers have on the fishing resource is required. And required on an ongoing basis every 5 years. Some will say we don't need that sort of information but in 25 years time, the wealth of data available will be viewed as an invaluable tool for scientists, managers and all sectors of the industry. The USA has been collecting recreational and sport fishing data every 5 years for 45 yrs.

Detailed data and scientific understanding for a lot of our fisheries around Australia is in its infancy. However, this is being addressed and we need to maintain momentum and ensure additional resources are injected.

Now is the time, more than ever, for the recreational and sport fishing industry to stand up and be counted. The long-term future for fishing lies in habitat, nurseries,

and unpolluted and unobstructed waterways. Habitat and nurseries have been, and still are, being destroyed through a culture of "develop at all costs". Admittedly, there is an awakening amongst the governments and planning authorities that the wetlands and habitats effected do play a very important role.

But we have an almighty challenge to reverse the damage that has already been done. Decade after decade we have seen critical areas of fish habitat drained and dammed, weirs built, canal estates developed, agricultural impact, industrial runoff, acid soils, and the list goes on.

Lets look at one example: - in 1928 a weir was constructed on Sportsman's Creek, a tributary of the Clarence River in NSW. This was for the purposes of providing fresh water for stock upstream of the weir. No thought was given to the impact on the aquatic resources. With a catchment of 285,000 hectares, the permanent swamp of 3000 hectares was known as the Everlasting Swamp and provided a year round sanctuary for aquatic resources. That function virtually disappeared when the weir was built.

Today, with the original purpose of the weir defunct, because reticulated town water is available, there is a pressing need to have the weir removed and return the 3000 hectares to its original and natural purpose – a nursery and wetland sanctuary for fish, prawns and the like. There are hundreds of examples of these types of obstructions around the country.

We need an urgent study into these obstructions to identify those that can be removed immediately and those that will require a little more political clout to begin the rehabilitation process.

Today we still have some people within government and private enterprise who believe wetlands can be developed with so called "minimal" impact on fisheries. "Let's use this barren useless land and have some economic return instead of seeing it lying idle and being wasted" is a common catch phrase among many so called developers. It is seen as cheap land and ripe for exploitation.

This is a misconception and is something all of the fishing industry needs to address and address fast.

Again a simple example: - Shoal Bay in the NT provides the nursery wetlands for the annual recruitment of about 98% of the barramundi and another 30-plus species for all of Darwin Harbour and Shoal Bay. A developer wanted to put a 2100-hectare prawn farm smack in the middle with so called minimal impact. To cut a long story short, this proposal was stopped by the NT Government after due persuasion by the recreational anglers in the NT. There are alternative sites where clean green, or is it "blue" aquaculture can proceed – why risk such an important area. The long-term consequences could have been disastrous.

Both national peak representative bodies of the commercial and recreational sectors of the fishing industry agreed in 1996 that about 80% of the problems facing the fishing industry were common to both sectors. It was all upstream and really out of the hands of the industry. Unfortunately, an FRDC project designed to come up with strategies to address these problems and, supported by both national peak bodies, was scuttled by the state bodies - Probably because it was not 'sold' to them properly and they feared the idea of supposed long time enemies getting into bed to fight the real enemy. I would like to believe that project might get a new start in the very near future.

There is no doubt that there will be disagreement amongst the commercial and recreational sectors and the issue of allocation of resources will be the central theme of those discussions. Debates and facts and figures will be trotted out and eventually, under our current data-deficient management situation, a political decision will probably end up the solution - something that most people from the industry sectors are all too familiar with. There will be, as there has already in a lot of areas, an allocation of resource given to one or the other sectors. There will also be further closures to commercial fishing because of increasing population levels and the need to sustain and increase recreational and tourism fishing. This will be unavoidable as the community's awareness of the value derived from recreational and tourism fishing widens.

Many people see aquaculture as a panacea for some problems within the naturally occurring fish stocks. It may assist in some areas but it is not the overall answer – only a small part of it. Increasing demand and rising world population levels will only see greater pressure placed on wild stocks.

Aquaculture will help but it should not be pushed through at all costs. And simply changing the legislation to allow developments to proceed after environmental concerns are raised is not the answer. There are reasons people from all walks of life have concern over sustainability. These must be considered and taken into account.

The recent election in Victoria of the 'Man **for** the Snowy River', Craig Ingram, is an example of the passion that the general community places on the rivers in this country. As I said before, humans have a fascination with building dams, weirs, barrages, bund walls, concrete canals, which all alter the creeks, rivers, bays, wetlands and swamps.

The great idea of flood mitigation enveloped the north coast of NSW and many other areas. Drain the swamps, build levee banks, change the hydrology, let the salt rise and acid leach, etc etc. Great for the short term but no one even thought of what impact it would have on the creatures in the water. Unfortunately, we have some people who want to place heritage orders over the likes of the 1928 weir I mentioned earlier. In my view this is absurd.

Most of the elected representatives of this country cannot see the fish because of the sheep, cattle, wheat, timber, canal estates and the like. What we must do - as a united industry with common environmental sustainability objectives - is raise these problems higher and higher and press home our requirements for remedies. As an example: - alternative arrangements need to be developed for water supply. Of course there will be a need for dams but what happened to the concept of catching the water that falls on our roofs? We waste far too much water.

Time does not permit me to cover the discussions that took place recently in Dubbo at a conference about the rising salt levels except to say I understand it painted a very bleak future for many rivers in this country.

It all starts at the very highest point in the country – what we pour onto the ground or dig up will somehow impact on something somewhere downstream. You only have to look at the Tiza and Danube rivers from the cyanide spill to see what I mean. We have the challenge of making sure that what we do from now on, anywhere on land, is challenged and the possible consequences for the marine and freshwater environment are realised and taken into account before proceeding. This is not an easy task with about 700 local councils, eight state governments and one federal

government all wanting to move forward on the so-called "development" of this country.

There are myriads of other issues we can address for the purposes of ESD. They include education and awareness for recreational and sport fishers, continuing improvement in gear technology, improved enforcement, greater involvement in management, selective conservation areas etc. etc. But this is only the icing on the cake.

I firmly believe the actual "cake" for ensuring long term sustainability of our fisheries resources is providing an environment where the fish can live, breed and thrive. If there are no fish to argue over, we can all go to the pub and drown our sorrows. And no habitat and no nursery **does** mean no fish! That's what we mean by unsustainable.

Next time you are on Mt Kosciusko, or another high point, have a look around and down, because we all live downstream!

Thank you.

Indigenous Rights in fisheries management and development

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Acknowledgement of Country and Traditional Owners

Rationale

Aboriginal ways of 'caring for country' have successfully managed Australia's lands and waters for tens of thousands of years. It is recognised that there have been great changes in national population and that there is a global component to our economy since European settlement but application of traditional wisdom to the overseeing of new attempts to sustain, restore, rejuvenate and protect the natural environment is a sensible step towards responsible management of our country. Genuine involvement of Aboriginal people is also an appropriate acknowledgment of legitimate Aboriginal interests, expertise and knowledge in this area.

The genuine involvement of Aboriginal people, and appropriate recognition of our rights and interests in ecologically sustainable development of fisheries and all natural resources has become a prominent issue for people and agencies involved in the use and conservation of these resources. This is an issue that has created much discussion but has to date, failed to produce a satisfactory and comprehensive response. An opportunity now exists where we can move from words to actions and give due recognition to the aspirations of Aboriginal people and our relationship with the lands and waters of this country.

There are many definitions for ESD, but whatever way you look at it, it is a fundamental Aboriginal philosophy. It is therefore pleasing to see that natural resource managers have finally come around to an Aboriginal way of thinking in this regard. Unfortunately, this shift in thinking has not correlated with the involvement of Aboriginal people in ESD or NREM (natural resource and environmental management) processes and decision making.

So, what's the problem?

Why should Aboriginal people be involved in natural resource and environmental management?

This is a common question asked by agencies who wish to undertake development and conservation in most areas of the country. Why should Aboriginal people be treated differently, given special privileges, or allocated specific places on committees?

The short answer to this question is simply that it is a **RIGHT** of Aboriginal people to be genuinely involved in these processes, and it is a **RIGHT** for Aboriginal people to benefit from the use and management of natural resources. This includes economic benefit.

As outlined in the opening paragraph, Aboriginal knowledge, expertise and interests need to be promoted and recognised across all areas of natural resource and environmental management. Once it is recognised and accepted that Aboriginal people do have unique and valuable knowledge and expertise in these areas, the basis of consultation and negotiation should be clear.

Further, Aboriginal people are significant land and sea holders across the country, with land acquired under Aboriginal land rights legislation, native title and significant purchases through the Indigenous Land Corporation. Recognition of this alone should dispel any questions of the legitimacy of Aboriginal involvement in such processes.

But, what are these rights that Aboriginal people talk about, and why should you, as natural resource managers, care?

Native Title

Two relatively recent native title cases have contributed to the further recognition of Aboriginal rights to the sea and natural resources, the first of these is the Croker Island case.

The Federal Court determination of the Croker Island Native Title application was handed down on 6 July 1998. The determination recognised the native title rights of the Mandillari-Ildugij, the Mangalara, the Murran, the Dadura-Minaga and the Ngaynjaharr clans of Croker Island. This was the first instance in Australia where native title rights and interests were recognised as extending over the sea, however, the native title rights recognised were held to be non-exclusive.

The Court concluded that, in accordance with traditional laws and customs and subject to existing laws established by the Commonwealth and Northern Territory, the applicants had a non-exclusive right to free access to the sea and sea bed for travelling through or in the area, fishing, hunting and gathering for personal, domestic, non-commercial, communal needs, visiting and protecting places and safeguarding cultural and spiritual knowledge.

The second native title case of note is that of *Yanner v. Eaton.* The decision in this case, handed down on 7 October 1999, challenged assumptions that the Crown had full, beneficial ownership of natural resources.

The decision in Yanner rejected a claim by the Queensland Government that a law which "vested" property in fauna in the State, extinguished native title rights and interests. The High Court effectively acquitted Murrandoo Yanner of taking two crocodiles because he did so in exercising his native title rights.

The effect of this decision is that where a permit is required to hunt or fish, native title holders do not need such a permit where they are exercising their native title rights. The effects of this for ESD management and implementation would appear to be significant. The implication is that you can plan for every last fish, every last tree

and every last drop of water, but if you don't deal with native title rights and interests the plan of management is at risk of being illegal and un-enforceable.

State and Territory Legislation

State and Territory legislation regarding Aboriginal rights and interests in fisheries management and exploitation can best be described as vague and inadequate.

Queensland and the Northern Territory, through their respective Fisheries Acts, allow limited fishing rights for Aboriginal and Torres Strait Islander people through agreements and licensing regimes. These "allowances" are characterised by their restriction of such practices to being non-commercial, with the Northern Territory even imposing gear restrictions.

In NSW, the Aboriginal Land Rights Act, 1983 allows Local Aboriginal Land Councils to negotiate agreements with owners, occupiers or controllers of land for access to hunt, fish and gather. If an agreement is unable to be reached, the relevant land council may seek redress through the Land and Environment Court.

Tasmania's Living Marine Resources Management Act, 1995 allows for Aboriginal people to be exempt from having to obtain fishing licences under certain circumstances. However, compliance with this legislation appears to be so burdensome that it negates any real benefit.

Fisheries legislation in Victoria, Western Australia, NSW and South Australia is all but silent on these issues.

International Perspective

There are a number of international conventions, reports and studies which outline the rights of Indigenous peoples in natural resource and environmental management. Such documents include the Report on the United Nations Technical Conference on Practical Experience in the Realisation of Sustainable and Environmentally Sound Self-Development of Indigenous Peoples, 1992; Convention on Biological Diversity, 1992; the International Covenant on Civil and Political Rights, 1993 and the United Nations Convention on the Law of the Sea, 1994. There are other documents to which Australia is not a signatory, such as the Convention Concerning Indigenous and Tribal Peoples in Independent Countries, 1989 and the Draft United Nations Declaration on the Rights of Indigenous Peoples.

These documents outline the rights of Indigenous peoples to be involved in, and to benefit from, the management and development of natural resources. This right, in many instances, is linked to cultural practice. We should not forget that there is a western management culture that seems to have right of way at the moment. The current debate does not seem to acknowledge the possibility of a very different set of management concepts in Indigenous world views or if it does, refuses to give them any credence. Herein lies the pivotal concept. As natural resource managers you must recognise that when you implement management plans that include conservation, you are restricting the **right** of Aboriginal people to practice their culture. When you put in place penalties for exceeding bag and size limits, you penalise Indigenous people for practicing their culture. This is a human rights issue.

While the value of international covenants and conventions such as these is arguable, they at least give some expression to Indigenous rights in this area.

If it is acknowledged that Indigenous peoples have a legitimate right to be at the negotiating table and have genuine input into decision-making processes regarding natural resources, why is it that our domestic processes have apparently failed to recognise this? The answer is that they haven't. Following is an overview of inquiries, strategies, recommendations and policies that have, at least in words, given expression to the role of Indigenous peoples in ESD and fisheries.

1991: ESD Working Groups Final Report – Fisheries

Almost a decade ago the ESD Working Group on Fisheries concluded:

> *If ecologically sustainable development policies are to achieve broad, ambitious gains for society and the environment, they must be socially just and progressive. Developing approaches and recommendations for Indigenous people in Australia who rely extensively on fisheries and aquatic resources is a case in point. To be effective, sustainability policies must succeed socially by working to overcome historical inequities and ignorance concerning Indigenous people's interests and rights in fisheries and an array of coastal and aquatic systems.*
>
> *Authorities need to find ways to engage Indigenous communities in all aspects and levels of management. Also, an appropriate framework must be found to work within customary tenure systems which extend over the land-sea interface and coastal waters used by Indigenous groups in much of Australia, especially north of the Tropic of Capricorn.*

Recommendation 29

(a) Undertake a comprehensive evaluation of government relationships to Indigenous coastal communities, with regard to fisheries management issues and arrangements, laws, obligations, local needs and customs, and traditional environmental knowledge;

(b) Integrate the Indigenous sector in a national framework for coastal fisheries and marine management;

(c) Investigate new co-management procedures with Indigenous communities;

(d) Ensure that Indigenous communities have membership on management advisory committees of appropriate fisheries.

1993: Coastal Zone Inquiry

Recommendation 23

That the Ministerial Council on Forestry, Fisheries and Aquaculture, in conjunction with the Aboriginal and Torres Strait Islander Commission and representatives of Land Councils and other Indigenous organisations, prepare an Aboriginal and Torres Strait Islander Fisheries Strategy. Key elements of the Strategy should be:

- Assessment by all fisheries authorities of Indigenous interests in fisheries for which they have responsibility;
- Representation of Indigenous people on advisory committees for all major fisheries;
- Identification of means by which Indigenous communities can participate in management of local fisheries and marine environments in which they have a traditional interest;
- Measures to improve economic development and employment opportunities for Indigenous communities in fisheries and mariculture ventures;
- Measures to improve relations between Indigenous communities, fisheries agency staff and commercial fishers.

1996: Aboriginal and Torres Strait Islander Fisheries Strategy

To be developed under the auspices of the Ministerial Council on Forestry, Fisheries and Aquaculture and coordinated by the Standing Committee on Fisheries and Aquaculture, with the following terms of reference (summarised)

- To promote the establishment of structures and processes within each jurisdiction for effective consultation with, and involvement of, Aboriginal and Torres Strait Islanders on the shared use of Australia's coastal aquatic resources;
- To develop principles and mechanisms for identifying and recognising Aboriginals' and Torres Strait Islanders' cultural associations with, and traditional use of, coastal aquatic resources to assist in management processes;
- To develop arrangements form promoting greater involvement of Aboriginal and Torres Strait Islanders in sustainable fishing and fishing related activities.

This Strategy received initial funding in 1997/98 of $300,000 to distribute to state and territory fishery agencies for them to convene regional workshops to implement the terms of reference. Each agency should have submitted a report to the Fisheries Standing Committee (via Dept of Agriculture, Forestry, Fisheries and Aquaculture) by 1999, prior to the next stage of developing the Strategy. The current status of this Strategy is uncertain.

It is worth noting that the idea of an Aboriginal and Torres Strait Islander Fisheries Strategy came from Canada, where the Canadian Government devoted CAN$140,000,000 to an Aboriginal Fisheries Strategy for Canada over 7 years - completed in 1999.

1997: National Aboriginal and Torres Strait Islander Rural Industry Strategy (Natsiris)

The Strategy is the joint responsibility of the Aboriginal and Torres Strait Islander Commission and the Department of Agriculture, Forestry, Fisheries and Aquaculture. Its action plan draws on recommendations of the Coastal Zone Inquiry and the objectives of the Aboriginal and Torres Strait Islander Fisheries Strategy. The Action Plan for the NATSIRIS includes:

Indious Marine Fishing

Action 2.1: Remove barriers to Indigenous groups practicing subsistence fishing.

Action 2.2: Encourage adoption of codes of practice by mainstream fishing enterprises which include return of by-catch to traditional owners.

Action 2.3: Assist the Torres Strait Island Regional Authority in identifying means for increasing Indigenous participation in the prawn trawling industry.

Action 2.4 : Encourage extension of preferential licensing to Indigenous people for collection of abalone, trochus, beche de mer and mud crabs in appropriate locations.

Action 2.5: Support reservation and buy back of fishing licenses where Aboriginal and Torres Strait Islander people have been excluded from the local commercial fishing industry.

Action 2.6: Assess the market opportunities for increased production and value adding by Indigenous communities in relation to abalone, trochus, beche de mer, shark fins, rock lobster and mud crabs.

Action 2.7: Provide assistance to Indigenous communities in establishing infrastructure for harvesting, storage, processing and transport of fishery products within the context of an enterprise plan.

Indigenous Freshwater Fishing

Action 2.8: Assist Indigenous communities in gaining access to inland fishery resources for community use.

Action 2.9: Support initiatives to restock inland waterways for subsequent sustainable harvesting by Indigenous communities.

Aquaculture

Action 2.10: Recognise the interests of Indigenous communities within the National Aquaculture Strategy.

Action 2.11: Provide technical support to Indigenous communities wishing to plan for and establish aquaculture enterprises for community food supplies or for external sales.

Action 2.12: Assist the planning and establishment of aquaculture enterprises where they are likely to achieve significant economic benefits for Indigenous communities, either in their own right or as a component of diversified production.

Additional Actions

Action 4.22: Assist Indigenous communities making claims over land and sea resources, or otherwise acquiring these resources, to prepare appropriate land management strategies in advance of claims being determined.

Action 4.23: Encourage Indigenous participation in regional land management initiatives including integrated catchment management, Landcare, marine and waterway management, feral animal, exotic fish and weed control, and soil conservation.

Action 4.24: Provide specific support for initiatives that will promote and demonstrate ecologically sustainable and multiple use of land and sea resources by Indigenous communities.

Action 4.25: Provide assistance to Indigenous communities in documenting traditional resource management practices that can contribute to contemporary mainstream best practices, including knowledge that relates to management of biological diversity, and promote equitable sharing of benefits derived from Indigenous knowledge and practices.

Action 4.26: Provide assistance to Indigenous communities in establishing integrated programs for harvesting and processing wild animals, with negotiated targets and environmental monitoring, in conjunction with other land holders.

Action 4.27: Promote recognition by fishery management authorities that coastal Aboriginal and Torres Strait Islander communities are stakeholders with distinct and unique interests in fisheries.

Action 4.28: Encourage all fishery authorities to identify Indigenous interests in each fishery, including customary marine tenure and traditional fishing practices.

Action 4.29: Promote understanding by fishery management authorities of the significance of coastal and marine environments and resources to Indigenous communities, together with appropriate policies for co-management.

Action 4.30: Address the threat of impacts posed by some commercial and recreational fishing activities on fishery resources and marine sites valued by Indigenous communities.

Action 4.31: Improve opportunities and appropriate support for Aboriginal and Torres Strait Islander people to become involved in fishery management processes, including representation on statutory and advisory committees at all levels.

Action 4.32: Promote mutual understanding of interests between Indigenous communities, fishery agency staff and commercial fishers.

1998: Australia's Ocean Policy

Special Sectoral Measures of Australia's Ocean Policy contains the following commitments with respect to Aboriginal and Torres Strait Islander Peoples' responsibilities and interests (Section 2.11):

The Challenge:

To involve Aboriginal and Torres Strait Islander peoples in the use, conservation and management of Australia's marine jurisdictions.

Background

The social, cultural and economic relationships of many Aboriginal and Torres Strait Islander peoples with the ocean environment mean that they have strong interests in the use, conservation and management of Australia's oceans.

Access to, and use of, marine resources are essential to the social, cultural and economic well being of coastal Aboriginal and Torres Strait Islander communities.

Among the concerns of coastal Aboriginal and Torres Strait Islander peoples are equitable and secure access to resources; direct involvement in resource planning, management and allocation processes and decisions; formal recognition of traditional patterns of resource use and access; traditional management practices and customary law and conservation of the oceans and its resources; and access to genetic resources, intellectual property and ownership.

Aboriginal and Torres Strait Islander peoples are concerned with the conservation of the coasts and the oceans for several reasons, including:

- a responsibility to look after and maintain areas with which they have a traditional affiliation and custodianship;
- an economic reliance on the resources of the oceans; and
- the need for continued access to vulnerable species such as dugong and sea turtles.

Response:

Awareness and understanding

The Government will:

- promote understanding of the social, cultural and economic importance of the ocean environment and its resources to coastal Aboriginal and Torres Strait Islander peoples and their role in its conservation.

Use of the ocean environment

The Government will continue to:

- implement the National Aboriginal and Torres Strait Islander Rural Industry Strategy as it is relevant to ocean-based industries, and the National Aboriginal and Torres Strait Islander Tourism Industry Strategy as it is relevant to marine tourism;
- remove barriers to Indigenous groups practising subsistence fishing on a sustainable yield basis consistent with conservation of species; and
- provide increased opportunities for Aboriginal and Torres Strait Islander peoples to be involved in commercial fishing.

Conservation of the ocean environment and its resources

The Government will continue to:

- provide guidelines for Indigenous communities in the preparation of plans for sustainable enterprise development, including use of information technologies;

- provide support for initiatives that will promote and demonstrate ecologically sustainable and multiple use of sea resources by Indigenous communities;
- provide assistance to Indigenous communities in documenting traditional resource management practices that can contribute to contemporary best practices, including knowledge that relates to management of biological diversity, and promote equitable sharing of benefits derived from Indigenous knowledge and practices;
- address the threats of impacts posed by activities on fishery resources and marine sites valued by Indigenous communities; and
- implement the National Aboriginal and Torres Strait Islander Cultural Industry Strategy as it is applicable to the natural and cultural heritage values of Australia's marine areas.

Management of the ocean environment and its resources

The Government will:

- provide for Aboriginal and Torres Strait Islander representation on the National Oceans Advisory Group and on Regional Marine Plan Steering Committees;
- provide for Aboriginal and Torres Strait Islander participation at the National Oceans Forum;
- consult with Indigenous groups on the requirements for establishing a national consultative mechanism.
- continue to develop and implement principles and guidelines for co-management of relevant marine areas and resources;
- continue to facilitate the increased involvement of Aboriginal and Torres Strait Islander peoples in monitoring, surveillance and enforcement activities;
- continue to promote the role of all spheres of government in recognising and developing the participation of Aboriginal and Torres Strait Islander peoples in the management of the ocean environment and its resources;
- continue to actively foster the development of agreements between Aboriginal and Torres Strait Islander peoples, governments and industry groups involved in the oceans;
- continue to promote capacity building, education and training within Aboriginal and Torres Strait Islander communities, to provide a sound base for traditional use and new commercial activities in marine resource use, management and marketing, and to support direct participation in regional planning and management activities; and
- continue to improve opportunities and appropriate support for Aboriginal and Torres Strait Islander peoples to become involved in the management of ocean areas as appropriate.

I would like to think that we have moved beyond such simple justifications for the involvement of Aboriginal people in these processes, but as long as such questions of Aboriginal legitimacy in this area continue to be asked, it is important that these issues are clearly articulated and reinforced. Recommendations in this regard have

been made in good faith but action is either very slow or absent. This creates extreme frustration and disenchantment with what appears to be an unchangeable system.

If it is accepted that Indigenous peoples have a range of rights in this regard, what is preventing the implementation of these rights on the ground?

It has been the experience of Aboriginal people seeking to provide input into NREM structures and processes, that their knowledge is treated at best as token and at worst is ridiculed. Aboriginal knowledge and expertise has often been dismissed as not being a genuine and valuable component of natural resource and environmental management, and Aboriginal people have often been excluded from such decision making processes either deliberately or inadvertently.

When approached about Aboriginal input into a particular committee or process, responses invariably include statements such as "they hardly ever show up, and when they do they don't provide any input". In such cases, it is always the Aboriginal representatives that are questioned as to their attendance and the nature of their input, rather than the processes of the committee and the attitudes of other representatives. There may also be resentment that places are specifically allocated to Aboriginal interests. It should be remembered that in most committee situations a great majority of members subscribe to a biodiversity focussed model not a geographic or culturally based one. As a consequence it is difficult for Indigenous representatives to verbalise their belief system as they are in the philosophical minority. The Sea Forum process in Queensland is developing an Indigenous framework agreement process that responds to traditional owner aspirations. It is about setting Indigenous agendas and having agencies respond rather than the limited representation available through the committee process.

If a committee or process is seen to be hostile to Aboriginal interests, and Aboriginal input is not treated as a credible source of information capable of contributing to the eventual outcome, Aboriginal people will be hesitant to participate. Non-participation may also be used as a form of protest, or a signal of disapproval of the overall process.

This is not to say that Aboriginal representatives cannot be challenged or disagreed with, on the contrary, such bodies should be at pains to have in place an environment where participants are free to state their position and others are free to challenge that position. The facilitation of open and constructive dialogue is the basis of a genuine consultation process that encompasses a range and diversity of opinions and knowledge that provides the basis for the best system of management.

This assessment of NREM decision making processes may sound trite, but it is important that the issues affecting Aboriginal people seeking to provide input to these systems is made clear.

We are in a position now where the talk has been talked, and it is up to you as natural resource managers not to do everything, but simply provide the opportunity for Aboriginal people to participate and benefit from these processes on our own terms.

An action plan for sustainable aquaculture: Aquaculture Perspective

Martin Breen

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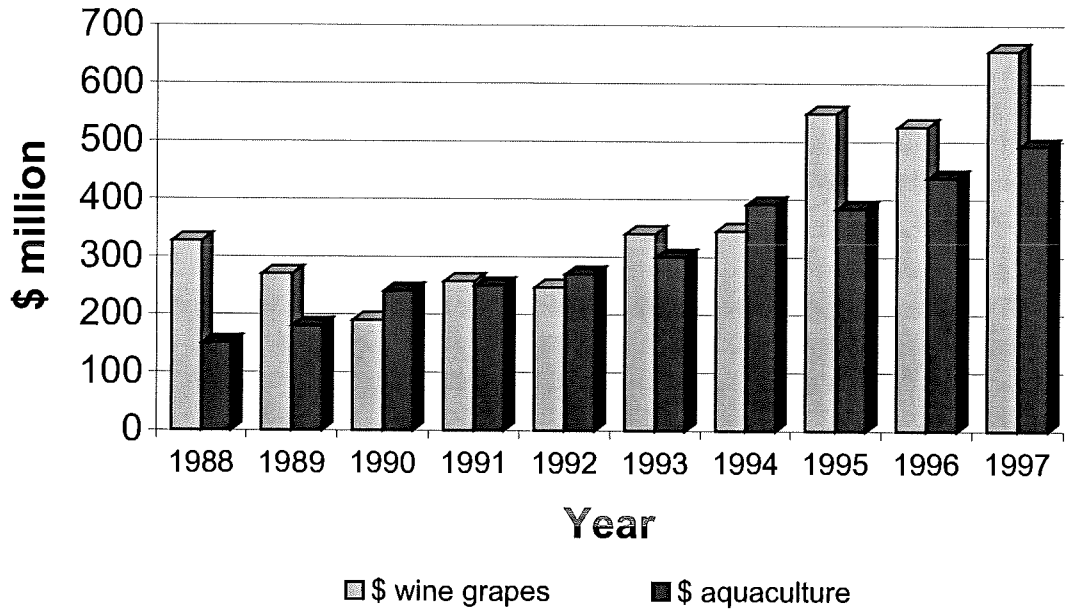
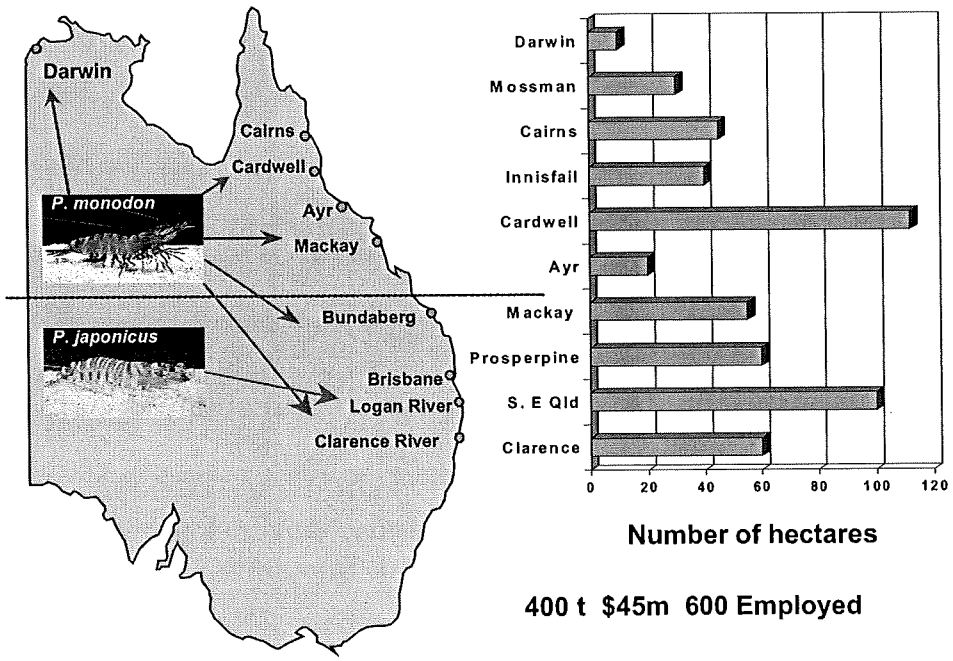
- **The Australian prawn farming industry**
- **Issues**
- **Needs**
- **Action plan**

Growth of the industry

Value of Aquaculture compared with Wine Grapes



Current distribution of prawn farms



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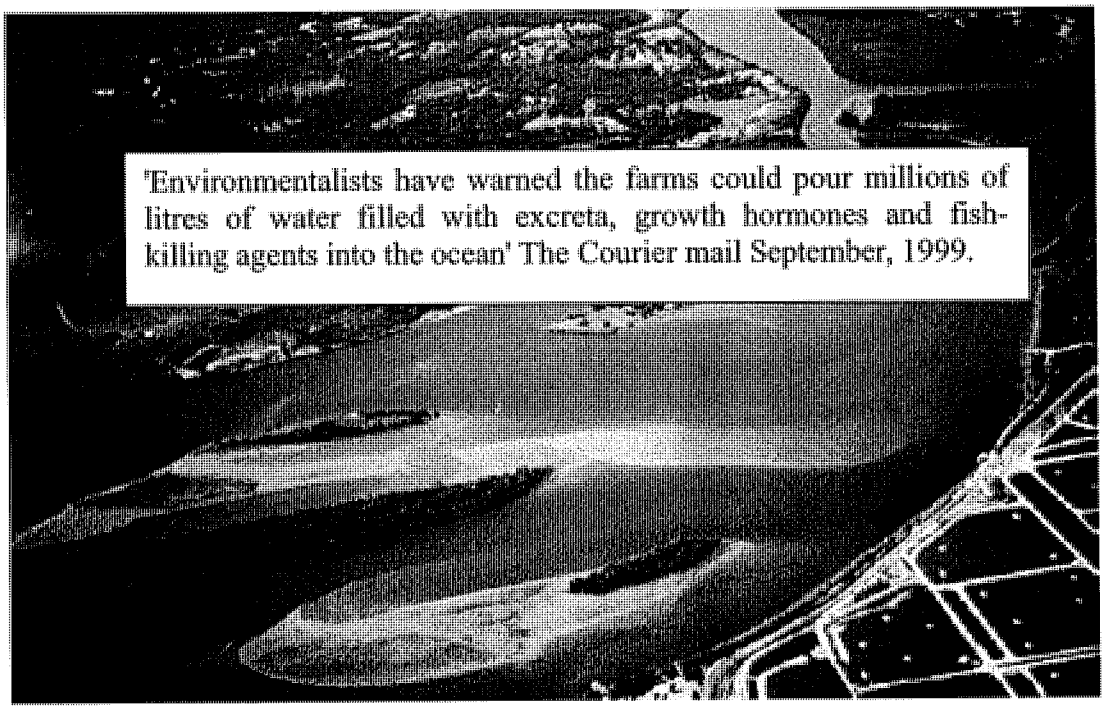
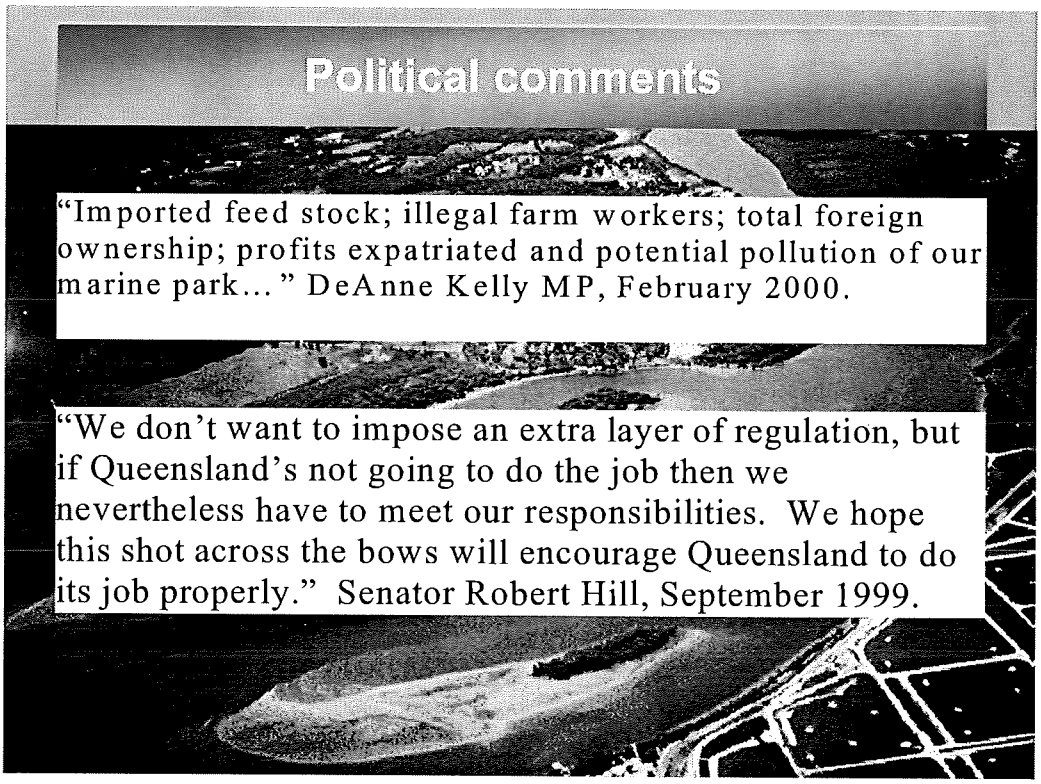
Issues

Constraints:

- Public perceptions and concerns
- Governments regulations

Community concerns





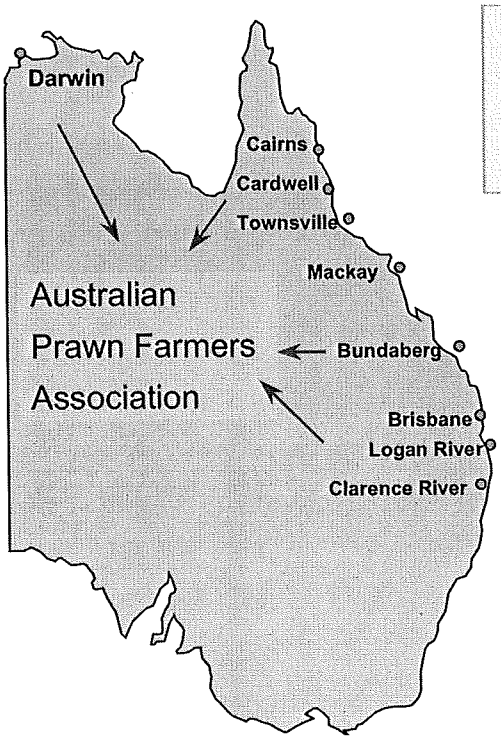
Government regulations

- Variable within states, between states & between states and commonwealth
- 14 different agencies involved in licensing and approvals
- Ad-hoc, site-by site

Industry needs

- Consistent approach to regulation - approvals and environmental management
- Defendable environmental management practices
- Encourage non-regulatory approaches (Code of Practice)

Nationally coordinated environmental research



Australian Institute of Marine Science

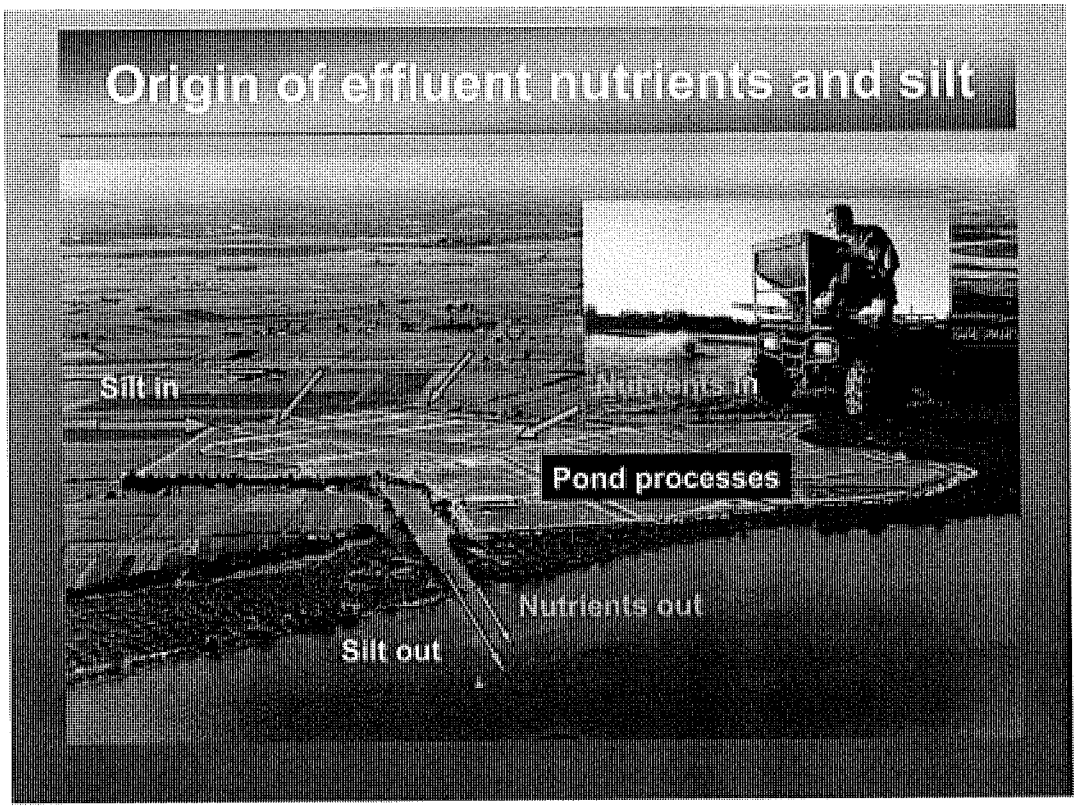
Effluent
- fate
- hydrodynamic models

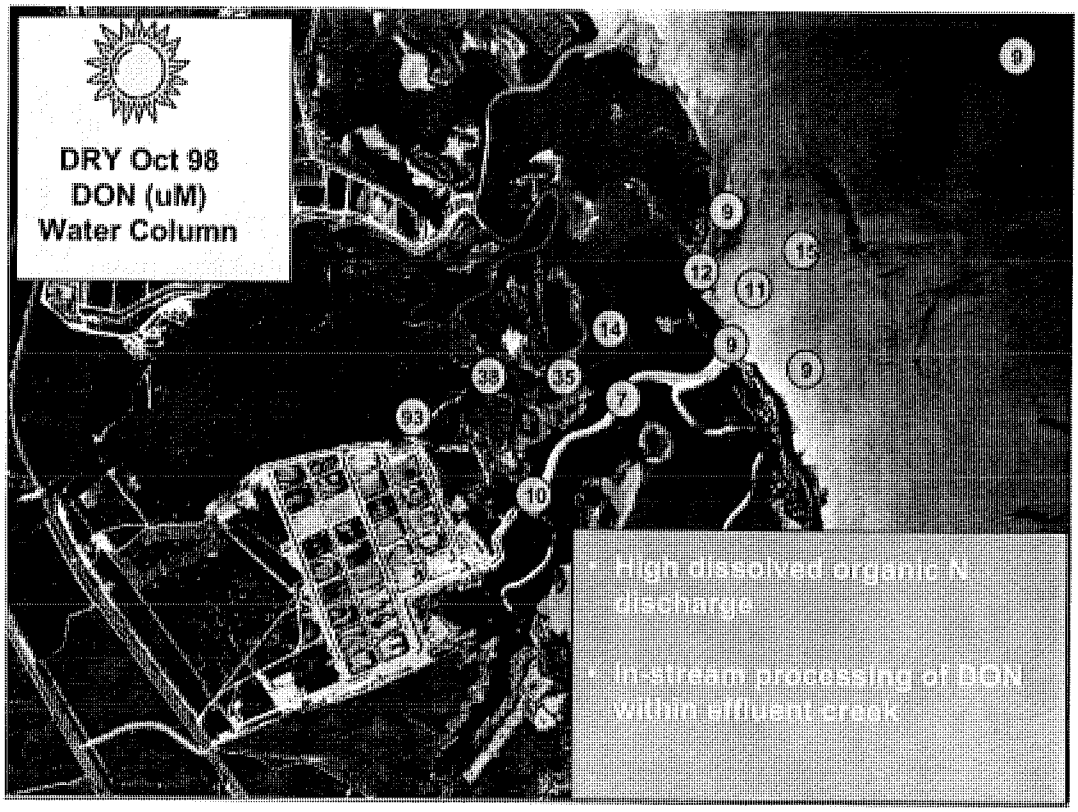
CSIRO Marine Research

Effluent
- origin
- composition
- treatment

University of Queensland Marine Botany

Effluent
- environmental health indicators



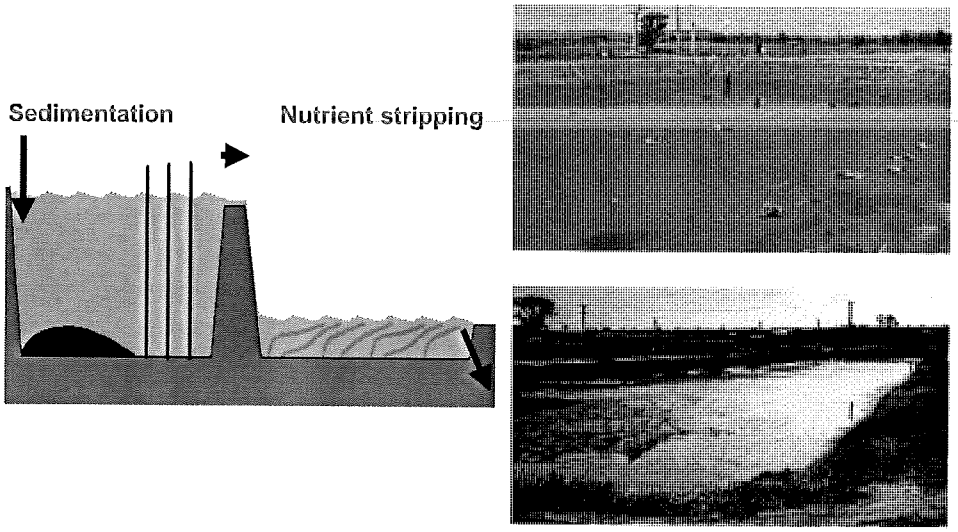


Summary of results

- Effluent composition precisely quantified (nutrient budgets & loads)
- Influence evident but localised

Summary of results

- **Options for reducing, re-use or dispose of wastes**



Industry response to research results

- Improve waste management strategies
- Code of practice
- National Workshop

National Prawn Farming Environmental Management Workshop May 24-25 2000

Objectives

- Discuss & document the key environmental management issues from the perspectives of industry, regulators, researchers, NGO's and other stakeholders
- Develop an action plan to achieve national environmental management standards for the Australian prawn farming industry

Environmentally sustainable farmed seafood

Responsible use of the coastal zone

Standing Committee on Fisheries and Aquaculture Perspective

Richard McLoughlin

Director
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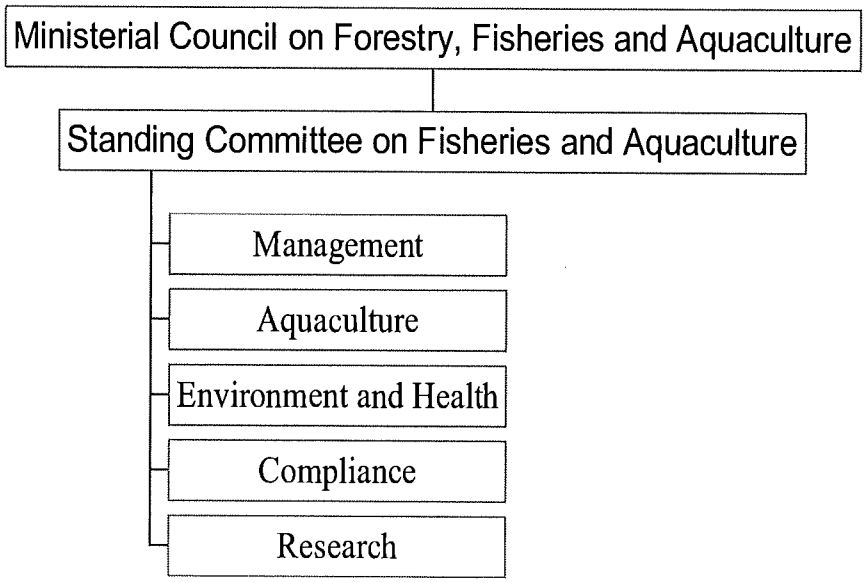
The Standing Committee on Fisheries and Aquaculture (SCFA) is chaired by AFFA and its membership comprises a representative of each agency represented by members of Ministerial Council.

Within the evolving context of Australia and New Zealand's regional political, social and economic environment, the objectives of the SCFA are identified as follows:

- Provide strategic leadership on key issues impacting on the ecologically sustainable management and development of fisheries and aquaculture.
- Facilitate national and regional planning and coordination of fisheries and aquaculture management, including the sharing of information across fisheries jurisdictions.
- Act as an advocate for the sustainable utilisation of fisheries and aquaculture products and resources.
- Address matters submitted to SCFA by the Ministerial Council on Forestry, Fisheries and Aquaculture.

Ministerial Council and Standing Committee Structure



1. Oceans Policy –
   Key issues are:
   - Sustainability indicators for fisheries;
   - Marine protected areas;
   - Regional marine planning;
   - Environmental Protection and Biodiversity Conservation Act;
   - Import/Export Controls

2. Total management framework for all user groups

3. Marine pests

4. Regional engagement

5. National aquaculture development

SCFA's approach to implementing ESD for Australian fisheries

Establish nationally agreed objectives and indicators for sustainable fisheries management along with appropriate reporting arrangements

Implementation of ESD in Australian fisheries

- National ESD policies developed late 1980's and early 1990's
- Development of ESD based fisheries legislation early 1990's - 1997 for all States and Commonwealth
- SCFA begins consideration of implementation and auditing of ESD principles 1997/98
- FRDC funded project 1999/98 on defining ESD terminology and principles
- Implementation schedule proposed - 2000

Summary of key SCFA tasks:

- Define scope and purpose of ESD indicators
- Agree on ESD terminology
- Agree on ESD objectives
- Develop system to organise indicators and criteria for different purposes
- Select and develop indicators and reference points
- Application and testing of indicators
- Develop monitoring and auditing

Conservation Perspective

Margi Prideaux

National Marine Campaign Coordinator
Australian Conservation Foundation
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(Transcription of verbal presentation)

I present the views of Australian Conservation Foundation but I would like to think that these views also represent those of the broader environment movement and maybe even some in the fishing community. This is not to suggest that my arguments are necessary policy across the movement, but I think that we are largely in agreement about most of the points.

I appreciated what Lyndon had to say earlier and I think that it is an area we pay far too little attention too. While my presentation is primarily on ecological processes and the environment I would not like us to loose sight of the other social justice issues involved in this debate.

I want you all to know that I have thrown away my original talk. After today's early presentations there seems to be evidence that there has been an attitudinal shift from both sides of the debate. Earlier on today it appeared to many of us in the audience, the conservation and fishing interests, were talking with one voice. I was actually very heartened to hear it, because it seems we can agree that our optimal goal is the same: inter-generational equity to a healthy ecosystem and access for our children's, children. Unfortunately that initial tone seems to have shifted slightly over the day, but I hope that we can still harness our initial cooperative impetus. There is a lot to be gained in working together rather than against each other all of the time.

We are operating in a dynamic ecosystem

One of the big issues for the conservation movement is that far to often debate about access right and sustainable management breaks down into single issues, single sectors or interest areas, rather than considering the ecosystem as a whole.

The ecosystem must come back into the centre of our focus even though we are hear to talk about ESD and fisheries specifically. Fisheries are one user of the marine environment of many. Its true that fisheries play a very important part in management of aquatic ecosystems but that they have to be considered as one of many users.

Put 'ecological' back into ESD

Its important for me to clearly state that from our perspective the 'ecological' in ESD is the fundamental first principle. Without ecology you don't have economy. Earlier on I heard fishers saying that was good news to hear. Other perspective have crept in over the day in an attempt to erode this so I need to state again that we are not trying

to restrict industry's advancement or economic growth in any way shape or form – but everything needs to be considered within what the ecosystem can handle, otherwise you won't have a industry in the future.

Today we have also heard a lot of rhetoric from the 'policy end' of the spectrum. I need not remind you that as a community – conservationist, fisheries and managers – we have been talking about this for ten years! - consistently debating the terminology of indicators and criteria. At some stage we do actually have to make a decision and get on and do something. I would like to hope that this comes out of this 2-day workshop. The fact that there are so many of us in the room, which is a rare occasion, may mean that we can actually achieve that. Hopefully, we are going to hear from Keith Sainsbury and colleagues tomorrow that we have got some things to work on and can at the end of the workshop start to put a lot of this into action.

The precautionary principle is fundamental to ESD

One thing that has not come up today very much, and I would like to bring it into quick focus is the precautionary principle. This is fundamental to Australia's definition of ESD. It is in our legislation, in our national strategy and lets not forget that we are 'managing' to take care that there is no harm into the future. Recent cases through our legal system have enshrined this. While they should not be seen as being an attack on industry in any shape or form it's simply an opportunity for us to bring back in focus the core principle of ESD - the precautionary principle.

Ecosystem - based management provides the framework

From the conservation movement's perspective, we tend to see things at a 'macro' level. Ecosystems-based management is fundamental to our Oceans' Policy. Also lets not forget that we are part of a bio-region and a wider region of oceanic realms and that we have been entrusted under international law to take care of our patch. UNCLOS, the United Nations Conventional on the Law of the Sea, charges us to manage our resources beyond 12 nautical miles for the benefit of all mankind. United Nations language is not very PC but it is very important. We don't own any of this, it's all in trust, its there for all of us to manage and ensure that it is around for future generations.

We must acknowledge that there are many users in the marine environment. These are complex things we have to grapple with but we do have national policy that assists us. It gives us some guiding principles to assist with ecosystem-based management. Fundamental to Oceans Policy and regional marine plans is the fact that there are many users.

Access equals responsibility

With this access must come responsibility. This is where the loop is joined and all the principles and words I am spouting come home to roost – when the burden of proof rests with the proponent then the precautionary principle requires that proponent to prove that what they are doing in the environment is sustainable.

If that proof is there, and if it is on the table where we can see it and we can feel confident that for example the science is strong or that there's some move towards

strengthening it, we won't be 'bashing' anything, we won't be trying to shut any thing down. I think that, that's something forgotten very often.

Confidence comes with transparency

So, for us this confidence comes with transparency. Thankfully there is a new trend towards transparency. We have been included to a large degree, and when I say 'we' I mean the conservation movement, in many of the Commonwealth fisheries management processes. There are conservation people on Management Advisory Committees but this openness has not flowed through to the States. In many cases the state management committees don't involve anyone outside the fisheries sector, and that's just not appropriate any more. The Australian community does not think that is appropriate any more. We want to be in there, we want to be engaging with the process, we don't want to be on the outside all the time bashing it.

The crux of what I brought me to the workshop for these 2 days was to actually find out where we were at with our sustainability indicators and where we were at with criteria for measuring it. The Schedule 4 process is coming into being. Conservationists are cautiously supportive of the initiative because we are finally seeing something that is actually going to give us information that we have been asking for. Like the fishing community, we are seeking security too.

Show some good faith and operate ahead of regulation

But ESD means more than security. ESD means being responsible within the area you are working with and this can be hard when operating in an absence of scientific certainty. The scientists, tomorrow, are going to give us some indication of the indicators they have got - but let's not kid ourselves - we don't know everything about the marine environment and that fact makes the job a hard one. If we accept that we are meant to be managing on a precautionary basis, we need to be looking towards other mechanisms to show that there is some good faith towards this goal; to show that we are understanding the complexity of what we are doing and that we are moving forward. So one of the things that the conservation movement is looking at is how we can measure the ESD principle with actions that we already have. We are developing a paper, to be released in the next month or two, which is looking at all of these things in more depth.

Obviously there's the scientific element to measuring ESD in practice, but there are two other areas, industry participation and management performance. We have identified these specific areas as being able to show some measure of transition towards our goal. An example might be an industry demonstrating that it is pro-actively pursuing, promoting and facilitating progress towards ESD. I know that it's a big ask, but, as I said up earlier, 'access equals responsibility'. Some of areas we hope to see voluntarily picked up by industry include industry initiated voluntary reduction of effort or seasonal quota when the stocks are not deemed of current commercial significance. These are not a big asks. But it requires some attitudinal shift and requires us to look at increasing security that fishers have within their access rights. We do not want to hurt their relationship with their bank managers, but we do need to be moving towards reducing the ecosystem impact. Examples exist - industry initiated voluntary strategies, and there are some out there, to minimise known impacts of fishing on the ecosystem, or the development and adoption of industry

codes of conduct relating to environmental and precautionary practice. There are some out there, I've been privy to a couple, unfortunately far too often they say commercial-in-confidence so we can't release them to the wider conservation movement and let them know the good things the fishing industry is doing. Also, all to often, the codes of conduct only came into being following regulation.

I want to refute some things that have been said earlier on today – that's it is far better to give industry the opportunity to voluntarily move along. In a perfect world I would agree, but in my experience its usually the case that they industry only voluntarily moves to the point of regulation, they will only move to that particular bar to jump over. We want to see industry leading regulations, so that regulations come from behind to pull up the members of the sector, that are not doing what you want them to do. That's what regulations should be there for. If the fishing community is really truthfully engaged in this, they can lead the codes of conduct, they can put in place things that Martin was talking about with the aquaculture industry. I have not seen the specific plans, but if he puts them in place and they are truthfully best practice in the world - we would welcome it, commend it - publicly and loudly, believe me.

Marine protected areas provided security

Support for and promotion of a facilitation of no take areas and research requirements it is necessary to establish environmental impacts and provide ecosystem security. I know marine protected areas are a touchy subject between the fishing industry and conservation movement. They need not be. They are not something trying to knuckle down or remove fisheries access from areas. We are simply asking for some security.

Management should be leading not stumbling

I am sad to say that management is an area that we have a problem with. I know we are not alone, sharing this view with many in the fishing community. I have been dismayed to watch the last year of inter-agency difficulties coming to terms with the whole idea of ecosystems-based management and the Ocean Policy. It would be great to see some proactive engagement and the acceptance that this is the way of the future. This is what we have to do if we are to 'walk our talk' in this country.

Another recurring problem is the full disclosure of issues in problem areas as a benchmark for assessment. I can only speak from my experience with Commonwealth management agencies, but it strikes me as a community individual, a lot of the influential documentation is either written in a speech that makes it very difficult to penetrate or indeed glosses over the reality of issues. I am not suggesting anyone is lying or falsifying any data or anything like that at all. What I am saying is we need some open honesty about where things truthfully are. So that we have a benchmark. So we know what's real and what's not.

To finish, I want to refer again to marine protected areas. They are very important fundamental aspects of what we are calling for and I have discussed the reasons why above. Consider them not a threat, but an insurance policy for the future. To us they serve so many purposes – they are caretakers for the non-commercial values to be protected in the marine environment.

Social Perspective

Melanie Fisher

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Just before I start, I would like to say that these are my views not necessarily those of AFFA or the Bureau of Rural Sciences. I was also a bit worried that some people might have been offended by what I have to say - until I heard Nigel Scullion speak.

ESD is really not a new process, indigenous managers of resources have recognised its importance for a long time, as have commercial fishers. They might not have always achieved the outcomes they desired but it has been considered and efforts made to achieve it for centuries. In the modern, industrial country version we have been talking about it and working towards it since the 1970s. But the Catch 22 for ESD is the more progress you make, the harder it becomes to achieve the remaining goals. The win-win situations and easy and symbolic objectives are easily achieved. Everyone is happy to work to achieve those outcomes. However, as they are progressively achieved, you are left with the difficult and harder to resolve - issues and I think that's where fisheries in Australia is heading at the moment. Oceans Policy and Schedule IV are going to present some really interesting challenges. While it is very good to hear people like Nigel Scullion and other people speaking about the need to get sustainable resource management in place and how important ESD is, we are now down to the difficult issues where there will be winners and losers.

I want to take a look at the social perspective of ESD in fisheries, that's the title I was given, but I do really think that understanding the social perspective is very important to achieving ESD. I say that for several reasons:

First, if you want to gain acceptance of and compliance with ESD objectives and the strategies for implementing ESD, you need to take account the perspectives of the wide range of players with interests in this area.

Second, social considerations are always built into definitions of ESD whether it is explicitly defined or not.

Third, when you start moving towards implementing measures which will lead to ESD, the social context they will be implemented in becomes very important..

The fourth social consideration deals with measuring progress. You could consider that this as a part of implementation, but monitoring and measuring progress are important enough to view in their own right.

Acceptance

Let us now consider the acceptance side of things. The way commercial fisheries are managed in Australia is ahead of the pack in terms of best practice. Everyone recognises this, but it is not perfect. As Martin Breen pointed out, commercial

fishing and aquaculture do run into some particular problems in terms of broader community perceptions about their environmental and social impacts. If you don't get acceptance from key stakeholders of the ESD approaches you are promoting, you risk the range of problems we have seen in relation to the native forest-based industries in Australia.

These problems range from legal challenges to non-compliance with rules and regulations to, at the other extreme, sabotage. Legal challenges have been raised in the NSW Land and Environment Court in relation to a number of natural resource issues, including aquaculture. There are a many ways people can use the legal system to hold up development and access to resources if they are unhappy with resource management decisions or the way these decisions have been made. Media campaigns were mounted very effectively during the native forests debate and could conceivably be used in relation to fisheries and aquaculture. Pressure can be applied to fisheries management agencies, either from a commercial fishing sector or from NGOs and green groups in an effort to influence or change management decisions and approaches.

If interest groups or individuals are unhappy with decisions, you may get pressure on elected representatives. I know people get annoyed about what they may see as political interference, but this is just the invisible hand of democracy in operation. Politicians are here to represent a range of community interests and, when a particular issue is well canvassed, they have to respond and be concerned about it. I thought the 'I fish I vote' car bumper stickers used at recent elections were quite effective in conveying the message that significant numbers of the electorate were concerned about a particular issue. It's interesting to see how that little saying has been hijacked by people protesting against the GST on tampons. In the US, concern from the commercial fishing sector over the introduction of quota management systems led to pressure on elected representatives. This led in turn to a delay in management decision making while a commission was established to investigate and report on fisheries management systems. So, pressure on elected representatives from disaffected members of the public or interest groups is a real issue which may have real impacts on the ability to achieve ESD objectives.

Other things that might occur if enough people disagree with approaches to achieving ESD in fisheries could include strikes or boycotts. Consumer boycotts of timber from unsustainably managed tropical forests was a driver which influenced governments efforts in trying to get an agreement on an international timber treaty. At the other end of the spectrum, fishermen in Iceland went on strike in protest against a quota arrangement. I am unsure whether it was effective or not.

Rule breaking or non-compliance occurs when people do not agree with the rules – and is most likely to occur when rules are difficult to monitor or enforce. Examples include people not wearing seat belts or bike helmets, littering behaviour, and failure of recreational or commercial fishers to adhere to bag limits or quotas. In the latter example, it is particularly difficult to see what is happening; how many fish are under the water; who is catching what and how!

Another real problem is sabotage. This was a real issue in the Australian forests debate with green groups threatening to and on occasions actually sabotaging logging operations. I do not know if that's likely to happen to fisheries but it might happen to aquaculture operations. I heard an allegation last night that an aquaculture operation, a prawn farm, was affected by someone putting something into the water upstream

causing the loss of prawns in some ponds. Apparently it was a disaffected farmer who was concerned about the impact of the prawn farm operations on his water quality.

So acceptance is a real issue; but acceptance by whom? Obviously commercial fishing interest and NGOs, but there is a wider range of stakeholders. The recreational fishing representative who spoke earlier mentioned people who might be interested in what is happening in terms of marine aquaculture resources; upstream and downstream. It also includes the broader community. Some people, for example, may attach a high level of value to seeing marine resources in a pristine state. They don't want to see it used by people at all. Others may want to go recreational fishing and don't want commercial fishing interfering with what they see is a right or a privilege.

So you can have a range of users with conflicting views. I thought it was a bit odd this morning to hear that there is no such thing as a trade-off or balancing between competing objectives in ESD. I don't believe that at all. Frankly it's crap! Sometimes there will be rather difficult decisions or conflicting interests and trade-offs that will have to be made. And if you ignore people who care strongly about an issue then they will try to interfere in the decision making process or the implementation of decisions they disagree with.

Defining ESD

So balancing values, needs and impacts on ecosystems is important to achieving the objectives of ESD. This is where you get into definitional issues. Definitions of ESD were discussed at considerable length by earlier speakers. I agree with Conall O'Connell, although my eyes don't glaze over when people start defining ESD - I just reach for my gun. The 'social' word generally appears to be ignored in many of these definitions and descriptions of ESD because the focus tends to be more on ecological functioning. However, if you don't take the "social" into account then you are not going to achieve the outcomes that you desire in terms of maintaining ecosystem function.

Usually people define social in terms of needs or quality of life, preferences or values. These can be extractive, either commercial or indigenous or recreational uses (Although why people would want to fish for fun, I don't know). They can be non-extractive recreational use. These values can be cultural or symbolic. Just knowing that we have a lovely coastline, beautiful beaches and fish under the water, is important to some people whether or not they use the beaches themselves. As I said earlier, some people just like to know the ecosystem is functioning well. They like to think of it being untouched. Sometimes people hold all of these values, extractive and non-extractive, at the same time which can be contradictory. If we are really going to assess the social context within which ESD operates, we need to be able to identify, articulate and to an extent measure these different values, needs and preferences.

Measuring some of these values is particularly difficult. Economists have used contingent valuation and a range of other measures to try to attach dollar values to non-market values. They have not worked at all except as a way of identifying priorities or preferences. Attempts at trying to value these non-market values have been going on for quite some time and now the sociologists are having a go. They

are using mechanisms like multi criteria – analysis and social choice modelling. Essentially, these approaches involve getting people to write out lists in order of what they think is important. The lists are then compared leading to a number or trade-off. However, how do you weight my preference for fish not to be killed for fun against the whole of the recreational fishing community? Do you give my vote equal weight to the sum total of their votes? You can get priorities, articulate who cares about what and perhaps the strength of their beliefs, but these methodologies do not tell us whose preferences and values you should pay more attention to and whose you should give less weight to. What you do get is information to facilitate structured discussions and bargaining around the table over resource access issues.

Implementing ESD

Implementing ESD will almost always involves some change and impact on humans. After all, why are we here at this workshop? If it everything was simple no one would have turned up or registered. Governments, fishery managers and industry have a range of different methods available to them to try to encourage change towards ESD. But choosing the right package of measures can be quite difficult and, I think, this is one thing that public servants are not very good at. (Having previously offended economists I guess now I have offended all my brethren in the Public Service). Public servants tend to develop policy on the basis of assumptions about what is going to work, that is, change behaviour, and what will not work.

A lot of policy tools are available, including things like participative decision making (very fashionable at the moment); cooperative management; participative action orientated research; involvement of the fishing industry in monitoring; economic instruments like the allocation of property rights; and a whole raft of regulatory approaches. There are also voluntary approaches like codes of conduct, accreditation systems and so on. And there are assistance packages; assistance to increase the value of fishing, assistance to change or adopt new technology, training and assistance in terms of structural adjustment. But which mechanisms do you choose and put together to make up an effective, coherent policy package? How do you implement and in what combination? Too often assumptions are made about what package will work rather than having a good look at how these instruments have worked in practice in the past.

Just by way of an illustration, I will briefly discuss property rights. Economists argue that if you allocate property rights you will achieve nirvana. Inefficient operators will leave the industry selling their shares to efficient operators. The value of the fishery will increase and everything will be gorgeous and the fishery will be more sustainable. But that is not how it works in reality. Usually, some inefficient operators stay in, some medium operators leave and some big operators expand. It doesn't necessarily lead to higher value in the fishery or more sustainable management. It all depends on the social and economic context in which your decision is made. Institutional arrangements can be a nightmare and often public servants don't consider these and their impacts on what is trying to be achieved.

One thing we tend to ignore is the social impact of change. If you restrict access to a fishery, what will be the impact on the land-based community that is affected by that fishery. It is not just a matter of dollars but where they flow and how many people live in the community. If a number of fishing families leave a community this might

equate to one less teacher or a shop closing down. What is the impact on that community of changes in a fishery and its ability to adapt and change? This is an area that requires considerably more focus.

Monitoring

Finally, (and briefly as I'm running out of time) monitoring is very important. As a number of people have said, ESD is not an end point. It will be an evolutionary process. Monitoring progress is required across the full range of ESD components including the social. This makes it possible to adapt and fine-tune as is necessary. Good quality monitoring of the social aspects of ESD is essential to dispelling the myths and misperceptions about social impacts and social drivers and influencers of change towards more sustainable practices.

Session 3

How do we implement ESD in Fisheries?

Chair:	Tom Davies
Speakers:	Keith Sainsbury
	Jean Chesson
	Katherine Short
	Bryan Pierce
	Gary Hera-Singh
	Colin Buxton
	Tony Smith
	Jayne Gallagher
	John Tanzer

A Review of ESD Indicators Used in Australian Fisheries Management

Keith Sainsbury, Tony Smith, and Helen Webb

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Background

Initiative of the FRDC Board (1997)

- Questionnaire to the peak industry body, fishery management agency, and FRAB in each jurisdiction
  - current usage
  - planned development
  - ideal/desired future development of ESD sustainability indicators

Review Aims

Project to:

- Consolidate information in questionnaire replies
- 'Ground truth' the consolidation
- Seek additional comments and views

To identify:

- Areas of agreement, partial agreement and contention
- Gaps and implications for future research and development

What Was Done

- **Fisheries legislation, policies and management plans reviewed**
  - use of ESD related objectives and indicators
- **FRDC questionnaire returns**
  - summary plus identified issues/gaps circulated back to participants
- **Interviews (mid 1998)**
  - peak industry body, fishery management agency, and FRAB in each jurisdiction
  - very frank discussions summarised in report
- **Draft report circulated back to participants for agreement**
  - late 1998 and early 1999

7 Key Issues and Points of Agreement Early 1998

1. Use of ESD indicators
2. Consistent terms and definitions
3. Current use of indicators
4. National approach
5. Guidelines for development and use of ESD indicators
6. Capturing existing experience
7. Cross-sectoral issues

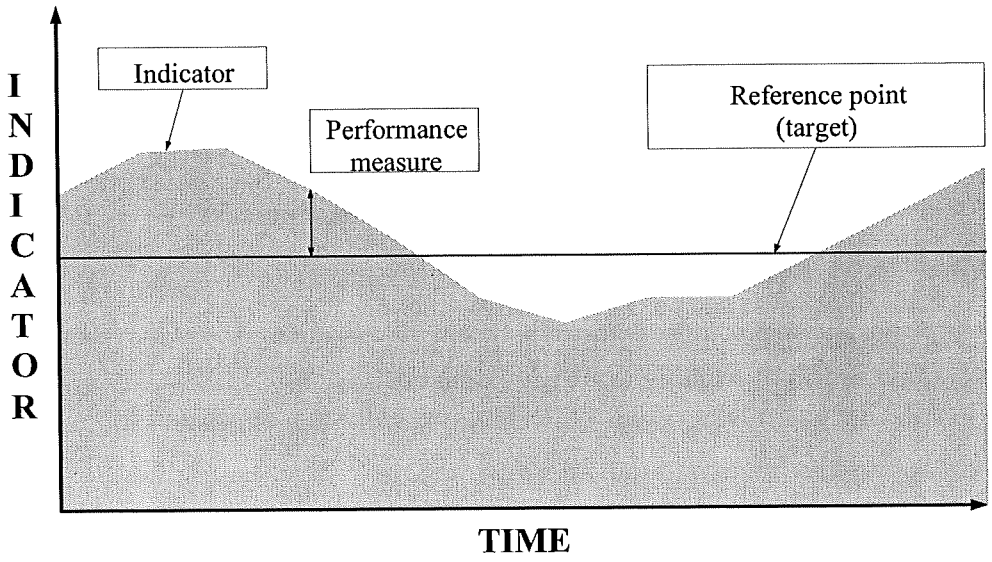
Issue 1: Attitude to Use of ESD Indicators

- Strongly supported
  - all jurisdictions have some explicit ESD related legislative objectives
  - but not consistent
  - most using indicators in management plans
- Agree that ecological aspects of ESD in fisheries extends beyond target species
  - supporting ecosystem and ecosystem health
  - most give higher priority to target species
- Agree that social and economic issues are part of ESD, but
  - very mixed views on value of explicit economic and social indicators

Issue 2: Consistent Terms and Definitions

- Much confusion with regard to use of terms within and between
  - jurisdictions
  - stakeholders
- Not a huge task to resolve but an important one
  - focus on terms related to use of indicators
  - criteria, objective, indicator, performance measure, reference point, benchmark, standard.....

An Example of the Relationship Between an Indicator, Target Reference Point and a Performance Measure



Issue 3: Current Use of Indicators

Wide range of indicators used

- Mostly for reporting
- Some conjunction with trigger points for management decision
- Many are process rather than outcome based
- Most are catch rate based, and almost all rely on catch recording

Target species

- Many indicators used and much experience to build on
- Hierarchy of indicator types depending mainly on value of fishery
  - reported catch through to quantitative stock assessments
- Widespread concern about consistency and adequacy
  - especially for low value and multispecies fisheries
  - across similar fisheries in different jurisdictions
  - across different MACs
  - what is really needed or adequate for each fishery type?

Ecosystem – ecologically related species, food chains, and 'ecosystem health'

- Very few outcome indicators or existing experience to consolidate

- Some process indicators
  - compliance with bycatch reduction devices and bycatch reduction
  - intended precautionary approaches in some fisheries
  - extent of protected or closed areas
- Widespread support for development of practical and cost-effective improvements

Economic indicators

- All agree that economics are vitally important
  - in the end drive decisions at all levels
  - but often through the political rather management process
- Some use of indicators
  - typically coarse such as first landed value
  - some proxys for profitability
  - some explicitly relating to management costs
  - ABARE and others currently developing additional approaches
- Mixed support for improved indicators

Social indicators

- All agree that social issues are vitally important
  - widespread view that this is through the political process
  - limitations on what can be done through fisheries agencies
- Very mixed views on the value of explicit indicators and performance measures
  - outside fisheries agency mandate
  - inside mandate but indicators not useful politically
  - inside mandate and indicators needed
- All agree very difficult
  - no examples of outcome indicators or performance measures
  - some process indicators used relating to consultation

Issue 4: National Approach

- Strong support for national guidelines or framework
  - recognise wide range of circumstances
  - options, justification and guidance, not prescription
  - coordinate effort and avoid duplication
- Strong support for SCFA to take a major role in this
  - needs 'bottom up' involvement
  - the national approach needs to work at MAC level
- Some support for national benchmarking or standards for use of ESD indicators in management plans

Issue 5: Guidelines for Development and Use of ESD Indicators

- Wide support for basics of what was needed in ESD indicators and performance measures
  - easy to understand
  - robust and defensible
  - deal with risk and uncertainty
  - guidelines about selecting when an indicator is appropriate
  - accepted by stakeholders, within and beyond fisheries
- Indicators are not an end in themselves
  - they must relate to or be useful to achieving management objectives
- The scope and limits of fishery responsibility be recognised
- Realistic time-lines for development and acceptance of ESD indicators

Issue 6: Capturing Existing Experience

- Make use of national capacity to provide 'critical mass'
  - consolidate national and international experience
  - build ownership of consolidated results
- National review
  - case studies for different fishery types
- Tool-box of indicators
  - options tested for strengths and weaknesses
  - justification for options, including risk management
  - guidelines for use of options

Issue 7: Cross-Sectoral Issues

Strong support for building greater acceptance and involvement by other sectors

- ESD is broad and fisheries is only one part, but could provide marine leadership
- Use of fisheries indicators in SOE reporting
  - objective defensibility of indicators and measures
- Use of fishery indicators by other sectors
  - shared burden of costs
- Separation of environmental effects of different sectors

R&D RECOMMENDATIONS

Common R&D threads throughout the review

- Nationally coordinated approach
  - not precluding independent jurisdictional efforts
- SCFA involvement in developing national standards

- Scientifically defendable tool-box of options for ESD indicators and performance measures
    - guidelines for use to be in plain English and applicable at MAC level

Four Specific recommendations:

1. Develop simple and clear definitions of main terms

2. Consolidate experience

- Experience of other nations
- Australian experience in other sectors
- Australian fisheries experience
    - identify fishery types for consolidation of experience
    - workshops based on case studies for fishery types
    - needs to involve MAC level practitioners
    - wide range of stakeholders including commercial and recreational users

3. Develop guidelines for use of sustainability indicators

- SCFA linked or lead process
- Industry and other stakeholders linked
- Links to other sectoral interests
- R&D to support

4. Scientific testing of indicators and performance measures

- Standardised simulation 'test bed' against common fishery and ecological situations
- Ability to test suggested indicators from any interest group
    - Really indicating what intended?
- Consolidated scientific justification of indicators
- Users guide in risk management context

A framework for assessing Ecologically Sustainable Development

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Ecologically Sustainable Development

using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased

- National Strategy for Ecologically Sustainable Development, 1992

Asking the right question

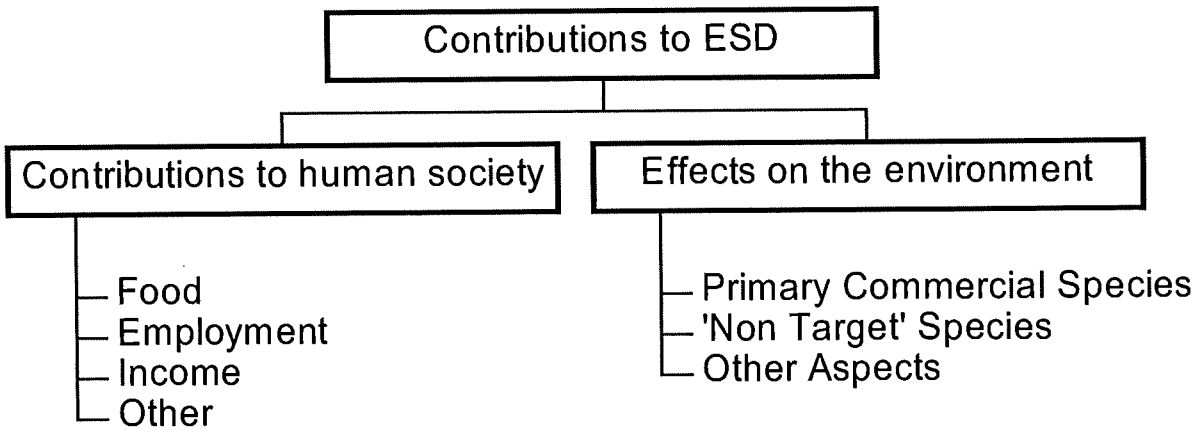
- Is it sustainable? ✘
- How does it contribute to ecologically sustainable development? ✔

Commercial Fishery Example

How does a commercial fishery contribute to ecologically sustainable development?

BRS Evaluation Framework

- Structure
- Set of procedures to apply to the structure



BRS Evaluation Framework

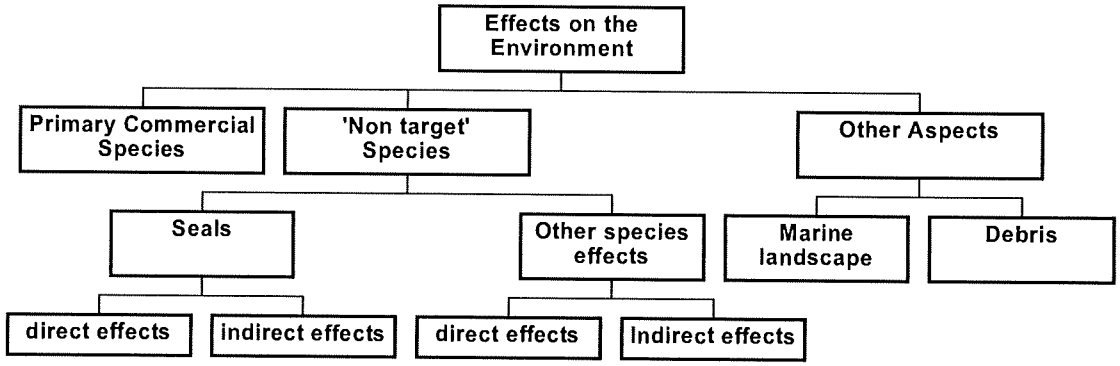
1. Identify components
2. Specify objectives
3. Measure progress with respect to those objectives
4. Evaluate options for improving progress

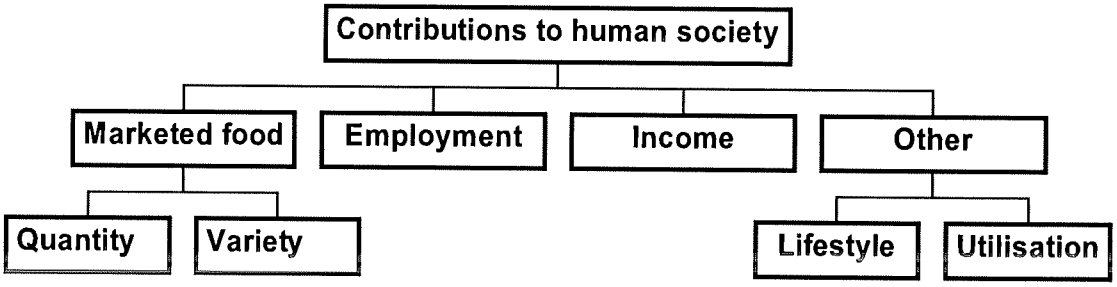
Simplified Example: South East Trawl Fishery

How does the trawl sector of the South East Fishery contribute to ecologically sustainable development?

BRS Evaluation Framework

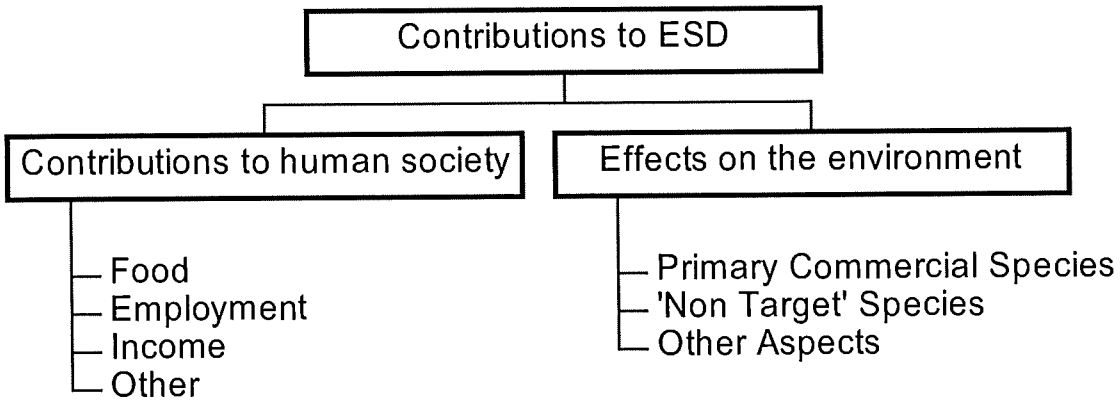
1. Identify components





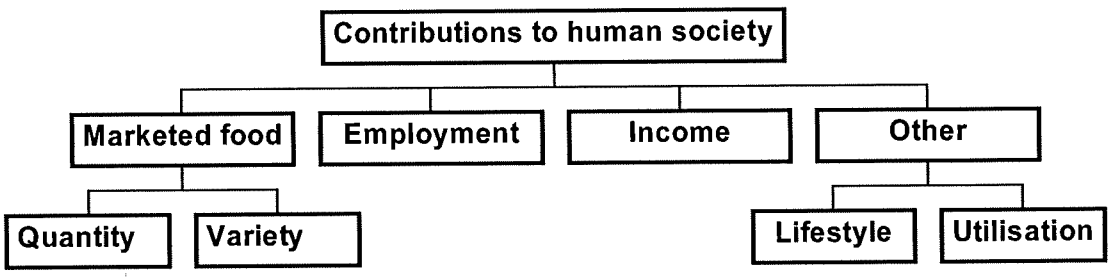
2. Specify objectives

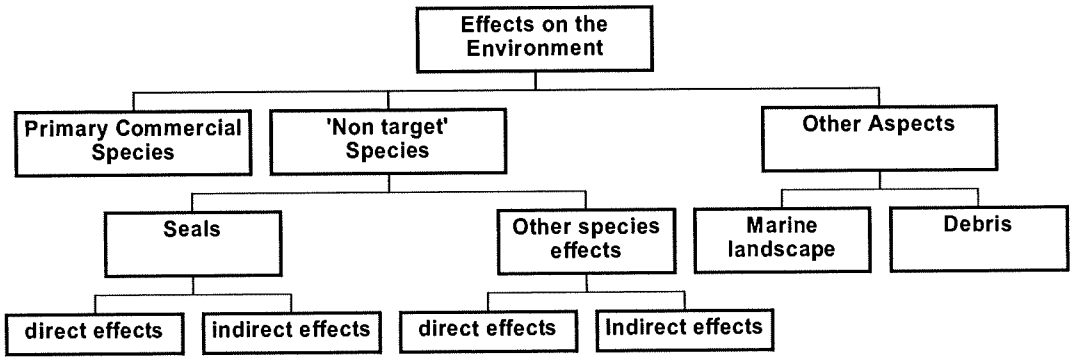
An objective in every box!



Objectives

- Food: Maintain or increase the provision of seafood to the Australian community
  - quantity: maintain or increase the amount of seafood
  - variety: maintain or increase the variety of seafood
- Employment: Maintain or increase fishery's contribution to employment
- Income: Increase net income
- Other: Maintain or increase net social benefits
  - lifestyle: maintain or increase lifestyle benefits to individual fishers
  - utilisation: reduce wastage





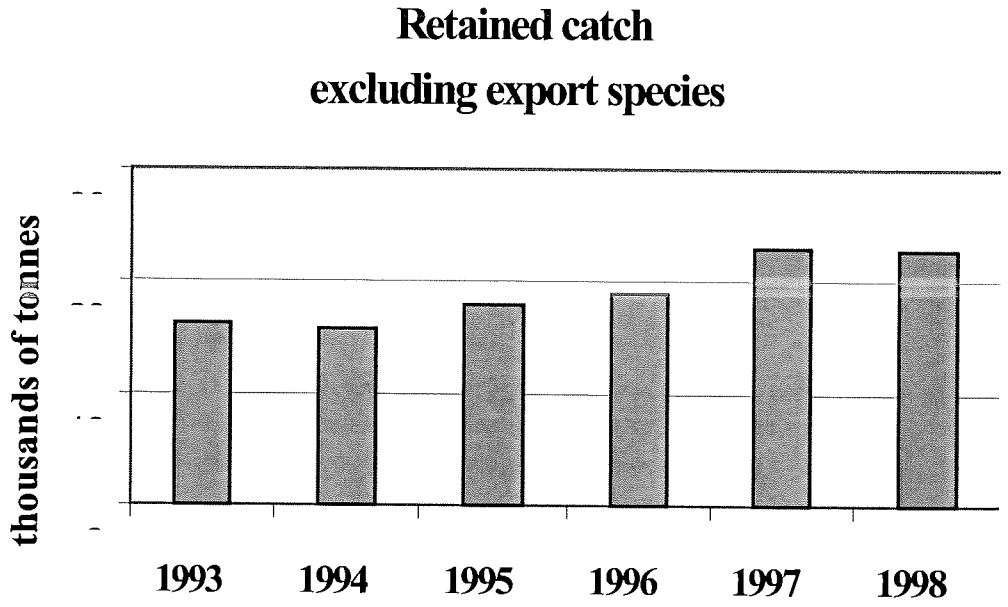
- Primary commercial species: Meet the stated objective for each species
- Non-target species: Minimise impact on non-target species
  - seals: minimise impact on seals
    - direct effects: no increase in direct mortality
    - indirect effects: reduction in injury attributable to fishing debris
- other species: minimise impact
  - direct effects: reduce amount caught
  - indirect effects: maintain or reduce total removals
- Other aspects: Minimise impact of fishery
  - marine landscape: no increase in area trawled
  - debris: reduce to negligible levels

BRS Evaluation Framework

3. Measure progress with respect to those objectives

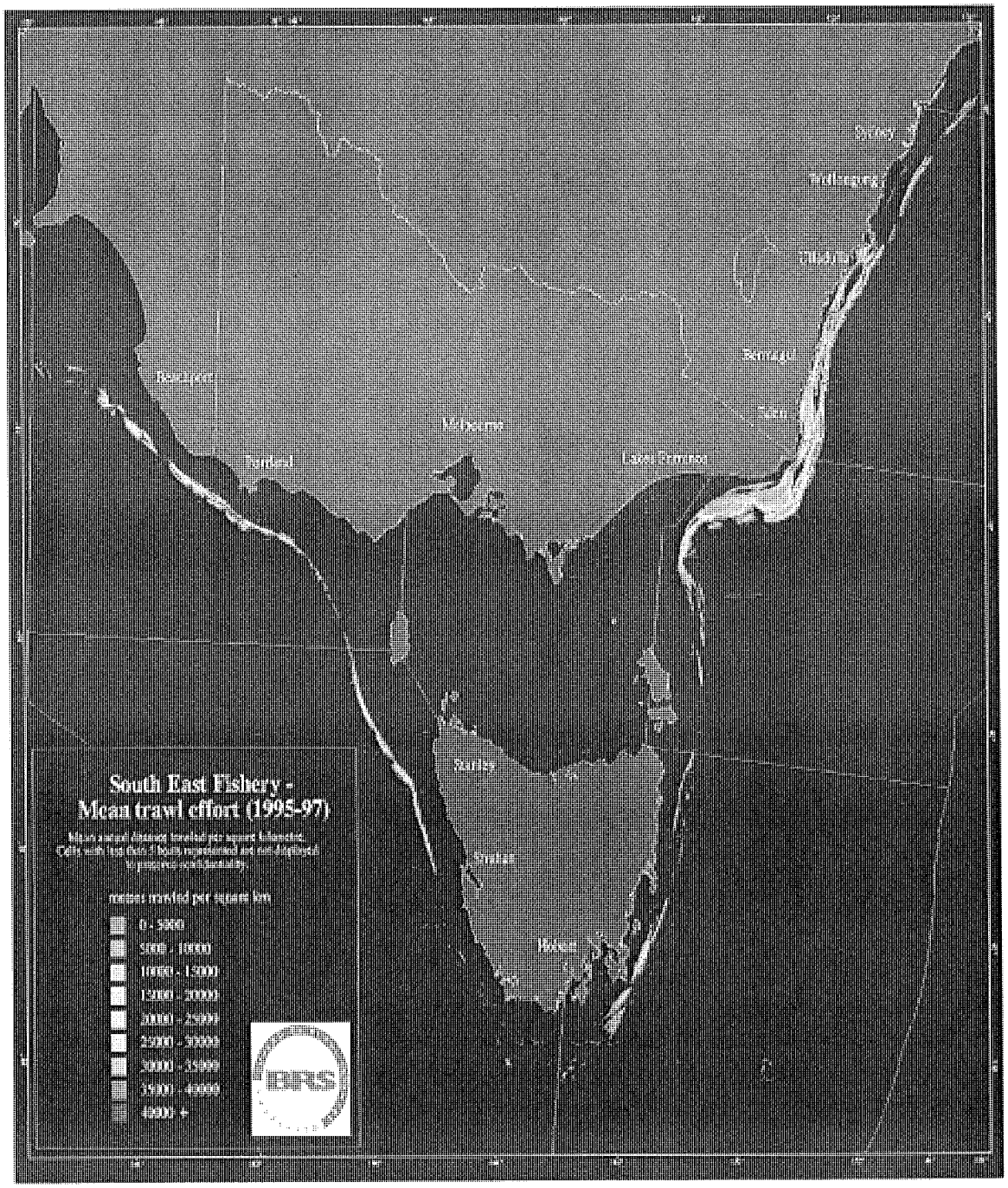
Component: food - quantity

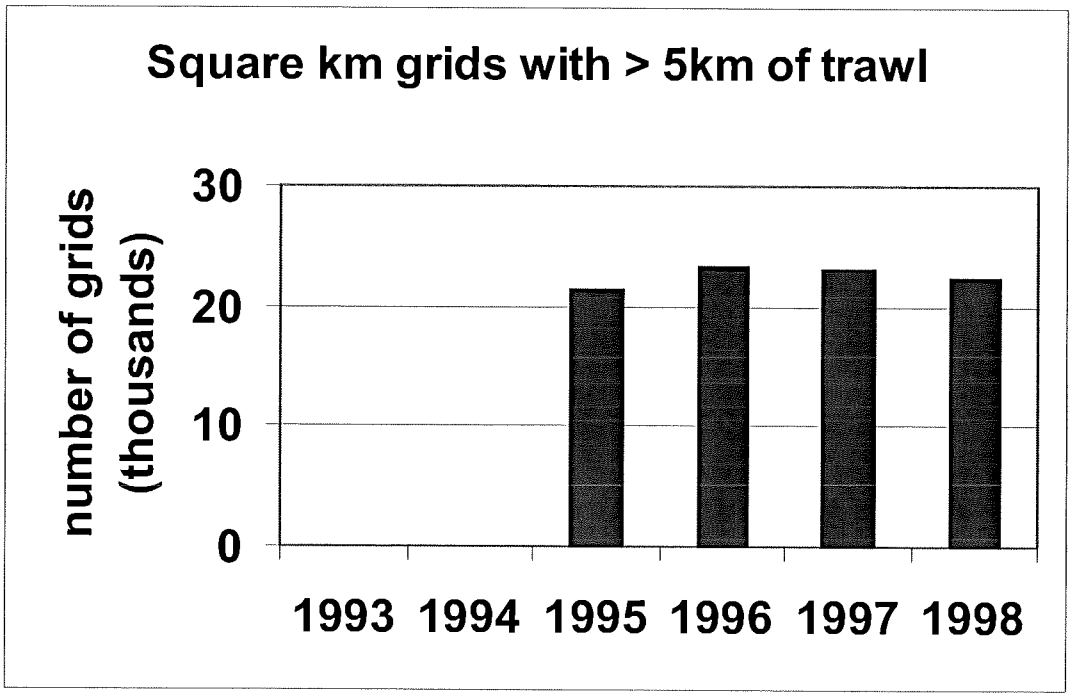
- Objective: maintain or increase the amount of seafood provided to the Australian community
- Indicator: amount sold domestically
- Interpretation: should remain steady or increase



Component: marine landscape

- Objective: no increase in area trawled
- Indicator: area of grids subject to at least 5km of trawl
- Interpretation: trend should be steady or decreasing





BRS Evaluation Framework

4. Evaluate options for improving progress

Summary

- Simple, flexible, rigorous
- Outcome oriented
- Designed for a consultative process involving all stakeholders
- Intended to work with existing management processes

The Marine Stewardship Council

Katherine Short

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World Wide Fund for Nature Australia
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Structure of Talk

- What is the MSC, the MSC Unveiled
- The MSC Certification Process
- The MSC to Date
- The Principles and Criteria
- The MSC and ESD
- The MSC is Delivering for ESD
- Where to from here?

What is the MSC?

- An independent charitable non-government organisation.
- Accredits certifiers to certify fisheries against the MSC Standard
- The Standard is the "Principles and Criteria for Sustainable Fishing"
- Created by Unilever and WWF in 1996

The MSC Unveiled

- The MSC is:
  - designed to improve fisheries management
  - voluntary, fishers decide if the benefits apply
  - a certification system, accreditation organisation and a licencing body
- The MSC is NOT:
  - a Unilever plot to control fish markets
  - a WWF plot to undermine industry or govt.
  - a greenie plot to shut fisheries down

The MSC Process

1. Interest from a fishery - (Voluntary)
2. Contact the MSC, a Certifier or WWF
3. Certifier contracts with the Client

4. Pre-Assessment against the P's&C's
    - Confidential and internal to the fishery
    - Overview, Budget, Timeline, Challenges
5. Full Assessment
    - Public, Rigourous, Requirements and Recommendations

The Certification Process

- The Certifier does the certification
- The Certifier is accredited to carry out the process
- The MSC checks the Certification Process
- If successful, the MSC licences the fishery to use the MSC logo

The MSC to date....

- International awareness of the MSC
- 2 certified products
    - WRL and Thames Herring
- 5 launch events
    - (WA, NSW, London, 2 Boston)
- Currently 12+ fisheries applying for MSC Pre- and Full Assessments
- Unilever and WWF are playing their roles

The Principles and Criteria for Sustainable Fishing

- **Principle 1 - The Stock Principle**
    - A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, or those populations that are depleted, the fishery must be conducted in a manner that demonstrable leads to their recovery.
- **Principle 2 - The Ecosystem Principle**
    - Fishing operations should allow or the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated, dependent and ecologically related species) on which the fishery depends.
- **Principle 3 - The Management Principle**
    - The Fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

The MSC and ESD

- Industry Improvement programmes
  - ISO, Organics, Codes of Conduct, FSC
- What does ESD mean?
  - Fisherman "tell me specifically what you want me to do greenie?"
- It's not that hard - G.O.W.I
  - What do we know - indicators, technology, management planning, consultation
  - What do your guts tell you?

What has the MSC Delivered?

- Principles and Criteria - unprecedented
- An ecologically based certification method
- Requirement for stakeholder involvement
- The Western Rock Lobster Certification
- The Performance Criteria and Scoring Guideposts
- A contribution to the ESD debate

.....and .....Requirements and

Recommendations for the WRL Fishery

1. Ecological Risk Assessment (14m)
2. Environmental Mmgmt Strat. (23m)
3. Operation of the EMS (36m)
4. Transparency of Decision Making (24m)
5. Data on Bycatch of Icon Species (12m)

+ 15 Recommendations

All to be annually reassessed.

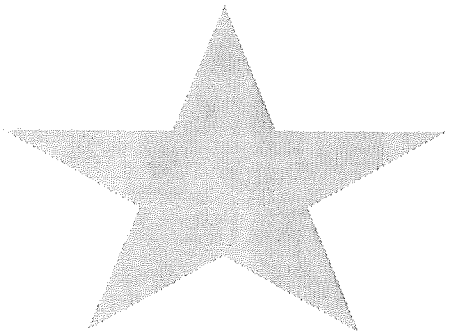
This could deliver for ESD in Fisheries.....!

- REQUIRES:
  - Research
  - Operationalising
  - Funding
  - Implementation, Management Plans
  - Support and Involvement
  - Lateral Thinking
  - Patience and Commitment!

Where to From Here for the MSC in Australia?

- MSC Strategy
- Working Group
- Other fisheries involved
- Connections with other programmes
- One of the many tools to improve fisheries management
- A group of us are Getting.O.W.I

Gold Stars Not Black Marks!!!!



check out www.msc.org

Grass-roots Driven Fisheries E.S.D.

(A cooperative FRDC/Seafood Services Australia/Industry/NGO Initiative)

Bryan Pierce

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SARDI Aquatic Sciences
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Abstract:

Natural Resource Management, including the latest ESD bandwagon, have long been torn by major structural conflicts, such as:

- Allegiance to "conservation/protection" ethics (as embodied in MPA's and National Parks) vs "wise use" ethics (eg, MSY objectives in fisheries)
- Command and control focused top-down government management vs a less than passive fisher subculture
- Inherent extreme population and ecosystem variability vs sparse funding and slow response capability
- Empowering ESD-based management vs maintaining political agendas.

Perhaps the primary contribution embodied in Australian ESD fisheries policy since its launch almost a decade ago is (finally) increased commitment to the use of measurable indicator variables to "steer" resource management. Given the recognised failure of western bureaucratic fisheries management to achieve wise resource stewardship, fisheries are increasingly failing to survive the economic "natural selection" of the marketplace: hard currency "value" of fisheries habitat production (environmental, recreational and commercial values inclusive) is progressively falling behind competing uses - and that habitat and its fisheries are lost.

The Southern Fishermen's Association is an innovative, visionary group of professional fishers who are making ESD happen on the water, now, through practical action. Members have found that industry-driven environmental management planning (and certification) is an effective means of guaranteeing their contribution to environmental quality, positively influencing other environmental users, and dramatically improving community confidence in the future of professional fisheries. A tailored progression of work has included implementation of self-declared environmental management plans, progression to ISO 14000 independently audited certification of a fishery's environmentally relevant processes, and potential Marine Stewardship Council audited certification of a fishery's "sustainability" with resulting product eco-labelling. The environmental certification model links privileges with accountability while capturing the majority of what fishers are already doing right. A focus on practical improvements (where necessary) has further unified members and helped them begin to think of themselves as environmental sentinels.

Emphasis on "continuous improvement" has now spawned a second level to the environmental management planning initiative aimed at:

- exceeding community expectations (ie, beyond certification!)

- collecting long-term, non-government environmental data to monitor the health of the internationally important Coorong ecosystem.

Fish, fishers, and concerned conservationists cannot wait any longer for "Humphrey Applebey" to create the perfect "ESD-based Management System" – the SFA experience demonstrates that "grass-roots ESD" driven by concerned fishers yields positive action on the water, where it counts.

Background

This contribution represents interim results derived from the Fisheries Research Development Corporation (FRDC) "Greening Australia's Fisheries Project." In effect, it reports on the re-invention of a fisheries management system that appears to work; that is, it appears to achieve practical sustainability outcomes. As part of this project, the system under development by the Southern Fishermen's Association has been found to be surprisingly low cost, contains accountability criteria, is primarily community-based (as opposed to hierarchy-based), is adaptive relative to practical indicators, and does not rely on Government oversight or responsiveness.

This contribution will be structured into discussion of:

- Fisheries sustainability problems and implications for the future
- The opportunity: "Back to the Future"
- The Southern Fishermen's Association experience

Fisheries sustainability problems and implications for the future

Throughout world history, the environment has managed fisheries production and fisheries sustainability. For example, at least 98% of all fish species which have ever existed are now extinct – the vast majority prior to institutionalised fisheries management (and humanity itself) (see Jablonski 1995, May et al. 1995). Broad assessment of the causal factors implicated in recent extinction events of inland fish species worldwide, as well as species conforming to IUCN Red List Threatened Classification criteria, further demonstrates the importance of environmental drivers on practical sustainability. Pierce (in prep.) reviewed the extant literature concerning such events and identified primary anthropogenic causal factor in 65% of these taxa was habitat modification or loss. Impacts of introduced species, including competitors as well as parasites and disease vectors, contributed another 29% to the freshwater fish taxon which has succumbed in recent times. Over harvest, inclusive of recreational, commercial and illegal harvest, has been responsible for only 6% of such events, and is not known to have resulted in the extinction of a single inland fish species. These results send a strong message regarding inland fisheries management priorities if sustainability is realistically desired; and appear to be the exact opposite of the priorities demonstrated in most current fisheries management with its single minded focus on harvest regulation as the primary means of fisheries management and sustainability.

In Western civilisations, society generally delegates responsibility for stewardship of fisheries resources to central government bureaucracy. In effect, government's primary accountability to society is achieved through marketing perceived fisheries management success back to the social marketplace. Since within government

resourcing and competitive stance is largely independent of the actual performance of the fish populations and fisheries management, the centralised fisheries management heirachy is effectively similar to a totally independent ecosystem within which an entirely different natural selection process operates. For example, incentives within the bureaucratic system may at times be primarily political, internally competitive, or funding-based. Linkage to the actual health of the resource or the health of the business systems dependent on that resource, let alone on the health of the habitat production system, are at best weak and at worst non-existent. Accountability to stakeholders is beginning to develop through the use of performance indicators in annual reports, but has generally not reached the stature of involving independent auditing of management performance (ie, most agency performance indicator reports amount to self-assessment declarations based on internal data collection systems. Indeed, the embryonic development of "Ecologically Sustainable Development" indicators critically underpin the development of independent, broadly accepted, repeatable and causally-based indicators of true fisheries management success and effectiveness. The position of incentive systems within, and without government are intriguing: within government, funding may dramatically increase in response to a crisis in perceived or actual stock abundance. Thus, less competent management can actually yield increased "benefits" to within government participants. As fisheries institutions consistently attract exceptional individuals picked from a large population of willing workers, it would appear that the structure of the government incentive system has the capacity to consistently override the best intentions, principles and dedication of individual staff. It is hardly surprising that an increasing number of scientific and popular articles are focussed on the demonstrable lack of success of traditional western fisheries management in achieving core resource stewardship outcomes (Fairley 1995, Pitcher et al. 1998).

Sub-optimal fisheries management has serious consequences for both resource sustainability and dependent stakeholders; it has even greater implications for the very future existence of natural aquatic production systems. Human natural selection is ultimately economic selection. In essence, a person or corporation willing to place the highest value upon a particular property or entity "wins" ownership and use rights of that entity. In a fisheries sense, this means that if the highest economic value of the Great Barrier Reef Marine Park (GBRMP) was as a paved parking lot, then nothing is surer than that this would ultimately occur. While societal desires for protected areas and even legislation may slow such a process, ultimately global evidence indicates that such economic selection will win out (eg, mining in Kakadu National Park). Thus, part of the future sustainability of all wildcatch fisheries must be that they, in partnership with recreational and non-consumptive uses of that habitat, remain the highest value use of that natural system. This implies the need for growth in the value placed on that habitat in hard currency terms, and such growth is unlikely to be achievable under less than focussed and aggressive management regimes.

Sustainability Opportunities: back to the future through grassroots ESD

In the course of responding to political and sustainability threats to its member's future, the Southern Fishermen's Association has (inadvertently) re-invented a traditional community-based approach to environmental management planning implemented at a grassroots level and with clear ESD principles and inputs that works. What for the purpose of this paper is termed "community-based

management," is simply a group of interested persons who are motivated to work together to develop and agree upon such a resource sustainability plan or structure. Operational customary fishing systems fit within this category, as do TURF'S (Territorial Use Rights Fisheries), as well as many other traditional systems worldwide. Such systems have been increasingly studied and optimised in eastern coastal communities (see Pido et al. 1996, Ruddle 1987). FAO's assessment for floodplain river systems (Scudder and Conelly 1985) actually indicated that such community-based systems were too conservative and resulted in under-harvest of the available resource relative to a presumed MSY objective. Surprisingly, institutionalised and hierarchal western fisheries management has been diametrically opposed to delegation of authority for fisheries management back down to the grass-roots level, even though this is the level where actual action and protection of the resource must occur.

In the case of the Southern Fishermen's Association, incentives for development of an environment management planning system were simply the threat of seeing their fishery shut down because of misconceptions about their impacts on ecosystem and stock sustainability. Incentives for fishers Australia-wide will vary and be unique to each situation. In common, most fisheries, be they recreational or commercial, have broad incentives for developing such an environmentally strategic approach. For example, the assembly line producing the products which wildcatch fisheries ultimately capture, package and sell is a healthy habitat production system – and such planning structures have proven an excellent way of proactively assuring the health of that assembly line as an investment in the future. As in the case of the SFA, such a planning structure may also be a necessary mechanism to show the broader regional community that fishing is a worthy use of their environment – thus allowing continued access to the resources therein. In this regard, written codification of agreed principles and procedures represents the simple updating of traditional management systems through the use of formal documentation evidentiary procedures – a process which most other terrestrial businesses completed long ago, but which has often been poorly received within the fishing sub-culture.

Risk reduction through planning is well known in most industries, and may incorporate quality, health and safety benefits which actually reduce insurance premiums/increase value – another tangible benefit of such an environmental planning initiative. Environmental risk reduction benefits are also inherent in getting the participants in a particular fishery to actually work together towards agreed, lower risk outcomes. Marketing, either to local communities, politicians, or to achieve price premiums for products, is another clear incentive which environment management planning can provide at the grassroots level. Levels of such premiums are as yet only broadly understood, but it appears that the western public is willing to pay at least 10% more for products which have an internationally demonstrable environmental best practice badging such as being promoted by the Marine Stewardship Council (MacMullen 1998, Wessells et al. 1999).

Finally, as with the Environment Australia "Guidelines for assessing the ecological sustainability of commercial fisheries" being introduced for all exporting fisheries in Australia, it is clear that environmental management planning will increasingly become a mandatory part of most, if not all, fishing operations. At the same time, to simply export to Europe, binding reciprocity agreements will require that export products meet EU environmental management standards (EMAS) or the Australian equivalent. Thus, while environmental management planning and accreditation may

be voluntary, it will become effectively mandatory if marketing of product to the highest value markets is desired.

Demonstrated accountability is probably the primary innovation inherent within a formalised planning structure. Traditional community-based systems often acted to protect the environment, but are primarily verbal agreements and social conventions between interested parties. Through a written planning structure, accountability can be both clearly documented and conveyed to other interested parties as well as recorded for history. Such accountability may be primarily regulatory, as at present in most Australian fisheries. It may involve self-assessment with transparency of performance appraisal. Accountability may evolve to an independent auditing process, as is currently established for ISO standards and some other safety and quality standards. An additional benefit of such planning is that ESD indicators or other performance measures can be readily built in, formally monitored and continuously improved by the industry itself. They then provide the agreed laneway to steer individual actions, while necessarily translating into practical and workable instructions rather than broad and unmeasurable objectives. Penalty systems may also be involved, either internally or externally, as is already the case in regulations. For example, in the case of some rivers in British Columbia (Pinkerton 1989) the community management teams performance is assessed once per decade by the government of the day who had the power to charge to rehabilitate any habitat or stock losses against agreed performance criteria.

Critical to accountability and proactive strategic development within a fishery is the self- development of what is effectively a strategic environmental plan, or environmental management plan. Whether or not an individual fishery requires such a plan, and how in-depth it might need to be developed, depends upon the threats and opportunities unique to each situation (see Baker and Pierce 1999). Four broad categories of options exist:

1. Do nothing. Under this scenario, the fishery as a whole has either insufficient cohesion or faces insufficient threats/opportunities to motivate the unified action on environmental or ESD issues. However, within most fisheries, actions by individual fishers incorporated into daily activities and aimed at ensuring environmental benefits still occur through the majority of participants. Such actions are seldom discussed between fishers, and certainly even less quantified, so there will be little realisation of the actual environmental footing of the fishery as a whole even though self-directed environmental management is in fact occurring. Fisheries in this situation may face few threats, but are also clearly vulnerable and not defensible against attacks on their environmental credibility – real or imagined. Neither are they maximising their value to the community or through their products.

2. Leave it to Government. This option is the option currently employed by the majority of Australian and western civilisation fisheries. Fishers remain focussed on their fishing activity and effectively delegate management, regulation, and responsibility for achieving environmentally acceptable outcomes to the government and bureaucracy of the day. In part, this appears to be a result of fishers tendency to focus on fishing as by far their primary interest. Secondarily, a great many fishers believe that they are powerless to significantly affect government objectives and action in this and many other areas. Under this scenario, both the fishery and the participating fishers may

face threats of a varying nature relative to their environmental and sustainability credibility. In effect, the robustness of their defence and accountability in this area is delegated to the government of the day, which may not understand or present the actual environmental accountability of the fishery, nor the true potential for environmental improvement on the water. Finally, such political environmental management in the fisheries arena will be typically managed through regulation and legislation, with attendant costs, enforcement inefficiencies and potential to specify prescriptive outcomes which may not be relevant to either the desired environmental achievement, nor to practical fishing operations. Lastly, tendencies to legislate and regulate fisheries in such a top down manner tend to create a situation in which fishers feel that their responsibility for environmental and other sustainability outcomes which are now "owned" by government – as a result, there is a tendency by some fishers to view breaking of such rules as part of a game with potential short term monetary or other benefits, but without personal or corporate accountability for the actual impacts upon the resource.

3. "Do it yourself" environmental self-declaration planning. Where fisheries face significant threats to their business or access, that fishery may unite to develop an agreed set of principles and actions which it will undertake to either benchmark or improve that fishery's environmental credibility. Critical components of this planning structure are that the self-declaration must be public in order to have credibility with alternative stakeholders. It is also, by definition, voluntary, rather than mandatory. Unlike the example above, a critical outcome of a voluntary environmental management planning (EMP) is that any agreed actions and resulting accountability are designed and "owned" by the individuals/businesses actually fishing – rather than by less interested or informed parties.

4. Independently certified/audited environmental management planning. A self-declaration management plan may achieve the necessary credibility and environmental objectives of a fishery, but not adequately demonstrate this to government, the community or some other marketplace. Independent auditing of environmental and other agreed fisheries management outcomes provides a demonstrable means of locking in both environmental goalposts, and demonstrating that the fishery in question has indeed scored the necessary runs on the board. While a plethora of environmental certification systems and brandings have appeared over time around the world, those with a regional or national footing tend to be less well accepted in the marketplace unless they become mandated by government. In the latter case they simply become part of the process of regulation and responsibility – and their market acceptance is necessarily geographically limited by political boundaries, and profit limited by political credibility. The most broadly accepted independent certification standards with an environmental/sustainability aim which are applicable to fisheries are the ISO 14000 family of Environmental Management Standards and the Marine Stewardship Council (MSC) fisheries product sustainability certification system. These have the benefit of being based on systems which are implemented uniformly worldwide and which have increasing global acceptability and awareness.

- **ISO 14000:**

  The ISO 14000 environmental standard primarily certifies the process or processes involved in the fishery business under consideration. It focuses not on achieving a particular environmental endpoint, but on a continuous improvement process usually beginning from quite a low environmental entry point. In the case of the work with the Southern Fishermen's Association, development towards this standard has shown that only about one third of the environmental goals of the Association and its membership are actually covered within typical ISO 14000 certification processes. ISO 14000 is a uniform playing field internationally, but suffers from being extremely general. It must be able to be adapted to any business, not just a specific fishing business. This environmental standard is also reasonably site specific, being typically applied to a single location of a single business. Our developmental work to date indicates that ISO 14000 can also be applied to regionally specific fisheries, such as in the case of the Lakes and Coorong fishery, but may need to work with regional sub-components of bigger fisheries in order to meet the site specific requirements of this standard. ISO 14000 certification is relatively less expensive than some other alternatives and may be as low as $12,000 for the 38 member Southern Fishermen's Association. Certification is audited against the ISO standards, applicable laws, any codes of conduct which the fishery has agreed to abide by, relevant treaties, and the plan which the fishery has developed for itself. At the end of the process, the fishery can generally apply a badge indicating it has successfully achieved ISO 14000 successful audit status, it can market product to, for example, the European Union as being equivalent to their EMAS environmental standard, and it will have an independently audited report verifying the credibility of the fishery and its members across the areas covered by the standard and the plan. Typically, ongoing monitoring audits will occur every six to twelve months.

- **Marine Stewardship Council Certification:**

  Unlike ISO 14000, MSC certification is certification of product rather than process. As such, it relies on market driven incentives to motivate the individual fisheries to meet the criteria of the standard. The standard aims to achieve wise management/sustainability of the fishery as a natural productive system, and is primarily aimed at certification of fisheries at the level of individual stock. Because the product is certified as coming from a "sustainable" fishery, chain of custody of product to the marketplace must be tightly monitored and controlled. This is in order to ensure that "uncertified" product does not infiltrate the production system and degrade the value of the certification brand itself (and the premium price market which it has generated). While the MSC certification system is international in nature, it is not governmentally-based. ISO 14000, on the other hand, is basically a voluntary international agreement with input from a diversity of world governments. MSC certification can be considered to be the "Rolls Royce™" certification system, and just the certification process alone may exceed $50,000 in the case of the Southern Fishermen's Association. Certification costs are actually considerably higher than this, since certification must be

based on extensive data collected across a diversity of sustainability criteria, plus the certification costs, plus an ongoing licencing cost for the use of the MSC logo and brand on the final product as an identifier in the marketplace. MSC certifies against the MSC criteria using a scoring system within a decision-support framework. Wise resource management is the agreed outcome, rather than social or economic criteria. MSC also certifies against, as in ISO 14000, laws and treaties. Unlike ISO 14000, MSC does not place great emphasis on internal industry plans, but places considerable emphasis on governmental management and regulatory structures (internal and external). While continuous improvement may become a feature of the MSC system in future, at present, it attempts to set a "sustainability entry hurdle" rather than relying on incremental improvement over time to achieve sustainability of the venture/fishery. Further, the MSC independent certification process is subject to clear and transparent peer review, making final certification both stringent and difficult to fault by external players once it has been achieved.

An Outsider's View of the Southern Fishermen's Association Experience

The Southern Fishermen's Association has broken new ground in working through the development of their environmental management strategy (EMP; Baker and Pierce 1998) which has now become part of their overall industry management planning process. In retrospect, it is clear that they have effectively re-invented traditional, tribal co-management using modern tools and facing modern threats.

Perhaps the most important outcome of the process to date has been in bringing individual fishers together to share their experiences and create a common focus. This is more than just words, as most fishers do not sit around talking about the environmental sides of their fishing businesses. Competition is in the nature of the fishing sub-culture and simply does not promote this. However, once fishers agreed to consider their options, most realised that much of what they were all doing individually was environmentally positive – and worth sharing.

Any form of strategic planning takes considerable time. Industry leaders within the Southern Fishermen's Association together with key participants on each of the issue areas invested major quantities of time over several years in the development of the final documentation and on-water activity. In reality, the documentation is trivial relative to the commitment and unification achieved within the minds of individual fishers as they move towards a more common direction.

As with any intensive group work on a new initiative, the environmental and strategic planning process sparked many new ideas and has led the way to different and improved ways of doing business. In many cases, this has had environmental benefits. In some cases, it has had pure business benefits which became obviously valuable in the course of considering alternative ways of achieving particular successes.

The entire environmental management planning process has been very much more public than had been originally planned. Experts and advisers were consistently brought into meetings to contribute as well as learn from the process. In effect, the fishery realised it had a new marketplace in the media, which have continued to be consistently interested in what they perceived to be the unusual environmentally "green" nature of a commercial fishing group. Finally, even before release of the

overall plan, there were many requests for advice from other fishers, fisheries, and persons in the environmental auditing professions.

Critical to the planning and now to the formal certification process, the entire initiative did not depend on government. Indeed, most environmental initiatives which can be undertaken by businesses and individuals can and must be undertaken regardless of whether government chooses to support them or not. In this case, the fishery is clearly running ahead of State, National and International governmental planning and action. In this regard, it is increasingly able to shape its own destiny, and to actually proceed on a more secure business footing.

While the Southern Fishermen's Association's planning process has been costly in terms of time and effort, it has not been costly in terms of money. Most of the actions were necessarily built into standard business activities, and do not cost Association members directly. As importantly, the primary costs of developing the plan from an Association perspective were worn by the individual participants in terms of travel costs and opportunity costs of time spent on strategic plan development. As the initiative is developed, a great many persons and businesses outside of the industry have volunteered assistance in diverse forms, from development of media material, to assistance with events, etc. Finally, by being ahead, it has been possible to attract industry investment and in-kind contributions from many sources. Cooperative funding from the Fisheries Research and Development Corporation (FRDC) Board, who have shared the vision of a greener Australian fishing industry has particularly accelerated SFA achievement at all levels.

Beyond Certification

While certification to either, or both, ISO 14000 and/or MSC levels is the current objective of the Southern Fishermen's Association, there are clear forward outcomes which have been identified as part of this process. Certainly, bragging about achievements is part of the fishing sub-culture (" ... and it was this big ! ....), and so certification will be a key stepping stone in the development of the fishery and the Association. Importantly, in conjunction with the South Australian River Fishery Association, the Inland Fishers of South Australia have clearly identified that one of their primary values to the State is as environmental sentinels. Since they are on the water every day, they can provide a critical environmental data collection platform which simply cannot be funded through the public purse. Likewise, they clearly have the incentives to both do an exceptional job of environmental monitoring and to be sure that any problems with the health of the resource and its habitat are immediately noticed and brought to the attention of managers/stakeholders. Finally, unlike public sector funded research at either the agency or university level, data collection through fishers is not dependent on government funding or the public purse, and has the independence which can allow such data to become publicly available regardless of the political sensitivities at the time.

Such voluntary data collection is not something which may happen in the future, it is currently happening now. For example, Figure 1 shows voluntary data collected over a period of approximately eighteen months monitoring recreational angling use of the core Area 1 component of the Coorong/River Murray estuary. Such data had not been collected by any entity previously, but at daily resolution level it is clearly demonstrable that peaks in recreational angling activity occur very tightly around

Christmas and Easter holidays, with relatively little use in the intervening periods. Such information is clearly critical to wise management of the total resource, as well as to management planning to reduce the impacts of these high densities of persons on the water over what are ultimately extremely limited periods.

Figure 2 displays the results of daily environmental data provided by a single River Murray reach commercial fisher concerning the reproductive status of callop (*Macquaria ambigua*).

This data for the first time clearly demonstrate that a proportion of callop stocks in the lower river spawn during non-flood years. This is in contradiction to evidence previously obtained elsewhere in the River Murray basin, and is congruent with genetic evidence supporting development of a new stock of callop adapted to the large lakes system of the lower River Murray estuary which has now been converted to freshwater through construction of the Coorong Barrage network in 1940. Such daily data, here summarised as fortnightly totals, could not have been collected cost-effectively by either agency or university researchers.

Conclusions

If world fisheries cannot contribute sustainably to human development, it is hardly conceivable that more heavily impacting industries can achieve more. Commercial fisheries look remarkably environmentally benign in comparison with mono-culture farms which have cleared the land of available biodiversity, in comparison with resource subsidised industry such as manufacturing. Fishing already treads lightly on both the habitat and the resource. By employing an environmental management planning strategic structure, it can tread increasingly lightly while continuing to provide quality products to discerning consumers.

The "Grass-roots approach to ESD" provides a proven mechanism to create networks of sentinel fisheries around the world which independently and cost-effectively monitor the heart beat of three-quarters of the earth. By combining traditional, community-based co-management systems with modern certification tools, Australian fisheries can regain considerable control over their own destinies while being proud of their environmental and fishing heritage.

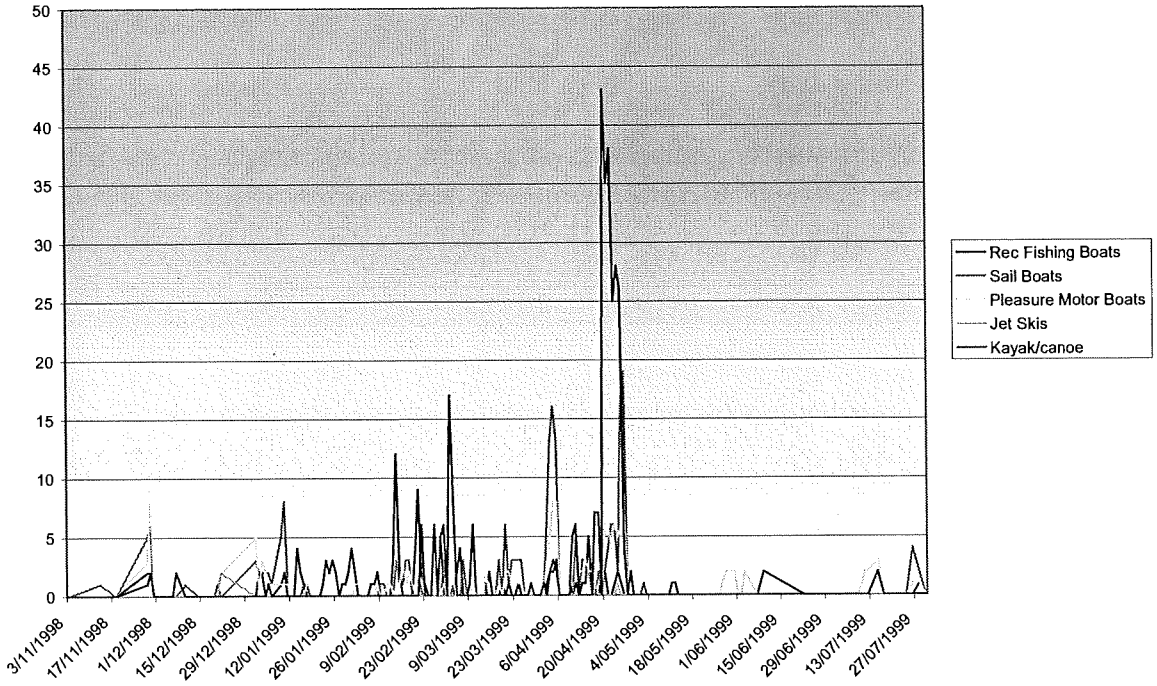

Figure 1. Recreational vessel use, Area 1 (north lagoon) of the Coorong (River Murray estuary) aggregated to weekly totals by vessel type. Note the relatively low vessel use during winter, and high concentration of use over holidays (Christmas, school, and Easter). Low level of recreational angling vessel presence is unexpected relative to perceived importance of this fishery to recreational angling in South Australia.

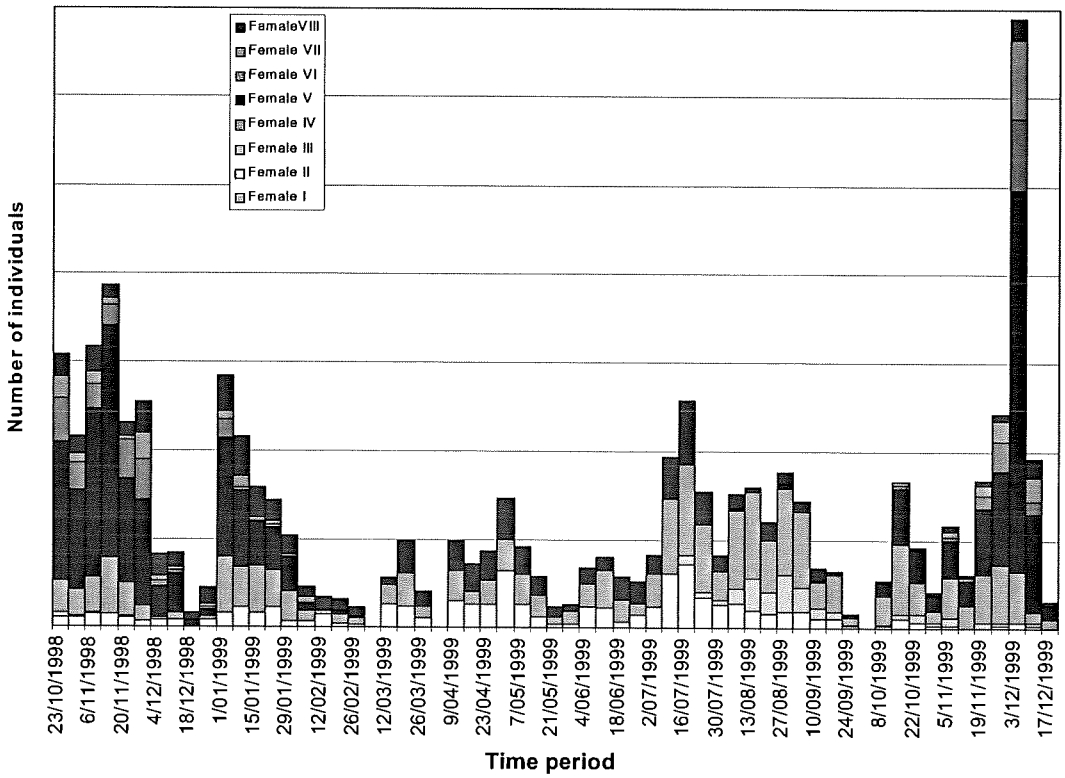

Figure 2. Callop maturity stage (females only presented here) derived from a census (100% sample) of one commercial fisher's harvest over time. Ripe female callop made up a significant portion of the female catch in December 1999, even though elevated flows (flooding) failed to occur. Note that the indices of catch have been removed to maintain confidentiality requirements specified within the Fisheries Act 1982 (SA). Stages are defined as:

1 immature - gonad small and transparent
2 mature - resting (larger, transparent in male; translucent in female)
3 maturing - increased blood flow, but spawn/milt not yet visible
4 vitellogenic - spawn clearly visible; male opaque (not yet full size)
5 mature - full size gonad, but not yet ripe
6 ripe - ovulated eggs/milt present
7 recently spent - gonad floppy, a few remnant ova present in females
8 recovering - gonads firming and reducing in size post-spawning

Environmental Planning from an Industry Perspective

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From the perspective of an on-the-water third generation Lakes and Coorong fisherman, it is clear that there is little future in being shot at! It is extremely clear that our fishery won't survive unless we are smart enough to adapt to meet the needs of the future. Within that context, we recognise that healthy habitat is essential to producing healthy fish and healthy fishing businesses. We cannot achieve this on our own, although we have our part to play; however, community support for what we do is absolutely essential.

To rebuild community support for our 150+ year old industry, we have found ourselves forced to better document what we already do right, as well as fix what we need to improve. Formal environmental management planning has been invaluable in providing a structure to turn around community mis-conceptions and focus industry action. This paper seeks to:

1. describe the genesis of the Lakes and Coorong Fishery's Environment Management Plan (EMP)
2. discuss some of the successes that have resulted from the plan
3. present our "take home messages" regarding the process.

Genesis of the EMP

Historically, the Lakes and Coorong fishing industry has initiated considerable environmentally positive change. Unfortunately, this change was primarily undertaken on an ad hoc basis and as a result the fishery received remarkably little credit for its initiatives in the community. Generally, changes were finally, if slowly, implemented through government who received what credit there may have been for our initiatives. Examples of industry initiated environmental improvements pre-EMP include:

1. support for ongoing effort reduction in the fishery, as necessary, to safeguard the health of fish stocks in this unique Australian region
2. unilateral introduction of greenback flounder minimum size limits well above the size of first maturity in this species and which also maximised economic returns from harvested stock
3. efforts to increase the minimum size restrictions on the taking of black bream from our regional waters
4. support for the increase in minimum size limit on Murray cod to 600mm as well as for introduction of a maximum size limit (1100mm) on this icon species

5. improvements in specification of mesh size restrictions and minimum ply ratings to reduce bycatch (or enhance survivability of any remaining bycatch). This was particularly aimed at reducing any incidental catch of undersized callop and other valued native fish species.

Again, while such changes were commonly initiated and pushed by industry, the broader community remained totally unaware of our efforts.

It was clear to individual fishers that this approach was inadequate. It was band aid measures which did not attack the core problem of degradation of the total aquatic habitat. Therefore, facing the twin threats of continued destruction of one of the most heavily modified river and estuarine systems on earth, and a community that did not understand the necessity for environmental stewardship within the fishing industry, the Southern Fishermen's Association took the initiative to develop its own industry driven Environmental Management Plan. Although beginning through discussion, this plan almost immediately became both strategic and proactive in nature. Continuous improvement was built in from the onset. Further, it was well understood that the plan would be voluntary on behalf of industry, rather than something mandated from government. While this meant it would be voluntary in the sense that industry had "voluntarily" produced it, it was understood that all of our industry members would be expected to comply with what they had agreed to in the development of the plan and its revisions. "Window dressing" efforts were ruled out by all members, particularly since our fishery exists in a highly visible environment with many and varied watchdogs – honesty was and remains the only option. Finally, the plan had to be of an extremely practical nature to meet the industry's focus on "just making it work and just making it happen."

Successes of the Environmental Management Plan (EMP)

One of the most obvious successes of the Environmental Management Plan was developing a network of fishers to report unusual observations and collect specimens not previously known from this system. Since the introduction of the Environmental Management Plan, no less than five new species for the Coorong fish fauna have been discovered by Lakes and Coorong fishers. Monitoring of exotic aquatic organisms such as the introduced European shore crab (*Carcinus meanas)* has also been a feature of the "sentinel" component of this undertaking.

Prior to the development of the Environmental Management Plan, a group of Lakes and Coorong fishers would get together annually to clean up key parts of the Coorong and remove other people's trash out of the environment. Although this was on a small scale, it was particularly important in areas which could often only be reached by four wheel drive vehicles and so were seldom if ever reached by other initiatives. Within the EMP, the scale of this operation has increased dramatically. Further, we now quantify the amount of garbage that is being removed and are linked in with the recycling and litter control programs for the Council area. Finally, in making this annual activity more public, we hope that we are drawing attention to the need to keep trash out of this unique system.

The Southern Fishermen's Association's Environmental Management Plan also requires a contribution to external environmental management that isn't actually part of what most people would expect to be the industry's core business. One recent example of industry following its Environmental Management Planning's strategic

direction was the necessity for members to take action concerning the ongoing issue of closure of the River Murray mouth. Over approximately the past the three years, the mouth of the River Murray has been progressively becoming shallower with concern that the mouth would finally fully close (as occurred in 1983). While this is only a temporary limitation for our native fish which have been forced to adapt to such closures which occur naturally within many Southern Australian estuarine systems, it is a far more significant issue for some other interests. Bureaucrats met and decided that the "solution" was to retain minor spring 1998 floodwaters and then release them in one concerted effort to "scour" the mouth open. This activity was planned, with typical efficiency, using less than 20% of the water which had been identified as being required as predicted by prior modelling (undertaken for the same group). Further, it effectively delayed the passage of natural flood waters into the Coorong ecosystem beyond the natural reproductive period of many of the estuarine fish species as well as out of sync with natural peak spawning activity in the Goolwa beach populations of Goolwa cockles. Not only was the release poorly timed, but the timing of the release also had other impacts on wildlife such as migratory waders. Because of the timing, much of the floodwater was ultimately backed up raising the water level in the Coorong by 400+mm. This flooded out the natural mud flats on which many migratory waders fed forcing them to move elsewhere. In effect, native fish stocks in the Coorong didn't know whether they were coming or going. Finally, because of the low head difference between the water levels of Lake Alexandrina and the Coorong at this point in time, released waters immediately backed up into the Coorong then slowly dispersed through the mouth and throughout the Coorong over several weeks - definitely not having the desired flushing effect. The Southern Fishermen's Association was required, under its Environmental Management Plan, to advise government on how to improve it management of this operation then and in the future. This led to a media-based showdown in which the Minister for the Environment of the day ultimately admitted that their advice and action had been unsuccessful and inappropriately planned. In effect, some $30 million of water was wasted in this exercise. Costs in terms of reduced breeding success of native estuarine fish as well as environmental costs to waterfowl and other organisms would also have been extremely high.

Fishers often have considerable observations and understanding to contribute to actions such as this which can help government and the regional communities not only capture environmental benefits, including financial benefits, but also ensure their actions are not environmentally destructive or embarrassing.

Thirdly, Lakes and Coorong fishers continue to collect voluntary environmental data during their time on the water. This information is of high value to managers of the Coorong National Parks system with regard to compliance issues and visitor management. For example, simple daily assessment of recreational use in the Coorong indicated that over 98% of recreational angling use and boating use occurs in the Coorong over the Christmas and Easter periods. Additionally, evidence is accumulating that it will be possible to use a simple barrage outflow management regime to actually enhance food availability for migratory waders within the more productive northern Coorong lagoon – an opportunity and a feeding site which has previously been poorly quantified and understood by other researchers.

Conclusions from a fisherman's perspective

From a fisherman's perspective, environmental self-management systems which are audited and applied to fisheries can produce practical grass roots action on the water. They can also help fishers realise and regain their own responsibility and accountability for actions in management of what they do. Lastly, they can link the incentives fishers naturally have to make a living for their families and to have a strong business future with the efficiencies that come from focussed activities by practical people with limited time and limited resources to accomplish environmental or other objectives.

In the experience of the Lakes and Coorong fishery, fishers will set environmental and fisheries management standards for themselves that far exceed any expectations of society – but they will only be able to do this with the help and support of that society.

Acknowledgments

The authors gratefully acknowledge the support of the Fisheries Research and Development Corporation, and its Board, for assistance in the continued development of the Southern Fishermen's Association's environmental vision. The continued practical improvements, suggestions, and work of fishers and concerned environmentalists and members of the community are acknowledged as the critical ingredients in the ongoing improvement of the fishery's performance. Ms Suzanne Bennett, SARDI Aquatic Science's Librarian, has consistently provided exceptional information access across the diversity of literature underpinning natural resource sustainability. The contributions of fishers supporting the Voluntary Environmental Data Collection System is greatly appreciated.

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The role of Marine Protected Areas in ESD of Fisheries

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Definition of MPA

an area of sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means

(after IUCN 1994)

NRSMPA

to establish and manage a CAR system of MPAs to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels

(ANZECC 1999)

NRSMPA & ESD

to establish and manage a CAR system of MPAs to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels

(ANZECC 1999)

NRSMPA management categories

(IUCN 1994)

- 1a - Strict Nature Reserve: managed mainly for science
- 1b - Wilderness Area: managed mainly for wilderness protection
- 2 - National Park: managed mainly for ecosystem conservation and recreation
- 3 - Natural Monument: managed for specific natural features
- 4 - Habitat/Species Area: managed for conservation by intervention
- 5 - Protected Seascape: managed for seascape conservation and recreation
- 6 - Managed Resource Protected Area: managed mainly for sustainable use of natural ecosystems

MPAs cover a range of options from complete protection to various forms of extractive and non-extractive use

no-take marine protected areas

(Leigh Marine Reserve, Tsitsikamma National Park & Maria Island Reserve)

multiple use marine protected areas
(GBRMP & FKNMS)

Threats to marine ecosystems:

- over-fishing
  - growth over-fishing - removal of small fish before they have had time to put on weight (reduces yield)
  - recruitment over-fishing - removal of too many large fish (reduces recruitment to the fishery)
  - ecosystem over-fishing - removal of species leading to ecosystem shifts and trophic collapse
- habitat loss
- pollution
- introduced species

Proposed NRSMPA benefits

- conservation of biodiversity
  - community value
  - recreation
  - historical significance
  - cultural significance
  - education
- scientific observation

Threats to fisheries

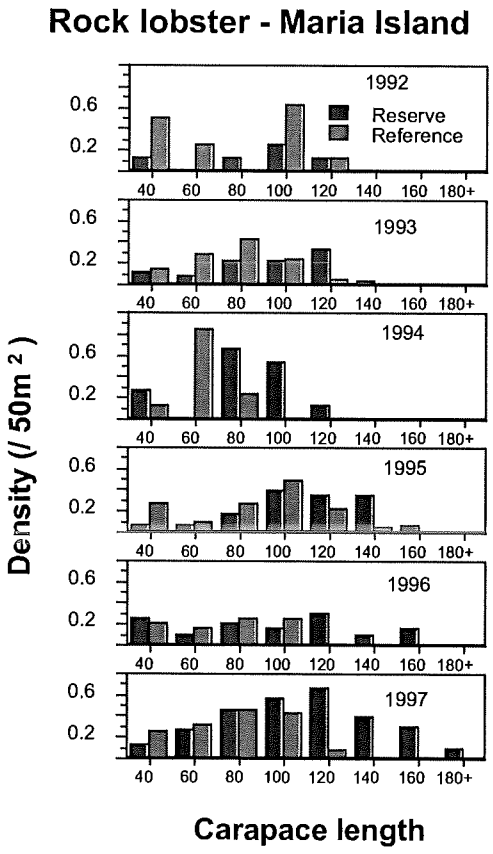
- habitat degradation or modification
- pollution from urban and industrial development
- threat of introduced species
- over-fishing and effects of fishing
- resource use and allocation conflict

Biological benefits of MPA

- protection of biodiversity
- restoring ecosystem balance
- recovery of spawner biomass
- natural population age structure
- source of recruits
- source of surplus adults
- insurance against stock collapse
- genetic insurance

MPA contribution to ESD

- undertanding the impact of fishing and the rate of recovery after fishing
- establishing baselines
- assessing the ecosystem effects of fishing

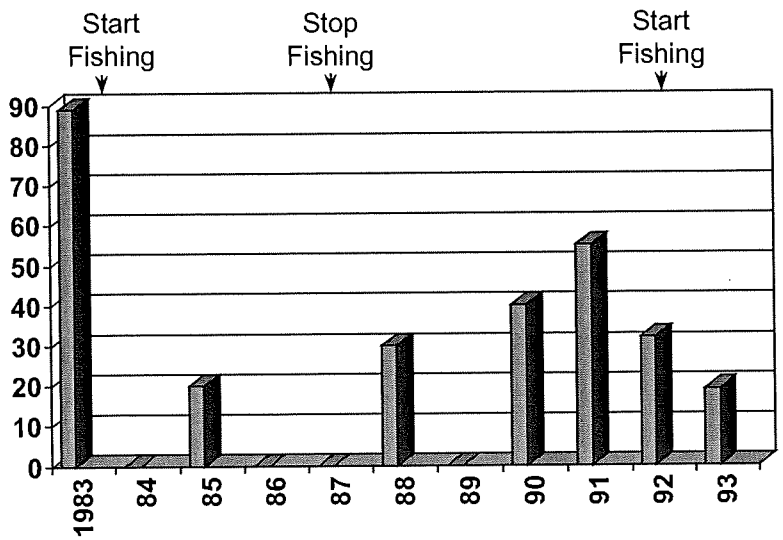


(after Edgar and Barrett)

TAFI

Density of fish in Sumilon Reserve

(redrawn from Russ & Alcala 1994)



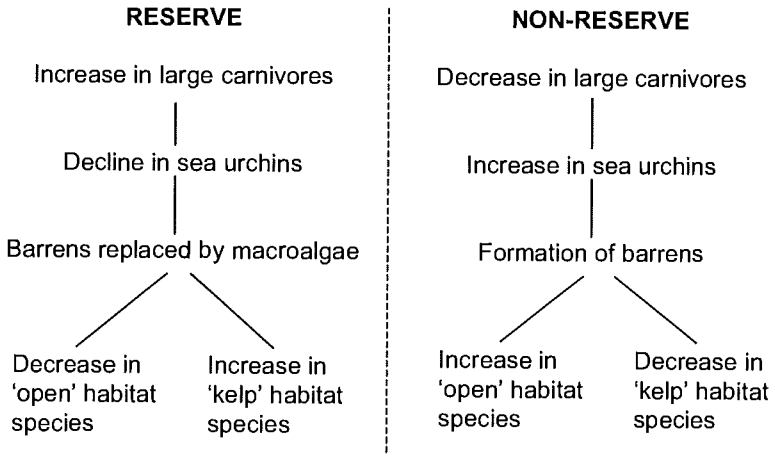
TAFI

Change in sex ratio

Species	Area	SR (m:f)	Fishing pressure
C. puniceus (Garratt 1985)	Mocambique	1 : 2.3	'light'
	Natal	1 : 18.8	'heavy'
C laticeps (Buxton 1993)	Tsitsikamma	1 : 0.8	0.04
	Port Elizabeth	1 : 2.4	0.29
C.cristiceps (Buxton 1993)	Tsitsikamma	1 : 3.8	0.09
	Port Elizabeth	1 : 13.0	0.43

TAFI

Ecoystems effects

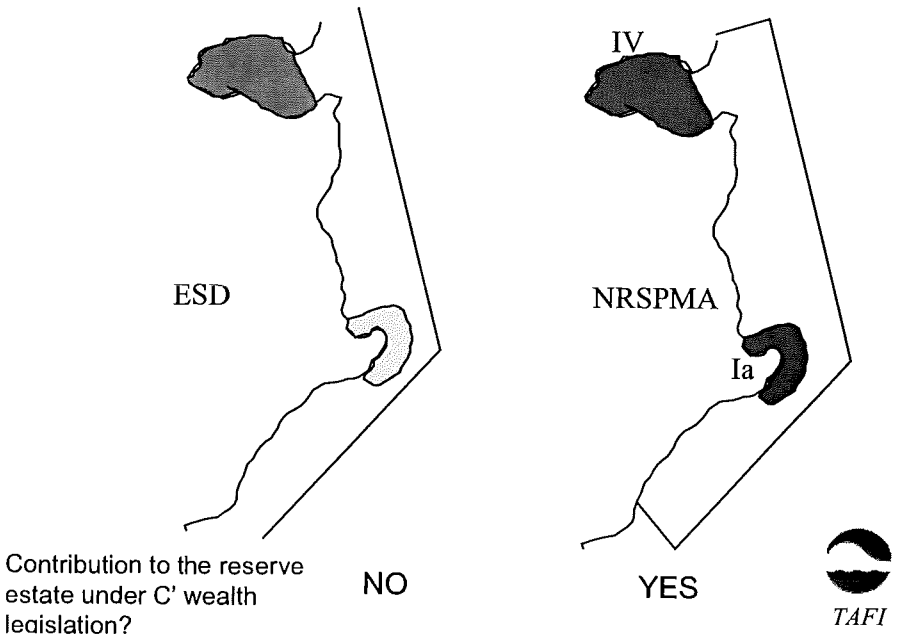


(after Jones et al. 1993)

TAFI

Conclusions

- MPA does not only mean no-take
- MPA extends beyond conservation of biodiversity
- ESD Fisheries and NRSMPA have similar agendas
- MPA could be used as tool to understand and measure performance



Developing and Testing Robust Indicators

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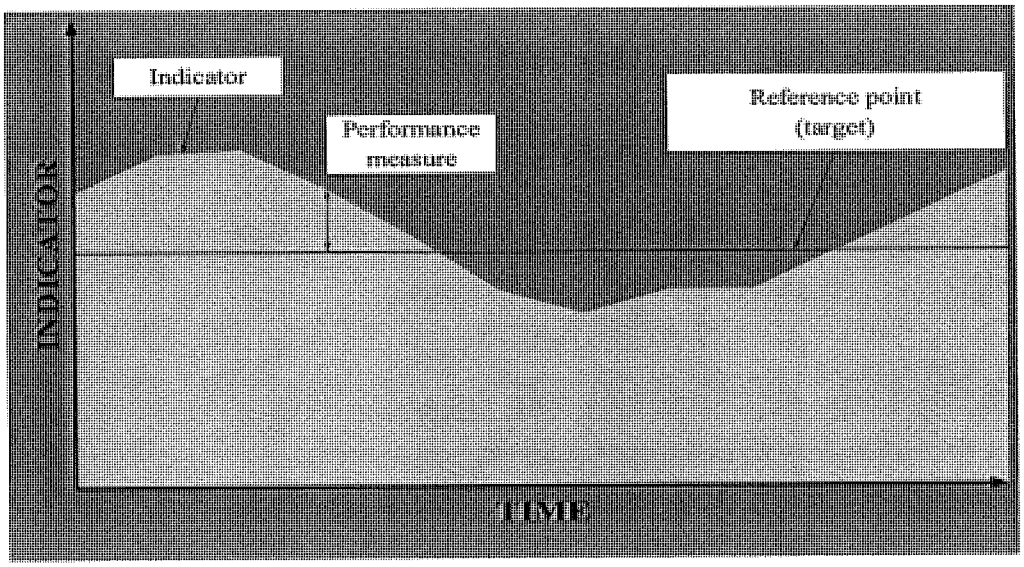
Outline

- Indicators and ESD
- What is a robust indicator?
- Testing for robustness
- Conclusions

Indicators and ESD

- Sustainability indicator: a quantity that can be measured and used to track changes in the status of a key component of the system relating to sustainability
- Examples: stock size, habitat area, catch level
- Can be used to measure performance against management objectives (Sainsbury, Chesson)
- Together with reference points, indicators can be used for management decisions

INDICATORS AND ESD



What is a Robust Indicator?

- What we are really interested in is usually some "key variable" e.g. stock biomass
- What we can actually measure is usually some indicator e.g. catch rate
- Q. How well does the indicator track changes in the key variable?
- Q. How badly can we go wrong by using the wrong indicator?

Examples of non-robust indicators:

- CPUE for northern cod
- Mean length for eastern gemfish
- By-catch level for seabirds
- Clearly not all indicators are created equal!

Desirable properties of indicators relative to "key variables":

- direct relationship between indicator and key variable
- relationship not too "noisy"
- relationship does not change over time

Testing for Robustness

Three basic approaches to testing for robustness:

- The test of time
- "Meta-analyses"
- The "Flight-sim" approach

The test of time:

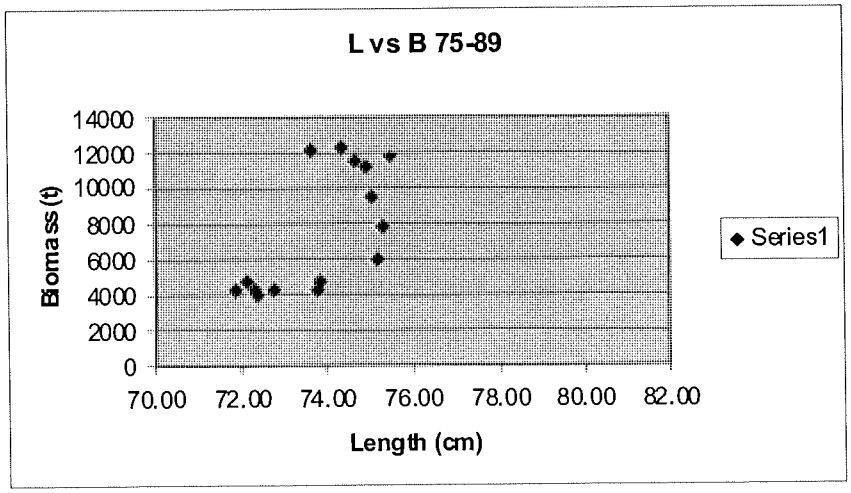
- "Suck it and see"
- Surest in the long term (for those that work)
- Can give very poor outcomes (previous examples)

Meta-analyses:

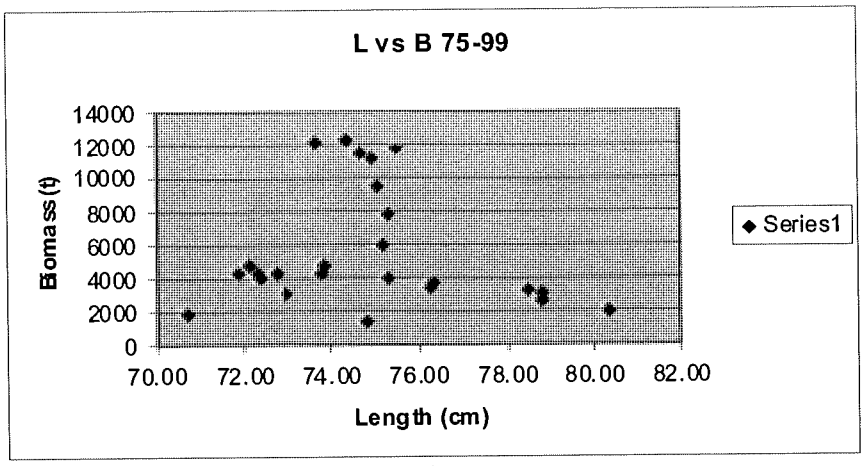
- Based on experience from other fisheries or ecosystems
- Can only draw conclusions from "well-studied" fisheries
- e.g. CPUE for fisheries where there are long time series of fishery independent surveys
- A useful approach, but data limited and hard to pull together

- Eastern gemfish example
  - Long time series of data and "good" assessment
  - Look at relationship between mean length and biomass

TESTING FOR ROBUSTNESS



TESTING FOR ROBUSTNESS



Testing for Robustness

The "flight-sim" approach:

- Analogy with testing pilots in a flight simulator before putting them in an F18!
- Test indicator performance against known (simulated) situation
- Relies on simulator capturing at least some of the features of the real world

- Useful to exclude "bad" indicators, but can't absolutely guarantee good ones
- Identify situations where indicators may fail
- Example: stock indicators for broadbill swordfish
  - Developed detailed simulation model for the stocks off eastern Australia
  - Looked at how well several indicators predicted changes in stock size
  - Indicators: CPUE, mean length, mean weight

TESTING FOR ROBUSTNESS

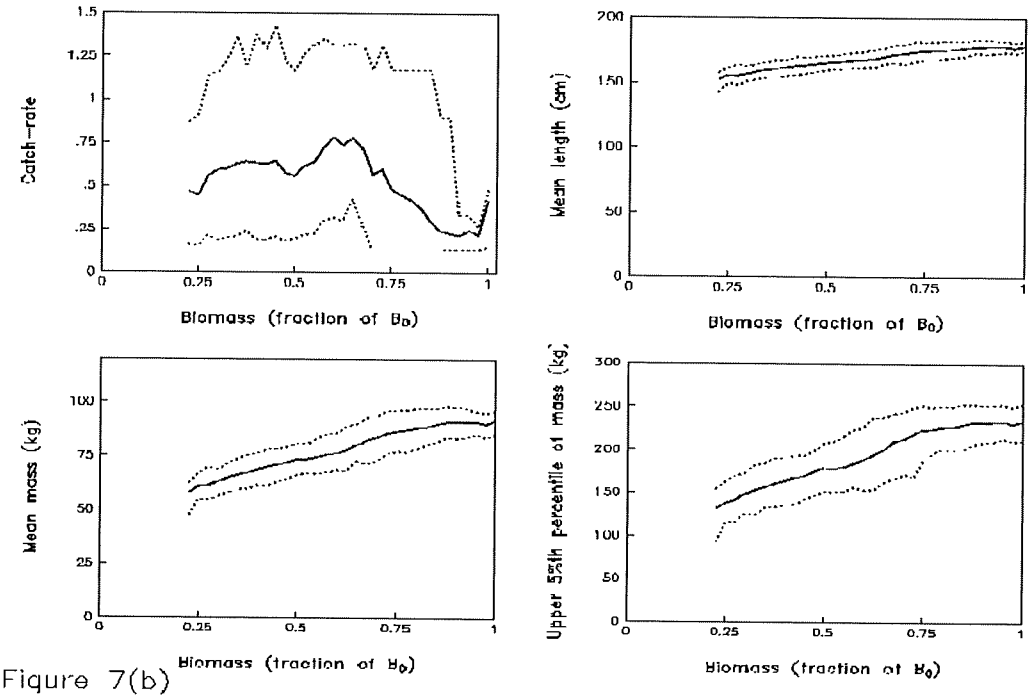


Figure 7(b)

Conclusions

- Indicators are key components of an effective system of ESD
- You can go badly wrong if you don't use "robust" indicators
- There are several ways in which robustness can be tested
- For target species, there is a body of data, knowledge and experience to draw on
- For ecological indicators, there is little data and experience, but "flight-sim" testing is feasible

SeaQual Australia and ESD

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Community awareness of environmental issues is at an all time high resulting in governments and industry increasingly being required to demonstrate that appropriate measures are in place to ensure environmentally responsible behaviour.

Significant progress has been made at Commonwealth and State level to bring fisheries onto an ESD footing. Several successful initiatives have been implemented over the last decade to address fisheries environmental challenges such as bycatch reduction, impact of fishing on marine wildlife and the impacts of fishing on marine habitat and the physical environment. Despite these significant efforts, it seems that little progress has been made with respect to enhancing the public's confidence that fisheries are well managed and fisheries resources are sustainable.

In recognition of this, the seafood industry has been actively searching for new tools to enable it to effectively improve its environmental performance while maintaining and enhancing industry efficiency and viability. It also recognises the need for the industry to clearly demonstrate to the community that it is operating within standards that the community itself has helped to develop.

There is currently a significant ground swell of support for industry driven initiatives that will ensure:

- the industry's environmental performance meets and where possible exceeds community expectation;
- continuous improvement with respect to the environmental performance of the seafood industry and fisheries management generally; and
- transparency and accountability in the measurement and reporting of environmental performance.

Recent initiatives to achieve this include:

- The Southern Fishermen's Association (SFA) environmental management plan, which has demonstrated that cultural change towards increased environmental awareness can be achieved throughout an entire fishery.
- The FRDC funded SFA project "Greening Australia's Fisheries" project which is examining options for environmental certification systems in Australian fisheries.
- The creation of SeaNet, an extension service for the industry, aimed at facilitating the uptake of bycatch reduction methods and promoting environmental best practice. SeaNet is funded by the Natural Heritage Trust and relies on an industry delivered face to face approach. SeaNet is a joint project of the Australian

Seafood Industry Council, the Australian Marine Conservation Society and Ocean Watch Australia Ltd.

SeaQual Australia can link and build on initiatives such as Greening Australia's Fisheries and SeaNet to ensure that research outcomes relating to environmental performance are adopted by industry within an appropriate context.

SeaQual Australia

Operating as part of Seafood Services Australia, SeaQual Australia is an industry/government partnership approach to developing and maintaining a "water to waiter" quality culture and assisting the achievement of a sustainable globally competitive seafood industry in Australia.

Located in Brisbane, SeaQual Australia has facilitated the establishment of a national network of people and organisations with responsibility for food safety, quality management and standards development.

The activities of SeaQual Australia are guided principally by the *Seafood Industry's Strategic Plan for Achieving Seafood Excellence.* Initially focusing on food safety, SeaQual Australia has the capacity to assist stakeholders address other issues, particularly those related to environmental management, which ultimately affect the quality and reputation of Australia's seafood.

Working in partnership with industry and government organisations in each State and Territory, SeaQual Australia is facilitating the development of a National Industry Best Practice Framework underpinned by agreed industry standards. SeaQual Australia also has the capacity to guide and coordinate the development of industry based codes of practice within the framework.

SeaQual Australia has established arrangements with the Joint Accreditation System of Australia New Zealand (JASANZ) and Standards Australia to ensure that the standards are recognised nationally and internationally. The capacity for optional third party certification, thus providing industry and government options for co-regulation, is a critical element of the SeaQual Australia approach.

An advisory group, comprising members from each state/territory SeaQual network, provides input to the annual work program and contributes to the achievement of the program objectives. Technical Advisory Panels are formed to address specific issues.

How is it funded?

Principally funded by the Fisheries Research and Development Corporation, significant funding has also been provided by the Queensland Department of Primary Industries and the Queensland seafood industry. Additonal funding is provided for specific functions and/or short term projects which are undertaken or managed by SeaQual Australia.

State/Territory based organisations, funded by industry and/or government, contribute significantly to the achievement of SeaQual Australia objectives.

SeaQual Australia and Standards Development

A standard is a document, published by consensus and approved by a recognised body, that provides rules, guidelines or characteristics for activities or their results, aimed at achieving agreed outcomes.

Standards can take many forms including:

- Systems Standards such as ISO 14001
- Codes of Practice Standards such as Marine Stewardship Council
- Regulations
- Product specifications
- Guidance standards which provide an interpretation of the other standards for a specific context eg for a specific industry or function.

The processes for developing a standard as well as the mechanism for assessing compliance are critical for achieving customer confidence.

To create a "chain of confidence" it is important that there is an effective accreditation and certification system in place. Beginning with the development of an agreed standard the Joint Accreditation System of Australia New Zealand (JASANZ) provides a framework to do that.

It gives everyone involved confidence that

- The standard is being complied with
- The people making the assessment about compliance are competent to do so and can do so in an open and transparent (impartial) manner
- The criteria used to assess performance are relevant to making an assessment about compliance.

The National Seafood Training Package, developed by Seafood Training Australia, will form the basis for the development of a National Seafood Industry Best Practice Framework underpinned by agreed standards. SeaQual Australia has established arrangements with JASANZ and Standards Australia to ensure that these standards can be recognised nationally and internationally.

A Partnership Approach to Implementing ESD

There is an urgent need to develop an environmental management system framework that provides realistic and achievable options for environmental accreditation/certification for each of the diverse range of fisheries in Australia.

Such a framework needs to be also supported by access to tools and expertise to assist each fishery to determine appropriate environmental management systems for that fishery and to help the fishery to commence the journey of continued improvement in environmental performance

The SeaQual Australia process provides an opportunity for governments and industry to lead the way internationally with the development and implementation of fisheries environmental standards which will engender public confidence in the way fisheries and the marine environment generally are being managed and that fisheries resources are being used sustainably.

Working together, SeaQual Australia can provide resources and guidance in the development of a "green chooser" and other products (including environmental management standards development) while SeaNet provides the all important face-to-face assistance with using such products and with ensuring that their development is soundly based on industry needs.

The SeaQual Australia process can also ensure that environmental standards are produced which are nationally and internationally recognised by using arrangements already established with the Joint Accreditation system of Australia and New Zealand (JASANZ) and Standards Australia

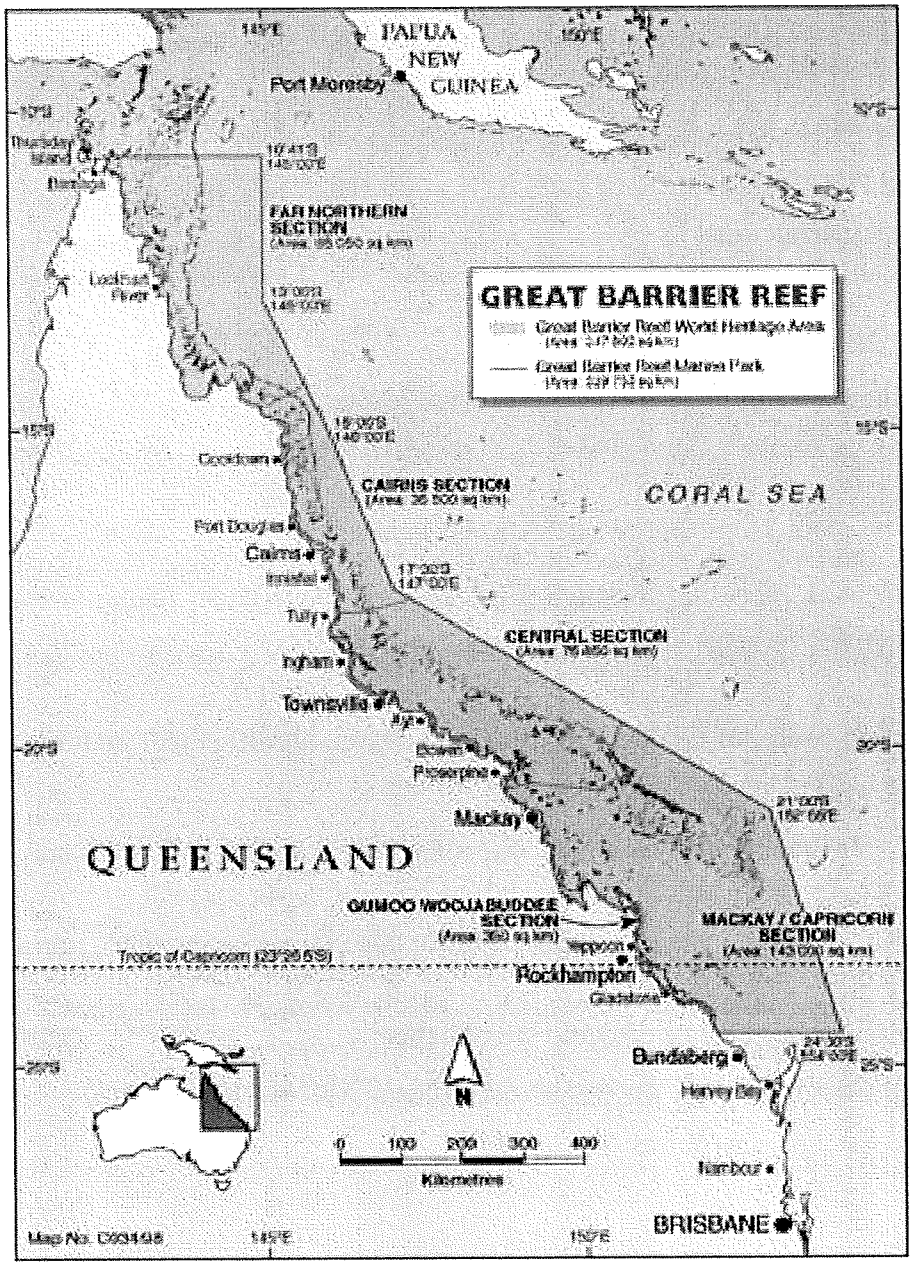
ESD and GBRMPA

John Tanzer

Executive Director
Great Barrier Reef Marine Park Authority
PO Box 1379, Townsville QLD 4810

The GBR is:

- the world's largest marine protected area
- the world's largest World Heritage Area
- > 2000 km long



The Great Barrier Reef Marine Park Act 1975

- Establishes park
- Establishes GBRMPA
- Bans mining
- Care, control, development,
- Conservation, reasonable use, management, appreciation,
- Enjoyment and preservation!
- No mention of ESD

GBRMP ACT

- Provides tools for management
- Regulations
- Zoning plans
- Plans of management
- Research
- Enforcement
- Consultative committee and judicial review

Authority's Goal

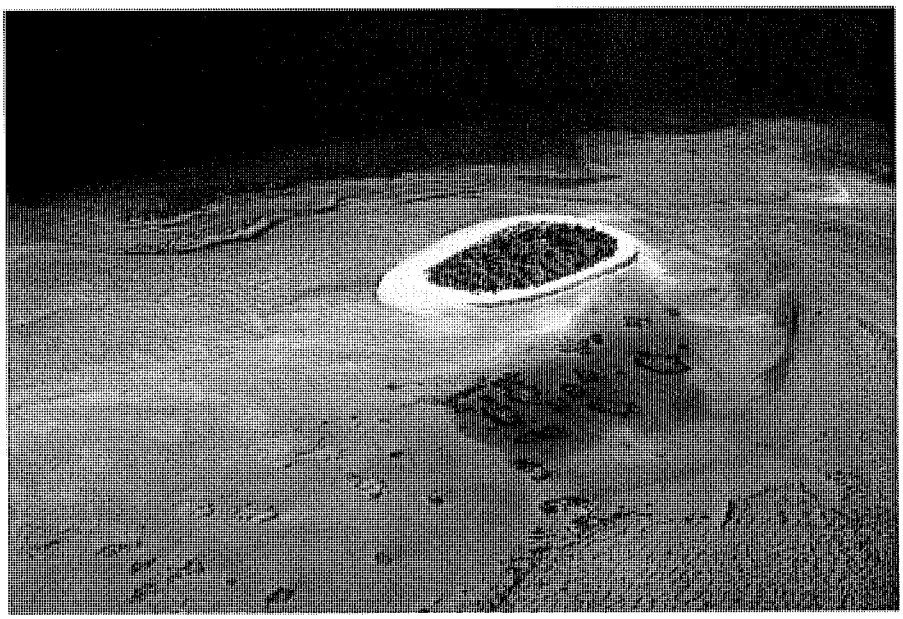
- The Authority's goal is to provide for the protection, wise use, understanding and enjoyment in perpetuity through the care and development of the Great Barrier Reef Marine Park

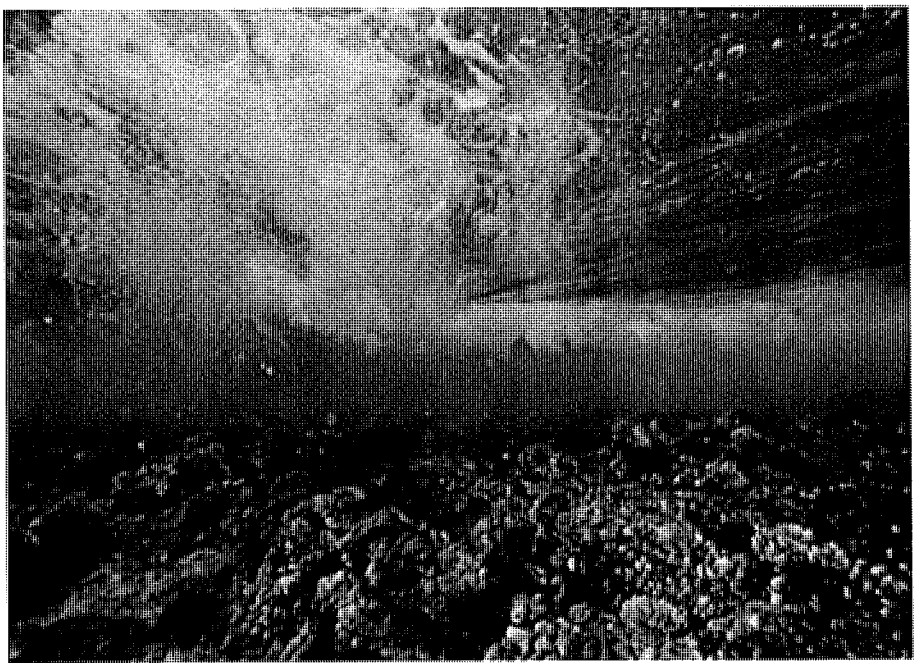
'Outstanding value' of GBR (= its World Heritage Significance) includes :

- 54% of world's mangrove diversity
- Some 3000 reefs containing over 1/3 of all the world's soft coral and sea pen species
- Six of the world's 7 species of marine turtle; also largest green turtle breeding area in the world
- Seabird breeding islands of world significance
- 800 species of echinoderms *(eg. sea stars)* (=13% of world's species)
- > 5000 species of molluscs *(eg. shells)*

Biological Diversity

- Continental islands
- Low wooded islands
- Coral cays
- Bottom-dwelling communities
- Deep ocean troughs





ESD and the GBRMP

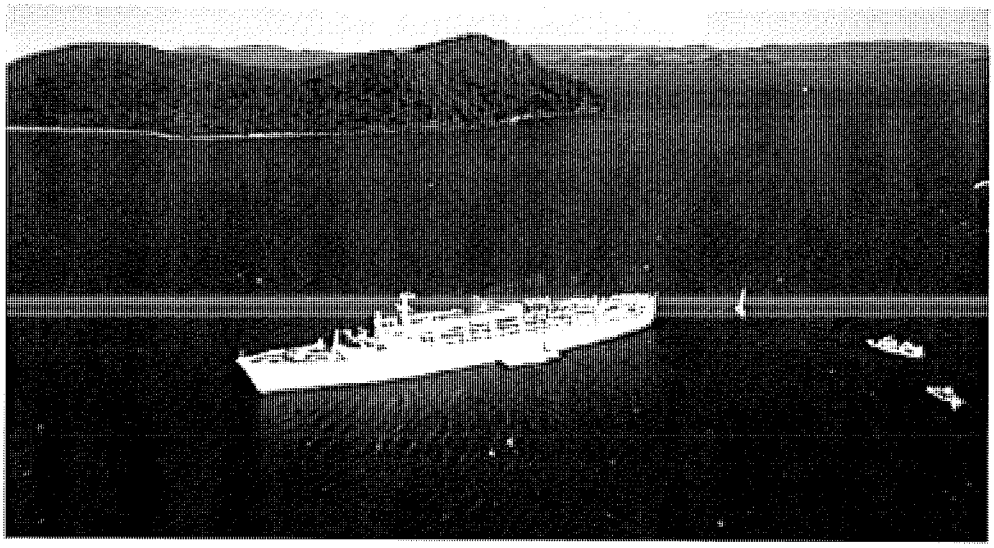
- Managing for multiple use
  - Commercial, recreational, indigenous
- Size and scale (regional depletion)
- Diversity
- Complexity

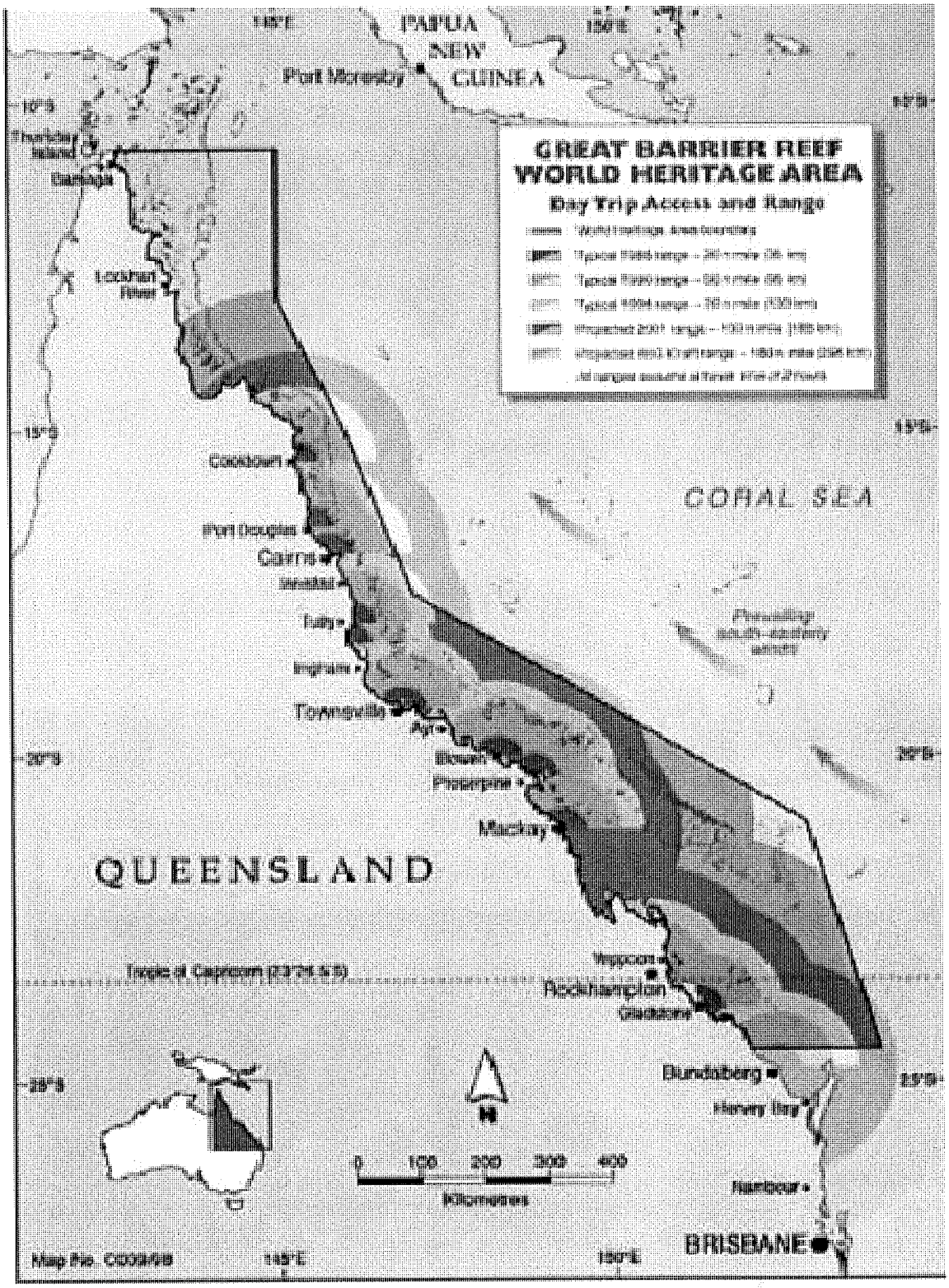
Economic Value

- Tourism >1.5m visitors per year
  - Approx $650m
  - Concentrated Cairns and Whitsunday areas
- Fisheries
  - 3700 commercial fishers($250-$350m)
  - 25000 recreational boats
  - 150 fishing tour operators

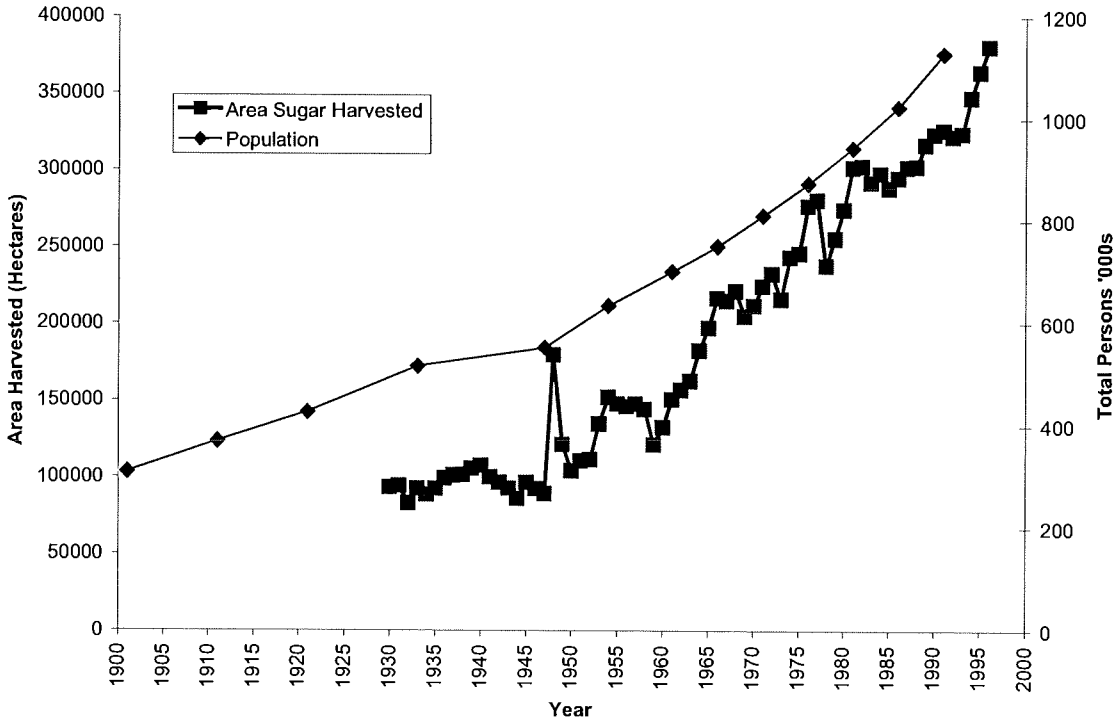
Tourism Issues

- Number of operations
- Diversity of services
- New technology/facilities
- Competing and conflicting uses



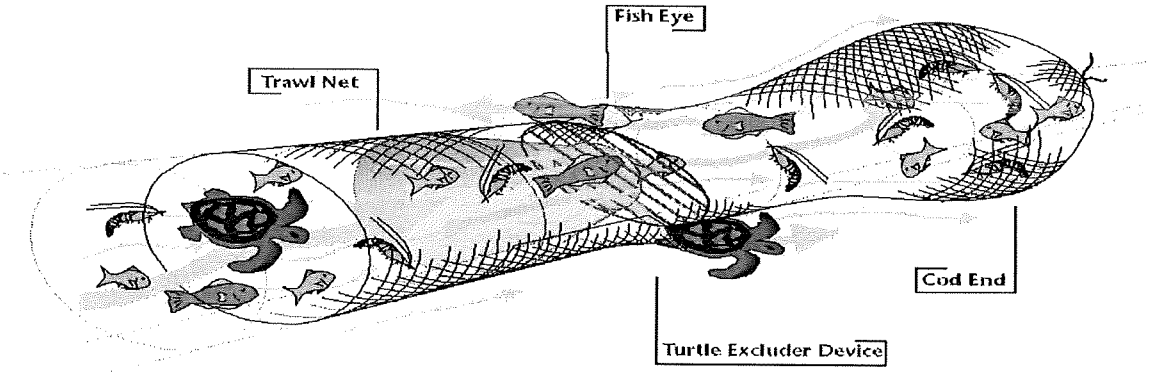

PAPUA NEW GUINEA
Port Moresby
GREAT BARRIER REEF WORLD HERITAGE AREA
Day Trip Access and Range
CORAL SEA
QUEENSLAND
Cooktown
Port Douglas
Cairns
Townsville
Mackay
Rockhampton
Bundaberg
Hervey Bay
Noosa
BRISBANE
Tropic of Capricorn
0 100 200 300 400
Kilometres
N

Population and Area of Sugar Cane for GBR Catchment



Fisheries issues

- Large excess capacity in commercial fisheries (latent effort)
- Increasing fishing effort (technology creep)
- Declining catch or decreased average size of fish caught in some areas
- Impacts of fishing on non-target species, the seabed and benthic communities



GBRMPA - 25 years

- 1975 - 1995 - The Foundation Years
- How and Where but not so much Why
- Zoning Plans
- Permit System
- Research and Monitoring
- Education and Information
- DDM

GBRMPA - Reviewing Reviews

- Several major reviews
- Inadequate reporting (need for clear operational objectives and measures for assessing progress)
- Trying to do too much with too little, too quickly
- Focus and priorities
  - critical issues
  - strategic work program

Reorganisation (the quest for Why & How)

- July 1998, but ongoing
- How do we apply ESD in MPA? The search for Policy
- Critical Issues
  - Water quality
  - Fisheries
  - Tourism
  - Conservation, biodiversity

Making Sense of ESD

- Defining threats / What
- Statements of intent - Objectives / Why
- Strategic work program / How & Where
- The Policy "black box"- transparency and certainty
- RAC's, LMAC's-involving communities national and regional

Threats To ESD in GBRMP

- Impact of fishing (habitat, arget stocks and biodiversity)
- Impact of pollution (nutrients, pesticides)
- Threatened species and communities (local, regional and parkwide)
- Concentrated tourism (providing for a range of experiences)

Managements Response

- Strategic work program - the judgement thing
- Comprehensive Policy to guide management including performance assessment
- Still too reactive
- Identifying management information needs and prioritising
- GBRMPA- auditing ESD
  - Trawl, reef line, inshore net, offshore net
  - Aquaculture

GBRMPA'S Role in Fisheries

- Working with fisheries agencies to strive for ESD
- Audit function - develop and agree on specific objectives and indicators for each fishery
- Jointly develop reporting format (how and when)
- GBRMPA to report to Minister and Parliament (public)
- Enable improved targeting of research and monitoring

Representative Areas in the GBRMP

- Insurance; to put a floor in ESD or does it deliver on ESD?
- Need to protect all the different communities in the Park not just those that are attractive for tourism
- Precautionary, perhaps but also simply a function of scale and diversity

What is the Representative Areas Program?

- A review of existing zoning in the GBRWHA to ensure adequate protection of biodiversity whilst minimising the impacts on existing users

Key objectives of the Program

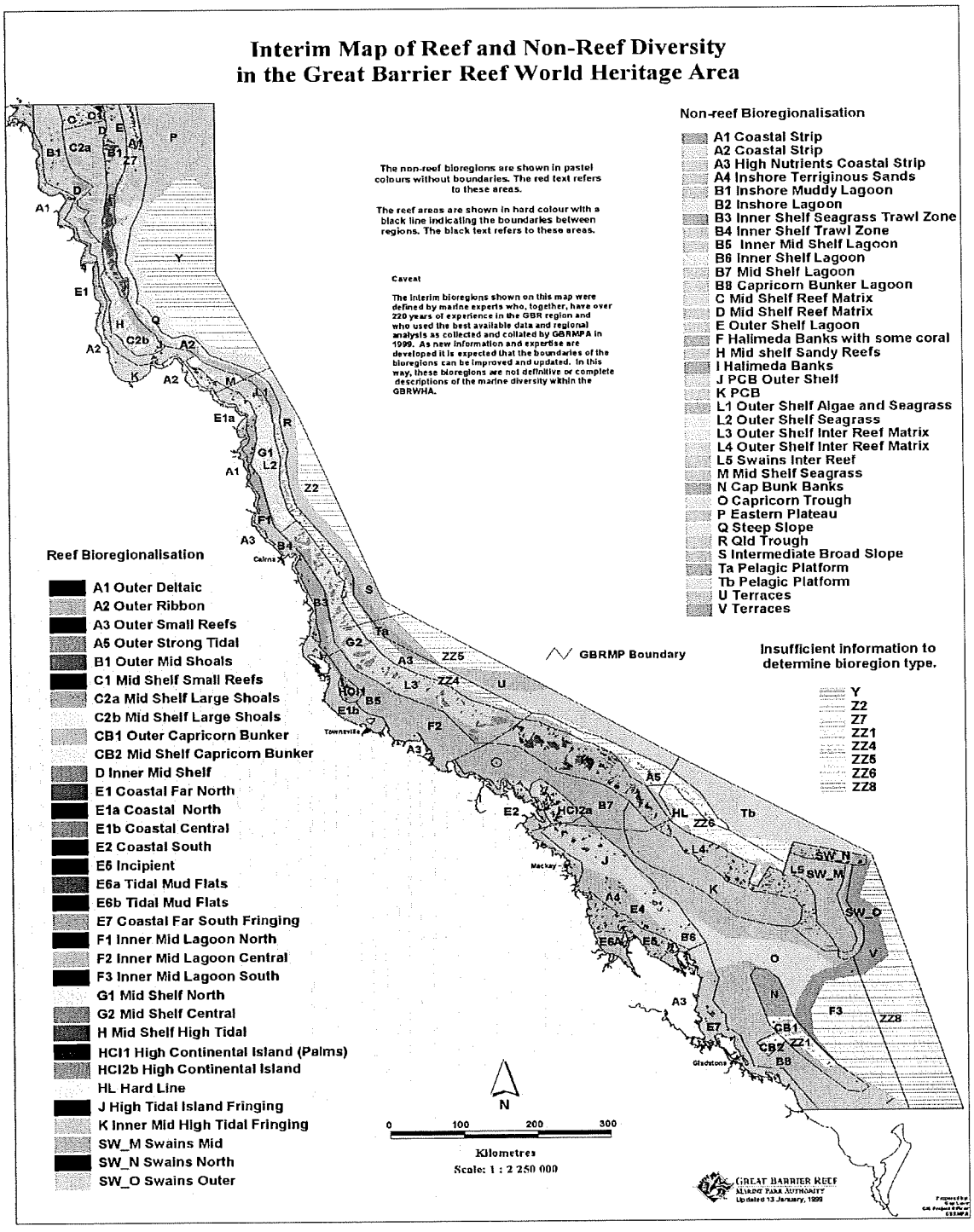
- To ensure long-term viability of the GBR through a network of comprehensive, adequate and representative highly protected areas
  - to protect biodiversity at all levels
  - to maintain ecological processes and systems without adverse impacts
  - to provide 'insurance' against ecological disasters

Why undertake a RAP?

- To fulfill Australia's national and international commitments to protect biodiversity and endangered species
- Part of a national system of MPAs based on a bioregional approach
- Recommended by stakeholders in GBRMPA 25 Year Strategic Plan

Guiding principles

- Regional framework
- Precautionary principle
- Comprehensiveness
- Adequacy
- Representativeness
- Consultation (indigenous/non-indigenous)
- Decision making



Session 4

When will ESD be implemented in all Australian Fisheries?

Chair:	Amanda Martin
Speakers:	David Kay
	Rick Fletcher
	Ted Loveday
	Frank Meere
	Duncan Leadbitter
	John Annala

Implementation of ESD from an EA Perspective

David Kay

Assistant Secretary
Marine Conservation Branch
Environment Australia
GPO Box 787, Canberra ACT 2601

Australia's Oceans Policy - Dec 1998

The Commonwealth Government will:

- under the *Environment Protection and Biodiversity Conservation Act 1999*:
  - "undertake strategic environmental impact assessments of all new management plans for Commonwealth fisheries and, within a five year period, of all those fisheries that do not have a management plan"

and:

- under the *Wildlife Protection (Regulations of Exports and Imports) Act 1984*:
  - "remove the current blanket exemption of marine species from wildlife export controls to ensure exemptions are available only for marine species harvested in accordance with sustainable and ecologically-based management arrangements."

Why do we need ESD in Fisheries?

- The public are increasingly seeking assurances that natural resources are being sensitively and sustainably utilised and developed
- Fisheries managers and industry are required to demonstrate environmental credibility as required by their legislation
- Environment legislation also requires resource management to be carried out in an ecologically sustainable manner:
  - environmental drivers include Schedule 4, regional marine planning, marine protected areas, EPBC Act
- People need to be confident they can invest in sustainable and competitive industries, which ESD will achieve

What does the Commonwealth Government want?

- To ensure that the access to and harvesting of marine wildlife takes place in an environmentally sustainable manner
  - assessed against guidelines which have been developed by an agency charged with environmental protection
  - by a body independent of the fisheries industry and fisheries management agencies

Implementation and Assessment of ESD from the SCFA Perspective

Rick Fletcher

SCFA Research Committee and Indicators Working Group
NSW Fisheries
PO Box 21, Cronulla NSW 2604

FOR ******* SAKE
JUST DO IT!!!

Outline

- Introduction
- Explain how the various ESD activities relate to each other.
- Describe the SCFA FRDC proposal to enable development of a nationally agreed system of reporting.
- Conclusions

SCFA Indicators Working Group

- Established in 1999 to ensure rapid development of a nationally agreed set of indicators for ESD
- Utilised previous work of Research Committee and others on ESD
- Covers all aspects of ESD
- Developed an FRDC proposal - "Initial Application of ESD Indicators"

Relationships Amongst ESD Activities

Background Material

- Target species reporting
- Review of current indicators
- ESD Framework
- FAO Report
- MSC assessment of WRL
- ISO 14000 assessment of Coorong
- Jurisdictional projects

Issues and Needs

- Fisheries Legislative Requirements (all components of ESD)
- Other Government Requirements (some aspects of ESD)
- {Market Leverage/Access (varying aspects of ESD)}

Measurement and Reporting

- Terminology and review (BRS)
- Current ecosystem indicator development (CSIRO)
- Application of known indicators (all fisheries -SCFA, Jurisdictions, Industry, EA, other Stakeholders)
- Future MSC assessments (some fisheries - industry, jurisdictions, other stakeholders)
- Future indicator development (eg robust indicators)

Responses - Improvements

- Fishery level management - changes to fisheries management plans
- Industry level management (Codes of Practice etc - Seafood Services Project)

Initial Application Project

- Reference Group
- Case Studies
- Workshop and Report
- Initial Application

Case Studies

- BRS survey found there are 140 distinct fisheries in Australia.
- Most efficient way of progressing is to use a series of case studies
- Case studies need to cover a range of fishery types, jurisdictions, information levels and other processes (ie linking to Seafood Services Project case studies).
- Case Study team to include fisheries, environmental, social and economic experts (participate in each study to ensure consistency)
- Local industry, managers, researchers, environmental groups and relevant government reps (ensure relevance and increase awareness)
- One per jurisdiction within a 3-4 month period.

Case Studies

FISHERY TYPE	Target Groups	Bycatch Levels	Ecosystem Issues	Information Levels	
				Data Rich	Data Sparse
1 TRAWLING etc	M	H	H	12	23
2 TRAP & LINE	S-M	L	L	8	15
3 POTTING & HAND	S	L	L	19	29
4 NETTING	M	M	M	3	9
5 MIXED	M	L-H	L-H	3	17
				45	**93**

Case Study Workshop

- Three day workshop within 4-5 months

Report

- Supply the best advice on the indicators and performance measures that can be used immediately for each major type of fishery
- Identify additional case studies (including recreational and aquaculture examples)
- Recommend approaches to develop new indicators for medium and longer term

Initial Application

- Using workshop report each jurisdiction (in association with MACs and other stakeholders) can attempt to assess all major fisheries
- By December 2001 a report will be compiled that for each fishery will include either specific data, comments on data availability or the need to develop new indicators.

Conclusions

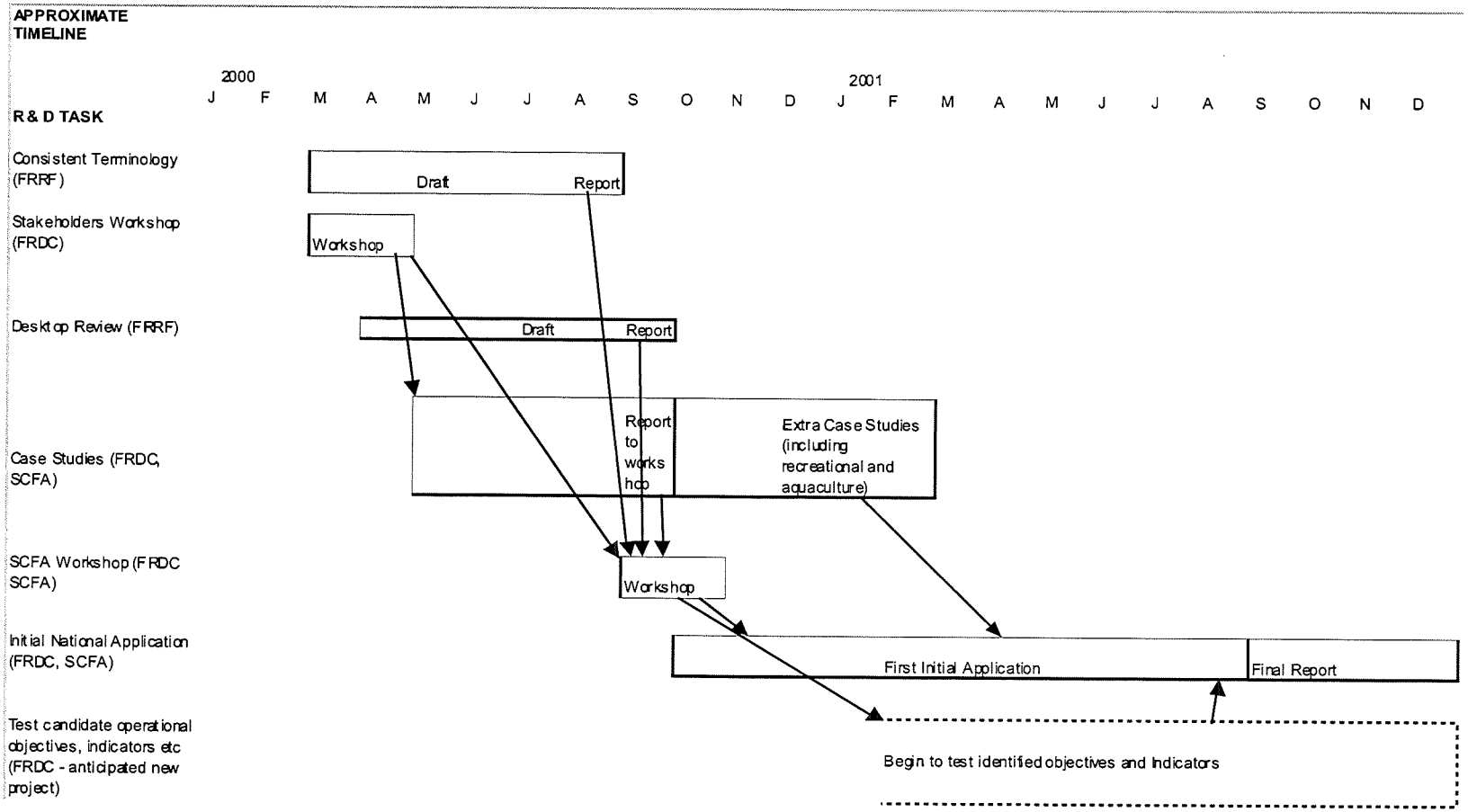
- SCFA plan is inclusive of all stakeholders
- Compliments or integrates with other ESD activities
- It has a tight schedule and series of outcome/output related milestones.
- Assessments will cover all aspects of ESD.
- Expect outputs to ultimately satisfy most internal and external auditing requirements.
- Process one of continual improvement.

LETS GET ON WITH IT!!!

Possible Reference Group

- SCFA Indicators Working group
- Commercial Industry (ASIC)
- Recreational
- Indigenous groups
- Environmental Groups (e.g. MSC)
- EA
- FRDC

Possible Timetable



Implementing ESD - An Industry Perspective

Ted Loveday

President
Queensland Commercial Fishermen's Organisation
PO Box 392, Clayfield QLD 4011

Sustainable Development *(WCED,1987. Pg 46)*

- *"not a fixed state but a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and embrace both current and future potential to meet human needs and aspirations"*

Brief Background-Fisheries ESD

- Industry embraced ESD in 1991 (NFIC)
- Embedded in C'wealth & State Fisheries Legislation (1st in Australia)
- Huge R&D Investment
- Australia's fisheries management recognised internationally

How has industry benefited?

TUESDAY February 15, 2000 Serving the Bundaberg region Phone 4153 8555 90

Limits threaten to sink trawlers

By Mike Darry

KERRY and Richard Taylor are among 11 local trawl operators facing ruin under new regulations proposed by Environment Minister Robert Hill.

At threat, the Taylors and their supporters say, is an industry worth more than $80 million a year.

people directly and indirectly.

Under Senator Hill's plan, the number of nights the trawl fleet is allowed to fish would be reduced by 25% over the next five years.

But Mr Taylor said he could not afford the new rules.

"I do 200 nights a year," he said. "I couldn't be viable at 150 nights a year."

"low impact" weather-restricted vessels, Mr Taylor said.

If they are forced out of business, the field will be left open to the larger, "high impact" vessels which can operate in bad weather.

"The large trawlers unload their catch directly on to factory ships and it goes straight overseas, without any input into the Queensland economy," Mr Taylor

Public perception of trawl operators as environmental vandals dragging their nets across the sensitive coral of the Great Barrier Reef were partly to blame for the proposed new laws, he said.

"We're sick of hearing that we trawl on the reef," Mr Taylor said. "We don't trawl on the reef, we trawl on the sandy seabed which lies between the mainland and the

"If we trawled on the reef our nets would hook up on the ... and we'd have to cut ... equipment worth about $20 ... each time."

Mr Taylor said a recent CS ... study showed less than 1% of ... Great Barrier Reef Marine ... area was trawled, with the ... limit of more than 15 passes a y ...

Hill's permit plan attracts trawl anger

CONSERVATION groups have supported proposals by federal Environment Minister Robert Hill to issue permits for trawling on the Great Barrier Reef.

Senator Hill has outlined a plan for ecologically sustainable trawl management which he said was essential to ensure the long term viability of the industry.

He said the far northern section of the reef contained the richest and most pristine coral, dugong habitats and the nesting sites for six species of threatened turtles.

"The new (federal) management plan will ensure high levels of protection for the region's biodiversity and improved management for users of the marine park," Senator Hill said.

However, Queensland professional fishermen were angry about the move.

"This is a typical Robert Hill stunt, positioning himself to grab the kudos for a conservation outcome that has already been achieved," Queensland Commercial Fishermen's Organisation president Ted Loveday said.

Mr Loveday said Senator Hill knew a Trawl Fishery Working Group including GBRMPA representatives last week finalised a management plan that more than satisfied his demands.

"Senator Hill looks to be spoiling for a fight with primary industry groups to try to bolster his stocks with green groups and the Sydney-Melbourne-Canberra cappuccino set," Mr Loveday said.

North Queensland Conservation Council co-ordinator Jeremy Tager said the conservation groups supported Senator Hill's proposals.

"Because the Queensland government, over three decades of mismanagement, has consistently refused to address the environmental impacts of trawling, we support Senator Hill's proposal to require permits for trawling in the Great Barrier Reef," Mr Tager said.

Bill acts against trawling damage

A SEABED Protection Bill recently introduced to the US House of Representatives proposes a moratorium on trawling in a number of significant areas throughout the United States.

Under the Bill, trawling will not be allowed to resume unless it is shown that the impacts of trawling are negligible.

Unfortunately it is the US and not Australia that is leading the way in recognising the extent of the damage caused by trawling and acting on that information, the NQCC said.

"This Bill finds that trawling severely damages the seabed; it destroys unique habitats and potential sources of food and medicine. Species are disappearing before they are even known," NQCC co-ordinator Jeremy Tager said.

"The Bill also concludes that trawling is not only seriously damaging the marine environment, but also industries and people who depend on a healthy ocean.

"We continue to pretend that trawling is an acceptable practice in the Great Barrier Reef Marine Park and World Heritage Area. This is probably the most important marine ecosystem in the world, and certainly the most important tourist destination in Queensland."

"The Queensland Government must take its head out of the mud and recognise that trawling is not compatible with either protection or tourism of the Great Barrier Reef," Mr Tager said.

"The kinds of proactive measures that are coming out of the United States should be happening in the Great Barrier Reef Marine Park first."

What went Wrong?

- Significant progress - not communicated
- Lost sight of who our customers are
- Industry has not driven implementation with the same passion for ESD as in 1991. E.G. This workshop should have been in 1992
- Inter-agency power struggles unchecked
- Lack of ESD assessments (checklists & reports)
- Basic lack of common understanding of ESD - very few looking at the big ESD picture

Consequences of poor understanding of ESD

- Scientific - obsessed with ecological
- Little socio-economic data
- Ideologically driven debates (some NGOs)
- Fisheries management regimes that ignore economic and social issues often backfire
- Fishers want economic efficiency but often avoid fundamentals such as restructure
- Governments promote incentive based systems but avoid more certain access rights

Political Perspective

- Basic lack understanding has made fertile ground for political intervention and distortion through mis-use of ESD
- Sustainable fisheries closed down by politicians under the auspices of social or economic benefits
- Compounded by ignoring or dismissing the social and economic consequences

Key Fisheries ESD Issues

- Broad community awareness and ACTION
- Sustainable marine ecosystems
- Impacts of fishing itself and of other human activities
- Allocation decisions based on 'true value'
- Decisions must reflect the 'true' ecological, economic and social consequences
- Transparent management processes
- Assessing combined harvest of all sectors
- Sustainability of by-catch and other species

- Efficient, diversified fishing fleet achieving maximum community benefits
- Incentives to sacrifice short term benefits in order to achieve long term gains
- MUST DEMONSTRATE

Where to Now

- Industry must accept responsibility to protect and promote its future
- Define, meet and exceed customer requirements (including EA)
- Strongly commit to and drive SCFA process
- Put current knowledge into action while also supporting longer terms strategies
- Build on examples of excellence

The fishermen angling for a future

CAROLYN COLLINS

HENRY Jones is a fourth-generation fisherman whose livelihood depends on the health of the Coorong estuary and the great freshwater lakes above the mouth of the River Murray — and he's determined not to be the last.

It's a determination shared by those who run all 38 of the region's commercial fishing businesses, which a couple of years ago joined forces to create history, developing an environmental management plan, a world first for a fishery.

The award-winning project, which embraces sustainable fishing practices and seeks to improve the local ecosystem, is being hailed around Australia as "the way of the future".

But according to Mr Jones, president of the Southern Fishermen's Association, its success is under threat from the reduction in Murray's flow.

"We can do all of this wonderful work that we are doing, but if they are going to keep taking water out of the Murray like they have been, it's all wasted," he said.

"We get 20 per cent of the water we used to get. The Murray River closed in 1983 for the first time in white man's history and now it looks like closing every year ... it's just becoming a salt drain and it's a blot on all of Australia."

Our water at risk

Speaking after the launch of the South Australian Government's inaugural fishing industry environment awards, Mr Jones said the environmental significance of the lakes and the Coorong region was recognised internationally.

The Coorong's lagoons and the freshwater lakes of Lake Albert were fish-rich, with the 38 businesses accounting for 10 per cent of the state's catch.

Under the management plan, fishermen have self-imposed limits, ranging from the types of nets they use to the species and size of the fish they catch.

They collect valuable data not only on fish species but bird and plant life — collated on computer and made available to researchers and scientists around the world — monitor pollution and visitor use and organise rubbish removal.

When carp, introduced in the 1970s, threatened native species, they found new markets and substantially reduced carp numbers — to the extent they can no longer meet market demand — and hastened the return of the native fish.

Within 12 months the group hopes to see the construction of "fish gates" to bring native fish, such as mulloway, back to areas that have been artificially controlled by barrages for more than 60 years.

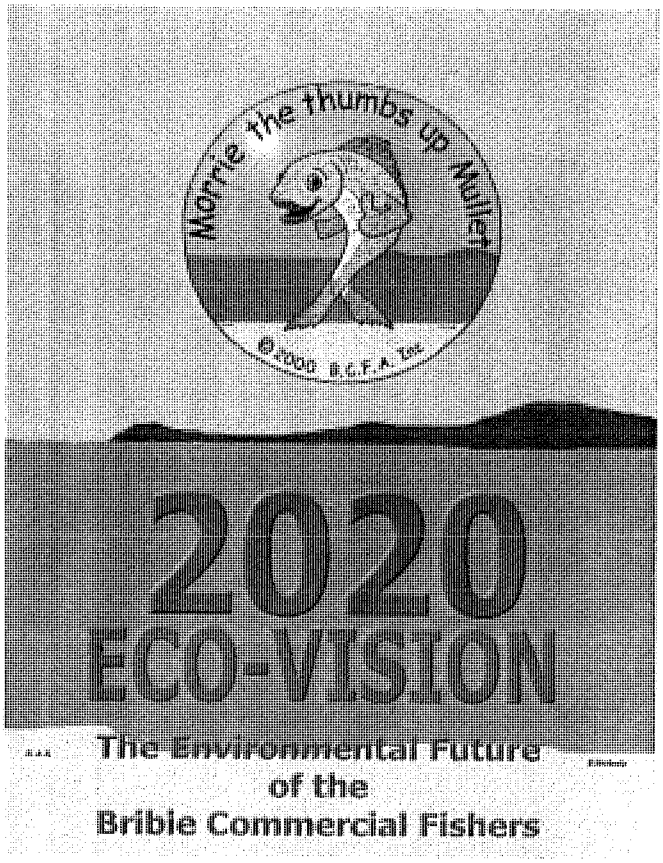
Mr Jones said despite the voluntary nature of the plan, there had been 100 per cent compliance.

"I was surprised because fishermen are hard-necked, they are the last of the hunters and gatherers, but they believed they were part of the environment," he said.

"They believe that the way of fishing in the future is to go down the environmental path. It has to be a sustainable fishery, otherwise we have no future at all."

Picture: CHRIS

Net benefits: Mr Jones casts his nets on the Murray River, fishing for a variety of native species



Eco-vision for fishing

Bribie Island commercial fishing operators have initiated a management plan that may set the standard for coastal areas of Australia.

A draft of their plan is about to be circulated for comment and input from interested organisations and individuals.

It's titled "The 2020 Eco-Vision of the Bribie Commercial Fishers Association In."

It includes their 2020 eco-vision statement, an environmental management plan, code of conduct, description of the local fishery and operating manuals of the association.

The local association has already received assistance from the Queensland Seafood Industry Association, Queensland Fisheries Management Authority, QPDI Southern Fisheries Centre, Southern Fishermen's Association of South Australia and the Australian Marine Conservation Society.

Project co-ordinator, Frank Lee, in an open letter to those who may read the very detailed management plan document, points out that it has been prepared by fishermen for fishermen.

"Most of us are fishermen by choice initially, and have become dependent on supplying fish to markets over 20 years or more.

"Further, many are descendents of fishing families, stretching back 100 years.

"However, the world has changed, and so fishermen operating in the new millennium must face a few hard facts.

"The most urgent one is, communicating with the public, government and organisations.

"While we are fortunate to be forming the Environmental Management Plan from a reasonable environmental record over the last 30 years, we must acknowledge that we are not unblemished, and that the community is on the verge of accepting high standards for itself and expecting all industries to be the best they can be.

"It is critical that fishermen continue to fight for the habitat.

"In the 1970s and 80s, fishermen's vocal and written protest over degradation of habitat was largely ignored by the community, and governments.

"The common response to our protests was, 'well, really, you are raping the resource, aren't you?' Today, this perception of fishing activities is fading fast.

"While some foreign fishing methods may be questionable, the beach haul, mesh netting and crabbing fisheries in Moreton Bay have stood up to rigorous scrutiny and legislation over the last 20 years.

"But this is still not good enough. If the habitat is destroyed and degraded, no Environmental Plan, or Code of Conduct, or Management Policy, will be good enough to sustain fish.

"We hope that this plan will improve our own performance in the environment, and that we can meet community expectations. As we are, effectively, paid to harvest the common resource for the fish buying public, it is reasonable that those people paying for fish, have confidence in the licensed fishermen."

In its plan, the association has adopted the National Strategy for Ecologically Sustainable Practice -

" ... using, conserving and enhancing the communities resources so that ecological processes on which life depends are maintained, and the total quality of life, now and in the future, can be increased."

Further, the association has embraced a vision similar to this but in plan English -

"A healthy marine ecosystem, sustaining present and future generations please and nutritional needs, with commercial fishermen harvesting quality products for the public."

In taking the lead, the association is offering to act as a vehicle for constructive discussion and action, for any individuals or organisations wishing to improve the marine environment.

Interested individuals or organisations may make contact with the association via the Secretary, 17 Wattle Avenue, Bribie Island.

Ocean Watch/SeaQual Project

- Achieve appropriate level of environmental accreditation/certification through implementation of EMS relevant to each fishery
- Expand capacity of SeaNet to provide expertise and assistance at industry level
- Turn existing knowledge into action
- Integrate new knowledge and tools developed under SCFA & other processes

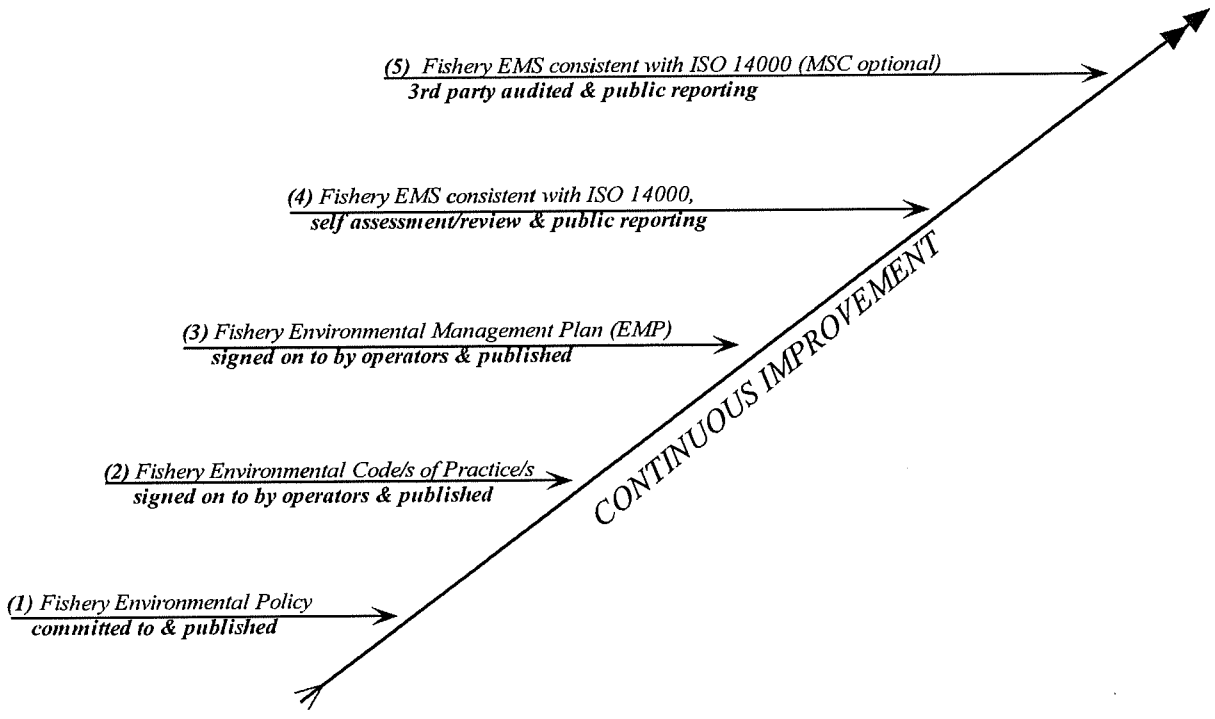
WHAT IS EMS?

- *That part of an overall management system which includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (ISO 1996)*

SeaQual Approach to EMS

- *The key to developing a robust, self sustaining EMS hinges on the methodology applied, the learning experiences and participation of the systems end users (Donnelly et al, 1999)*
- De-mystify EMS (Green Chooser)
- Options which each fishery can identify as being realistic and achievable
- Continuous improvement - "stepping stones" towards a 3rd party audited EMS

FRAMEWORK FOR FISHERIES EMS & CONTINUOUS IMPROVEMENT



EMS Deliverables

- Transparency and accountability
- Public awareness about how the industry operates and conducts business
- Cultural change
- Continuous improvement of environmental performance
- Demonstrate industry is operating to standards which meet and exceed community expectations

EMS Benefits

- enhanced industry image and increased confidence
- enhanced resource security
- promotion of positive environmental management initiatives
- reporting ESD progress
- reduce the need for increased red tape and associated costs to industry
- improved industry productivity and efficiency
- improved regulatory compliance with clearly articulated minimum standards
- reduced environmental risk
- focus on cleaner production techniques
- improved focus of training and skills development
- market advantage

Keys to SUCCESS!!!

- Coalitions and partnerships (commercial, indigenous, recreational, NGOs)
- Continuous improvement rather than the 'high-jump' approach
- Harness industry's human resources and vested interest in success
- Provide simple, easy to use tools (green chooser and templates)
- **COMMITMENT! COMMITMENT! COMMITMENT! COMMITMENT!**

Implementing ESD - An AFMA Perspective

Frank Meere

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ESD within Commonwealth Fisheries Legislation

- Some history
  -development of the *Fisheries Administration Act 1991* (FAA) and *Fisheries Management Act 1991* (FMA)
- Primary focus on sustainability however within an partnership approach with integrated decision making
- Is ESD a new concept?
  - formally implemented in Australia after the FMA, however had been the key to progressive fisheries management - ecological aspect is continuing to evolve

ESD does not equal environment

- Often confusion that ESD only covers ecological processes
  - Productivity Commission Report on Implementing ESD
  - *ESD does not equal environment*
- It is clear that all forms of human activity affect the environment
- We need to be conscious and assess these impacts and make judgments about acceptable impacts within AFMA's integrated decision making framework
  - this will involve all sorts of trade-offs

ESD - A Continuum?

- ESD does not tell us what is an acceptable outcome, rather it identifies why we want to pursue it
  - for future generations
  - for the conservation of biological diversity and ecological integrity
- It does provide guidance on how to pursue it
  - use of the precautionary principle
  - integrating decision making to cover economic, environmental and social considerations
  - using valuation, pricing and incentive mechanisms

- Our understanding of ESD is changing - it is evolving
- AFMA has been pursuing ESD for 9 years - obviously with differing emphasis
  - initial focus - individual stock sustainability, now much broader
- ESD is a major focus of AFMA's legislative objectives it is part of our day to day business
  - Section 3(1) (b) of the FMA

What has Changed?? - Philosophy

- Clear focus on broader management - target, by-product and by-catch
- Rationalised management between different jurisdictions both within Australia and internationally - active engagement
- Broadening of fisheries management to include non target species and the marine environment
- Active use of the "precautionary principle"
- Move towards broader ecosystem management

What has Changed?? - Practice

- Active engagement of all stakeholders - broadening of MAC membership, greater involvement in decision making
  - more open and accountable
- Development and implementation of by-catch action plans
- A new mind set both within AFMA and among key stakeholders - varies
- Clear indication of the need for continual improvement and refinement

So - When will ESD be implemented?

- AFMA is actively implementing ESD - it is a goal to be pursued
- Some key drivers will help this process
  - the need to pursue our legislative objectives
  - Community expectations
  - Environmental NGOs
  - key environmental legislation
- Outcomes will differ, judgements will need to be made - it is balancing act
- Our aim - best practice fisheries management

ESD from a lobbyist's point of view

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Abstract

Ecologically sustainable development has always been about politics and is increasingly so. The reasons for this are several folds and include the following:

- ESD is substantially about people but structured approaches to people related issues are directly avoided by fisheries (if not most other natural resource management) agencies. Social and economic issues are commonly relegated to the world of politics, hence the political nature of natural resource management.
- Not with standing the importance of biological and ecological research there is insufficient attention given to social and economic research. Social research in particular is rudimentary, probably because it is considered 'soft' science.
- Despite the rhetoric about co-management the approach to management is still very top down. The system assumes that the tertiary-trained managers do not need further training or guidance on communication/social (amongst other) skills but fishermen do.
- Management systems deal with fishermen on the basis of historical experience and do not acknowledge that these systems also shape the industry and how it interacts with management.

With the increasing number of stakeholders involved in fisheries management systems some serious questions have to be confronted about how to avoid what many in the United States are referring to as 'fisheries gridlock'. Do we tolerate (by ignoring) a system that feeds a political quagmire or do we take actions that could avoid this? Is the current escalation of political action merely the result of competition as biological limits being reached or (exceeded) or are there other mechanisms at work?

Introduction

Everyone is a lobbyist of one sort or another. Seeking to influence the decisions of others is a 'venerable Australian practice' according a book called 'the Lobbyists' by Peter Sekuless. Sekuless notes that lobbying has changed little since the British first colonised Australia but it has become more complex.

There can be little doubt that natural resource management has become far more complex than it was twenty or thirty years ago. In the case of fisheries management it could be argued that we are currently undergoing a revolution. This revolution has its roots in the rapid rise in public interest in the state of natural resources in the 1980s and the resultant strengthening of the roles of natural resource, planning and environment agencies.

In 1991, business and industry, environmentalists, the wider community and governments all agreed that there must be a better way of using natural resources in a way that does not remove from future generations the sorts of options we have now. Beyond that there is a great divergence in what this actually means and how it can be achieved.

Economic and social aspects of fisheries

ESD is as much about social and economic issues as it is about the environment. In his book, The Return of Scarcity, Nugget Coombs notes that the threat to the future of society arises from the failure of economics and politics to provide long term solutions.

Yet, with fisheries, social and economic issues are left to the fickle world of politics on the assumption that good science will produce the most appropriate outcome in terms of sustainability. It was interesting to read of the comments by State fisheries agencies on social and economic indicators in a report by Sainsbury *el al.* on sustainability indicators. Some agencies recognised the importance of such indicators and noted the difficulties involved whilst others claimed that such indicators had limited value anyway. Leaving such issues to politics was actually specified as a preferred option.

Has this approach delivered the goods in terms of sustainability? Arguably not. Not only is the sustainability of many individual species still uncertain but major questions over the ecosystem impacts of fishing will probably never be answered due to their complexity. Yet whilst we continue to invest large amounts of money in the science of the environment we invest little in the social sciences and economics. Indeed social and economic issues are commonly explicitly excluded from the issues deemed to be the responsibility of fisheries agencies even though ESD is firmly embedded in the legislation that drives management.

Yet it is most commonly social and economic issues that dominate the concerns of industry in particular and such issues are thus major topics for lobbyists. However, there is very little economic and social research available for either lobbyists or decision-makers to access. So called economic information is rarely any more sophisticated than simple financial data. The in appropriateness of these data is best illustrated by the 'economic' debates between the commercial and recreational sectors in which recreational expenditure data is compared to commercial landed catch data in a biased comparison of apples and oranges. Only recently has there been an attempt to resolve this but it remains to be seen whether fisheries managers will ever make use of the analytical framework being produced.

It is not uncommon to hear scientists, industry, managers and environmentalists bemoaning the economic pressures on fisheries yet rarely do we see any serious attempts to address them. Somewhat remarkably the view that as long as the biological data are complete then market forces can be left to reign supreme remains entrenched. Few attempts have been made to influence these forces even before the convenient excuse of economic rationalism came into vogue. The fact that other industries are interested in using economic tools to influence decisions about resource use suggests that, amongst fisheries agencies, there is either a lack of comfort in going down this path or some other factors at play.

The Marine Stewardship Council is probably the first major attempt to tackle economic pressures head on and make the pressures operate in favour of sustainability not against. Whilst there has been much discussion about the feasibility and practicality of the MSC I have not heard any major complaints about this initiative distorting the market or creating an uneven playing field, i.e. the usual arguments trotted out against proposals to use economic instruments to influence behaviour. In some respects the MSC is quite a blunt tool in that it focuses only on the profit motive which may be a necessary but not sufficient factor in explaining the motives of fishermen.

The MSC is thus likely not the only mechanism available. The agricultural world has been devoting a considerable amount of effort to designing economic incentives for sustainable agriculture. Some may argue that very little reform has been implemented to date but at least the research and intellectual work is being put into place. Maybe the reason why agriculture is further ahead is that the big stick of regulation is less of an option than it is for fisheries and this breeds some adventurous thinking.

The social aspects of fisheries are even less well addressed than the economic aspects. The type of fishing community that evolves in response to an open access management regime is more than likely different to the one that evolves in response to a tradeable rights based regime. Yet the reasons for changing from one to the other are nearly always biological, commonly economic and less commonly social. Indeed the social fallout from such changes are nearly always left to the political arena where a Minister is expected to tough it out against community pain. Very rarely is there a change management plan developed and I would argue that few fishery managers would know what needed to be undertaken.

A brief foray into the literature of common property management (see for example Ostrom 1990) reveals that the oft quoted Tragedy of the Commons is not as common as one would expect and many human communities got along quite well before the advent of natural resource management agencies. Granted there are some differences between modern Australian fishing communities and the ones quoted in the literature but there are probably lessons to be learned. Indeed, it is likely that the ties of kin and the strictures of tradition bring as much to bear on the decisions of individual fishermen as does making a buck.

Maybe if the social consequences of management decisions were better understood and better managed some necessary fisheries management changes may have a better chance of being accepted.

There is a major gulf between the managers and the fishermen that, whilst acknowledged, seems to be addressed only by educating fishermen and not managers. For example, we provide MAC training to fishermen to ensure that they interface with the management systems that have been established but there is no ongoing program for training managers to increase their knowledge about fishermen and fishing communities. Indeed, given the broadening scope of fisheries management the same could be said about gaining an understanding about the other constituencies involved. I would argue that maybe there should be some more understanding, thus generating respect, for environmentalists involved in fishery debates.

In short, co-management is still very much a top down exercise that rewards fishermen who are best able to interface with the system. The skills, knowledge and views of those that are not may commonly are lost.

What does all this mean for ESD and the humble lobbyist?

From my, currently very much NSW perspective, fisheries management is a mix of ambulance chasing and rainbow chasing. The rainbows usually begin with 'If we only had this .....' and the ambulances with 'We need to solve this now .....'. How many fisheries managers chase rainbows starting with 'If we only had more research data on this .....' and end up chasing ambulances starting with 'If the industry only accepted the need for these changes .....'

Given the increasing complexity of fisheries, if we continue to leave social and economic issues solely to the realm of politics then it seem that the fisheries debate will become more polarised. The lobbying positions of the players will become harder and more extreme as each group tries to sway decisions closer to their idea of what is the middle ground.

This outcome is currently exemplified by the state of play in NSW where ESD is almost irrelevant and the poisonous atmosphere between government and the commercial sector that was created several years ago has been stoked up to nuclear proportions by current proposals to shut down commercial fisheries in exchange for a recreational licence fee. The stage was set by the demolition of the NSW equivalent of other state's commercial sector representative bodies and the implementation of a top-down command and control system that completely disempowered the commercial sector and marginalised those who questioned the direction being taken. Real dialogue and discussions went out the window as conflict between government and industry and between the commercial and recreational sectors heated up.

The whole process of proposing this license has been characterised by increasing the conflict and contention with a so called consultation paper stating that commercial fisheries will be removed in areas where there is conflict between the commercial and recreational sectors and commercial fishing gear can be labelled contentious and removed if the Minister receives enough representation by anglers or these methods are sufficiently covered in the media. The document puts in place an ongoing process of fostering conflict and rewarding the protagonists with unlimited access to fish resources.

In this hot house atmosphere sustainability has no chance. Indeed there is not even the pretence that sustainability is relevant. When the pros are gone and the fish still run out then pump priming with artificial stocking will be used. Anything to keep the voters happy.

We have enough information to know that the recreational catch is very large and is focussed on juvenile and under size fish. We have enough anecdotal evidence to know that this sector affects large numbers of protected and endangered birds. What we don't have is any evidence that the so called economic value of this sector is any where near as big as is claimed and we have no formal mechanism for evaluating the views of the majority of people who don't go fishing, i.e. a social issue.

How would we actually like to manage our fisheries with ESD as a real outcome?

In the short term the role of commercial fishery lobbyists in our State is to try derail this destructive process and to put in place a process that is far more rational and far less political.

If we were able to make progress down this track we would put in place an independently funded restructuring program for the industry to deal with excess fishing effort. We would put in place a program that linked research on improving fishing gears and methods to an extension and accreditation program. The industry would move into a process of continuing improvement whereby those that did the right thing were rewarded and we moved away from the current system of focusing on punishing those that transgress the laws.

We would establish meaningful forums for stakeholders to get together to solve local problems. In these forums the department would occupy a facilitative and supportive role and not be in charge. Solving local problems at the local level is far better than centralising control.

We would put in place management systems for both fishery sectors that made each focus on addressing and managing its own problems, not pointing the finger elsewhere. For the commercial sector we would provide long term and secure rights so that the ongoing uncertainty that is proving stressful for fishing families was put to rest. For the recreational sector we would establish proper management committees with a full suite of stakeholders and these fisheries would have management plans and environmental impact statements, just like the commercial fisheries.

We would seek to ensure that fisheries managers exercised leadership by involving stakeholders and by having them participate in management and not just subjected to the occasional road show consultation exercise.

Sure the whole system would not be perfect but it would be a damn sight better than what we have now. Yes, research and biological data and indicators and all that would be important but they wouldn't be the be–all and end–all. Our system would provide the tools and the backup to better integrate social and economic issues into biology. In short our system would empower people and make them feel that it was up to them to manage the fisheries, not some remote people in suits in Sydney.

Finally, ESD will not be implemented, i.e. reach an end point. It is a process not a 'when'. However, unlike the process followed to date which deals almost exclusively, at least in a formal sense, with science there is a need to tackle the intellectual and practical challenges associated with integrating the social and economic aspects into the process as well.

New Zealand Perspective

John Annala

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Before I run through what we are doing with indicators work in New Zealand, it would probably pay to describe what the role of Ministry of Fishery is. We develop fishery policy similar to AFFA and, also manage fisheries similar to AFMA, so we have that dual role.

The other agencies in New Zealand that have a role in marine management include the Ministry for the Environment, representatives from MFE are here today, and the Department of Conservation and regional councils, so there is some overlap of responsibility.

New Zealand does not have an ESD policy, we have an E-policy; we manage using environmental indicators only. We have not become involved in the sustainable development side of things and we don't have any socio-economic indicators at this stage. However, we may be moving down that line in the future. The environment policy was driven by the Government policy document called E2010 developed and delivered in 1996. It provides for annual state of the environment reporting. Having said that, New Zealand fisheries have been recording fish stock indicators for target species and some non-target species since 1988. So, as in Australia we do have regular reporting on indicators and have for sometime.

In 1998, the Ministry for the Environment began their environmental indicators program based on the 1996 policy. Indicators have been developed for the land, freshwater, atmosphere, coastal and estuarine ares, fisheries and the marine environment and the information is available on their website. In the same year, the Ministry of Fisheries and the Ministry of the Environment developed a joint initiative to develop indicators for fisheries.

During this workshop we have heard a lot about the need to develop clear criteria and objectives and we have certainly benefited from that in the development of fisheries indicators. There are three corner/stones of indicator development:

- The first is that it has to be policy relevant and that there needs to be a linkage into the criteria and objectives.
- The second is it has to be measurable, obviously you can develop any number of indicators that you can't actually measure.
- The third is it has to be simple and understandable because there are a lot of non-technical people that are engaged in the debate that actually have to understand what indicators are.

We took the pressure-state-response approach that various people have eluded too during the last couple of days. We had a fully consultative process to develop the fisheries indicators. The process began in November 1998 and we reached agreement in June 1999 on the indicators following sign-off by the joint Ministers of Fisheries

and Environment, so it took eight months. We had two very extensive workshops on the objectives. At the first workshop, we reached broad agreement on the objectives. They were confirmed at the second one. Indicators were developed and confirmed at two further workshops. We started off with about 25 proposed indicators for fisheries and ended up confirming 12. We have 9 stock indicators, ie indicators for target fish stocks, and three indicators for the impacts of fishing.

I will briefly run through a couple of examples that I think might help. In terms of pressure on fish stocks we have things like the level of total catch, for each species by area, with a level of total effort directed at each species by area. A state indicator would be one we use very extensively, the ratio of current standing stock to some target standing stock. This is where the trade offs really come in, when we try to reach agreement on what the ideal state of the indicator is. There is a lot of argy-bargy in terms of trying to come up with what the appropriate target should be.

Consider some of the talks yesterday that dealt with target reference points. An example for a response indicator would be for a fish stock that is below a certain target. The management strategy to rebuild above that target would be a response indicator. In terms of fishing impacts, an example of the pressure indicator is the number of different non-fish or protected species caught by species per fishery by area by year. We also have state indicators of population size and stock status of these non-fish species and response indicators, for example, whether there are population management plans in place to control the level of bycatch of protected species, eg sea lions.

In terms of the use of the fish stock indicators in New Zealand, we have over 300 different fisheries management units. We don't update stock assessments for those every year, but we do on a regular basis. We have about 1000 fish species within New Zealand's zone that have been identified to date. About 130 of those are taken commercially and about 60 important commercial species make up the 300+ management units.

What we will be doing with this information? I indicated above that we are putting the information on fish stocks and the impacts on fishing into the annual State of Environment Report that the Ministry for Environment prepares. We are also using the indicators as inputs into fishery management decisions as part of the annual management decision process. Fishery management plans are being developing for key fisheries. Some fisheries, like the rock lobster fishery are managed using decision rules that are pre-agreed with all stakeholders: if the stock status shows 'X' you have to do 'Y'. So the indicators will feed directly into those decision rules. The indicators will be posted on the Ministry's external website in June. The reason why it is taking so long is that we want to make it user-friendly with lots of graphics and with over 300 management units (even though there are a number of indicators that combine across units) it will be about 400 pages. So if anyone wants to hit it, have a look for it in June.

I mentioned earlier on that we only do the E part of ESD, not the social economic and cultural aspects of fisheries management. The New Zealand legislation provides for sustainable utilisation of a fishery and sustainability takes pre-imminence. However, when making decisions after setting the sustainability criteria, then decision-makers have to make provisions to allow people to provide for their own social, economic and cultural well being. This is where the SD part comes in using the legislation.

Before I forget, (and almost I did manage to forget) indicators have been developed for the wider marine environment. The Ministry of Environment has taken the lead on this. The Ministry of Fisheries only controls fishing, the activity of fishing. It does not control the activities of people that are discharging or what ever. These activities are measured by the indicators for the wider marine environment mentioned above.

Session 5

Where to Now?

Panel Session - Key Impressions and Issues

Chair:	Peter Dundas-Smith
Speakers:	Russell Reichelt
	Margaret Moore
	Keith Sainsbury
	David Kay
	Peter Rankin
	Tor Hundloe
	Nigel Scullion
	John Harrison
	Richard Aken
	Peter Yuile

Summarising Comments

Russell Reichelt

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Fisheries Research and Development Corporation
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Thanks very much for the opportunity, its probably presumptuous to call this a summary but in the spirit of what Peter Dundas-Smith was saying about getting some more discussion and engagement going, I will give a few comments and explain what Patrick Hone is also doing as well.

Patrick will be recording the key points raised during this session as a starting point for a draft material that will be discussed, expanded and reviewed by this group this afternoon and the group tomorrow. We want you to see it unfold as it goes. To some extent they are also my speaking notes.

ESD: what can we say about the last couple of days? It was a workshop about ESD and indicators. But to me it was fairly obvious, probably in the first five minutes, that having a workshop just focussing on indicators, would be like us just looking at gauges in the car. After a while we get sick of looking at the gauges and want to talk about the car, and that's what really happened here today. We have some fairly significant points of overlap in opinion but have unearthed and turned-over a number of rocks revealing a few scorpions as well.

The first big message is to adopt a pragmatic approach - people want to get into more than just indicators. They are looking for genuine ESD, as opposed to just monitoring ecological parameters, they want the social and economic aspects as well. This workshop presents that opportunity, belated according to some. However, its not that everyone has been fast asleep since the 1992 report. There has been a lot happening and these last couple of days have "flushed" it out. Interesting models have started to emerge.

Ted Loveday made the point strongly about Environment Australia as a customer. I found people were continually finding language that turned what might be a posture, if you like, or a turf grabbing position, into a partnership approach. If any sort of subliminal things were going on for me, it was the importance of language. Use one wrong word and it could take you half an hour to get back into the main stream of the argument. So we do need to be careful about communication which is the point that I want to finish on.

The main issues that were covered in the conference discussions were pragmatism, exclusivity of access, government issues, the possibility of more than one solution, tool kits for how to do it, robust indicators, continuous improvement, and commitment. Reaffirming commitment for ESD was very common theme. This was the major outcome in my mind.

Many people argued for stakeholder input and that's one of those language things I mentioned: a risk we run to convene meetings such as this is that we are engaging the problem for a few minutes, have an input and leave. We have to get away from this

way of operating so people are a part of the whole rather than just "having an input". It might seem like a trivial point but it seems very important for getting the commitment that was discussed above.

We did not draw out much about ethical aspects. It came through in statements and for me the argument for building mutual respect was made very strongly. That encapsulates an extra layer to the ESD process.

As I said before there has been a lot happening since 1992. I was involved in stock assessment work with a group with a funny acronym DPFRG (the Demersal and Pelagic Fisheries Research Group). Some ex-members are in the audience here. There was about half a dozen scientists involved. In 1991, we would lock the doors, even fisheries managers were not allowed in the room. That's how open the scientific community was then. There was a fear that you might have seen us (the scientists) arguing. It would be a terrible thing to see that there was uncertainty in the scientific assessment. Things actually changed quite a lot within a year or two of that meeting in 1991. Now fisheries managers, industry and other stakeholders are all in the room. If you look at current stock assessments for some of the species considered by DPFRG, the main theme is to give the best scientific explanation of uncertainty; many of the reference and trigger points relate to dealing and coping with uncertainty. There are good developments in the scientific area.

It is also happening in other sectors. We have seen the rise of the Co-management model and I think this ESD process is Co-management plus. It is not just the commercial sector and fisheries managers. We have to break the bond that has formed there to include other people. There are workable models now appearing, for example the Coorong region and Bribie Island's Pumicestone Passage. They are very different models, models that the existing management regimes probably find they are having to adjust to. They may not be comfortable with it, not meaning Bryan's (Pierce) personal seminar style of course. It is the actual release of power, delegation of responsibility, the beginning of self-auditing. Those things are starting to happen now.

I should say, that in the intervening period of indicator work, I think the heroes have been in research community. They have been nudging FRDC to fund projects and have kept the interest in ESD indicators alive.

Environment Australia - now they have been seen to be perhaps a little bit distant from the process. Setting high bars to jump. But in fact, from their point of view, (I guess you will correct me if I am wrong David [Kay]), its basically getting on with their job. There is willingness, through the Oceans Policy processes, to engage other stakeholders.

ESD process: How will we do this? Some of the issues in the "how" include transparency and openness, certification, ownership, robust indicators, and transportable methods. These are just a few catch phrases that I hope will be torn apart and expanded on or changed by your input. But these issues have to be turned into action steps. For me strategic planning is great but when you have done that you have to decide what you are going to do next. So, it is the next steps, that's what I hope will emerge from this process. Who ever is driving them, and there will be multiple drivers, have to ensure that participation is inclusive, have to include and allow for a full range of ecosystems that are involved in fisheries and the sectors

beyond fisheries that are involved in those ecosystems. So this is not an easy task and there is not going to be a single answer.

I did particularly like the green chooser idea. Those of you who have not seen it already should look at the SEAQUAL quality chooser. This describes simple action steps. It is part of a communication strategy and the great thing about communication is as long as you stop talking, (I'm not going to stop yet), and you listen you get quick feedback. The chooser model coming out of SEAQUAL is a guide for action for people that don't know where to start on some issues. Who can I pick up the phone and talk to about this problem. I am very much in favour of this very basic, easy built communication approach. So the communication strategy is crucial. For example, like I suspect many of you, I have been wondering about the Standing Committee people. What are they doing? We have this process going along at a hundred miles an hour and you can have the input as it roars past. That's how I thought this thing might be operating until I talked to them and discovered its not the concept they had in mind at all. It is a participative process they are in fact driving. Communication needs to be improved to avoid "if you are not part of it and the bus seems to be pulling away from the station you start to abuse the driver".

So in summary, the concept I want to get across is that it is not a simple problem. You need to have some actions driven by different people that don't all have to wait for the others to start. We want to get a sense of parallel processes and high speed interactions.

I should just say FRDC sponsored this workshop not because it wanted to drive the process of ESD, but because it wants to be on the bus with everyone else. Supporting R&D provides information to help other people in that process.

I hope that some of the ideas and brainstorming from the floor and the panel will start to generate the next steps. Thank you very much.

Panel Session - Key Impressions and Issues

Margaret Moore

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One of the things that is coming out is that we all want to hear less words and see more action. Over the last two days, we've drowned in words. Fishers must be feel as though they are drowning on land for the first time. But these words are important words and they communicate what we are trying to do here. So lets get the words right. Jean Chesson, get the definitions right and then lets start putting those actions into place. We have heard all about objectives, indicators, performance indicators, reporting back, feedback mechanisms etc so that you can modify and adjust as you go along. Excellent, well done, but lets make sure that it is a transparent and a participatory process, because it is really important that everyone has ownership. We have a lot of good brains in this room and probably a few more out there that did not get to this workshop. Let us engage people to get something really worthwhile accomplished. Then we can feel ownership and feel some pride, because like a lot of you, I know there are a lot of good fisheries out there. However I also know there are some not so good fisheries. Let us find out where the bad ones are and see if we can shift them along that improvement line with the ESD process and Schedule IV. We should not be afraid of either of these. I keep hearing from people how well they are managing. Show me, lets have a look at it. I think Margi Prideaux, said it, when she said, if there is information, get it out so we can make that judgement. To see where we are, right now, and use that as our starting point to go on and improve. There is a lot more I would like to say if we get time, and I will say it later.

Keith Sainsbury

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My reaction to is that we have had a lot of issues raised but that the really big difficulty, I think, is that ESD is so broad in terms of the number and range of stakeholders. It involves local fishing operations through to national legislation and international agreements. The question is how you actually put all that together into something that coherently meets all the needs.

Where do we go from here? There is definitely the need for a national framework that works for the regulators and that works for the managers and through their Management Advisory Committees. There is a separate but connected aspect that presents a huge opportunity for local fishers that can be done now. That is the local industries taking charge of its own operations to establish environmental management systems (EMS) and seek private sector certification through organisations such as International Standards Organisation (ISO) and Marine Stewardship Council. Development of operational indicators, reference points and performance measures

for reporting and for use in management is really crucial to us practically moving forward, both at the national level and at the local fisher level. These operational indicators, reference points and performance measures should be consistent between the national and local applications.

So there are three things we need to focus on – developing the national framework, developing the local initiatives for EMS and certification, and developing practical indicators and performance measures that can be used by each. Within each of those three areas, I think, there are really constructive things that can be achieved in the short term (in less than a year), the medium term (1 to 2 years), and longer term (2 to 5 years). In each of these 3 areas and time-frames there are some clearly identifiable things that can be done, and I think really we should get on with doing them.

There is a fourth over-arching area that needs attention, and that is getting the message out about what we are doing. The fact is we have been losing the media war about sustainable fisheries. Getting the message out is a crucial battle in that war. I think that if we can achieve meaningful outcomes in the each of the three areas and deliver in the short, medium and longer term. And we need to ensure that we have a good strategy for getting our message out.

Which brings me to the other broader issue: How are we going to hold it all together? SCFA provides a mechanism, at least in part. We all want an inclusive process. While we can't have 180 people participate, as at this meeting, representation from the people we have here is what is needed.

David Kay

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Environment Australia
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Trying to put this into one minute is going to be a big ask. I think Russ said something fairly significant; we all have our jobs to do. We all have an interest in ESD but those interests are not always going to coincide. We are not always going to be sharing the same problems; there will be differences; there will be nuances. The whole process involves assessment, monitoring and reporting. We are going to be looking at different aspects of those processes, going to be in different camps, use different indicators.

I don't think there is one solution. We can have a whole series of processes driven by different groups moving forward in a converging or a parallel way. It doesn't help at times to have duplication of process and I think it is most important that we recognise what the others roles are, what the others aim are, and where the common ground is and acknowledge there will be some difference.

One thing I will say, in conclusion, is that everyone involved in fisheries management and fishing needs to accept now that some form of environment impact assessment of management arrangements is going to be a fact of life.

Peter Rankin

Fisheries Co-Management Council
8 Fink Street, Kensington VIC 3031

To be quite frank the ESD train left the station a long time ago and we are all currently on it. What we are trying to do is come up with a continual improvement system. In aquaculture, we have objectives and indicators and we look at most of the social, economic and environmental criteria. We heard from Martin yesterday about continually improving environmental management on farms. In terms of the social issues; as soon as a farm has to go through a planning process we've been measured. So we are on the train and it is running.

What we want is to continually improve. How we do that is through improved communication and a good share of knowledge amongst all stakeholders. We need commitment from everyone in this room and to be frank and open with each other.

We all want the same result, none of us wants anything different. The key things are communication and continual improvement.

Tor Hundloe

Professor of Environmental Management
University of Queensland, St Lucia QLD 4072

Look I think I agree with the comments on process and I certainly believe in co-management but I'll leave those aside. You may have noticed yesterday that I used my hands while talking. I was not measuring the fish, that's how close I believe we are to having a common agreement on ESD.

The difficulty still is working out what the ecological constraints are and what the social constraints are. We all have agreed on the big principle, that's no problem. There is a major job for scientists, ecologists economists, sociologists and anthropologists, to help us as a community in co-management framework work out what those constraints are. We start with a number of indicators as outlined by Jean Chesson and, as Derek Staples said, we can probably have those very quickly. By the way, this time last year 25-25 people gathered in Sydney and worked out indicators for the FAO. Derek led that from the Australian perspective.

I think that our long-term challenge is, and here I disagree with David Kay, is to find one solution. ESD is about comprehension, about bringing those things together getting rid of trade offs and that old language. It is one solution and I get disappointed when people are still saying 'look EA has got an different objective from some else'. We have one objective and if I have got one thing to say it means that that sort of language has to go. It is not about trade-offs. We have to search for the so called win-win and ultimately whether we are a better society in 50 years time. That is the challenge. Let's do the simple things first and that is develop the range of indicators and we can do that quickly.

Nigel Scullion

Chair
Australian Seafood Industry Council
GPO Box 618, Darwin NT 0801

I suppose the industry position is really that we don't have any real problems with ESD. We support it. On one hand it is a challenge, on the other is the opportunity. The challenge is to be able to demonstrate substantially that a great many of our fisheries in Australia are sustainable. There is no question we have to demonstrate that to people and I think that's the challenge. The opportunity is that other things will flow from this and, for the first time, we will be able to identify what are wrong with some of our fisheries and focus our resources, our manpower, and our energy and innovation to resolving this. I think this needs to happen in terms of a time-line. It has to happen tomorrow. I believe it has to happen under the framework of Standing Committee and this framework has to be inclusive of some of the stuff I talked about yesterday, with no doubt, at the end of the day, the inclusion of some sort of NGO representation..

I hope people recognise that the inclusion of indigenous people specifically is very important. For the first time at a National level we can recognise that indigenous participation in all levels of management and decisions is part of the reconciliation process.

I've heard from four different sets of people that they will have the indicators at hand. I believe the economic indicators are our priority. With great respect to Tor, I was actually speaking to a economist yesterday who confessed he had 101 magnificent ways to make love but did not actually know any women.

We really need to move forward on this issue. So that it will not stall we must be focussed on where we need to end up. I am actually looking forward to Peter Yule telling us that is exactly how it is going to be.

John Harrison

Executive Officer
Amateur Fishermen's Association of the Northern Territory
PO Box 40694, Casuarina NT 0811

Unfortunately I have to follow Nigel yet again.

From the recreational sectors perspective, I think we need to know the social value of what recreational fishing is. We need to know its true value compared to the commercial sector. So let's get those numbers. However, we can have all the indicators you like but unless we have fish habitats and nurseries we won't have any fish. What I hate to say is this needs a whole of government approach as well as industry. We have got to add additional departments to this debate to fix the critical problems in the rivers.

Richard Aken

Cape York Land Council
Balkanu and Cape York Corporation
PO Box 2496, Cairns QLD 4870

The Cape York Land Council and Balkanu Cape York Development Corporation have worked together on ESD matters.

Balkanu provided some input into the Lindon Coombes paper ("Indigenous Rights in Fisheries Management and Development") within this proceedings and attention should be paid to the section within that paper which summarises Indigenous and Marine Strategies already considered by the Commonwealth. The intent is clearly there but implementation is not happening.

We provide reference to a paper central to these matters at the end of the transcript.

Below follows an expanded transcript from the tapes of the Conference.

Reality is native title. Any planning needs to see to that. Native Title exists in Australian Law as of 1993. Indigenous peoples have rights under that legislation and indeed under Fisheries legislation. As such ESD planning must account for those rights. Commitment must be made

- to implementing the recommendations of the ESD working group from 1991,

  (See the Coombes paper that spells out those findings):

- to fund Ocean's Policy, providing resources within fisheries agencies so that they can acquit obligations nationally.

Now the question is what is happening to the Aboriginal and Torres Strait Islander Fisheries Strategy. As a consequence of the 1993 Coastal Zone Inquiry, a National Indigenous Coastal Reference Group was established. One of their first initiatives was the progression of an Aboriginal and Torres Strait Islander Fisheries Strategy. Some $400 to $500,000 was allocated to the process. This was reduced over time to in the order of $350,000 by government we understand. At this point Queensland is the only state that we know of that has the makings of a strategy and it is currently being considered by the State having been presented in January 1999. The National Indigenous Coastal Reference Group was disbanded by the Commonwealth in May 1998 amidst protest from the group. The funding provided for consideration of Indigenous fishing issues can be compared with initiatives in other countries. I will give you a classic example. In Canada, the government provided $140 million over 7 years to Aboriginal strategies, but compared to Australia it is not even $300,000. When the National Indigenous Coastal Reference Group was formed there was no consistency in it. It had a government secretariat, thereby limiting the agenda to some degree, had meetings broadly spaced and based on an ad hoc arrangement. An independent secretariat would have helped the members greatly. The re-establishment of such a group was subsequently called for at the FISHRIGHTS99 Conference in Perth and a further call for a national fisheries group has come out of the recent Cultural Maritime Summit on Thursday Island 2001.

GBRMPA - Indigenous issues were among the top priority issues as far as Cape York was and is concerned. Now there are four critical issues that do not include Indigenous issues.

ESD must include cultural indicators. It needs to involve Indigenous people because subsistence fishing is part of the Indigenous economy. Priorities for access to fishing resources include in the following order:

1. Conservation
2. Indigenous
3. Commercial and recreational

The above was recommended by the Australian Law Reform Commission in 1986 that are consistent with Canadian court decisions.

So there needs to be firm commitment to the process of an Indigenous fisheries strategy. I think Australia is attempting to emulate international process. When you look at FAO Code of Conduct 680, I took a piece out of it that says to 'secure a livelihood as well as professional access'

From the Indigenous perspective, when I mentioned the Aboriginal and Torres Strait Islanders Fisheries strategy I think it needs to change the wording. With a new wording which I call a national partnership plan with indigenous people. We have objectives, a recommitment industry-wide and from governments to the principle that Indigenous cultural and customary values, rights and interests are a paramount part of the ESD of Australian fisheries. Many issues have already been discussed and now need action.

1. Recognise the Indigenous Australian fisheries referred to in introductory documentation, agreements and codes of priorities as artisanal fisheries. Recognise existing agreements and legislation globally and nationally that relate to Indigenous fisheries and rights.
2. Constitute distinct fisheries within the Australian fishing management framework and regimes at the State and Commonwealth level. There must be statutory recognition of Indigenous fisheries.
3. Recognition that Indigenous customary fishery and related practice and beliefs constitute a significant part of Indigenous economy both subsistence and commercial.
4. Agreements between Indigenous parties and commercial fishing representative bodies on ESD and fisheries and framework for commercial joint ventures. Access principles, practical mechanism for responding to indigenous requests for respect for cultural and customary value. Protection of species, reduction of bycatch and secondary catch waste and other issues raised in conversation between industry and indigenous parties
5. Indigenous/commercial and other resource benefits sharing arrangements including training and employment of Indigenous people to be pursued jointly by industry and indigenous parties to such agreements.

The above are the five objectives of a National Partnership Plan relating to fisheries.

These notes are based on the March 2000 meeting. It is recommended that interested parties should contact Richard Aken for advice and up to date information. There have been significant developments since the Geelong meeting.

Reference

Smyth.D, 2000, Fishing for Recognition: The search for Indigenous Fisheries Policy in Australia. Indigenous Law Bulletin, Vol, 4, Issue 29, April /May special issue Water Rights, pg 8-10.

Peter Yuile

First Assistant Secretary
Agriculture, Fisheries and Forestry Australia
GPO Box 858, Canberra City ACT 2601

Thank you, I won't take very long because I think its more important that everyone gets a chance to participate more fully. I feel like a interloper because I arrived late this morning having had four days of international negotiation. I have been really looking forward to this workshop because it was the Standing Committee on Fisheries and Aquaculture and the Victorian Department of Natural Resources and the Environment and others in Victoria who with FRDC sponsored this workshop/conference because we did want to get everyone together. We did want to have this conversation and clearly its happened very successfully which I think is fantastic.

I guess the key things I hear have heard since I have been here is the commitment to getting on with the journey, the ESD journey.

Second thing I hear clearly is the recognition of the variety of interested parties or stakeholders depending on what ever language you wish to use and I am conscious that Russ (Reichelt) gave us a warning about language.

Thirdly there clearly needs to be a consultative and participatory process and again I think this workshop, this conference is an certainly an example of the sort of things that the Standing Committee is keen to encourage and involve.

The fourth point is that comes to me is the "Nike" principle. Everybody is saying let's do it. I don't hear anybody not saying that. The critical thing is striking a balance between moving and acting sensibly and expeditiously. At the same time, working together and bringing people with you is always hard. Making sure that people understand what is going on, to use Russ's image that the bus has not left, leaving people at the bus stop.

The fifth point is we obviously need a good process to pursue this. I think that is the aim of this afternoon and tomorrow morning. To establish objectives or to at least articulate them so that everyone understands them; to do that constructively and get on and test them. As I say it's a journey that seems to me all about continuous improvement. It's the holy grail; you never get there, you just keep working at it. That is certainly where Standing Committee is coming from.

In this current job, the last twelve months, I have inherited involvement in SCFA. The group does have legislative responsibility. That is why we said we have to get on and do this, work on this national framework. However, we recognise that a whole range of people who have a stake and interest need to participate. There is a short paper that has been circulated to give you some idea of the timetable that we have set ourselves. It is very ambitious but, it seems to me, that the best thing you can do is to start doing it. Testing what works and improve as you go. Thank you.

Workshop Programme

Wednesday 22 March 2000

Registration, All Seasons Ambassador Hotel

Welcome Cocktail Party, All Seasons Ambassador Hotel

Day One Thursday 23 March – Blakiston Theatre, Geelong Performing Arts Centre

Registration

Opening and Welcome Addresses

Richard Rawson, Acting Secretary, Department of Natural Resources and Environment

Ross Hodge Executive Director Seafood Industry Victoria

Peter Dundas-Smith, Executive Director FRDC

Session One: *What is ESD and its role in Fisheries?* Chair: David Smith

Introduction to the Concepts of ESD. *Tor Hundloe*

International Context. *Derek Staples*

National Context. *Geoff Gorrie*

Session Two: *Why ESD and Fisheries?* Chair: Ross Hodge

Environment Australia Perspective. *Conall O'Connell*

Commercial Fisheries Perspective. *Nigel Scullion*

Recreational Fisheries Perspective. *John Harrison*

Indigenous Perspective. *Lindon Coombes*

Aquaculture perspective. *Martin Breen*

Standing Committee Fisheries & Aquaculture Perspective. *Richard McLoughlin*

Conservation Perspective. *Margi Prideaux*

Social Perspective. *Melanie Fisher*

Session Three: How do we implement ESD in Fisheries? Chair: Tom Davies

A Review of ESD Indicators used in Australian Fisheries Management. K*eith Sainsbury*

A framework for assessing ESD. *Jean Chesson*

The Marine Stewardship Council. *Katherine Short*

The Coorong and Lakes Fishery. *Bryan Pierce and Gary Hera-Singh*

Is there a role for Marine Protected Areas. *Colin Buxton*

Developing and testing robust indicators. *Tony Smith*

Seaqual Australia. *Jayne Gallagher*

Close of Day One

Dinner Le Parisien- Speaker *Russell Reichelt*

Day Two Friday 24 March – Blakiston Theatre

Chair Amanda Martin

ESD and the GBRMPA. *John Tanzer*

Session Four: ***When will ESD be implemented in all Australian Fisheries?***

Chair: Amanda Martin

Implementation of ESD from an EA perspective. *David Kay*

Implementation of ESD from SCFA perspective. *Rick Fletcher*

Implementation of ESD from a Industry perspective. *Ted Loveday*

Implementation from an AFMA perspective. *Frank Meere*

Implementation of ESD from a lobby group perspective. *Duncan Leadbitter*

Session Five: ***Where to Now?*** Chair: Peter Dundas-Smith

Summarising Comments. *Russell Reichelt*

Panel Session

Panellists include: Peter Yuile, Tor Hundloe, Nigel Scullion, Conall O'Connell, Margaret Moore, Peter Rankin, Keith Sainsbury, Pat Washington

Each panellist will summarise for 5 minutes key issues. actions and time lines. This will be an interactive session with questions and comment from delegates

Closing of Workshop. *Richard McLoughlin*

Associated Activities

Seafood Sensations, – Courtyard, Deakin University, Waterfront Campus

International Seafood Fair – Steampacket Gardens, Waterfront Geelong

Launch of National Seafood Training Package

Hon Warren Truss, Minister for Fisheries and Agriculture

Fishermen's Pier Restaurant Waterfront, Geelong

International Seafood Fair - Steampacket Gardens, Waterfront Geelong

List of Participants

Richard Aken	Cape York Land Council - QLD
Bill Allen	Victorian Eel Fishermen's Association
Fiona Anderson	Seafood Services Australia - QLD
John H Annala	Ministry of Fisheries - New Zealand
Pascale Baelde	University of Canberra - ACT
Kaz Bartaska	Fisheries Co-Management Council - VIC
Doug Bathgate	WA Recreational Fishing Advisory Committee
Rachael Bathgate	Victorian National Parks Association
Christian Bell	Marine and Coastal Community Network - TAS
Simon Bennison	Fisheries Research & Development Corporation - ACT
Arno Blank	Victorian Ocean Scallop Association
Craig Bohm	Marine and Coastal Community Network - NSW
Carol Booth	North Queensland Conservation Council
Chris Boyton	Aquaculture Enterprises Pty Ltd - NSW
Martin Breen	Australian Prawn Farmer's Association - QLD
Margaret Brett	Fisheries Victoria, Department of Natural Resources & Environment
Steven Brockwell	Orion Fishing - VIC
Peter Brodbeck	NSW Advisory Council on Recreational Fishing
James Baudinet Brook	Conservation Council of SA Inc
Deborah Brown	ABARE - ACT
Jon Bryan	Tasmanian Conservation Trust
Michael John Buckley	Pearl Producers Association Inc - WA
Don Buckmaster	Victorian Abalone Divers Association
Colin Buxton	Tasmanian Aquaculture and Fisheries Institute
Karen Campbell	Department of Natural Resources & Environment - VIC
Tony Cappelluti	Ministers Office - Primary Industry; Fisheries - WA
Barry Cason	Clarence River Fishermen's Cooperative - NSW
David Chaffey	Tasmanian Fishing Industry Council
Jean Chesson	Bureau of Rural Sciences - ACT
Jane Clout	QLD Oyster Growers/Aquaculture Council of QLD
Robert Coffey	Western Zone Abalone Divers Association - VIC
John Cole	Western Australian Fishing Industry Council

Keith Collins	VRFish - VIC
Andrew John Constable	Australian Antarctic Division - TAS
Lindon Coombes	Department of Aboriginal Affairs - NSW
Ian Crisp	Oyster Farmers Association of NSW
Rod Crowther	Fisheries Co-Management Council - VIC
Fiona Curley	Queensland Commercial Fishermen's Association
Richard Davidson	Lakes Entrance Fishermen's Cooperative - VIC
Campbell Davies	CRC Reef, James Cook University - QLD
Tom Davies	Fisheries Co-Management Council - VIC
Ross Davis	Abalone Fishermen's Cooperative Ltd - VIC
Peter Dawson	New Zealand Seafood Industry Council
Trevor Dix	Tassal Limited - TAS
Murray Donaldson	Fisheries Victoria, Department of Natural Resources & Environment
John Doohan	Sunfish Qld Inc
Jennifer Doust	Department of Agriculture, Fisheries and Forestry, Australia - ACT
Michael John Drynan	Department of Agriculture, Fisheries and Forestry, Australia - ACT
Peter Dundas-Smith	Fisheries Research & Development Corporation - ACT
James Nicholas Dunlop	Australian Marine Conservation Society - WA
Kathy Dunn	Australian Fisheries Management Authority - ACT
Collin Dyke	Tasmanian Aquaculture Council
Martin Eadie	New Zealand Seafood Industry Training Organisation
Steve Eayrs	Australian Maritime College - TAS
Brian Elderidge	Tasmanian Marine Recreational Fishing Council
Melanie Fisher	Bureau of Rural Sciences - ACT
Mark Flanegan	Environment Australia - ACT
Rick Fletcher	NSW Fisheries
Neville Fowler	Department of Natural Resources & Environment, Benalla - VIC
Jayne Maria Gallagher	SeaQual Australia - QLD
John Garnham	Fisheries Victoria, Department of Natural Resources & Environment
Colin Frank Gibbs	Colin Gibbs and Associates - VIC
Alistair Gilmour	Macquarie University - NSW
Geoff Gooley	Marine and Freshwater Resources Institute - VIC

Geoff Gorrie	Department of Agriculture, Fisheries and Forestry, Australia - ACT
Michelle Grady	Conservation Council of SA Inc
Leanne Gunthrope	Marine and Freshwater Resources Institute - VIC
Graeme Hanel	Department of Natural Resources & Environment - VIC
Ray Harkins	Fisheries Co-Management Council - VIC
John Harrison	Amateur Fishermen's Association NT
Michael Harte	New Zealand Seafood Industry Council
Brian Hemming	Primary Industries and Resources South Australia Fisheries
Garry Hera-Singh	Southern Fishermen's Association - SA
Neil Hickman	Fisheries Victoria, Department of Natural Resources and Environment
Graeme Hillyard	NSW Fisheries
Ross Hodge	Seafood Industry Victoria Inc
Patrick Hone	Fisheries Research and Development Corporation - ACT
Angus Horwood	RecFish Australia - VIC
Tor Hundloe	University of Queensland
Diane James	Victorian Coastal Council
Peter Johnston	Victorian Abalone Divers Association
Robert Jolly	Department of Natural Resources and Environment - VIC
Hans Jusseit	East Coast Tuna Boat Owner's Association - QLD
David Kay	Environment Australia - ACT
Ilse Kiessling	World Wide Fund for Nature - NT
Ian Knuckey	Marine and Freshwater Resources Institute - VIC
Rosemary Lea	Queensland Fisheries Management Authority
Duncan Leadbitter	Ocean Watch Australia Ltd - NSW
Grant Leeworthy	Marine and Freshwater Resources Institute/Deakin University - VIC
Guy Leyland	WAFIC - WA
Bob Lister	Tasmanian Fishing Industry Council
Ted Loveday	Queensland Commercial Fishermen's Organisation
Theresa Lowe	Northern Prawn Fishery (QLD) Trawl Association Inc
David Lucas	Eastern Zone Rock Lobster Association - VIC
Murray MacDonald	Fisheries Victoria, Department of Natural Resources and Environment
Katrina Maguire	Australian Fisheries Management Authority ACT

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Bruce Mapstone	CRC Reef, James Cook University - QLD
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Amanda Martin	Victorian National Parks Association
Len McCall	SIMIC Marine Pty Ltd - VIC
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Rod McDonald	Seafood Industry Victoria Inc
John McKoy	National Institute of Water and Atmospheric Research - New Zealand
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Daryl McPhee	Queensland Commercial Fishermen's Organisation
Frank Meere	Australian Fisheries Management Authority - ACT
Bob Miller	Australian Fisheries Management Authority - ACT
Michael Minehan	Abalone Fishermen's Cooperative Ltd - VIC
Tim Mirabella	Fisheries Co-Management Council -VIC
Margaret Moore	World Wide Fund for Nature - VIC
Sandy Morison	Marine and Freshwater Resources Institute - VIC
Eddie Mulholland	Department of Primary Industries Fisheries Division - NT
Russ Neal	Australian Seafood Industry Council - ACT
Garth Newman	Fisheries Co-Management Council - VIC
Gina Newton-McKay	Environment Australia - NSW
Stephen Nichol	Australian Antartic Division - TAS
John Nicholls	Fisheries Western Australia
Conall O'Connell	Environment Australia - ACT
Patrick O'Leary	Marine and Coastal Community Network - NT
Dos O'Sullivan	DosAqua/Ozefish Info - SA
Kim Parkinson	Australian Fisheries Management Authority - ACT
Kylie Paulsen	Fisheries Research and Development Corporation - ACT
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Alison Penfold	Office of the Minister for Agriculture, Fisheries and Forestry - ACT
Jim Penn	Fisheries WA Research Division

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Margi Prideaux	Australian Conservation Foundation - VIC
Jeremy Prince	Biospherics Pty Ltd - WA
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Nick Rayns	Department of Primary Industry and Fisheries NT
Russell Evan Reichelt	Australian Institute of Marine Science - QLD
Stuart Richey	Tasmanian Fishing Industry Council
Bill Risk	Larrakia Nation Aboriginal Corporation - NT
Chris Roberts	Balkanu, Cape York Development Corporation - QLD
Les Rochester	RecFish Australia - WA
Lorraine Rosenberg	South Australian Fishing Industry Council
Peter Rothlisberg	CSIRO Marine Research - QLD
Kerry John Rowe	Western Australian Fishing Industry Council
Dave Ryan	Fisheries Victoria, Department of Natural Resources and Environment
Keith Sainsbury	CSIRO Marine Research - TAS
Glenn Sant	Traffic Oceania - NSW
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Iain Smith	Northern Territory Seafood Council
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Demot Smyth	Smyth and Bahrdt Consultants and JCU - QLD
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Rob Swindlehurst	Department of Primary Industries - QLD
Richard Bill Talbot	NSW Fisheries
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Helen Webb	CSIRO - TAS
Alex Wells	Fisheries Research and Development Corporation - ACT
Lloyd Willman	Sunfish Qld Inc
Anna Willock	Traffic Oceania - NSW
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