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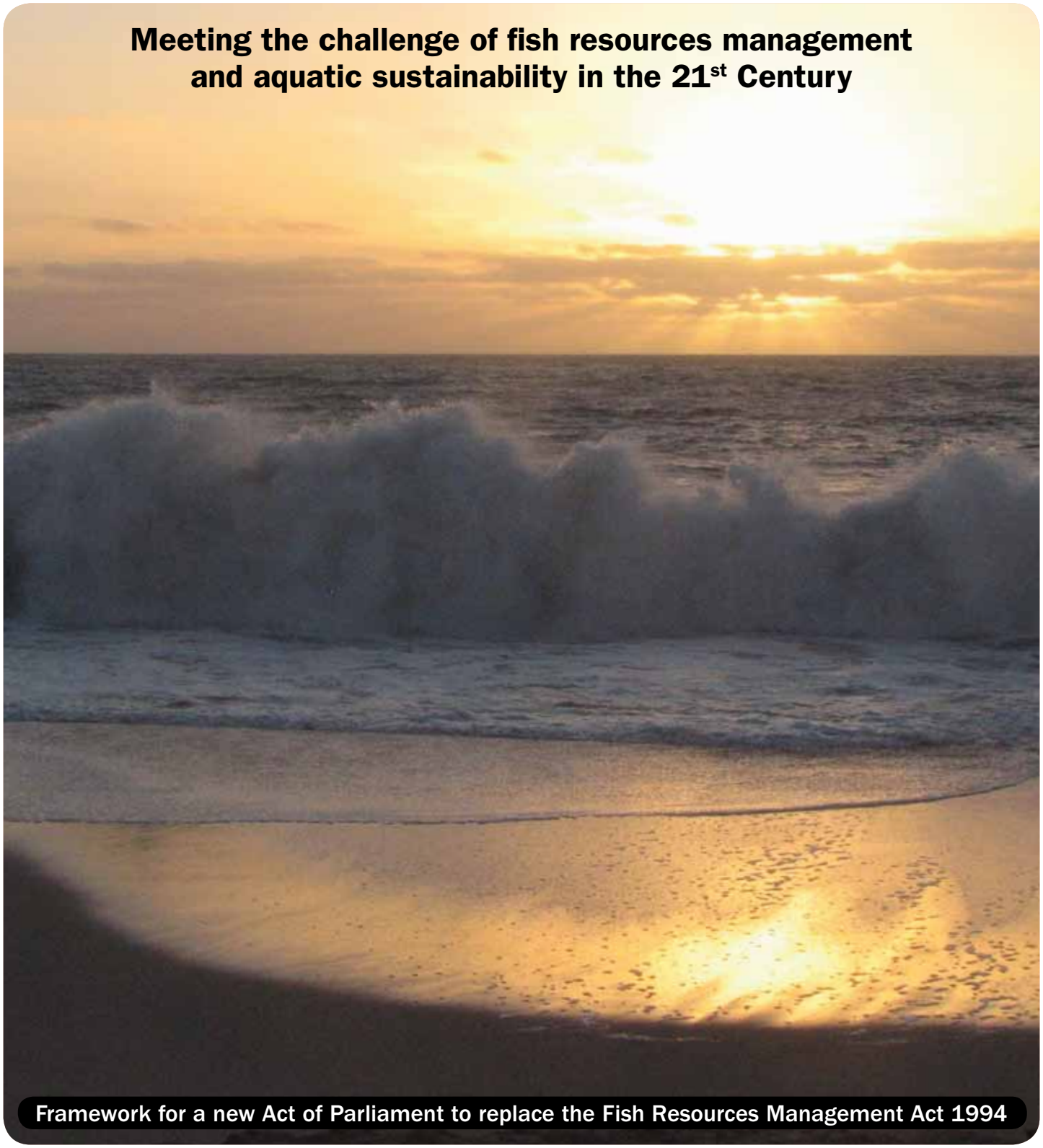
A SEA CHANGE FOR AQUATIC SUSTAINABILITY : Meeting the challenge of fish resources management and aquatic sustainability in the 21st Century

Department of Fisheries

Government of **Western Australia**
Department of **Fisheries**

A SEA CHANGE FOR AQUATIC SUSTAINABILITY

Meeting the challenge of fish resources management and aquatic sustainability in the 21st Century



Framework for a new Act of Parliament to replace the Fish Resources Management Act 1994

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1. INTRODUCTION

The Minister for Fisheries, the Hon. Norman Moore, has directed the Department of Fisheries to investigate and scope the requirements for a new Western Australian Act of Parliament to ensure the sustainable development and conservation of the State's aquatic biological resources in the 21st Century.

The Fish Resources Management Act 1994 (FRMA) is over 15 years old, with relatively few amendments since it came into force. During this period, there has been significant change in pressures on fisheries and on the aquatic environment generally. There has also been increasing recognition of the need to manage biological resources in a more integrated manner across government and sectoral boundaries and provide a basis for stronger community stewardship.

This "framework paper" outlines the scope, rationale and framework for a proposed new *Aquatic Resources Management Act* to replace the FRMA.

The intention in regard to this paper is to take a 'step-back' from the micro-detail of individual powers within an Act of this kind and adopt a strategic view of how the underpinning legal basis for the management of WA's aquatic biological resources might be better structured to face the challenges of population pressure, environmental variation and increasing administrative complexity.

To assist in development of the framework concept an extensive review of relevant literature from around the world has been conducted, together with a detailed analysis of primary aquatic and fisheries resource management legislation in those jurisdictions considered most relevant to the Western Australian situation.

Opportunity to comment

This framework paper has been produced as a means of provoking discussion on any matters that might be considered in the formulation of a new Act of Parliament to replace the *Fish Resources Management Act 1994*.

Your views are sought on the concepts presented in this paper, and also on any other matters relevant to the primary legislation for the management of Western Australia's aquatic biological resources that are of significance to you or your organisation.

Once comments received have been analysed, a final proposal will be presented to the Minister for Fisheries for consideration prior to the preparation of detailed drafting instructions for a new Act of Parliament.

Subject to Cabinet approval, a draft Bill will be prepared and a further opportunity for public input on the detailed content of the new Act of Parliament will provided at this stage.

To ensure your submission is as effective as possible, please:

- Make it clear and concise.
- Make specific reference to the topic sections and page numbers in this paper where appropriate.
- Describe briefly each topic or issue you wish to discuss under separate headings.
- State whether you agree or disagree with the concepts presented, and why. Clearly state your reasons, particularly if you disagree, and give sources of information where possible.
- Suggest alternatives to address any issues that you disagree with.
- Identify other issues or concepts you think should be considered in formulating a new Act.

Where and when to send your submission

The closing date for submissions is 26 July 2010. Please send your submission before this date, along with your full name, address, and association details (if applicable) to:

The Chief Executive Officer
Attention: Mr Andrew Cribb
The Department of Fisheries
39 Northside Drive
Hillarys Boat Harbour, WA 6025

Or by email to:

andrew.cribb@fish.wa.gov.au

For further details and copies of this and other relevant papers visit the Fisheries website at **www.fish.wa.gov.au**

2. WHY A NEW ACT IS NEEDED

Western Australia is approaching a number of environmental thresholds. Our population base is expanding, the demand on our natural resources is increasing and many of the ecosystems and habitats that support the web of life on which our society depends are facing significant disruption and change.

The world beyond our shores is also changing – and pressures that were once remote are now very real and having a direct effect in our own community. Changes in environmental conditions, the run-down of fossil fuel reserves, changes to ocean currents and chemistry, the globalisation of financial markets, the speed and volume of international transport and communications, and the growing effect of international politics on our internal affairs are all realities of the world we live in.

The next 50 years may well be the making or breaking point for the stresses associated with human impact on the environment in Western Australia. Elsewhere many social and environmental sustainability thresholds have most likely been passed (UNEP 2007).

How Western Australians manage the things that we can manage will play a critical role in our future quality of life, and the economic, social and environmental health of our society.

Our aquatic world – our rivers, lakes, estuaries and ocean ecosystems – are a vital element in a healthy, sustainable future for Western Australia.

Our marine and freshwater systems are a critical part of our "natural capital" and fundamentally different from terrestrial ecosystems in the way they function. At this moment in time, most of our marine ecosystems are largely unchanged by human use. The same cannot be said of our rivers and estuaries, where the rate and degree of degradation is very closely linked to their proximity and connection to areas of intensive human land use.

We also need to take into account responsible governance arrangements for aquatic creatures that have been seriously depleted due to habitat destruction and uncontrolled harvesting elsewhere in the world. Some of the lesser known include sawfish in the Kimberley, and populations of dugongs, sea lions, reef sharks and mantas.

Photo: Shannon Conway

Higher profile species include humpback and right whales and great white sharks.

On the positive side of the ledger we still have a world-class marine environment, marine parks and sustainable managed fisheries, some of the world's largest areas of critical seagrass habitat from Cape Naturaliste to the Northern Territory protected from the impacts of trawling and other fishing practices, the world's largest population of dugongs, and healthy and diverse marine ecosystems.

Our apparent success in these areas can be attributed in part to good governance, and in part because of a growth in community and industry awareness of the need for effective environmental management and the wide adoption of

Effective governance in the aquatic environment needs to integrate sustainable use with conservation outcomes.

values supportive of ecologically sustainable development.

However, it can also be due in part to the fact that WA is relatively wealthy in global terms and is only just starting to experience the overwhelming pressures created by high human population levels that are part of the global experience.

Our geographical isolation and relatively low population density will not continue to protect our environment by default. The opposite is almost certain. Without effective governance that integrates sustainable use and development with conservation outcomes, and recognises the interconnections between human society and a healthy aquatic environment, we face a bleak future.

The interconnection between environment and the economic and social well-being of human society was first recognised internationally in 1987 in the Brundtland Report (WCED 1987).

Twenty years on, the need to put sustainability at the centre of government decision-making, rather than on the periphery, has again been highlighted on the international stage in *Global Environmental Outlook 4* (UNEP 2007).

Attaining a successful synergy between economic, social and environmental outcomes that is the basis of the philosophy of sustainable development (ESD) will depend heavily on the way in which government organizes its policies, processes and resources. It will also require much clearer consideration by government decision-makers of the issues and costs associated with allowing the continuing degradation of Western Australia's natural capital.

To meet the challenges of the next fifty years, the legal framework for environmental management provided by government needs to reflect and encompass the range of outcomes needed for a common sustainable aquatic future in an integrated manner, and provide sufficient flexibility to meet changing demands.

This will require some fundamental shifts in the way aquatic ecosystems, and their various elements – including fisheries – are conceptualised and managed.

These trends are already evident in international thinking. For example governments such as the UK are currently restructuring their approach to integrate all the elements of marine and fisheries resources management under a unified vision, which embraces biodiversity conservation and sustainable development (DEFRA 2009).

The first step in achieving a more efficient use of government resources and better outcomes for metropolitan and regional WA must be to re-draw the primary legislation governing the management of aquatic biological resources –the *Fish Resources Management Act 1994,* and how it interacts with other State and Commonwealth legislation. This needs to establish clear lines of jurisdiction, responsibility and accountability across the spectrum of sustainability and conservation outcomes for aquatic biological resources.

3. WHERE WA'S AQUATIC RESOURCES ARE HEADING

3.1 The big picture

Like most countries in the developed world, Western Australia's aquatic biological resources and fisheries are under considerable pressure from a variety of directions.

The Food and Agriculture Organisation (FAO) report '*State of world fisheries and aquaculture 2008*' (FAO 2008) makes the observation that the proportion of global fish stocks over-exploited, depleted or recovering have remained relatively stable in the last 10 to 15 years. However, this leaves little room for complacency.

A key point is that approximately 28 per cent are over-exploited and 52 per cent fully exploited at or close to their maximum sustainable limits, with no room for further expansion in production.

World wild fisheries production peaked in the late 1980s at over 80 million tonnes and has since declined gradually to 67 million tonnes.

Within Australia the value and volume of wild-capture fisheries production has also been declining since 2000/01 (ABARE 2007).

WA's fish populations are high in species diversity, but generally small in size, low in reproductive potential and hence 'productivity' by world standards.

Despite these limitations, WA produces 29 per cent of Australia's total commercial fisheries production by value – largely due to the value of the rock lobster, abalone, prawn and pearling industries, which are essentially low-volume, high-value products.

Fishing for recreation also remains a very significant component of WA's coastal lifestyle, and the opportunity for a high-quality recreational fishing experience is an important element in the overall attractiveness of many coastal tourism destinations.

In WA, most oceanic fisheries are presently considered to be operating within acceptable sustainable limits (*State of the Fisheries 2009*). Importantly the commercial components of those fisheries that are considered over-exploited operate within a management plan that can be adjusted to manage them to recovery.

The legal 'head powers' to manage harvest levels to biological targets for non-commercial sectors are far less sophisticated, and adjustment of overall catch or fishing activity in response to changing resource levels and pressures remains problematic with the current suite of legislation.

However, there is also a high degree of uncertainty around the status of many fish populations, due to the absence of adequate data for assessment.

The picture in WA's riverine, estuarine ecosystems and nearshore embayments is very different. Here all the signs point to significant environmental change driven by pollution, eutrophication, habitat alteration and changes in rainfall, which have affected the underlying productivity of these systems and resulted in the loss or significant depletion of species that were once abundant and supported vibrant recreational and small-scale commercial fishing.

Those species important for fishing include estuarine cobbler, river prawns and Perth herring in the Swan-Canning and Murray River systems; marron in freshwater bodies throughout the south-west; and King George whiting and other species in the Leschenault Inlet.

While most of these species are of comparatively low economic value in terms of landed commercial catch, they are also all important elements in these ecosystems and have significant value

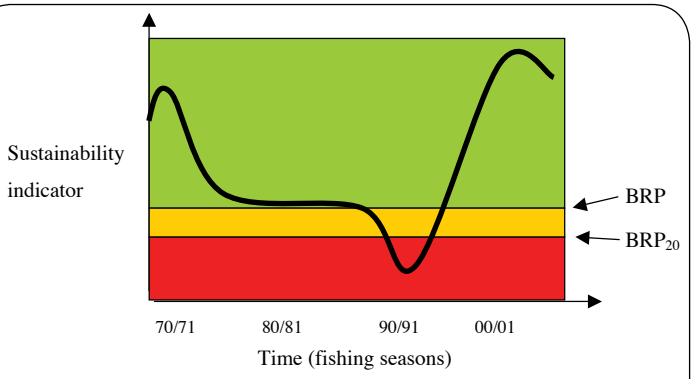


Figure 1. Variation in western rock lobster breeding stock abundance as a percentage of unfished biomass in relation to two biological reference points, the 1980 level (BRP) and 20% below this level (BRP20)

to local communities for a range of social and ecological reasons.

In addition, major WA ocean fisheries that were once considered robust, such as western rock lobster and demersal scalefish, are showing signs of increasingly frequent changes in reproductive success (recruitment levels) and possibly reduced long-term productivity.

These observations in combination lead to the inexorable conclusion that many populations of aquatic species in WA – including those exploited as fisheries – are highly sensitive to changes in climatic conditions, as well as to increases in overall pressure from fishing and other human-induced influences (Figure 1).

As a consequence the Western Australian community must face the reality that as climate conditions change, some fisheries are likely to produce reduced harvest levels and, in the longer-term, some may have irregular harvest potential due, in part, to the factors described above which go beyond the community's extraction of fish for food or recreation.

In practical terms, this means asking an important question when setting fishery operating parameters: "If a fish population can only double every 10 to 15 years due to its reproductive features, at what rate should it be harvested, if at all?"

3.2 Establishing a legal and management framework for the future

In the medium-to-long term there is undoubtedly a real and growing need to establish a management and legal framework which is capable of containing the fishing pressure from all sectors at a level that is either clearly sustainable or assessed and agreed as 'low risk'.

The legal framework also needs to accommodate adaptive management that responds to human pressures other than fishing and takes into account the effects of ecosystem change on fishing, as well as the effects of fishing on ecosystems.

In effect, even within the narrower context of managing fisheries, the debate about objectives needs to move from "how to manage?" to "what are the most appropriate levels or qualitative standards to manage to?"

This is most clearly seen in the case of aquatic biological communities that contain a significant proportion of long-lived and slow-growing species with highly variable reproductive success rates and relatively low productivity.

Additionally, the ability to create targeted closures to reduce fishing pressures, prevent activities with significant negative impacts, protect spawning aggregations or key elements of the marine food-web, or allow fish populations to rebuild, also becomes an increasingly important tool.

On a broader scale it also means that it is essential to have a legal and governance framework which is adaptive in nature, responsive to change, and provides a basis for integrating policy outcomes such as sustainable harvest objectives and biodiversity conservation and ecosystem goals under the overarching principles of ecologically sustainable development.

This is strongly supported in international literature from a variety of disciplines including fisheries management, marine conservation and environmental policy (EU 2010, GEO4 2007).

A further development across the world has been the widespread adoption of risk assessment and risk management methodologies as policy tools for determining management requirements and allocating resources in a range of fields from business to natural resource management (FAO 2010, Figure 2).

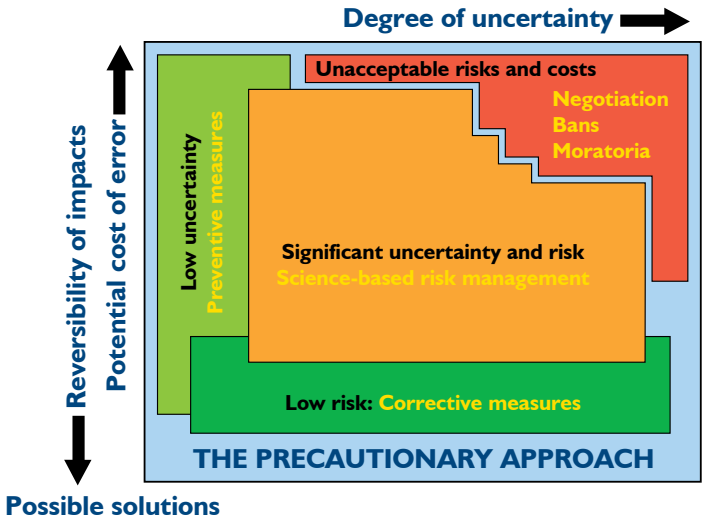


Figure 2. Diagram of the precautionary approach as applied to aquatic resource management (FAO 2010)

These methodologies have already been applied in Australia to ecological risk associated with human use of natural resources and sustainability assessments for harvested fisheries – and are increasingly being explicitly recognised in primary legislation at both State and Commonwealth levels (DEWR 2007).

In the context of WA's aquatic biological resources, the ability of government to effectively assess long and short-term risk and actively manage the level of fishing and other human activity – and the total impact across all sectors – for high-risk biological resources becomes a critical issue.

3.3 Population growth and technology

Western Australia's population is projected to grow from 1.9 million to 2.8 million by 2031CE (WA Planning Commission 2005). This anticipated growth is likely to not only create increasing demand for government servicing, but also be a critical driver of pressure on fisheries and aquatic ecosystems.

A number of WA Government and fisheries-specific policy and planning papers published in the past 15 years have cited population growth and technology improvements as critical factors that are increasing the human pressures on aquatic environments and fish populations.

"WA is one of Australia's fastest growing states, and at a predicted population growth rate of 1.5 percent a year it is estimated the population will grow to more than 2.7 million people by 2030. Most of this growth will be based along the west coast and will continue to have a wide ranging and considerable impact on fishing and fisheries; an impact that must be managed or there will be a deterioration in the quality of WA's fisheries" (Integrated Fisheries Management Review Committee, 2002).

These critical factors fall into three groups: those that directly affect fisheries; those that directly affect the environment (and thus may influence the health and productivity of aquatic ecosystems); and those that increase competition for access to areas of the marine environment and nearby land for a variety of commercial and recreational purposes.

Those technological improvements that directly affect fisheries not only include better fishing gear and fish finding equipment such as satellite global positioning systems (GPS), echo-sounders, and braided lines, but also communications equipment such as mobile phones that enable the rapid transfer of information among large numbers of fishers about fish aggregations, areas that hold fish, fish-feeding times and other related information.

While the specifics of what constitutes legal fishing gear are often regulated under fisheries legislation, the use of broader-spectrum technologies that improve the ability of fishers to find and catch fish are not.

As a consequence, improved fishing 'efficiency' is constantly increasing exploitation levels at a rate faster than the adjustment of fisheries management controls.

This is true in highly regulated managed fisheries such as the commercial western rock lobster sector, where adjustments to the total allowable commercial catch can be made under the existing management plans.

However, in non-commercial fisheries, and in particular with reference to the recreational and aboriginal (customary fishing) sectors, the current


Photo: Andrew Cribb

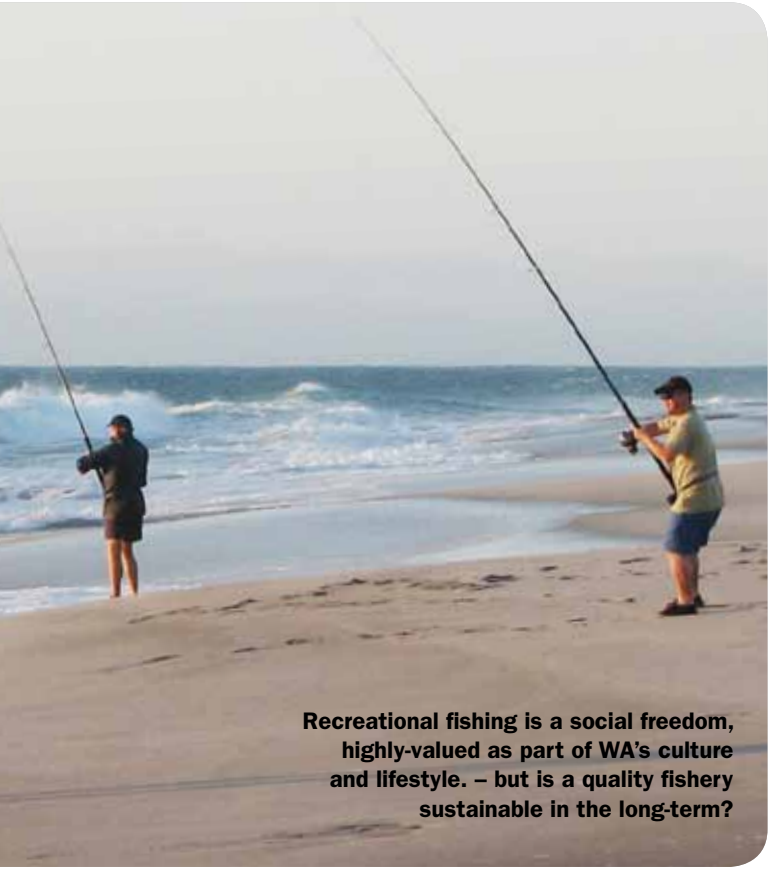
suite of fishing controls are rarely capable of containing the total exploitation once participation exceeds a certain level.

Effectively the only option currently available for reducing the total catch and fishing effort across these sectors is a 'blunt' legislative instrument, such as a fishery closure of some kind. This may be of a spatial, temporal or species-specific kind.

The term 'blunt' is used because these instruments are essentially absolute in nature and tend to create very high levels of political and social tension. The instruments are not only absolute but effectively shift the management objectives from sustainable harvesting to total protection.

A significant management 'downside' to a partial or full closure of a fishery is that this creates gaps in the ability of scientists to collect data from the fishery, and in a practical sense makes the biological status of the fish population concerned more difficult to evaluate.

From a community and social perspective, absolute closures not only limit the supply of commercially caught fish onto the local market, but also erode important social freedoms which are highly valued as a component of WA's culture and lifestyle.



Recreational fishing is a social freedom, highly-valued as part of WA's culture and lifestyle. – but is a quality fishery sustainable in the long-term?

Other factors associated with human population growth that adversely affect aquatic ecosystems include pollution and eutrophication of estuary and nearshore waters; degradation of fish nursery habitat areas; the removal of seagrasses and macroalgae from beaches; and the alteration of beaches and foredunes.

Coastal development including the construction of breakwaters, marinas, boat ramps, and harbour facilities; changed nearshore diurnal lighting patterns; and increased sub-water noise from boating traffic, echo-sounding and seismic gear; also contribute to a degree of ecological disruption.

Many of these effects may be quite subtle and relate to changes in water chemistry or the release of manufactured chemicals that impact on critical aquatic life-support systems. These impacts are not well understood at a detailed level but affect water quality, habitat quality and the availability of food, as well as potentially affecting the life-cycles and reproductive capacity of marine organisms including fish.

Irrespective of the cause, these impacts point towards major disruptions in many of our estuarine and nearshore biological systems, some of which are most likely to be irreversible even with significant intervention by government in the causal mechanisms over an extended period of time.

A prime example of this in WA is the Swan-Canning ecosystem, where multiple factors throughout the catchment continue to affect water quality, river flow, and habitats to the detriment of the natural ecology of the rivers.

A critical issue for government is that the response to these issues across all portfolios is difficult to co-ordinate or make consistent. In many instances, conflicting policy and priorities between departments – and between governments – means that these become long-running 'legacy' issues – inherited by successive governments in turn, but seldom resolved.

In the context of sustainable fisheries and biodiversity conservation, these issues become part of a gradual downgrading of aquatic ecosystems, whose causes are generally outside the scope of fisheries or conservation legislation, and beyond the resources of any one arm of government to deal with.

3.4 The role and limits of science

Due to the adversarial nature of government across the western world and the limitations of public debate, it is acknowledged that decisions by governments are generally made on the basis of weight of argument and public opinion, rather than scientific evidence.

The complexity and dynamic nature of environmental systems also means that the state of scientific knowledge is constantly evolving – and always imperfect.

A presumption often made in defence of government inaction is that the science is inadequate – either in nature or extent. The predominance of this premise in government thinking was clearly recognised in principle 15 of the Rio Declaration of 1992:

> *Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*

This 'precautionary principle' was subsequently adopted by Australia in the *National Strategy For Ecologically Sustainable Development* (1992) and has since been incorporated into a range of environmental legislation as one of the guiding principles.

In the context of fisheries management, 'science' covers a range of investigations, which historically have focused on establishing the status of each stock of harvested fish and the rate of exploitation.

Fisheries stock assessments look at a number of biological parameters to model fishery productivity and hence estimate sustainable annual harvest levels. In a general sense, the minimum information required to form an assessment will include an understanding of:

- The reproductive biology of the species concerned.
- Growth rates and other life history parameters.
- The geographic and genetic limits of the fish stock or population in question.
- The age-structure of the fish population at various points in time.
- The history of fishing, including trends in catches and levels of fishing activity.

Issues such as climate change are demanding science that looks at causal relationships between climatic and biological systems.

- Trends in the efficiency of fishing gear and other technologies.
- Estimates of the rate at which fish are caught or killed in relation to the rate at which they are replaced in the population (fishing mortality).
- A range of fishery specific parameters such as post-release mortality rates, indices of the strength of larval recruitment, etc.

These parameters form the basis for setting sustainable harvest levels which – in commercial fisheries at least – are generally managed through catch targets, quotas or controls on fishing effort of various forms ('output and 'input' controls).

Much of the data for this level of assessment is derived from large-scale monitoring programs, either through commercial catch sampling or independent surveys – or both.

In recent times the focus for fisheries and marine science has shifted into the area of the ecosystem effects of fishing and, in particular, to the implications for the biological relationships between various species in the food-web (ecosystem-based fisheries management or EBFM).

Data from fisheries science programs have also become important in gaining an understanding of the condition of aspects of the marine environment – and have been used extensively in wider resource use planning for marine areas.

In addition, issues such as climate change and global warming are leading to further demand for science that looks at the causal relationships between climatic and biological systems – and models likely future effects of changes in these systems.

For small-scale commercial and recreational fisheries the amount of research investment needed to develop sophisticated scientific models, or even longitudinal monitoring systems, has not been available on a regular long-term basis.

As a consequence, science and monitoring programs on finfish and in marine protected areas in particular have been limited in WA, and there are significant gaps in the scientific understanding of the dynamics and status of many species, as well as the impacts of fishing.

Most data on commercial fisheries in WA has historically been taken from compulsory logbooks kept by commercial fishers. The Department of Fisheries' data collection system (Catch and Effort Statistics System) extends back to at least the 1960s and provides a unique – albeit imperfect – long-term set of information on commercial catch trends.

In recent times, the buy-out of commercial fishing licences and closure of areas to commercial fishing due to resource reallocation has lead to increasing gaps in both area and time in this data set. Hence there are a growing number of marine areas for which there is no current understanding of catches and thus changes to stock dynamics or species abundance.

To meet the challenges posed by environmental and social change it is critical that the paradigm of "evidence first, action later" is inverted to give greater legal weight to the precautionary principle and other key elements that govern the exercise of responsibilities under the enabling legislation.

3.5 New tenets in marine environmental and fisheries management.

Since the Western Australian *Fish Resources Management Act* was enacted in 1994 there has been considerable movement in international and Australian thinking on fisheries and marine environmental management (FAO 1995, 2001, 2008; Department of the Environment and Water Resources 2007).

In 1987 the publication of the World Commission on Environment and Development report '*Our Common Future'* (the Brundlandt report), and its acceptance by the Australian Government, led to a number of changes to the underlying policy approach to managing natural resources across Australia and the developed world.

In December 1992, the concept of ecologically sustainable development (ESD), was affirmed by the Commonwealth Government and all Australian States as the fundamental basis for the management of natural resources in Australia, when the Council of Australian Governments endorsed the National Strategy for Ecologically Sustainable Development (*Ecologically Sustainable*

Development Steering Committee, 1992). This followed the signing of the *Intergovernmental Agreement on the Environment* in the same year.

In addition, the emergence of ecosystem approaches to fisheries management as a concept have become dominant in policy thinking in the western world and are increasingly driving the setting of sustainable harvest strategies, along with the manner in which fisheries operate.

Importantly, thinking about fisheries management in terms of ecosystems opens up a new level of complexity in understanding the fabric of competing uses in the marine environment and their interrelated effects on marine ecosystems and may lead to increasing change in the balance of decisions regarding aquatic biological resource use.

At a national level, a clearer policy hierarchy is beginning to emerge, driven by the recognition that the total impact of human use of the marine environment is often greater than the sum of its parts (*Fletcher, W. J. et al 2003*). This again highlights the need for informed risk-based assessments to balance the gaps in definitive scientific knowledge.

There has also been a significant emphasis on developing and implementing audit and public reporting strategies within various levels of governments, and in the non-government conservation sector.

These approaches create considerable demands on biological assessment and management programs, but are seldom, if ever, accompanied by additional resources for research or management,

Photo: Shannon Conway

Ecosystem approaches to fisheries management open up a new level of complexity for science and management.

leading to an increasing gap between high-level, publicly stated expectations and the capacity of government to meet them.

The creation of the Marine Stewardship Council, in a partnership between the World Wildlife Fund and Unilever and Kitchen in the late 1990s, provides an example of how ecosystem approaches to fisheries management are also moving beyond the boundaries of regional and national governments and into the market sector (MSC 2008) as a means of exerting pressure on government and industry to meet new standards.

Within Australia, the 'sustainability audit' approach has been employed by the Commonwealth Government under the

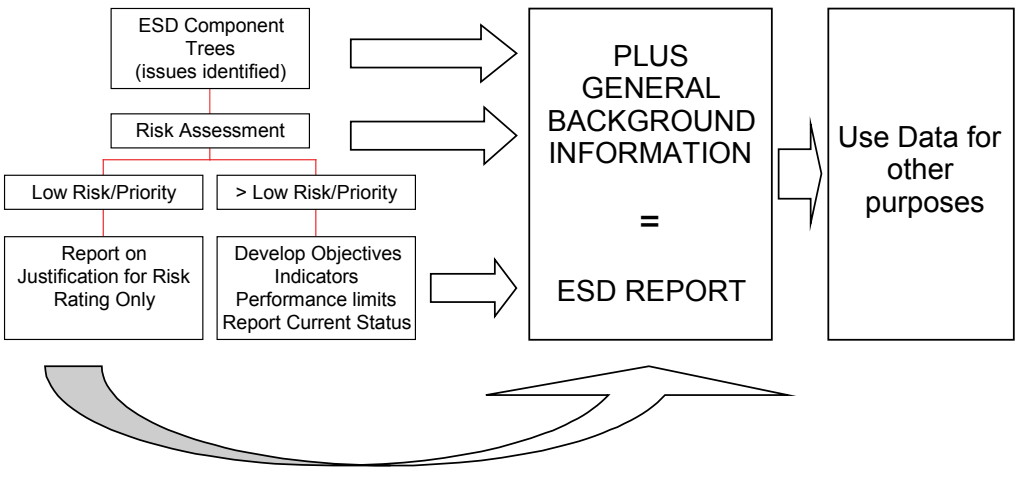


Figure 3. Summary of National ESD reporting framework processes (Fletcher et al 2002).

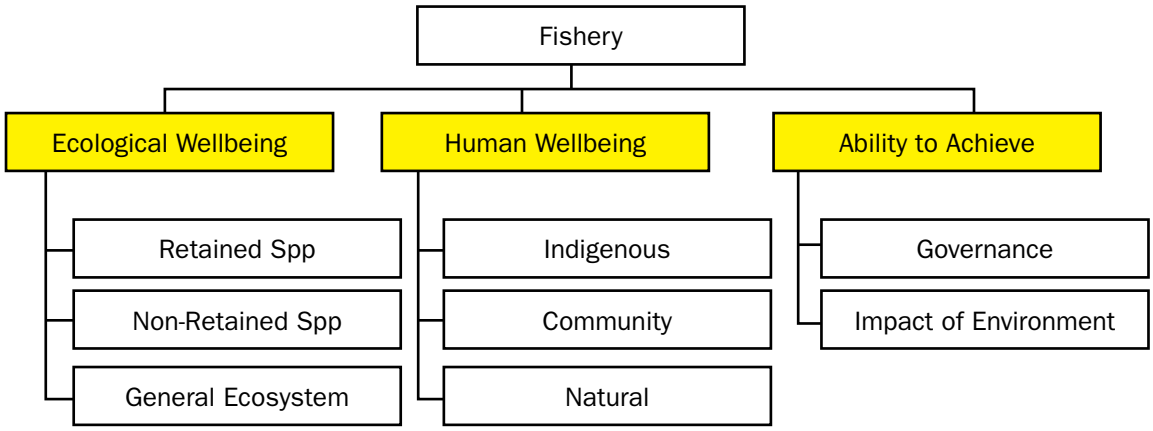


Figure 4. The eight major components of ESD for fisheries (Fletcher et al 2002).

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The *EPBC Act* itself does not specify the standards required, but applies a 'blunt instrument' in the form of potential withdrawal of Commonwealth export approvals for wildlife and related products.

Between 2000 and 2008 several national workshops were held to review the concept of sustainability and ecosystem-based fisheries management and progress towards its implementation (Millington *et al* 2008). These workshops were part of a program funded by the Fisheries Research and Development Corporation (FRDC) to develop national thinking on the nature of ESD and its application to fisheries management (Figure 3).

This approach has effectively established nationally-agreed standards for fisheries sustainability to meet Commonwealth assessment requirements for export fisheries.

In WA a conceptual model of how the principles of sustainable development would apply to fisheries management policy was developed in 2002 (Department of Fisheries, 2002) (Figures 4 and 5).

However this approach has been slow to flow into State-level fisheries and conservation Acts, is not explicitly applied to non-export fisheries and there is little consensus on its application to non-fisheries issues, such as the management of marine protected areas.

A key issue that emerges from the implementation of ESD under various levels of government policy and legislation is how best to integrate both the assessment of human impacts, and their management in a social environment where 'rights' of various forms have already been allocated by government for fishing and other activities.

In Australia to date, the major policy response to ecosystem management has come from the Commonwealth Government, first expressed in the National Oceans Policy (1998) and continuing with the marine bioregional planning process now underway under the authority of the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*.

While the planning process is intended to cover both State and Commonwealth waters, and is being conducted in conjunction with State Governments, the mechanisms for future governance remain unclear at both a state and federal level, and the access rights of resource users appear to be unrecognised at this time.

Importantly, due to the overarching nature of the EPBC Act, and Commonwealth planning and policy agendas in the marine environment, the issue of re-clarifying State and Commonwealth jurisdiction and governance arrangements outside the three nautical mile limits of State waters is again becoming critical[1].

[1] The Offshore Constitutional Settlement (1988 and 1995) provided clarity around the management of specified commercial fisheries, but left open the question of jurisdiction on many other matters including recreational fishing, aquaculture and marine protected areas.

Within Australia the Commonwealth marine planning process gives a strong emphasis to the establishment of marine protected areas but appears not to clearly recognise existing fishing access rights.

At present, the WA approach to multiple-use marine reserves also has limited consistency with the categories for conservation areas established by the International Union for the Conservation of Nature (IUCN), to which Australia is a signatory. In addition, the significance of the extensive areas of critical habitat protected under fisheries management plans is often overlooked in the wider debate over marine protection.

Another key point is that governments across Australia have generally failed to integrate planning across the continuum from marine conservation outcomes (which imply little or no human exploitation) to sustainability outcomes (which imply ongoing human use of renewable resources).

In a better integrated governance system, the administration of both conservation and sustainability outcomes would be linked at the top end under an overarching policy which embraces the continuum of goals from 'no-take' to maximum sustainable yield (MSY). Specific outcomes would be delivered through an Act of Parliament, with a commitment to the specified outcomes across all relevant government portfolios.

Importantly, a consistent risk assessment process, based on the biological resources in question, would be used to determine and assess the effectiveness of the management strategies and actions required.

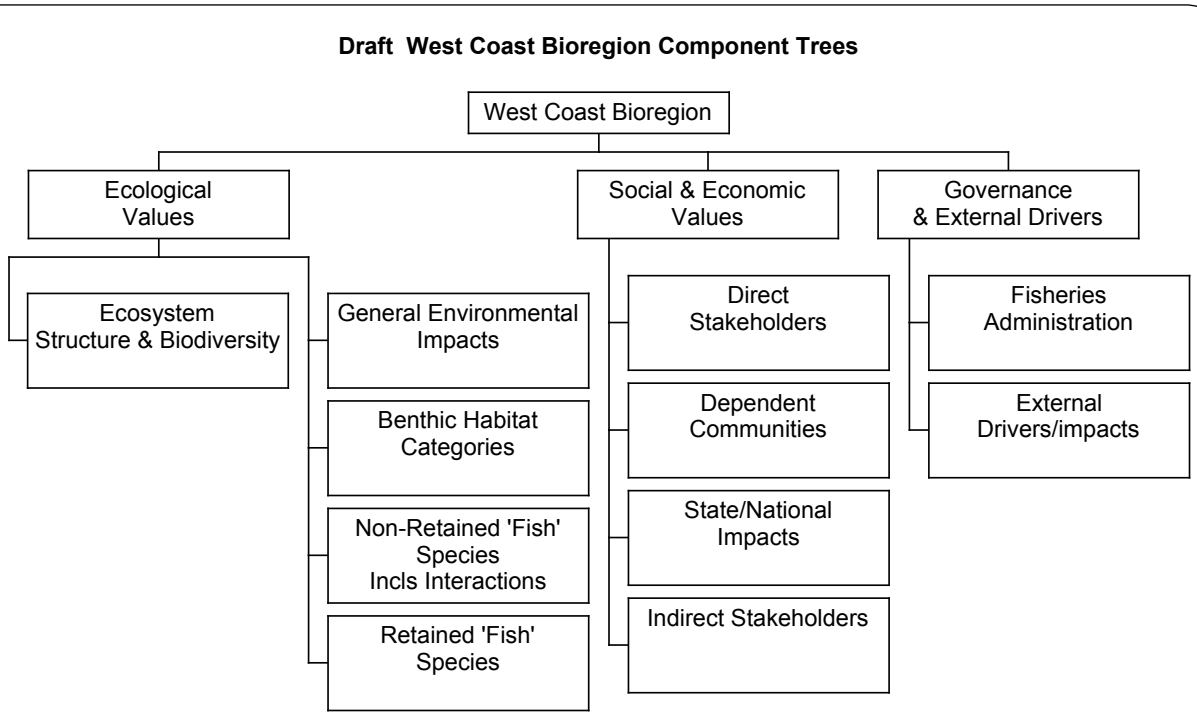


Figure 5. Draft component tree showing the values and assets identified for the West Coast Bioregion (Shaw et al., in prep.).

4. A NEW FRAMEWORK FOR AQUATIC MANAGEMENT

The *Fish Resources Management Act 1994* (FRMA), along with other State Acts that impact on aquatic biological resources, were conceived in the late 1980s and early 1990s, at a time when the concept of ecologically sustainable development was relatively new in the international picture.

In WA the management of commercial sector fisheries at that time had developed rapidly to a point where there was confidence that effective legislation using management plans which defined fishing capacity could be constructed to contain the impact of fishing and ensure a sustainable harvest from a variety of fish stocks for this sector.

The FRMA, proclaimed in 1994, provided an effective framework for management of commercial fisheries, and the establishment of a clearer system of commercial fishing entitlements ('fishing rights') but left more open the management of other factors related to fishing in the ecosystem.

This Act also did not consider the questions associated with managing aquatic biological resources used by multiple sectors for competing purposes as a biological unit (as opposed to a fishery based on a specified gear type or single stock/single species/single sector) or provide any head powers that would allow this approach to be taken readily.

It also did not consider fishing access rights for non-commercial sectors or how these might be managed, transferred and given continuity at a sectoral, as well as an individual, level.

In other words, the Act did not provide the legal structure needed for managing fisheries within an ecosystem context, for the integration of management across multiple sectors, or the allocation and management of access between competing sectors to components of the resource.

At governance level, other gaps in the FRMA include:

- the absence of any clear principles for its application;
- no consideration of how better cross-government integration might be given a basis in the enabling legislation;
- limited capacity for the devolution of powers and functions and the delegation of decision-making; and
- limited powers for dealing with biosecurity issues.

To meet the needs of fisheries management post-2011, and ensure sustainability in the face of an increasing population, a new framework for the management of aquatic biological resources is proposed.

4.1 Broad scope and guiding principles

It is critical that the enabling legislation for aquatic resources can:

- Manage all factors associated with fishing (ESD and ecosystem-based fisheries management).
- Provide a clear basis for management of a whole biological resource (as opposed to just one sector).
- Give effect to integrated fisheries management by:
  - creating head powers that can establish management strategies with clear biological outcomes for all sectors as required;
  - establish formal harvest allocations where these have been made; or
  - describe the basis of informal allocations where these operate.
- Clearly distinguish between managed aquatic resources and fisheries with biological targets and socially regulated fisheries.

Consequently, the guiding principles used in developing this proposed framework are that a new Act should:

- Provide an integrated aquatic resource management framework which incorporates ESD and biodiversity conservation goals.
- Incorporate the precautionary principle more explicitly.
- Broaden the base of the Act to include aquatic ecosystem issues in the management prescriptions.
- Provide a basis for simplifying subsidiary legislation where possible.
- Provide for greater devolution of decision making and delegation where suitable.

- Provide flexibility for more cost-effective management based on more explicit risk assessment.
- Provide explicit head powers to achieve biological and allocation outcomes across all harvest sectors as required.
- Provide improved security of access for all resource users.

4.2 Stages in biological resource management

The management of biological resources across the developed world has moved through a number of sequential stages since the 1960s. These stages can be observed in the approach to natural resource management in general, but also in the evolution of management for individual fisheries and fishing sectors.

They can also be observed in relation to the management of human use of other natural resources.

The conceptual diagram (Figure 6) illustrates typical trends in four key factors, as population pressure increases and management of biological resources becomes more specific and outcome-focused. These stages may be experienced by different sectors at different times and progress at different rates.

Effective aquatic resource management legislation needs to recognize these stages and the process by which management develops over time in parallel with trends in fishing activity, scientific knowledge, and cost to government.

A primary objective needs to be the management of the risks posed by human population growth at an appropriate level, and with an appropriate degree of complexity and cost.

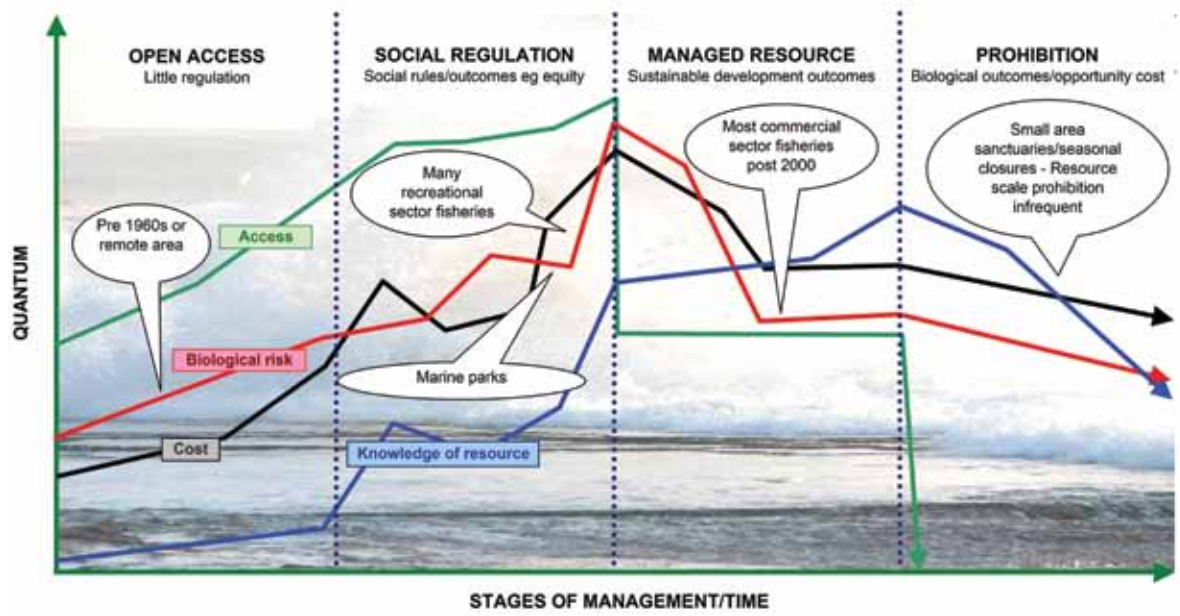


Figure 6. Stages in biological resource management.

Stage 1 (Open access) provides little or no biological management and usually only exists where either low human populations mean fishing and other pressures are low and diffused or where social governance structures are inadequate or political will to manage is lacking. Lack of progress to Stage 2 results in overexploited aquatic resources.

Stage 2 (Social regulation) is where management of the recreational sector share of most fisheries in WA falls. Here participation and fishing pressure on a finite resource continues to increase, accompanied by increasingly complex social regulation and cost to Government and increased demands by stakeholders for research into a multiplicity of factors that may not be tightly focused on sustainability requirements. The regulations do not provide effective management of the total sectoral harvest, which leads to over-exploitation and often precipitous action by Government.

Stage 3 (Managed harvest) is where the commercial sector share of most fisheries in WA falls. Legislated "management plans" contain risk by explicitly limiting fishing pressure and total sectoral catch, while allocating individual transferable access rights.

Stage 4 (Prohibition) represents either a recognition that social management is failing to achieve the desirable biological results, or an explicit allocation decision by Government for non-extractive use. This stage may often occur directly after Stage 2. While it may provide some biological outcomes for a period, there is also a significant opportunity cost to society from loss of extractive use of the resource.

4.3 Powers and responsibilities

The framework for a new Aquatic Resource Management Act envisages the following shifts in the nature and scope of powers and responsibilities.

FROM HERE 1994 → **TO HERE 2011**

1994		2011	NOTES
Scope of jurisdiction			
Fisheries-specific		'Whole of resource'/aquatic ecosystem	
Overarching Governance			
Centralised authority		Devolved authority	*Delegation of power and management model interlinked.*
Fisheries-specific purpose, objectives and principles		Sustainable development purpose, objectives and principles	
All checks and balances through Parliament		Checks and balances for operational management through administrative process and review	*Separate accountability and responsibility for high level policy/strategic decisions from 'operational decisions.*
Cost-intensive		Cost-effective	*Explicit designation of managed fisheries based on risk assessment will allow simplification of 'social' regulation for lower risk resources. The key decision becomes: "Which do we manage to explicit biological targets?"*
Inflexible and can be slow		More flexible and faster	*Delegation of operational decision making within the overarching resource management strategy and sector-specific management plans.*
Departmental 'silos'		Cross-community networks	*Collegiate approach to science.* *Law enforcement co-operation, etc.*
Resource management			
Sectoral management		Resource-based management	*Overarching resource strategy*
Species/stock management		Ecosystem-based management	*Include ecosystem considerations in resource strategy*
Implicit emphasis on managing for sustainable harvest		Explicit emphasis on agreed biological, economic and social outcomes.	*Clear objectives at a resource and sectoral level*
Implicit emphasis on managing for maximum sustainable yield		Explicit targets or objectives on agreed yield parameters.	*Explicit decision to manage at levels lower than MSY – ie "sustainability" has some definition*
No overarching resource management strategy or allocation framework		Overarching strategy for each defined resource, with specific allocation requirements and clearly identified biodiversity conservation parameters.	*The 'resource' may be a fish stock, group of stocks, area or ecosystem. The 'resource management strategy' provides the framework for sector-specific harvest plans ('management plans').*

1994		2011	NOTES
Resource management (continued)			
No explicit resource allocation provisions		Explicit resource allocation provisions	*Resource strategy provides a clear statement of government policy with legal status and continuity.*
Optimising individual benefits		Optimising biological and collective community benefits	*Clear statement of allocations and conservation parameters.*
Commercial management to implicit biological targets		Objectives made explicit	*Include objectives in 'management plans'.*
Commercial harvest strategies are explicit		All sectors with explicit harvest strategies	*Harvest plans for all extractive sectors.*
Recreational and other sectors – by social regulation. Biological targets and objectives largely implicit		Explicit harvest strategies	*Risk assessment decides which resources are to be managed to sustainability targets.*
High burden of regulation for social purposes		Lower burden of regulation for social purposes	*Focus through risk assessment provides scope to reduce social regulations.*
Biosecurity powers narrow in focus		Broad powers to manage biosecurity issues.	*Provide adequate response powers*
Rights-based environment			
Medium degree of commercial "fishing access right"		Higher degree of 'fishing access right'	*Stronger basis in law provides better cross-government recognition.*
Sectoral "fishing access rights" not explicit.		Sectoral fishing access rights are explicit.	*Stronger basis in law provides basis for allocations and better cross-government recognition. Future management of access rights may include options for the use of market-mechanisms.*
Community stewardship environment			
Degree of community/ industry responsibility.		Increased community/industry responsibility.	*Structured stakeholder engagement in development, implementation and review of management.* *Aquatic management agreements.*
High compliance costs/low flexibility		Greater flexibility/more efficient compliance delivery	*Targeted at high biological risk resources.*

4.4 From fishery to biological resource management

The proposed new Act aims to provide a platform for aquatic resource management and stewardship that will work across Government (Figure 7).

It is based firmly on the principles of ecologically sustainable development (ESD), which explicitly incorporates the conservation of biodiversity and allows for a process that determines ecological risk as the driver for establishing the degree of management of harvesting of specified aquatic resources.

It is proposed to replace the eight current objects (FRMA S3) with a single overarching 'purpose', which focuses on biological sustainability of aquatic resources, eg:

The purpose of this Act is to provide for the ecologically sustainable development and conservation of Western Australia's marine and freshwater biological resources and systems.

This shifts the focus of the Act from "fisheries" to "aquatic resources", and importantly, makes sustainable development the explicit overarching purpose of the Act.

The principals of sustainable development are as follows:

(a) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

(b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent the degradation of aquatic ecosystems and resources.

(c) The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

(d) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

It is also proposed to incorporate these principles to give specific guidance on how the Act is to be applied, eg:

Every person engaged in the administration of this Act or the regulations must:

(a) take into account and apply the objectives and principles of ecologically sustainable development;

(b) seek to apply an ecosystem approach in the management of fisheries and in the conservation and protection of aquatic biological resources;

(c) seek to minimise risk to the biological resource by applying a precautionary approach such that, if there is both high scientific uncertainty and a risk of serious harm, they will not use a lack of adequate scientific information as a reason for failing to take, or for postponing, cost-effective measures for the conservation or protection of aquatic biological resources that they consider proportional to the potential severity of the risk;

(d) take into account scientific information in the management of fisheries and in the conservation and protection of aquatic biological resources;

(e) seek to ensure policy interventions are as minimal as reasonably practicable, efficient, cost-effective and flexible;

(f) encourage the meaningful participation of Western Australians in decisions about the management of fisheries and the conservation of the aquatic environment.

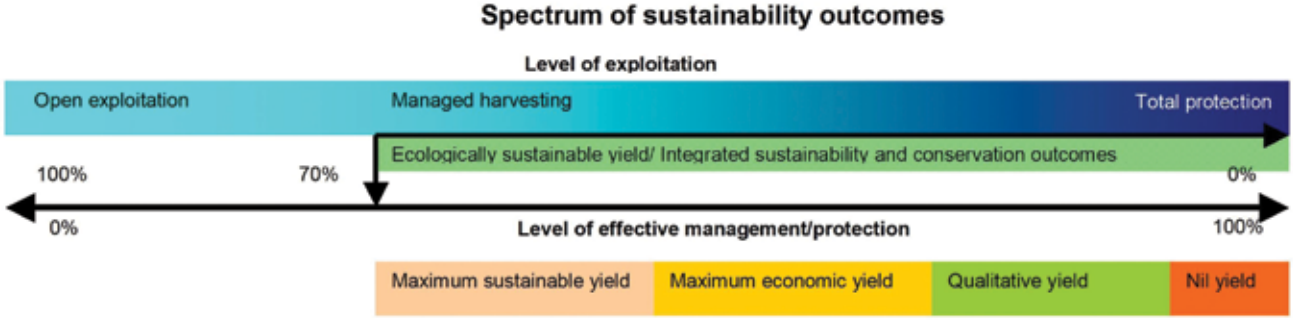


Figure 7. The new Act needs to provide a platform that supports the full range of sustainability outcomes.

4.5 Resource planning, management and governance framework

The proposed model is based on a resource risk assessment process that permits the more efficient allocation of limited Government resources to high-risk areas (see Figures 8 and 9).

The model incorporates the precautionary principle by allowing for the explicit setting of harvest objectives at any level below maximum sustainable yield from maximum sustainable yield (MSY) to zero. The model distinguishes between harvesting that is managed to specific biological targets, and harvesting that is regulated primarily for social or economic outcomes. It also clearly establishes sectoral fishing access rights for all harvest sectors.

The model also allows for zero-harvest objectives for specific 'resources' for the purposes of conservation, and will provide a clearer basis for decisions to not fish for ecological or sociological reasons.

Photo: Shannon Conway

The proposed model will allow for a range of objectives for specific resources.

4.5.1 Planning and management model

The model establishes a hierarchy of management strategies (Figure 8) that are developed and operated through a process that devolves operational responsibility as follows:

Aquatic Resource Management Strategy (ARMS)

The new Act will provide for the preparation of overarching Aquatic Resource Management Strategies (green box). The Act will require these strategies to cover specific issues, including a definition of the biological resource each one covers.

The new Act envisages that an ARMS may be applied at a range of spatial or resource levels, according to the nature of the issue that requires management – potentially either a bioregional, ecosystem or fish community level. The decision about what to manage is made as an outcome from a resource risk assessment process. Importantly, this strategy will provide a critical linkage between the various biological resource uses and approaches, and how they are managed.

Each of these strategies, once approved, are given status in law, most likely through publication of the Minister's approval as a notice in the Government Gazette and possibly listing in a schedule to the associated regulations.

The ARMS becomes an official policy document approved by the Minister that sets out the goals and parameters for overall resource use and gives effect to ESD and IFM elements including proportional harvest allocations.

The ARMS then flows into Sectoral Harvest or Resource Use Plans, Resource Protection Plans, Sustainability Orders and Social Regulations – which are described below:

Sectoral Harvest and Resource Use Plans

Sectoral Harvest Plans are subsidiary legislation with a preamble that outlines the objectives of each strategy. Within each Sectoral Harvest Plan the power to create "orders" (directions) to authorised fishers provides flexibility within the plan so as to adapt to changing circumstances efficiently.

The plans may have a defined lifespan or review date. Carry-over of fishing access rights into new plans will be provided through powers in the Act that create "fishing access options" similar to the

Aquatic Resources Protection, Management and Allocation Framework

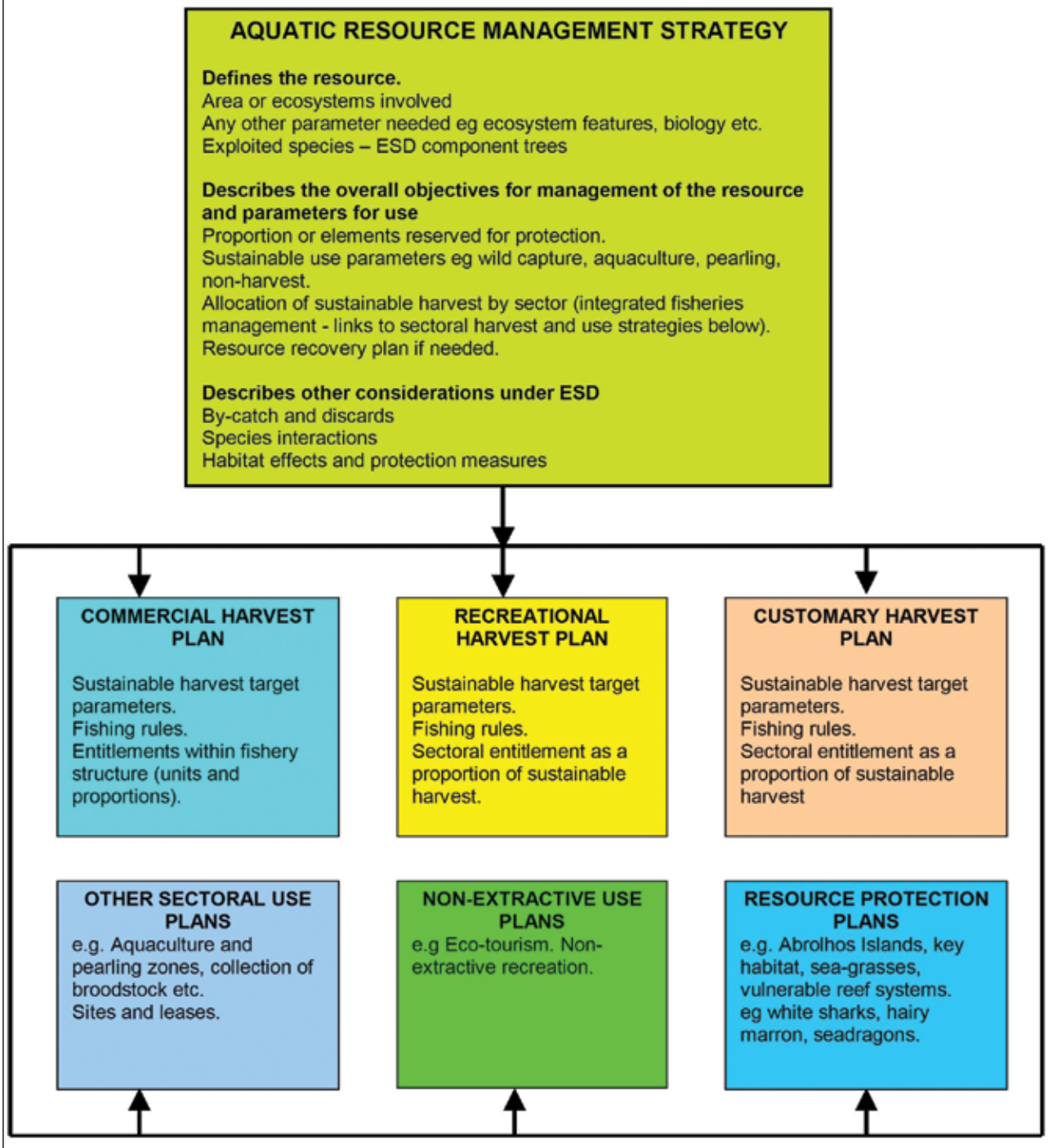


Figure 8. Resource planning and management framework

model that operates under the Commonwealth *Fisheries Management Act*. Operational elements may also be devolved to industry or community legal entities under *Aquatic Resource Management Agreements*.

Resource Protection Plans

Resource Protection Plans are also subsidiary legislation, but may be described in terms of biological units (eg. area, species or ecological features). They would replace Fish Habitat Protection Areas under Part 11 (of the *Fish Resources Management Act 1994*).

Resource Protection Plans are intended to focus primarily on conservation requirements, will require specific objectives, and provide for either prohibition of human activities on a specified resource, or control of extractive or non-extractive use. They also provide for spatial or temporal "zoning" to manage incompatible uses.

Resource Protection Plans would need to take into account harvest parameters, sectoral allocations fishing access rights, and other aquatic management arrangements. These plans may be provided under the proposed Aquatic Resource Management Act (eg. The Abrolhos Fish Habitat Protection Area) or may refer directly to a management plan under other relevant legislation such as the *Conservation and Land Management Act* (eg. Ningaloo Marine Park).

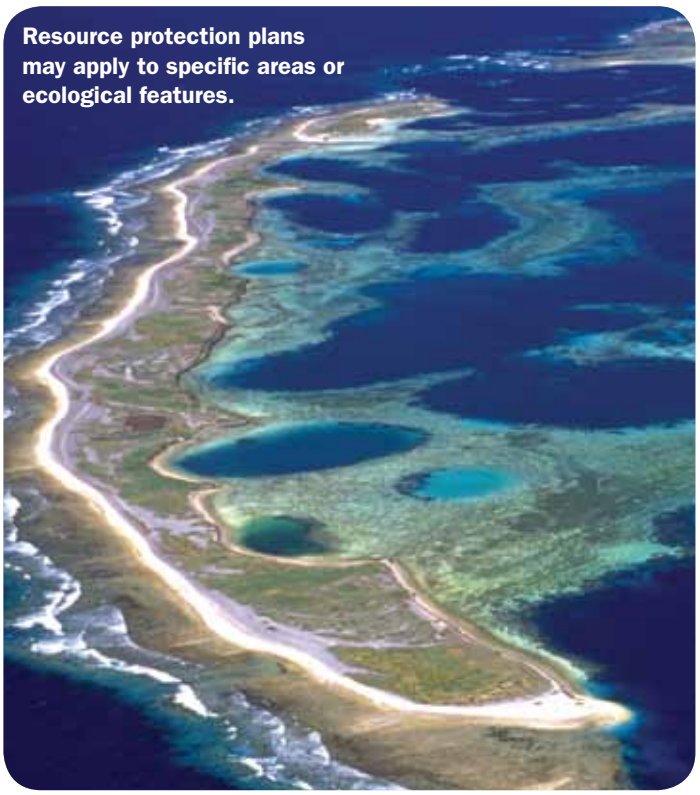
Importantly, it is proposed that their structure would take proper account of International Union for Conservation of Nature (IUCN) criteria for marine protected areas. A key point is that these resource "tools" may be applied in a spatial sense, or to enable broadscale protection of critical biological features such as seagrass beds, sea wrack or reef habitats from deleterious activities.

Sustainability Orders

Sustainability Orders broaden the ability of the Minister to manage time-critical situations in regard to sustainability or biosecurity issues that fall outside the scope of either a Sectoral Harvest Plan or Resource Protection Plan.

Regulations

Regulations enable the Minister through the Governor to establish fishing rules outside a



Resource protection plans may apply to specific areas or ecological features.

Sectoral Harvest Plan or Resource Protection Plan primarily aimed at meeting expectations of social equity, or constraining inappropriate practices. This provides a clear separation between aquatic resources managed with clear biological goals, and lower risk resources primarily managed for social or economic reasons. No significant change is proposed in relation to these powers.

4.5.2 Planning and approval process

The proposed process (Figure 9) provides greater delegation of responsibility and devolution of power for the operational management of sectoral harvests.

To achieve this the proposed new Act envisages the establishment of a responsible statutory office at a level below that of Minister, which has powers to prepare ("determine") draft management strategies, and conduct limited operational management within this framework once approved ("directions").

The establishment of a statutory role would enhance the focus on sustainability outcomes under the new Act.

Further devolution of operational responsibility to industry or community legal entities for aspects of sectoral harvesting is envisaged under powers to create 'Aquatic Resource Management Arrangements'.

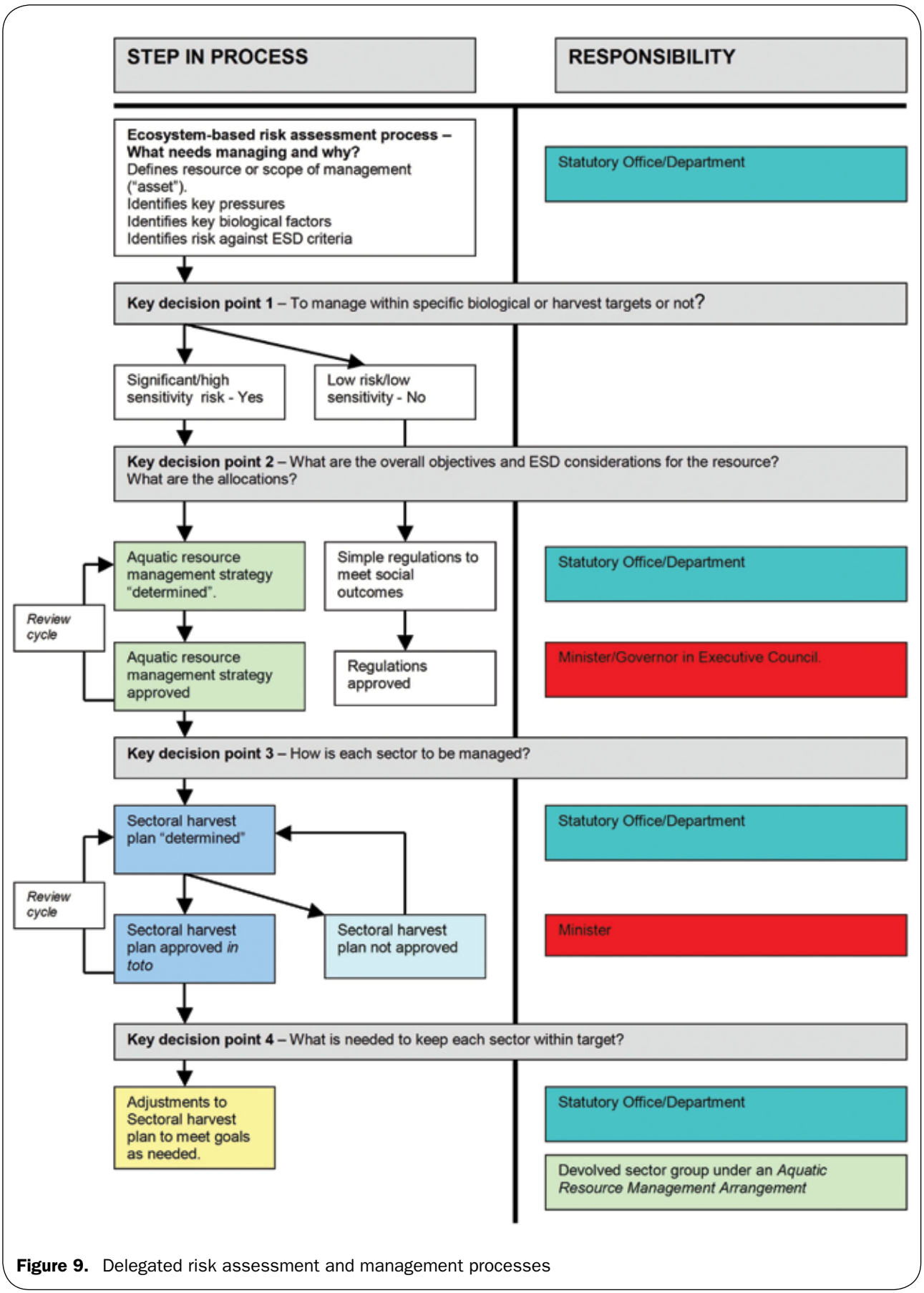


Figure 9. Delegated risk assessment and management processes

In effect the decision to manage a resource is made by the Minister and the overarching Aquatic Resource Management Strategy is either approved *in toto* – or rejected. If the original strategy is rejected by the Minister it is reconsidered and resubmitted.

The critical element is that the plan is outcome focused. This approach recognises that biological outcomes are best achieved through a "package" of regulatory and other measures which interact. The process helps obviate the pitfall of a strategy being adopted in part – and the cost and time involved in re-iterations until the accepted mix achieves the stated outcomes.

Governance structure

The proposed governance structure (Figure 10) proposes the establishment of a statutory role under the Act, which is responsible for aquatic sustainability outcomes, at a level below that of Minister. The new role would have specific powers and responsibilities delegated by statute in relation to the management of aquatic resources.

This model is one step further devolved than a departmental model, but does not go as far as the commonly envisaged model inherent in a Statutory Fisheries Authority, and is much broader in cross-government and cross sectoral application.

A key point is that of separating strategic from operational decision-making. Getting decision-making at the right level in government is a critical success factor for natural resource management (Commission of the European Communities, 2009).

A devolved governance structure provides a number of features not generally encompassed by a standard departmental model. These include:

- A separation of strategic government functions from operational management of biological resources.
- A greater focus on integrating aquatic resource management at the point of planning.
- Greater transparency in decision-making.
- Enhanced stakeholder engagement in a structured process.
- Greater capacity for delegation of functions and powers, both within government and to industry and community groups.
- Placing decision-making and operational management at the right level for the nature of the issue.

The creation of a legal role and a supporting governance and advisory process also provides a much clearer structure that can work 'across Government' to provide a focus for ecologically sustainable aquatic resource management and the allocation of access.

It also provides a greater degree of impartiality and outcome focus in the advisory processes inherent in resource planning.

This hybrid model also avoids some of the inherent weaknesses experienced in highly devolved structures like Statutory Authorities, such as an inability to achieve necessary legislative reform and narrowness of focus on sectoral interests.

At present, aquatic resource management functions within Government are highly compartmentalised within separate portfolios. An overarching role responsible for aquatic sustainability would provide both a clearing house for 'across Government' policy issues, and, importantly, clearer linkages between the various elements of government policy and operational management in this area.

Without the creation of a statutory office in this way, the options for further delegation or devolution of power remain extremely limited and the capacity for Government to work efficiently across portfolios remains restricted.

It is envisaged that such an office would be supported by an expertise-based advisory committee, which would be empowered and required to seek extensive stakeholder engagement in the management planning and review process.

A further degree of co-management and community/industry stewardship would be provided by the ability of the Minister to enter 'aquatic management arrangements' with legal entities which could assign contractual responsibility for aspects of operational management.

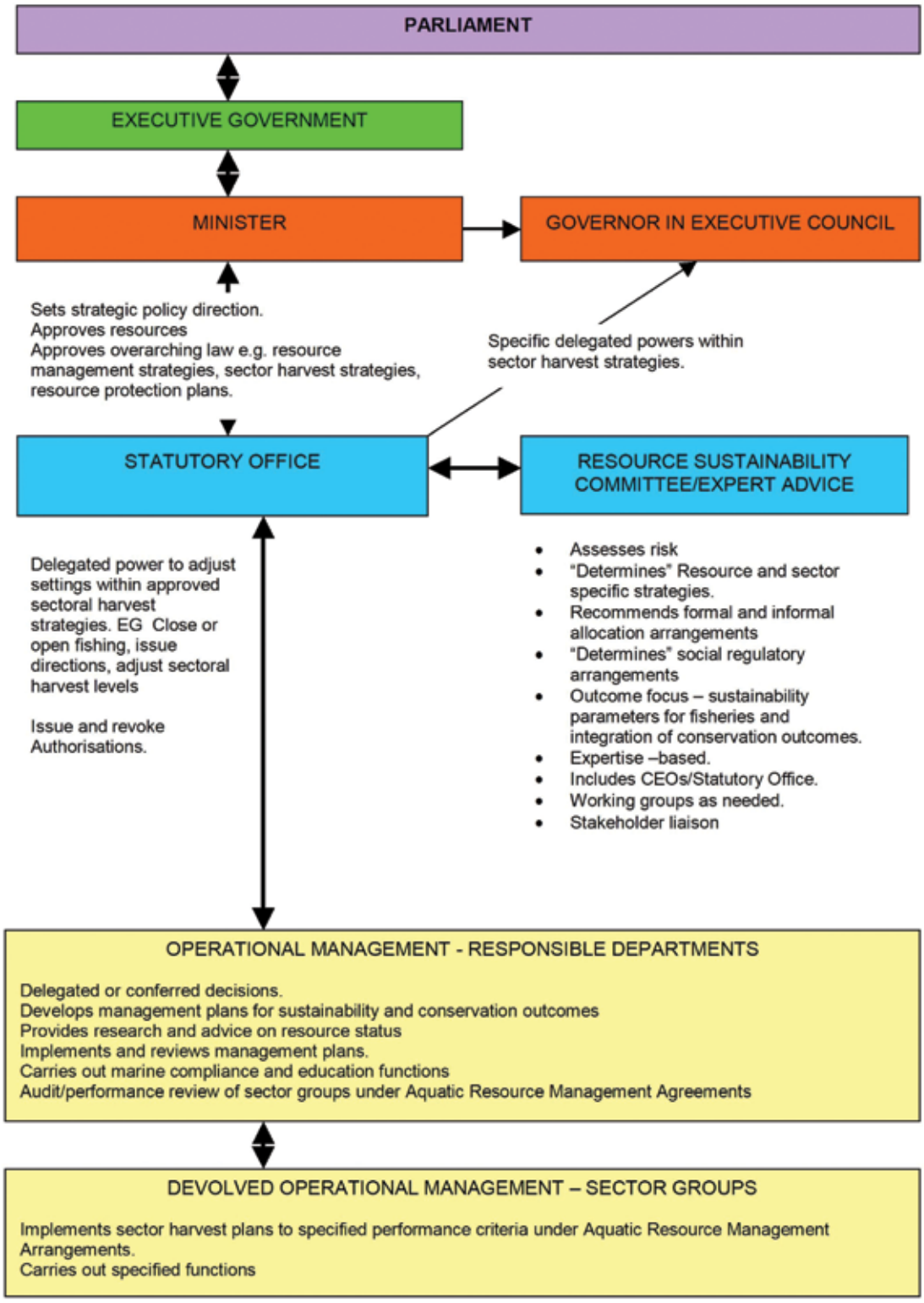


Figure 10. Aquatic resources governance structure

5. OTHER SPECIFIC CONSIDERATIONS

The proposed new Act will build on the structure of the existing *Fish Resources Management Act 1994* (FRMA), but will encompass a number of new or improved provisions that seek to address or clarify powers for the management of higher level critical strategic issues. Some of these issues were previously canvassed in the 2003 review of the Fisheries Statutory Management Authority Advisory Committee (Fisheries Statutory Management Authority Advisory Committee 2003).

Specific considerations in the new Act will include:

Primary emphasis on biological sustainability

A broader revised purpose and the inclusion of a definition of ecologically sustainable development to replace the objects of the old Act.

Clear and transparent guidelines for decision making

Inclusion of "principles" based on ESD and ecosystem management to guide the application of the Act.

Photo: Henrique Kwong

A number of amendments are proposed to give greater security of access to all harvest sectors.

Resource security and "fishing access rights" for all harvest sectors:

Currently, clear statutory ("black letter law") fishing access rights ("entitlements") only exist under commercial fisheries management plans created under Part 6 of the FRMA. All other access is essentially common law as modified by regulation. A number of amendments are proposed to give greater security (and concurrent responsibility) to all harvest sectors. These include:

- Explicit allocations of a defined resource published in the overarching Aquatic Resource Management Strategy. These will provide a clear statement by government of the approved harvest regime and allocations by sector. The model of proportional allocation developed under the Department of Fisheries' Integrated Fisheries Management strategy will be used.
- Explicit objectives for the resource under management and for each harvest sector within the relevant sectoral harvest strategy.
- Continuity of fishing access rights if resource management or sectoral harvest strategies are terminated by a clear statement of interest for each sector, and for individual commercial interest holders. A model based on the "statutory fishing rights options" used by the Commonwealth is proposed.

Linkages between marine parks, aquatic wildlife management and the aquatic resource management framework

The development of Aquatic Resource Management Strategies under the new Act will provide for formal recognition of interactions with aquatic management under other State and Commonwealth legislation and *vice versa*.

The demarcation of jurisdiction over aquatic resources and terrestrial resources will be further clarified by consequent amendments to relevant legislation.

Broader powers under the new Act will also allow operational management of wildlife and ecosystem issues as they relate to harvested fisheries, as well as the creation of management regimes which incorporate specific conservation outcomes.

Photo: Jim Lochman

Broader powers will allow more effective management of relevant ecosystem issues such as by-catch reduction and aquatic wildlife conservation.

Streamlined commercial fishing arrangements

A model consisting of three discrete licence types is under consideration to replace the multiple permits now required. These would be based on the Managed Fishery Licence (MFL/access right), which would include registration of boats, gear and other elements of the fishing operation; a "fishing masters licence" which contains no access right, but licences the person directly in charge of the fishing operation; and specific licences issued under regulation for fishing operations that occur outside fisheries with a sectoral harvest plan. To operate in a fishery an MFL, or an authority under an MFL, together with a Fishing Master's licence, would be required. Crew would be registered as part of the operation, but not licensed.

Other considerations include:

- Simplified management arrangements for commercial fisheries, including the removal of 'interim' managed fisheries as a class of their own. Fisheries in this category would either move to a management plan (Sectoral Harvest Strategy) or become fished under licences created by regulation.
- Longer term consolidation and grouping of access rights. The new Act envisages that smaller fisheries may be bundled together under more consolidated management regimes, reducing regulatory and administrative complexity and providing fishers with clearer reference points for rules and entitlements.

Improved management and resource security for recreational fishing sector

The Aquatic Resource Management Strategy for each resource will contain a clear statement of allocation or estimated harvest share for each sector, as determined through the Department of Fisheries' Integrated Fisheries Management process. This will provide the recreational fishing community for the first time with a clearly-stated and legally-constituted fishing access right for managed fishery resources. This will be supported by management objectives in each Sectoral Harvest Plan, and a further statement of sectoral entitlement published as subsidiary legislation.

It is proposed that such a collective entitlement would, in the first instance, be held by government on behalf of the community, but will allow flexibility

in future for the use of these entitlements for a variety of purposes, in due course.

The creation of explicit sectoral harvest plans will enable a sharper focus on outcomes, along with greater flexibility in the management tools applied to recreational fishing sector allocations.

Head powers for social regulation of recreational fishing will be modified to allow the development of a greater range of more flexible management options under either a Sectoral Harvest Plan or regulation for total sectoral, as well as individual, catches. In the medium term, this provides the opportunity to focus rigorous management on the areas of greatest biological risk and to considerably simplify the existing fishing rules, such as bag and size limit controls for species considered to be robust.

Sector-level data collection and education for highest risk recreational fishing activities will be informed through the recently introduced Recreational Fishing from Boat Licence (RFBL). At a fishery level, the licensing structure for recreational fishing will focus on authorisations to operate under the specified sectoral harvest plan for high risk fish resources, rather than gear, with gear use controlled through subsidiary legislation as required.

Penalties for breach of a Sectoral Harvest Plan for non-commercial fishing will be scaled to better match the seriousness of the offence and the vulnerability of the resource.

Integration of customary fishing within aquatic resource management framework

Customary fishing will be explicitly included in the new Act, with flexible management capability provided through either sectoral resource harvest plans or broad regulatory powers.

Co-management, stewardship and "delegation"

The new Act will provide broad head powers for the Minister to create and enter into "aquatic resource management arrangements" with specified legal entities. This creates the capacity to hand-over specific aspects of resource management to entities outside government under specified conditions.

The "arrangement" would take the form of a contract with Government for the delivery of specified services or outcomes in relation to the resource or sectorial allocation in question. Appropriate mitigations or penalties would be provided in the terms of the contract.

Integration of pearling within the aquatic resource management framework

The *Pearling Act 1990* will be repealed and the management of the industry incorporated under the provisions of the new Aquatic Resource Management Act.

The wild stock harvest elements will be managed under a Sectoral Harvest Plan with similar entitlements to a commercial fishery, while the grow-out components will be managed under the aquaculture or other relevant provisions of the Act.

This will result in considerable simplification of existing licence requirements and provide a far more flexible regulatory framework that focuses on biological and industry outcomes.

Critical powers for urgent biosecurity responses

The management of disease risk issues is presently covered under the *Biosecurity and*

Cross-border compliance is a critical issue in some fisheries.

Photo: Henrique Kwong

Agriculture Management Act 2007 (BAM Act).

However the complexity of this Act and its requirements for detailed regulation are likely to present operational difficulties from a fisheries perspective, given the nature of water-borne organisms. A further consideration is that the critical elements of the BAM Act have yet to be proclaimed.

During emergencies, such as disease outbreaks or the introduction of invasive exotic species, the ability to act swiftly to contain the movement of biological material and control other vectors of transmission is critical.

In addition there is an ongoing lack of clarity about the management of fish translocations and stocking of fresh and salt-water bodies.

Specific issues include:

- Vessels entering WA waters and the removal of exotic species.
- Release of fish into the wild.
- Policy framework for fish stocking and the release of fish.

- Rapid response and ability of Minister for Fisheries to initiate control measures.
- Import of live fish and raw fish products into WA.
- Control of 'feral fish' and risk assessment process to determine targets.

It is proposed to provide broad head powers in the new Aquatic Management Act that can regulate these issues, including translocation and stocking through an appropriate risk assessment process, and will enable the Minister to respond rapidly to disease or feral organism outbreaks.

Improved management and integration of aquaculture within the aquatic resource management framework

Revised aquaculture provisions will provide for the streamlined management of aquaculture.

These will include the submission of management and environmental monitoring plans as part of the licence application process. Responsibility for reporting will be relegated to the industry proponents, in a similar process to the 'safety case' model used in the petroleum and gas industry.

Provisions for the establishment of aquaculture zones and the collection of broodstock will also be made.

Removal of Act level fish processing requirements

The fish processing provisions contained in Part 7 of the FRMA will be repealed. Head powers to regulate establishments involved in the wild-capture fishery supply chain will be broadened where this is necessary for effective management of the fishery.

Inter-state cooperation and fisheries enforcement

The new Act will contain extended powers that allow the Minster to enter bi-lateral arrangements for fisheries compliance and management with other States, and extend the ability to enforce specific provisions of Western Australian legislation across State boundaries if necessary.

Amendments to Section 250 of the FRMA will also provide greater flexibility for releasing and sharing fisheries data for the purposes of the Act, while protecting sensitive fishing information. ■

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