



Submission to Independent Scientific Audit of Marine Parks in NSW

7 October 2011

The EDO Mission Statement:

To empower the community to protect the environment through law, recognising:

- the importance of public participation in environmental decision making in achieving environmental protection
- the importance of fostering close links with the community
- the fundamental role of early engagement in achieving good environmental outcomes
- the importance of indigenous involvement in protection of the environment
- the importance of providing equitable access to EDO services around NSW

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Introduction

The Environmental Defender's Office NSW (**EDO**) welcomes the opportunity to comment on the Independent Scientific Audit of Marine Parks.¹ The EDO is a community legal centre with over 25 years' experience in public interest environmental and planning law.

The importance of science in the development of policy should not be underestimated. It is hoped the current review process results in renewed opportunities for a comprehensive range of science-based management strategies, in order to better protect declining biodiversity and threatened marine populations. These strategies should include creating, maintaining and managing marine parks.

This submission brings a range of issues to the Panel's attention for consideration in its review. Of the nine terms of reference for the independent scientific audit, the EDO will comment on the following three:

1. review the domestic and international commitments to conserving marine biodiversity, current actions for meeting these commitments and the effectiveness of these actions;
3. review the degree to which all threats to the varying types of marine environments have been properly identified and prioritised. The Panel will then consider the degree to which the marine parks process is anticipated to address each significant threat;
8. make recommendations on how all current potential threats to the marine environment could be effectively addressed and which bodies or agencies would be most appropriate to address them.

We paraphrase these terms of reference (**TORs**) where appropriate in headings below.

TOR 1: Domestic and international commitments to conserving marine biodiversity, current actions to meet these commitments and the effectiveness of these actions

These comments focus on:

- Australia's international and national commitments to marine biodiversity conservation (Parts A and B below);
- the operation of the legislation underpinning NSW marine parks and fisheries management, including a case study on the Grey Nurse Shark (Part C).

The analysis notes the various commitments to ecologically sustainable development (**ESD**) and the 'precautionary principle' at these jurisdictional levels. However, the evidence does not demonstrate this approach is being sufficiently implemented. We return to the importance of applying the precautionary principle under the framework for marine biodiversity protection in the final part of the submission (TOR 8).

¹ Available at: <http://www.marineparksaudit.nsw.gov.au/>.

Australia has vast marine biodiversity, ranging from coral reefs in tropical waters, to giant kelp forests in the cool waters in the south. Indeed, a recent survey has ranked Australia's waters as being the most biologically diverse in the world, with up to 80% of species yet to be discovered.² This adds to the challenge of designing a legal framework to protect not only around 33,000 known marine species;³ but also to address potentially uncertain impacts on a potentially vast range of unknown species.⁴

Part A – International Commitments to establish a network of Marine Sanctuaries

Australia has made a range of international commitments to protect marine biodiversity and establish marine sanctuaries, as the Australian Marine Conservation Society notes:⁵

- *World Summit on Sustainable Development (2002): Australia and other global leaders agreed to have network of MPAs established by 2012.*
- *World Parks Congress (2003): countries recognised that a minimum of 20-30% of each marine bioregion should be highly protected.*
- *World Conservation Congress (2004): countries strengthened the above commitments and supported a representative system of Marine Protected Areas and;*
- *The Convention on Biological Diversity (UNEP 1992): broad commitment to the protection of plants and animals including sea life.*

Part B – National Commitments

At the national level, a range of policies also commit governments to the protection of marine habitats.⁶

National Strategy for Ecologically Sustainable Development (1992)

Under the COAG-endorsed National Strategy for ESD, the NSW Government has a responsibility to manage the environment and marine resources in line with ESD principles.⁷ We particularly note the central objectives under 'Nature Conservation System' (National Strategy, Part 3, at 10.1):

to establish across the nation a comprehensive system of protected areas which includes representative samples of all major ecosystems, both terrestrial and marine; manage the overall impacts of human use on protected areas; and restore habitats and ameliorate existing impacts such that nature conservation values are maintained and enhanced.

² ABC Online, "Australian waters ranked most biologically diverse" (3/8/2010) <http://www.abc.net.au/news/stories/2010/08/03/2972318.htm>

³ Census of Marine Life 2010, available at <http://www.coml.org>.

⁴ Around 85% of fish species, 90% of echinoderm species and 95% of mollusc species in the southern waters are unique to Australia. See Walmsley R. and Lashko, A., (EDO NSW) "Are our marine biodiversity laws climate ready?", *National Environmental Law Review*, 2011:2, pp 37-45, at 37.

⁵ See Australian Marine Conservation Society, at http://www.amcs.org.au/WhatWeDo.asp?active_page_id=581.

⁶ Ibid.

⁷ See *National Strategy on Ecologically Sustainable Development* (endorsed by COAG, 1992), available via <http://www.environment.gov.au/about/esd/index.html>. See also *Fisheries Management Act 1994 (NSW)*, s 4; *Marine Parks Act 1997 (NSW)*, s 3;

Inter-Governmental Agreement on the Environment (1992)

Under Schedule 9 of this Agreement (Nature Conservation), the Governments of Australia including NSW agreed to the following:

13. The parties agree that a representative system of protected areas encompassing terrestrial, freshwater, estuarine and marine environments is a significant component in maintaining ecological processes and systems. It also provides a valuable basis for environmental education and environmental monitoring. Such a system will be enhanced by the development and application where appropriate of nationally consistent principles for management of reserves.

14. The parties agree that the national approach to the conservation, protection and management of native species and habitats may include the addition of new areas to reserve systems and protected areas, some of which may be under multiple land use regimes, where such multiple land use does not adversely affect the prime nature conservation function of the reserve or protected area.

15. The parties further recognise that the establishment and management of a reserve system is not in itself sufficient to ensure the protection of Australia's flora and fauna. Off-reserve protection and management, particularly of remnant vegetation, are also required. ...

National Strategy for the Conservation of Australia's Biological Diversity (1996)

This COAG-endorsed strategy is intended to fulfil Australia's obligations under the international Convention on Biological Diversity.⁸ The following two objectives are particularly relevant:

Objective 1.4

Establish and manage a comprehensive, adequate and representative system of protected areas covering Australia's biological diversity.

Objective 1.5

Strengthen off-reserve conservation of biological diversity.

The 1996 strategy noted that protected marine and estuarine environments are largely managed on a multiple-use zoning basis, with a very small percentage being set aside purely for nature conservation.

Draft Commonwealth Biodiversity Policy (2011)

Complementing the above strategy, the Australian Government has recently released a draft Biodiversity Policy for consultation. Under the draft principle, "The conservation estate is the backbone of our efforts", the Australian Government says it will:

continue to work with all stakeholders and state and territory governments to build a representative system of marine protected areas, and to ensure the sustainable management of fishing, mining and tourism activities in these areas.⁹

⁸ The strategy was prepared by the Australian and New Zealand Environment and Conservation Council (ANZECC) and endorsed by the Council of Australian Governments (COAG) in 1996. See Australian Government Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), <http://www.environment.gov.au/biodiversity/publications/strategy/index.html>.

Part C – NSW specific legislation

New South Wales has also committed to protect marine biodiversity and resources in accordance with the principles of ESD under specific state-level legislation – including the *Marine Parks Act 1997* and the *Fisheries Management Act 1994*, as explored below. It is understood that NSW currently has approximately 6.7% of waters in marine sanctuaries, and that this compares with a minimum of 20% which would be needed to meet IUCN (World Conservation Union) commitments for marine protected areas.¹⁰

Marine Parks Act 1997 (NSW)

Objects

This Act provides for the declaration of marine parks; and for other purposes.¹¹ The objects of this Act are to *conserve* marine biological diversity and marine habitats, to *maintain* ecological processes in marine parks, to *provide for ecologically sustainable use* of fish and marine vegetation in marine parks, and to *provide opportunities* for public appreciation, understanding and enjoyment of marine parks.¹² Fishing is permitted in NSW marine parks but remains subject to general fisheries law, and controlled by zoning regulation.

Declaring marine parks (Part 2)

The Governor may by proclamation declare any area of Crown Land a marine park,¹³ or vary an area of a marine park¹⁴ dealt with in Part 2 of the Act. A declaration of a marine park revokes any declaration of the area as an aquatic reserve under the Fisheries Management Act.¹⁵ To be able to declare an area a marine park, the Governor may have to seek consent from a holder or occupier of the land.¹⁶

The recently enacted moratorium on new and amended marine parks suspends the operation of these and other provisions for up to five years (discussed below).

Regulations (Part 3 generally)

The regulations may make provision for or with respect to the management, protection and conservation of marine parks.¹⁷ There is wide scope to make regulations for the use and enjoyment of the marine park, regulation or prohibition of activities, protecting cultural heritage, prescribing fees, etc.¹⁸ Regulations can also be made for the use and management of a marine park by means of a zoning plan (also affected by the moratorium).¹⁹

⁹ Department of SEWPaC, available at <http://www.environment.gov.au/epbc/publications/consultation-draft-biodiversity-policy.html>.

¹⁰ See IUCN (2003), *Worlds Parks Congress Recommendations*, p 80.

¹¹ *Marine Parks Act 1997* (NSW), Long Title.

¹² *Ibid*, s 3.

¹³ *Ibid*, s 6.

¹⁴ *Ibid*, s 9.

¹⁵ *Ibid*, s 10.

¹⁶ *Ibid*, s 6.

¹⁷ *Ibid*, s 15.

¹⁸ *Ibid*, s 17.

¹⁹ *Ibid*, 17B.

Operational Plans (Part 4)

Part 4 deals with operational plans for marine parks, which are formed to identify strategies, actions and activities to operate a marine park consistent with the Act's objects.

Mining and development applications (Part 3, Division 2)

Prospecting or mining for minerals in marine parks is prohibited, except as authorised as an Act of Parliament.²⁰ Before determining a development application under Part 4 of the EPA Act for development within²¹ or affecting a marine park,²² a consent authority (or Minister) must take into consideration: the objects of the Act, objects of the zone if there is a zoning plan, permissible use of the area under the regulations, any relevant marine park closures and, where an Environmental Impact Statement is required, obtain consent of relevant ministers where required.²³

The Marine Parks Authority, Advisory Council and Advisory Committees (Part 5 and 6)

The Marine Parks Authority, Advisory Council and Committees are established to consider proposals for marine parks and make recommendations for their operation.

Marine Parks Amendment (Moratorium) Act 2011 (NSW)

The EDO notes the passage of this Private Member's Bill by the NSW Parliament on 8 September 2011 with support from the NSW Government. The amending Act places a five year moratorium on new marine parks, alterations and zoning plan reviews. The moratorium period may be shortened following the completion, publication of, and government response to, an independent scientific audit of NSW marine parks.²⁴ In the EDO's view, this is an unwelcome development that subverts a precautionary approach, and risks marine biodiversity for present and future generations of beneficiaries – including divers, fishers, tourists and the broader Australian community.

Fisheries Management Act 1994 (NSW)

The *Fisheries Management Act 1994 (FM Act)* provides the legislative basis for management measures relating to NSW fisheries. As the objects of the FM Act make clear, the promotion of viable commercial fishing, aquaculture and recreational fishing – along with other social, economic and cultural benefits – is to occur within an overarching framework of conservation and ESD. Among other things, the objects explicitly refer to conserving fish stocks and key fish habitats, along with threatened species, populations and ecological communities of fish and marine vegetation.²⁵

²⁰ *Marine Parks Act 1997* (NSW), s 18.

²¹ *Marine Parks Act 1997* (NSW), s 19(1).

²² *Marine Parks Act 1997* (NSW), s 20.

²³ *Marine Parks Act 1997* (NSW), s 19(4).

²⁴ The *Marine Parks Amendment (Moratorium) Act 2011* was assented to on 13 September 2011. See <http://www.parliament.nsw.gov.au/prod/parlament/nswbills.nsf/131a07fa4b8a041cca256e610012de17/b2301600f2f894d3ca257886002b6eca?OpenDocument>.

²⁵ *Fisheries Management Act 1994* (NSW), s 3 (emphasis added):

(1) *The objects of this Act are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations.*

(2) *In particular, the objects of this Act include:*

Offences under the FM Act demonstrate the seriousness with which Parliament views the decline of threatened species. In particular, harming a threatened species, population or ecological community (or interfering with them, damaging habitat, etc) is punishable by a fine of up to 2000 penalty units (\$220,000), two years' imprisonment or both.²⁶ Parliament has also made it an offence to interfere with threatened species of fish – punishable by a fine of up to 1000 penalty units (\$110,000), two years' imprisonment or both. However, in stark contrast to the combined aims of the Marine Parks Act and the FM Act, marine biodiversity continues to decline rapidly worldwide.²⁷

NSW case study – Grey Nurse Shark

In NSW, the Grey Nurse Shark is one species that exemplifies this trend. Unfortunately, over the last three decades, the shark's increasingly protected status has been paralleled by its ongoing decline. Since its first listing as a protected fish in NSW in 1984, the species has been elevated to 'vulnerable' under the *Fisheries Management Act* in 1999; to 'endangered' in 2000; and to 'critically endangered' in 2008.²⁸

The Grey Nurse Shark's decline, despite this recognition, demonstrates that offence provisions must be supplemented by robust, science-driven management actions. The EDO believes marine parks must be a central part of these actions. In our view, scientific evidence has demonstrated the need for sanctuaries to protect this species, and that this can occur through the use of marine parks.

In its recent submission to the Department of Primary Industries (DPI) on Grey Nurse Shark protections, in summary the EDO recommended:

- a) Creation of appropriate protected areas** within a 1.5km radius of aggregation sites as part of any Grey Nurse Shark management strategy.
- b) Elevated protection status to all critical habitat areas** – from multiple use sites to a classification analogous to a sanctuary zone within a marine park ('no-take' zones).
- c) Reinstatement of fishing closures, and new closures** at key aggregation areas;
- d) Improved provisions and tools for monitoring and enforcement**, to increase compliance with fishing laws.

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- (a) to *conserve fish stocks and key fish habitats, and*
 - (b) to *conserve threatened species, populations and ecological communities of fish and marine vegetation, and*
 - (c) to *promote ecologically sustainable development, including the conservation of biological diversity, and, consistently with those objects:*
 - (d) to *promote viable commercial fishing and aquaculture industries, and*
 - (e) to *promote quality recreational fishing opportunities, and*
 - (f) to *appropriately share fisheries resources between the users of those resources, and*
 - (g) to *provide social and economic benefits for the wider community of New South Wales, and*
 - (h) to *recognise the spiritual, social and customary significance to Aboriginal persons of fisheries resources and to protect, and promote the continuation of, Aboriginal cultural fishing.*

²⁶ See *Fisheries Management Act 1994* (NSW), Part 7A (Threatened species conservation), Division 4 (Offences). Various defences apply.

²⁷ See, eg, Title: Rogers, A.D. & Laffoley, D.d'A. 2011. *International Earth system expert workshop on ocean stresses and impacts*. Summary report. IPSO Oxford, 18 pp. Summary available at: <http://www.stateoftheocean.org/ipso-2011-workshop-summary.cfm>.

²⁸ DPI Discussion Paper on Grey Nurse Shark protections (2011), p 2. The Grey Nurse Shark is also listed as 'critically endangered' on Australia's east coast on the IUCN Red List of Threatened Species. See <http://www.iucnredlist.org/apps/redlist/details/44070/0>.

This creation of protected areas and sanctuary zones accords with recommendations of an independent scientific review commissioned by the NSW Government in 2003.²⁹ According to the DPI Discussion Paper on Grey Nurse Shark protections (2011): “These blanket recommendations were not implemented as a large number of sites were under review as part of the marine parks process.” This lack of implementation, coupled with the current marine parks moratorium, demonstrates the practical danger of ongoing delays in conservation measures – contributing to the ongoing decline of the Grey Nurse Shark.

TOR 3: Whether all threats to marine environments have been properly identified and prioritised; and the use of marine parks to address these threats.

Climate change impacts on marine biodiversity

Recently the EDO has been looking into the impacts of climate change as one of the major threats facing marine ecosystems and biodiversity. Specific climate change related stressors will include increased ocean temperatures; acidification; changes in salinity; changes in ocean biochemistry, circulation and currents, rainfall and run-off levels; and increased frequency of extreme events such as wave action and storm surges.³⁰ Resulting environmental change will also directly affect marine species’ morphology (form and structure) and physiology – including rates of metabolism, reproduction, development, photosynthesis and respiration, and reproductive output.³¹

Adapting to climate change will be an extremely complex and long term problem, emphasizing the need to move early to ensure our marine biodiversity laws are capable of appropriately responding to future challenges. In spite of this, Australia is in the “very early stages of adapting to climate change”³² – an issue which must be addressed at the state as well as federal level.

Other threats

Climate change will act in synergy with other anthropogenic factors, such as pressure from fishing, to produce numerous direct and indirect effects and are likely to exacerbate climate-induced changes.³³

While we will not detail the effects of all of these, other acknowledged threats to marine biodiversity include:³⁴

- over-exploitation of fisheries
- coastal development
- pollution

²⁹ Stevens, J. (2003), “Review of grey nurse shark protection”, CSIRO, eg p 17.

³⁰ See, eg, Walmsley R. and Lashko, A., (EDO NSW) “Are our marine biodiversity laws climate ready?”, *National Environmental Law Review*, 2011:2, pp 37-45.

³¹ Ibid, pp 37-38.

³² House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts, ‘Managing our coastal zone in a changing climate,’ October 2009

³³ Morton, S., O. Hoegh-Guldberg, et al. (2009). “The big ecological questions inhibiting effective environmental management in Australia.” *Austral Ecology* **34**: 1-9; Harley, C. D., A. R. Hughes, et al. (2006). “The impacts of climate change in coastal marine systems.” *Ecology Letters* **9**(2): 228-241.

³⁴ Keller, B., D. Gleason, et al. (2009). “Climate change, coral reef ecosystems, and management options for marine protected areas.” *Environmental Management* **44**(6).

- habitat destruction, and
- some forms of tourism.

Non-climate related stressors can increase vulnerability to climate change by reducing resilience, and can also reduce adaptive capacity because of resource deployment to competing needs.³⁵ As a result, any consideration of the likely impacts of climate change on marine biodiversity must include consideration of other stressors on marine biodiversity. Indeed, it has been suggested that:

*easing the impacts of fisheries, pollution, habitat destruction, and other human impacts on marine ecosystems may be our best management option for marine climate change impacts in the near future and over local and regional scales.*³⁶

Over-fishing

In relation to fisheries legislation, the Hawke Review noted:

*more needs to be done to ensure that Australian fisheries remain viable in the long term. This is particularly important in light of the mounting pressures on fisheries including the yet unquantifiable impact of climate change on fisheries and the marine ecosystem, public concern about the sustainability of commercial fish species, the interaction of fisheries with threatened marine species and ecological communities and the decline in some fish stocks in Australia and around the world.*³⁷

While the primary objective of marine parks is the protection of marine biodiversity, well-designed marine parks can be used to meet multiple marine management objectives. One case in point is the need to implement management measures outlined under the NSW commercial fisheries' Fisheries Management Strategies. Extensive work has been done to identify the actions required to make fisheries management in NSW sustainable, and there are a long list of actions required. Rather than attempt to cover all issues raised, we will illustrate this point with one example.

In January 2007 the NSW Government released the Fisheries Management Strategy for the Ocean Trawl Fishery.³⁸ Amongst other things, this strategy identified the need to close approximately 75 per cent of all State waters located south of Barrenjoey Point to all trawling (Action 1.1b). Recent decisions in marine park management have seen a number of marine parks closed to trawling (although some of these decisions were later reversed in Solitary Island Marine Park and Jervis Bay Marine Park). However, these closures demonstrate the ability to meet multiple management goals through the implementation of marine parks.

³⁵ Hennessy, K., B. Fitzharris, et al. (2007). Australia and New Zealand. *Climate Change 2007: impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. M. L. Parry, O. F. Canziani, J. P. Palutikof, P. van der Linden and C. E. Hanson. Cambridge, Cambridge University Press: 507-540, at 18.

³⁶ Hobday, A. J., T. A. Okey, et al. (2006). Impacts of climate change on Australian marine life: Part A. Executive Summary. Report to the Australian Greenhouse Office. Canberra, Australia, at 30.

³⁷ Hawke A., *Independent review of the Environment Protection and Biodiversity Conservation Act 1999* (2009), p 207, available at <http://www.environment.gov.au/epbc/review/index.html>,

³⁸ See http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0010/224479/Ocean-Trawl-FMS.pdf, p 55.

TOR 8: Effectively addressing current potential threats to the marine environment

Activating the precautionary principle

In order to slow or reverse the decline of marine biodiversity, the EDO believes more needs to be done to apply a precautionary approach to marine biodiversity protection – and that marine parks are central to such an approach.

The ‘precautionary principle’ is a fundamental component of the concept of ecologically sustainable development (ESD). In the context of environmental protection, it is essentially about the management of scientific risk. The principle is defined in Principle 15 of the *Rio Declaration (1992)*³⁹ as follows:

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.

As noted above, the Marine Parks Act, the FM Act and a range of other NSW laws including ESD in their objects. Despite this, the approach to management actions to protect marine biodiversity does not appear to be following the precautionary principle in relying on existing scientific evidence. This is further exemplified by the recent passage of the Marine Parks Moratorium Bill.⁴⁰

The EDO supports ongoing scientific studies involving marine parks, their effectiveness, and their role alongside other management actions. However, the EDO does *not* support the use of additional scientific studies as a reason to suspend increased protection measures. As noted, this approach directly contradicts the precautionary principle; and it is of particular concern given the increasing threats to, and corresponding decline in, marine biodiversity. The importance of the precautionary principle is corroborated by other sources below.

Recent national and international reports on marine biodiversity and fisheries

At a University of Oxford summit earlier this year, 27 scientific experts across six countries convened to reflect on ocean stresses and impacts, and propose creative solutions.⁴¹ The expert workshop concluded:

*Unless action is taken now, the consequences of our activities are at a high risk of causing, through the combined effects of climate change, overexploitation, pollution and habitat loss, the next globally significant extinction event in the ocean.*⁴²

³⁹ United Nations Conference on Environment and Development, Rio, 1992 (the “*Rio Declaration*”).

⁴⁰ For example, the Agreement in Principle speech for the Moratorium Bill (10/8/2011) in the NSW Legislative Assembly said the Bill was introduced:

to allow a mechanism whereby the government of the day... can put beyond all doubt that there needs to be a rest period in the creation of new marine parks and extension of sanctuary zones to allow proper scientific studies to take place.

....

I am similarly advised that the Government understands the need for science in the review of all marine parks and certainty before the creation of any new marine parks. ...

⁴¹ See “Multiple ocean stresses threaten ‘globally significant’ marine extinction”, at <http://www.stateoftheocean.org/ips0-2011-workshop-summary.cfm>. (See also footnote 27 above).

The participants recommended four central strategies to address the combined effects of these impacts. While the EDO broadly supports all of these strategies,⁴³ the following two are particularly relevant to the current context in NSW:

- ***Urgent actions to restore the structure and function of marine ecosystems, including the coordinated and concerted action in national waters and on the High Seas ... by states and regional bodies to:***
 - *Reduce fishing effort to levels commensurate with long-term sustainability of fisheries and the marine environment;*
 - *Close fisheries that are not demonstrably managed following sustainable principles, or which depend wholly on government subsidies;*
 - *Establish a globally comprehensive and representative system of marine protected areas to conserve biodiversity, to build resilience, and to ensure ecologically sustainable fisheries with minimal ecological footprint; ...*⁴⁴
- ***Proper and universal implementation of the precautionary principle by reversing the burden of proof so activities proceed only if they are shown not to harm the ocean singly or in combination with other activities.***⁴⁵

The EDO recommends that the Scientific Audit Panel:

- consider adopting the above recommendations in the context of its review of NSW marine parks, and
- provide tailored guidance on how these strategies could be practically applied by the NSW Parliament, Government and relevant agencies.

At the national level, a recent report from the Centre for Policy Development (CPD) found:

- *[Australia's] oceans provide an unrecognised \$25 billion in value every year to our national economy – billions of dollars that are currently unaccounted for in official statistics.*
- *The value of sustainably managed Australian fisheries could increase by 42% over 20 years if global fish stocks collapse.*

We understand these findings are made in the context of the need to properly value marine 'ecosystem services' that contribute to the Australian and NSW economy.

⁴² "Summary of the conclusions and recommendations of the international Earth system expert workshop on ocean stresses and impacts", 20 June 2011, available at http://www.stateoftheocean.org/pdfs/1806_IPSOshort.pdf.

⁴³ For completeness, the other two central strategies (of less direct relevance here) were:

- *Immediate reduction in CO₂ emissions coupled with significantly increased measures for mitigation of atmospheric CO₂ and to better manage coastal and marine carbon sinks to avoid additional emissions of greenhouse gases*
- *Urgent introduction by the UN Security Council and the UN General Assembly of effective governance of the High Seas...*

⁴⁴ The workshop also recommended various controls on harmful and toxic substances, and monitoring and assessment of other potentially harmful marine activities.

⁴⁵ See "Summary of the conclusions and recommendations of the international Earth system expert workshop on ocean stresses and impacts", 20 June 2011 (bold text in the original – underline added). available at http://www.stateoftheocean.org/pdfs/1806_IPSOshort.pdf. See further footnote 27 above.

This is consistent with the principles of ESD, which include improved environmental valuation, pricing and incentive mechanisms.⁴⁶

The CPD report recommended five measures to secure Australia's marine resources:

- ***Protect the assets that underpin our marine estate*** – *We must treat our marine estate as a portfolio of valuable ecological assets. We need to balance our investment portfolio across a well-managed commercial fishing estate; marine protected areas and highly protected areas.*
- ***Rebuild fish stocks*** – *We need to take better care of fish stocks to reduce the risk of collapse. While management measures for our Commonwealth fisheries provide a strong foundation for reducing over-fishing, 42 per cent of our fisheries remain in an over-fished or unknown state.*
- ***Ensure all commercial fisheries are sustainably managed*** – *We need to adjust economic incentives to avoid poverty traps for commercial fishers and loss of resources for tourism and recreation. Around half of Commonwealth fisheries are currently struggling to cope with economic pressure from rising fuel prices, a high Australian dollar and increased competition.*
- ***Establish baseline data for recreational catch and biomass in undisturbed ecosystems*** – *We need better information to avoid sudden collapse of ecosystems. While our knowledge of many commercial fisheries has improved, we don't have enough information on recreational catch and on how marine ecosystems function to manage multiple pressures well.*
- ***Support local communities through marketing and business innovation*** – *We need innovations in marketing and business models to help local economies find opportunities from changing market demand and resource availability.*

The EDO is broadly supportive of these recommendations – noting in particular the importance of marine protected areas alongside sustainably managed fisheries. In our view, the CPD report's findings and recommendations further highlight the need to conserve and protect marine ecosystems – including through marine parks – to ensure the ongoing viability of these ecosystem services for present and future generations.

For further information on this submission please contact Mr Nari Sabukar, Acting Policy and Law Reform Director, EDO NSW, on (02) 9262 6989 or nari.sabukar@edo.org.au

⁴⁶ See *Protection of the Environment Administration Act 1991* (NSW), section 6.