

Input to the EPBC Review Panel on the Interim Report

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22 July 2009

I wish to provide input and comment to the panel on three topics, (1) bioregional planning to address landscape level management, (2) evaluation and reporting of outcome performance and management effectiveness against the objectives of the Act, and (3) harmonising Federal approaches to managing marine fish species.

1. Bioregional planning to address landscape level management

Management at the landscape or regional ecosystem level is one of the biggest challenges to Ecologically Sustainable Development, and climate change is going to exacerbate this challenge. Failure of management at this level has already caused our worst failures in sustainable development, particularly in catchments (e.g. Murray-Darling) and coasts (e.g. the estuaries and coasts of most of our large cities). The economic and social cost of rebuilding failed regional ecosystems is huge, and it simply cannot be done in some contexts.

Management at the landscape or regional ecosystem level is needed to address cumulative impacts and cross sectoral (i.e. multiple use) impacts of development, to provide strategic regional planning of development, and to provide mechanisms for dispute resolution. The integrated planning and management of coastal development is an area of particular need.

At present there are very few mechanisms to coherently or effectively address these issues. The EPBC mechanisms are reactive and mostly triggered by particular events, threats or developments, rather than being proactive, broadly focused and a 'normal' part of planning. Also bioregional plans under the EPBC are limited to the Commonwealth jurisdiction, unless there is specific agreement with other jurisdictions, but most of the most pressing challenges are in non-Commonwealth jurisdictions or are cross jurisdictional.

Further, even in the Commonwealth jurisdiction the existing powers under the Act have proven to be inadequate to address multiple use management, to provide strategic regional planning or to provide effective dispute resolution among competing users, policy makers and regulators. Australia's Oceans Policy was intended to provide a Regional Marine Planning process that could deliver on these issues in the offshore Commonwealth jurisdiction and to provide a mechanism to engage the States on coastal matters. It failed in both. Within the Commonwealth jurisdiction there was no basis under the EPBC Act or the Policy to require that the different users, Commonwealth policy makers and Commonwealth regulators fully engaged in and adhere to a bioregional plan, or to provide effective and binding dispute resolution. The result has been a retreat from the original goals of integrated multiple-use planning and management, even within the Commonwealth jurisdiction, and a focus on the subset of matters that are enabled by the current EPBC Act – most notably the development of the National Representative System of Marine Protected Areas. The system of protected areas is a useful development in itself, with potential benefits at the landscape level. But it is in effect a single sectoral management measure (i.e. to achieve conservation outcomes), it is only a part of what is required to address planning and management of multiple uses for sustainable development of regional ecosystems.

Chapter 10 of the Interim Report raises options for the expanded use of bioregional planning to address landscape level planning and management. I strongly support that direction of development. Specifically I recommend:

- (i) The marine planning process for the Commonwealth jurisdiction is re-invigorated, and in particular re-focused on multiple-use planning and management. In the short term the EPBC powers should be expanded to allow effective integrated planning and management at the landscape level in the Commonwealth marine jurisdiction, including cross sectoral planning, management and dispute resolution.
- (ii) That a set of events and conditions related to failure of management at the landscape level be included in the Act to trigger a requirement for cross jurisdictional integrated planning and management at the landscape level, including cross sectoral planning, management and dispute resolution. This should be used to address coastal development, and the coastal example could be used to establish mechanisms and methods that could be used in other cross jurisdictional situations (eg catchments and land use). The events and conditions that trigger Commonwealth involvement through the EPBC would be developed as new matters of National Environmental Significance. Adding coastal matters as new matters of National Environmental Significance in the EPBC could build on the recognition in the Inter-Governmental Agreement on the Environment that coastal matters are an issue of National Environmental Significance in which the Commonwealth has a role. The findings of the House of Representatives review of the effects of climate change on Australia's coasts and Marine and Coastal Committee (MACC) development of approaches to implement Integrated Coastal Zone Management may also be valuable in identifying relevant coastal matters for Commonwealth involvement.

Together (i) and (ii) above, if firmly grounded in the principles and goals of ESD, would go a long way to achieving the goals usually associated with an Oceans Act.

Past efforts at landscape level planning and management were impeded by some technical limitations in addition to the legal and jurisdictional limitations. While significant technical advances have been made since the initial drafting of the EPBC and Oceans Policy, focused development to reduce these technical limitations is also necessary. They include indicators and performance measures for landscapes, attribution of impacts, evaluation of management/policy options, operational guidelines for use of precaution.

2. Evaluation and reporting of outcome performance and management effectiveness

The evaluation of performance against measurable outcomes is a widely recognised driver of management effectiveness and a key element of adaptive management. However the Act does not place consistent or strong emphasis on performance evaluation, with the result that performance evaluation is often a poorly supported after-thought without clear performance measures or adequate monitoring programs. For example state of environment reports typically are compilations of results from ad hoc (or at best designed to meet some other purpose) monitoring and/or evaluation programs, that report trends in indicators for which there are not statements of intended outcomes and which therefore cannot be interpreted as performance measures.

I recommend that evaluation and reporting of outcomes against all of the objectives of the Act should be made mandatory. The focus should be on measurable outcomes or against management intent statements, rather than trends in indicators or reports on processes and activities. Identification of the measurable outcomes or management intent statements, monitoring and reporting should be an integral and funded aspect of programs to deliver against the objectives of the Act. The reported outcomes should be evidence based and publically available. The requirement could usefully specified in a hierarchical manner, so that individual programs established to help achieve the high

level objectives of the Act are mandated to develop and provide outcome performance evaluation and these individual program report can be aggregated and augmented to provide outcome performance reports each of the high level objectives of the Act.

3. Harmonising Federal approaches to managing marine fish species

Two related issues require harmonisation, being (i) appropriate criteria for recognition of fish species at risk of extinction (i.e. conservation dependent, vulnerable, endangered and critically endangered) and (ii) consistent and seamless operation of the Commonwealth Harvest Strategy Policy and the criteria for listing species by category of threat. In addition there is need for harmonisation between the (iii) fishery management under the FMA and strategic assessments under the EPBC.

(i) Appropriate criteria for recognition of fish species at risk of extinction

The categories of threatened species are defined in the EPBC in relation to risk of extinction (i.e. critically endangered is an 'extremely high risk of extinction', endangered is a 'high risk of extinction in the near future', vulnerable is 'high risk of extinction in the medium term' and conservation dependent would meet any of these risk levels in the absence of a conservation plan). Some of the guiding criteria for determining this risk are given in Attachment 2. The risks of extinction for the different categories of threat range from 10% in the medium-term for vulnerable to 50% in the immediate future for critically endangered – all very high extinction probabilities. And the levels of population reduction given in the guiding criteria are a reduction of 30-50% for vulnerable, 50-70% for endangered and 80-90% for highly endangered.

The approach to identifying species at risk under the EPBC is broadly based on the IUCN Red List criteria. These were initially developed for terrestrial organisms. However it has become clear that they greatly over-estimate the risk of extinction in fish. There are very few examples of even local extinction (extirpation) of bony marine fish, even in cases of extreme over-exploitation where populations have been reduced by more than 95%. Regrettably there is a lot of world experience where overfished stocks have been reduced by more than 80%, but none of these have become extinct and several have actually recovered. Most of the well managed fisheries in the world have their populations reduced intentionally by at least 50% and none of these has become extinct. There is no defence for overfishing and there are a lot of good reasons to avoid severe depletion of fish populations, but the fisheries experience does demonstrate that reduction of fish populations by 50-80% does not result in the extinction probabilities that match the those intended in the EPBC Act for vulnerable, endangered or critically endangered. If they did then globally we would have had a very large number of extinct marine fish species in the past 200y. While the reasons for this population resilience are not totally clear the phenomenon is sufficiently recognised to have resulted in several international reviews and modifications of the extinction risk criteria for marine fish species, including by CITES. A brief summary of these reviews and their conclusions are provided in Attachment 3.

From this and other scientific information the extent of population reduction expected to be associated with elevated risk of extinction ,or of other undesirable and slowly reversible impact, in marine fish populations is by 70-90% of the initial population size depending on the productivity of the species. Accepting the intended extinction risk categories described in the EPBC then there is a

serious mismatch in the criteria used to assign fish species to these risk categories. The currently used criteria result in significant over-estimation of the risk of extinction. I recommend that the EPBC listing criteria be altered to better reflect international experience and practice with marine fish species and the risk of extinction, and in the first instance the CITES criteria would be appropriate (i.e. reduction by 80-95% depending on productivity).

If the objectives of the EPBC 'at risk' categories were altered to include issues other than risk of extinction (e.g. broader issues related to the maintenance of population processes, ecological process and ecological function) then criteria for categorisation with respect to these issues would need to be developed. The recent developments to operationalise the Ecosystem Approach to Fishery management (EAF) and the Ecosystem Based Fishery Management (EBFM) would be useful guidance in developing such criteria.

- (ii) Consistent and seamless operation of the Commonwealth Harvest Strategy Policy (HSP) and the criteria for listing species by category of threat

The HSP provides default target and limit reference points and a decision rule relating the allowable catch and the status of the population. The limit reference point is the greatest amount of population depletion that is permitted in a targeted fishery fishing, and this limit is selected to be higher than the level of depletion that results in impaired reproduction. The limit is commonly about a 80% reduction of the population. The limit is expected to be well above the population level at which there is a significant risk of extinction. The target reference point in the HSP is 1.2 times the population giving the maximum yield, and commonly this is a reduction of 50-70% from the unfished population size. A population is expected to fluctuate about the target, but the programmed catch reductions in the HSP are intended to avoid the limit level of depletion.

The levels of population reduction given in the guiding criteria for species listing are a reduction of 30-50% for vulnerable, 50-70% for endangered and 80-90% for highly endangered.

So a population managed under the HSP may:

- Be quickly reduced by 50-70% of its unfished level, that is to the target level, as an intentional consequence of this Commonwealth policy. This would meet the criteria for listing as an endangered species and also as a conservation dependent species.
- Occasionally fluctuate into the vicinity of 80% of its unfished level, that is the limit reference point, as an acceptable part of the application of this Commonwealth policy. This would certainly meet the criteria for listing as an endangered species and a conservation dependent species, and perhaps for listing as a highly endangered species.

And in both cases the species is likely to be at negligible risk of extinction.

The HSP contains words that give an expectation that species above the limit reference point will not be listed. But the inconsistency between the HSP and the more general listing criteria is not satisfactory, and it is not a legally certain situation (usually an Act will trump policy if the issue is seriously pursued). It also creates an incorrect impression that fisheries operators and regulators have in some way been given an exemption to operate with an otherwise unacceptably high risk of

extinction to a native species, and some of the inputs to the EPBC review appear to reflect that perception. The actual situation is that the criteria overestimate the extinction risk in marine fish species and the 'expectations' in the HSP are a very imperfect way to address that more fundamental inconsistency.

The HSP also contains words that give an expectation that species below the limit reference point will be considered for listing. This is using the fishery limit reference point, usually set at a level to prevent events such as reduced reproductive capability, as though it was associated with a high risk of extinction. The fisheries experience and practice of setting limit reference points strongly refutes the notion that there is a high risk of extinction at the limit reference point, and that is certainly the intention. There may well be good reason to consider the extinction risk in fish species that are below the limit reference point, but different criteria and methods are necessary to do such an assessment reliably. It is not appropriate to use the fishery limit reference points that are derived for quite a different purpose – maintaining productive capacity. In principle it would be expected that the level of depletion giving high extinction risk is lower than the limit reference point, and this is the global fisheries experience.

I recommend that the HSP, EPBC listing criteria, and as necessary the Fisheries Management Act, be harmonized to remove these inconsistencies. As appropriate this may include revision of the reference points of the HSP.

(iii) fishery management under the FMA and Strategic Assessments under the EPBC

The EPBC Strategic Assessments have been valuable in focusing attention on ESD performance, including non-target species and habitats, and without doubt their existence has accelerated progress. There is value in the strategic assessments continuing to be conducted independent from the management agencies, and in any listing of threatened or protected species being conducted separate from the Strategic Assessments.

However there is also some duplication and inefficiency (cost) that could be significantly reduced. Specific areas where identifiable improvement would be possible are:

- Clearer outcome performance measures for fisheries ESD through a revision of the current EPBC guidelines to include outcomes as well as principles. When the guidelines were first developed, and later revised, suitable outcome performance measures were not available. But recent developments with operationalising EBFM and EAF, as well as significant practical experience consolidated from fishery ecolabelling, make this now much more achievable.
- Greater use of the HSP for target species and risk based ecological assessment/ecological risk management for non-target species.
- Ensuring that the performance measures and HSP/risk-based tools are applied consistently to meet the requirements of ESD through the FMA and strategic assessments of the EPBC, and the definition of ESD is the same in both Acts.
- Development of default reporting templates that address the ESD performance measures, HSP and risk-based tools necessary for both the FMA and EPBC, so that the work only needs to be done once and reporting is streamlined.
- The EPBC strategic assessments become, on the basis of this more explicit and consistent reporting, more efficient audits of ESD practice and achievements under the FMA.

Attachment 2: Criteria for EPBC listing of species at risk of extinction

criteria	Critically Endangered	Endangered	Vulnerable
It has undergone, is suspected to have undergone or is likely to undergo in the immediate future:	a <u>very severe</u> reduction in numbers	a <u>severe</u> reduction in numbers	a <u>substantial</u> reduction in numbers
Its <u>geographic distribution is precarious</u> for the survival of the species and is:	<u>very restricted</u>	<u>restricted</u>	<u>limited</u>
The estimated total number of mature animals is: And either (a) or (b) is true (a) Evidence suggests that the number will continue to decline at: (b) The number is likely to continue to decline and its geographic distribution is:	Very low A very high rate Precarious for its survival	Low A high rate Precarious for its survival	Limited A substantial rate Precarious for its survival
The estimated total number of mature individuals is:	Extremely low	Very low	low
The probability of its extinction in the wild is at least:	50% in the immediate future	20% in the near future	10% in the medium term

General guidance used to judge severity of population reduction

criteria	Very severe	severe	substantial
population size reduction over the last 10 years or three generations, whichever is the longer, population size reduction over the last 10 years or three generations, whichever is the	>90%	>70%	>50%

longer			
population size reduction over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible	>80%	>50%	>30%
population size reduction, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years)	>80%	>50%	>30%
observed, estimated, inferred, projected or suspected population size reduction over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible	>80%	>50%	>30%

Attachment 3: A brief summary of some reviews of the extinction risk criteria for marine fish

After a series of international workshops to develop more appropriate depletion measures for fish species, Musick (1999) identified threshold depletion limits that would trigger an immediate listing as 'vulnerable' and a more thorough assessment of conservation status. These thresholds could be regarded as 'precautionary' in the sense that they apply in the absence of more thorough assessment and until that more thorough assessment is provided and shows that the listing is not justified. The depletion (% reduction) thresholds suggested by Musick (1999) differ according to the productivity of the species, where productivity is assessed from general life history parameters such as the maximum age, intrinsic rate of natural increase (r) and the von Bertalanffy growth parameter (k). Musick's criteria for recognition of a vulnerable species were:

- 99% reduction in abundance for highly productive species (e.g. maximum age 1-3y, $r > 0.5$, $k > 0.3$)
- 95% reduction in abundance for medium productivity species (e.g. maximum age 4-10y, $r = 0.16-0.5$, $k = 0.16-0.3$)
- 80% reduction in abundance for low productivity species (e.g. maximum age 11-30y, $r = 0.05-0.15$, $k = 0.05-0.15$)
- 70% reduction in abundance for very low productivity species (e.g. maximum age $> 30y$, $r < 0.05$, $k < 0.05$)

Two further major reviews followed the report of Musick (1999), and focused on the application of CITES to fisheries. FAO (2001) recommended that the depletion criterion for CITES listing be to 5-20% of the unfished population level. Mace *et al.* (2002) concluded that the threshold for concern about the long-term viability of a species is reduction to 5-30% of the unfished or potential population. The 5% end of the range is appropriate for high productivity species, with productivity bring a proxy for resilience or steepness in the stock-recruitment relationship. FAO (2001) and Mace *et al.* (2002) explicitly did not support thresholds as low as reduction to 1%, even for highly productive species. The appropriate threshold for low productivity species is at the 20% and 30% end of the range according to FAO (2001) and Mace *et al.* (2002) respectively.

The CITES (2004) criteria for listing, as applied to exploited aquatic species, are:

- Populations are depleted below 5-20% of their historical levels (i.e. the levels prior to fishing or that would be expected in the absence of fishing). The range 5-10% is applicable to species with high productivity, 10-15% to species with medium productivity, and 15-12% for species with low productivity. A natural mortality rate in the range 0.2-0.5 per year may indicate medium productivity.
- The recent rate of decline of a population, if it is likely to continue or resume, is projected to reduce the population below 5-20% of its historical levels within a 10y period. The same productivity ranges as above apply to this range of depletion.

Recognising all these arguments, depletion to 5-30% of the unfished or potential population size are reasonable thresholds for significant risk of very slowly reversible or irreversible depletion in fish— including the risk of local or global extinction in marine fish species. And at a depletion of 30% the

risk of extinction is expected to be very low even for very low productivity species (Clark 2002, Myers *et al.* 2002).

Note that in this Appendix the % reduction figures are how much is left in the population compared to an unfished population, as is the convention in the fisheries literature. In the body of this submission and in the EPBC criteria the % reduction is how much has been removed from the population, as is the convention in the conservation literature.

References

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