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Sustainability of harvested marine resources in Australia

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Review – Fisheries have been operating in Australia for well over a century and range from classics such as rock lobster, flathead, and barramundi to more exotic species such as *bêche de mer* and Patagonian toothfish. We are fishing deeper and further a field than ever before but fewer novel species are being added to the panoply of species already being harvested, although new markets continue to be found. Possibly all of Australia's fisheries are well developed or if they are still developing, there is an excess of potential fishing effort available to be applied to each fishery. This excess or latent effort is a major problem for many fisheries around Australia and has immediate implications for sustainability of affected stocks. There are significant challenges currently being faced by the world's living marine resources. Worldwide there are growing concerns¹ about the sustainability of marine resource in the face of industrial scale fishing effort. Besides the depletion of stocks there are also concerns over "fishing down the food web"², meaning that the larger, predatory species, which unfortunately for them are also often the higher value species, are first depleted, then the next level is fished down, until eventually fishers are left with fishing for what was previously lower value less appealing fish species. Along with signs of long-term slow depletion of marine resources there have been significant changes in the fishing fleets doing the fishing. While the total number of vessels may have been reduced they are far more efficient now at finding and catching the fish. In this way the effective effort can grow even when the number of days fished and the number of vessels remain the same. More and more people want to include fish products in their diet but many of the resources appear to be at or beyond their sustainable level of fishing. The demand is growing but the resources appear to be getting smaller; this is clearly unsustainable. There is a growing need for long-term solutions to the management requirements of natural resources that learn from past mistakes and attempt to insure against future errors. This is the origin of the growing call for ecosystem management rather than single species management. The need for ecosystem management is undeniable but this is, in some ways, a depressing prospect. Our stock assessment methods are already stretched to the limits with some single species fisheries so the notion of expanding the scope of such assessments to include many species is not encouraging. We are not immune to these concerns in Australia. There are numerous fisheries for which there is either very little information or the assessments are very rudimentary. A further problem for Australia is that there are many smaller fisheries, which are of relatively low economic value. In total, these minor fisheries employ significant numbers of people and in total provide significant amounts of seafood for consumption, but individually they are worth so little that their individual assessment tends to be very basic. Fortunately we do have a number of well managed and sustainable fisheries (e.g western and southern rock lobster fisheries), so the outlook is not all bad. The challenges to sustainability are therefore many: demand for seafood is increasing, generally the resources are fully or over-exploited, there is excess effort available, fishers are becoming more efficient at catching fish, we need long-term solutions, and we need to consider ecosystem management.

Conclusions - The prospects for increasing the catch taken from wild-fisheries are minimal. In fact, if the need for introducing precautionary management is recognized this is likely to lead to a reduction in catch across many fisheries. While this will not be welcome news, especially to the fishers involved and their customers, it appears to be the only option for ensuring sustainability and preventing more and more species being depleted below economic viability.

References

1. Myers W. Rapid worldwide depletion of predatory fish communities. *Nature* 2003; 423:280-283.
2. Caddy JF, Csirke J, Garcia SM, Grainger RJR. How pervasive is "fishing down marine food webs"? *Science* 1998; 282:138.