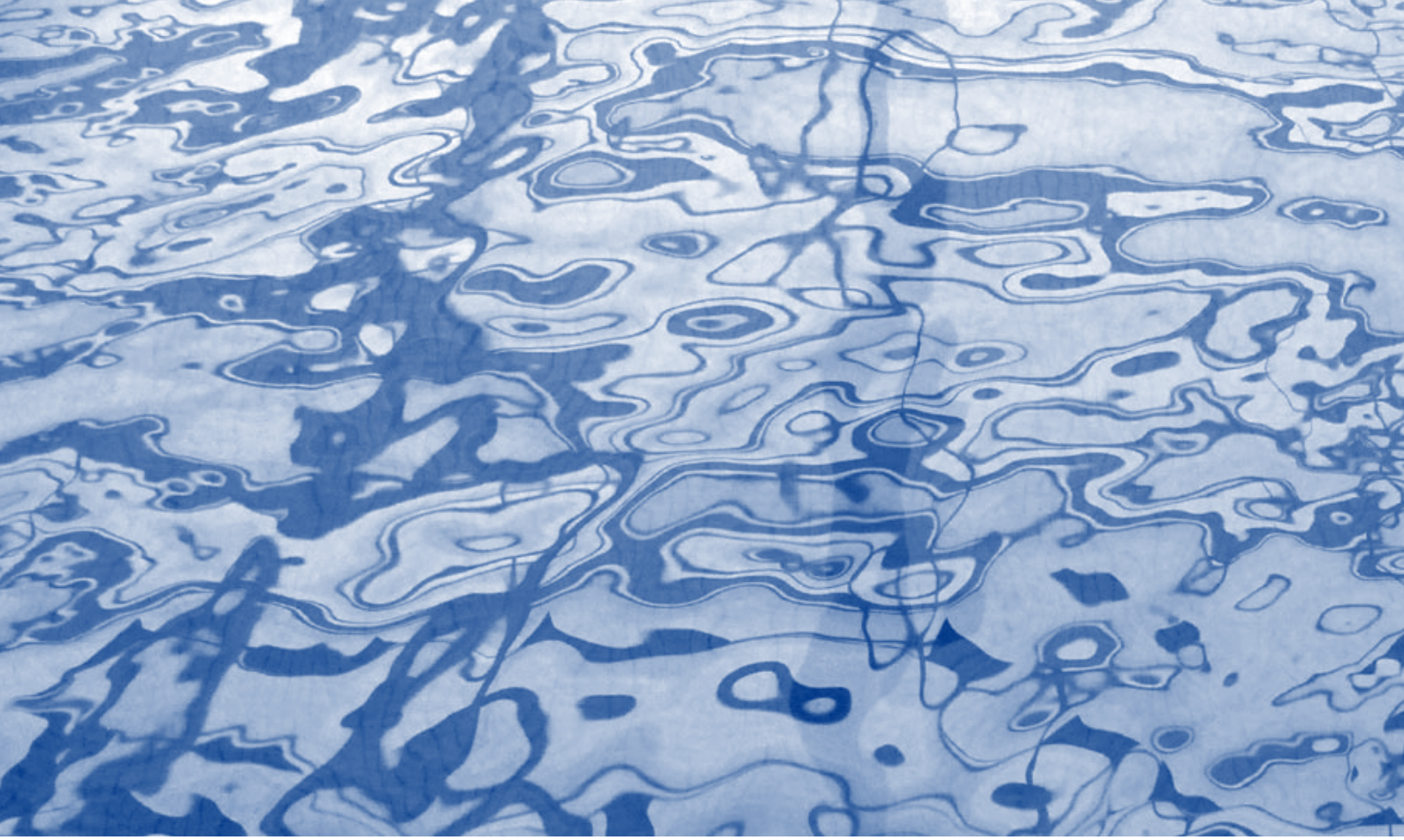
Fishing and marine protected areas

Fishing and marine protected areas – How can we best share the fish to meet fisheries and conservation objectives?



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Abstract

With the expansion of marine protected area (MPA) networks, there has been an increasing tension around the allocation of living marine resources to meet conservation objectives. Restricting or prohibiting fishing through MPA zoning can have some unintended and/or undesirable consequences for fisheries resource management. Closures introduced for biodiversity conservation purposes often result in displacement of fishing effort into areas still available to fishing and may also have flow-on economic and social consequences requiring structural adjustment. For instance, the initial licence buyout following the Great Barrier Reef Marine Park rezoning cost the Australian Government over $31 million, with the total cost of assistance to fisheries-related businesses and communities expected to reach $100 million.

MPA zoning arrangements may implement a de facto re-allocation of fisheries resources between fishing sectors, e.g. through use of zones which impose significant gear restrictions purportedly for conservation purposes, with the result that commercial fishing activities may become unviable but recreational fishing can continue. Lack of alignment of MPA and fisheries closures results in complex spatial management regimes that may also impinge upon resource allocation.

In this paper, specific examples from Queensland-managed fisheries are discussed, with reference to MPAs in the Great Barrier Reef region and Moreton Bay and the relevant legislative and policy frameworks. These examples underscore the need for fisheries managers and MPA planners to work together with stakeholders, to develop a long-term vision for fisheries resource allocation that will meet the social and economic needs of the community as well as broader conservation objectives.

Introduction

Policy and legislative framework for managing Queensland's fisheries

The management of living marine resources off the eastern coast of Queensland comes under a complex array of Australian and Queensland Government policy and legislation which seeks to address a range of international, national and state obligations. Responsibility for management of fisheries resources (including resource allocation) in these waters is vested largely in the Queensland Government, in accordance with the framework agreed between the federal and state governments under the Offshore Constitutional Settlement (OCS). These Queensland-managed fisheries include lucrative prawn fisheries and reef and coastal finfish fisheries; information on catches and values of Queensland's fisheries have been compiled by Williams (2002). A long-established and growing network of Fish Habitat Areas to protect key habitat such as mangroves and seagrass and significant nursery areas now covers over 714,000 ha of coastal and estuarine habitat. Some fisheries in the Gulf of Carpentaria and Torres Strait are managed through partnership or 'joint authority' arrangements between governments, while a small number of fisheries such as tuna and billfish are managed by the Australian Government. The key legislation is the Queensland Fisheries Act 1994 plus subordinate legislation including the Fisheries Regulation 1995 and fisheries management plans administered by the Queensland Department of Primary Industries and Fisheries (DPI&F, refer DPI&F and OQPC websites). The relevant federal fisheries legislation is the Fisheries Management Act 1991 and the Fisheries Administration Act 1991, and the responsible agency is the Australian Fisheries Management Authority.

In the past several years, the approach to management of fisheries resources has been broadened to encompass much more than just the management of target stocks. Queensland-managed fisheries must be managed consistent with the main purpose of Queensland's Fisheries Act, i.e. the ecologically sustainable development (ESD) of fisheries resources consistent with ESD

principles relating to environmental, economic and social considerations. Under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 all Australian fisheries with an export component or that interact with protected species must undergo assessment against stringent guidelines established by the Australian Government Department of the Environment and Heritage (DEH). The result of the assessment is the declaration of a Wildlife Trade Operation subject to conditions, or a fishery being declared exempt from export controls under the EPBC Act. Queensland, like other Australian states, devotes considerable resources to the ecological assessment of its fisheries, implementation of DEH recommendations, long-term monitoring and annual status reports (refer DEH website) – all evidence of an increasingly ecosystem-based management approach.

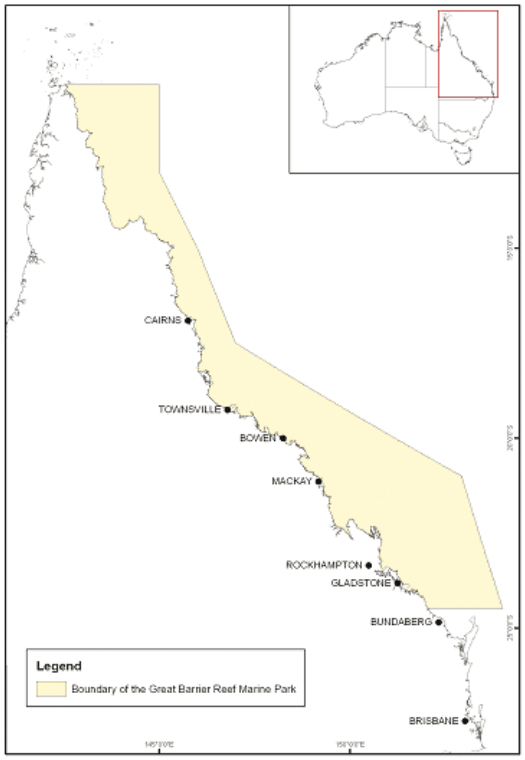
Policy and legislative framework for managing marine protected areas off Queensland

In addition, living marine resources off the east coast of Queensland are contained within Marine Protection Areas or MPAs. The Great Barrier Reef (GBR) Marine Park (see Figure 1 for indicative location) was established under the Commonwealth Great Barrier Reef Marine Park Act 1975, and under the OCS arrangements extends up to the low water mark. The overall goal of the Australian Government Great Barrier Reef Marine Park Authority (GBRMPA) is to provide for the protection, wise use, understanding and enjoyment of the GBR in perpetuity through the care and development of the GBR Marine Park. In 1981 the entire GBR region was inscribed on the World Heritage List and the first marine park zoning plan (for the small Capricornia Section) was finalised. During the 1980s large sections of the GBR Marine Park were declared and zoned by the GBRMPA. In 2003 these sections were amalgamated under a single revised zoning plan to implement the Representative Areas Program for biodiversity conservation, part of an Australia-wide commitment to comprehensive, adequate and representative ('CAR') protection of marine bioregions. For further details refer to the GBRMPA website (and for legislation follow the links to the ComLaw website).

The Queensland Government has progressively established marine parks over areas of the state's tidal lands and waters in the Great Barrier Reef region, under the Queensland Marine Parks Act 1992 (superseded by the new Marine Parks Act 2004). This legislation is administered by the Queensland Environmental Protection Agency which undertakes day-to-day management of the federal GBR Marine Park as well as managing state marine parks and island national parks covered by state legislation. In 2004 the GBR Coast Marine Park came into effect, incorporating four previously separate state marine parks plus some new areas into what is the world's longest littoral MPA. This was to facilitate a seamless approach to management in areas of uncertain jurisdiction around low water, and the state zoning arrangements

largely mirror those implemented by the Commonwealth in the previous year. During the late 1980s and early 1990s, Queensland also established other state marine parks south of the GBR, namely the Hervey Bay and Woongarra Marine Parks (to be incorporated into the Great Sandy Marine Park), and Moreton Bay Marine Park (including Pumicestone Passage) off Brisbane. For further details of state marine parks see the EPA website (and for legislation refer to the OQPC website).

Figure 1. Location of the Great Barrier Reef Marine Park (note that the boundary is indicative only and does not differentiate the Great Barrier Reef Coast Marine Park).



The commonwealth and state marine parks legislation and policy accommodate a range of commercial, research and private uses of the marine resources but its primarily goal is conservation of the marine environment. In the 1970s there had been considerable public concerns about limestone mining and petroleum exploration on the reef, and under the GBR Marine Park legislation, mining and mineral exploration were prohibited throughout marine park from the outset. Aside from this, the zoning plans have always had a strong emphasis on spatial management, using zones (broadly equivalent to IUCN reserve categories) ranging from highly protected Preservation and Marine National Park zones to General Use zones in which many activities are allowed. In practice, the conservation management regime provided for by zoning plans focuses particularly on regulation of various types of extractive activities such as fishing and collecting.

In this paper, I will briefly examine three topics to illustrate how fisheries resource allocation is impinged upon by marine protected area planning and management: Conservation Park or 'yellow' zones in Commonwealth and Queensland marine parks; displaced fishing effort as a result of major increases in 'no take' zones in the GBR Marine Park; and allocation issues relevant to the forthcoming review of the State's Moreton Bay Marine Park.

Fisheries resource allocation and conservation park or 'yellow' zones

In the most recent GBR Marine Park zoning plan, about 1% of the park is now zoned Conservation Park zone. Although this is a very small area it represents an increase in 'yellow' zoning and has been very contentious in terms of zone location and the types of restrictions placed on fishing activities. According to the GBR Marine Park zoning plan, the objectives of this zone are: '(a) to provide for the conservation of areas of the Marine Park; and (b) subject to the objective mentioned in paragraph (a), to provide opportunities for reasonable use and enjoyment, including limited extractive use'.

Extractive fishing and collecting activities include trolling, limited line fishing, limited spear fishing, bait netting, limited trapping, limited collecting which are allowed without specific permission from marine parks agencies (but subject to fisheries legislation). However, the devil lies in the detail of the zone provisions and definitions of activities in the zoning plan or regulations especially those that are 'limited'. For example, 'limited trapping' means that a maximum of four catch devices such as crab pots, dillies or inverted dillies per person may be used. 'Limited line fishing' restricts fishers to one line or rod per person and one hook per line, and only one dory may be detached from the primary commercial fishing vessel. While marine park management agencies may assert otherwise, these constraints effectively render a commercial level of activity unviable, while enabling recreational fishing activities to continue (subject primarily to catch or size limits applicable under Queensland fisheries legislation).

The marine parks legislation duplicates fisheries legislation in that marine park permits are required for a suite of harvest fisheries for which licences are anyway required under Queensland fisheries legislation. Under the provisions of the GBRMP zoning plan and regulations, some harvest fisheries (marine aquarium fish, coral and beachworm) are allowed subject to permit in 'yellow' zones if the GBRMPA has formally accredited as ecologically sustainable the relevant fisheries management arrangements under Queensland fisheries legislation. To date, however, such accreditation

has not occurred and is not expected to occur in the foreseeable future, even though various harvest fisheries including the marine aquarium fish fishery have undergone ecological assessment and been approved by DEH as Wildlife Trade Operations. Another constraint existing in a number of locations especially in areas of tourism interest, is that under the regulations a Special Management Area is overlaid over the 'yellow' zones. In effect, the Special Management Area for (e.g.) public appreciation purposes excludes harvest fisheries, even if accredited.

While the marine parks legislation does include consideration of users' amenity issues, a particular complaint made by the commercial fishing industry is that the Conservation Park zone does not seem to meet its own principal conservation objective or contribute to marine biodiversity conservation – the over-riding rationale for the recent rezoning of the GBR Marine Park was to implement the Representative Areas Program. Complementary zoning in most of the adjacent State GBR Coast Marine Park resulted in extension of the zoning to high water or highest astronomical tide with resultant impacts on commercial fishers especially for those conducting inshore crab and net fishing activities. In the state marine park, certain concessions were made in the zoning scheme to accommodate continued commercial crabbing in some key areas north and south of Townsville (although net fishers did not benefit). But the concessions, though welcome to those crab fishers affected, may be regarded as further confounding and detracting from the purported conservation objective of the Conservation Park zone.

Displaced fishing effort resulting from 'no take' marine park zoning

The recent rezoning of the GBR Marine Park, which sought to protect at least 20% of 70 reef and non-reef bioregions in no-take zones, saw an increase in Marine National Park (the principal 'no-take' zone) from about 4% to over 33% of the park. While the closures have to some extent matched existing closures under fisheries legislation and the planning process attempted to select zoning options with least cost for existing users, the new zoning would (without intervention) result in substantial displacement of fishing effort in several significant fisheries. Estimates of the loss in gross value of production from these areas have varied but conservative assessments put this at over AUD $10 million per annum (Bureau of Rural Sciences 2003) and this figure increases to about AUD $14 million when processing sector impacts are included. The effects on the seafood industry of the marine park rezoning come on top of substantial restructuring and effort/catch reduction in major fisheries including the east coast trawl and coral reef finfish fisheries, implemented under Queensland fisheries legislation.

Subsequent to development of the final zoning proposals the Australian Government released its 'Marine Protected Areas and Displaced Fishing Effort Policy' (refer DEH website) and formulated a structural adjustment package (SAP), managed by the DEH with operational delivery through the Queensland Rural Adjustment Authority. The objectives of the SAP are to assist fishers, fishery-related businesses, employees and communities affected by the GBR Marine Park rezoning, and to manage in the most cost effective manner any displaced fishing effort that has unsustainable ecological or economic impacts. The package did not extend to those affected by complementary state marine park zoning.

The first phase of implementing the SAP saw a buyout of approximately 114 licences out of 583 tendered (Queensland Seafood Industry Association Inc. 2005a) at a cost of nearly AUD $32 million. Purchase of licences and associated fishery symbols and quota was based on effort reduction targets established for the major fisheries affected, namely otter trawl, reef line,

Spanish mackerel, net and pot (crab) fisheries. The SAP continues to be rolled out to assist business restructuring for fishing and fishery-related businesses, and to support business exit for fishery-related businesses, licence lessees, and for fishers in certain fisheries not covered by the initial licence buyout. The final cost is expected to be in the order of AUD $100 million. A detailed analysis of the rezoning impacts on the seafood industry and the associated SAP is provided in a companion paper (Taylor-Moore 2006, this conference). The key message here is that marine park zoning, especially if large areas of 'no-take' zones are involved, inevitably constitutes a resource reallocation. Representatives of the fishing industry regard the increase in Marine National Park or 'green' zones as a re-allocation for tourism (Queensland Seafood Industry Association Inc. 2005b). This is not strictly true given that marine tourism is mostly concentrated in a few hotspots around the Whitsunday Islands and offshore from Cairns (Dinesen and Oliver 1997; Harriott 2002), while 'green' zones extend across many often remote areas which are not a focus for tourism. In fact, the expanded 'green' zoning is a re-allocation primarily for conservation. However, most marine tourism activities are compatible with the expanded Marine National Park zoning, while the commercial fishing industry's options have been significantly impacted. For seafood industry representatives the rezoning, apparently in favour of the tourism industry at the expense of the fishing industry, is regarded as an unwarranted piece of 'social engineering' (Queensland Seafood Industry Association Inc. 2005b). Fishers also point out that most tourists expect to be able to eat fresh local seafood during their visit to the reef region, and the seafood industry is essential to the continued viability of the region's tourism industry.

As a final comment, it is worth noting that the new 'green' zones have also impacted on the recreational fishing sector in some areas. For example, loss of easily accessible recreational fishing areas near Cairns had led some anglers to explore whether artificial reefs would be permitted, to provide recreational fishers with ongoing access to fishing areas close to the coast.

Moreton bay fisheries management and marine park

The Moreton Bay area off Brisbane includes a series estuaries, bays and islands and is a highly productive area, providing around 10% of Queensland's commercial harvest and about 30% of the state's recreational catch (L. Williams, DPI&F, pers. comm.). The bay supports lucrative prawn, finfish, and crab fisheries, plus and other fisheries including squid, with a typical gross value of production $10 million per annum. Participation includes about 400 commercial fishing vessels and some 500,000 recreational fishers. In addition, there are traditional and developmental fisheries, as well as rock oyster aquaculture operations. There is a fairly complex set of fisheries closures (see Figure 2) relevant particularly to trawl and net fisheries which involves permanent, seasonal or week-end closures to meet various stock management, environmental and inter-sectoral resource allocation objectives. There are also extensive Fish Habitat Areas, to protect significant marine plants and fish nursery areas from incompatible activities such as dredging and development.

In addition, the Moreton Bay Marine Park zoning plan (see Figure 3 for indicative zone location, refer EPA website for further details) provides an additional spatial management regime. The current zoning arrangements are comparatively generous in terms of fishing, with trawling allowed in the dark blue habitat zone. Fishing is prohibited in relatively small areas zoned as protection and buffer zones, while some restrictions apply in the conservation zone notably prohibition of trawling. The zone names and provisions used in this plan differ from those used in Commonwealth and Queensland marine parks in the GBR region, and it is intended to progressively standardise zone names and provisions throughout Queensland marine parks. Therefore, as part of the forthcoming review of the Moreton Bay zoning, the zones will be made consistent with those used in the GBR.

The future zoning scheme for Moreton Bay Marine Park will in due course be resolved through a public consultation process. Some stakeholders may seek to have the existing zoning 'upgraded' so that the area open is trawling

Figure 2. Fisheries closures in Moreton Bay (indicative).

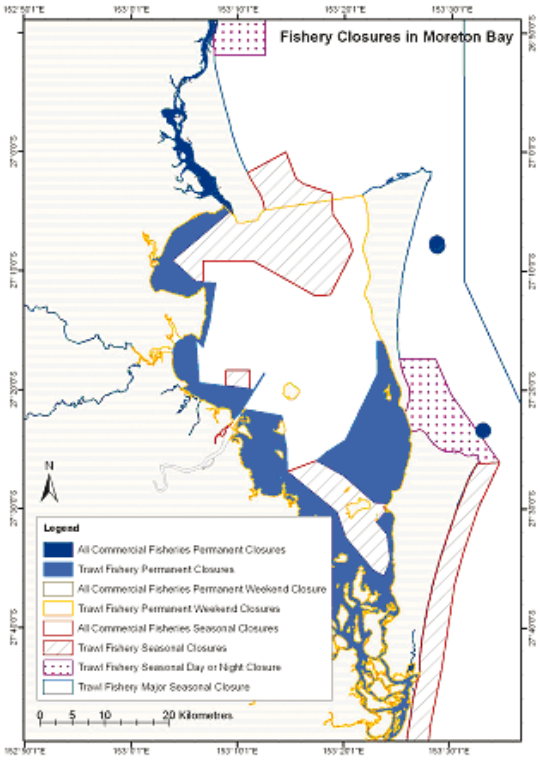
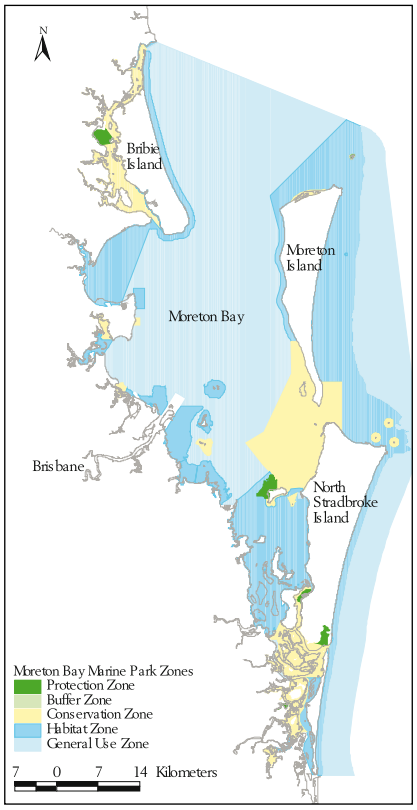


Figure 3. Moreton Bay Marine Park Zoning Plan (indicative only).



is reduced, and it is to be expected that conservation groups will seek to have local bioregions defined and afforded at least 20% protection in 'no take' zones as occurred in the GBR Marine Park. There will probably be considerable debate about allocation between recreational and commercial fishing sectors, even though this should be a matter dealt with under fisheries legislation.

Despite the challenges, the rezoning exercise would present an excellent opportunity for enhanced collaboration between fisheries and MPA manages, and to work together to align as far as possible the complex spatial management regimes. More significantly, the rezoning could provide an opportunity for government agencies and stakeholders to develop a strategic approach to future resource allocation in the bay, balancing the needs of various fishing sectors as well as biodiversity conservation objectives. The DPI&F resource allocation policy (discussed by Andersen and Dekker 2006, this conference) would be relevant and can accommodate allocation for conservation purposes. However, a whole-of-government approach may be more appropriate to resolve strategic issues which must take into account, among other issues, the anticipated population growth in southeast Queensland.

Conclusion

Achieving a fair allocation of resources for fishing sectors and for marine conservation purposes requires a genuine willingness of responsible government agencies and stakeholders to find common ground and develop realistic social, economic and environmental objectives for resource management. This is especially important where particular industries or communities may be negatively impacted by conservation initiatives. One of the four main objectives of the inaugural International Marine Protected Area Congress held in Geelong, Victoria in October 2005 was 'to develop a blueprint for partnerships between MPA managers, fisheries managers, management agencies, Indigenous peoples, local communities and industries reliant on marine resources to ensure that marine ecosystems are sustained into the future'. Such partnerships are essential if different resource users' needs and conservation objectives are to be fairly and adequately balanced (see IMPAC website).

Some of the AUD $220 million being provided by the Australian Government to reduce effort in several Australian fisheries is expected to fund licence buyout relevant to the proposed network of deepwater MPAs in south-eastern Australia. Effective resolution of fisheries vs. conservation allocation issues certainly calls for better integration of fisheries and MPA planning processes and willingness to deal with the socio-economic consequences of large-scale 'no take' MPA zoning. An important lesson learned from recent marine park planning exercises, especially the GBR Marine Park rezoning, is that it is preferable to properly address socio-economic issues during, not after, the planning process.

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