



The Marine Protection Dividend: NSW marine parks deliver more over time

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80 per cent

Community support for sanctuary zones in the three NSW marine parks where local opinion has been surveyed

82 per cent

Proportion of NSW marine park areas which allow recreational fishing

15 years

The time marine park protected areas must be in place before their effectiveness can be judged

2002

The year in which the first NSW marine park was zoned

20 per cent

Increase in local business turnover in the first five years of the Solitary Islands Marine Park

A\$2.4 million

Income the Jervis Bay Marine Park has brought to the region through marine tourism

AT A GLANCE

- **Marine parks provide significant economic benefits to local communities.** They attract significant tourism: the establishment of the Solitary Islands Marine Park, for example, saw a 20% increase in local business turnover in the first five years. Jervis Bay Marine Park has brought an estimated \$2.4 million into the region through marine tourism.
- **Community support for marine parks, and sanctuary zones within them, is high.** In the three NSW marine parks where local opinion has been surveyed since the establishment of the park, support is extremely high across all sectors of the local community, with support for sanctuary zones at 80% or higher.
- **Benefits from marine parks continue to increase over years and even decades.** While NSW marine parks are still in the early years of the protection afforded by zoning, elsewhere in Australia and overseas marine parks have shown continued growth in environmental and economic benefits over twenty years after protection began.
- **The existence of sanctuary zones within marine parks is essential to the recovery and growth of fish** and other marine species, and thus to the economic benefit of marine parks. Tourists are drawn to marine parks to see wild areas and to swim, boat, snorkel, dive, and fish. European studies have shown that for each year a fully protected zone is in place, the number and/or size of commercially targeted fish within the park, compared to the immediately adjacent areas, increased by around eight per cent. Older marine reserves are more effective than newly established ones, both for increasing the size of commercial fish species and for increasing species richness.
- **Both recreational and commercial fishing benefit from the environmental recovery provided by sanctuary zones.** Fish and other marine species increase in size and number in protected zones and there is significant spill-over to surrounding areas, growing over time.
- **Recreational fishing has a significant effect on fish stocks, making up as much as 90% of the catch for some species.** The impact of recreational fishing is often thought to be minimal: one angler doesn't catch much compared to one fishing trawler. However, the total number of recreational fishers is a massive multiplier and sustainable fish stock management for the preservation of both commercial and recreational fishing in the long term must take recreational fishing into account.
- **Marine Parks in New South Wales are multiple use parks.** Marine parks cover less than 40% of NSW State Coastal Waters and all are multiple use parks with different zone categories. Of the marine park areas, 82% allow recreational fishing and a variety of other uses, including some commercial fishing. Less than 18% of the area of State Marine Parks is in sanctuary zones where extractive uses such as fishing and collecting are not allowed. In broader terms, 93% of the total area of State Coastal Waters is open for recreational fishing, some commercial fishing and other activities, and just 7% of state waters are fully protected in sanctuary zones.
- **The process of creating marine parks in NSW was bipartisan, multi-staged and involved years of research and consultation.** It starts when an area is studied, a park proposed, discussed, declared, and zoned in an official management plan, and then the zoning is reviewed after the initial 5 years and at 10-year intervals. Studies and local input are a required part of each step. The management plan sets out the area of each marine park in the four legally defined zones and what activities are allowed and prohibited in each.
- **The zoning of New South Wales marine parks is all fairly recent,, and economic and ecological benefits will continue to increase in future years and decades.** In NSW, the first management plans came into effect in 2002 for Solitary Islands and Jervis Bay marine parks. Lord Howe Marine Park was zoned in 2004; Cape Byron Marine Park and Port Stephens – Great Lakes Marine Park in 2006; and Batemans in 2007. As marine parks need to have consistent protection in place for around 15 years before it is possible to reliably assess ecological benefits, none of NSW's marine parks is yet old enough to be judged.

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MAIN POINTS

Marine Parks provide a wide range of benefits, which increase over time

- **Sanctuary zones in marine parks are crucial to the purpose of the parks, and over time, they also help to improve fishing in surrounding areas.** There is very strong evidence of the increase in fish within sanctuary zones and also of a spill-over effect in surrounding areas. Some improvements are rapid, but most start after a few years.
- **Recreational fishers see an immediate benefit in reduced competition from commercial fisheries.** Removing or limiting commercial fishers significantly reduces the competition for fish. Since 82 per cent of all the NSW marine parks areas are open to recreational fishing, and most restrict commercial fishing considerably, this can be a substantial improvement for the recreational fishers. The net effect over an entire marine park is generally an improvement in recreational fishing, even if some fishers have to change their sites.
- **Commercial fishers are compensated for fishing relinquished in marine parks.** Commercial fishers who are excluded or restricted in access are compensated to make up for their losses. There are documented cases in which commercial fishers find that after some years fishing on the edges of protected areas brings in an equivalent catch, but the effort to get it has decreased, improving their bottom line.
- **Tourism benefits continue to develop over time.** Tourists are drawn to marine parks because they expect to be able to see wild areas and to engage in a number of activities, including swimming and beach activities, boating, fishing, snorkelling and diving. Often schools start using parks for educational purposes, and they can become centres for research as well. These positive effects can start quite soon after marine parks are declared, while some may take a few years to start and then increase over time. This can create a demand for more local businesses.
- **Biological changes start when areas are protected and continue and evolve for decades.** The science is clear that biological changes develop with time: marine species, including fish, become larger and/or more numerous within the fully protected areas and significant amounts spill-over into neighbouring areas. This process takes time, with some species increasing much more quickly than others. Ecosystems become more complex and stronger as species that were exploited return. Fifteen years is considered a minimum to begin to judge the biological effects of protection, although some changes will be observed before then. The oldest NSW sanctuary zones are barely 11 years old and the youngest only six. In biological terms, the changes associated with these parks are still in their infancy.
- **The purpose of fully protected sanctuary zones is to secure the future viability of the marine environment in the face of multiple threats.** Sanctuary zones are useful to study and understand natural, undisturbed phenomena in marine ecosystems. They are also essential in helping marine ecosystems to survive the impact of the multiple threats we are throwing at them through development, pollution, climate change and ecosystem changes caused by over-fishing. The fact that fishing, tourism and local businesses can increase and profit from the existence of sanctuary zones is a benefit, but it is not the only reason to establish them.

Perceptions of marine parks are overwhelmingly positive

- **Most members of the community are in favour of marine parks.** Surveys conducted since NSW marine parks were created show that the majority of the general population are in favour of marine parks in general as well as the marine park nearest to them.
- **Most recreational fishers support marine parks.** The same surveys showed support for marine parks from the majority of recreational fishers. Recreational fishers often cite their concern for the long-term viability of recreational fishing for themselves and their children and grandchildren. Most recreational fishers also realise that they are allowed to fish in 80 per cent or more of most NSW marine parks.
- **Because benefits develop over time, businesses closely related to fishing sometimes initially oppose marine parks.** Some business owners are concerned that restricting fishing areas at all may reduce their business. There are many examples where this has been shown not to be the case in Australia and worldwide, but each site will be different and local conditions should be taken into consideration.
- **A minority of recreational fishers remain opposed to marine parks.** Unlike commercial fishers, who rely on fisheries for their income, recreational fishers are not financially compensated when marine parks are created, and some have become the biggest opponents of marine parks. They may lose access to their favourite spots, or dislike the idea of having some areas off-bounds, or resent the process, feeling that it is dictated by non-locals.

Policy implications

- **Wait 15 years to rigorously assess effectiveness.** The two oldest NSW marine parks were only fully zoned in 2002 and the most recently declared was only zoned in 2007 (although the Solitary Islands Marine Park was made a reserve in 1991, less than 1 per cent of it was protected then). They are recent enough that they are only beginning to show their benefits. This is because both the creation of marine parks, and public acceptance of marine parks, are complex processes that evolve and change over decades. The first fifteen years is not the end of those changes, but can be enough to show biological, social and economic changes. Marine parks are an investment in the future and – like financial investments – can take time to mature.
- **Maintain investment in marine parks as regional infrastructure.** Marine parks have been embraced by regional shires, which actively market them to attract tourists to their region. As the economic dividends from marine parks continue to grow over time, they are likely to become increasingly important infrastructure to support regional economies. Since the benefits only increase over time, disrupting this investment could mean that regional economies don't see the full dividends of marine parks.
- **Invest in scientific monitoring and keep consulting the community.** Scientific monitoring and community consultations are essential. Improvements in the biodiversity, biomass and resilience of sanctuary zones will continue long after the first fifteen years. In some cases in NSW, benefits are emerging and local support is strengthening already.

Note on terminology:

The vocabulary around marine protected areas is not standardized. Marine protected areas (MPAs) are generally areas with specified zones that allow or prohibit different mixes of activities. In New South Wales state waters, MPAs are called marine parks (MPs). Within MPAs (and MPs) the fully protected zone, where no extractive uses are allowed, is often called a "Sanctuary Zone." In some literature this zone is called a "marine reserve" or a "no-take-zone." Other zones in MPAs go under many names. In NSW MPs there are four categories of zones:

- **Sanctuary zones (SZ)** which prohibit extractive uses including fishing
- **Habitat protection zones (HPZ)** which allow recreational fishing and some commercial fishing with some species restrictions and some restrictions on types of fishing gear
- **General use zones (GUZ)** which allow recreational fishing and some commercial fishing with general state restrictions on species fished and fewer restrictions on types of fishing gear
- **Special purpose zones (SPZ)** which are general small and relate to docks, aquaculture, military and the like
- *Only sanctuary zones prohibit recreational and commercial fishing completely.*

INTRODUCTION

NSW has created six marine parks

New South Wales has six marine parks and a number of smaller aquatic reserves. Some national parks include marine coasts as part of the National Park Estate. This paper focuses on the marine parks (MPs) of NSW. While some of the MPs were established long ago, the process of incorporating and then developing management plans that determine usage is much more recent. Permitted usage in the different zones is spelled out in the management plans. A summary is shown in Table 1.

Table 1: Extent, date of incorporation, management plans and review of NSW marine parks

<i>Marine Park</i>	<i>Date marine park was incorporated</i>	<i>Date of zoning in Management Plan</i>		<i>Approx. area of Marine Parks (ha)*</i>	<i>Area of sanctuary zone w/in Marine Park (%)</i>
		<i>Initial plan</i>	<i>1st plan review</i>		
Solitary Islands	1998**	2002	2008-11	72,200	12%
Jervis Bay	1998	2002	2008-11	21,100	20%
Lord Howe Island	1999	2004	2009-11	48,000	27%
Cape Byron	2002	2006	-	22,000	27.5%
Port Stephens Great Lakes	2005	2006	-	98,000	17%
Batemans	2006	2007	-	85,000	19%
Total area (overall %)					17.8%
Total area of NSW state coastal waters (ha)***					880,200
Proportion of NSW coastal waters in sanctuary zones					6.7%
Proportion of NSW coastline in sanctuary zones					< 4%

*Note that there are differences in the areas given for MPs in various reports. These rounded figures are taken from most recent information on parks and Fishing in Marine Parks, all on the MPA website.

** The movement to protect Solitary Islands marine ecosystem started much earlier, developing through the 1970s and 1980s. The Solitary Islands Marine Reserve was declared in 1991 and less than 1% of it was a protected areas, mainly around Islands and the upper reaches of estuaries; it was converted to a Marine Park in 1998. The Zoning process took 4 years and involved extensive public discussions, over 7000 submissions and feedback on both a zoning plan and a revised zoning plan before it was adopted on 1 August 2002.²

***The marine areas of states and territories are referred to as coastal waters. This is a belt of water between the territorial sea baseline, which usually is the low water line along the coast of the states and the Northern Territory, and a line three nautical miles or 5.5 kilometres seaward from the baseline.³

Source: Marine Parks Authority.^{4,5}

Creating NSW marine parks was a long process but the parks are relatively young

The evolution of marine parks in NSW is a long story in itself. Solitary Islands Marine Park, although incorporated in 1998, under the legislation creating marine parks, had been a Marine Reserve since 1991, following about 20 years of discussion. In the process of zoning, the protected area went from less than 1% under the Marine Reserve to 12%, which is still the smallest proportion of any of NSW Marine Parks. The Zoning review, completed in March 2011, increased the Sanctuary Zone area to 20% but the rezoning was rescinded in May 2011. Other marine parks in NSW have long histories leading up to the creation of the parks as well. The effort should not be considered recent, nor tied to one political party. Solitary Islands was declared a Marine Reserve in 1991 under a Liberal government headed by Premier Nick Greiner.

The number of community consultations, meetings and studies produced around the marine parks in NSW is impressive. The process starts from pre-park identification and ecosystem research and continues with community surveys, business surveys, zoning decisions, management plans, operational guidelines and activity and ecosystem monitoring, as a minimum. Marine scientists – both park staff and researchers from various universities and research institutions in Australia and abroad – have surveyed marine life, the health of different marine ecosystems and changing conditions. Consultants have been hired to interview local businesses and to conduct community opinion surveys.

Three of the six parks have moved on to the first 5-year reviews of initial zoning, as required. Two issued revised zoning plans that were rescinded in a blanket state-wide decision on the grounds of inadequate community consultations and politically based decision-making. Research for this paper suggests that for the most part, decisions about marine park zoning have been made on the basis of extensive consultation and research. The process has however also been affected by manoeuvrings from both ends of the political spectrum. While improvements are always possible, political judgements tend to result in both scientific understanding and local preferences being discounted. At this point in time, with yet more changes in store, it seems useful to examine the biological and economic evolution of marine parks over time.

ECOLOGICAL DIVIDENDS TAKE AT LEAST 15 YEARS TO RIGOROUSLY ASSESS

Biological changes start when areas are protected and continue for decades

“Our meta-analyses demonstrate that, globally, old reserves are more effective than young reserves at increasing fish densities. Our results imply that reserves should be maintained for up to 15 years following establishment, even if they initially appear ineffective. If protection is maintained for long enough, fish densities within reserves will recover and such benefits will be particularly pronounced for large, locally fished species.”

Molloy, 2009, *‘Effects of marine reserve age on fish populations’*⁶

The study quoted above, which compares fish density inside and outside marine reserves from around the world, aged from 1-26 years, showed decisively that older reserves were more effective than younger ones. Reserves older than 15 years consistently harboured more fish than unprotected areas, but in reserves younger than 15 years results were less reliable. This effect was more noticeable in larger fished species compared to smaller fished species and non-fished species of all sizes.⁷

The habitats in New Zealand’s oldest marine reserve were mapped when it was created. A team of Australian, New Zealand and French researchers mapped those habitats again 30 years later.⁸ The most remarkable change was the recovery of kelp forests, which had been reduced to ‘urchin barrens’. Once protected, these areas recovered as the return of fish and lobster species kept sea urchins in check.

The researchers pointed out that although 30 years is one of the longest time periods for study of a marine reserve, it is within the time of one generation of many marine species, including the top predators. They also pointed to research showing that most fish populations take longer than 15 years to recover from over-fishing,⁹ and studies finding that after 18 years, fish biomass was still increasing in two Philippine reserves and that full recovery may take decades.¹⁰

An Australian study undertaken across the continent found that the data from fourteen temperate and subtropical Australian marine parks showed ecological changes continuing to develop over at least two decades.¹¹ We also see the population of large fishes, lobsters, sea urchins and molluscs continuing to recover in Tasmania, where reefs are recovering from “urchin barrens” as populations of lobsters and large fishes returned.¹² This has considerable relevance to the situation in NSW, given that in 2000, such barren areas were reported to cover around 50 per cent of shallow rocky reefs along the central and southern NSW coast.¹³

It is clear from all these studies that sanctuary zones are where the biggest changes occur, when full protection is enforced, especially where those areas have previously been damaged by heavy fishing.¹⁴ While the marine environment faces additional challenges, besides fishing (such as pollution from urban and industrial discharges, agricultural runoff, introduced marine pests, and warming oceans) it is clear that fishing has an impact and, depending upon how large the impact has been within fully protected areas, ecosystems will gradually re-establish themselves and marine species will recover their populations.

Sanctuary zones are key to securing the future viability of the marine environment

*“Sites in 11 MPAs distributed around 5000 km of the Australian coastline had significantly more large (>30 cm) fishes and total fish biomass than nearby fished reference sites. For the older MPAs, fishes belonging to the largest class size (≥80 cm) were observed approximately 10 times more often in sanctuary zones than in fished zones...”*¹⁵

NSW marine parks are all multi-use areas allowing multiple activities, including recreational and commercial fishing in more than 80 per cent of the total NSW marine park area. The fully-protected sanctuary zones are relatively small areas, averaging less than 20% of the marine park areas overall – but they do the heavy lifting. As well as the ecological and economic benefits of recovering fish populations, the buffer effect of sanctuary zones against Australia’s highly variable climate will increase in importance and value if global climate change exacerbates this variability.¹⁶

The NSW Marine Parks Authority listed the six primary categories of environmental benefits from marine protected areas and their sanctuary zones as:

- Increases in the abundance, biomass, diversity and productivity of many organisms;
- Reduction in the loss of threatened and vulnerable species;
- Helping ecosystems to recover from natural and human impacts;
- Increased protection of important species and habitats;
- Provision of reference sites for the evaluation of threats to biodiversity; and
- Improved engagement and education of the community concerning issues of marine conservation.¹⁷

The changes in marine species population in fully protected areas can be startling, as Table 2 shows.

Table 2: Summary of findings of a few studies on effects of fully-protected marine reserves

Region	# of MPAs	Indicator	Main findings	Source
Global (for fish, invertebrates, algae)	124	Biomass Density Size Richness	446% increase 166% increase 28% increase 21% increase	Lester et al. 2009
Global	33	Fish density	1.66 x higher	Molloy et al. 2009
Global, temperate only (for fish, invertebrates, algae)	30	Density Biomass Species richness	1.4-1.92 x higher 0.107-3.67 x higher 1.27-1.68 x times higher	Stewart et al. 2009
Global (for fish, invertebrates, algae)	81	Biomass Density Size Richness	352% increase 151% increase 29% increase 25% increase	Halpern 2003
Global	19	Fish density Species richness	1.25-3.7 x higher 1.11 x higher	Mosqueira et al. 2000/ Côté et al. 2001
Mediterranean	12	Fish density Biomass	1.2 x higher 2.1x greater	Guidetti & Sala 2007
Mediterranean	12	Fish density Species richness	2.46 x higher No effect	Claudet et al. 2008
Philippines	19	Fish density	1.64 x higher (2.5 x for exploited species)	Maliao et al. 2009b

Source: Toropova et al, 2010¹⁸

In Australia, the Great Barrier Reef is well-known example. Research shows that in fully protected areas in two island groups, coral trout populations had increased as much as 3 times after 14 years.¹⁹ Increases in population density of three to sevenfold were reported for coral trout in two regions of the Abrolhos Islands (Western Australia) after only 6 years of protection.²⁰

After only 4 years, Jervis Bay Marine Park saw an increase in red morwong in a 2006 study, even though around 50 per cent of all reef habitat within surveyed sanctuary zones remain urchin barrens.²¹ In the Solitary Islands Marine Park, there are 'preliminary indications' that certain fish, such as red morwong have greater densities in sanctuary zones but the relative young age of the park means longer monitoring is needed to be sure.²²

In New Zealand marine reserves, snappers above the minimum legal size of 27 cm were estimated to be 14 times more abundant than in nearby fished reserves. In fished areas, most snapper were close to or smaller than the legal size, a frustrating experience for recreation fishers²³ At the Poor Knights Islands in New Zealand, particularly large snapper showed increases in abundance and size compared to unfished locations. Total snapper biomass increased by 800 per cent following the declaration of the 'no take' marine reserve.²⁴

Over time, sanctuary zones also improve fishing in surrounding areas

"There is overwhelming scientific evidence that sanctuary zones protect fish from fishing pressure. Much larger and longer-lived individuals are found in these refuges than outside them. The zones may even help protect adjacent fisheries through adult or larval spill over, with new evidence showing that most of the fish caught near marine park zones are born within sanctuary zone boundaries, even if the zones are under 10 per cent of the total area."

David Booth, Professor of Marine Ecology at UTS and Chair of the Scientific Advisory Committee, Sydney Institute of Marine Science, quoted in *Fishing World*, 2013²⁵

Fishing authorities have been reluctant to consider marine park areas and sanctuary zones as part of fisheries management, preferring to use highly targeted temporary closures - with the goal of rebuilding stock and then allowing fishing again. However, as our ability to model both biological and economic systems has improved, marine economists are beginning to change their views on the value of marine protected areas as a fisheries management tool. Theoretical modelling has shown that due to the 'buffering effect' provided by marine reserves against environmental shocks and other forms of uncertainty, marine reserves can increase the cumulative harvest and generate positive economic payoffs even if harvesting is optimal and the fishery is not overexploited. Moreover, these benefits cannot be obtained from other methods of fishing control, such as limits of total take or on the methods used to fish.²⁶

In fact genetic testing is increasingly showing that sanctuary zones act as nurseries for nearby areas. Sanctuary zones see either more fish, or bigger fish, or both. Increase in fish size is important for the sanctuary zones' nursery effect as older females produce more far more eggs than younger ones. As long as the reproductive grounds are included in the reserves, these spill-over effects can increase over time as fish size and fecundity increase.²⁷

ECONOMIC DIVIDENDS ARE SEEN EARLIER AND GROW OVER TIME

Recreational fishers benefit from increase in fish stock and reduced competition from commercial fishers

Once the six marine parks were zoned, in stages, from 2002 to 2007, 17.8 per cent of the Marine Park area became off-limits for fishing of any kind in the sanctuary zones, a total of 7 per cent of the NSW state coastal waters. In exchange, significant commercial fishing effort was removed from the marine parks, reducing the competition for recreational fishers in the other 82 per cent of the area of marine parks. This was a deliberate measure to allow more scope for other activities including recreational fishing, as virtually identical quotes from the Batemans and Port Stephens-Great Lakes Marine Park documents show:

“Adjustment of commercial fishing effort at the time of zoning was a critical component of the marine park’s establishment and aimed to ensure that sufficient commercial fishing effort was removed to offset reduced access to the marine park as a consequence of zoning.”

Marine Parks Authorities, 2010, Batemans and Port Stephens – Great Lakes management plans^{28, 29}

A number of examples of recreational fishers stating how positive this has been for recreational fishing can be found in fishing magazines. The example given here is typical:

“I’ve been involved on the Port Stephens - Great Lakes Marine Park Advisory Committee from day one. Through the zoning plan I believe we’ve been able to retain and protect fantastic fishing spots for local and visiting recreational fishers. The growing numbers of fishers and a growth in tourism supports my opinion. Locals and visitors are increasingly positive about fishing in the marine park.”

John ‘Stinker’ Clarke, Radio presenter and fishing author quoted in the *Marine Parks brochure*³⁰

Commercial fishers are compensated when fishing within marine parks is reduced, but commercial fishing continues in and around the marine parks

NSW spent \$30 million on commercial fishing buyouts to support sustainable recreational and commercial fishing in marine parks. This was designed to reduce fishing pressure within the marine parks, including in the 82 per cent of parks open for recreational fishing.³¹ It is also consistent with long-running national and NSW policies to improve the economic prospects of the industry.

For years, the Commonwealth Government has had programs to reduce the number of commercial fishers nationally to increase the viability of those remaining in the industry. The NSW government is now embarking on another such program.

In some cases, buying fisheries out, whether for marine park creation or to try to reduce numbers, have not had the expected result – sometimes fishing was simply displaced to other areas, or mostly inactive quotas were bought up. In other cases, those who left the business were perhaps overcompensated relative to those who continued fishing. While the new buyout program is redesigned with a goal to avoid those problems, the licenses bought out to make the marine parks were done under the earlier structures.³²

An example from Jervis Bay shows that the number of commercial fishing businesses has steadily dropped. However, the amount of the catch by commercial fisheries in the ocean zone outside Jervis Bay has been relatively stable since at least 1997-98.³³ Theoretically, this should improve the financial returns of those fishers remaining in operation.

Table 3: Commercial Wild Harvest in or Adjacent to Jervis Bay Marine Park

Year	Weight	Value	Number of Fishing Businesses	
	(tonnes)	(\$ '000)	number	% of 1997-98 number
1997-98	1,969	5,311	166	100%
1998-99	1,620	4,517	168	101%
1999-00	1,816	5,257	146	88%
2000-01	1,900	5,538	143	86%
2001-02	2,140	6,511	129	78%
2002-03	1,740	4,997	110	66%
2003-04	1,735	4,449	96	58%
2004-05	1,989	4,858	92	55%
2005-06	1,745	5,044	91	55%
2006-07	1,640	5,241	85	51%
2007-08	1,829	5,817	75	45%
2008-09	1,843	6,708	66	40%

Source: Clarke, M., 2010 ³⁴

As Box 1 shows, some form of commercial fishing continues in appropriately zoned areas of each of the NSW marine parks.

Box 1: Commercial fishing compensation and trends within marine parks

The following excerpts from Marine Park Authority reports give a quick overview of compensation paid, and the commercial fishing remaining, for each of the NSW marine parks.

Solitary Islands Marine Park (zoned 2002)

Thirty commercial fishers received a buy-out for \$4.2 million in 2002 following the introduction of the zoning plan.ⁱ

Catches in commercial fishing ocean zones in which the marine park is located (ocean zones 2 and 3) have reduced by 50–66% since 2000. However, this reduction has been mirrored in other ocean zones (1 and 4) to the north and south of the marine park and so does not appear to be directly attributable to the marine park. Estuarine catches within the marine park have reduced substantially since 2000, as a result of the zoning plan prohibiting mesh netting. Some commercial crab trapping continues in the marine park. Aquaculture within the marine park involves oyster cultivation in the Woolli and Sandon Rivers.ⁱ

Jervis Bay Marine Park (zoned 2002)

Prior to the establishment of the Marine Park zoning plan in 2002 the NSW Government completed a buy-out of 17 fishing businesses and reduced estuary general commercial fishing activity in the enclosed waters of Jervis Bay.ⁱ

Structural adjustment has removed most of the commercial fishing industry from inside Jervis Bay and the bait fishing industry has also contracted. There are a few fishers to whom the Jervis Bay Marine Park area is still an important source of income. There are many fishers to the north and south of Jervis Bay who make no use of the bay, preferring to fish in deep water outside marine park limits. Commercial fisheries that may operate in the marine park are the estuary general fishery, lobster fishery, ocean hauling fishery, ocean trawl fishery, ocean trap and line fishery and abalone fishery.ⁱ

Lord Howe Island Marine Park (zoned 2004)

Lord Howe Island is a special case with its tiny population, remote location and World Heritage Status. The only fishing considered as commercial is that of the nine charter fishing operators who conduct tours and fishing activities in the marine park. Export of fish from Lord Howe Island is currently prohibited under the marine parks regulation and operators sell their catch to restaurants and visitors on the island. Catch return information is provided by the charter fishers to the NSW Marine Parks Authority where annual analysis is undertaken. The annual catch has ranged from 18 to 35 tonnes since marine park catch returns were established as a permit condition in 2004.ⁱ

Port Stephens – Great Lakes Marine Park (zoned 2006)

The PSGLMP Zoning Plan places additional conditions on commercial fishing, such as no trawling within the PSGLMP habitat protection zone and no set-lining anywhere in the marine park. At the commencement of the zoning plan, local commercial fishing operations were adjusted through a \$10 million voluntary buy-back program.ⁱ

Many forms of commercial fishing are permitted including fish and prawn trawling, beach hauling, purse seining, line fishing, trapping (fish, crab, lobster and eel), hand gathering, long-line and drop-lining, estuary prawn netting, and estuary mesh and haul netting. Approximately 150 commercial fishermen operate in the marine park in some capacity during the year.¹

Cape Byron Marine Park (zoned 2006)

A \$4.3 million voluntary buy-out program resulted in 22 fishing businesses being bought out, to implement the Cape Byron Marine Park Zoning Plan and avoid the transfer of fishing pressure to other areas within and adjacent to the park. Ensuring commercial fishing pressure does not increase within and adjacent to the marine park is important for biodiversity conservation and sustainable fisheries management.¹

There are about 35 commercial fishing crews that operate in the marine park on a regular basis across the following fisheries: prawn trawling (9), spanner crab netting (10), trap and line fishing (14), commercial bait gathering and beach hauling (2).¹

Batemans Marine Park (zoned 2007)

The Marine Park Zoning Plan places additional conditions on commercial fishing, such as no trawling within the park's boundaries and no mesh netting in the Clyde River. Local commercial fishing operations were adjusted through a \$10.8 million voluntary buy-back program.¹

Some forms of commercial fishing are permitted in specified zones of the Batemans Marine Park. As well as commercial fishing, there is a thriving oyster aquaculture industry within the Batemans Marine Park.¹

Regional businesses benefit from tourists attracted to marine parks

An increasing number of studies show that the combined economic benefits of marine reserves (including fishing enhancement, tourism, and ecosystem services) outweigh the costs of creating and maintaining the reserves. ... Our bio-economic model shows that fishing revenue increases after the creation of a reserve, and also that tourism revenue surpasses the revenues from fishing. It is worth noting that the total value of the reserve is larger than the pre-reserve value within only five years of protection. This result is in agreement with data on the rapid biological recovery of reserves and short-term local fisheries enhancement. Therefore the typical concern about short-term revenue losses associated to reserve creation, especially for fishers, should be easily addressed with a proper business plan that estimates revenue projections, accounts for costs, and identifies financing mechanisms.

Results of a 2013 study into economic impacts of marine sanctuary zones on local revenues³⁵

Tourism can inject hundreds of millions of dollars into local economies. Tourists visit marine parks to enjoy a range of activities, such as snorkelling, recreational fishing, boating, swimming, and experiencing marine life including, but by no means limited to, whales and dolphins.

The quality of their experience, and the benefit to local business through repeat custom and reputation, is directly connected to the quality of the marine environment – and sanctuary zones, both through providing biodiversity rich areas for non-fishing activities and enriching other areas of the park through spill-over, play a key role in creating a high-value tourism experience.

Solitary Islands Marine Park (zoned 2002)

The Marine Parks Authority commissioned a survey of local businesses in 2006 to gauge the effects of the marine park zoning plan on local business. The estimated annual turnover for businesses surveyed had increased by about 20 per cent from 2001 to 2006 with an estimated increase of \$3 million and employment in the peak season had also increased. The results of the survey indicated that most of this growth was due to an increase in visitation to the area.³⁶

Jervis Bay Marine Park (zoned 2002)

Table 4 summarises commercial marine tourism activities in Jervis Bay Marine Park. In 2008, about 55,000 people participated in various commercial tours, operated by 26 commercial tour businesses in Jervis Bay Marine Park, generating total revenue of \$2.4 million.

Table 4: Profile of Jervis Bay Marine Park commercial marine tourism activity (2008)

Activity	Number of Permits	Estimated Passengers	Cost per Passenger (\$)	Total Revenue for Sector (\$)
Charter fishing	8	1,813	110	200,000
Dive	6	3,665	120	440,000
Mammal/Scenic	9	48,884	35	1,700,000
Hire	2	378	75	28,000
Kayak	1	200	100	20,000
Total	26	54,900		2,388,000

Source Clarke, M (2010)³⁷

Lord Howe Island Marine Park (zoned 2004)

Revenue generated from tourism activities in the marine park is of critical economic importance to the small permanent local community of approximately 350 people on Lord Howe Island. Most residents provide accommodation, tours, or goods and services. Fifty-eight per cent of survey respondents were on package deals, with total expenditure for the survey period for all visitors estimated to be approximately \$2.1 million. While the Lord Howe Island Board spends approximately \$8 million per year on the provision of services, the value of the local economy is unknown.³⁸ Table 5 lists the most popular activities in the marine park:

Table 5: Most popular activities for visitors to Lord Howe Island Marine Park surveyed in 2007

Activity	Frequency cited	Activity	Frequency cited
Shore or reef walking	89%	Glass-bottom boat trip	55%
Swimming	86%	Recreational fishing	22%
Snorkelling	84%	Scuba diving	18%
Feeding fish at Neds Beach	70%	Surfing	16%
Trip to North Bay (sanctuary zone)	63%		

Source: NSW Marine Parks Authority, 2010 ³⁹

Cape Byron Marine Park (zoned 2006)

Approximately two million people visit the Byron Shire annually, injecting approximately \$300 million into the local economy.⁴⁰ Marine tourism is a major focus for visitors who come to enjoy stunning beaches and a wide range of water based recreational activities, including world class surf breaks and a renowned diving location. Results of a community and visitor recreational use questionnaire undertaken by the Marine Parks Authority in 2002 showed that swimming, beach going, whale and dolphin watching, surfing and recreational fishing were the most popular recreational activities undertaken within the marine park.⁴¹

Port Stevens – Great Lakes Marine Park (zoned 2006)

Within the Port Stevens – Great Lakes Marine Park, dolphin and whale watching receive the highest level of commercial tourism activity. Indeed, Port Stephens is regarded as the ‘dolphin watch capital of Australia’, and arguably carries the highest number of clients on dedicated dolphin watching trips anywhere in the world. Gross revenue related to marine tourism was estimated at \$5 million from 250,000 passengers in 2010.⁴²

Batemans Marine Park (zoned 2007)

“The Narooma News editorial on January 6 2010 declared, ‘...Narooma swells with visitors. The boat ramps and beaches have never been busier.’ ... ‘It is wonderful to see so many happy fishermen in Narooma for the holidays...the kingfish have been terrific. ... Ocean Hut has sold something approaching 2,000 licences this week alone.’ ... Narooma beds completely sold over the Christmas/New Year period and beyond as visitors extend their stay. ... there have never been as many recreational watercraft seen on the waters off the coast as there have been this summer. I am told constantly that shops throughout the Eurobodalla have been doing a roaring trade.... According to Eurobodalla Tourism’s manager, John Pugsley, ‘Caravan parks particularly, right along the coast, were at capacity over the summer holiday period. If it’s not the best season we’ve had it’s certainly up there and this has all occurred at the tail end of the greatest financial crisis since the Depression.’”

Assortment of quotes from regional newspapers and authorities, 2010, assembled by Marine Park Authority⁴³

In Batemans Marine Park, business permits have been issued to more than 60 businesses since the marine park was zoned including whale watching tours, charter fishing tours, kayak tours, scuba diving charters, surf schools, boat hire companies, sightseeing tours, cruises, mooring contractors, construction companies and fishing clubs. Given the seasonal nature of business on the NSW south coast, many businesses conduct a range of activities, e.g. a combination of charter fishing, whale watching and scuba/snorkelling charters.⁴⁴

COMMUNITY PERCEPTIONS OF MARINE PARKS EVOLVE OVER TIME

Surveys show high local support for marine parks, including recreational fishers

In the three NSW marine parks where local opinion has been surveyed since the establishment of the park, support is extremely high across all sectors of the local community, with support for sanctuary zones at 80 per cent or higher.

Solitary Islands Marine Park (zoned 2002)

Survey results indicate that the marine park is well accepted and supported by the general community. In January 2008, an attitudinal survey of 407 local residents by McGregor Tan Research found 87 per cent support for the conservation of the marine environment. This support was demonstrated across a number of groups including non-fishers (88 per cent in favour of conserving the marine park) and fishers (82 per cent in favour of conserving the marine park). Sanctuary zones in the marine park were also highly supported by 80 per cent. When asked to rate a list of reasons for protecting the marine park, the reasons given most frequently were allowing future generations to enjoy the marine park, protecting natural habitats, supporting a diverse array of marine and bird life, and providing educational benefits.⁴⁵

Jervis Bay Marine Park (zoned 2002)

In January 2008, an attitudinal survey of 402 local residents found that 84 per cent support conservation of the marine park. The level of support was similar across a number of groups, including fishers and non-fishers. Sanctuary zones in the marine park were supported by 82 per cent of the respondents. When asked to rate a list of reasons for protecting the marine park, the reasons given most frequently were allowing future generations to enjoy the marine park, protecting natural habitats, supporting a diverse array of marine and bird life, and providing an important area for recreation and leisure. The most popular and frequent activities undertaken in the marine park are beach activities, with swimming, walking and surfing accounting for 73 per cent of all activities mentioned. Other important activities include boating (36 per cent), recreational fishing (32 per cent), and snorkelling and scuba diving (26 per cent).⁴⁶

Lord Howe Island Marine Park (zoned 2004)

Lord Howe Island Marine Park is particularly aimed at preservation and eco-tourism. The Lord Howe Island Group World Heritage Area was declared in 1982 and was listed on the National Heritage List in 2007.

An attitudinal survey, conducted in the summer of 2008–09, showed the marine park and its zoning plan were well-supported by residents and visitors. Of the 500 surveys completed, 81 per cent of respondents were aware of the marine park, with 96 per cent of residents and 98 per cent of visitors supporting it. The value of the island was highlighted by the survey result, showing that 48 per cent of visitors surveyed had been to the island previously. Reasons for visiting the island were:

- the natural marine environment (41 per cent);
- the natural land areas (33 per cent); and
- the island’s World Heritage status (30 per cent).

Sanctuary zones were supported by 91 per cent of residents and 96 per cent of visitors, and by 90 per cent of fishers and 98 per cent of non-fishers. These results indicate a very high acceptance and understanding of the conservation values of the marine park.⁴⁷ They also show that even in a World Heritage Area, where most of the residents are dependent on the Marine Park for employment, support may be very high, but will not be 100 per cent. Table 6 details the support levels of sanctuary zones in the marine park.

Table 6: Support for sanctuary zones, Lord Howe Island Marine Park

<i>Support level</i>	<i>Visitors</i>	<i>Residents</i>
Strongly supportive of SZs	86%	78%
Supportive	10%	13%
Neutral	3%	5%
Against or strongly against	0.50%	4%
Not sure	0.50%	NA
	100%	100%

Source: NSW Marine Parks Authority, 2010 ⁴⁸

Initial opposition to marine parks can be vocal, although based on misperceptions

Although the overwhelming majority of recreational fishers near marine parks support the parks and their sanctuary zones, there is often initial concern at the establishment of a park.

Some concerns are based on misperceptions of what a new park will mean for local fishing. There is a common assumption that no fishing at all is allowed in a marine park,⁴⁹ while in actual fact an average of 82 per cent is open for recreational fishing. Local and regular visitor recreational fishers worry that they will no longer be able to fish in favourite spots. This concern can be exacerbated if the consultation process does not sufficiently recognise the expertise of local fishers in the stewardship of their marine environment and fish stocks, leading to the impression that the experts from the city are dictating to the locals.

Another common assumption is that recreational fishing catch is so small as to have no impact, and that there is therefore no need to exclude it from any area of a marine park, even sanctuary zones. However, recreational catch can be as high as commercial catch in some areas and for some species.

Given that one in five Australians participates in recreational fishing each year, it's not surprising that it has an impact. A single commercial fisher takes massively more fish than any single recreational fisher, but there are far more recreational fishers and for some species the cumulative impact can be substantial. It has been clear for some years in NSW that recreational fishing accounts for a large share of the total catch.⁵⁰

In NSW a number of fish species are known to be fished as heavily by recreational as commercial fishers, and some far more. This is illustrated in Table 7. Recreational fishers do not have the same reporting requirements as commercial fishers but this data suggests that the impact of recreational fishing on fish stocks should be calculated when setting catch limits for all.

Table 7: Species in NSW for which estimated recreational catch exceeds commercial catch

Species	Exploitation Status	Annual commercial catch			Estimated annual recreational catch			Total
		tonnes low	tonnes high	% of total avg.%	tonnes low	tonnes high	% of total avg.%	tonnes avg
Bluespotted flathead	Fully Fished	120	150	26%	320	450	74%	520
Dusky flathead	Fully Fished	100	250	20%	570	830	80%	875
Grey Morwong ^a	Overfished	40	40	19%	130	210	81%	210
Mahi Mahi ^b	Undefined	10	10	9%	100	100	91%	110
Mulloway ^c	Overfished	40	40	12%	100	500	88%	340
Sand Whiting	Fully Fished	100	200	30%	230	460	70%	495
Spanish Mackerel ^b	Fully Fished	10	10	15%	10	100	85%	65
Spotted Mackerel	Fully Fished	20	30	31%	10	100	69%	80
Tarwhine	Fully Fished	30	80	24%	130	210	76%	225
Teraglin ^d	Fully Fished	20	20	18%	70	110	82%	110
Yellowfin Bream	Fully Fished	200	500	27%	820	1,070	73%	1,295
Yellowtail Kingfish	Growth Overfished	85	160	35%	120	340	65%	353

^a commercial fishing estimate based on 2006-2009 figures
^b commercial estimate is <10, cited here as 10 for lack of more precise figures
^c commercial fishing estimate based on 2008-2009 figures
^d commercial estimate is <20, cited here as 20 for lack of more precise figures

Source: Clarke P, D. Kindleysides, K. Evans, 2011, letter: "Re: Independent Scientific Audit of marine parks NSW," Nature Conservation Council of NSW, Australian Marine Conservation Society & National Parks Association of NSW
 Data: Rowling K. et al, 2010, Status of Fisheries Resources in NSW 2008/09, Industry and Investment NSW, Cronulla⁵¹

Department of Primary Industries' staff have confirmed some of the data in this table, noting it contrasts with assertions from recreational fishers that they are responsible for a relatively small proportion of the total catch.⁵² Recreational fishers generally think that they are responsible for around 5 per cent of the total catch, when for many species their take is about 50 per cent of the total catch.⁵³

Recognising this, recreational fishers have begun to advocate for tighter regulatory control of their own catches.⁵⁴ Representative bodies are promoting best-practice fishing techniques and responsible use through education campaigns such as "limit your catch" and "fish for the future".⁵⁵

Increases in recreational catch may come quickly when the parks are protected and commercial fishers restricted. There are already signs of changing local attitudes towards full protection areas, including in fishing magazines.

"Maybe we do need some total no-take zones, even if they are inconvenient to some of us. ... I guess the next 50 years or so might "prove" who's correct ... if successive governments provide sufficient funding for valid, ongoing scientific research and for staff to undertake it."

John Newberry, 18 July 2013, *Fishing World* ⁵⁶

As benefits become apparent, support grows for marine parks - but takes time

As local fishers discover that marine parks, including sanctuary zones, are not really a threat to fishers or to related businesses, initial resistance decreases and support grows. Experience elsewhere shows that this transition can take years, but as tourism can pick up quite rapidly, economic benefits can accelerate the development of support for a park.

The following quote is from an article written in the local newspaper, the South Coast Register, in 2006. Jervis Bay Marine Park had been in existence since 1998 and zoned since 2002 but Batemans Marine Park was just about to be declared.

“Huskisson booms, thanks to Marine Park sanctuaries while further south they fear a looming economic disaster

“Jervis Bay is teeming with life, with large numbers of fish, whales, dolphins, seals and turtles spotted in its waters. The abundant marine life is bringing increased numbers of tourists, according to local tour operators, who have credited much to the current boom enveloping Huskisson and surrounds to the Jervis Bay Marine Park. While further south, fears have been raised about the planned Batemans Marine Park wrecking the economy from Ulladulla to Tathra, Jervis Bay operators said the marine park had helped their businesses boom.

‘While there have not been any quantitative studies on the effect of the marine park on tourist-based businesses in Huskisson, all operators feel it is positive for their businesses,’ said Huskisson Chamber of Commerce president Tony Lim. ... Jervis Bay Sea Sports owner said the marine park had made a huge difference to life in the Jervis Bay waters with divers spotting more fish, bigger fish, and more juveniles, particularly in the sanctuary zones. ... Dolphin Watch cruises said the marine park had transformed the region ... a huge benefit to the entire region ... a large increase in the number of whales entering Jervis Bay to rest while other forms of marine life had also increased in numbers. That all added up to more tourists and more business for local outlets.

Shoalhaven tourism manager ... said the marine park helped create ‘a very positive tourism experience.’ ... benefits also spread to things such as recreational fishing. Visits to the region’s boat ramps also showed many anglers were catching the bag limits when fishing in the bay, ‘and they’re catching good sized fish, which creates a good impression’. ... for overall tourism the marine park ‘gives us a very good image’ he added.”

Glenn Elland, 25 October 2006, South Coast Register.ⁱ

The above offers strong evidence that marine parks can be feared initially by businesses and strongly supported after a few years. Jervis Bay Marine Park was 8 years old and had been zoned for 4 years. Batemans was about to be declared in September 2006.

A particularly interesting example comes from New Zealand, because it has an exceptionally old marine reserve. When New Zealand’s first marine reserve opened in 1977 in Goat Island Bay, local newspapers announced “Nothing to do at Goat Island Bay anymore”. Now it has a paved road for access with 100,000 people a year visiting, school trips by the hundreds and a marine education centre, all of which followed the declaration of a total no-take reserve status.

The ecological transformation was unexpectedly vivid. As snapper and lobsters (which had been fished to very low levels) returned, the kelp forests began to regrow. As the principal predators of sea urchins, the snapper and lobsters allowed a rebalance and regrowth. These two species now aggregate within the areas closed to fishing. Their density inside the reserve is about 15 times higher than outside and there is an outward migration of lobsters (called crayfish in New Zealand) that is now supporting the local commercial crayfishermen who place their pots just outside the border of the marine reserve.

“These former sceptics are now some of the reserve’s staunchest defenders. They refer to it as ‘our reserve’ and act as maritime minutemen, reporting poachers and boundary cheats....reserves where fishing is banned are now seen as potential stud farms and fish hatcheries, replenishing the surrounding seas” was only possible because the reserve had been closed for 30 years. The founder of the park said ‘fifteen years ago, if you had suggested that entire school classes would be put into wet suits and taken into the water here you would have been laughed at. Now it’s routine’.”

Kennedy Warne, *National Geographic*, 2007⁵⁷

The reserve has been closed to fishing for 36 years now. When the story was written up in 2007, it cited the above research that was already showing long term benefits.

POLICY IMPLICATIONS

Wait 15 years to rigorously assess effectiveness

Marine parks show clear biological benefits over time, but the timeframe can vary. Factors such as the original condition of the site, conditions in the area around the site, management, and the kinds of marine species in the area, can make predicting changes over time difficult.

Recent research has sought to make this complex task easier. For example, Claudet et al (21 authors in all) produced a highly technical study examining 58 datasets from 19 European marine reserves (fully protected areas) in Europe, looking for information that would specifically be of use for the design of marine protected areas.⁵⁸ Some variables were highly significant, particularly age and size of reserves:

- Fish species generally caught for commercial purposes were either more numerous, or larger, or both, in the reserves. Mean densities were 2.46 times larger inside the marine reserves compared with the adjacent fished areas.
- For each year of the park's age, the comparative density of commercially valuable fish species increased by 8.3 per cent on average.
- For every 10-fold increase in the size of a 'no-take' or sanctuary zone, there was a 35 per cent increase in the density of commercially valuable fish species.

The authors concluded that older marine reserves are more effective than newly established ones in both increasing sizes of commercial fish species and species richness. This may be partly explained by the relatively long life span of some commercially targeted species, such as groupers and sea basses that can live as long as 40 years. They also concluded that since fish communities recover fairly slowly, rotating temporary closures of fisheries may not be sufficient for fish stocks to recover from being fished to low levels.⁵⁹

Furthermore, three key insights into the management of marine reserves emerge from the meta-data study by Molloy et al in which they recommended keeping marine reserves for a minimum of 15 years:⁶⁰

- The overall effectiveness of marine reserves at enhancing fish densities improves over time. Although some reserves may be effective quickly, most reserves require more than a decade to yield significant benefits.
- Reserves may provide benefits in the long run, irrespective of their early performance.
- Given enough time fish species that are locally exploited do recover in reserves. Reserve stakeholders therefore need to have realistic expectations and management plans need to incorporate short-term uncertainty and a long-term perspective.⁶¹

Maintain investment in marine parks as regional infrastructure

Marine parks have been embraced by regional shires, which actively market them to attract tourists to their region. As the economic dividends from marine parks continue to grow over time, they are likely to become increasingly important infrastructure to support regional economies.

A 2010 business survey found '...it was clear that businesses and communities were generally supportive of the protection of the marine environment which draws visitors to the area and for which a degree of ownership is felt.'⁶² Without exception, local chambers of commerce, councils and businesses now actively promote each of NSW's six marine parks for their unique tourism opportunities.

The following excerpts from local marketing websites gives a sense of how marine parks are valued as regional infrastructure.

Solitary Islands Marine Park (zoned 2002)

The Coffs Coast marketing campaign highlights Solitary Islands as "a unique area [which] includes estuaries, beaches, rocky shore, reefs, ocean and islands at the point where warm and cool currents meet". There are over 550 reef fish species, 90 hard corals and 600 molluscs. Attractions include scuba diving and snorkelling, and whale and dolphin watching.⁶³

Lord Howe Island Marine Park (zoned 2004)

The Lord Howe Island Tourism Association markets the Marine Park, saying:

“A little over 600 kilometres from the north coast of NSW, rising through the clear waters of the southwest Pacific Ocean, lies the remains of an extinct volcano. The entirety of the waters of this special place are managed within a Marine Park. Large fish, which are scarce and avoid humans in other parts of the world, are easily approached at Lord Howe, making underwater photography easy. A number of tour operators offer round-island sight-seeing trips in calm weather and further offshore, game fishing charter boats fish for kingfish, yellowfin tuna, wahoo and a variety of other oceanic species.”

Lord Howe Island Tourism Association, no date, Lord Howe Island – the last paradise⁶⁴

Batemans Bay Marine Park (zoned 2007)

The Narooma Chamber of Commerce and Tourism promotes the Batemans Marine Park for its benefits to recreational fishers, through “bigger and better catches”. A key marketing point is that the Bateman’s Bay Marine Park puts smaller restrictions on recreational fishing than marine parks in other states and those who regularly fish there have reported bigger and more plentiful catches since the park was established.⁶⁵

This suggests NSW should maintain its investment in marine parks. Since the benefits only increase over time, disrupting this investment could mean regional economies don’t see the full dividends of marine parks.

Invest in scientific monitoring and keep consulting the community

Decisions based on short term assessments run the risk of being driven by emotional reactions, rather than a balanced view of dividends that will continue to flow from marine parks.

Adequate scientific monitoring is an essential part of managing marine protected areas, as we know that their ecological benefits change over time. Marine parks and sanctuary zones become biologically richer with protection, but are also affected by various environmental insults, from pollution to ocean acidification. Protection makes the protected areas stronger, but we won’t know what the changes are and whether threats have been averted unless we observe and analyse over time. This is an investment, not an expense – and a necessary one.

Achieving a sustainable management plan relies on scientific understanding of what is happening at the ecosystem level: What are the changes? What are the threats? What do we need to preserve? Should we be trying to rebuild damaged ecosystems or protect undamaged ones from threats? Why and how? We need good science to be able to answer such questions.

We also need to bear in mind that when local preferences and rights to use resources are being debated, a purely scientific solution to a complex issue is a difficult thing to achieve. Local communities and those who use the marine resources need to be well-informed by both scientists and planners. The wishes of local groups need to be taken into consideration, but with adequate representation of *all* the different interests, not just the loudest ones - including the interest of future generations.

While it is not clear that we have yet considered all interests adequately, let’s hope that we will collectively give marine protected areas enough time to develop and to show the benefits they can bring.

“Polling suggests an overwhelming majority of Australians support the establishment of marine parks, so it’s not a plan that should polarize citizens. Again, the scientific consensus is substantial. It’s not a matter of fisheries management; it’s about the preservation of ecosystems. ... This is a moment for the future so you expect to hear the voices of the past rail a while. You can still meet the odd geezer whining that he can’t shoot roos in a national park. Sixty years ago there were more of them. And in sixty more you’ll doubtless find anglers who cannot accept that some bits of the ocean are for fish and not fishing, but there probably won’t be many. Most rec-fishers are philosophical about marine parks. Most of them are people with a sense of justice and proportion. When they see that most coastal waters will remain open to fishing, they can’t see what the fuss is about.”

Tim Winton, 2012, ‘Sea Change’⁶⁶

NOTES

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