

THE FRIENDS OF DURRAS SUBMISSION TO THE MARINE PARKS AUTHORITY ON THE ZONING OF THE BATEMANS MARINE PARK

PREAMBLE

The Friends of Durras (FoD) congratulates the Marine Parks Authority (MPA) on the draft zoning plan for the Batemans Marine Park (BMP). The MPA draft makes a genuine attempt to meet the primary objectives of the BMP; to conserve marine biodiversity, habitats and ecological processes as well as accommodating the secondary objectives of the Park; to provide for the ecologically sustainable use of fish and marine vegetation (including commercial and recreational fishing) and provide opportunities for public appreciation, understanding and enjoyment of marine parks.

FoD has examined the draft, received submissions from FoD members, and undertaken a detailed assessment of the specific natural values of the Murramarang Coast and Durras Lake. FoD has matched these natural values to national identification criteria established by the National Representative System of Marine Protected Areas (NRSMP), which were used to evaluate the Park's natural values in the first instance. It is clear from the information presented below (pages 8-19) that a large part of the Murramarang Coast and all of Durras Lake is worthy of sanctuary zoning. Both the Murramarang Coast and Durras Lake will substantially contribute to the conservation of marine biodiversity, habitats and the ecological processes found in the BMP.

However, FoD also recognises the great pleasure fishing provides for recreational fishers, and the importance of recreational fishing to the regional economy and to the well being of local communities. In 2001 FoD was the only organization to nominate Durras Lake as a recreational fishing haven. Many of our members fish, using fishing as a justification for spending long hours by the sea and enjoying the physical and mental health benefits of being outdoors - regardless of quantity of catch. The importance of recreational fishing to both individual and community identity and wellbeing is very difficult to quantify, and it may be in danger of being overlooked or underestimated by those who do not understand enthusiasts' identification with this sport. FoD has reflected genuine community concern on this issue in our recommendations to the Marine Parks Authority.

FoD has followed the public debate generated by the opponents of the BMP carefully. Despite considerable effort on the part of anti-marine park interests and individuals, opponents have been unable to find evidence to substantiate their warnings about the potential for negative impact of the proposed marine park zoning. In contrast to this approach, FoD has based its submission on published data sources wherever possible. Some of the assertions made by BMP opponents are addressed on pages 3-7.

RECOMMENDATIONS

GENERAL

- FoD recommends that the MPA immediately begin a vigorous education campaign aimed at all ages presenting the need for marine conservation and the important role the BMP will play in ensuring marine biodiversity is conserved into the future.

- FoD recommends that the MPA seeks and encourages scientific institutions to begin intensive scientific study in the BMP to establish much needed base line data essential for the evaluation of the BMP's effectiveness and upon which to base possible zoning changes in the future.

SPECIFIC

FoD recommends that the MPA incorporate the following measures in their final zoning plan for the BMP.

Durras Lake

- Increase the proposed sanctuary zone to include Bartley's Arm.
- Prohibit all forms of commercial fishing from all areas of Durras Lake (recreational fishing to continue in all non-sanctuary zones).
- Prohibit all forms of bait collection from Durras Lake.
- Prohibit personal watercraft (jetskis) from operating on any part of Durras Lake.
- Place a speed limit of 4 knots on all motorised boats using Durras Lake.
- Establish and maintain a vigorous monitoring programme of the lake in fished and unfished zones to inform ongoing management with the aim of ensuring long term ecological protection of the lake and improvement in fish stocks.

Murramarang Coast

- Declare sanctuary zones around Wasp Island and Grasshopper Island out 50 metres from the low water mark to provide increased protection to shorebirds.
- Declare habitat protection zone along the North Head rock ledge and beach out 50 metres from the low water mark, with the sanctuary zone extending from North Head to the Tollgates to commence from this point as specified in the BMP zoning proposal.*
- Prohibit all forms of collecting in the intertidal zone of the Murramarang Coast, except for the sandy beaches in Beagle Bay.
- Prohibit all forms of commercial fishing from the Murramarang Coast.
- Prohibit personal watercraft from operating along any part of the Murramarang Coast.

* If implemented, this measure will allow rock and beach recreational fishers to continue line fishing from this popular National Park area, but protect the coastal environment and resource from access by commercial and recreational fishing vessels. Monitoring of rock and beach recreational fishing under these modified conditions of access would be integral to such a compromise and, where found necessary to protect the resource, measures such as seasonal closures, reduced bag limits etc should be applied.

THE BATEMAN'S MARINE PARK:

ANSWERING THE OPPOSITION

Opponents of the BMP have strongly, sometimes aggressively, stated their case over the past ten months. Most have claimed that the BMP is unnecessary and will do nothing to conserve marine biodiversity in our region. Some appear to be ill-informed, not understanding that the primary objective of the BMP is to conserve marine biodiversity, habitats and ecological processes of all living forms, and that secondary objectives include providing for the ecologically sustainable use of fish and marine vegetation (including commercial and recreational fishing) and providing opportunities for public appreciation, understanding and enjoyment of marine parks. FoD believes many of the claims publicly presented by the opponents of BMP are ill informed and unsubstantiated, and that it is important to address these claims directly. We do this below.

“The BMP is a vote catching exercise”

A claim vehemently put forward by organisations such as Coastal Rights Association, the Durras Marine Park Working Group, the Narooma Ports Authority and Ecofishers is that the BMP exists because the NSW Labor Government is appeasing minority extreme green groups in order to get Green Party preferences in the 2007 election (ECOfishers, 2006 and Phillip Creagh, in Sloane 2006).

Such comments ignore the overwhelming evidence of bi-partisan support for marine conservation initiatives and the fact that this support is based on increasingly strong evidence of severe decline in the health of the marine environment and fish stocks.

In 1994 the NSW Liberal coalition government introduced the Fisheries Management Act, which resulted in the Solitary Islands Marine Reserve. On 27 May 1994 the then Liberal Premier of NSW John Fahey announced that Jervis Bay was to become a marine reserve.

On 25 June 1997 the NSW Marine Parks Bill was supported by the Liberal opposition and by other minority parties such as the Call to Australia Party. Their leader, the Reverend Fred Nile, said “ I am pleased to support this bill and its objectives which are to conserve marine biological diversity and marine habitats by declaring and managing marine parks” (www.parliament.nsw.gov.au).

The Great Barrier Reef Marine Park was declared under the Federal Liberal government of Malcolm Fraser. His government placed the Great Barrier Reef, Kakadu, Willandra Lakes, Lord Howe Island and SW Tasmania on the World Heritage List.

The Howard Federal Liberal Government recently increased the no-take Green Zones of the Great Barrier Reef Marine Park from 4.5% to 33.5%. The WA Government recently declared 34% of the Ningaloo Reef Marine Park a sanctuary zone. In 2003, the then Federal Minister for Environment and Heritage, Dr Kemp, said

Protected areas in the Great Barrier Marine Park have proven to be effective, with studies showing there are more and bigger fish and other species in these zones and sanctuaries. The Green Zones also provide a safe sanctuary for endangered and threatened marine species (Department of Environment and Heritage, 2003).

The truth is that Labor, Liberal and most minority political parties in Australian politics have furthered the cause of marine conservation. Public acceptance of the establishment of marine parks in NSW is not the result of political pressure of minority groups, but instead reflects increased community awareness of the need for environmental protection measures. The recent Lowy Institute survey, published in early October 2006, found that Australians placed ‘improving the global environment’ at the top of the list of ‘possible foreign policy goals’ - viewing this as even more critical than ‘protecting the jobs of Australian workers’ or ‘combating international terrorism’ (Lowy Institute 2006). The

importance of protecting the marine environment is recognised internationally. For example, the first marine park in the United States of America was established in 1975, and earlier this year the Bush Administration created the Northwestern Hawaiian Islands marine park, the largest area of marine environment protection in the world. The US government has taken a very public hard line on environmental issues over the last two terms; it is engaged in marine conservation because it clearly understands how vital such action is, and not because it is seeking the political support of the environmentalists.

The claim that the BMP was created by the NSW Labor government to obtain Green preferences is unsubstantiated.

“There is no science to support the creation of the BMP”

Marine biologist Pia Winberg, who has been researching ecology changes since the creation of the Jervis Bay Marine Park, said in the regional media in August 2006 that “people have been asking for the science behind the marine park plan and I am available to provide the research. But at the public meetings I have been silenced by a noisy fishing body.” (Condie 2006).

One of the loudest voices claiming there is no science to support the BMP has been ECOfishers. Unfortunately ECOfishers have not referenced any of the material they use on their website to justify the claim of no science, and as such it is impossible to fully explore the credibility of their claim.

It is unfortunately the case that scientific knowledge of marine biodiversity and ecosystems is limited, both in Australia and overseas.

Despite the large human population base in New South Wales and the diversity and dollar-value of fishing activities undertaken, knowledge about the biology and dynamics of our fish resources is extremely limited...For many important species (of fin fish) very little is known about their biology and almost nothing is known about their population. Yet for many of these species concerns have been expressed about stock status. (Rowling, 2001).

With more than half the US population now living in coastal states, the young and growing sanctuary system inevitably finds itself being drawn into the kinds of debates that swirled around national forests and wildlife refuges. A key difference is that we have only a blurry idea of what's out in those salty depths, much less how ecosystems work. Sanctuary managers list research as an urgent priority, for they are dealing with the planet's last and least explored frontier. (Chadwick, 1998).

Research is also needed into emerging potential threats to marine biodiversity. Unseasonably warm water on the NSW coast this winter could be part of global climate change, but more study is needed. Dr Jan Williamson, head of the marine ecology group at Macquarie University's Department of Biological Sciences, has suggested that the warmer water in Sydney winters is affecting the marine ecology of the region. (Dasey, 2006).

Similarly, more research is needed into invasive species, such as sea spurge (*Euphorbia paralias*), which could potentially take over many of the BMP beaches, threatening native flora and fauna.

Obviously we could benefit by knowing more.

No-one really knows how to manage an ocean or even part of one. We have to invent ways as we go along. Our marine sanctuary system remains a work in progress, gathering influences from near and far. (Chadwick, 1998).

What Senator Robert Hill, Australia's ambassador to the United Nations, *does* know is that “The global picture in relation to the marine environment is a dismal one” (Nichols, 2006). There are numerous scientific studies supporting Senator Hill's belief, and many that point to ailing marine biodiversity and

ecosystems in Australia. Until we have more science upon which to base marine biodiversity management we must adopt the science of common sense - the precautionary principle. Throughout Australia and much of the world a first step in addressing the potential threat to marine biodiversity has been to create marine reserves.

Work has recently begun by some of Australia's leading marine scientists to identify the shortfalls in current marine conservation strategies and in particular the lack of awareness of the key ecological principles within the marine and coastal areas of Australia. This team, lead by Professor Helene Marsh, Professor Hugh Possingham and Professor Brendan Mackey has expressed the view that marine and coastal biodiversity is seriously threatened in all regions of Australia as a result of current inadequacies in marine conservation planning.

Clearly there will be a need to monitor and review the effectiveness of this first important step towards improving marine conservation through the BMP.

While we desperately need more data, the claim that there is no science to support the creation of BMP is unsubstantiated.

“Sanctuary zones will not conserve marine biodiversity”

The Green conservation movement believe that sanctuary zones in the Batemans Marine Park will provide areas for fish to breed and live in safety, away from the angler's hooks. This is complete anthropomorphic rubbish (Creagh, Narooma Ports Authority 2006).

Refuting this common claim in talking of US experience in relation to the Florida Keys National Marine Sanctuary at a marine biodiversity conference in Australia in 2002, Dr Sylvia Earle, the former chief scientist of the United States National Oceanic and Atmospheric Administration, said

... the density of fish [in the Florida Keys National Marine Sanctuary] was 91% higher inside the no-take zone than outside, the size of fish 31% larger and the diversity of species 23% greater (Miller, 2002).

Confirming such findings, in 2003 the then Federal Minister for Environment and Heritage, Dr Kemp, reported

Protected areas in the Great Barrier Marine Park have proven to be effective, with studies showing there are more and bigger fish and other species in these zones and sanctuaries. The Green Zones also provide a safe sanctuary for endangered and threatened marine species (Department of Environment and Heritage, 2003).

Marine biologist Pia Winberg, who has been researching ecology changes since the creation of the Jervis Bay Marine Park, believes the MPA draft-zoning plan for the BMP does not go far enough because it will not adequately protect marine biodiversity. She claims that sanctuary zones should be larger and connected between habitat zones such as estuarine lakes and the open ocean. (Condie, 2006).

There is a wealth of scientific references which suggest that protecting 30-50% of marine bioregions in secure sanctuary zones is the minimum needed to help protect and restore the marine environment and to improve fish stocks. An attached Literature Search ‘*Benefits of no take zones/reserves on fisheries and biodiversity*’ in December 2005 produced 26 papers from both overseas and Australian marine parks.

The claim that sanctuary zones will not conserve marine biodiversity is completely unsubstantiated.

“There is no threat currently to marine biodiversity in the area proposed for the BMP”

Recreational fishers in the marine park don't employ practices that have a significant impact on the environment. We contend that recreational fishing has a low impact on the environment. Dolphins and sharks are significantly more efficient at catching fish than the average recreational fisher (spokesperson for the Durras Marine Park Working Group - Bay Post, 2006).

In 1978 CSIRO, in a comprehensive study of terrestrial and marine resources of the south coast of NSW, stated that fishing

... has considerable significance in an area of low permanent population and its efforts inevitably have an impact on the state of the resource, which in turn influences the well-being of the area, both at present and for the future (Owen, 1978).

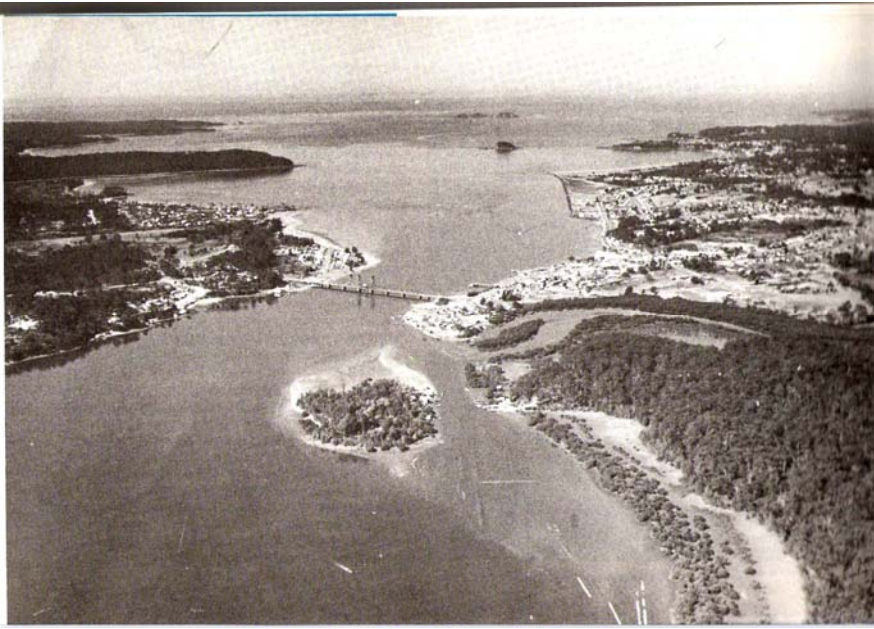
In 1971 the population of NSW was 4.589 million. In 2004, the NSW population had grown to 6.72 million, an increase of 2.131 million. The South East region, which includes the south coast, is the third fastest growing region in NSW. It is claimed that around 66% of the Australian population qualify as recreational anglers (PM Archive, 1999). The two aerial photos below taken from a 1977 boating guide to the NSW south coast confirm that the population centres bounded by the BMP have grown and spread enormously in the past 30 years. Tourism to the south coast has increased at a faster rate than the permanent population. EOCfishers claim that recreational fishers catch 13 million fish each year, although NSW Fisheries state that

no estimate of the total recreational fish catch has been made (however) their combined impact on the resources can be significant, particularly with some species in some areas (NSW Fisheries, 1998).



South Durras in 1977, looking north with Wasp Island in the right foreground and Wasp Head and Murramarang camping area (now Murramarang Resort) to the left.

(Toghill 1977)



Batemans Bay in 1977, looking east towards the Tollgates.

(Toghill 1977)

Fishing is analogous to hunting rather than farming and because this implies a comparatively early stage of evolution of a food producing function, the potential for improvement in techniques is large (Owen, 1978).

There are many more fishers than 30 years ago, and fishing technology has improved enormously. Dr Bryan Pratt, an expert fishing writer, explains that the

... technology available to recreational anglers has expanded enormously in recent years. We're an affluent society now. There are a lot more boats out there, a lot more four-wheel drives, a lot more penetration of otherwise safe fishing areas. We've got chemically sharpened hooks that don't miss too many fish. Braided Kevlar lines give us better access to bigger fish in deeper waters. Better rods and reels. We've got GPS things that let us pick up a specific location and you can go back to it day after day. We've got sounders that will pick up an individual fish underneath the boat.... You see, we've got a bit too good (PM Archive, 1999).

Rob Paxevanos a fishing writer with the Canberra Times recently alerted readers to a new website where they could obtain free sea-surface temperature maps, and to another site which was updated at least six times a day. Armed with this information and a GPS, fishers could easily locate the leading edge of the current. "It is absolutely filthy with yellowfin along the edge. The fish got thicker and thicker as the morning went on, with double and triple hook-ups the norm " (Paxevanos, 2006).

Dr Pratt concluded with a statement fully endorsed by FoD

This is the challenge, by the way, right now for recreational anglers. Do you want your kids and grandkids to be able to catch fish? If you do, get in now and put in some sensible pressures to safeguard fish stocks, both from the recreational angler's point of view and from the commercial point of view (PM Archive, 1999).

The claim that there is no threat to marine biodiversity in the BMP is unsubstantiated.

THE CASE FOR THE BATEMAN'S MARINE PARK:

THE NATURAL VALUES OF THE MURRAMARANG COAST

GEOMORPHOLOGY

The Murramarang coast runs between Murramarang Beach and North Head. Almost all of this coastal section abuts Murramarang Aboriginal Area and Murramarang National Park, which extend to the ocean low water mark. All the offshore islands are protected in Brush Island Nature Reserve, Belowla Island Nature Reserve or Murramarang National Park. Within the Batemans Marine Park boundaries (out to 3nm) around 13km² has an ocean depth of 0-20m; 105 km² is between 20-60m and 72 km² is between 60-200m in depth. The Jervis Bay Marine Park has only 1.2 km² in the 60-200 metre depth zone. The Willinga to Durras section of the Murramarang coast contains more mapped shallow reef and shoal than any other coastal section of the Batemans Marine Park, and the same section of coast has the most reef within 1km of the coast. In contrast, the Jervis Bay Marine Park has little near shore reef. The most islands and rocks within 1 km of the shore in the Batemans Marine Park also occur in the Willinga to Durras coastal section. Along with the Wagonga to Wallaga coastal section, the Durras to Batemans coastal section contains the most islands over 1km from the shore. Most intertidal rocky shore occurs in the Willinga to Durras section and the Wagonga to Wallaga section.

In 1999 NSW Fisheries short-listed Bawley Point and Wasp Head as candidate MPA sites when identifying candidate sites for declaration as aquatic reserves for the conservation of rocky intertidal communities. A data base of significant rock platforms compiled by the Total Environment Centre listed Snapper Point, Point Upright, Wasp Head and Flat Rock from the Murramarang coast (Breen et al., 2005). Snapper Point Nursery Beds are listed on the Register of the National Estate as “an outstanding records of trace fossils, including the oldest record in the world of decapod fossils [and] ... a diverse and rich assemblage of bivalves and brachiopods” (Register of the National Estate, 1992). Wasp Head and the unconformity at Dark Beach are important sites for geomorphology study at high school and university level.

In summary, the Willinga to Durras coastline had the second highest summed irreplaceability score for ocean ecosystems and habitats for all sections of coast in the Batemans and Twofold Shelves (Breen et al., 2005).

Meets NRSMPA criteria

Representativeness

- represents one or more ecosystem within the IMCRA bioregion
- adds to the representativeness of the NRSMPA

Comprehensiveness

- adds to the comprehensiveness of the full range of ecosystems recognised at an appropriate scale within and across each bioregion
- adds to the comprehensiveness of the NRSMPA

Ecological Importance

- contributes to the maintenance of essential processes and life support systems
- contains habitat for endangered species

- preserves genetic diversity
- contains areas on which species or other systems are dependant
- contains one or more areas which are biologically functional, self sustaining ecological units

Uniqueness

- contains unusual geographical features

Biogeographic Importance

- captures important biogeographic qualities

Economic Interests

- makes an existing and potential contribution to economic value by virtue of its protection as a refuge and nursery area and source of supply for economically important species
- has current use for extraction of (marine) resources
- has importance to commercial fishers

Scientific Interests

- has existing and potential value for research and monitoring

Practicability/feasibility

- has a degree of insulation from external destructive influences
- has social and political acceptability and a degree of community support
- has access for recreation, tourism and education
- has relative ease of management and compatibility with existing management regimes

FLORA

In 1973 CSIRO and the Australian Museum conducted a small-scale pilot investigation of the intertidal and sub-littoral zones of the NSW south coast. The area had been little studied previously. Depot Point was one of seven study sites. In a comparison of flora species richness between sites, Depot Point scored higher than all other sites except Congo Point. The NW sheltered face of Depot Point had 30 species, while the exposed SE face had 25 species (Owen, 1978).

At The Pinnacle, a dive site 3kms out to sea directly east of the northern tip of Brush Island,

... you will find one of the best sponge gardens in NSW. Sea whips as long as 2 metres containing tiger anemones and basket stars, Gorgonian fans, sea tulips and sponges can be found everywhere ... on the western side of The Pinnacle...you will find a kelp forest (diveoz, 2006).

In 2002, Dr Alan Millar a seaweed specialist from the Australia Museum was "stunned into an awed silence" after survey diving around the Tollgate Islands. "Down here is like a paddock with these beautiful seaweeds poking up. It's like a marine botanical garden." Dr Millar found a whole new family of seaweed; "a marine plant so different from anything currently known to science that it cannot be categorised into any existing species or genus." His companion Dr Wilson, a marine invertebrate specialist found dozens of new invertebrate species. Dr Wilson enthused "Every time I see them [invertebrates] coming off the seaweed it's probably a new species." By the end of the brief survey of part of the Tollgate Islands Dr Wilson had collected tens of thousands of organisms, which he estimated would take him two years to catalogue. A number of other strange life forms were collected' including fish. Dr Wilson concluded, "only about 5% of these [invertebrate] species are known to science" (Woodford, 2002).

After a similar survey around Montague Island Dr Millar estimated that "30% of Australia's seaweed is yet to be discovered and documented." During this survey in 1999, Dr Millar found that the waters around Montague Island were "like diving into a tropical rainforest. Every few centimetres, there's a different plant, a different species, some different growth form. It's really quite spectacular." Dr Millar pointed out that "the world's kelp forests are crucial as greenhouse sinks and are considered more productive than any land-based forest" (Woodford, 1999).

It could be predicted that the waters around the Tollgate Islands have similar natural values to those along isolated parts of the Murramarang coast and its offshore islands. Millar and Wilson's discoveries highlight the need for the most basic of survey work along the Murramarang coast. Considering the complexity of habitats along the Murramarang coast, it is very probable that basic surveys would discover new species; certainly of invertebrates and most likely of flora and even fauna. Millar and Wilson's work confirms that the biological natural values of the Batemans Marine Park biological values are high, and likely to be higher than imagined. With such knowledge the precautionary principle must be exercised, and the Murramarang coast given high conservation priority.

Meets NRSMPA criteria

Representativeness

- represents one or more ecosystem within the IMCRA bioregion
- adds to the representativeness of the NRSMPA

Comprehensiveness

- adds to the comprehensiveness of the full range of ecosystems recognised at an appropriate scale within and across each bioregion
- adds to the comprehensiveness of the NRSMPA

Ecological Importance

- contributes to the maintenance of essential processes and life support systems
- contains habitat for endangered species
- preserves genetic diversity
- contains areas on which species or other systems are dependant
- contains one or more areas which are biologically functional, self sustaining ecological units

Productivity

- has a high natural biological productivity

Economic Interests

- makes an existing and potential contribution to economic value by virtue of its protection as a refuge and nursery area and source of supply for economically important species
- has importance to commercial fishers

Scientific Interests

- has existing and potential value for research and monitoring

Practicability/feasibility

- has a degree of insulation from external destructive influences
- has social and political acceptability and a degree of community support
- has access for recreation, tourism and education

SHOREBIRDS

The beaches, rocky headlands, estuaries and offshore islands of the Murramarang coast support a range of threatened resident and migratory shorebirds. These include the resident Pied and Sooty Oystercatcher and the Hooded Plover, the latter a species whose adult population numbers less than 50 individuals in NSW (The NSW South Coast Shorebird Recovery Program, undated).

As early as 1973, warnings were issued by the Australian Bird Study Association that “there is increasing evidence that the activities of man are affecting ecosystems [on the south coast of NSW] and is likely that herein lie some of these observed changes [decreases] in seabird abundance and distribution.”

The Australian Bird Study Association surveyed the Murramarang coast offshore islands in 1973 and found that Brush, Belowla, Grasshopper and Wasp Islands had important breeding populations of the Little Penguin (*Eudyptula minor*); Wedge-tailed Shearwater (*Puffinus pacificus*); Short-tailed Shearwater (*Puffinus tenuirostris*); White-faced Storm Petrel (*Pelagodroma marina*), Eastern Reef Egret (*Egretta sacra*) and Sooty Oystercatcher (*Haematopus fuliginosus*) (Lane, 1979).

Despite the Australian Bird Study Association warnings a major decline in the distribution and population numbers of locally breeding shorebirds continues on the south coast of NSW. These declines are caused by a wide range of introduced threats. Human disturbance through the trampling of eggs and chicks poses a serious threat to the long-term viability of shorebird populations. Unrestrained dogs may impact on breeding shorebirds by predating on eggs and chicks, as well as disturbing adult birds from nest incubation and guarding duties.

The South Coast Shorebirds Recovery Program coordinated by NSW National Parks and Wildlife Service began in 1999 to assist with the recovery of south coast threatened shorebirds. The success of this project would not be possible without the help of a large number of volunteers including “The Friends of Durras, The Coastwatchers... [and others]” (The NSW South Coast Shorebird Recovery Program, undated).

Recent surveys by the Southern Oceans Seabird Study Association found that the Murramarang coast is a stronghold of threatened oystercatchers. The offshore islands, Brush, Belowla, Wasp and Grasshopper revealed a larger population of oystercatchers than previously thought to exist. Before the surveys only 100 oystercatchers were thought to survive in NSW, but the Murramarang coast surveys have more than doubled that census figure (Woodford, 2001).

Meets NRSMPA criteria

Representativeness

- adds to the representativeness of the NRSMPA

Comprehensiveness

- adds to the comprehensiveness of the full range of ecosystems recognised at an appropriate scale within and across each bioregion
- adds to the comprehensiveness of the NRSMPA

Ecological Importance

- contributes to the maintenance of essential processes and life support systems
- preserves genetic diversity

Scientific Interests

- has existing and potential value for research and monitoring

Practicability/feasibility

- has social and political acceptability and a degree of community support
- has access for recreation, tourism and education

FISH

The 1973 CSIRO/Australian Museum study (see flora above) found 45 species of fish, all of them common to the south coast.

It was significant that the littoral rock pools [of the study sites including Depot Point] sheltered considerable numbers of the juveniles of important sub littoral and estuarine fishes. Apart from the small rock-pool species, almost all the fish recorded [were] under direct human predation..[and] ... further human pressure from an increased population in the future could be detrimental to several of the more sedentary species, such as luderick and black drummer (Owen,1978).

Little is known about changes in the populations of even the most common fish species since 1973.

Despite the large human base in NSW and the diversity and dollar-value of fishing activities undertaken, knowledge about the biology and dynamics of our fish resources is extremely limited. For many important species there is a long time series of catch data, but very little is known about their biology and almost nothing is known about their population (Rowling, 2001).

Since the 1973 study the human population on the south coast, both resident and visitor, has increased enormously. Anecdotal evidence suggests that populations of the most targeted fish species have declined markedly – “fishing isn’t like it used to be around here!”

At The Pinnacle dive site there are

... schools of kingfish, ... large drummer ... as well as schools of old wives, yellowtail and eastern pomfrets. [A] platform is home to wobbegong and Port Jackson sharks as well as a huge bull ray [and] under the ledge we have found cuttlefish, blind sharks, magpie morwongs, Bleaker’s blue devil fish and ... two pineapple fish. ... Grey nurse sharks have been seen around the cave entrance in the past (diveoz, 2006).

Australian Fur Seals have been seen around the Pinnacle dive site and along the Murramarang coast. Other mammals observed along the Murramarang coast include leopard seals, humpback and sperm whales and common dolphins (Atlas of Australian Wildlife).

Meets NRSMPA criteria

Representativeness

- represents one or more ecosystem within the IMCRA bioregion
- adds to the representativeness of the NRSMPA

Comprehensiveness

- adds to the comprehensiveness of the full range of ecosystems recognised at an appropriate scale within and across each bioregion

- adds to the comprehensiveness of the NRSMPA

Ecological Importance

- contributes to the maintenance of essential processes and life support systems
- preserves genetic diversity

Economic Interests

- has current use for extraction of (marine) resources
- has importance to commercial fishers

Scientific Interests

- has existing and potential value for research and monitoring

Practicability/feasibility

- has social and political acceptability and a degree of community support
- has access for recreation, tourism and education

THE CASE FOR THE BATEMAN'S MARINE PARK:

THE NATURAL VALUES OF DURRAS LAKE

ECOLOGICAL CONDITION

In May 1999, James Woodford, science writer with the Sydney Morning Herald, awarded Durras Lake the title, "the last pristine lake" in NSW. While this is not technically correct, Durras Lake is regarded as "the best of its kind in NSW ...an example of how the [estuarine] system should work... [where] everything is in equilibrium" (Dr Peter Scanes, Manager, Coastal Catchment Unit, Environmental Protection Agency, in Woodford, 1999). The Healthy Rivers Commission in 2001 classified Durras Lake as 'near pristine'. Of the 92 NSW estuarine lakes the Commission examined, only a few were in as good ecological condition as Durras Lake. By all ecological measures Durras Lake is a gem,

... a glimpse of what a large coastal waterway would have looked like before the arrival of Europeans. To paddle the backwaters of Durras Lake, gliding over sea-grass beds while an eagle hunts and the wind roars through nearby forest, is to make a journey into the past (Woodford, 1999).

Meets NRSMPA criteria

Representativeness

- Represents one or more ecosystem within an IMCRA region
- Reasonably reflects the biotic diversity of the marine ecosystem

Naturalness

- has been protected from serious negative human induced change

Economic interests

- makes a contribution to economic value by virtue of its protection eg tourism, refuge and nursery area for economically important species

Social interests

- has value to the local, national and international communities because of its heritage, cultural, traditional aesthetic, educational and recreational values

WATER CHEMISTRY AND SEDIMENTATION

When Dr Peter Scanes of the Environmental Protection Agency was quoted the Woodford's 1999 article, he was undertaking a major study to understand what a near-pristine coastal waterway was like. The project has still not released all its results. but found that the chemistry of Durras Lake was drastically different from many other NSW waterways. The nutrient phosphorous in Lake Illawarra near Wollongong was almost fifty times greater than the Durras Lake concentrations and nitrogen concentrations three times higher. "The concentration of nutrients is quite low [in Durras Lake] and the rates of plant growth quite high. There is lots of plant material which feeds the food chain" (Scanes in Woodford, 1999).

Justin Meleo's 1998 geomorphology study of Durras Lake found sediment samples "indicated no enrichment of environmentally significant heavy metals lead (Pb), copper (Cu) and zinc (Zn) in sediments ...since European settlement of the area." Other estuaries in the study displayed Pb values up to six times higher than Durras Lake and Cu and Zn concentrations up to three times higher. Meleo (nd) proposed that the low heavy metal concentrations were the result of the relatively undisturbed nature of the catchment draining to the estuary and minimal shoreline development. Bio available Pb fractions are highest in surface sediments, a finding which suggested recent inputs from airborne Pb and/or power boats on the lake (Meleo, undated).

Meets NRSMPA criteria

Representativeness

- reasonably reflects the biotic diversity of the marine ecosystem

Naturalness

- has been protected from serious negative human induced change

Scientific Interests

- has existing value for research or monitoring

CLASSIFICATION

Durras Lake is part of the Benandarah listing on the Register of the National Estate. It has a surface area of 3.214 km² and a catchment area of 55 km². Eighty percent of its foreshore is densely forested and less than 1% of the catchment is cleared. More than 90% of the catchment is in Murrumbidgee National Park (Coastal Council of NSW, 1985). Durras Lake is one of the largest intermittent estuaries in the Batemans Shelf bio-region.

Dr John Chappell, Head of the Biogeography and Geomorphology Unit of the Australian National University, in 1986 classified Durras Lake as "the only lake in the set, in the large, slow turnover class, which is sufficiently undamaged to warrant special protection." The set refers to the review of 59 lakes and estuaries from Durras to the Victorian border completed by Dr Chappell. Chappell explained that

... the argument for classifying lakes according to size is that the diversity of habitats of large lakes [like Durras Lake] is inherently different from small lakes ... [and] Durras is the only undamaged lake in the large, slow turnover class. This alone constitutes good grounds for its careful preservation (Chappell, 1986).

Barrier and intermittent estuaries like Durras Lake with saltmarsh habitats are not well represented in existing marine parks. Durras Lake scored highly in summed irreplaceability for estuarine ecosystems in the Batemans and Twofold Marine Shelves according to criteria examined by the Marine Parks Authority 2005 assessment (Breen, et al, 2005).

Meets NRSMPA criteria

Comprehensiveness

- adds to the coverage of the full range of ecosystems recognised at an appropriate scale within and across ecosystems

International and national importance

- is rated and listed on the national heritage list

Uniqueness

- contains unusual geographic features

Biogeographic assessment

- captures important biogeographic qualities

WORLD HERITAGE QUALITY

There are few other places in the world where lake systems similar to the NSW south coast estuarine lakes are found.

There are not many of these lakes in the world. Brazil and South Africa have some...but we have a monopoly on them. Coastal lakes are our most sensitive coastal water bodies yet we are placing increasing demands on them...Tourism, fishing, oyster growing and other human activities that depend on healthy coastal lakes are being placed at risk (Healthy Rivers Commissioner, Peter Crawford in Benson, 2001).

The Healthy Rivers Commission's 2001 Independent Inquiry into Coastal Lakes classified 92 NSW estuarine lakes according to their natural sensitivity, current condition of the water body and catchment, recognised ecosystem and resource conservation values and other significant socio-economic values. Durras Lake was one of only twelve lakes with catchment condition near pristine and lake condition slightly affected. The Commission recommended Durras Lake as worthy of Comprehensive Protection with management decisions consistent with restoring and preserving all natural ecosystem processes. The Commission called on the NSW Government to explore the possibilities for nominating the catchments and waterways of a group of coastal lakes....on the South Coast for World Heritage Listing...These considerations should include...Durras [Lake]".

Durras Lake, along with all other near pristine estuarine lakes, was seen to have a "Very High" natural sensitivity and risk where minor changes could bring major change in lake condition. As such the Commission strongly recommended that the few lakes in near pristine condition such as Durras Lake be protected by a declaration of "the lake body and bed as reserve".

The NSW Fisheries Office of Conservation recommended Durras Lake as one of seven estuary aquatic reserves in 2001. These candidate reserves were chosen to "ensure representation and conservation of the full range of estuarine habitats present in these ecosystems, including saltmarshes and entrance channels (NSW Fisheries, 2001).

Meets NRSMPA criteria

International and national importance

- Is rated and has the potential to be listed on the world and national heritage list

Uniqueness

- Contains unusual geographic features

Biogeographic assessment

- Captures important biogeographic qualities

Social interests

- has value to the local, national and international communities because of its heritage, cultural, traditional aesthetic, educational and recreational values

FLORA AND FAUNA

Eighty percent of the foreshore of Durras Lake is densely forested and less than 1% of the catchment is cleared. More than 90% of the catchment is in Murrumbidgee National Park (Directory of Important Wetlands, 1999).

Durras Lake has an increasing area of seagrass, which may be important for enhancing fish recruitment. The seagrass in the Lake is in excellent health, and is not covered by excess algal growth. Both *Zosteraceae* and *Halophila* spp have been recorded from the estuary (NSW Fisheries, 2001).

There are also significant areas of salt marsh habitat (NSW Fisheries, 2001).

Durras Lake is free from *Caulerpa taxifolia*, which has spread into estuaries north and south of severely infested Lake Conjola. The introduction of *Caulerpa taxifolia*, most likely transferred via fishing equipment used in a *Caulerpa* infested system, would seriously threaten the aquatic biodiversity of Durras Lake and have the potential to disrupt the long established marine ecosystem (NSW Fisheries, undated).

Durras Lake "supports extensive shallow wading bird habitat and thriving frog communities" (NSW Fisheries, 2001). The Hooded Plover, listed as endangered in NSW, and 15 other vulnerable listed birds have been recorded from the Lake area. Two vulnerable mammal species, the Brush-tailed Phascogale *Phascogale tapoatafa* and the Yellow-bellied Glider *Petaurus australis* have also been recorded from the Lake forests (Directory of Important Wetlands, 1999). Two hundred and eight species of birds have been recorded from Murrumbidgee National Park.

Meets NRSMPA criteria

Ecological Importance

- contributes to the maintenance of essential processes and life support systems
- contains habitat for rare and endangered species
- contains rare and endangered species
- preserves genetic biodiversity
- contains areas on which species or other systems are dependent
- contains one or more areas which are biologically functional, self-sustaining ecological units

Productivity

- species, populations and communities have a high natural biological productivity

ARCHAEOLOGY

At least 25 midden sites have been recorded from the shores of Durras Lake. Most of the known sites occur on the shores of the Broadwater, west of Punt Arm. The Mud Oyster (*Ostrea angasi*) was the most common shellfish species found in the middens, followed by the Sydney Cockle (*Andara trapezi*) and the Hercules Whelk (*Pyrazus Ebeninus*). Other shellfish found in middens include the Periwinkle

(*Benibicium nanum*); Rock Oyster (*Crassostrea commercialis*); Australian Club Whelk (*Velacumantus australis*); Sand Snail (*Conuber sordium*) and the Cartrut Shell (*Dicathais orbita*).

Durras Lake is a unique lake in that it is relatively accessible in terms of its aquatic resources. How effectively this lake was exploited cannot be known at this stage. ... Middens such as Durras Lake North M and Durras Lake South B are over a metre in depth and could provide valuable data on chronology of occupation. It is imperative that some of the middens are preserved in some way for historical, educational and scientific reasons (Hamm,G. 1987).

Captain Cook sighted aboriginals when he sailed along the Murramarang coast. Cook named Beagle Bay, into which Durras Lake opens, and Point Upright. Cook's sighting of Aboriginals in the Durras area was one of his first sightings (Directory of Important Wetlands, 1999).

Meets NRSMPA criteria

Indigenous Interests

- has traditional usage
- contains cultural values
- has importance for maintaining indigenous ecological knowledge

Social interests

- has value to the local, national and international communities because of its heritage, cultural, traditional aesthetic, educational and recreational values

COMMUNITY STEWARDSHIP

The Friends of Durras (FoD) was formed in 1985 with the dual and complementary aims of retaining Durras Lake and its catchment in pristine condition and of seeking to improve the viability of Murramarang National Park by expanding its area.

In 1986 FoD put an end to the practice of dumping raw sewerage in Durras Lake. In 1987 FoD commenced campaigning against the development of a 500 ha Urban Expansion Zone on the south-west shore of Durras Lake. In 1989 the 500ha parcel became available for purchase and FoD began a public campaign to raise the almost \$1 million asked by the vendor. In 1993, after raising \$113,000 towards the purchase, FoD and the NSW Government purchased around 370 ha and added it to Murramarang National Park, increasing the Park's size by about 25%. In 1998 FoD prepared a proposal for the Southern Regional Forest Agreement process. The Greater Murramarang National Park proposal provided the blueprint for campaigning, which resulted in Murramarang National Park's size increasing from around 2000 ha to 12000 ha.

In 2004 Sea Spurge (*Euphorbia paralias*) was 'discovered' on the Murramarang coast. This invasive beach weed, if left uncontrolled will swamp entire beaches and replace native vegetation. It is a problem for the endangered Hooded Plover and other nesting shore birds that use beaches for nesting (Eurobodalla Shire Council, 2006). FoD and South Durras Landcare have undertaken a control program. All the beaches of the Murramarang coastline have been surveyed for spurge and it has been removed initially from all beaches except the heavily infested Richmond Beach, where the NPWS has commenced spraying. The control program is in its second year, with seedlings being removed wherever they appear. The program will continue indefinitely. FoD and Landcare also monitor Bitou Bush along the Murramarang coast and remove invaders when found. The Murramarang coast is currently almost free of Bitou Bush. FoD and Landcare also cooperate in dune stabilisation work and beach access trackwork.

FoD volunteers have assisted the NSW EPA and other organisations and academic institutions in a number of Durras Lake studies. FoD volunteers conduct an annual Hooded Plover survey of the Murramarang coast and assist The South Coast Shorebirds Recovery Program, coordinated by NSW National Parks and Wildlife Service, each year during shorebird breeding season.

BIBLIOGRAPHY

All references available on request

- Australian Heritage Commission (1992) *Register of the National Estate Database Place Report, Snapper Point Nursery Beds*, Australian heritage Commission, Canberra.
- Bay Post (2006) Claim zoning targets rec fishers, *Bay Post*, August 30, 2006.
- Benson, S. (2001) Heritage move to protect our lakes, in *The Daily Telegraph*, 20 August, 2001, p.10.
- Breen, D.A., Avery, R.P. and Otway, N.M. (2005) *Broadscale Biodiversity Assessment of the Batemans Shelf and Twofold Shelf Marine Bioregions*, Marine Parks Authority, Sydney.
- Chadwick, G.H. (1998) Blue Refuges, US National Marine Sanctuaries in *National Geographic*, March 1998, Vol.193, No. 3.
- Chappell, J. (1986) Letter to Friends of Durras, Department of Biogeography and Geomorphology, Australian National University, Canberra.
- Coastal Council of NSW (1985) *Coastal Wetlands of New South Wales*, Coastal Council of NSW, Sydney.
- Condie, K. (2006) Zoning ineffective: scientist In *Ulladulla Times* August 9, 2006.
- Creagh, P. (2006) Marine park debate continues in *Your Say, Bay Post/Moruya Examiner*, September 29, 2006.
- Dasey, D. (2006) Ocean off Sydney is the warmest in the Tasman in *The Sun-Herald*, August 20, 2006, p. 16.
- Department of Environment and Heritage (2003) www.deh.gov.au/minister/env/2003/mro2jun03
- diveoz (2006) *The Pinnacle Dive Site*, http://www.diveoz.com.au/directory_sites/list_sites
- ECOfishers website at www.ecofishers.com
- Elliot, G and Sexton, J. (undated). Island haven Obeid helped to create, in *The Australian*.
- Eurobodalla Shire Council (2006) *Sea Spurge*, Eurobodalla Shire Council, Moruya.
- The NSW South Coast Shorebird Recovery Program (undated) *Shorebird Conservation* WWF, Australia.
- Friends of Durras (1998) *The Greater Murrumbidgee National Park*, Friends of Durras, Box 174, Batemans Bay.
- Hamm, G. (1987) *An Archaeological Survey of Durras Lake*, Australian National University honours project, Department of Prehistory, Australian National University, Canberra.
- Healthy Rivers Commission (2001) *Coastal Lakes Independent Enquiry into Coastal Lakes*, Healthy Rivers Commission of New South Wales, Sydney.
- Lane, S.G. (1979) *Summary of the Breeding Seabirds on New South Wales Coastal Islands*, Corella 1989, 13(4).
- Lowy Institute (2006) *Australia, Indonesia and the world* <http://www.lowyinstitute.org/Publication.asp?pid=470>
- Maley, P. (2006) Fishing snags in marine catch in *The Canberra Times*, May 13, 2006.
- Marine Parks Authority NSW (undated) *Marine Park Zones*, Marine Parks Authority NSW, Sydney.
- Marine Parks Authority Secretariat (2002) *Developing a Representative System of Marine Protected Areas in NSW – an Overview*, Marine Parks Authority Secretariat, Sydney.

- Marsh H, Possingham H, Mackey B, Souter R, Ward T : paper in preparation on 'Ecological processes for effective coastal and marine conservation'.
- Miller,C. and Berry,J. (2002) Fishing industry will benefit from marine parks, say experts in *The Age* March 7, 2002, p.6.
- Meleo, J.F. (undated) *Metal element concentrations in sediments of a barrier estuary Durras Lake, New South Wales*, Coastal Studies Unit, School of Geosciences,University of Sydney.
- Nichols, M. (2006) Push to ban deep sea trawling In *The Canberra Times*, October 5, 2006, p.10.
- NSW Fisheries (1998) *Policy and Guidelines – Aquatic Habitat and Fish Conservation 1998*, NSW Fisheries, Sydney.
- NSW Fisheries (2001) *Consultation Paper - selection process for candidate aquatic reserves for rocky shores and estuaries*, NSW Fisheries, Sydney.
- NSW Fisheries (undated) *Invasive Seaweed Caulerpa taxifolia*, NSW Fisheries, Sydney.
- Owen (1978) *Land Use on the South Coast of NSW*, Vol. 2, CSIRO, Canberra.
- Pacey, L. (2003). Amateurs pull in best catches in *Canberra Sunday Times*, February 9, 2003.
- Paxevanos, R. (2006) Hits and memories in '80s revival in *Canberra Times Sunday*, September 3, 2006, p. 44.
- PM Archive (1999) Concerns over popularity of recreational fishing, *ABC Radio, PM Archive*, July 9, 1999.
- Rowling, K (2001) *Issues concerning data-limited multi-sector fisheries in New South Wales*, Australian Society for Fish Biology, www.asfb.org.au.
- Sloane, B (2006) Horse advocates, fishers say Govt pandering to green vote *The Queanbeyan Age*, August 4, 2006.
- Toghill, J. (1977) *Jeff Toghill's Boating Guide To The NSW South Coast*, A.H & A.W.Reed, Sydney.
- Walker, F. (2006) Ban to be a boon for fish *The Sun Herald*, February 12, 2006.
- Woodford, J. (1999) Last pristine lake reflects a glimpse of distant past *The Sydney Morning Herald*, May 15, 1999, p.5.
- Woodford, J. (1999) Where great oceans join, it's a well-kept secret, *The Sydney Morning Herald*, October 11, 1999, p.5.
- Woodford, J. (2001) For Lindsay Smith, the world's his oystercatcher, *The Sydney Morning Herald*, Sydney.
- Woodford, J. (2002) Seaweed diggers unearth new life in ocean's gardens, *The Sydney Morning Herald*, November 2-3, 2002, p.5.