Investigating the effectiveness of an MPA in an area of rapid urban expansion: some preliminary observations

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Abstract

The SA Government recently unveiled a plan for the State’s first of 19 proposed Marine Protected Areas (MPA) under the South Australian Representative System of Marine Protected Areas (SARSMPA) in an area extending from the Murray mouth west to Normanville and across to Kingscote. This is a region of high conservation value as well as population growth. This paper provides an overview of a preliminary investigation into potential effects of urban growth processes on the establishment of the MPA with a focus on Kangaroo Island. Various themes emerging from a field study on the Island are discussed. Given the MPA sets an important precedent in conserving the state’s marine environment, the paper concludes with several future research needs and directions including further consideration of zoning within the MPA and the encouragement of integration between agencies involved in managing the coastal resource.

Introduction

In March 2005 the South Australian Government released the draft zoning plan of the Encounter Marine Park. It is the first of 19 parks proposed under the South Australian Representative System of Marine Protected Areas (SARSMPA), all to be implemented by 2010, and forming part of the state’s Strategic Plan and Living Coast Strategy (Government of South Australia 2004b). The Encounter Marine Park covers an area of 2,400km² extending from the mouth of the Murray west to Normanville and south to the north eastern shore of Kangaroo Island (see Figure 1). This is a region of high conservation value (Edyvane 1999) as well as population growth. Final zoning plans for the Encounter Marine Park are currently being refined on the basis of a public consultation process that ran between March and May 2005.

Some MPAs currently exist in South Australia in the form of a number of small aquatic reserves, and one existing marine park, the Great Australia Bight (Commonwealth of Australia 1999), established under three sets of legislation. There is, however, a long way to go to achieve an adequate representative system, and there remain significant gaps in the formal protection of the state’s nearshore bioregions (Baker 2000). The Encounter MPA is the first park established under a new (and long overdue) process emerging from the state’s 1998 Marine and Estuarine Strategy (South Australian Government 1998) and carried over to the current coastal policy (Government of South Australia 2004b). Such progress is propelled by associated federal initiatives. Since the 1990s the Australian federal government has been promoting a National Representative System of Marine Protected Areas (NRSMPA) providing funding to
facilitate their establishment in the States and Northern Territory (Commonwealth of Australia 1998a). Furthering the development of the NRSMPA in Commonwealth waters around Australia is the bioregional marine planning process, a commitment of the Australia’s Oceans Policy (Commonwealth of Australia 1998b). The process is culminating in the preparation of a series of Regional Marine Plans that will provide a framework from which to implement the system of MPAs. The South-East Region Marine Plan includes some of the waters of the Encounter Marine Park (Commonwealth of Australia 2001).

The Encounter MPA has been subject to considerable public consultation and once gazetted will form part of this national network of marine protected zones. The establishment of the MPA adjacent to the rapidly developing local government areas (LGAs) of the Fleurieu coast has many implications for ongoing management that will require the co-operation of numerous agencies, both local and state.

Integration of government agencies towards common environment goals is an area requiring further research.

This paper presents the first stage of a broader project, the goal of which is to develop an understanding of the relationships between coastal urbanisation in southern South Australia and the recently proposed Marine Protected Area (MPA). The wider project will examine how urban growth processes have affected, and are likely to influence in the future, the establishment of the MPA. It hypothesises that urban growth will have positive and negative impacts on the MPA that reflect industry pressures, community ‘ownership’ and government policies, and these need to be understood in order for the MPA to achieve its objectives. There has been little research in temperate Australia into the processes associated with the establishment of MPAs and very little research into this topic internationally (Agardy 2000; Elliott et al. 2001). This Research Note provides a report on

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the first field investigation on Kangaroo Island.

**The role of an MPA**

MPAs include marine parks, nature reserves and locally managed marine areas (Commonwealth of Australia 2003) and can be defined as:

any area of land and or sea especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources, and managed through legal or other effective means (IUCN 1994).

More specifically, a representative MPA ‘encompasses typical examples of marine ecosystems’ (Government of South Australia 2004a, p.2) and the primary purpose of dedicating coastal waters to marine parks is to protect biodiversity. The southern temperate waters of Australia, to date, have had the lowest representation of protected marine areas but high population pressures. Australia’s southern coastal waters are recognised for their high degree of endemism (species uniqueness), richness and diversity, increasing the necessity to afford them better protection (Edyvane 1999). Furthermore, existing MPAs in southern and eastern Australia tend to be small in size and zoned for multiple-use, allowing for a variety of activity and resource extraction (Harvey and Caton 2003, p.73).

A number of researchers have attached considerable significance to MPAs with Kenchington et al. (2003, p.143) arguing that the benefits include:

- Conservation of biodiversity and ecosystems;
- Arresting and possibly reversing the global and local decline in fish populations and productivity by protecting critical breeding, nursery and feeding habitat;
- Raising the profile of an area for marine tourism and broadening local economic options;
- Providing opportunities for education, training, heritage and culture; and
- Providing broad benefits as sites for reference in the long term.

However, despite their potential significance, questions remain over the effectiveness of MPAs in preserving the marine environment. Attention has focussed on the historical pattern of haphazard design, implementation, enforcement and evaluation of these areas, and the evidence of their ability to achieve their objectives is contradictory (Carr 2000, p.106). In addition, Mascia (2003) argues that social factors, not biological or physical variables, are the primary determinants of MPA success or failure and that efforts to design more effective MPAs are hindered by a lack of research into the human dimensions of MPA development and management. According to Carr (2000) a challenge for managers of MPAs is to achieve agreed objectives between stakeholders (including managing agencies) that are compatible with the anticipated purpose of the MPA (i.e. ecosystem conservation, fisheries enhancement and ecotourism).

**Population and economic development**

The Encounter MPA is adjacent to one of the fastest growing non-metropolitan regions of the state, presenting many park creation and management issues. Over the last 20 years a sea-change phenomenon has been responsible for much faster growth of non-metropolitan coastal towns than cities (Australian Bureau of Statistics 2004; Burnley and Murphy 2004). The southern Fleurieu Peninsula (comprising the LGAs of Victor Harbor, Yankalilla and Alexandrina) and Kangaroo Island exemplify this sea-change shift as the fastest growing regions in South Australia outside central Adelaide (Australian Bureau of Statistics 2002).

The population of Victor Harbor, Yankalilla and Alexandrina grew by 30.9 per cent between 1991 and 2001 and over the same period the Kangaroo Island population
increased by 482 people, or 12.4 per cent. The region is expected to maintain population growth and to reach 40,000 people by 2020. The second home phenomenon is also reflected in the number of eligible voters recorded by the local council, 4,596 persons, well above the number of resident adults.

*Residential Development*
Increasing numbers of new residential dwelling units being constructed also indicate the extent of coastal growth. The region has recorded some of the greatest number of approvals in the state, for example the Alexandrina local government area recorded an increase of 237 new dwelling units in 2002 (ABS 2002) and during the decade prior to 2001 the actual number of occupied dwellings increased 45.1 percent. There was a similar though smaller increase in Kangaroo Island, with 261 extra occupied dwellings, but the additional 195 unoccupied dwellings (an increase of over 34 per cent) is indicative of the expansion of the holiday home or second home developments in the area.

*Non-residential Development on Kangaroo Island*
In addition to the increase in housing there have been substantial recent increases in the amount of commercial and other development taking place on Kangaroo Island. The Kangaroo Island Development Board (KIDB 2005) reports that over the year 2004S, in partnership with a number of other agencies, $1.2 million was invested in business in the island. They had previously reported investment of $9 m illion in the year 20034 (KIDB 2004) which brought with it increased job opportunities and significant investment in training by the board.

One of the most notable recent increases concerning building in South Australia outside the Adelaide Statistical Division occurred in Kangaroo Island (DC), where the value of non-residential building approvals rose from $0m in 200102 to $0.3m in 200203 (AB S 2004). During the same period the Kangaroo Island Council reports that it assessed 329 applications for development with a total value of over $0,000 m illion (Kangaroo Island Council 2003), and these applications cover a wide range of activities including building works, land use and land division changes.

From the population and development data it can be seen that the pressure on coastal areas in Kangaroo Island is likely to continue to increase substantially in the near future. The consequences of such development will have significant repercussions for management of the coastal area, and subsequently for interest in the setting up and management of the proposed MPA.

*Kangaroo Island field investigation*
This field investigation comprised a small research team spending two days on Kangaroo Island interviewing stakeholders during November 2005. Several key individuals representing both private and government sectors were invited to discuss various issues surrounding the MPA proposal. The remainder of this discussion provides an overview of the four central themes emanating from this early field study, with specific reference to Kangaroo Island. The themes of significance for ongoing management of the MPA include:

- the implications arising from further coastal development and residential subdivision on the coast;
- the delicate balancing act that exists between meeting demands of commercial and recreational fishing interests whilst simultaneously trying to fulfil the aims of the MPA;
- the need for a truly coordinated approach between agencies with responsibility for management of the coast; and
- issues arising over the current selection of particular zones within the MPA.

*Urban growth pressures on the MPA*
Population growth and urban development is
clearly a potential threat to the Encounter MPA. As the previous discussion of population data has shown, Kangaroo Island’s population has not grown substantially over the last decade. However, urban growth and residential development is not always associated with an expanding population as the ‘sea-change’ phenomenon (Burnley and Murphy 2004; Salt 2004), evident throughout much of coastal Australia, is often associated with second homes (Gallant et al. 2005) or holiday homes. Kangaroo Island is a preferred location for holiday homes for many metropolitan residents.

Field interviews suggested that urban development associated with holiday homes is not generating significant pressure on Kangaroo Island’s environment and the MPA. Discussions with real estate agents and other sources found that while there is a significant demand for holiday homes on the island, many of those who invest in these properties hold them for a relatively short time (a mean of three years) and there is therefore a continual turning over (or churn) of established properties and sub-divided allotments. In large measure demand is therefore met from the established stock of properties. Several informants pointed out that coastal developments legally subdivided in the 1960s still only had 50 per cent or less of their properties built upon and this reflected the gap between the aspirations of urban residents to have a retreat on Kangaroo Island and the reality of funding and building such a property.

The high turnover of holiday homes on Kangaroo Island and their relatively low occupancy rate means that urban growth processes most likely will have minimal impact on the environment of the Encounter MPA. However, two caveats need to be noted. First, some informants recognised that long established coastal strip developments such as Island Beach and Baudin Beach were developed with inadequate septic sewerage systems. Effluent may be having a significant negative impact on the bays and inlets they abut. Further investigation is warranted to substantiate these claims. Second, some elements within the Kangaroo Island community are strongly in favour of further coastal development and further residential subdivision on the coast could have an adverse impact on the marine environment if development works were undertaken in anticipation of housing demand.

Clearly urban growth has the capacity to have significant negative impact on the coast and the in-shore waters, and on-going monitoring of residential and commercial development needs to be incorporated into the implementation and administration of the Endeavour MPA.

**Fisheries’ role in proposal formulation and public response**

The impact of the proposed MPA on Kangaroo Island’s fishing industry was the most commonly raised issue in our discussions. Overall, there was a general impression that commercial fishermen knew restrictions were inevitable and that fish stocks are currently approaching biological limits. Many viewed the sanctuary, or ‘no take,’ zones within the proposal as a necessary step to manage the region’s fisheries and to provide a respite for important breeding grounds.

In understanding the response to the proposed zones, these discussions highlighted the importance of differentiating commercial fishing practices, e.g. line, mesh net, whole net, and lobster fishermen, since the restrictions would impact on each of these practices differently. The perception was that lobster and net fishermen would be more adversely impacted than line fishermen. The commercial fishing community does not have a uniform or unanimous opinion of the protected area.

Throughout the fisheries discussions, we observed a lack of concrete knowledge or data on the trends in fishing pressure or in fish stocks. While the conventional wisdom held that fish stocks were declining, our

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conversations revealed discontent about the sparse and obtuse information from PIRSA on trends. This lack of information made an assessment of current conditions and the MPA’s potential improvements speculative at best. Several interviewees believed that fishing proponents were ‘in denial’ about apparent fish declines and that more detailed and synthesized information would have more clearly shown the perils of current practices.

While commercial fishing received the most attention, several interviewees raised the issue of increased recreational fishing in the area and the lack of information about these changing practices. Interviewees pointed out that the emphasis on commercial fishing may conceal a comparable impact from recreation fishing.

Integration of management responsibility for the coast

The success of the Encounter MPA will rely upon the cooperation of a number of management agencies that share an overlap of responsibility for the coast. A number of state agencies (PIRSA; DEH), the Australian Government (through the NRM process) and local government (KI Council) have specific management roles and responsibilities. The Council, through its Development Plan (Planning SA 2003), outlines provisions for development but currently lacks a strategic approach for assessment and approvals and is under increasing pressure to rezone farming land into smaller allotments. The Council is considering a PAR (plan amendment report) for coastal areas to resolve this, but this is not likely to occur in the short term. In 2003 the Kangaroo Island Natural Resources Board produced its first Integrated Natural Resource Management Plan for the Island. The Plan aims to address, among other issues, coastal and marine degradation (Kangaroo Island Natural Resources Board 2003). As yet, however, integration between these stakeholders is not a formalised process and in terms of planning, the parties come together on an ad hoc basis. Environmental management continues to follow a silo approach with separate agencies managing their ‘bit’. The newly established MPA introduces yet another layer of complexity onto this already complicated management system.

This siloisation of management largely separates the terrestrial from marine elements of the environment. Ironically, and problematically, according to the views of respondents in this study, many of the areas zoned as sanctuaries within the MPA are being degraded by land-based pollutants (such as diffuse pollution from catchments, increases in storm water, etc); such threats will not be regulated under the MPA.

Therefore, one of the most confounding issues for future management of the park will be reconciling the lack of formal connection between the different players, especially in regard to the current approach of managing terrestrial and marine components separately.

MPA zone misalignment with biological assets

Overall the zoning strategy was considered crude, requiring more detail, resolution and consideration of the effects of particular activities within zones. Examples of unresolved activities within zones include the effect of large vessels in shallow waters or patch reefs; or the ability of many small boats to cause considerable damage if allowed to anchor. In particular, several interviewees indicated that the sanctuary zones of the proposed MPA fail to protect several ecologically significant areas and, compounding the problem, include areas already severely degraded. Several sanctuary zones (Bay of Shoals and Western Cove) contain degraded sea grass populations that are currently subject to land-based pollution. On the margins of these sanctuary zones are healthier sea grass communities without ‘no take’ protection. It was suggested these decisions were made as concessions to commercial fishing interests. Starting out with an inappropriate zoning strategy sets up the
MPA for failure. There will be an expectation of some kind of improvement to the marine environment as a consequence of the establishment of the MPA (such as improving fishing effort or expanding fish populations). However, if zones are poorly allocated then chances for success are diminished.

Conclusion

Combined, our discussions delineate the major conflicts verbalised by some of the Kangaroo Island community regarding the Encounter MPA proposal. Contrary to our initial emphasis on coastal development, the issues of fisheries management, zoning delineation, and integrated terrestrial and marine management emerged as central issues.

If approved, the protected area will attempt to manage fisheries problems that have not been tackled by other South Australian agencies. This management will impact various commercial fishing operations differently. Both the degree to which current fisheries management fails to address stock issues and the extent to which MPA sanctuary zones will mitigate these problems warrants further investigation. Initially, it appears the MPA will improve local fisheries management.

Further investigation into the zoning selection process is warranted because if the assertions of interviewees are correct, the Encounter MPA will be launched with several ecological strikes against it. According to local opinion, several sanctuary zones target degraded areas while leaving out many areas most in need of protection. Additionally, the lack of integrated management of coastal development or terrestrial threats will greatly hinder any efforts to mitigate external threats to the park. These ‘birth marks’ may drastically decrease the chance of success in protecting marine communities.

The identification of these issues points to several future research needs and directions. For one, there is an unresolved tension in the zoning of the protected area. On one hand, the zones are viewed as ecologically inadequate, a failing of MPA design. On the other, they are seen as restricting fishing in key nursery areas, an MPA zoning success. Determining the degree to which the MPA zoning is a blend or compromise of these two assertions will be important in gauging its long term success. Additionally, the ways in which the lack of integrated management will impact park resources needs to be clearly demarcated, both to identify future problems and their potential solutions. Lastly, these conflicts and issues will serve as future sites of investigation and contrast with other communities adjacent to the MPA.

As South Australia’s first representative marine protected area, the Encounter MPA will set an important precedent in conserving the state’s marine environment. Understanding its failings and successes will have implications well beyond its final boundaries, and this work represents a step in that direction. Future research efforts will expand in coverage to include mainland issues and wider debates from a diverse array of stakeholders.

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