

ZONING FRINGING REEFS IN THE GREAT BARRIER REEF MARINE PARK

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THE ZONING PROCESS

Zoning is the management planning approach which forms the basis for establishment, control and development of the Great Barrier Reef Marine Park. Section 32 of the Great Barrier Reef Marine Park Act 1975 makes detailed provision for the development of zoning plans. Their function is to make provision with respect to the purposes for which zones may be used or entered. Section 32 (7) of the Act specifies that regard shall be had, to the following objects in the preparation of a zoning plan:

- . the conservation of the Great Barrier Reef;
- . the regulation of the use of the Marine Park so as to protect the Great Barrier Reef while allowing the reasonable use of the Great Barrier Reef Region;
- . the regulation of activities that exploit the resources of the Great Barrier Reef Region so as to minimize the effect of those activities on the Great Barrier Reef;
- . the reservation of some areas of the Great Barrier Reef for its appreciation and enjoyment by the public; and
- . the preservation of some areas of the Great Barrier Reef in its natural state undisturbed by man except for the purposes of scientific research.

The Great Barrier Reef Marine Park Authority (GBRMPA) has developed zoning plans for the Capricornia, Cairns, Cormorant Pass and Far Northern Sections of the Marine Park and is finalising the zoning plan for the Central Section. The Far Northern, Cairns and Central Sections, all contain fringing reefs on the mainland coast and on continental islands. The zones, provide a gradation of restrictions on activities which is illustrated in Table 1.

Zoning plans are developed by a process which involves two phases of public participation during which principal users and groups which have an interest in the area being planned are contacted. The process has been described in more detail (Kelleher and Kenchington (1982), Kenchington (1984), Kenchington (1985)). Briefly, the object of the first phase of public participation is to add to the information held by GBRMPA as a description and definition of the resources of the area being planned and to seek suggestions regarding the content of the plan and approach to management. The second phase consists of review by the public of a draft plan developed by GBRMPA on the basis of a wide range of information including results of the first phase of public participation.

In socio-economic terms there are four reasonably coherent, but not necessarily mutually exclusive, lines of direct interest in management and availability of reef resources in any Section of the Marine Park:

- .Commercial fishing - which encompasses activities ranging from trawling, through line fishing and trolling for pelagic species to collection fisheries for aquarium fish, corals and shells such as trochus;
- .Amateur fishing - which is a socially important and growing activity ranging from the occasional non-expert fishing session in which the taking of fish is a secondary objective to highly organised and efficient programs whose principal objective is the sale of fish for cost recovery and profit;
- .Tourism and recreation - the fastest growing area which encompasses the provision of transport, accommodation and the means for individuals and groups to experience the reef for extractive or non-extractive activities; and
- .the environment observer, fish watcher, reef watcher or researcher who observes and enjoys the reef directly.

To these may be added the category of the vicarious user and philosophical supporter who experiences the reef indirectly through print, film or photograph. Such a user may never visit the Great Barrier Reef but sees its protection for present and future generations as an important national responsibility.

CHARACTERISTICS OF FRINGING REEFS RELEVANT TO ZONING

The allocation of reefs to particular zones depends upon a number of physical and usage factors which may be considered here in relation to fringing reefs:

- .accessibility - fringing reefs which are accessible, to coastal roads, tracks, harbours, boat ramps or safe anchorages are likely to:
 - be heavily used for a wide range of uses;
 - be the site of friction between incompatible uses;
 - be the site of user stress;
 - be more difficult to manage than more remote reefs

.shelter - fringing reefs which have a high degree of shelter are likely to have large coral colonies and to be attractive to small boat users.

..exposure - fringing reefs which are exposed to waves generated by prevailing winds and storms are likely to have a high biological diversity but to suffer quite frequent physical impacts which may have major effects on biological communities.

.turbidity - some species thrive in turbid conditions, benefitting from high nutrient levels associated with coastal runoff and possibly from reduced competition with species which cannot tolerate high silt levels. Other species which are found deep on open water reefs can occur in shallow water on fringing reefs in turbid areas. Mainland fringing reefs and those of nearshore islands occur in areas which are likely to be turbid for much of the year. They may thus have rich and distinctive biological communities. The fringing reefs of offshore islands are often remote from turbid waters and little different in biological communities from free standing reefs.

.salinity - most corals and many other reef species are adversely affected by low salinity. Species which are able to tolerate or survive low salinity are more likely to be found on inshore fringing reefs.

Fringing reefs, particularly those on the mainland or islands close to the mouths of major rivers, are a distinctive reef habitat. They are specialised and often marginal environments. They are likely to have biological communities dominated by species which can cope with or thrive in periods of adverse conditions such as depressed salinity following cyclonic rains..

On populated coasts fringing reefs are often the most accessible reef sites for recreational boating, fishing, reef walking, fossicking and, when turbidity permits, underwater reef viewing. In planning terms they are a scarce resource. This makes the task of developing a zoning plan more difficult because of the lack of alternative sites for activities which may be displaced by zoning decisions. Accessibility, particularly where a road comes close to a fringing reef, makes surveillance and management of use more difficult. Managers can take advantage of the accessibility but they have to be prepared to react rapidly and at shorter notice than may be the case in more remote areas.

JURISDICTIONAL ISSUES

For their greater part fringing reefs of the Great Barrier Reef are subtidal although their upper levels extend into the intertidal zone to the extent that the corals and algae are able to tolerate exposure to the atmosphere at low water. Much of the biological activity, such as fish feeding, occurs at or below the low water mark as does much of the human use of fringing reefs. Fringing reefs thus occur on a jurisdictional interface. Below low water they are within the Great Barrier Reef Region and as such, with few exceptions, they have been included within declared sections of the Great Barrier Reef Marine Park. Intertidally they come

under the maritime jurisdiction of the state of Queensland and may be declared Marine Parks under the Queensland Marine Parks Act 1982. They occur within the three mile territorial sea of the State of Queensland unless they are on the shore of an island owned by the Commonwealth. The jurisdictional complexity is compounded by the multitude of interpretations of the meaning of the term low water and further by the physical difficulty of determining a precise location of low water even if there is an agreed interpretation.

A further constitutional issue may arise where regulation under the Great Barrier Reef Marine Park Act could deny access to parts of Queensland.

In practical terms, whatever the definition of low water, the boundary is difficult to determine, particularly with a degree of precision necessary to convince a court of law considering an offence alleged to have taken place at or about low water. Therefore effective management of fringing reefs and their adjacent sub-tidal and supratidal areas needs complementary plans and regulations applying either side of the low water mark. The policy of the Commonwealth and Queensland governments, co-ordinated through the Great Barrier Reef Ministerial Council, provides for such complementary action. Planning under the Great Barrier Reef Marine Park Act, 1975 (Commonwealth) and under the Marine Parks Act, 1982 (Queensland) is being undertaken in parallel for the Southern Sections of the Great Barrier Reef Marine Park and for adjacent waters under Queensland jurisdiction. Plans are being developed under the Marine Parks Act (Queensland) which are complementary to zoning plans for other sections of the Great Barrier Reef Marine Park.

CONCLUSION

Fringing reefs are generally more accessible than offshore reefs. Inshore, they often have distinctive and well developed communities of particular interest to scientists. On the mainland coast and nearby islands their accessibility and the shelter provided by the islands make fringing reefs attractive sites for a range of human activities ranging from shell collecting and fishing to scientific research although frequently high turbidity precludes or severely limits reef viewing activities such as snorkelling. Offshore, in clear waters, the fringing reefs of continental islands present opportunities for a wide range of reef activities. Fringing reefs are a scarce resource which present a number of problems in planning, resource allocation and management.

REFERENCES

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- Kenchington, R.A. 1984. The concept of marine parks and its implementation. In Symposium proceedings: The Capricornia Section of the Great Barrier Reef, Past, Present and Future. The Royal Society of Queensland and the Australian Coral Reef Society. Brisbane: 153 - 159.
- Kenchington, R.A. 1985. Planning for multiple use of marine resources: the Great Barrier Reef Marine Park approach. Maritime Studies 25: 11-14.

Table 1. Simplified guide to the **major** activities **by** zones for the **Cairns** and **Cormorant** Pass Sections

Zones	Boating Diving	Collecting	Line Fishing Bait Netting	Trolling	Spear- fishing	Pole & Line Tuna Fishing	Trawling	Cruise Ships	General Shipping
General Use 'A'	YES	PERMIT	YES	YES	YES	PERMIT	YES	YES	YES
General Use 'B'	YES	PERMIT	YES	YES	YES	PERMIT	NO	PERMIT	NO
Marine National Park 'A'	YES	NO	YES	YES	YES	NO	NO	PERMIT	NO
Marine National Park Buffer	YES	NO	NO	NO	YES	NO	NO	PERMIT	NO
Marine National Park 'B'	YES	NO	NO	NO	NO	NO	NO	PERMIT	NO
Scientific Research	NO	NO	NO	NO	NO	NO	NO	NO	NO
Preservation	NO	NO	NO	NO	NO	NO	NO	NO	NO

The proportional coverage of zone types is illustrated in Table 2.

Table 2. Extent of zone types in the zoning plans for **the** Capricornia, Cairns, **Cormorant** Pass and **Far** Northern Section final zoning **plans** and the **Central** Section draft zoning plan

Zone type	Area (km ²)	No. of reefs/shoals	% of Marine Park	% of reefs/shoals
General Use A	153603	2 3 4	7 4 . 4	1 4 . 9
General Use B	37758	1014	18.3	64.8
Marine National Park A & Buffer.	1615	45	0.8	2.9
Marine National Park B	12836	243	6.2	15.5
Preservation/ Scientific research	572	29	.3	1.8
TOTAL	206384	1565	100	99.9

In addition to zones, the zoning plans make provision for a system of permits which covers activities for which it is considered that more detailed consideration or information is required in order to determine appropriate conditions of use and entry.