

**KEY ISSUES FOR DAY-TO-DAY MANAGEMENT OF FRINGING REEF AREAS
IN THE CENTRAL SECTION OF THE GREAT BARRIER REEF MARINE PARK**

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BACKGROUND

The Queensland National Parks and Wildlife Service (Q.NPWS) is responsible for the day-to-day management of the Great Barrier Reef Marine Park, on behalf of the Great Barrier Reef Marine Park Authority (GBRMPA) under a joint agreement between the Australian Commonwealth Government and the government of the State of Queensland. Under this arrangement, the Commonwealth Government provides initial capital and 50% of operating expenses, and the balance of costs is met by the State.; Day-to-day management responsibilities may be broadly divided into several categories including surveillance and patrols, law enforcement, research and monitoring, with a particular emphasis on education and contact with park users. The Q.NPWS also undertakes the daily management of Queensland Marine Parks within the Great Barrier Reef region. These Marine Parks have been established over tidal lands and tidal waters of Queensland, and responsibility for their declaration and zoning has resided with the Premier's Department. In addition, the Service is responsible for all aspects of ~~ma-n-ageme-n-t-of-the-State's-nationalandenvironmental-parks~~. On the mainland adjacent to the Central Section are several such parks, while some sixty continental islands within the Section are included in the national park estate. Although the legislation applicable to these various national park and marine park areas does differ, complementary management of these island/coastal, tidal and **subtidal** park areas is considerably enhanced through the delegation of daily management responsibilities to a single management agency. --

INTRODUCTION

The title of this presentation deliberately refers to fringing reef areas, as fringing reefs can rarely be considered as clearly delineated entities. Ecologically, fringing reefs are not isolated communities. They are continuous with terrestrial environments via rocky shores or beaches which abut them higher up in the littoral zone; and with the seawater, and the soft bottom areas adjacent to them underwater. Similarly, human usage is not limited to fringing reefs, but involves also the adjacent terrestrial and marine environments. Moreover, the impacts of human activities are unlikely to originate in or impinge upon only one type of environment, and those affecting fringing reefs may well arise in a neighbouring area. Management of fringing reefs clearly needs to take these inter-relationships into consideration.

Fringing coral reefs are well represented in the Central Section of the Great Barrier Reef Marine Park, but in terms of reefs surrounding continental islands, rather than those bordering the mainland coastline. The Section's principal areas of fringing reefs are located (from north to south) around the Family Group, the Brook Islands, the Palm Islands, Magnetic Island, islands off Bowen such as Holbourne Island, and the numerous islands of the Whitsunday region. Most of these islands are located rather close to the mainland relative to the width of the continental shelf, and it is noteworthy that there are very few coral cays anywhere in this Section of the Great Barrier Reef Marine Park. Substantial fringing reef development and diversity of coral species have been noted in locations such as the Palm Islands and Magnetic Island, and more detailed studies in the Whitsundays would probably confirm a comparable diversity in the southern part of Central Section.

Access to mid shelf and outer shelf reefs has greatly increased during the past decade. Nevertheless, with the exception of commercial fishing activities which are probably more evenly spread, human usage of offshore areas focuses on a very few reefs of particular recreational or tourist interest. Most human activity within the Central Section is concentrated in the nearshore areas, to which access is possible using a greater variety of craft or even directly from the land, and is generally easier, quicker, cheaper and less weather-dependent. With the continuing growth of Northern Queensland cities such as Townsville and the rapid expansion of the tourist industry especially in the Whitsunday region, usage of the Central Section can only be expected to increase. Although remarkably few figures are available on current usage patterns of the Central Section (and even fewer referring specifically to fringing reefs), it is likely that inshore environments will continue to receive relatively much greater use overall than offshore areas. Furthermore, the area covered by fringing reefs in this (and other) Sections of the Great Barrier Reef Marine Park is much less than that occupied by non-fringing coral reefs. Thus human usage and impact, direct or indirect, are much greater inshore, and are generally concentrated on or near a far smaller area of coral reef.

KEY MANAGEMENT ISSUES

The Zoning Plan proposed for the Central Section is expected to go before the Australian Parliament early in 1987, and details of the recommended Zoning Plan are at present still confidential. However, in the light of previously zoned sections and the Draft Zoning Plan issued for Central Section, it is expected that zoning of inshore areas will be comparatively complex to accommodate the range and intensity of established uses. An important part of day-to-day management is to ensure that park users are informed of details of the Zoning Plan and Regulations which may affect their activities, and wherever possible to gain public support and co-operation for the zoning. This task will be all the more challenging in the case of the heavily used, nearshore waters of the Central Section and correspondingly complex zoning.

A further problem for day-to-day managers lies in the fact that the management regimes in different parts of the Maritime Estate are not necessarily identical. Although both the Great Barrier Reef Marine Park and Queensland Marine Parks are multi-use marine parks and have been zoned as far as possible to provide complementarity, the legislation is not identical and occasional differences or discrepancies might lead to problems with interpretation and management. Perhaps more significantly, the island, and coastal national and environmental parks are, in contrast, not multi-use parks in the sense of their marine counterparts. They are afforded a much higher degree of protection than generally applies below high water mark, roughly equivalent to Marine National Park 'B' Zone. Where this degree of protection does not extend into the marine park (which may often be the case), management difficulties may be encountered where usage frequently extends above and below the high water mark. For example, it is not always easy for a ranger to explain to park visitors that they may not collect even dead shells or driftwood from above high water mark, but that that may do so further down on the beach, and may even go fishing and collecting on the adjacent fringing coral reef!

This Workshop indicates an increasing awareness of the importance of fringing reefs in the Great Barrier Reef Region. However, the significance of fringing reefs has tended to be underestimated, in terms of their scientific, recreational, and tourist and commercial values. Day-to-day management staff will be seeking to promote a greater awareness among marine park users of the resources offered by fringing reefs. For example, many tourist operators and even private recreational users seem to be under the misconception that nearshore reefs are somehow not 'proper' reefs, and that 'outer barrier' reefs are the only 'real' coral reefs. A better appreciation is required of the recreational potential of fringing reef areas, along with a recognition that these are proper reefs, and may (as other types of coral reefs) be vulnerable to misuse. In addition to using interpretive approaches such as displays, slide talks, and written materials, the Service expects to be involved in specific impact-reducing and educational projects in fringing reef areas, such as establishment of self-guiding reef walking/underwater trails (eg. at Magnetic Island), and positioning of moorings in popular anchorages (especially in the Whitsundays).

Although our knowledge of coral reef communities has increased substantially in the last ten or fifteen years, our understanding of those complex ecosystems is still very incomplete; and this is of course as much the case with fringing reefs as with other types of coral reef. Simply because species found in fringing reef areas closer to the mainland tend to be more tolerant of certain environmental stresses (such as turbidity and sedimentation) than species more typical of clearer offshore waters does not indicate that these inshore species have an unlimited ability to cope with such stresses. The presence of a handful of coral species on the breakwater in Townsville Harbour does not constitute a coral reef either in structure or diversity! And while coral reef communities may indeed show recovery following moderate siltation events or after sources of pollution such as domestic sewage have been eradicated, the rate of change or 'recovery' of a fringing coral reef community may

not necessarily occur within the short time **scale** that environmental managers might wish, as, the work of Done (this Workshop Proceedings) indicates. Much more information is needed about fringing coral reefs and their ability to tolerate various short- and long-term stresses (including likely synergistic effects), and about their potential for recovery. Studies of mainland fringing reefs in the Cairns Section discussed elsewhere in this workshop, illustrates the difficulty of establishing causal relationships and verifying the effects of certain environmental factors on reefs, especially **when** quite unrelated events (such as a strong gale) may unexpectedly disrupt field experiments or destroy part of a study area.

Long-term monitoring programs need to be established to assess the present condition of fringing reef areas in the Great Barrier Reef Region, and to monitor their well-being, particularly in relation to known or potential human impacts. Design of such monitoring programs will require careful planning to ensure that data collected are relevant to precisely - formulated monitoring objectives and can supply the appropriate management Information. While research and monitoring of fringing reef areas are expected to be carried out by a range of agencies, there is clearly an important role for the Q.NPWS, as most day-to-day management staff are frequently working in the field and are operating from a number of locations, along the coast.

More information on human usage of the Central Section is also essential for planning and implementation of effective day-to-day management. Some very relevant questions have already been addressed by Driml (this Workshop Proceedings) in her presentation on tourist developments on continental islands. Again, the Service has a valuable role to play in obtaining much needed data on current and predicted trends in usage of fringing reef areas.

In conclusion, during the next few years the Central Section is likely to experience a rapidly accelerating level of usage which has not hitherto been experienced in the Great Barrier Reef Region. A key ingredient for successful day-to-day management, especially of the most heavily used nearshore areas, will be a balanced combination of planning to take into account this increased usage, and flexibility to adapt to unforeseen and emergent management challenges.

REFERENCES

Driml, S. 1987. Tourist Development and Fringing Reefs. Fringing Reef Workshop, GBRMPA.,

Done, T. 1987. Zonation and Disturbance in Coral Communities on Fringing Reefs. Fringing Reef Workshop, GBRMPA.