Of the more than 30 species of marine mammal occurring within the Great Barrier Reef Marine Park (GBRMP), three are the focus of wildlife-based tours: humpback whales (Megaptera novaeangliae), dwarf minke whales (Balaenoptera acutorostrata) and dugongs (Dugong dugon). Currently (April 2001), 19 permits, comprising 31 ships and two aircraft, allow whale-watching in the GBRMP. The combined passenger capacity of these craft is 3,238 at any one time (e.g., per day). However, fewer than 15,000 persons were recorded in ‘dedicated’ whale-watching tours each month during the May - October ‘whale-watching’ season between 1998 and 2000. Watching M. novaeangliae occurs primarily in the Central and Cairns Sections of the GBRMP, with most activity focused in the Whitsundays. Permitted levels of whale-watching are capped at eight permits in the Cairns Area, and at 11 permits in the Whitsundays. Other tours include: a specialised form of whale-watching involving swimming with B. acutorostrata which is being brought within a limited-entry management regime; one dolphin-watching tour in the Central Section of the GBRMP north of the Whitsundays; and one dugong-watching tour in the Hinchinbrook Region. Because of reported declines in the number of D. dugon on the Great Barrier Reef, this activity is being monitored closely before further permits are granted.

Marine mammal watching activities in the GBRMP are managed through a combination of best practices guidelines, codes of conduct, regulations, zoning, wildlife protection areas and permits. The potential for the commercial whale-watching industry to become self-regulating is acknowledged.

Key words: Great Barrier Reef, whale-watching, dwarf minke whale, dugong, humpback whale, dolphin, tourism

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Fig. 1. The Great Barrier Reef World Heritage Area.
GBR, including marine mammals, the GBRMPA also aims for ecologically sustainable use of the GBRMP.

In addition, the interests of Aboriginals and Torres Strait Islanders need to be considered and reflected in the management of the GBRWHA. The particular relationship between Aboriginals and Torres Strait Islanders and whales and dolphins on the GBR has not been well documented. However, Barker (1998) noted that Aboriginals in the Whitsunday region of the GBR hunted whales, and there are reports from the late nineteenth and early twentieth centuries of dolphins assisting Aboriginals to catch fish around Moreton and Stradbroke Islands south of the GBRMP (Neil and Brieze 1998). This type of relationship may have been widespread in south-east Queensland. In contrast, it is well known that for indigenous peoples, dugongs (*Dugong dugon*) hold cultural, spiritual, social and economic significance. *D. dugon* are very important for special social and cultural celebrations. They are spiritually significant and many coastal indigenous communities have integrated them in their stories and accounts of the past. Regardless of the specific significance of marine mammals to Aboriginals and Torres Strait Islanders, indigenous rights and interests must be considered in developing and implementing conservation or management measures in the GBRWHA.

### TOURISM ON THE GBR

Tourism is the principal industry in the GBRWHA and is valued at almost $1 billion annually (Driml 1999). In 1998, 742 tour operations, comprising 1674 individual craft including 328 bareboats, 127 aircraft, 17 cruise ships and 461 hire craft (e.g., dinghies, watersports craft, kayaks, etc.) were permitted in the GBRMP. The majority of tourism occurs in less than 5 % of the GBRMP and is intensely focussed in the Whitsunday and offshore Cairns Areas (Wachenfeld 1998).

Commercial tour operators undertake a wide variety of activities, including scenic cruises, island and reef trips, glass-bottomed boat rides, snorkel and diving trips, and marine thrill rides. Trips may last an hour or less, or extend for a few days, weeks, or longer. The sizes and types of vessels used similarly vary. Watching wildlife, especially whales, dolphins and *D. dugon*, is a growing feature of tourism on the GBR.

### Benefits & impacts of marine mammal tours

The key management challenge for wildlife-based activities is to ensure that the animals largely control the interactions, which is one of three general principles recommended by the International Whaling Commission Scientific Committee (International Whaling Commission 1997). Marine mammals are generally able to readily avoid people in the water. Nonetheless, repeated vessel approaches by people attempting to view or swim with them could be a serious source of disturbance to the animals and must be managed accordingly. Of particular concern are the cumulative effects of avoidance behaviour, if animals spend large amounts of time and energy avoiding vessels, rather than focussing on their primary activity, which could be foraging, mating or calving.

The potential benefits for management of the GBRMP of wildlife-based watching tours include i) presentation of World Heritage values as stated by the World Heritage Convention; ii) increased information about wildlife populations resulting from required monitoring and reporting by permittees; and iii) increased awareness by tourists (Australian and overseas) of the species and conservation and management actions in the GBRWHA. However, it must also be recognised that whale-watching tours can not replace dedicated research on specific problems.

The potential adverse impacts (direct or indirect) of wildlife-based watching tours include impacts associated with i) noise; ii) harassment; iii) physical displacement; iv) physical habitat degradation or destruction (e.g., disturbance to seagrass beds upon which *D. dugon* depend); v) pollution; and vi) vessel strikes. Adverse impacts of marine mammal watching activities on the animals can occur regardless of whether they are conducted in a recreational or a commercial context. GBRMPA’s whale and dolphin conservation policy document summarises these impacts for whale-watching and swimming-with-whales tours (GBRMPA 2000) and additional information on swimming with *B. acutorostrata* has been provided by Birtles and Arnold (2000).

Management actions are in place to address these potential impacts. For example, Commonwealth regulations promulgated under the *Environment Protection and Biodiversity Conservation Act 1999*, address how vessels and aircraft are to be manoeuvred in the vicinity of cetaceans, regardless of whether they are dedicated to whale-watching or are used by recreational or other tourism operators. These regulations include approach distances for vessels and aircraft, prohibition of feeding and touching, and when within the vicinity of cetaceans, the making of sudden movements and noise. With respect to boat strikes, voluntary transit lanes have been established in the Hinchinbrook Region to encourage vessel users to transit in deeper water away from seagrass beds, the primary foraging habitat of *D. dugon*. 
Possible adverse impacts of dugong-watching arising from harassment, disturbance, and stress are essentially unknown. In order to obtain more information about the possible adverse impacts of this activity, sighting information is required from the current operator and should be mandatory for future operations. Such information will allow park managers to better understand the nature of the commercial activity and D. dugon movements within a specified area.

The potential for vessel strikes of D. dugon is recognised (Anderson 1997; Senate Environment, Communications, Information Technology and the Arts References Committee 1999; Marsh et al. 1999; Queensland Parks and Wildlife Service 1999). From 1996 to 31 December 2001, of 320 D. dugon examined, twelve vessel strikes have been reported on live-stranded or dead D. dugon along the urban coast of Queensland. For commercial dugong-watching, a tendency of D. dugon not to allow close approaches and the slow watch-and-wait speed of a commercial vessel should mitigate their potential to strike the animal. However, parts of the GBRMP are subject to high levels of vessel activity (e.g., Hinchinbrook Area). People on any vessel may take the time to watch D. dugon opportunistically when they are noticed. Activities by one or two commercial dugong-watching operations are unlikely to have a greater impact on D. dugon than other vessels using an area.

Dugong Dugon populations tend to inhabit nearshore bays and around seagrass beds. If too many vessels are watching D. dugon at one time, there is the possibility that the D. dugon could be ‘boxed’ into an area with little chance of avoiding operators. Therefore, in accordance with the precautionary principle and until better scientific evidence is at hand with respect to the potential adverse impacts associated with commercial dugong-watching activities, limits should be placed on the numbers of these types of permissions in certain areas, such as Dugong Protection Areas. This will minimise impacts on the animals and allow them the freedom to move within their home areas without having too many vessels ‘blocking’ potential exits.

Viewing D. dugon from vessels, especially if the animals are underwater, depends on the angle of the sun, wind, waves and the animal’s behaviour. Low sun angle (early and late in the day) makes D. dugon difficult to see if they are below the surface. Strong winds and rough seas make locating D. dugon and managing vessels more difficult. Tidal state also may influence the ability of vessels to approach D. dugon for viewing. As such, the opportunity for viewing dugongs may be limited (Anderson 1997) and can make finding and watching D. dugon difficult.

Dugong dugon inhabit the GBRMP at all times of the year and as such, are susceptible to year-round watching by tour operators, unlike M. novaeangliae and B. acutorostrata, which are seasonal visitors to the GBR. There are potential, but unknown, impacts on, for instance, D. dugon reproductive success and foraging behaviour from exposure to repeated dugong-watching vessel activity. Anderson (1997) recommends that an individual D. dugon “should not be subjected to more than one interaction per day. If more than one vessel is licenced to interact with dugongs on a particular seagrass bank vessels should be assigned mutually exclusive interaction zones (or regulations should allow competing vessels to visit the area only on alternate days”). In addition, D. dugon may be susceptible to displacement from favoured habitat by chronic vessel disturbance (Preen 2001). In this study, Preen suggests an inverse relationship between vessel and D. dugon sightings in the Townsville-Cardwell region.

MANAGEMENT FRAMEWORK

In total, over 20 Commonwealth and Queensland Government agencies have some interest in the GBRWHA (Lucas et al. 1997). Management of the GBRMP occurs through a system of integrated management administered by GBRMPA (Fig. 2). The Authority’s goal, as stated previously, ensures that the GBRMP is managed as a multiple-use area. Because the GBR is also a World Heritage Area, GBRMPA has an international obligation to protect and conserve the GBRWHA values, allowing transmission of these values to future generations, both for the sake of humanity and for the intrinsic value of the GBR.

Zoning plans

One of the primary tools for protecting and preserving the GBR, as specified by the GBRMP Act, is zoning. Zoning separates activities that may conflict with each other, such as commercial fishing and tourism. Zoning also allows areas that need permanent conservation to be protected from potentially threatening processes by being placed ‘off limits’ to users (except for the purpose of scientific research) for varying lengths of time.

Marine Park zoning plans are not dissimilar to planning schemes prepared for local government areas. For example, zoning plans provide for activities that are as-of-right, with permission or prohibited. Each zone category specifies which activities can or cannot be undertaken and whether or not permission is required to undertake those activities.

The principal objectives of any zoning plan for the GBR (according to Section 32(7) of the GBRMP
Fig. 2. Management framework for environmental impact assessment in the GBRMPA.

The objectives of the GBRMP Act are: i) conservation; ii) protecting the reef while allowing reasonable use; iii) minimising the effects of activities that exploit the reef’s resources; iv) reserving some areas for appreciation and enjoyment by the public; and v) preserving some areas in a natural state except for the purposes of scientific research.

With respect to tourism and marine mammal watching on the GBR, zoning plans require all tourism operators to be permitted. Tourism is allowed in all zones except those which were established to preserve the GBR in a natural state and for the purposes of scientific research. These two zones comprise 0.16% (531 km2) of the GBRMP.

**Plans of management**

Plans of management (PoMs) are generally prepared for intensively used, or particularly vulnerable groups of islands and reefs, and for protection of threatened species or ecological communities. PoMs complement zoning by addressing issues specific to an area, species, or community, in greater detail than can be accomplished in the broader, Reef-wide zoning plans.

Objectives of PoMs identified in Section 39Y of the GBRMP Act are to protect and conserve identified values (natural, cultural, heritage, scientific) of a planning area, while allowing for reasonable opportunities to access and use the area.

In the preparation of PoMs, the precautionary principle and the natural and cultural World Heritage values of the GBRMP and GBRWHA must be taken into consideration. PoMs have been completed for the two portions of the GBRMP most utilised for tourism, including whale-watching, the Cairns and Whitsundays Areas. A third PoM is in development for the Hinchinbrook Area. Whale-watching permits have been capped at their existing levels in both the Cairns and Whitsunday Areas (8, 11 respectively). The Whitsundays PoM contains additional provisions for protecting whales, especially within the Whale Protection Area, where whale-watching is prohibited and vessel and aircraft approach distances are greater. An amendment to the Cairns Area PoM will allow for the swimming-with-dwarf minke whale activity to be brought under a permitting arrangement.

**Policy**

GBRMPA, like other Government agencies, routinely develops policy to guide courses of action to help achieve objectives. The policies inform decision makers within the agency, such as persons delegated to grant permits.

A permission granted to conduct whale-watching does not confer permission to conduct swimming-with-whales activities. A tour operator wishing to conduct both whale-watching and swimming-with-whales activities will require a permit specifically allowing both activities. Increasingly marine mammal conservation policies will be pivotal in providing for a precautionary approach to the conduct of commercial wildlife-watching operations in the GBRMP.

### Permits

All tourist programs (including marine mammal tours) operating within the GBRWHA require a permit from GBRMPA under the *GBRMP Act* and from the State of Queensland under the *Marine Parks Act 1982*. Permits for whale-watching also are required from Environment Australia, under provisions contained within the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.

The use of permits helps GBRMP and the Queensland Parks and Wildlife Service to ensure the conservation of the GBR’s State and Commonwealth Marine Parks. The permits allow these organisations to: i) reduce impacts on high-use and sensitive areas; ii) separate potentially conflicting activities; iii) encourage responsible behaviour in all GBRMP users; iv) collect data for planning of GBRMP; and v) monitor activities which may become damaging to the GBRMP.

The Authority is required to assess all valid permit applications. In assessing an application, the Authority must consider criteria as set out in Section 18(4) of the *Great Barrier Reef Marine Park Regulations 1983*. These criteria include: i) ensuring consistency with zoning plans, ii) protecting natural, cultural and heritage values, iii) considering the likely effect of granting the permit on future options and on the existing and future use and amenity of the relevant area and of nearby/adjacent areas; iv) the adequacy of safeguards for the environment; and v) health and safety aspects involved in the construction and operation of any structures (e.g., pontoon, moorings).

If it is considered the proposal may restrict reasonable use by the public of a part of the GBRMP, the Authority can require a public notification of the proposal and invite public comments. These comments will then be considered in assessing the application. With all applications for Marine Park permits, the onus is on the applicant to establish that the environmental impacts of the proposed operation are acceptable.

As the GBRMP is also part of a World Heritage Area, GBRMPA must consider the effect that a proposal is likely to have on World Heritage values. In the event that the proposal may affect the environment to a significant extent, the proposal may be designated under the Commonwealth *EPBC Act* and an Environmental Impact Statement may be required.

### Permit conditions

Permits often contain general and specific conditions to minimise the risks of activities occurring on the GBR. Typical permit conditions for marine mammal watching vessels include the following (N.B., for whales and dolphins, many of the permit conditions are based on Queensland’s *Nature Conservation (Whales and Dolphins) Conservation Plan 1997* and the Commonwealth’s *Environment Protection and Biodiversity Conservation Regulations 2000*):

- Minimum approach distances – varies according to taxa (e.g., 50 m for *D. dugon* and dolphins, 100 m for whales);
- Mandatory reporting of sighting information;
- Operation of vessels in proximity to animals (e.g., withdrawing vessel from a whale interaction at a constant, no wake speed; avoiding sudden or repeated changes in direction or speed)

### Best environmental practice

Best Environmental Practices (BEPs) are designed to complement, rather than duplicate, legal requirements. By individuals and associations adopting BEPs, there is less need for regulation and more emphasis on self-regulation in GBRMP activities. BEPs are guidelines detailing environmentally responsible behaviour. They are usually developed jointly with the marine tourism industry and have been developed for whale and dolphin watching in the GBRMP.

Codes of conduct based on the best available information and reasonable application of the precautionary principle also substantially reduce the adverse effects of human activities on marine mammals. GBRMPA works with stakeholders to review, periodically evaluate, and disseminate existing codes of conduct; and to develop new codes as required. To encourage compliance with codes of conduct, mechanisms to allow user groups to self-regulating are being developed where appropriate. These mechanisms will be underpinned by regulations or other legislative tools as necessary (GBRMPA 2000). Arnold and Birtles (1999) have developed a *Code of practice for dwarf minke whale–diver interactions*, which will assist the GBRMPA with managing this type of tour.

### Current permit situation

Of the more than 742 permitted tour operators in the GBRMP, only 21 (< 3 %) are permitted to conduct marine mammal watching tours. However, up to ten additional permits have yet to be allocated for the swimming-with-dwarf minke whale industry in the
Ribbon Reefs and offshore Port Douglas Areas (Table 1).

**Whale-watching**

Much of the following summary of information about whale-watching (including dolphin watching) and swimming-with-whale activities in the GBRMP is derived from information available in GBRMPA’s whale and dolphin policy and its supporting document (GBRMPA 2000).

Whilst both recreational and commercial whale-watching occur in the GBRMP, the recreational form does not require a specific permit. Such activity occurs principally on an opportunistic basis and in the areas of the GBRMP that are subject to the highest levels of use by recreational and tourist vessels, namely the Whitsundays and Cairns Areas. All users of the GBRMP must abide by regulations set out under the *Environment Protection and Biodiversity Conservation Act 1999* as noted previously.

Currently (April 2001), 19 commercial tourism operations using 31 ships are permitted to conduct whale-watching tours in the GBRMP (Table 2). The combined maximum passenger capacity of the ships is 3,238 people at any one time (e.g., per day). To date, five of the permitted operations have not conducted whale-watching tours. Of the more than 1.5 million visitors attracted to the GBR annually, returns required under an Environmental Management Charge (EMC) system suggest that far fewer than 15,000 persons participate in ‘dedicated’ whale-watching tours each month during the ‘whale-watching’ season (Fig. 3). Whether whale-watching was specifically conducted on these tours cannot be determined as the EMC system does not differentiate among activities (e.g., snorkelling, scuba diving, fishing, whale-watching) conducted by the tour operator.

Most commercial tour operators within the GBRMP provide access to the reef for a variety of activities including snorkelling and/or scuba diving. With many operators, watching whales or dolphins occurs only if convenient and as an opportunistic element of their main operations. These ‘incidental’ whale-watching operators do not require specific whale-watching permissions unless they advertise whale-watching, employ spotter aircraft to locate cetaceans (GBRMPA 2000). However, currently only one tour operator in the GBRMP routinely employs spotter aircraft for locating *M. novaeangliae* in the Whitsundays.

GBRMPA is also planning to introduce regulations under the *GBRMP Act* to minimise disturbance to whales and dolphins by: i) adopting minimum approach distances for various types of water- and air-craft and ii) prohibiting personal motorised watercraft (e.g., jetskis), parasails, hovercraft, rotary wing aircraft, wing-in-ground effect craft and vessels in excess of 100 m in length from conducting commercial whale-watching activities in the GBRMP.

**Whale-watching including swimming, snorkelling or scuba diving**

A specialised type of whale-watching activity developed during the 1990s in the Ribbon Reefs Area of the Cairns Section of the GBRMP. In this area, generally in June and July, *B. acutorostrata* commonly approach scuba divers, allowing people in the water to watch the whales at close distances. Some tourist operators in the area altered their programs to take advantage of this unusual opportunity. Although swim-with-dolphin programs have developed in several countries, including Australia and New Zealand, there are few swim-with-whales programs (Arnold and Birtles 1999).

Observing cetaceans under water can provide better understanding of the animals, and can be a particularly exciting and rewarding experience for people. However, people may attempt to get close to the animals in order to be able to see them under water (see below), and there are potential human safety risks associated with having people in the water close to cetaceans.

The Commonwealth *EPBC Act* defines whale-watching to include “being in the water for the purposes of observing or swimming with a whale”. The *Australian National Guidelines for Cetacean Observation* (Environment Australia 2000), which apply in the GBRMP, provide detailed recommendations designed to protect both the animals and people during swims, and incorporate
Fig. 3. Total number of passengers carried in 1998-2000 for all Marine Park activities (e.g., diving, snorkelling, fishing, whalewatching) by 13 GBR permitted whalewatching vessels during the humpback whale migration seasons. (N.B. The number actually participating in dedicated whalewatching tours would be far less as the graph indicates all activities conducted on tours).

<table>
<thead>
<tr>
<th>Type of tour</th>
<th>No. of permits</th>
<th>Location</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whale-watching</td>
<td>19</td>
<td>Far Northern, Cairns and Central Sections</td>
<td>Not specified</td>
</tr>
<tr>
<td>Swimming-with-whales</td>
<td>10*</td>
<td>Offshore Port Douglas, Ribbon Reefs (Cairns Section)</td>
<td><em>B. acutorostrata</em></td>
</tr>
<tr>
<td>Dolphin-watching</td>
<td>1</td>
<td>Central Section north of the Whitsundays</td>
<td>Not specified</td>
</tr>
<tr>
<td>Dugong-watching</td>
<td>1</td>
<td>Cardwell - Hinchinbrook Region</td>
<td><em>D. dugon</em></td>
</tr>
</tbody>
</table>

Table 1. Permits for marine mammal watching tours in the GBRMP (as of 30 April (2001). * Yet to be allocated.

<table>
<thead>
<tr>
<th>Section of GBRMP</th>
<th>No. of permits</th>
<th>No. of permitted vessels</th>
<th>Passenger capacity (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far Northern</td>
<td>7</td>
<td>7</td>
<td>497</td>
</tr>
<tr>
<td>Cairns</td>
<td>8</td>
<td>9</td>
<td>336</td>
</tr>
<tr>
<td>Central</td>
<td>15</td>
<td>25 (+2 aircraft)</td>
<td>2737</td>
</tr>
<tr>
<td>Whitsunday Region</td>
<td>11</td>
<td>23 (+2 aircraft)</td>
<td>2527</td>
</tr>
<tr>
<td>Mackay/Capricorn</td>
<td>Prohibited</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Permitted commercial whale-watching operations and area of operation in the GBRMP. (N.B. Some operators and vessels are permitted to operate in a number of GBRMP sections).
Arnold and Birtles (1999) have published a code of practice for swimming-with-dwarf minke whales that was developed through close consultation with the tourism industry and this code will provide the basis for permit conditions in the future. The most recent version of this code is available at http://www.reef.crc.org.au/aboutreef/wildlife/minkewhalecode.shtml. The authors have also conducted workshops each year for staff of the tourist operators.

Incidental commercial swimming-with-whales activities do not require additional specific permission. Minimum vessel approach distances will apply to all vessels permitted to conduct dedicated commercial swimming-with-whales activities.

Dugong-watching
A new form of commercial wildlife-watching commenced in the GBRMP in May 2000 with the granting of a permit for dugong-watching tours in the Hinchinbrook Area. Apparently other operators are also interested in conducting this activity in the same and other areas of the GBRMP; however no further applications have been received to May 2001. The extent of incidental dugong-watching by other tourist operations is not known.

A report on *D. dugon* and boating in the Hinchinbrook region was recently published with a recommendation that permissions be granted for commercial dugong-watching, rather than not having the activity under a management regime (Preen 2001). GBRMPA agreed with this recommendation and to date has granted one permit with the conditions specified in Table 3. However, *D. dugon* have a high public and political profile as a result of increased awareness about, and actions to recover their populations from a reported 50% decline in the southern GBR between 1986/87 and 1994 (Marsh et al. 1996). Therefore, before any further permits are granted, GBRMPA will develop a Reef-wide policy to manage the activity, including spatial and temporal limits and a review of permit conditions. This approach is similar to that recommended by Preen (2001) “any commercial dugong-watching should be regulated by permit, and guidelines should be developed for boat-based dugong watching, as has been done for whales”.

**Future directions for managing marine mammal watching tours**

Tourism in the GBRMP is managed along four pathways (Wachenfeld 1998):

- strategic planning to establish a clear direction for managing marine tourism;
- direct management to establish well-defined enforceable and effective management controls to protect the values of the GBRMP;
- self-regulation by the industry to encourage, assist and promote environmental responsibility and professional presentation of the Reef within the marine tourism industry; and

<table>
<thead>
<tr>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Permittee must not approach a dugong closer than 50 m while under power or sail or closer than 100 m to a dugong if the vessel is moving faster than planing speed.</td>
</tr>
<tr>
<td>The Permittee must not cause, or act in a manner to cause, an adult dugong to become separated from its calf.</td>
</tr>
<tr>
<td>The Permittee must ensure that any participant in the program or person aboard the vessel does not swim, dive or enter the water during any interaction with a dugong, or feed, touch or alarm a dugong.</td>
</tr>
<tr>
<td>When departing from an interaction with a dugong, the Permittee must avoid where possible engaging the propeller within 50m of a dugong, and must move off slowly at less than planing speed.</td>
</tr>
<tr>
<td>The Permittee must supply sighting information, via a Marine Mammal Sighting Form (supplied) at three (3) monthly intervals to the Authority.</td>
</tr>
<tr>
<td>If the Permittee accidentally harms, injures, or kills a dugong while conducting dugong-watching, the Permittee must report it immediately to the Marine Animal Hotline on 1300 360 898, or such other number as may from time to time be specified by the Authority, and suspend all operations under the permit until the permit conditions have been reviewed.</td>
</tr>
<tr>
<td>The Permittee must not herd or intercept, or attempt to herd or intercept, the direction of travel of a dugong.</td>
</tr>
<tr>
<td>The Permittee must abandon contact at signs that a dugong may be distressed or alarmed (e.g. swimming at maximum speed to the point of exhaustion, dives with violent fluke slaps).</td>
</tr>
<tr>
<td>The Permittee must not attempt to pursue a dugong that has moved away from the vessel.</td>
</tr>
</tbody>
</table>

**Table 3. Conditions specified for the existing dugong-watching permit in the GBRMP.**
• active partnerships to encourage the industry and other stakeholders to be active partners in Marine Park management.

Over the long term, a Reef-wide strategy for managing commercial whale-watching is required. This strategy should draw upon the best available scientific information, review existing management measures, and consider appropriate limits on whale-watching, including establishment of whale-watching refuges or additional Whale Protection Areas. It is possible that the levels of permitted whale-watching in the GBRMP may be increased without presenting unacceptable risks to cetacean populations, particularly if the numbers of humpback whales continue to increase. However, it is recognised that the east Australian *M. novaeangliae* stock whilst recovering in numbers, remains below its pre-harvest level. It is also recognised that information (population estimates, population demographics) on other whale (e.g., *B. acutorostrata*) and dolphin species is scarce. Therefore, management of whale-watching activities will proceed cautiously, and potential growth in the scale, number or geographic extent of whale-watching operations will be considered on the basis of the conservation status of the animals and the cumulative effects of the activity on their populations. Any expansion of dugong-watching tours will likewise be carefully considered beforehand.

Industry self-regulation will be extended through the development, adoption and monitoring of codes of conduct, such as the code for the swimming-with-dwarf minke whales, and compliance with best environmental practices.

REFERENCES


