

The status of cetaceans in the Great Barrier Reef Marine Park

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Introduction

Although they are charismatic megavertebrates, our knowledge of cetaceans in the Great Barrier Reef is poor.

The aim of this paper is to outline what is known, and what needs to be known, about cetaceans in the Great Barrier Reef.

The cetaceans in the Great Barrier Reef can be divided into:

- Baleen whales
- Inshore delphinids
- Pelagic cetaceans

Baleen Whales

Mostly migratory, in the Great Barrier Reef generally July - November.

Two species merit more detail - humpback and minke whales.

Other rorquals (e.g. blues, fins), may be observed occasionally in the Great Barrier Reef, but Brydes whales (*Balaenoptera edeni*) are probably the most likely to be seen.

Apart from humpbacks, very poorly known.

Humpback whales, *Megaptera novaeangliae*

Their annual migrations from Antarctic waters takes humpback whales into the Great Barrier Reef through the winter months, although there are record of some humpbacks in the Great Barrier Reef throughout the year.

Status in the Great Barrier Reef

The population migrating off eastern Australia is increasing at about 10% per year (at least since the mid-1980s). Recent (1993) information demonstrates that illegal Soviet whaling killed far more whales than previously thought. The latest estimate (1993) of the population on the east coast of Australia is approximately 2500 individuals.

Biology

Northern terminus of migration remains unknown - perhaps diffuse between the Whitsundays and Cairns? Recent behavioural work in south-east Queensland demonstrates that 'breeding ground' behaviour occurs far to the south of the putative terminus of migration - is all of the Great Barrier Reef a 'breeding ground'? Molecular genetic work demonstrates that (at least for mtDNA) east coast and west coast populations off Australia are separate. Molecular genetic, photo-identification and *Discovery* tagging work suggests that the picture in the SW Pacific is more complex.

- Molecular genetics - no significant differences between eastern Australia and Tonga.
- Photo-identification - matches between New Caledonia and Australia, Tonga and Australia.
- *Discovery* tagging - movements between New Zealand and Australia (including a Tasman crossing of about two weeks), Fiji and Australia.

Management issues

In the Great Barrier Reef, the major management issue is whalewatching. Data from Hervey Bay demonstrates that whale behaviour changes when in the presence of whalewatching vessels. Some data indicate that the usage of Hervey Bay by whales has changed - but lack of data continuity (due to poor organisation of research funding) means that no definitive statements can be made.

Other management issues are outside the realm of the Great Barrier Reef, e.g. krill fishing, global warming.

*Minke Whales, *Balaenoptera acutorostrata**

The minke whales most often observed in Great Barrier Reef waters are dwarf minke. Their annual migrations from Antarctic (?) waters takes minke whales into the Great Barrier Reef through the winter months.

Status in the Great Barrier Reef

Unknown

Biology

Poorly known

Management issues

Unclear

Inshore Delphinids

- Indo-Pacific humpback dolphins
- Irrawaddy dolphins
- Bottlenose dolphins

*Indo-Pacific Humpback Dolphins, *Sousa chinensis**

Status

Unknown

Biology

Poorly known - likely that their maximum rate of reproduction is low, and requires very high adult survivorship. Data from the Great Barrier Reef demonstrates that they can occur in shallow offshore waters, a new finding with implications for their conservation.

Management issues

Most countries where *Sousa* occur are developing, and lack effective marine wildlife management programs. Australia is one of the only places where it is likely that *Sousa* will survive into next century. Therefore, Australia has a special responsibility to manage human impacts on these animals. The Great Barrier Reef is the largest single management area in the range of *Sousa*, and so there is an urgent need to ensure their survival in the region. There is no estimate of population size of *Sousa* in the Great Barrier Reef, but this could be rectified with work to: (1) improve cetacean species determination on dugong surveys; and (2) estimate availability bias for the surveys. Threats include gill netting, prey depletion due to overfishing, pollution and habitat destruction from coastal development.

Irrawaddy River Dolphin, *Orcaella brevirostris*

Status

Unknown

Biology

Very poorly known

Management issues

As for *Sousa*

Bottlenose Dolphins, *Tursiops truncatus*

The 'definitive' dolphin, occurring throughout the world (other than polar waters).

Status in the Great Barrier Reef

Unknown, unlikely to be threatened.

Biology

Very poorly known in the Great Barrier Reef, but probably similar to elsewhere in the world. Long lived animals with low maximum rates of reproduction. Relatively localised populations have been found in the (mainly inshore) areas where they have been studied. Taxonomy is still muddled.

Management issues

As for *Sousa*, only less urgent, as they occur in other developed countries around the world.

Pelagic Species

Species known to include:

- Spinner dolphins, *Stenella attenuata*
- Pantropical spotted dolphins, *S. longirostris*
- False killer whales, *Pseudorca crassidens*
- Killer whales, *Orcinus orca*
- Long-finned pilot whales, *Globicephala macrorhynchus*

Sperm Whales

Great sperm whale, *Physeter macrocephalus*

Beaked Wales

Dense-beaked whales, *Mesoplodon densirostris*

Longmans beaked whales, *M. pacificus*

Little is known of pelagic species in the Great Barrier Reef, other than that they occur there. Longmans beaked whale is known only from two skulls.

Research Required

Baleen whales

Humpback Whales

- Maintain land-based surveys.
- Further work on impacts of whalewatching (more aerial surveys in Hervey Bay required for a start).
- Determination of the status of the stocks in the SW Pacific.
- Assess behaviour and habitat requirements in Great Barrier Reef waters, especially females with newborn calves.
- More work on basic biology.

Minke Whales

- Assess distribution, relative abundance and behaviour in the Great Barrier Reef.

Inshore Delphinids

- Determine availability bias, improve species identification to derive population estimates from dugong survey data.
- Assess human impacts in selected key areas - using behaviour and behavioural ecology in conjunction with population biology.
- More work on life history of *Sousa* and *Orcaella* required.

Pelagic cetaceans

- Learn something about them?

Pressure-state-response model

Table 1 summarises pressure, state and response (DEST 1994) for cetaceans in the Great Barrier Reef Marine Park.

Table 1. Summary of pressure, state and response (DEST 1994) for cetaceans in the Great Barrier Reef Marine Park

	Pressure	State	Response
Humpback Whale	Whalewatching	Population increasing	Increased research, continued moratorium on new whalewatching
Minke Whale	Unclear	Unknown	Increased research
Indo-Pacific Humpback Dolphin	Gill netting, prey depletion from overfishing, pollution, habitat destruction	Unknown	Recognise importance, eliminate mortality from gill nets and shark nets, improve fish stocks, reduce pollution through catchment management
Irrawaddy River Dolphin	As for Indo-Pacific Humpback Dolphin	Unknown	As for Indo-Pacific Humpback Dolphin
Bottlenose Dolphin	As for Indo-Pacific Humpback Dolphin	Unknown, unlikely to be threatened	As for Indo-Pacific Humpback Dolphin
Pelagic Cetaceans	Unknown	Unknown	Increased research

Conclusions

- Cetaceans have been, by and large, ignored by management in the Great Barrier Reef.
- Management recently has been restricted to regulating whalewatching in the Whitsundays.
- Until impacts of whalewatching have been determined, the moratorium on new whalewatching enterprises currently in place (through the Queensland Department of Environment) should remain.
- the importance of the Great Barrier Reef for *Sousa* and *Orcaella* needs to be recognised by management.
- Steps need to be taken to limit and eventually eliminate the mortality due to netting, especially gill nets and the nets set as part of the Queensland Shark Meshing Program.
- Sufficient fish stocks need to remain to provide inshore species with food.
- Catchment management is needed to limit pollutant loads in inshore waters.
- It would be nice to know something, sometime about pelagic cetaceans.

Reference

Department of the Environment, Sport and Territories 1994. State of the Environment Reporting: Framework for Australia. Department of the Environment, Sport and Territories. Canberra. 42 pp.