

Maldives Archipelago and Adjacent Oceanic Waters IMMA

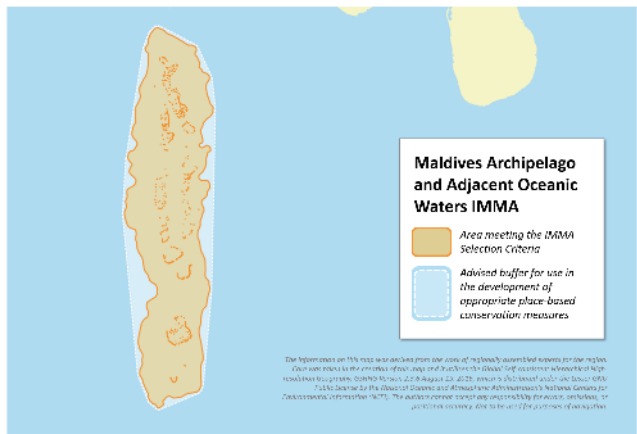
Summary

The Maldives comprises a chain of coral atolls in the equatorial Indian Ocean, southwest of India and Sri Lanka. Running from north to south, the atolls of the Maldives form the central and largest part of the Lakshadweep-Chagos Ridge, but are separated from those two other archipelagos by deep, wide channels. The Maldives archipelago hosts a variety of habitats, including the atolls themselves, the slopes immediately outside the atolls, the channels and other waters between the atolls, and oceanic waters immediately offshore. These habitats support a diverse array of 23 documented cetacean species. Spinner dolphins (*Stenella longirostris*) and pantropical spotted dolphins (*Stenella attenuata*), are the most frequently observed species, and are known to both feed and reproduce within the area. Blue whales (*Balaenoptera musculus*) and humpback whales (*Megaptera novaeangliae*) have also been observed at regular intervals, and may include visitors from both the Southern Hemisphere and the Arabian Sea.

Description

The Maldives comprises a north-south chain of coral atolls in the equatorial Indian Ocean, southwest of southern India and Sri Lanka. The IMMA includes the atolls themselves, the slopes immediately outside the atolls, the channels and other waters between the atolls, and oceanic waters immediately offshore. All of these areas have been relatively well surveyed and they are home to resident or transient populations of a number of cetacean species.

The people of the Maldives have traditionally fished for tuna using live-bait pole and line. All major forms of net fishing (including gillnetting, purse seining and trawling) were banned decades ago, specifically to protect the livelihoods of the pole and line fishermen. A fortuitous consequence of this ban is that cetaceans are not subject to high levels of bycatch as they are elsewhere in the region. In addition, all cetaceans are legally protected.



Area Size

166,500 km²

Qualifying Species and Criteria

Humpback whale - *Megaptera novaeangliae*
Criteria A, C1, D2

Northern Indian Ocean blue whale -
Balaenoptera musculus indica
Criteria A, C3

Sperm whale - *Physeter macrocephalus*
Criterion A

Spinner dolphin - *Stenella longirostris*
Criteria C2, C3

Pantropical spotted dolphin - *Stenella attenuata*
Criterion C2

Marine Mammal Diversity (D2)

Balaenoptera musculus, *Balaenoptera edeni*,
Megaptera novaeangliae, *Physeter macrocephalus*,
Kogia sima, *Orcinus orca*, *Pseudorca crassidens*,
Globicephala macrorhynchus, *Feresa attenuata*,
Peponocephala electra, *Stenella longirostris*,
Stenella attenuata, *Stenella coeruleoalba*, *Tursiops aduncus*, *Tursiops truncatus*, *Grampus griseus*,
Steno bredanensis, *Lagenodelphis hosei*, *Ziphius cavirostris*, *Mesoplodon hotaula*, *Mesoplodon densirostris*, *Indopacetus pacificus*

Criterion A: Species or Population Vulnerability

The Maldives are at the southern end of the range of the Endangered Arabian Sea sub-population of the humpback whale (*Megaptera novaeangliae*) and are within the range of the Northern Indian Ocean blue whale (*Balaenoptera musculus indica*) (Anderson et al., 2012a). (Fig. 1) Although the status of this blue whale subspecies has not been assessed, it was subject to high levels of commercial whaling in the 1960s, and the species as a whole is considered to be Endangered on the IUCN Red List. Sperm whales (*Physeter macrocephalus*), are assessed as Vulnerable, and this species is the one most frequently recorded as stranding in the Maldives (Anderson et al., 1999).



Figure 1: The dorsal fluke of a Northern Indian Ocean blue whale (*Balaenoptera musculus indica*) in the Maldives Archipelago. Photo: ©Charles Anderson.

Criterion C: Key Life Cycle Activities

Sub-criterion C1: Reproductive Areas

Southern Ocean Humpback Whales (*Megaptera novaeangliae*) visit the Maldives during June-October in ever increasing numbers. The proportion of sightings with calves increases dramatically in Sept-Oct (R. C. Anderson, pers obs). Several other species are also seen regularly with calves, suggesting that the Maldives is a reproductive area for species such as spinner dolphins (*Stenella longirostris*) and pantropical spotted dolphins (*Stenella attenuata*) (Anderson, 2005; Dalebout et al., 2003; Anderson et al., 2012b; R.C. Anderson, pers. obs.).

Criterion C: Key Life Cycle Activities

Sub-criterion C2: Feeding Areas

The Maldives are affected by the seasonally oscillating monsoon seasons, which brings two distinct peaks of marine productivity to the archipelago. During the SW monsoon season (April to Oct.), ocean currents are from the west, and productivity is high on the eastern side of the atoll chain. During the NE monsoon season (Dec. to March), ocean currents are from the east, and productivity is high on the western side of the atoll chain. Many species shift from side to side of the atolls to take advantage of this seasonally shifting abundance of food. This is most obvious for those species closely associated with the outer atoll slopes. The blue whale is most common on the seasonally changing upstream side of the Maldives atoll chain, whilst in contrast spinner dolphins appear to be most common on the downstream side of the atolls (Anderson, 2005; Anderson et al., 2011; Anderson et al., 2012a). The waters of the far north of the Maldives appear to be a seasonal feeding ground of particular importance for pantropical spotted dolphins (Anderson et al., 2011).

Criterion C: Key Life Cycle Activities

Sub-criterion C3: Migration Routes

The Maldives are on the migration route of the Northern Indian Ocean blue whales, as they pass seasonally between Sri Lanka and the upwelling areas of the Arabian Sea (Anderson et al., 2012a), their numbers peaking in Dec-Jan and again in April. The far north of the Maldives may be a particularly important migratory corridor for these blue whales. In addition, increasing numbers of humpback whales are recorded each year from June-October (R.C. Anderson, pers. obs.). These are believed to be Southern Ocean animals, at the northern end of their annual migration. Large numbers of spinner dolphins appear to constantly pass through the Maldives. Movements are generally upstream (i.e. into the seasonally changing monsoon currents) although further details of these movements are not known (R.C. Anderson, pers. obs.).



Figure 2: Risso's dolphin, Maldives Archipelago. Photo: ©Charles Anderson



Figure 3: Fraser's dolphin bowriding in the Maldives Archipelago. Photo: ©Charles Anderson



Figure 4: Pantropical spotted dolphin, Maldives Archipelago. Photo: ©Susan Anderson

Criterion D: Special Attributes

Sub-criterion D2: Diversity

A total of 23 species of cetacean have been recorded from the Maldives, with many of these species occurring in relatively high densities relative to surrounding areas in Indian and Sri Lankan waters (Ballance et al., 2001; Anderson, 2005; Anderson et al., 2015; R.C. Anderson, pers obs). Within a 10-day survey period encounters of 10-12+ species are commonly recorded (Anderson et al., 2015), including striped dolphin, rough-toothed dolphin, Fraser's dolphin, common bottlenose dolphin, killer whale, melon-headed whale, false killer whale, pygmy killer whale, and Bryde's whale. During the 5-year round-the-world Voyage of the Odyssey, acoustic detections were recorded consistently, and the Maldives had the highest detection rates recorded for the entire voyage, suggesting particularly high abundance of cetacean species (Ocean Alliance, 2009; Clark et al., 2012).

Supporting Information

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**MARINE MAMMAL
PROTECTED AREAS
TASK FORCE**

IMMA

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