

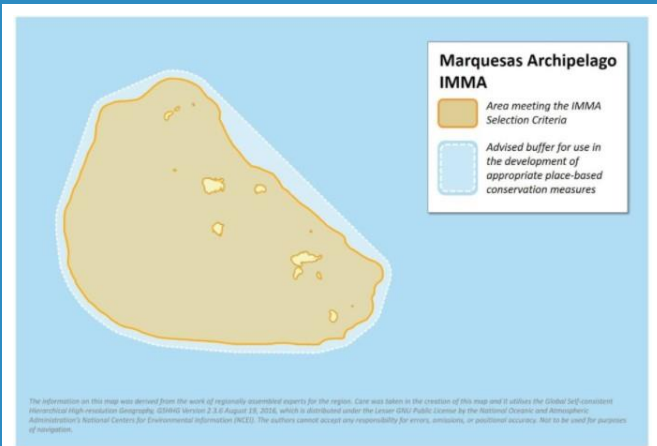
Marquesas Archipelago IMMA

Description

This IMMA is centred around the Marquesas Archipelago, in French Polynesia, including coastal waters of 12 islands in the archipelago and the western offshore waters, which benefit from the island mass effect and have a high productivity where a high density of cetaceans was detected (Gannier, 2009; Laran et al., 2012). The Marquesas are fairly new islands arising from the Marquesas hot point and are therefore not surrounded by coral reef systems. Their coastal slope rapidly falls into deep water (>1000 m). The IMMA roughly extends from 12° to 8°S and 138° to 142°E. This IMMA is exclusively within French Polynesia national jurisdiction, and inside the national marine mammal sanctuary. The Marquesas archipelago has been proposed as World Heritage site.

The IMMA is notable for its high diversity and density of cetaceans (Fig. 1) (Gannier et al., 2002; Laran et al., 2012; Poole et al., 2013). This is particularly true in nearshore waters, as well as offshore waters west of the archipelago. To date, a total of 16 marine mammal species have been recorded in the area, including 15 odontocetes and 1 mysticete. In coastal waters, melon-headed whales, spinner dolphins, pantropical spotted dolphins and common bottlenose dolphins are the most frequently encountered species. In pelagic waters, Risso's dolphins, short-finned pilot whales, and rough-toothed dolphins are common. In addition, Cuvier's and Blainville's beaked whales, dwarf sperm whales and sperm whales are a significant part of the marine mammal community (Laran et al., 2016). Frazer's dolphin occurrences are only known from a skeletal specimen found in the area (Reeves et al., 1999). Some rare sightings of humpback whales have been reported by the local population (Poole et al., 2013; Gannier, 2004).

It was estimated from aerial surveys that during summertime the density of marine mammals in the Marquesas is seven times higher than other archipelagos of French Polynesia (Laran et al., 2012).



Area Size

100,460 km²

Qualifying Species and Criteria

Melon-headed whale – *Peponocephala electra*

Criteria B2, D1

Spinner dolphin – *Stenella longirostris*

Criterion D1

Marine Mammal Diversity

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

Summary

Marine mammal aerial and small-boat surveys in the Marquesas Archipelago have revealed an unusually rich area in terms of cetacean diversity (16 confirmed species to date) and abundance in comparison to other regions of the South Pacific. The IMMA encompasses coastal and pelagic waters surrounding all the islands of the Marquesas archipelago, extending offshore to the west to include an area of higher density for pelagic species. The IMMA also includes nearshore habitat used regularly by genetically distinct aggregations of melon-headed whales that show predictable and unusual behaviour throughout the archipelago.

Coastal surveys by small boats have also revealed that some dolphin species usually found in deep waters are regularly seen in high numbers very close to shore within the IMMA. These include pantropical spotted dolphins and melon-headed whales. The melon-headed whale population is abundant, and likely divided into subpopulations and seems to have converged with spinner dolphins in the pattern of nearshore sheltering and socialising during morning hours. It is also interesting to note that the Marquesas archipelago has a history of traditional dolphin hunting as well as 19th century sperm whale hunts by American and European whaling boats.

Criterion B: Distribution and Abundance

Sub-criterion B2: Aggregations

Large groups (up to several hundreds) of melon-headed whales are seen aggregating on a daily basis very close to the shore around most of the main islands of the archipelago within the IMMA. Over 6,000 dorsal fin photographs collected among 14 melon-headed whales' groups at four islands (Mohotani, Ua Huka, Ua Pou, and Nuku Hiva) in the IMMA were analysed. A total of 393 distinctively

marked individuals were identified. Based on these data, the minimum abundance of melon-headed whales in the Marquesas Islands was estimated, using the Lincoln-Petersen, two-sample, mark-recapture model as about 1,800 individuals (McClung, 2017; Poole et al., 2013).

Criterion D: Special Attributes

Sub-criterion D1: Distinctiveness

The unusual use of coastal habitat by melon-headed whales in the Solomon's during daytime is a distinctive behavioural/ecological feature of the IMMA. Furthermore, preliminary mtDNA analyses have shown genetic structuring of melon-headed whales inhabiting the waters of Mohotani, compared to those that occur around the northern islands of Nuku Hiva, Ua Huka and Ua Pou (Baker, unpublished), (i.e. within the IMMA). Melon-headed whales are usually described as pelagic and therefore their regular occurrence in coastal waters of the Marquesas is noteworthy. However, it is important to note that aggregations of this species have also been reported at Palmyra atoll (Brownell et al., 2009) and Mayotte (Kiszka et al., 2011). Therefore, while unusual,

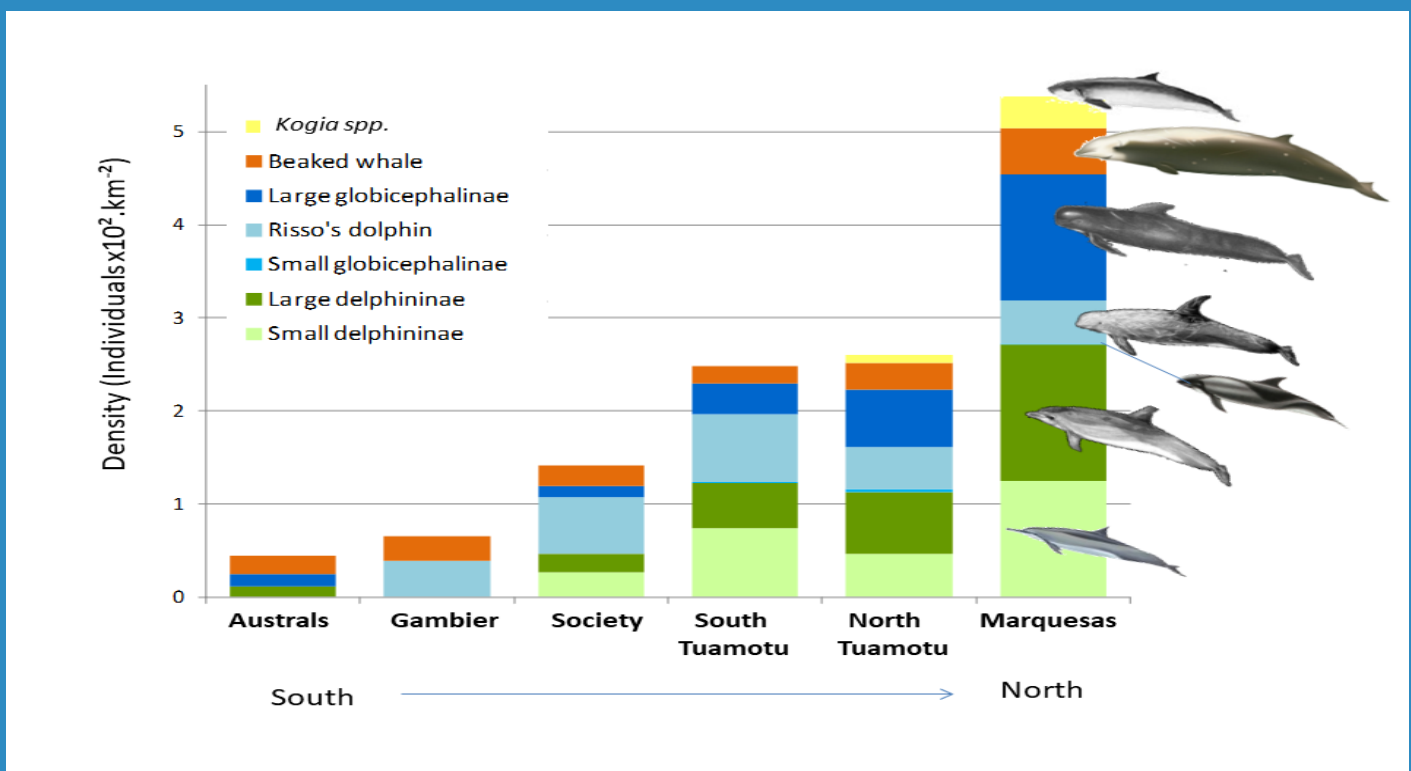


Figure 1: A comparison of odontocete species density across French Polynesian archipelagos. From: Laran et al., 2012

this behaviour is not necessarily unique. The fact that these aggregations happen simultaneously at several islands of the same archipelago is unmatched to our knowledge.

Genetic analyses (mtDNA sequencing and microsatellite genotyping) have shown that spinner dolphins from the Marquesas are genetically distinct from other populations in the Pacific (Oremus et al., 2007; Baker, unpublished, 2015). In addition, Oremus et al (2007) found clear genetic differentiation between spinner dolphins in the Marquesas and Society Islands.

Criterion D: Special Attributes

Sub-criterion D2: Diversity

All dedicated cetacean surveys conducted in the Marquesas to date have confirmed a high diversity of cetacean species (16 species) in the IMMA (Gannier et al., 2002; Laran et al., 2012; Poole et al., 2013). Gannier et al., (2002) recorded a total of 154 groups of odontocetes, including ten delphinids species (*S. attenuata*, *S. longirostris*, *T. truncatus*, *P. electra*, *S. bredanensis*, *G. macrorhynchus*, *P. crassidens*, *F. attenuata*, *G. griseus* and *O. orca*). In April-May of 2011, Laran et al. (2012) conducted aerial surveys across the Marquesas archipelago and identified 11 species. Finally, Poole et al. (2013), despite concentrating their effort only in coastal/nearshore waters, identified 7 cetacean species during small boat surveys in April 2012.

Supporting Information

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**MARINE MAMMAL
PROTECTED AREAS
TASK FORCE**

IMMA

GOBI

TETHYS
since 1986

WDC
WHALE AND
DOLPHIN
CONSERVATION

Supported by:

Federal Ministry for the
Environment, Nature Conservation,
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OFB
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