

The Cook Islands Whale Sanctuary

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On September the 19th 2001, the Government of the Cook Islands declared a whale sanctuary in the territorial waters of that island state. Here, we present a brief description of the Sanctuary, together with a list of cetacean species known or believed to inhabit the region. We also summarize information on ongoing research efforts aimed at marine mammals in the Sanctuary, with particular focus on humpback whales (*Megaptera novaeangliae*).

Boundaries and area

The Cook Islands Whale Sanctuary (CIWS) encompasses an area of approximately one million nm² and includes all of the territorial waters of the Cooks (Figure 1). Latitudinally, the Cook Islands lie between approximately 7° S and the Tropic of Capricorn; the longitudinal boundaries of the Cooks are between 156° and 167° W, with the Cooks lying between French Polynesia to the east and Samoa and Niue to the west. There are two major island groups, the Southern and Northern Cooks; together, these comprise fifteen inhabited islands, the largest of which is Rarotonga.

Cetacean species in the Sanctuary

There is a considerable diversity of cetacean fauna within the CIWS. Species which are known to exist in this area are summarized in Table 1; other species whose presence in the region is likely based upon unconfirmed observations, or on knowledge of their distribution elsewhere in the South Pacific, are listed in Table 2.

Species known to occur in the CIWS include four baleen whales and ten odontocetes. The occurrence in the region of an additional two mysticetes and nine odontocetes is considered likely.

Humpback whales

Humpback whales utilize the waters of the CIWS during the austral winter. The result of directed studies undertaken since 1998 indicate a consistent seasonal presence in the region, from at least July to October (Hauser *et al.* 2000, SC/54/O14). Observations of newborn calves, as well as singing behavior and competitive groups, strongly indicate that the waters of the CIWS are used by humpback whales for both calving and mating.

Given upon the longitudinal position of the Cooks, it is likely that the humpback whales found in the CIWS are part of the IWC Area VI management stock. Discovery marks shot or recovered in nearby areas of the South Pacific generally support the belief that this region should be considered part of Area VI for management purposes (Mikhalev 2000). Individually identified humpback whales observed in the Cooks have been matched to French Polynesia, Niue and Tonga (Garrigue *et al.* 2002), indicating migratory connections among these areas of Oceania.

The current status of humpback whales in the CIWS is not clear. It is likely that this population has still not recovered from the overexploitation to which it was subject in its high-latitude feeding grounds in the Antarctic. Area V and Area VI humpback whales were greatly reduced by whaling, including extensive illegal catches by the USSR (Yablokov *et al.* 1998, Clapham and Baker 2001). In particular, almost 13,000 humpbacks from these two areas were killed in the 1959/60 season alone (Mikhalev 2000). Observations from the Cooks and other areas of the South Pacific indicate that recovery of this species has been slow throughout Oceania (Garrigue *et al.* 2002).

Research in the CIWS

Research in the CIWS is currently focused on continued study of humpback whales, on beaked whales, and on documentation of cetacean diversity in the region. Some details of these two topics are given below.

Humpback whales

The long-term study of humpback whales begun in 1998 will continue indefinitely. The work is currently based at Rarotonga, but additional surveys have been (and will be) conducted elsewhere in the Cooks. The major objectives of this study are: (i) to estimate the abundance of humpbacks in the region; (ii) to document habitat use and behavior of whales in the Cooks; (iii) to assess the degree of exchange between the Cooks and other areas of the South Pacific using photo-identification; and (iv) through the collection of biopsy samples from the Cooks, to contribute to an ocean-wide investigation of the genetic structure of South Pacific humpback whales.

Beaked whales

At least two species of beaked whale (Cuvier's and Blainville's) are known to occur in the waters of the CIWS (Table 1). Cook Islands Whale Research has recovered four ziphiid skulls as well as other skeletal remains, primarily from Rarotonga. Beaked whales are sometimes encountered during surveys off Rarotonga, and a project to document the occurrence, distribution and behavior of these animals is currently funded.

Cetacean diversity surveys

To date, surveys aimed at establishing the occurrence of cetaceans in the CIWS area have been conducted at Rarotonga, Aitutaki and Palmerston Atoll. However, additional surveys are planned in other areas, with the immediate priority being the island of Penryn in the Northern Cooks. Eventually, it is hoped that all the main island areas can be systematically surveyed.

Collaboration with other institutions

Cook Islands Whale Research is a member of the South Pacific Whale Research Consortium (SPWRC). SPWRC serves as a vehicle for collaboration among research institutions working on cetaceans in the South Pacific region, and involves work in French Polynesia, the Cooks, Tonga, American Samoa, Niue, Fiji, New Caledonia, New Zealand and Australia (see SC/54/O14). Photographs and biopsy samples collected in the Cooks have already contributed to important inter-area comparisons within the Oceania region (Garrigue *et al.* 2001, SPWRC 2001, SC/54/O14).

Educational programs

Cook Islands Whale Research has conducted educational programs for all schools and for the local community in general on Rarotonga. Additional programs have been run on Palmerston Atoll and Aitutaki.

In April 2002, The Cook Islands Whale Center opened in Avarua, Rarotonga. This institution features educational displays, a whale museum, and interpretive programs. The Museum is aimed primarily at local people, but will also cater to tourists.

Whaling history

As noted by Hauser *et al.* (2000), the Cook Islands do not appear to have ever been a major site for whaling. Maps compiled by Townsend (1935) from American whaling logbook data show only three records of humpbacks taken in the vicinity of the Cooks, but it seems likely that these whales were encountered opportunistically by vessels en

route to more established grounds at Tonga or elsewhere in the southwestern Pacific region. Documentation of local shore-based whaling in the Cook Islands is sparse, although there are reports of whales taken by natives at Rarotonga. That the focus of these catches was the humpback is suggested by a local tradition that the flowering of the Ngatae (Indian Coral) tree during July represented a cue for local whalers to prepare boats and equipment for the arrival of the first whales (McCormack, 1990); this coincides with the timing of the humpbacks' migration into Cook Island waters. The other plausible target species, the sperm whale (*Physeter macrocephalus*), is much less seasonal in its occurrence.

Discovery tagging

We have recently learned that fisheries officers in the Cooks had been given Discovery tags in the 1960's, for use with humpback whales. A surviving fisheries officer recalls tagging at least two dozen humpbacks in the waters around Rarotonga. We are currently attempting to discover more about this effort, and whether recovery of any of these tags occurred elsewhere.

Protective measures

Following the declaration of the CIWS, the government of the Cook Islands enacted a set of regulations aimed at the protection of cetaceans within Sanctuary waters. As a result, it is now forbidden to kill, injure or harass whales and other cetaceans within the Sanctuary.

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Table 2. Cetacean species likely to occur in the Cook Islands Whale Sanctuary, based on either equivocal local reports or knowledge of their distribution and range in the South Pacific Ocean.

Scientific name	Common name
<i>Balaenoptera edeni</i>	Bryde's whale
<i>Balaenoptera physalus</i>	Fin whale
<i>Pseudorca crassidens</i>	False killer whale
<i>Feresa attenuata</i>	Pygmy killer whale
<i>Grampus griseus</i>	Risso's dolphin
<i>Steno bredanensis</i>	Rough-toothed dolphin
<i>Peponocephala electra</i>	Melon-headed whale
<i>Tursiops truncatus</i>	Bottlenose dolphin
<i>Stenella attenuata</i>	Spotted dolphin
<i>Kogia breviceps</i>	Pygmy sperm whale
<i>Kogia simus</i>	Dwarf sperm whale

Table 1. Cetacean species known from confirmed scientific observations to occur in the Cook Islands Whale Sanctuary.

Scientific name	Common name	Remarks
<i>Megaptera novaeangliae</i>	Humpback whale	Hauser <i>et al.</i> (2000). Seasonal occurrence in austral winter; likely breeds and calves in the region.
<i>Balaenoptera borealis</i>	Sei whale	
<i>Balaenoptera musculus</i>	Blue whale	Probably <i>B. m. brevicauda</i> .
<i>Balaenoptera bonaerensis</i> or <i>Balaenoptera acutorostrata</i> sp.	Antarctic minke whale or Dwarf common minke whale	Species uncertain.
<i>Physeter macrocephalus</i>	Sperm whale	
<i>Orcinus orca</i>	Killer whale	
<i>Globicephala macrorhynchus</i>	Short-finned pilot whale	
<i>Lagenorhynchus australis</i>	Peale's dolphin	Leatherwood <i>et al.</i> (1991).
<i>Ziphius cavirostris</i>	Cuvier's beaked whale	Observed both alive and stranded.
<i>Mesoplodon densirostris</i>	Blainville's beaked whale	Observed both alive and stranded.
<i>Delphinus delphis/frontalis</i>	Common dolphin	
<i>Stenella longirostris</i>	Spinner dolphin	
<i>Stenella attenuata</i>	Striped dolphin	
<i>Lagenodelphis hosei</i>	Fraser's dolphin	Stranding in Rarotonga in 2001.