

Multiple Opportunistic Observations of Arnoux's beaked whales in Doubtful Sound (Patea).

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Abstract

Herein, we report an observational study of Arnoux's beaked whales in the Fiordland waters of the South Island of New Zealand. On four separate occasions between March 2007 and January 2011, groups of eight to twelve Arnoux's Beaked Whales were watched and, on two occasions, photographed in the waters of Doubtful Sound. The occasions on which the whales were photographed are referred to as confirmed sightings, while the verbal reports are referred to as unconfirmed sightings. Importantly, the whales seemed undisturbed by the presence of boat traffic. Behaviors including diving and breaching were observed.

INTRODUCTION

Arnoux's beaked whale (*Berardius arnuxii*), member of the family Ziphiidae, is found throughout the southern hemisphere from the Antarctic continent and ice edge north, to about 34°S. This species is known from 73 strandings in New Zealand, Australia, South Africa, South Shetlands, Brazil, Argentina, Falklands and Chile (W. Bachara unpubl. stranding database). We document two confirmed sightings (Fig.1) of Arnoux's Beaked Whales in Doubtful Sound (Patea), South Island, New Zealand. Two other anecdotal sightings in the various locations around the Fjord are also reviewed. The behavior of the whales, their pod size, and details of the encounters are discussed. This appears to be the only known inland area regularly exposed to boat traffic that has been repeatedly visited by Arnoux's Beaked Whales. All sightings were opportunistic and made by crews operating vessels in and around Fiordland and the Tasman Sea.

RESULTS

In 2007, the sighting of unidentified beaked whales, alerted Fiordland vessel operators of a unique opportunity to contribute to the scientific study of cetaceans. The first unconfirmed sighting occurred in the Hall Arm, in March 2007 (Fig.1, C) before confirmation that Arnoux's Beaked Whales were present in Fiordland. The whales were identified by a Nature Guide aboard a Real Journeys vessel as beaked whales, based on their size, shape and coloration. This pod remained in Hall Arm between five and seven days. Based on the amount of spouting observed, the crew estimated that the pod contained between five and eight individuals. Later encounters with animals confirmed to be Arnoux's Beaked Whales, suggested to the crew that these had also been Arnoux's Beaked Whales.

After a further sighting in 2009, the first author was informed by the captain of one of the vessels, and presented with photographs of a pod of whales thought to be Arnoux's Beaked Whales. At this point the author requested to be informed of any further sightings of beaked whales in and around Fiordland National Park.

The first confirmed sightings were reported in mid-June of 2009, near Elizabeth Island, a relatively narrow part of the fjord (Fig. 1, A., Figs. 2-4). A pod of six to ten beaked whales surfaced near a vessel, the Breaksea Girl, operated by Fiordland Ecology Holidays in Doubtful Sound. The depth of the water at this location ranges from 134 to 158 m, with a few geologic formations peaking at 50 m below the surface. The whales were observed to surface abeam of the vessel at an approximate distance of 150 m. For approximately four minutes the whales' behavior was observed

by Captain Lance Shaw and guests aboard the Breaksea Girl, a twenty metre ketch. The average length of the whales was estimated to be about 7.4 m, compared to the length of the vessel. The direction of motion of the pod appeared to be toward Deep Cove, at the head of the fjord. Their speed of travel matched that of the vessel at 8kt. The pod remained at the surface for about four minutes and exhibited repetitive breaching behavior before submerging for a considerable time. On the same occasion, the pod was observed surfacing three additional times at a distance of about 500 m behind and to the west of the Breaksea Girl. Three useful photographs were obtained by Captain Shaw.

There was no direct interaction with the whales, but they appeared not to be disturbed by the presence of the vessel. There were no other observations of a pod of beaked whales that day in Doubtful Sound, despite the fact that there were several other companies operating approximately six trips in the fjord. On 16/1/2010, a group of whales was observed on the surface of Doubtful Sound at about the mid-point, outside of First Arm (Fig. 1, B and Fig. 5-6), an area of 200-400 m depth, at the junction of Doubtful Sound with two other fjords, Bradshaw Sound to the north-east, and Thompson Sound to the north-west. A tourist vessel from the Ecotourism Company, Real Journeys, reported the sighting. Photographs were taken by the crew and passengers. The lack of clarity of the photos suggests either greater distance from the animals or poor lens quality. The photographs show a series of short dives. The crew estimated the pod size to be about 8 individuals. This number was confirmed by the first author using repeated distinguishing features and counting the number of individuals in each photograph. As before there was no direct interaction with the whales, and as before the whales seemed not to be disturbed by the presence of the vessel. On 18/1/2010, a fishing vessel reported spotting eight to ten beaked whales at the mouth of Dagg Sound, to the south of Doubtful Sound, where the previous sighting had occurred. This sighting, although unconfirmed by photographic evidence, is suggestive of the presence of the same pod of Arnoux's Beaked Whales. The most recent, unconfirmed sighting of beaked whales in the Hall Arm was reported in mid-January 2011. The crew aboard a Real Journeys vessel spotted a group of whales heading toward them. The whales dived before any photos were taken. The pod headed north out of Hall Arm, to the main body of the fjord (Fig. 1, D).

DISCUSSION

Arnoux's Beaked Whales and the Southern Bottlenose Whales (*Hyperoodon planifrons*) are the only large ziphiids found in the Fiordland region (MacLeod *et al.* 2006). In the field they are distinguished using size, color, rostrum and melon shape. Arnoux's whales are also distinguished by a great difference in size from the Bottlenose Whales. The Bottlenose whale reaches 7.8 m, while Arnoux's beaked whale is significantly larger, at up to 9.9 m (McCann 1975). Although the whales spotted by Captain Shaw appeared smaller than the typical size of Arnoux's beaked whales, it could have been the distance at which they were observed, combined with the speed of the ship, and sea conditions that account for the discrepancy in observed size. Doubtful Sound has a resident pod of Bottlenose Dolphins (*Truncates tursiops*) (Te Ara Encyclopedia). Many species of cetaceans make guest appearances in the fjord. Common dolphins (*Delphinus delphis*), Dusky Dolphins (*Lagenorhynchus obscurus*) (Wursig and Wursig 2009), long finned pilot whale (*Globicephala melas*), and Orca (*Orcinus orca*) are seen in and around the fjords on occasion. (Lusseau, *et al.* 2002). These cetaceans are clearly smaller in size. Orcas have distinct markings. Southern Right Whales (*Eubalaena australis*), Humpback whale (*Megaptera novaeangliae*), Sperm Whales (*Physeter macrocephalus*) and Minke Whales (*Balaenoptera acutorostrata*) have been seen inside the fjord as well and off the coast infrequently (Lusseau and Slooten 2002). Southern Right Whales (*Eubalaena australis*), Humpback whale (*Megaptera novaeangliae*), Sperm Whales (*Physeter macrocephalus*) and Minke Whales (*Balaenoptera acutorostrata*) have been seen inside the fjord as well and off the coast infrequently (Lusseau 2002). The only other ziphiid species seen in Doubtful Sound has been a single male Strap-toothed Whale (*Mesoplodon layardii*). (L. Shaw pers.com).

Crews operating ships in Doubtful Sound interact with cetaceans on a nearly daily basis. The fjord has a resident pod of cetaceans and each vessel is required to log any sighting with the location and behavior. Based on the first author's knowledge of the very experienced crews of tourist vessels in Doubtful Sound, the observations of the crews are considered to be accurate and reliable.

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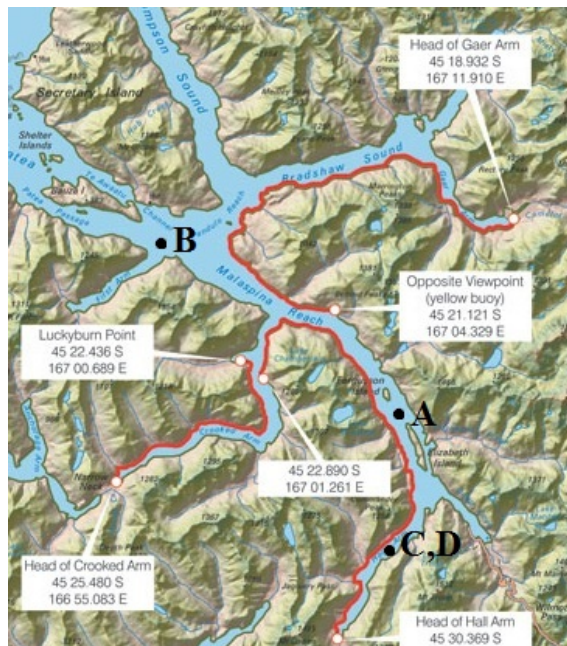


Figure 1. This map is produced by the New Zealand Department of Conservation. The area outlined is the Dolphin Protection Zone, where dolphin pods are most likely to be seen.



Figure 2.



Figure 3.



Figure 4.



Figures 5-6