

Cetacean records for the New Caledonian area (Southwest Pacific Ocean)

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Abstract—We report the results of opportunistic sightings collected over a 9-year period. These observations add 9 species to the previously known species from New Caledonia, bringing the total number of cetaceans identified in this area to 13. They are: Minke whale, *Balaenoptera acutorostrata* (Lacépède, 1804); Sperm whale, *Physeter macrocephalus* (Linnaeus, 1758); Short-finned pilot whale, *Globicephala macrorhynchus* (Gray, 1846); Killer whale, *Orcinus orca* (Linnaeus, 1758); Bottlenose dolphin, *Tursiops truncatus* (Montagu, 1821); Spinner dolphin, *Stenella longirostris* (Gray, 1828); Spotted dolphin, *Stenella attenuata* (Gray, 1846); Risso's dolphin, *Grampus griseus* (Cuvier, 1812); and Blainville's beaked whale, *Mesoplodon densirostris* (de Blainville, 1817).

Introduction

The marine mammal fauna of New Caledonia is poorly known. Published accounts of cetacean sightings and strandings for New Caledonia and the Loyalty Islands are scarce. Two papers reported pygmy sperm whales, *Kogia breviceps* (de Blainville, 1838), from the south of New Caledonia in 1974 (Robineau & Rancurel 1981) and from the southwest of the island in 1985 (Sylvestre 1988). Robineau & Rancurel (1981) also reported a dwarf sperm whale, *Kogia simus* (Owen, 1866) stranded in 1972 on a beach in the northwest of New Caledonia. More recently Garrigue & Gill (1994) presented the first published observation of humpback whales, *Megaptera novaeangliae* (Borowski, 1781), wintering in the lagoon of New Caledonia, and Greaves & Garrigue (1999) reported the first encounter with false killer whales, *Pseudorca crassidens* (Owen, 1846). In this note we report the results of data collected during 9 years of opportunistic sightings and a 5-year research program on humpback whales (Garrigue & Greaves 1999).

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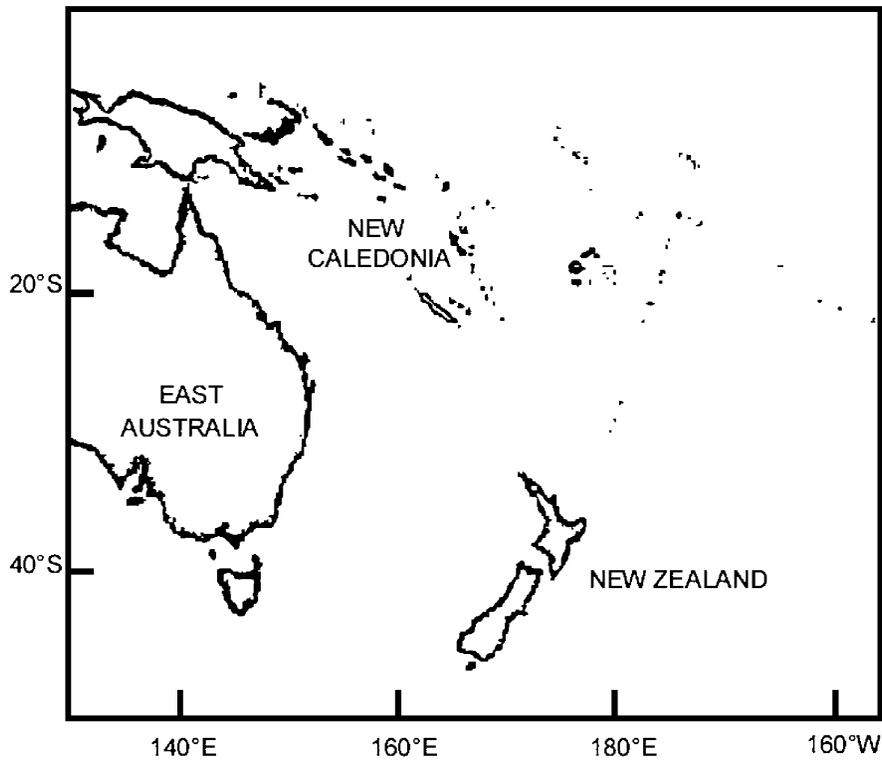


Figure 1. Location of New Caledonia in the south-west Pacific Ocean.

Materials and Methods

New Caledonia (French Territory) is situated in the south-west Pacific Ocean at 18–20° S and 163–168° E (Figure 1). It comprises a main island, 400 km long and 80 km wide, and a number of smaller islands including: Ile des Pins in the south; Belep in the north; and the Loyalty Islands (Lifou, Maré and Ouvéa) in the east. A barrier reef 1600 km long surrounds a huge lagoon of 24,000 km² around the main island. The mean depth of the lagoon is 24 m. In contrast, at least two of the Loyalty Islands have no lagoon and are surrounded by open ocean.

Compilation of marine mammal sightings began in 1991. Requests for notification of cetacean sightings have been published in the local newspaper (“Les Nouvelles Calédoniennes”), in a free newspaper (“Le Gratuit”) and in the CNC (Club Nautique Calédonien) bulletin. Since 1995 a standard whale sighting form has been made available to a wide range of potential observers including researchers, fishermen, charterboat operators, dive shop owners, the navy and air-

borne police, the two main harbour authorities, the environmental and fisheries division of each New Caledonian Province, the aquarium, the University and most of the ship-chandlers. More than 10,000 forms have been distributed.

Regular field trips have been organised since 1993 to the southern portion of the New Caledonian lagoon during July, August and September as part of a scientific research programme that contributes to the South Pacific Humpback Whale Research Program (SPHWRP). This program of surveying humpback whales led to an inventory of the marine mammal species of New Caledonia (Garrigue & Greaves 2000).

Results

A total of 467 forms have been returned during the 9 years documenting opportunistic sightings of nine species (Table 1): *Tursiops truncatus*, *Stenella longirostris*, *Stenella attenuata*, *Grampus griseus*, *Physeter macrocephalus*, *Balaenoptera acutorostrata*, *Orcinus orca*, *Megaptera novaeangliae* and *Globicephala* sp. Our personal observations during the 5 years of the SPHWRP, plus sighting surveys, resulted in the observation of 8 species; *Tursiops truncatus* (3 forms), *Stenella longirostris*, *Stenella attenuata*, *Grampus griseus*, *Physeter macrocephalus*, *Balaenoptera acutorostrata*, *Pseudorca crassidens*, and *Globicephala macrorhynchus*.

Balaenoptera acutorostrata

A few incidental sightings (2% of returned forms) of minke whales were photographed or filmed on video. The narrow rostrum, the falcate dorsal fin, the dark grey coloration of the back and the white coloration of the belly confirmed the identification as minke whales. In September 1997, during the SPHWP, a

Table 1. Results from the sighting forms : Mn, *Megaptera novaeangliae*, Pm: *Physeter macrocephalus*, Ba: *Balaenoptera acutorostrata*, Sl: *Stenella longirostris*, Sa: *Stenella attenuata*, Tt: *Tursiops truncatus*, Gg: *Grampus griseus*, G: *Globicephala* sp., Undet.: undetermined species.

Year	Number of Forms	Mn	Pm	Ba	Tt	Sl	Sa	Gg	Oo	G	Undet.
1991	41	37									4
1992	83	69									14
1993	35	23	5								7
1994	58	43	1					1			13
1995	80	42	5	4	5	1			1	2	20
1996	57	32	4	2	2			2	1		14
1997	33	20	4	1		1				2	5
1998	36	14		1	6	2			1	5	7
1999	44	18	2	3	6	1	1	1		5	7
Total	467	297	21	11	19	5	1	4	3	14	91
%		64	5	2	4	1	1<	1	1	3	19

group of minke whales was encountered in Baie du Santal in Lifou (Loyalty Islands). It was composed of 8 to 10 whales spread over several hundred square meters. Some whales were photo-identified by dorsal fin. The colour of the body was dark grey with many "cookie cutter" shark marks on the flanks. These animals never raised their fluke above the surface, and their blows were thin and vertical. They reached speeds of up to 8 knots. This species appears to be present in New Caledonian waters year round. Inspection of two underwater photographs (Laboute 1983) by P. Arnold (Museum of Tropical Queensland) leads us to believe that at least some of the individuals observed are dwarf minke whales.

Physeter macrocephalus

Sightings of sperm whales were recorded every year from 1993 to 1997 and in 1999 (5% of returned forms). The huge head, the rounded humps of the dorsal fin and the blowhole located on the left tip of the snout could be seen in photographs and films provided. Pods were composed of a few to 30 individuals, but single sperm whales were also encountered. The largest animals reached 10 to 12 m length; others measured 8 to 10 m and the smallest 5 to 6m. Females were observed with young. The size of the pods and the fact that in one pod an individual bigger than the others was observed, probably a mature male, suggests that sperm whales may reproduce in the waters surrounding New Caledonia.

All of the sightings reported were from outside the barrier reef. However in September 1995 we observed a pod of about 10 individuals inside the lagoon in an area 50 to 60 m deep. Sperm whales are mainly present from September to November.

Orcinus orca

Killer whales are rarely observed in New Caledonia, but three sightings have been confirmed outside of the barrier reef. Two of the encounters were on the west coast of New Caledonia (Bourail) in September 1995 and in August 1996, the other was in the vicinity of Lifou (Loyalty Islands) in June 1998.

Globicephala macrorhynchus

Pilot whales were identified on 15 sighting forms (3%). It was not possible to identify the species from these observations, but autopsies of two pilot whales stranded in 1997 on Ile des Pins allowed the identification of short-finned pilot whale. A pod of 20 to 30 short-finned pilot whales was observed in the Baie du Santal (Lifou) in September 1997 during the SPHWRP. This species appears to be present year round.

Grampus griseus

Few forms identified Risso's dolphin (1% of the returns). In February 2000 one of us (CG) encountered a pod of 20 Risso's dolphin outside the lagoon at a distance of 2 nautical miles from the barrier reef. The coloration and the charac-

teristic white scars on the back of this species made it easy to identify. All observations of this species have been made on the west coast of New Caledonia outside of the barrier reef.

Tursiops truncatus

The bottlenose dolphin is the most common species of dolphin observed in the lagoon (4% of the sightings forms). Personal observations have led to the recognition of three ecotypes of bottlenose dolphin around New Caledonia; one offshore and two coastal forms. The offshore form is much larger (3 to 4 m) than the coastal forms (max. 2.5 m). It is light or dark grey, the flanks being lighter than the cape, and generally has a lot of body scarring. Offshore pods are composed of more individuals than coastal forms where even solitary animals have been observed. The offshore form is much more likely to bowride and body-surf vessel wakes, while coastal forms tend to be boat-shy. The offshore form has only been observed in the deep ocean in the vicinity of Walpole Island (90 NM E-SE of New Caledonia) in November 1995, in Baie du Santal (Lifou) in March 1999 and on the west coast of New Caledonia (Dumbea) outside of the barrier reef in December 1999. The two coastal forms are encountered in the lagoon. One form is a uniform light grey, while the other has dark spots on the belly similar to the form that was known as "*Tursiops aduncus* (Ehrenberg, 1932)." Of the 19 sightings of bottlenose dolphin, five described this "spotted" form. Bottlenose dolphin can be observed all year round.

Stenella longirostris

Few forms (1%) identified spinner dolphin, but our personal observations confirmed its identification on the basis of photographs and aerial behaviour. These dolphins range in length from 1.2 to 1.6 m long, and possess fine long beaks. They have a tri-colour pattern with a dark grey cape, light grey sides and a white or slightly pink belly. Spinning behaviour has been observed. This species has been encountered in Baie du Santal (Lifou) in April 1998, and outside the barrier reef in the southern part of the lagoon in August 1999. It can also be regularly observed in a location known as the "Corne de Ténia" (22°S, 166°E). Located on the barrier reef of the west coast of New Caledonia, the hook-shaped Corne de Ténia is protected from the dominant trade winds by the reef, with sandy bottom areas ranging from 15 to 50 m in depth. During a study carried out in 1996, an individual spinner dolphin with a uniquely scarred dorsal fin was observed on several occasions. This individual was also identified from photographs taken in the same location two years previously. This leads us to think that this site may be used by the same pod of dolphins on a regular basis.

Stenella attenuata

Spotted dolphin have been observed only in Baie du Santal (Lifou) in September 1997, January and April 1999. The identification was done on the basis

of observations of shape, colour and behaviour of the animals, and was later confirmed using photos. Spots being visible only on the larger individuals added to the difficulty of distinguishing this species from spinner dolphin. Only one sighting form described this species, which has only been observed in a pelagic environment.

Mesoplodon densirostris

The ranges of most beaked whales are poorly known, so it is interesting to note that at least one *Mesoplodon* species has stranded in New Caledonia. The examination of teeth, the only available biological material recovered from a reef flat, led to the identification of Blainville's beaked whale.

Discussion

Seven species have been recognised using the sightings forms. Most of the forms (64%) reported humpback whales, which results from the fact that at the beginning of our study most of our education programme was based on this species, as we tried to determine its period of migration. From 1995 the sighting form evolved to inventory other species living in the area, leading to an increase in the diversity of species identified.

A large number of forms (19%) did not enable the species to be reliably identified. Half of the unreliable sightings were probably of the following species: minke whale, humpback whale, sperm whale, killer whale, other dolphins and a

Table 2. List of marine mammals from New Caledonia.

Family Balaenopteridae
<i>Balaenoptera acutorostrata</i> Lacépède, 1804
<i>Megaptera novaeangliae</i> Borowski, 1781
Family Physeteridae
<i>Physeter macrocephalus</i> Linnaeus, 1758
<i>Kogia breviceps</i> de Blainville, 1838
<i>Kogia simus</i> Owen, 1866
Family Ziphiidae
<i>Mesoplodon densirostris</i> de Blainville, 1817
Family Delphinidae
<i>Pseudorca crassidens</i> Owen, 1846
<i>Orcinus orca</i> Linnaeus, 1758
<i>Globicephala macrorhynchus</i> Gray, 1846
<i>Grampus griseus</i> Cuvier, 1812
<i>Tursiops truncatus</i> Montagu, 1821
<i>Stenella attenuata</i> Gray, 1846
<i>Stenella longirostris</i> Gray, 1828

sea cow (*Dugong dugon*). However, the poor descriptions provided did not allow for their use. This probably reflects the poor state of the public knowledge about marine mammals and cetaceans. Dolphin identification proved most problematic in instances where a film or photograph was not available; 12 forms describing “dolphin” could not be used. This probably explains the low numbers of reported sightings of spinner dolphins, despite this species being relatively common in the vicinity of New Caledonia. The remaining half of the unusable forms did not provide enough information to enable an attempt at identification.

In conclusion, a checklist of thirteen species of marine mammals living in the New Caledonian waters can be established from previous work and from the present studies (Table 2).

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