A note on cetacean observations in the Indian Ocean Sanctuary and the South China Sea, Mauritius to the Philippines, April 1999

M.N. DE BOER

Greenpeace Netherlands, Keizersgracht 174, 1016 DW Amsterdam, The Netherlands
Contact e-mail: mdeboer@wdcs.org

ABSTRACT

Information on cetaceans in the Indian Ocean Sanctuary and the South China Sea is summarised from a cruise carried out from 29 March to 17 April 1999. Ten species were positively identified: finless porpoise, pantropical spotted dolphin, spinner dolphin, sperm whale, melon-headed whale, pygmy killer whale, false killer whale, Cuvier's beaked whale, Bryde's whale and fin whale. Spotted dolphins, melon-headed and pygmy killer whales were sighted around the Island of Borneo and sightings of fin whales and a sperm whale west of the Balabac Strait suggest a possible migration route of these species between the South China Sea and the Sulu Sea. This is the first record of fin whales in the South China Sea.

KEYWORDS: INDIAN OCEAN; ASIA; INCIDENTAL SIGHTINGS; SURVEY-VESSEL; FINLESS PORPOISE; PANTROPICAL SPOTTED DOLPHIN; MELON-HEADED WHALE; PYGMY KILLER WHALE; FIN WHALE; DISTRIBUTION; MIGRATION

INTRODUCTION

In 1979, the International Whaling Commission created the Indian Ocean Sanctuary (IWC, 1980). The Sanctuary consists of those waters of the Northern Hemisphere from the coast of Africa to 100°E (including the Red and Arabian Seas and the Gulf of Oman) and those waters of the Southern Hemisphere between 20°E and 130°E from the Equator to 55°S. Cetacean distribution and movements are relatively poorly documented in this Sanctuary (Leatherwood and Donovan, 1991). This note details cetacean observations made during a cruise from Mauritius to the Philippines in April (*ca* 4,520 n.miles).

METHODS

To facilitate systematic data collection, the data-logging program 'Logger' (Conservation Research Limited) ran continuously throughout the survey on a laptop computer connected to the ship's GPS (a *Furuno* GP-50 satellite navigation system). This program automatically recorded the ship's location every five minutes, provided a continuous visual display of the vessel's track on a map of the area and gave audible warnings when input of environmental data was due. Data concerning the sightings (species identification, group size, behaviour, distance and angle to sighting) were entered manually when a sighting was made.

Table 1
Summary of cetacean sightings in the Indian Ocean Sanctuary and the South China Sea during high effort search status.

Species	Sightings	% Sightings	Individuals	% Individuals	School size
Sperm whale *Physeter macrocephalus*	11	34.4	27	18.4	1-8
Pantropical spotted dolphin *Stenella attenuata*	3	9.4	4	2.7	1-2
Spinner dolphin *Stenella longirostris*	2	6.3	23	15.6	3-20
Melon-headed whale *Peponocephala electra*	3	9.4	22	15.0	3-15
False killer whale *Pseudorca crassidens*	1	3.1	10	6.8	10
Pygmy killer whale *Feresa attenuata*	1	3.1	18	12.2	18
Cuvier's beaked whale *Ziphius cavirostris*	1	3.1	1	0.7	1
Finless porpoise *Neophocaena phocaenoides*	1	3.1	1	0.7	1
Bryde's whale *Balaenoptera edeni*	1	3.1	1	0.7	1
Fin whale *Balaenoptera physalus*	1	3.1	3	2.0	3
Unidentified blackfish	2	6.3	11	7.5	2-12
Unidentified dolphin	4	12.5	25	17.0	1-20
Unidentified baleen whale	1	3.1	1	0.7	1
Total	32	100	147	100	-

Water depths were obtained from a nautical chart and, in more shallow waters, with a *JRC* JFV-8010 Echo Sounder. Sea surface temperature was measured every hour and at all sighting locations. Sea states were estimated according to the Beaufort Scale. Data were collected mainly in 'passing mode', where the vessel did not deviate from the trackline. On several occasions sperm whales were approached in order to obtain photographs of their flukes for natural marking studies. These were later provided to the Silliman University of the Philippines.

All observations were made from the Greenpeace vessel the M/V *Arctic Sunrise* (49.6m) with a bridge platform height of 9m. Dedicated watches ('high effort' search status) were carried out during calm weather (i.e. Beaufort sea states 0-4 and visibility of more than 3 n.miles). Watches began at first light and continued until 1800 hours (an average duration of 12 hours). Two experienced observers were on watch at any one time on each bridge wing searching 90° (with a combined angle of 180°), while the third person was on break. Searching was carried out with the naked eye with occasional scans along the horizon using 7 × 50 reticule binoculars. During poor conditions, opportunistic watches ('low effort' search status) were maintained by the watch officers and the lookouts on the bridge. A debris survey which was conducted daily (involving data collected visually and using a towed fine-mesh) will be reported elsewhere.

RESULTS

The survey began on the 29 March 1999 in Mauritius and finished on 17 April 1999. The cruise track is shown in Appendix 1. Cetaceans were sighted on 12 of the 20 days at sea. 'High search effort' consisted of 1,105 n.miles within the Sanctuary and 441 n.miles within the South China Sea. There were 32 sightings (147 individuals) made during high effort and eight odontocete species and two mysticete species were identified during the survey (Table 1). Cetaceans not positively identified were recorded as either unidentified baleen whale, unidentified dolphin or unidentified blackfish[1]. Environmental data for each sighting are given in Table 2.

[1] Melon-headed whales (*Peponocephala electra*) are likely to be confused with pygmy killer whales (*Feresa attenuata*) unless seen at close range (Leatherwood *et al.*, 1991).

Table 2

Cetacean sighting records in the Indian Ocean Sanctuary and South China Sea, during high and low effort search status. Sperm whales photographed for individual identification are marked with an asterix.

Date	Species	Number	Sea Surface Temperature (°C)	Depth (m)	Latitude, longitude	Effort
Indian Ocean Sanctuary						
30 Mar. 1999	Sperm whale	4	27.5	4,000	19.05°S, 60.52°E	High
	Sperm whale	1	27.5	4,000	19.05°S, 60.52°E	High
	Sperm whale	3	27.5	4,000	19.03°S, 60.58°E	High
	Sperm whale	1	27.5	4,000	19.01°S, 61.06°E	High
4 Apr. 1999	Dolphin	1	28.0	4,810	13.40°S, 80.09°E	High
5 Apr. 1999	Bryde's whale	1	28.0	4,311	12.50°S, 82.54°E	High
6 Apr. 1999	Dolphin	8	-	2,828	11.00°S, 88.52°E	Low
7 Apr. 1999	Dolphin	1	-	-	10.36°S, 90.26°E	Low
8 Apr. 1999	Cuvier's beaked whale	1	26.5	3,759	09.19°S, 95.08°E	High
	Sperm whale	1 (calf)	26.5	3,759	09.18°S, 95.11°E	High
	Sperm whale	1	26.5	3,759	09.18°S, 95.12°E	High
	Dolphin	2	26.5	3,759	09.16°S, 95.16°E	High
	Dolphin	20	26.5	4,632	09.06°S, 95.54°E	High
10 Apr. 1999	Sperm whale	8	27.5	5,651	07.18°S, 102.02°E	High
	Sperm whale	3	27.5	5,651	07.17°S, 102.02°E	High
	Sperm whale*	2	27.5	5,651	07.16°S, 102.05°E	High
	Sperm whale	2	27.5	5,651	07.17°S, 102.06°E	High
12 Apr. 1999	Spotted dolphin	2 (1 juvenile)	29.5	25	01.45°S, 107.22°E	High
	Blackfish	2	28.8	35	00.45°S, 107.44°E	High
South China Sea						
13 Apr. 1999	Spinner dolphin	20	28.9	29	02.20°N, 109.34°E	High
	Spotted dolphin	1	28.9	29	02.20°N, 109.34°E	High
	Melon headed whales	4	29.5	50	02.45°N, 110.09°E	High
	Melon headed whales	3	29.5	50	02.46°N, 110.10°E	High
	Blackfish	12	28.7	60	04.06°N, 112.04°E	Low
	Finless porpoise	1	28.7	68	04.11°N, 112.12°E	High
14 Apr. 1999	Dolphin	2	28.7	90	04.22°N, 112.28°E	High
	Melon-headed whales	15	28.7	116	04.29°N, 112.39°E	High
	Spotted dolphin	1	28.7	116	04.29°N, 112.39°E	High
	Pygmy killer whales	18	28.7	116	04.29°N, 112.40°E	High
	Blackfish	9	28.7	116	04.30°N, 112.40°E	High
	Blackfish	2	30.7	100	04.47°N, 113.02°E	Low
15 Apr. 1999	Sperm whale*	1	30.4	1,554	07.17°N, 115.32°E	High
	Fin whale	3	30.4	1,554	07.32°N, 115.45°E	High
	False killer whales	10	30.0	2,414	08.01°N, 116.07°E	High
	Spinner dolphins	3 (1 juvenile)	30.0	1,100	08.14°N, 116.18°E	High
16 Apr. 1999	Dolphin	4	29.5	800	12.13°N, 119.01°E	Low
	Baleen whale	1	28.3	3,600	13.44°N, 119.50°E	High

DISCUSSION

A number of authors have previously reported on the distribution of cetaceans in the Indian Ocean: Keller *et al.* (1982); Wray and Martin (1983); Leatherwood *et al* (1984); Kasuya and Wada (1991); Reeves *et al.* (1991); Robineau (1991); Corbett *et al.* (1994); Eyre (1995); Ballance and Pitman (1998); Leatherwood *et al.* (1991). Over forty species are known from the Indian Ocean Sanctuary (IWC, 1980). Similarly, a number of reports have been published about cetacean species occurring in Indonesian waters where about 25 species occur (Leatherwood *et al.*, 1984; Perrin *et al.*, 1995; Rudolph *et al.*, 1997; Beasly and Jefferson, 1999). The present survey adds to the data available from this region, matching precise species location, depth and temperature. It should be seen as part of an ongoing effort to collect such data from platforms of opportunity, ultimately to help determine distribution, migration patterns and critical habitat parameters. Of particular interest from the study were the following: (1) although finless porpoises are generally found in the lower courses of rivers and in coastal waters, our sighting 73 miles offshore in the South China Sea agrees with previous sightings of finless porpoises in the middle of the East China Sea far from shore but in shallow waters (Kasuya, 1999); (2) the sightings of melon-headed whales, pygmy killer whales and pantropical spotted dolphins around Borneo are the first confirmed for these waters (c.f. Beasly and Jefferson, 1999), although not unexpected given their distribution and presence in surrounding waters; (3) our sighting of fin whales is the first record in the South China Sea; and (4) our sightings suggest that the Balabac Strait might represent a migration route for sperm whales and fin whales between the Sulu Sea and the South China Sea.

ACKNOWLEDGEMENTS

I wish to thank all the people who helped with observations, especially Martin Stanley and Nicholas Fredman for their assistance and all the crew of the M/V *Arctic Sunrise*. The research could not have been conducted without the support of J. van den Broek, Greenpeace Netherlands and Greenpeace Australia. Special thanks to R. Leaper for preparing the figures. J. Frizell, P.C. Gill and M.L.L. Dolar are gratefully acknowledged for their helpful comments on an earlier draft of this paper. Finally, the Whale and Dolphin Conservation Society is acknowledged for their generous support of this project.

REFERENCES

Ballance, L.T. and Pitman, R.L. 1998. Cetaceans of the Western Tropical Indian Ocean: distribution, relative abundance, and comparisons with cetacean communities of two other tropical ecosystems. *Mar. Mammal Sci.* 14(3):429-59.

Beasly, I. and Jefferson, T.A. 1999. Marine Mammals of Borneo: a preliminary checklist. *The Sarawak Museum Journal* 51(72, new series):193-210, pls XXV-XIV.

Corbett, H.D. 1994. The occurrence of cetaceans off Mauritius and in adjacent waters. *Rep. int. Whal. Commn* 44:393-8.

Eyre, E.J. 1995. Observations of cetaceans in the Indian Ocean Whale Sanctuary, May-July 1993. *Rep. int. Whal. Commn* 45:419-26.

International Whaling Commission. 1980. Chairman's Report of the Thirty-First Annual Meeting. *Rep. int. Whal. Commn* 30:25-41.

Kasuya, T. 1999. Finless porpoise *Neophocaena phocaenoides* (G. Cuvier, 1829). pp. 411-2. *In:* S.H. Ridgway and R.J. Harrison (eds.) Vol. 6. *Handbook of Marine Mammals*. Academic Press, New York.

Kasuya, T. and Wada, S. 1991. Distribution of large cetaceans in the Indian Ocean: data from Japanese sightings records, November-March. *UNEP Mar. Mamm. Tech. Rep.* 3:139-70.

Keller, R.W., Leatherwood, S. and Holt, S.J. 1982. Indian Ocean cetacean survey, Seychelles Islands, April through June 1980. *Rep. int. Whal. Commn* 32:503-13.

Leatherwood, S. and Donovan, G.P. (eds.). 1991. *Marine Mammal Technical Report*. No. 3. *Cetaceans and Cetacean Research in the Indian Ocean Sanctuary*. 1st Edn. UN Environment Programme, Nairobi. vii+287pp.

Leatherwood, S., Peters, C.B., Santerre, R., Santerre, M. and Clarke, J.T. 1984. Observations of cetaceans in the northern Indian Ocean Sanctuary, November 1980-May 1983. *Rep. int. Whal. Commn* 34:509-20.

Leatherwood, S., McDonald, D., Prematunga, W.P., Girton, P., Ilangakoon, A. and McBrearty, D. 1991. Records of the 'Blackfish' (killer, false killer, pilot, pygmy killer and melon-headed whales) in the Indian Ocean, 1772-1986. *UNEP Mar. Mamm. Tech. Rep.* 3:33-65.

Perrin, W.F., Leatherwood, S. and Dolar, M.L.L. 1995. The status of the marine mammal research in Southeast Asia. *IBI Reports* 5:1-15.

Reeves, R.R., Leatherwood, S. and Papastavrou, V. 1991. Possible stock affinities of humpback whales in the northern Indian Ocean. *UNEP Mar. Mamm. Tech. Rep.* 3:259-69.

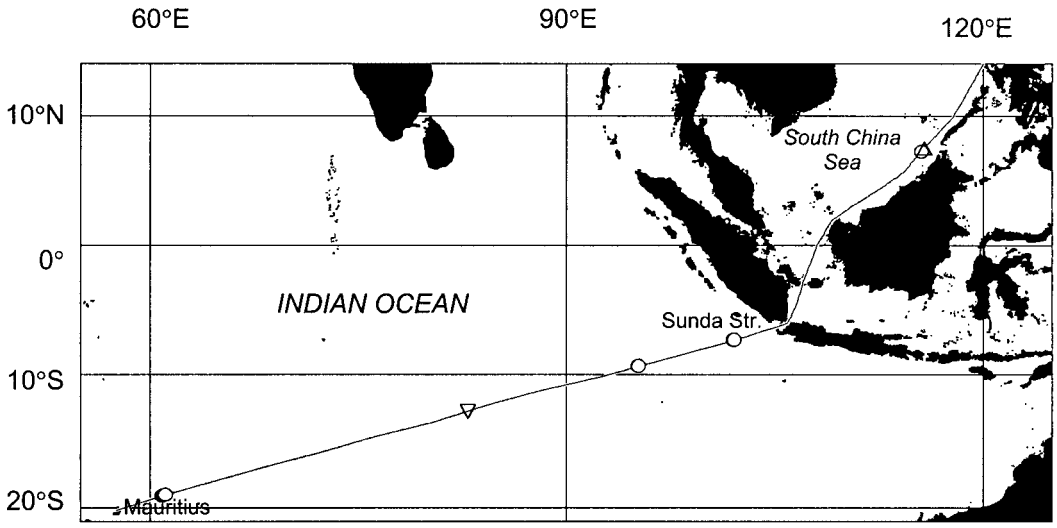
Robineau, D. 1991. Balaenopterid sightings in the western tropical Indian Ocean (Seychelles area), 1982-1986. pp. 171-8. *In:* S. Leatherwood and G.P. Donovan (eds.) *Marine Mammal Technical Report 3. Cetaceans and Cetacean Research in the Indian Ocean Sanctuary*. United Nations Environment Programme, Nairobi, Kenya. viii+287pp.

Rudolph, P., Smeenk, C. and Leatherwood, S. 1997. Preliminary checklist of Cetacea in the Indonesian Archipelago and adjacent waters. *Zoologische Verhandelingen* 312:1-48.

Wray, P. and Martin, K.R. 1983. Historical whaling records from the western Indian Ocean. *Rep. int. Whal. Commn* (special issue) 5:213-41.

Appendix 1

SURVEY TRACK AND SIGHTINGS OF LARGE WHALES



Key: Sperm whale (open circles); Bryde's whale (point down triangle); Fin whale (point up triangle).