

Additional Records and a Review of the Cetacean Fauna of the Leeward Dutch Antilles

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ABSTRACT.—Forty-one additional cetacean records are reported for the Leeward Dutch Antilles, expanding the list of documented records to 70 (53 sightings and 17 strandings). First records are given for the melonhead whale *Peponocephala electra* (Gray), such that now 13 species are confirmed for these islands. The most sighted whales are Bryde's whale and shortfin pilot whale, whereas the most sighted dolphins are spinner and bottlenose dolphins. Most cetacean movement is upstream and towards the east/southeast. Reported strandings have been on the rise, of which 47% involved beaked whales (goosebeak whale and Antillean beaked whale).

INTRODUCTION

Several new cetacean records have been documented recently for the Leeward Dutch Antilles (Aruba, Bonaire and Curaçao) and twelve species have been confirmed for these southern Caribbean islands. The species are Bryde's whale *Balaenoptera edeni* Anderson, shortfin pilot whale *Globicephala macrorhynchus* Gray, dwarf sperm whale *Kogia simus* Owen, humpback whale *Megaptera novaeangliae* (Borowski), Antillean beaked whale *Mesoplodon europaeus* Gervais, killer whale *Orcinus orca* (L.), sperm whale *Physeter macrocephalus* L., pantropical spotted dolphin *Stenella attenuata* (Gray), striped dolphin *S. coeruleoalba* (Meyen), spinner dolphin *S. longirostris* (Gray), bottlenose dolphin *Tursiops truncatus* (Montagu) and goosebeak whale *Ziphius cavirostris* G. Cuvier (Soot-Ryen, 1961; van Bree et al., 1973; van Bree and Kristensen, 1974; van Bree, 1975; Kristensen, 1979; Debrot and Barros, 1992; 1994, LeDuc et al., 1997; Debrot, 1998).

We document here 41 new or previously unreported cetacean records, including the first records for the melonhead whale *Peponocephala electra* (Gray), and present a review of the cetacean fauna based on all published sighting and stranding records for the Leeward Dutch Antilles.

METHODS

Twenty of the new records were documented by volunteers as part of our cetacean sightings project, in which field forms and disposable cameras were disbursed to dive operators and other interested parties by the Bonaire Marine Park. Most other new records were documented by various volunteers on Curaçao and by CARMABI personnel during the course of their routine activities. Many records thus obtained were incompletely or inconclusively documented. Therefore, except for one reliable *Megaptera novaeangliae*, two *Balaenoptera* sp., and two *Orcinus orca* records, we only present strandings and those sightings for which definitive photo or video documentation was obtained. For four of the seven strandings first reported here, skeletal material is deposited in the collections of the CARMABI Foundation, Curaçao, and for two in the collections of the Zoological Museum of the University of Amsterdam. One stranding is based only on photographic documentation. Diagnostic features and characteristics on which definitive identifications were based are largely those presented by Debrot (1998).

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SPECIES ACCOUNTS

Table 1 details the new records presented herein. Table 2 provides a synoptic review of all known cetacean records, and Fig. 1 shows how the records for each species are distributed throughout the year.

Balaenoptera edeni—Bryde's whale is the most common rorqual of the southeastern Caribbean (Casinos, 1986). The two new

Balaenoptera sp. records documented in this paper (Table 1) are probably Bryde's whales, which would make this species the most sighted great whale in the Leeward Dutch Antilles (Table 2). Bryde's whale is one of two whales with a local name, and is known by elder Bonairean fishermen as the "tó-pó". The species is common in the summer and late fall months (Fig. 1). The latter coincides with the peak of local fish landings (G. van Buurt, Agriculture, Animal Husbandry and Fisheries Service, Curaçao, pers. comm.). The species is generally associated with feeding tuna schools, which are targeted by Venezuelan purse seiners just outside the territorial waters of the Netherlands Antilles. As indicated by Debrot (1998), the animals seen in the Leeward Dutch Antilles are probably part of the Venezuelan stock associated with the area of upwelling off the coast of Venezuela.

Globicephala macrorhynchus—The shortfin pilot whale is also a commonly sighted cetacean (Table 2). This species probably corresponds to the cetacean referred to by elder fishermen as "kabe'i keshi" (literally "cheese head") due to its bulbous head reminiscent of a Dutch cheese. The species has been documented throughout most of the year. The new record reported as a stranding for Aruba (Table 1) was previously misreported as a false killer whale *Pseudorca crassidens* (Owen) by Agudo and Ponson (1996) based on incomplete photographic documentation. Calves are commonly present. The species is common throughout the Caribbean (Mignucci-Giannoni, 1996).

Kogia simus—There is only one record of a stranding in December and a skull found in May. Four of the five documented Caribbean records are for the southeastern portion of the sea (Mignucci-Giannoni, 1996).

Megaptera novaeangliae—The humpback whale is relatively common (Table 2) and has been documented in winter and spring months (Fig. 1). Four of the five sightings were solitary animals. The species is known to winter in the Caribbean Sea, and numerous records exist for the southeastern Caribbean (Casinos, 1986; Mignucci-Giannoni, 1996).

Mesoplodon europaeus—The new stranding of the Antillean beaked whale reported

in this paper for Bonaire involved two specimens. The skulls were quite damaged and are deposited at the CARMABI collection. The guts of the specimens contained exoskeletal remains of the giant lophogastriid mysid *Gnathophausia cf. ingens* Dohn and many unidentified squid beaks. This species is now known for spring and summer and, after *Ziphius cavirostris*, is the second most commonly stranded species for the Leeward Dutch Antilles (Table 2).

Orcinus orca—The oval white eyepatch and tall, erect dorsal fin allowed definitive identification of two new records for Bonaire (Table 1). The three known records for the Leeward Dutch Antilles are for spring and fall (Fig. 1), and all were off exposed northeast or east sides of the islands. Caldwell et al. (1971) provided records for the southeastern Caribbean for May, July and June, whereas Romero et al. (1991) reported a record for October and Agudo et al. (1994) reported one for January, all which indicate the species' presence in the southeastern Caribbean throughout much of the year.

Peponocephala electra—We present the first records of the melonhead whale for the Leeward Dutch Antilles. The first record involved a 220-cm male stranded 3 July 1982, at Playa Grandi, Curaçao. The skull of this specimen is at the University of Amsterdam. The second record involves a herd photographed off Klein Bonaire, September 1997. Diagnostic features included sizes of 2-3 m, the triangular rounded head with concave face and unpigmented lips, long and pointed flippers, and the overall black color and distinct cape (Leatherwood and Reeves, 1983). Records of this species for the Caribbean are rare (Casinos, 1986; Mignucci-Giannoni, 1996; Watkins et al., 1997).

Physeter macrocephalus—Three records of the sperm whale have been documented for the Leeward Dutch Antilles. The most recent involved a decomposing male of about 11 m which washed ashore in Curaçao in April 1998. Many unidentified squid beaks were collected from its stomach and the skeleton is deposited at the CARMABI Foundation. Two of the records are from early spring and the other is from

TABLE 1. New or previously unreported cetacean records¹ for the Leeward Dutch Antilles.

Species	Date	Location ²	Group size	Reported by	Comments ³
<i>Balaenoptera</i> sp.	Nov-92	Playa Funchi, B (12°17'N, 68°26'W)	1	R. Hensen	
	1-Sep-96	1000 steps, B (12°13'N, 68°20'W)	3	D. Wilhelm	
<i>Globicephala macrorhynchus</i>	3-Apr-94	California, A (12°38'N, 70°3'W)	1	T. Barmes	Stranded, specimen destroyed.
	29-Jul-95	St. Michielsbaai, C (12°8'N, 69°3'W)	>40	P. Dezentjé	Juveniles noted.
	18-Feb-97	Rif-St. Marie, C (12°10'N, 69°5'W)	>20	C. Evertsz	Juveniles noted.
	24-Aug-97	Sta. Cruz, C (12°19'N, 69°9'W)	30-40	C. & S. Kerdel	Juveniles noted.
	12-Feb-98	betw. B. & Kl. B (12°9'N, 68°18'W)	23	T. Ley, L. Baker	Juveniles noted.
<i>Kogia simus</i>	23-May-84 ⁴	Lago Refinery, A (12°26'N, 69°54'W)	1	R. van Halewijn	Stranded, ZMA 22.212.
<i>Megaptera novaeangliae</i>	2-Apr-97	Playa Lechi, B (12°9'N, 68°18'W)	1	R. Zonneveld	
	8-Apr-97	betw. B. & Kl. B (12°9'N, 68°18'W)	1	B. Snelder	
<i>Mesoplodon europaeus</i>	28-Jun-97	Onima, B (12°16'N, 68°19'W)	2	A. Debrot, E. Newton	Stranded, CPM 2.3 & 2.4.
<i>Orcinus orca</i>	12-Nov-95	Baby Beach, B (12°5'N, 68°14'W)	2	F. Scholtz, N. Valkering	
	18-Oct-96	Spelonk, B (12°13'N, 68°12'W)	1	M. Kaijser	
<i>Peponocephala electra</i>	3-Jul-82	Playa Grandi, C (12°19'N, 69°4'W)	1	R. Finies	Stranded, ZMA 22.254.
	29-Sep-97	Kl. B (12°12'N, 68°22'W)	>70	R. van Wees	
<i>Physeter macrocephalus</i>	3-Apr-98	St. Jorisbaai, C (12°8'N, 68°48'W)	1	A. Debrot	Stranded, CPM 3.2.
<i>Stenella attenuata</i>	21-May-95	Kl. C (12°1'N, 68°40'W)	>50	A. Siersma, M. Kuenen	
	14-Mar-98	Caracasbaai, C (12°3'N, 68°52'W)	15	A. van Bergen	
<i>Stenella coeruleoalba</i>	9-Jul-97	Parasassa, C (12°7'N, 68°58'W)	1	A. Debrot	Stranded, CPM 5.1.
<i>Stenella longirostris</i>	28-Oct-95	Parasassa, C (12°7'N, 68°58'W)	15	P. Dezentjé	
	20-Feb-97	Piscaderabaai, C (12°8'N, 68°58'W)	±50	O. Frans	Juveniles noted.
	29-May-97	Salt Pier, B (12°5'N, 68°18'W)	30-50	M. Kowalsky	
	26-Jun-97	Calabas Reef, B (12°8'N, 68°18'W)	30-40	J. Joslin, E. Diehl	Juveniles noted.
	11-Jul-97	Piscaderabaai, C (12°8'N, 68°58'W)	>20	O. Frans	
	21-Jul-97	Carib Inn, B (12°9'N, 68°18'W)	>100	T. Ley, P. Podeska	
	21-Jul-97	Habitat, B (12°9'N, 68°18'W)	200	E. Diehl	Juveniles noted.
	29-Jul-97	Carib Inn, B (12°9'N, 68°18'W)	40-50	T. Ley	
	4-Aug-97	Andrea II, B (12°12'N, 68°19'W)	20	E. Diehl	
	5-Aug-97	Lighthouse, B (12°9'N, 68°18'W)	10-20	L. Baker	
	11-Aug-97	Playa, B (12°9'N, 68°18'W)	30	E. Diehl	Juveniles noted.
	26-Aug-97	Piscaderabaai, C (12°8'N, 68°58'W)	>30	S. Weinberg	
	27-Aug-97	Bachelor's Beach, B (12°8'N, 68°18'W)	30	T. Ley	

¹Sightings unless indicated as strandings under "Comments".

²A = Aruba, B = Bonaire, C = Curacao, Kl.B = Klein Bonaire, Kl.C = Klein Curacao.

³Where applicable, collection numbers have been indicated for stranded specimens (CPM = Christoffel Park Museum, ZMA = Zoological Museum of Amsterdam).

⁴Date calvarium found. True date of stranding unknown.

TABLE 1. Continued.

Species	Date	Location ²	Group size	Reported by	Comments ³
<i>Tursiops truncatus</i>	15-May-95	Fuikbaai, C (12°3'N, 68°50'W)	10	A. Siersma, G. Cox	
	29-Jul-95	St. Michielsbaai, C (12°8'N, 69°3'W)	<20	P. Dezentjé	
	8-Jan-97	Pink Beach, B (12°3'N, 68°18'W)	17	J. Joslin	
	2-Mar-97	Belnem, B (12°8'N, 68°18'W)	15	S. Ringeling	
	25-Mar-97	Noname, Kl. B (12°11'N, 68°18'W)	30-40	F. Peseckis	Juveniles noted.
	28-Aug-97	Spaanse Water, C (12°5'N, 68°51'W)	1	A. Debrot	Juvenile trapped in lagoon.
	17-Sep-97	Avila Beach, C (12°6'N, 68°54'W)	>20	F. Zimmerman	Juveniles noted.
	16-Dec-97	Piscaderabaai, C (12°8'N, 68°58'W)	20	A. Debrot	
<i>Ziphius cavirostris</i>	30-Apr-97	St. Annabaai, C (12°7'N, 68°57'W)	1	A. Debrot	Stranded, CPM 4.2.

¹Sightings unless indicated as strandings under "Comments".

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³Where applicable, collection numbers have been indicated for stranded specimens (CPM = Christoffel Park Museum, ZMA = Zoological Museum of Amsterdam).

⁴Date calvarium found. True date of stranding unknown.

TABLE 2. An overview of 70 cetacean records for the Leeward Dutch Antilles.

Species	Number of records		
	Sightings	Strandings	Total
<i>B. edeni</i> & <i>B. sp.</i>	7	1	8
<i>G. macrorhynchus</i>	7	1	8
<i>K. simus</i>	—	2	2
<i>M. novaeangliae</i>	5	—	5
<i>M. europaeus</i>	—	3	3
<i>O. orca</i>	3	—	3
<i>P. electra</i>	1	1	2
<i>P. macrocephalus</i>	1	2	3
<i>S. attenuata</i>	2	1	3
<i>S. coeruleoalba</i>	1	1	2
<i>S. longirostris</i>	16	—	16
<i>T. truncatus</i>	10	—	10
<i>Z. cavirostris</i>	—	5	5
Total:	53	17	70

fall. Other recent records for fall and spring-early summer in the southeast Caribbean are provided by Watkins and Tyack (1991) and Watkins et al. (1993). According to Casinos (1986) the species is most abundant in the region during winter and spring, whereas Jefferson and Lynn (1994) indicate that it is one of the most common large whales in offshore areas of the Caribbean during summer months. For the shallower waters surrounding the Leeward Dutch Antilles, this species is sighted less often than other great whales, such as Bryde's whale and humpback whale.

Stenella attenuata—Three confirmed records for spring and summer are available for the pantropical spotted dolphin. The findings by Jefferson and Lynn (1994) suggest that this species is one of the most abundant cetaceans in offshore areas of the Caribbean.

Stenella coeruleoalba—Two records are available for the striped dolphin. Taruski and Winn (1976) recorded no striped dolphins on several winter cruises through the Greater Antilles, while Mignucci-Giannoni (1996) indicated one stranding for St. Croix, one for Jamaica and one sighting for Puerto Rico. Jefferson and Lynn (1994) documented three dispersed summer records for the southern Caribbean, and Perrin et al. (1981) recorded a capture for St. Vincent.

Stenella longirostris—The spinner dolphin

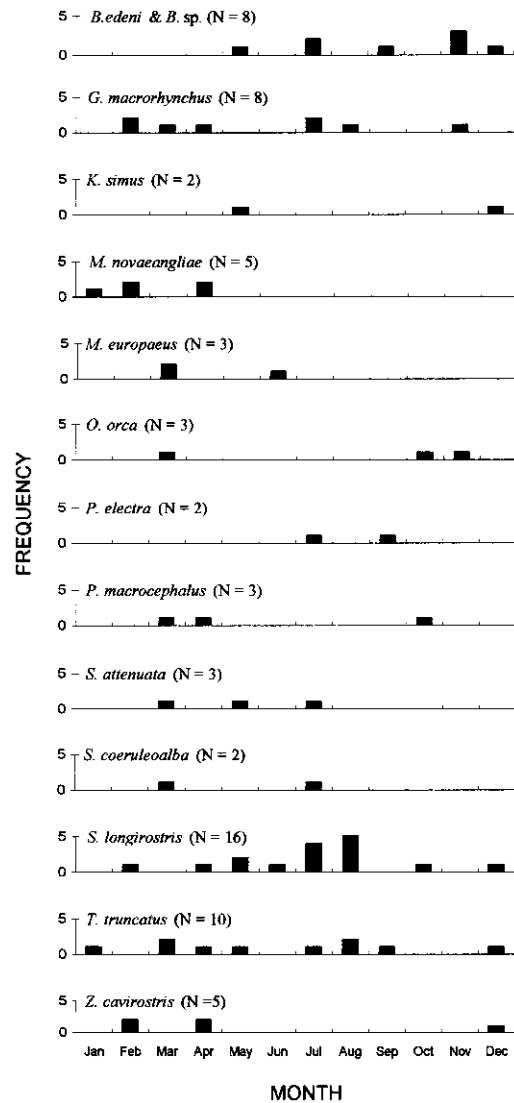


FIG. 1. Records distribution of thirteen cetacean species throughout the year in the Leeward Dutch Antilles.

species is present most of the year, most sightings corresponded to late spring and summer. Calves are commonly sighted. Large aggregations of this species were recorded in the vicinity of Margarita Island during November (Perrin et al., 1981).

Tursiops truncatus—The bottlenose dolphin is the second most commonly sighted cetacean in the Leeward Dutch Antilles (Table 2). While the species is evidently present most of the year, peak abundance

appears to be in spring and summer. Calves are commonly sighted. The absence of strandings for the species is curious, as it is a commonly stranded species elsewhere in the Caribbean (Mignucci-Giannoni, 1996).

Ziphius cavirostris—A goosebeak whale of about 5.5 m washed ashore in Curaçao in April 1997. The carcass was very decomposed and had been scavenged by sharks. The calvarium is housed in the CARMABI collections. No food items were found in the gut, but Debrot and Barros (1994) reported both squid and mysid (*Gnathophausia cf. ingens*) remains in another specimen. With five strandings, this is the most commonly stranded cetacean species for the Leeward Dutch Antilles, just as it is in Puerto Rico and the Virgin Islands (Mignucci-Giannoni, 1996). All five records are for winter and spring.

DISCUSSION

Several authors (van Bree, 1975; Casinos, 1986; Romero et al., 1991) have listed the potential cetacean fauna for different areas of the southern Caribbean, which amounts to about 26 marine species. Agudo and Ponson (1996) provide unconfirmed records of Atlantic spotted dolphin *Stenella frontalis* (G. Cuvier) and Risso's dolphin *Grampus griseus* (G. Cuvier) for Aruba, and it is likely only a matter of time before these or other species are confirmed for the Leeward Dutch Antilles. While the current information remains incomplete, the 70 records which comprise 53 sightings and 17 strandings allow some insight into the faunistic composition of cetaceans inhabiting the waters of these islands.

It is evident that sighting and stranding frequencies provide different indicators of relative abundance (Table 2). Both indicators are biased and must be used carefully when attempting any inferences about relative abundances of species.

The two most commonly sighted whales in the waters surrounding the islands of Bonaire and Curaçao are Bryde's whale and shortfin pilot whale, while the two most commonly sighted dolphins are spinner and bottlenose dolphins. Aruba is not an oceanic island, but lies on the continen-

tal shelf of South America, and may have a different fauna. Only three confirmed (stranding) records are available for Aruba.

It is interesting to note that most (71%) cetacean groups sighted were heading up stream (east/southeast) along the northwest-southeast oriented axes of the islands (based on 183 largely unidentified sightings reported to us during September 1994 - June 1998; Debrot and de Meyer, unpubl. data). In contrast, 12% of groups were observed moving northwesterly, while for the remainder 17% the direction of movement was either not consistent or essentially on/off shore.

Such a nonrandom pattern of movement for both Bonaire and Curaçao could indicate large scale migration towards the biologically productive feeding grounds located upstream to the east (Sturm, 1991). It could also simply reflect localized movement of resident groups moving in opposite direction either at night, offshore, or on the wave-exposed northeast coast (for which largely no observations were made). In either case, movement upstream along the leeward sides of the island would be energetically favorable, as ocean current strength is pronouncedly less there than either offshore or along the northeast coast of the island (A. Schrier, Curaçao Seaquarium and R. Henriquez, Curaçao Ports Authority, pers. comm.).

With only 6 of the 17 strandings dating from prior to 1989, the frequency of documented strandings in the Leeward Dutch Antilles has been high in the last decade. Mignucci-Giannoni (1996) found a similar increase in the number of reported strandings for Puerto Rico and the Virgin Islands and ascribes it to growing public awareness and interest in reporting and recording such occurrences.

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