

**First record of the melonhead whale (*Peponocephala electra*)  
for Puerto Rico**

by A.A. MIGNUCCI-GIANNONI<sup>1</sup>, M.A. RODRIGUEZ-LOPEZ<sup>2</sup>, J.J. PÉREZ-ZAYAS<sup>2</sup>,  
R.A. MONTOYA-OSPINA<sup>1</sup>, and E.H. WILLIAMS, J.R.<sup>1</sup>

*Red Caribeña de Varamientos - Caribbean Stranding Network*  
PO Box 38030 San Juan, Puerto Rico 00936

<sup>1</sup> *Department of Marine Sciences, University of Puerto Rico*  
PO Box 908 Lajas, Puerto Rico 00667

<sup>2</sup> *Department of Science and Technology, Metropolitan University*  
PO Box 21150 San Juan, Puerto Rico 00928

Melonhead whales (*Peponocephala electra*) are considered an oceanic tropical and subtropical species throughout the world (Perryman *et al.* 1994). The species is well documented for the Pacific, but its geographical range for the Atlantic Ocean is poorly known. Thirty-one records have been reported for the Atlantic, with its northernmost record being from the United Kingdom and its southernmost record from Brazil. Only 8 records are known for the Caribbean Sea. We present a new record of the melonhead whale for the Atlantic and the Caribbean, in addition to documenting the first record from the island of Puerto Rico.

On 17 August 1993 a 210-cm juvenile male *P. electra* stranded at Playa Los Veleros in Cayo Icacos (17°58'N, 66°54.5'W), 0.3 km E of Cabo San Juan (Fajardo) on the NE corner of Puerto Rico. The animal was found in a moderate state of decomposition and a full necropsy was conducted, including complete morphometrics (Table 1).

During gross internal examination, the gastrointestinal tract was found to be almost empty, with the exception of a few squid beaks, fish scales and the algae *Gracilaria* sp. in the first stomach. No digesta was found in the small and large intestines. Tissues from both lungs, esophagus, liver, kidney, heart, and muscle were collected for histopathology analysis. The right lung showed moderate diffuse congestion with multifocal alveolar edema. The liver showed moderate diffuse fatty change. The esophagus revealed diffuse to marked hyperkeratosis (the epithelium is thickened involving its superficial layer) and was orthokeratotic (thickened epithelial cells which did not retained their nuclei). The kidney, liver, heart, muscle and lung all showed numerous intravascular gram-negative bacilli. The presence of this bacteria in so many organs is consistent with terminal septicemia, although the origin of the infection was not evident due to the state of decomposition of the carcass. In addition, hepatic fatty changes suggest decreased food intake and increased fat mobilization expected from an emaciated animal. The esophageal hyperkeratosis also supports the contention that the animal had not eaten recently.

An adult female metastrongyloid nematode, identified as *Stenurus globicephalae*, was found in the ear canal of the dolphin, and a larval cestode, *Diphyllobothrium* sp., was found in the intestine (Mignucci-Giannoni *et al.* 1998). While *S. globicephalae* has previously been reported for the melonhead whale (Cannon 1977; da Silva *et al.*

TABLE 1. – Morphometrics (parallel to the body axis) for the *Peponocephala electra* stranded in Puerto Rico.

Measurement	Value in cm
From the tip of the snout to the notch of the fluke	210.0
From the tip of the snout to the center of the anus	138.0
From the tip of the snout to the genital slits	119.0
From the tip of the snout to the umbilicus	98.0
From the tip of the snout to the flipper	42.0
From the tip of the snout to the tip of the dorsal fin	122.0
From the tip of the snout to the ear	32.0
From the tip of the snout to the eye	24.5
From the tip of the snout to the angle of mouth	19.0
From the eye to the ear	4.0
Length of dorsal fin base	28.5
Height of dorsal fin	18.0
Girth at axilla	94.5
Maximum girth	98.0
Girth at fluke base	19.0
Girth at anus	52.0
Fluke span	39.0
Fluke width	11.0
External length of flipper	39.5
Internal length of flipper	27.5
Width of flipper	11.0

1987), no record was found for *Diphyllobothrium* in *P. electra* (Perryman *et al.* 1994), thus constituting a new host record (Mignucci-Giannoni *et al.* 1998). The food contents found in the stomach are consistent with those found in a 226-cm male in the Lesser Antilles by Caldwell *et al.* (1976), which included partially digested fish and squid, cephalopod beaks, fish bones and otoliths. By counting growth layer groups (GLGs) in the dentine and cementum of a tooth, the animal was estimated to be 2 GLGs of age. In most delphinids, 1 GLG is thought to be deposited each year. The dental formula was 24UR, 24UL, 22LR, 21LL, and its vertebral formula was C<sub>7</sub>, T<sub>12</sub>, L<sub>17</sub> and Ca<sub>44</sub>, total 80, consistent with that reported for the species by Perryman *et al.* (1994). Cranial measurements were taken (Table 2) and most correlated roughly with condylobasal length (CBL) proportions given by Perryman *et al.* (1994) for 8 to 12 melonhead whales. Those measurements which did not correlate, were somewhat short of the percent CBL, most probably because of the immature status of the specimen from Puerto Rico. The complete skeleton was collected and is stored at the University of Puerto Rico's Marine Mammal Osteological Collection under number MMOC0047 (Mignucci-Giannoni *et al.* 1997).

TABLE 2. – Craniometry for the *Peponocephala electra* stranded in Puerto Rico (PR), compared to condylobasal length (CBL) proportions presented by Perryman *et al.* (1994).

Measurement from Perryman <i>et al.</i> (1994)	Specimen from PR		Perryman <i>et al.</i> (1994)
	Value in cm	% of CBL	% range of CBL ( ) = n
Condylobasal length	43.5	100.0	100.0 (13)
Rostrum length	22.0	50.5	52.3-55.6 (13)
Rostrum basal width	11.7	26.9	27.6-31.0 (12)
Rostrum width at middle	8.6	19.8	17.3-25.2 (8)
Tip of snout to blowhole	28.7	66.0	67.1-70.4 (12)
Preorbital width	21.4	49.2	50.5-54.4 (13)
Postorbital width	22.9	52.6	53.6-57.6 (12)
Greatest width of premaxillaries	4.8	11.0	37.7-44.0 (11)
Width of braincase across perietals	24.0	55.2	35.3-40.9 (12)
Length of upper tooth row	16.1	37.0	33.8-39.2 (9)
Mandible length	35.0	80.5	79.4-81.8 (10)

Thirty-one records of melonhead whales exist for the Atlantic Ocean. The only records for the South Atlantic are a stranding from South Africa (Best and Shaughnessy 1981), and strandings from Brazil, including a mass stranding in Praia Piracanga in Bahia on 16 April 1987 (Lodi *et al.* 1990 ; Siciliano *et al.* 1987), a 100-cm long calf which stranded alive at Fernando de Noronha Archipelago, off Pernambuco (Hetzl and Lodi 1993), a 260-cm adult male from Barra do Sahy in Espirito Santo on 6 October 1991 (Gasparini and Sazima 1996), and a second live stranding at Praya Guaxuma in Alagoas on 8 March 1994 (Fragoso *et al.* 1994). In the eastern North Atlantic, records include 2 animals which stranded in Senegal (van Bree and Cadenat 1968) and 1 stranding from Charlestown, Cornwall in England on 13 September 1949 (Hill-Mikkelsen and Sheldrick 1992). From the mid-Atlantic, a 273-cm mature male was captured on 10 October 1912, some 400 km SW of Freetown, Sierra Leone (03°03'N, 24°40'W) (Goodwin 1945), and a sighting was reported some 400 km W of Cabo Verde (17°N 38°W) by Pilleri (1982).

The majority of the records for the species in the Atlantic come from its western border in the United States of America, including a live stranding of a 246-cm female in Assateague Island, Maryland on 23 October 1984 (Potter 1984 ; Mead *et al.* 1986), a 265-cm male which stranded alive on West Matagorda Peninsula in Texas on 22 June 1990, and another 246-cm male in Cameron Parish, Louisiana on 14 June 1991 (Barron and Jefferson 1993). Mullin *et al.* (1994) reported 10 sightings of *P. electra* in the Gulf of Mexico during the months of May (4), June (4), August (1) and between 20 May 1992 and 16 May 1993 during marine mammal assessment surveys using both ship and airplane.

Eight records exist for the Caribbean. Four animals were taken during the small cetacean fisheries off St. Vincent, on 27 and 31 March, and 1 and 6 April 1976 (Caldwell *et al.* 1976). Four sightings were reported by Watkins *et al.* (1997) within a 30-

km<sup>2</sup> area W of Dominica during 3 cruises in 27 October 1991 (14 whales), May 1994 (12 whales) and April 1995 (10 and 12 whales). It is of special interest that Watkins *et al.* (1997), reported not seeing these species during 7 other cruises in the same general area in 1981, 1983, 1984, 1987, 1990 and 1993. Similarly, recent surveys for cetaceans in the Caribbean during 1988, 1990 and 1994 by Palacios *et al.* (1995; 1996), during 1991 by Jefferson and Lynn (1994) and during 1995 aboard the *Oregon II* (K. Mullin, NOAA National Marine Fisheries Service, pers. comm.), did not yield any sighting of the melonhead whale. No sightings or strandings were reported based on previous research efforts and on interviews with fishermen in the Dominican Republic (I. Bonnelly de Calventi, Fundemar, pers. comm.) or Puerto Rico and the Virgin Islands (Mignucci-Giannoni 1989; Mignucci-Giannoni 1998). Particular attention should be paid in future studies and surveys in further documenting the presence of this tropical dolphin in the Caribbean.

*Acknowledgements.* – Carcass salvage and specimen collection were conducted under a letter of authorization from NOAA's National Marine Fisheries Service, Protected Species Management Branch and a cooperative agreement with Puerto Rico's Department of Natural and Environmental Resources. We gratefully acknowledge the assistance of CSN participants in the salvage and necropsy of the dolphin carcass and collection of samples, as well as the Department of Marine Sciences, University of Puerto Rico, for providing facilities for specimen collection and storage. We thank Dr. E.P. Hoberg (Biosystematics Parasitology Laboratory) for identifying the parasites, Dr. T.P. Lipscomb (Armed Forces Institute of Pathology) for histopathology analysis, and Dr. I. Loder Brooks and Dr. H. Anderson (Mote Marine Laboratory) for aging the tooth of the dolphin. We appreciate the diligence of E. Secchi and D. Palacios in reviewing early forms of the manuscript and the assistance of A.R. Estrada-Acosta in measuring the skull.

#### *Bibliography.*

- BARRON, G.L. and T.A. JEFFERSON, 1993. – First records of the melonheaded whale (*Peponocephala electra*) from the Gulf of Mexico. *Southwestern Naturalists*, 38 : 82-85.
- BEST, P.B. and P.D. SHAUGHNESSY, 1981. – First records of the melon-headed whale *Peponocephala electra* from South Africa. *Annals of the South African Museum*, 83 : 33-47.
- BREE, P.J.H., VAN and J. CADENAT, 1968. – On a skull of *Peponocephala electra* (Gray, 1846) (Cetacea, Globicephalinae) from Senegal. *Beaufortia*, 177 : 193-202.
- CALDWELL, D.K., M.C. CALDWELL and R.V. WALKER, 1976. – First records for Fraser's dolphin (*Lagenodelphis hosei*) in the Atlantic and the melon-headed whale (*Peponocephala electra*) in the western Atlantic. *Cetology*, 25 : 1-4.
- CANNON, L.R.G., 1977. – Some aspects of the biology of *Peponocephala electra* (Cetacea : Delphinidae). II. Parasites. *Australian Journal of Marine and Freshwater Research*, 28 : 717-722.
- FRAGOSO, A.B.I., P.R. DORNELES, R.P. LIMA, D.F. CASTRO and J.L. BRITO, Jr., 1994. – Registros do golfinho de Clymene, *Stenella clymene*, e do golfinho cabeça-de-melão, *Peponocephala electra*, para o litoral de Alagoas, Brasil. Pp. 133-134, in : *Anais, VI Reuniao de Trabalho de Especialistas em Mamiferos Aquaticos da America do Sul*. Eds. A. Ximenes and P.C. Simões-Lopes. Florianópolis, Brasil.
- GASPARINI, J.L. and I. SAZIMA, 1996. – A stranded melon-headed whale, *Peponocephala electra*, in Southeastern Brazil, with comments on wounds from the cookiecutter shark, *Isistius brasiliensis*. *Marine Mammal Science*, 12 : 308-312.

- GOODWIN, G.G., 1945. – Record of a porpoise new to the Atlantic. *Journal of Mammalogy*, 26 : 195.
- HETZEL, B. and L. LODI, 1993. – *Baleias, botos e golfinhos : Guia de identificação para o Brasil*. Nova Fronteira, Rio de Janeiro, Brasil.
- HILL-MIKKELSEN, A.M. and M. SHELDRICK, 1992. – The first recorded stranding of a melon-headed whale (*Peponocephala electra*) on the European coast. *Journal of Zoology* (London), 227 : 326-329.
- JEFFERSON, T.A. and S.K. LYNN, 1994. – Marine mammal sightings in the Caribbean Sea and Gulf of Mexico, summer 1991. *Caribbean Journal of Science*, 30 : 83-89.
- LODI, L., S. SICILIANO and L. CAPISTRANO, 1990. – Mass stranding of *Peponocephala electra* (Cetacea, Globicephalinae) on Piracanga Beach, Bahia, northeastern Brazil. *Scientific Reports on Cetacean Research*, 1 : 79-84.
- MEAD, J.G., W.A. WALKER, C.W. POTTER and W.A. MCLELLAN, 1986. – *Further observations on the life history of the melon-headed whale, Peponocephala electra*. Unpublished manuscript, National Museum of Natural History, Smithsonian Institution, Washington D.C., 35 p.
- MIGNUCCI-GIANNONI, A.A., 1989. – *Zoogeography of marine mammals in Puerto Rico and the Virgin Islands*. Masters thesis, Department of Marine Affairs, University of Rhode Island, Kingston, Rhode Island, 448 p.
- MIGNUCCI-GIANNONI, A.A., 1998 (in press). – Zoogeography of cetaceans off Puerto Rico and the Virgin Islands. *Caribbean Journal of Science*, 34 : 3-4.
- MIGNUCCI-GIANNONI, A.A., G.M. TOYOS-GONZALEZ, J. PÉREZ-PADILLA, R.A. MONTOYA-OSPINA and E.H. WILLIAMS, Jr., 1997. – First osteological collection of marine mammals for Puerto Rico and the Virgin Islands. *Caribbean Journal of Science*, 33 : 288-292.
- MIGNUCCI-GIANNONI, A.A., E.P. HOBBERG, D. SIEGEL-CAUSEY and E.H. WILLIAMS, Jr., 1998. – Metazoan parasites and other symbionts of cetaceans in the Caribbean. *Journal of Parasitology*, 84.
- MULLIN, K.D., T.A. JEFFERSON, L.J. HANSEN and W. HOGGARD, 1994. – First sightings of melon-headed whales (*Peponocephala electra*) in the Gulf of Mexico. *Marine Mammal Science*, 10 : 342-348.
- PALACIOS, D.M., T. GERRODETTE, S. BELTRAN, P. RODRIGUEZ and B. BRENNAN, 1995. – Cetacean sighting cruises off the Colombian Caribbean Sea and Pacific Ocean. P. 88, in : *Abstracts, Eleventh Biennial Conference on the Biology of Marine Mammals*, Orlando, Florida.
- PALACIOS, D.M., P. RODRIGUEZ, B.J. BRENNAN, S. BELTRAN and F. TRUJILLO, 1996. – Cetacean sightings during cruises in the southwestern Caribbean Sea. P. 76, in : *Resúmenes, VII Reunión de Trabajo de Especialistas en Mamíferos Acuáticos de América del Sur and I Congreso de la Sociedad Latinoamericana de Especialistas en Mamíferos Acuáticos*, Viña del Mar, Chile.
- PERRYMAN, W.L., D.W.K. AU, S. LEATHERWOOD and T.A. JEFFERSON, 1994. – Melon-headed whale *Peponocephala electra* (Gray, 1846). Pp. 363-383, in : *Handbook of marine mammals, volume 5 : The first book of dolphins*. Eds. S.H. Ridgway and R. Harrison. Academic Press, San Diego, California.
- PILLERI, G., 1982. – Sight record of a school of *Peponocephala electra*, in the North Atlantic Ocean. *Investigations on Cetacea*, 14 : 65-67.
- POTTER, C.W., 1984. – The marine mammals of Maryland. Pp. 442-453, in : *Threatened and endangered plants and animals of Maryland*. Eds. A.W. Norden, D.C. Forester and G.H. Fenwick, Maryland Heritage Program, Special Publication 84-1.
- SICILIANO, S., B. FIORI, L.F. LODI and M. BOROBIA, 1987. – Recent records of small cetaceans from the northeastern and southeastern coasts of Brazil. P. 64, in : *Abstracts, Seventh Biennial Conference on the Biology of Marine Mammals*, Miami, Florida.

- SILVA, V.M.F., DA, V.E. THATCHER and L. CAPISTRANO, 1987. – The mass stranding of *Peponocephala electra* on the Brazilian coast and possible relationships to the parasites *Stenurus globicephalus* (Nematoda) and *Nasitrema* spp. (Trematoda). P. 15, in : *Abstracts, Seventh Biennial Conference on the Biology of Marine Mammals*, Miami, Florida.
- WATKINS, W.A., M.A. DAHER, K. FRISTRUP and G. NOTARBARTOLO-DI-SCIARA, 1994. – Fishing and acoustic behavior of Fraser's dolphin (*Lagenodelphis hosei*) near Dominica, Southeast Caribbean. *Caribbean Journal of Science*, 30 : 76-82.
- WATKINS, W.A., M.A. DAHER, A. SAMUELS and D.P. GANNON, 1997. – Observations of *Peponocephala electra*, the melon-headed whale, in the southeastern Caribbean. *Caribbean Journal of Science*, 33 : 34-40.