

Observations on Blainville's Beaked Whales,
Mesoplodon densirostris (Blainville, 1817),
at Poor Man's Canyon, Virginia

Edward S. Brinkley

9 Randolph Avenue
Cape Charles, Virginia 23310

J. Brian Patteson

53169 Land's End Way
Frisco, North Carolina 27936

ABSTRACT

A group of three Blainville's Beaked Whales (*Mesoplodon densirostris*) was observed in the Atlantic Ocean at Poor Man's Canyon off the coast of Virginia. These sightings apparently are the first documented at-sea records of this species from Virginia's offshore waters.

Key words: Atlantic Ocean, *Mesoplodon*, Virginia, whale.

INTRODUCTION

On 17 August 1996, while conducting a public birdwatching excursion into Virginia's pelagic waters aboard the headboat *Judith M*, we observed a group of three whales of the genus *Mesoplodon* that we identified as Blainville's Beaked Whales (*M. densirostris*), also known as Dense-beaked Whale, Atlantic Beaked Whale, or Tropical Beaked Whale. The whales were located at 37° 49' 30"N, 74° 06' 30"W and were studied at 1240 EDT for just under five minutes at a distance of some 400–500 m through Zeiss 10 x 40 and 7 x 42 binoculars. Water temperature was 20.8° C, water depth over the canyon approximately 400 m, and the wind-sea state judged to be Force 0 to 1 on the Beaufort Scale. Air temperature was not recorded, and no seawater frontal activity was observed in the vicinity. The whales sounded as we approached them and could not be photographed. The only other cetaceans noted in the immediate vicinity included several dozen Risso's Dolphins (*Grampus griseus*) and Atlantic Bottlenose Dolphins (*Tursiops truncatus*).

The identification to genus was made carefully in order to rule out the superficially similar Cuvier's Beaked Whale (*Ziphius cavirostris*). The relatively long, distinct rostrum of the two larger animals was of a

shape consistent with that of *Mesoplodon* but not with that of *Ziphius*, which is very deep basally, especially in the male, and tapers to a blunt tip, with little in the way of a distinct "beak" (hence the local name "Goosebeak").

We judged the whales' lengths to be in the range of 4 to 5 m, with two animals clearly larger than the third and one of the two larger animals slightly or noticeably larger than the other. Coloration was dark gray to somewhat paler gray dorsally, although coloration was difficult to determine precisely, and under transient light conditions, a cast of bluish or brownish sometimes appeared. The whales' ventral surfaces were not seen apart from the underside of the lower jaw on two animals. The largest individual appeared to be slightly darker than the next largest, and the largest showed a dark blotch surrounding the eye. It also appeared to be mottled with paler scars or scratches, though distance precluded determination of the precise appearance of these marks. The next-largest whale bore a strikingly pale lower jaw, with the distal two-thirds of the upper jaw similarly pale. All three showed a small, triangular dorsal fin set back about two-thirds of the way down the back. The dorsal fin appeared markedly darker in the larger animals, and on one occasion the larger animals' central back appeared to bear a very narrow

ridge of darker pigment along the spine. The shape of the dorsal fin was nearly that of an equilateral triangle in the smallest individual, which was not seen especially well, but slightly more falcate (curved along the posterior edge) in the larger whales.

The largest whale surfaced several times between the boat and the other two whales, bringing its rostrum and head well out of the water at a sharp angle (about 45 degrees) and bringing it down abruptly; the surfacing of the other two whales was less conspicuous, although the head of the next-largest whale was seen well on one occasion. When the largest animal commenced its "roll," we were twice able to see a high arch in the lower jaw near the corner of the mouth, with the arch extending above the level of the eye and nearly to the level of the upper jaw. No other Atlantic *Mesoplodon* shows this exaggerated bulge of the lower jaw.

DISCUSSION

Identification

The high "crested" mandible with a prominent arch (sometimes with barnacle-covered tooth at just posterior of the mid-jaw) is a diagnostic character of adult male Blainville's Beaked Whale, and the roll behavior we observed was strongly suggestive of the species (Jefferson et al., 1993; Carwardine, 1995; Ritter, 1999; Tove, 2000; Cresswell & Walker, 2001). The pigmentation of the second-largest animal was suggestive of an adult female Blainville's Beaked Whale (Carwardine, 1995). Maximum recorded lengths are 4.7 m in both sexes (Ward, 2001), which accords with our estimates of size. Group size is typically between two and nine animals (Jefferson et al., 1993; Ritter & Brederlau, 1999), with a mean of 3.4 animals per group (Ritter & Brederlau, 1999), also consistent with our observation.

Other local at-sea reports of *Mesoplodon*

We have seen this species only once subsequently, on 30 May 1998, off Hatteras, North Carolina (Patteson & Brinkley, unpubl. data). Off this port, in the deep Continental Slope waters (>1000 m depth) crossed by the Gulf Stream, we have routinely observed herds of Cuvier's Beaked Whales between 1981 and 2005 and are familiar with their behavior and identification, which is feasible at considerable distances, particularly when the pale-headed males are present. We also see *Mesoplodon* once or twice annually, but these whales rarely remain at the surface long enough to be identified.

In the wider area of the mid-Atlantic states, there is photographic documentation of three probable Blainville's Beaked Whales from an area south of Hudson Canyon (off New Jersey) on 9 June 1979; this was the only record of the genus during the 14 months of survey work of the Cetacean and Turtle Assessment Program (CeTAP) 1979-1980 (CeTAP, 1982). This would appear to be the only other published at-sea record of the species from the mid-Atlantic, although there is an unpublished sight record of the genus from 30 May 1999 off Hatteras, North Carolina (M. Tove, *in litt.*). None of the 21 beaked whale contacts (a category that includes both *Ziphius* and *Mesoplodon*) of the more recent National Marine Fisheries western North Atlantic stock assessment studies were of individuals identified to species (Blaylock et al., 1995). Moreover, none of those contacts were made in Virginia's offshore waters, from which apparently no at-sea records of *Mesoplodon* have previously come (Rowlett, 1980; Blaylock, 1985). In Virginia waters, the only offshore mesoplodont record known to us is a recent record of four to five adult Sowerby's Beaked Whales (*M. bidens*) seen on 10 July 1998 some 77 nautical miles east of the Virginia-North Carolina border by T. Pusser (pers. comm.) during a line-transect survey on the vessel *Relentless*. This species would seem to be the most easily confused at sea with Blainville's in the Atlantic, and it should be kept in mind when studying a mesoplodont off the mid-Atlantic states, even though Pusser's record represents one of only two records from waters south of Cape Cod, the other being from the Gulf of Mexico, which is considered extralimital (Bonde & O'Shea, 1989).

Global and regional distribution

Blainville's Beaked Whale, the most widely distributed of the mesoplodonts, is apparently an uncommon resident of warm waters around the world. It is the only member of its genus found on both sides of the equator (Leatherwood et al., 1976; Leatherwood & Reeves, 1983; Meade, 1989; Carwardine, 1995; Pitman, 2002). Through 1971, the species was known only through 18 strandings worldwide (Beharse, 1971), but since that time many more strandings and at-sea records have come to light. The distribution away from the western North Atlantic is deduced from a handful of single records from Britain (Herman et al., 1994), Portugal, Spain, Madeira, Japan, California, and Australia (Rice, 1998) and New Brunswick, Canada (McAlpine & Rae, 1999). Other sightings have been reported from Hawaii (where the species is now known to be relatively common), Brazil, Chile, Taiwan, Midway Island, Mauritius, the Seychelles, and South

Africa (Mead, 1989; Rice, 1998) as well as New Zealand (Baker & van Helden, 1999).

In the western North Atlantic, where the species is most often recorded (MacLeod 2000), Blainville's Beaked Whale is known to occur from Atlantic Canada to Florida, the Bahamas, and into the Gulf of Mexico (Mead, 1989). The most recent estimate (1998 data) of beaked whale numbers in the western North Atlantic stock is 3,196: 2,600 in the Atlantic off the northeastern United States, and 596 in the Atlantic off the southeastern United States, a number acknowledged to have a wide error margin (Waring et al., 2001).

Data from research vessels show that they rarely made contact with beaked whales in the past, and very few mesoplodonts have ever been critically identified (Pitman, 2002). In the Gulf of Mexico, for instance, the first systematic surveys of cetaceans in deep waters—by the National Oceanic and Atmospheric Administration's (NOAA) research vessel *Oregon II* in 1991–1994—did not distinguish *Mesoplodon* from *Ziphius* in their data (Davis et al., 1994). Likewise, the GULFCET projects documented no Blainville's Beaked Whales, despite multiple contacts with ziphiids (Davis & Fargion, 1996). The species is known in the Gulf of Mexico by two stranding records and one probable observation at sea (Jefferson et al., 1992; Hansen et al., 1995). In the western North Atlantic, the Bahamas Marine Mammal Survey, an activity of the Center for Whale Research, has found the species to be common off Great Abaco Island, with over 60 individuals photographically identified, 16 of those revealing inter-year and intra-year matches, including mother/calf pairs (Claridge & Balcomb, 1995).

Stranding records

The only mass strandings of Blainville's Beaked Whale have been recorded in the Bahamas on 5 March 1998 ($n = 3$; Balcomb & Claridge, 2001) and on 15 March 2000 ($n = 3$, plus 2 unidentified *Mesoplodon*; Anonymous, 2001; Balcomb & Claridge, 2001). Most records of this species in the western North Atlantic away from the Bahamas come from stranding events involving single animals. We have located data on eight strandings of single individuals in the Atlantic coast of North America between Nova Scotia and Florida in the literature, including a 1973 specimen record from Assawoman Island, Virginia (Potter, 1979). We are aware of at least six other unpublished reports on file with the Smithsonian Institution in its database of stranded marine mammals (D. Allen, pers. comm.). In Virginia, Blainville's Beaked Whale would appear to be an uncommon visitor: the majority of Virginia's few published *Mesoplodon* stranding records ($n = 3$, 60%)

are of *M. europaeus* (Potter 1979, 1991; Linzey, 1998). Strandings, however, do not necessarily reflect relative abundance of various species in proximal pelagic waters in any case, and there are several unpublished Virginia strandings of mesoplodonts for which data were not available to us.

Reasons for strandings are usually not apparent, but in one case, ingestion of plastic debris has been implicated in the death of a Blainville's Beaked Whale (Secchi & Zarzur, 1999). Off the northeastern coast of the United States, 46 fishery-related mortalities were observed in the pelagic drift gillnet fishery between 1989 and 1998: 24 Sowerby's, 4 True's, and 17 unidentified beaked whales (Waring et al., 2001). In September 2002, one Blainville's Beaked Whale was apparently killed during a naval exercise conducted around Gran Canaria, Spain (V. Martin, pers. comm.), and another three to five Blainville's stranded alive (one of these died) due to injuries inflicted by Low Frequency Active Sonar (LFAS) in use by U. S. Navy vessels in the area on 15 March 2000 (Anonymous, 2001; Balcomb & Claridge, 2001).

CONCLUSIONS

The location of our Blainville's Beaked Whale sight record in Virginia waters is unsurprising, given that surveys of marine mammals in the mid-Atlantic have noted a strong tendency for cetaceans to be distributed along the edge of the Continental Shelf, centered on the 1,000-m depth contour (Edel et al., 1981; Blaylock et al., 1995) and given the preference of this genus for deep water in general (Pitman, 2002). The area of Poor Man's Canyon, much like that of the larger Baltimore Canyon, has historically produced multiple contacts with squid-eating species such as Risso's Dolphin (*Grampus griseus*), Northern Bottlenose Whale (*Hyperoodon ampullatus*), and pilot whale species (*Globicephala*) (pers. obs.; Rowlett, 1980; T. Pusser, pers. comm.), so that the presence of *Mesoplodon* here, a genus known to eat squid (Mead, 1989; Pitman, 2002; MacLeod et al., 2003), is logical.

ACKNOWLEDGMENTS

We thank Todd Pusser for assistance with both bibliographic research and field study and the late Captain Linwood Martens for his able boatwork. Vikki Socha of the Marine Mammal Stranding Center, New Jersey, supplied records of stranded whales from that organization's archive; and Dee Allen assisted us by cross-referencing records of stranded mesoplodonts from the Smithsonian Institution's archives. All have our thanks.

LITERATURE CITED

- Anonymous. 2001. Joint interim report Bahamas marine mammal stranding event of 15-16 March 2000. Unpublished report released by the U.S. Department of Commerce and the Secretary of the Navy. 59 pp. Available at <http://www.nmfs.noaa.gov/prot_res/overview/Interim_Bahamas_Report.pdf>.
- Balcomb, K. E., III, & D. E. Claridge. 2001. A mass stranding of cetaceans caused by naval sonar in the Bahamas. *Bahamas Journal of Science* 2: 2-12.
- Baker, A. N., & A. L. Van Helden. 1999. New records of beaked whales, genus *Mesoplodon*, from New Zealand (Cetacea: Ziphiidae). *Journal of the Royal Society of New Zealand* 29: 235-244.
- Blaylock, R. A. 1985. The marine mammals of Virginia, with notes on identification and natural history. Virginia Institute of Marine Science Education Series No. 35 (Publication VSG-85-05). College of William and Mary, Williamsburg, VA. 118 pp.
- Blaylock, R. A., J. W. Hain, L. J. Hansen, D. L. Palka, & G. T. Waring. 1995. U. S. Atlantic and Gulf of Mexico marine mammal stock assessments. National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFSC-363. 211 pp.
- Bonde, R. K., & T. J. O'Shea. 1989. Sowerby's beaked whale (*Mesoplodon bidens*) in the Gulf of Mexico. *Journal of Mammalogy* 70: 447-449.
- Carwardine, M. 1995. Whales, Dolphins, and Porpoises. Dorling Kindersley, London. 256 pp.
- Cetacean and Turtle Assessment Program [CeTAP]. 1982. A characterization of marine mammals and turtles in the mid- and north Atlantic areas of the U.S. outer continental shelf. Cetacean and Turtle Assessment Program, University of Rhode Island. Final Report #AA551-CT8-48 to the Bureau of Land Management, Washington, DC. 538 pp.
- Claridge, D. E., & K. C. Balcomb. 1995. Photo-identification of dense-beaked whales (*Mesoplodon densirostris*) in the north-eastern Bahamas. P. 23 *In* Abstracts of the Eleventh Biennial Conference on the Biology of Marine Mammals, Orlando, December 1995.
- Cresswell, G., & D. Walker. 2001. Whales and Dolphins of the European Atlantic, the Bay of Biscay, and the English Channel. Wild Guides, Ltd. Hampshire, England. 56 pp.
- Davis, R., G. Scott, B. Würsig, W. Evans, G. Fargion, L. Hansen, K. Mullin, N. May, T. Leming, B. Mate, J. Norris, & T. Jefferson. 1994. Distribution and abundance of marine mammals in the north-central and western Gulf of Mexico: Final Report. OCS Study #MMS 94-0003. Texas Institute of Oceanography and the National Marine Fisheries Service. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA.
- Hansen, L. J., K. D. Mullin, & C. L. Roden. 1995. Estimates of cetacean abundance in the northern Gulf of Mexico from vessel surveys. Southeast Fisheries Science Center, Miami Laboratory, Contribution No. MIA-94/95-25. 9 pp.
- Herman J. S., A. C. Kitchener, J. R. Baker, & C. Lockyer 1994. The most northerly record of Blainville's beaked whale, *Mesoplodon densirostris*, from the eastern Atlantic. *Mammalia* 58: 657-661.
- Houston, J. 1989. Status of Blainville's beaked whale, *Mesoplodon densirostris*, in Canada. *Canadian Field Naturalist* 104: 117-120.
- Jefferson, T. A., S. Leatherwood, & M. A. Webber. 1993. FAO Species Identification Guide, Marine Mammals of the World. Food and Agriculture Organization of the United Nations, Rome. 320 pp.
- Jefferson, T. A., S. Leatherwood, L. K. M. Shoda, & R. L. Pitman. 1992. Marine Mammals of the Gulf of Mexico: A Field Guide for Aerial and Shipboard Observers. Texas A&M University Printing Center, College Station, TX. 92 pp.
- Leatherwood, S., & R. R. Reeves. 1983. The Sierra Club Handbook of Whales and Dolphins. Sierra Club Books, San Francisco, CA. 302 pp.
- Leatherwood, S., D. K. Caldwell, & H. E. Winn. 1976. Whales, dolphins, and porpoises of the western North Atlantic. A guide to their identification. U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Report NMFS Circular 396. 176 pp.
- Lee, D. S., R. B. Funderburg, & M. K. Clark. 1982. A distributional survey of North Carolina mammals. Occasional Papers of the North Carolina Biological Survey 1982-10. North Carolina Museum of Natural

- History, Raleigh. 70 pp.
- Blacksburg, VA.
- Linzey, D. W. 1998. The Mammals of Virginia. McDonald & Woodward Publishing Company, Blacksburg, VA. 459 pp.
- MacLeod, C. D. 2000. Review of the distribution of *Mesoplodon* species (order Cetacea, family Ziphiidae) in the North Atlantic. *Mammal Review* 30: 1-8.
- MacLeod, C. D., M. B. Santos, & G. J. Pierce. 2003. Review of data on diets of beaked whales: Evidence of niche separation and geographic segregation. *Journal of the Marine Biological Association of the United Kingdom* 83: 651-665.
- McAlpine, D. F., & M. Rae. 1999. First confirmed reports of beaked whales, cf. *Mesoplodon bidens* and *M. densirostris* (Ziphiidae), from New Brunswick. *Canadian Field Naturalist* 113: 293-295.
- Mead, J. G. 1989. Beaked whales of the genus *Mesoplodon*. Pp. 349-430 *In* S. H. Ridgway & R. Harrison (eds.), *Handbook of Marine Mammals, Vol. 4: River Dolphins and the Larger Toothed Whales*. Academic Press, London. 442 pp.
- Nicolas, J., A. Williams, & G. Repucci. 1993. Observations of beaked whales (*Mesoplodon* spp.) in the western North Atlantic Ocean. Proceedings of the Tenth Biennial Conference on the Biology of Marine Mammals, November 11-15, 1993, Galveston, TX (Abstract).
- Pitman, R. L. 2002. Mesoplodont whales. Pp. 738-742 *In* W. F. Perrin, B. Würsig, & J. G. M. Thewissen (eds.), *Encyclopedia of Marine Mammals*. Academic Press, San Diego, CA.
- Potter, C. W. 1979. Mammals – The marine fauna. Pp. 595-602. *In* D. W. Linzey (ed.), *Proceedings of the Symposium on Endangered and Threatened Plants and Animals of Virginia*. Center for Environmental Studies, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Potter, C. W. 1991. Marine mammals. Pp. 603-607. *In* K. Terwilliger (coord.), *Virginia's Endangered Species*. McDonald & Woodward Publishing Company, Blacksburg, VA.
- Reynolds, J. E., III, & D. K. Odell (eds.). 1991. *Marine Mammal Strandings in the United States*. Proceedings of the Second Marine Mammal Stranding Workshop Miami, Florida, December 30, 1987. U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Report NMFS 98. National Technical Information Service, Springfield, VA. 157 pp.
- Rice, D. W. 1998. *Marine Mammals of the World: Systematics and Distribution*. Society for Marine Mammalogy, Special Publication Number 4 (D. Wartzok, ed.). Lawrence, KS. 4,231 pp.
- Ritter, F., & B. Brederlau. 1999. Behavioural observations of dense beaked whales (*Mesoplodon densirostris*) off La Gomera, Canary Islands (1995-1997). *Aquatic Mammals* 25: 55-61.
- Rowlett, R. A. 1980. Observations of marine birds and mammals in the northern Chesapeake Bight. U. S. Fish and Wildlife Service, Biological Services Program. FWS/OBS-80/04. 87 pp.
- Secchi, E. R., & S. Zarzur. 1999. Plastic debris ingested by a Blainville's beaked whale, *Mesoplodon densirostris*, washed ashore in Brazil. *Aquatic Mammals* 25: 21-24.
- Tove, M. H. 2000. *Guide to the Offshore Wildlife of the Northern Atlantic*. University of Texas, Austin. 250 pp.
- Ward, H. K. 2001. Beaked whales. <<http://www.cetacea.org/whales.htm>>.
- Waring, G. T., J. M. Quintal, & S. L. Schwartz (eds.). 2001. U. S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments - 2001. National Oceanic and Atmospheric Administration Technical Memorandum NMFS-NE-168. <<http://www.nefsc.noaa.gov/nefsc/publications/tm/tm168/index.htm>>.
- Webster, W. D., P. D. Goley, J. Pustis, & J. F. Gouveia. 1996. Seasonality in cetacean strandings along the coast of North Carolina. *Brimleyana* 23: 41-51.