

## **WHITE-BEAKED DOLPHIN (*Lagenorhynchus albirostris*): Western North Atlantic Stock**

### **STOCK DEFINITION AND GEOGRAPHIC RANGE**

White-beaked dolphins are the more northerly of the two species of *Lagenorhynchus* in the northwest Atlantic (Leatherwood *et al.* 1976). The species is found in waters from southern New England to southern Greenland and Davis Straits (Leatherwood *et al.* 1976; CETAP 1982), across the Atlantic to the Barents Sea and south to at least Portugal (Reeves *et al.* 1999). Differences in skull features indicate that there are at least two separate stocks, one in the eastern and one in the western North Atlantic (Mikkelsen and Lund 1994). No genetic analyses have been conducted to corroborate this stock structure.

In waters off the northeastern U.S. coast, white-beaked dolphin sightings are concentrated in the western Gulf of Maine and around Cape Cod (CETAP 1982). The limited distribution of this species in U.S. waters has been attributed to opportunistic feeding (CETAP 1982). Prior to the 1970s, white-sided dolphins (*L. acutus*) in U.S. waters were found primarily offshore on the continental slope, while white-beaked dolphins were found on the continental shelf. During the 1970s, there was an apparent switch in habitat use between these two species. This shift may have been a result of the increase in sand lance in the continental shelf waters (Katona *et al.* 1993; Kenney *et al.* 1996).

In late March 2001, one group of 18 animals was seen about 60 nautical miles east of Provincetown, MA during a NMFS aerial marine mammal survey (NMFS unpublished data). In addition, during spring 2001 and 2002, white-beaked dolphins stranded on beaches in New York and Massachusetts (see Other Mortality section below).

### **POPULATION SIZE**

The total number of white-beaked dolphins in U.S. and Canadian waters is unknown, although one old abundance estimate is available for part of the known habitat in U.S. waters, and two other estimates are available from Canadian waters.

A population size of 573 white-beaked dolphins (CV=0.69) was estimated from an aerial survey program conducted from 1978 to 1982 on the continental shelf and shelf edge waters between Cape Hatteras, North Carolina and Nova Scotia (CETAP 1982). The estimate is based on spring data because the greatest proportion of the population off the northeast U.S. coast appeared in the study area during this season, according to the CETAP data. This estimate does not include a correction for dive-time, or for  $g(0)$ , the probability of detecting an animal group on the track line. This estimate may not reflect the current true population size because of its high degree of uncertainty (e.g., large CV), and its dated nature.

A population size of 5,500 white-beaked dolphins was estimated based on an aerial survey off eastern Newfoundland and southeastern Labrador (Alling and Whitehead 1987).

A population size of 3,486 white-beaked dolphins (95% confidence interval (CI)=2,001-4,971) was estimated from a ship-based survey of a small segment of the Labrador Shelf in August 1982 (Alling and Whitehead 1987). A CV was not given, but assuming a symmetric CI, it would be 0.22.

There are no recent abundance estimates for this species in waters between the Gulf of Maine and the Newfoundland/Labrador region.

### **Minimum Population Estimate**

Present data are insufficient to calculate a minimum population estimate in U.S. Exclusive Economic Zone (EEZ) waters.

### **Current Population Trend**

There are insufficient data to determine population trends for this species.

### **CURRENT AND MAXIMUM NET PRODUCTIVITY RATES**

Current and maximum net productivity rates are unknown for this stock. For purposes of this assessment, the maximum net productivity rate was assumed to be 0.04. This value is based on theoretical modeling showing that cetacean populations may not grow at rates much greater than 4% given the constraints of their reproductive life history (Barlow *et al.* 1995).

## **POTENTIAL BIOLOGICAL REMOVAL**

Potential Biological Removal (PBR) is the product of minimum population size, one-half the maximum productivity rate, and a “recovery” factor (Wade and Angliss 1997). The minimum population size of white-beaked dolphins is unknown. The maximum productivity rate is 0.04, the default value for cetaceans. The “recovery” factor, which accounts for endangered, depleted, threatened stocks, or stocks of unknown status relative to optimum sustainable population (OSP) is assumed to be 0.5 because this stock is of unknown status. PBR for the western North Atlantic white-beaked dolphin is unknown.

## **ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY**

White-beaked dolphins have been incidentally captured in cod traps and in the Canadian groundfish gillnet fisheries off Newfoundland and Labrador and in the Gulf of St. Lawrence (Alling and Whitehead 1987; Read 1994; Hai *et al.*1996). However, the total number of animals taken is not known. Of three bycaught white-beaked dolphins reported off Newfoundland during 1987-1988, 1 died in a groundfish gillnet, 1 in a herring gillnet, and 1 in a cod trap (Reeves *et al.*1999).

There are no documented reports of fishery-related mortality or serious injury to this stock in the U.S. EEZ. A white-beaked dolphin was captured by a Northeast bottom trawl in March 2003. However, since the animal was moderately decomposed and the trawl duration was short, the animal could not have died in this trawl.

## **Fishery Information**

Because of the absence of observed fishery-related mortality and serious injury to this stock in the U.S. and Canadian waters, no fishery information is provided.

## **Other Mortality**

White-beaked dolphins were hunted for food by residents in Newfoundland and Labrador (Alling and Whitehead 1987). These authors, based on interview data, estimated that 366 white-beaked dolphins were taken each year. The same authors reported that 25-50% of the killed dolphins were lost. Hunting that now occurs in Canadian waters is believed to be opportunistic and in remote regions of Labrador where enforcement of regulations is minimal (Lien *et al.*2001).

White-beaked dolphins regularly become caught in ice off the coast of Newfoundland during years of heavy pack ice. A total of 21 ice entrapments involving approximately 350 animals were reported in Newfoundland from 1979 to 1990; known mortality as a result of entrapment was about 55% (Lien *et al.*2001).

Mass strandings of white-beaked dolphins are less common than for white-sided dolphins. White-beaked dolphins more commonly strand as individuals or in small groups (Reeves *et al.*1999). In Newfoundland, 5 strandings of white-beaked dolphins occurred between 1979 and 1990, involving groups of 2 to 7 animals. On three occasions live dolphins came ashore, including groups of 3 and 4 (Reeves *et al.*1999).

White-beaked dolphin stranding records from 1997 onwards that are part of the US NE Regional Office/NMFS strandings and entanglement database include five records that clearly identify the species to be the white-beaked dolphin (Table 2). Three of these strandings took place on Cape Cod, Massachusetts beaches, where 1 animal stranded during May 1997, and 2 animals stranded during March 2001. A white-beaked dolphin also stranded in New York in February 2002. No white-beaked dolphins stranded during 2003. One white-beaked dolphin stranded in Maine during May 2004. It was not possible to determine the cause of death for any of the stranded animals.

Whales and dolphins stranded between 1997 and 2004 on the coast of Nova Scotia as recorded by the Marine Animal Response Society (MARS) and the Nova Scotia Stranding Network are as follows: 1 white-beaked dolphin stranded in May 1997, 0 documented strandings in 1998 to 2001, 2 in 2002 (1 in July (released alive) and 1 in August), and 0 in 2003 and 2004 (Table 1).

Table 1. Summary of number of stranded white-beaked dolphins during January 1, 2000 to December 31, 2004, by year and area within U.S. and Canada.						
Area	Year					Total
	2000	2001	2002	2003	2004	
Maine					1	1
Massachusetts		2				2
New York			1			1
<b>TOTAL US</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>4</b>
Nova Scotia <sup>a</sup>	0	0	2	0	0	2
<b>GRAND TOTAL</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>6</b>
a. One animal that stranded in July 2002 was released alive.						

#### STATUS OF STOCK

The status of white-beaked dolphins, relative to OSP, in U.S. Atlantic coast waters is unknown. The species is not listed as threatened or endangered under the Endangered Species Act. There are insufficient data to determine population trends for this species. Because there are insufficient data to calculate PBR, it is not possible to determine if the Western North Atlantic stock is strategic or if U.S. fishery-related mortality and serious injury for this stock is insignificant and approaching zero mortality and serious injury rate. However, because the stock has a marginal occurrence in U.S. waters and there are no documented takes in U.S. fisheries, this stock has not been designated as strategic.

#### REFERENCES CITED

- Alling, A.K. and H.P. Whitehead. 1987. A preliminary study of the status of white-beaked dolphins, *Lagenorhynchus albirostris*, and other small cetaceans off the coast of Labrador. *Can. Field Nat.* 101(2): 131-135.
- Barlow, J., S.L. Swartz, T.C. Eagle, and P.R. Wade. 1995. U.S. Marine mammal stock assessments: Guidelines for preparation, background, and a summary of the 1995 assessments. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-OPR-6, 73 pp.
- 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.
- Hai, D.J., J. Lien, D. Nelson, and K. Curren. 1996. A contribution to the biology of the white-sided dolphin, *Lagenorhynchus albirostris*, in waters off Newfoundland. *Can. Field Nat.* 110(1):278-287.
- Katona, S.K., V. Rough, and D.T. Richardson. 1993. A field guide to whales, porpoises, and seals from Cape Cod to Newfoundland. Washington, D. C. Smithsonian Institution Press. 316 pp.
- Kenney, R.D., P.M. Payne, D.W. Heineman, and H.E. Winn. 1996. Shifts in Northeast shelf cetacean distributions relative to trends in Gulf of Maine/Georges Bank finfish abundance. Pp. 169-196. *In*: K. Sherman, N.A. Jaworski and T. Smada (eds.) *The Northeast Shelf Ecosystem: Assessment, Sustainability, and Management*. Blackwell Science, Cambridge, MA 02142, USA.
- Leatherwood, S., D.K. Caldwell, and H.E. Winn. 1976. Whales, dolphins, and porpoises of the western North Atlantic. A guide to their identification. U.S. Dept. of Commerce, NOAA Tech. Rep. NMFS Circ. 396, 176 pp.
- Lien, J., D. Nelson, and D.J. Hai. 2001. Status of the White-beaked Dolphin, *Lagenorhynchus albirostris*, in Canada. *Can. Field Nat.* 115(1):118-126.

- Mikkelsen, A.M.H. and A. Lund. 1994. Intraspecific variation in the dolphins *Lagenorhynchus albirostris* and *L. acutus* (Mammalia: Cetacea) in metrical and non-metrical skull characters, with remarks on occurrence. *J. Zool., Lond.* 234:289-299.
- Mikkelsen, A.M.H. and A. Lund. 1994. Intraspecific variation in the dolphins *Lagenorhynchus albirostris* and *L. acutus* (Mammalia: Cetacea) in metrical and non-metrical skull characters, with remarks on occurrence. *J. Zool., Lond.* 234:289-299.
- Read, A.J. 1994. Interactions between cetaceans and gillnet and trap fisheries in the northwest Atlantic. *Rep. int. Whal. Commn (Special Issue)* 15:133-147.
- Reeves, R.R., C. Smeenk, C.C. Kinze, R. L. Brownell Jr., and J. Lien. 1999. White-beaked dolphin (*Lagenorhynchus albirostris* (Gray 1846)). Pp. 1-30. *In*: S.H. Ridgway and R. Harrison (eds.) *Handbook of marine mammals*, Vol 6. Academic Press, San Diego, CA.
- Wade, P.R. and R.P. Angliss. 1997. Guidelines for assessing marine mammal stocks: Report of the GAMMS workshop April 3-5, 1996, Seattle, Washington. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-12, 93 pp.