

Harbor Porpoise

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The harbor porpoise (*Phocoena phocoena*) is one of the smallest cetaceans, reaching lengths of about 150 cm (5 feet) and weights of about 64 kg (140 pounds). Mean age at sexual maturity in females is 3.4 years, and they most often bear a calf every year. Harbor porpoise births generally occur in May after 11 months of pregnancy, while ovulation and conception follow in late June and early July. This is one of the shortest-lived of all cetaceans, with a maximum longevity of 17 years, but over 90% of animals examined are younger than 10.

Harbor porpoises are found in the northwestern Atlantic from North Carolina to Labrador. It has been suggested that there are four populations in the western North Atlantic Ocean; these being the western Greenland, Newfoundland-Labrador, Gulf of St. Lawrence, and Gulf of Maine/Bay of Fundy populations. These populations are currently thought to be reasonably discrete, as shown by studies of mitochondrial DNA, reproductive schedules, contaminants and radio tagging.

To determine abundance and seasonal distribution of harbor porpoise, the NEFSC has conducted aerial surveys in all seasons and shipboard line transect surveys during spring and summer. Large numbers of harbor porpoises are found in the Gulf of Maine - lower Bay of Fundy region in the summer months, but nearly none are found there during winter. The overall winter distribution is unknown, although during January to May, harbor porpoises strand on beaches from New Jersey to North Carolina and are caught as by-catch in the Mid-Atlantic coastal gillnet fisheries. There is little information concerning the dis-

tribution of harbor porpoises in non-summer months in Canadian waters.

Estimates of harbor porpoise abundance are available for the Gulf of Maine and Bay of Fundy region. Based on NEFSC line transect surveys during the months of July and August in 1991, 1992 and 1995, the inverse-weighted pooled estimate from these three surveys is 54,300 (CV=0.14, 95% CI 41,300 to 71,400) animals. The next abundance survey is scheduled for the summer of 1999.

By-Catch

Estimation of total mortality caused by commercial fisheries on the Gulf of Maine/Bay of Fundy harbor porpoise population has been a difficult task. The largest measured incidental catches have been taken by groundfish sink gillnet fisheries where harbor porpoises become entangled, presumably as they forage near the net. The NEFSC Sea Sampling Program has collected data on fishing activity and marine mammal interactions in the Gulf of Maine region since June 1989 and in the Mid-Atlantic (New Jersey to North Carolina) region since summer of 1994. The current level of observer coverage is approximately 4-7% of the total estimated U.S. fishing effort. In the Gulf of Maine, harbor porpoise takes have been observed throughout the year, but in the Mid-Atlantic takes have been observed only during January to May. Observed incidental catch rates have been applied to various measures of total fishing effort to estimate total incidental mortality. Estimation has been complicated by a number of factors including the seasonal migra-

tion of harbor porpoises, seasonal changes in patterns of fishing effort, and potential sources of bias in data collection. During an international workshop held in Woods Hole, MA during February 1994, estimates made before 1993 were found to be biased downward, in some cases due to under-reporting during unobserved hauls. A new method of estimating by-catch was subsequently developed and accepted by peer review. Estimates of by-catch for 1990 to 1996 for the U.S. Gulf of Maine and Mid-Atlantic sink gillnet fisheries based on application of this method are shown in Table 1.

A Canadian observer program in the lower Bay of Fundy has provided by-catch estimates for the Canadian sink gillnet fishery of 424 for 1993, 101 for 1994, and 87 for 1995. This fishery operates from June to September.

Biological Significance of the By-Catch

In 1994 the U.S. adopted a procedure to be used to assess the significance of human-related mortalities on marine mammal populations. This procedure involves calculating Potential Biological Removal (PBR) which is compared to the estimated mortality. The PBR is the product of a minimum abundance estimate, half of the maximum net productivity rate, and a recovery factor. The PBR for the Gulf of Maine/Bay of Fundy harbor porpoise population is 483. The average annual human-related mortality estimate is 1,667 (CV=0.09). Because mortalities exceed PBR, the population is classified as a strategic

stock. Consequentially, two Take Reduction Teams were convened and each developed plans to reduce the fishery-related mortalities to PBR. One team met to develop a plan for the sink gillnet fishery in the Gulf of Maine and the other for the gillnet fishery in the Mid-Atlantic. The plans were based on area closures during critical time periods, use of acoustic alarms on the gillnets, and gear modifications.

For further information

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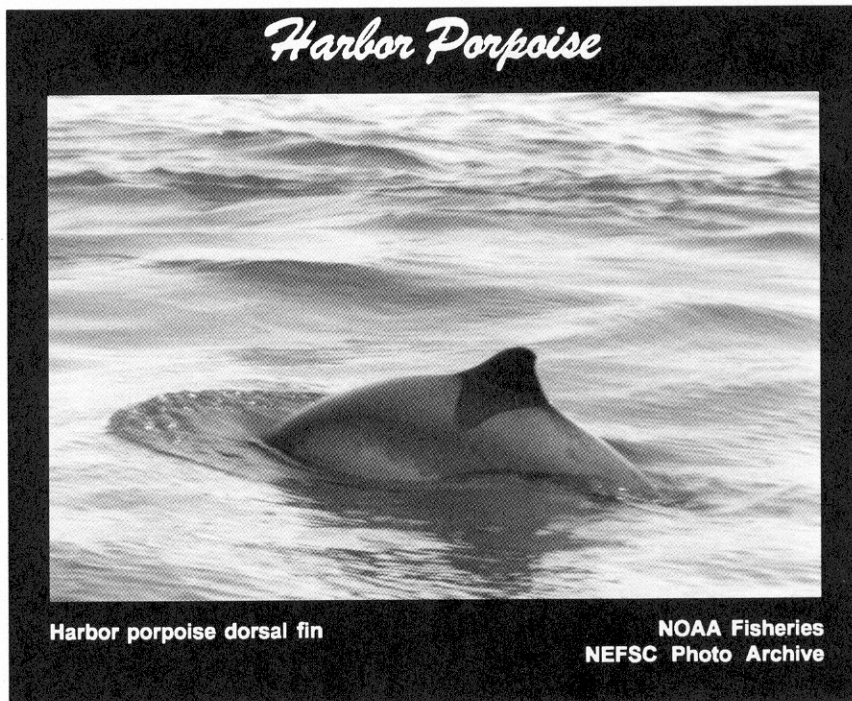


Table 1. Revised U.S. harbor porpoise by-catch estimates, with measures of uncertainty; numbers have been rounded to the nearest hundred

Year	Gulf of Maine		Mid-Atlantic	
	Estimate	%CV	Estimate	%CV
1990	2900	32	-	-
1991	2000	35	-	-
1992	1200	21	-	-
1993	1400	18	-	-
1994	2100	18	-	-
1995	1400	27	103	57
1996	1200	25	311	31

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