

STRIPED DOLPHIN (*Stenella coeruleoalba*): Western North Atlantic Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

The striped dolphin, *Stenella coeruleoalba*, is distributed worldwide in temperate and tropical seas of the world. Striped dolphins are found in the western North Atlantic from Nova Scotia south to at least Jamaica and in the Gulf of Mexico. In general, striped dolphins appear to prefer continental slope waters offshore to the Gulf Stream (Leatherwood et al. 1976; Perrin et al. 1994; Schmidly 1981). There is no information concerning striped dolphin stock structure in the western North Atlantic.

In waters off the northeastern U.S. coast, striped dolphins are distributed along the continental shelf edge from Cape Hatteras to the southern margin of Georges Bank, and also occur offshore over the continental slope and rise in the mid-Atlantic region (CeTAP 1982). Continental shelf edge sightings in this program were generally centered along the 1,000 m depth contour in all seasons (CeTAP 1982). During 1990 and 1991 cetacean habitat-use surveys, striped dolphins were associated with the Gulf Stream north wall and warm-core ring features (Waring et al. 1992).

POPULATION SIZE

The total number of striped dolphins in the U.S. Exclusive Economic Zone (EEZ) is unknown. Seasonal abundance estimates are available from an aerial line transect survey program conducted in the continental shelf and continental shelf edge waters between Cape Hatteras, North Carolina and Nova Scotia from 1978 to 1982 (CeTAP 1982). R. Kenney (personal communication) provided abundance estimates that accounted for survey effort in two continental slope survey blocks and uncertainties resulting from sighting of unidentified small dolphins. An estimate based on an inverse variance weighted pooling of revised CeTAP (1982) spring and summer data is 36,780 (CV = 0.27). An average for these two seasons was chosen because the greatest proportion of the population off the northeast U.S. coast appears to be in the CeTAP study area in these seasons. This estimate was not corrected for $g(0)$, the probability of detecting an animal group on the trackline.

Abundance estimates were also derived using data collected during an autumn 1991 aerial line transect survey in the CeTAP study area (NMFS unpublished data), which included an interplatform experiment between a Twin Otter and an AT-11). Sightings were almost exclusively in the continental shelf edge waters. The data were analyzed using DISTANCE (Buckland et al. 1993; Laake et al. 1993) where confidence intervals were calculated using the bootstrap lognormal method. Abundance estimates, based on a low number of sightings, from this survey were 13,157 (CV = 0.45) and 25,939 (CV = 0.36), respectively, for the AT-11 and NOAA Twin Otter. Data were not pooled, because the interplatform calibration analysis has not been conducted. These estimates are not comparable to the CeTAP estimates, because the 1991 data are from a single survey conducted during August-October, while the CeTAP estimates were based on data pooled over several years of seasonal surveys.

Striped dolphin sighting data were also collected during three fine-scale ship line transect surveys (August 1990, June-July 1991, and June-July 1993) conducted in continental shelf edge and deeper oceanic waters (NMFS

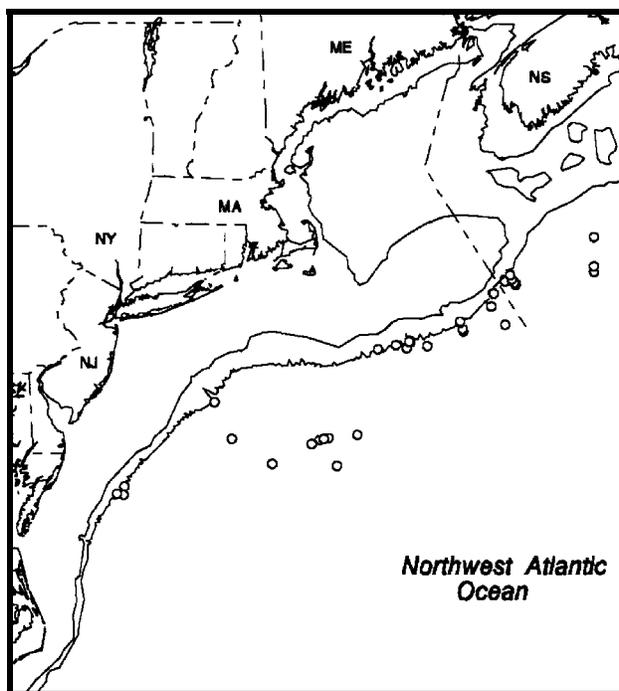


Figure 1. Distribution of striped dolphin sightings from NEFSC shipboard surveys during the summer in 1990-1994. Isobaths are at 100 m and 1,000 m.

unpublished data) and striped dolphin sightings during these surveys are shown in Figure 1. These data were too limited for use in estimating abundance because these surveys did not adequately sample striped dolphin high-use habitats off the northeastern U.S. coast.

Minimum Population Estimate

The minimum population estimate was based on the AT-11 aerial survey abundance estimate of 13,157 striped dolphins (CV = 0.45) (NMFS unpublished data) in 1991. This estimate was used because that survey provided the most complete coverage of continental shelf edge and continental slope waters off the northeast U.S. coast. The minimum population estimate is the lower limit of the two-tailed 60% confidence interval of the log-normal distributed abundance estimate, which is equivalent to the 20th percentile of the log-normal distribution as specified by NMFS (Anon. 1994), and was 9,165 striped dolphins.

Current Population Trend

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

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

Current and maximum net productivity rates are not known for this stock. The maximum net productivity rate was assumed to be 0.04 for purposes of this assessment. This value is based on theoretical calculations showing that cetacean populations may not generally grow at rates much greater than 4% given the constraints of their reproductive life history (Reilly and Barlow 1986).

POTENTIAL BIOLOGICAL REMOVAL

Potential biological removal (PBR) was specified as the product of minimum population size, one-half the maximum productivity rate, and a "recovery" factor for endangered, depleted, threatened stocks, or stocks of unknown status relative to optimum sustainable population (OSP) (Anon. 1994). The recovery factor was 0.40 because of the high variance (CV = 1.30) associated with the estimated total annual fishery-related mortality and serious injury for striped dolphins. PBR for this stock is 73 striped dolphins.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

No mortalities were observed in 1977-1991 foreign fishing activities off the northeast U.S. coast. Nineteen mortalities were documented between 1989 and 1993 (see below) in the pelagic drift-gillnet fishery, and two mortalities were documented in 1991 in the New England groundfish trawl fishery. No mortalities were documented in the Atlantic swordfish/tuna/shark longline, Atlantic swordfish/tuna/shark pair trawl and New England multispecies sink gillnet fisheries. Also, no takes have been documented in a review of Canadian gillnet and trap fisheries (Read 1994).

Total estimated average annual fishery-related mortality and serious injury to this stock in the Atlantic during 1989-1993 was 63 striped dolphins annually (CV = 1.30). The total fishery-related mortality and serious injury for this stock is not less than 10% of the calculated PBR and cannot be considered to be insignificant and approaching zero mortality and serious injury rate. This determination cannot be made for specific fisheries until the implementing regulations for Section 118 of the MMPA have been reviewed by the public and finalized.

Fisheries Information

Data on current incidental takes in U.S. fisheries are available from several sources. In 1986, NMFS established a mandatory logbook system for large pelagic fisheries. Data files are maintained at the Southeast Fisheries Science Center (SEFSC). The Northeast Fisheries Science Center (NEFSC) Sea Sampling Observer Program was initiated in 1989, and since that year several fisheries have been covered by the program. In late 1992 and in 1993, the SEFSC provided observer coverage of pelagic longline vessels fishing off the Grand Banks (Tail of the Banks) and provides observer coverage of vessels fishing south of Cape Hatteras.

Pelagic swordfish, tunas, and billfish are the targets of the U.S. longline fishery in the U.S. Atlantic and Gulf of Mexico EEZ (SEFSC unpublished logbook data). Interactions between the longline swordfish/tuna fishery and striped dolphins have been reported; however, a vessel may fish in more than one statistical reporting area and it is not possible to separate estimates of fishing effort other than to subtract Gulf of Mexico effort from Atlantic fishing effort, which includes the Caribbean Sea. This fishery has been monitored with about 5% observer coverage, in terms

of trips observed, since 1992. Total longline effort for the Atlantic pelagic fishery (including the Caribbean), based on mandatory logbook reporting, was 11,279 sets in 1991, 10,605 sets in 1992, and 11,538 sets in 1993 (Cramer 1994). There were no reported human-caused mortality or serious injury to this stock by this fishery.

The estimated total number of hauls in the Atlantic large pelagic drift gillnet fishery increased from 714 in 1989 to 1,144 in 1990; thereafter, with the introduction of quotas, effort was severely reduced. The estimated number of hauls in 1991, 1992, and 1993 were 233, 243, and 232 respectively. Fifty-nine different vessels participated in this fishery at one time or another between 1989 and 1993. Observer coverage, expressed as percent of sets observed, ranged from 8% in 1989, 6% in 1990, 20% in 1991, to 40% in 1992, and 42% in 1993. Effort was concentrated along the southern edge of Georges Bank and off Cape Hatteras. Examination of the species composition of the catch and locations of the fishery throughout the year, suggested that the drift gillnet fishery be stratified into two strata, a southern or winter stratum, and a northern or summer stratum. Estimates of the total by-catch, for each year, were obtained using the aggregated (pooled 1989-1993) catch rates, by strata (Northridge, in review). Nineteen striped dolphin mortalities were observed in this fishery between 1989 and 1993 and occurred east of Cape Hatteras in January and February, and along the southern margin of Georges Bank in summer and autumn. Estimated annual mortality and serious injury (CV in parentheses) attributable to this fishery was 39 striped dolphins in 1989 (0.84), 57 in 1990 (0.73), ten in 1991 (0.87), 7.7 in 1992 (0.65), and 21 in 1993 (0.20). The 1989-1993 average annual mortality and serious injury to striped dolphins in the Atlantic large pelagic drift gillnet fishery was 27 dolphins (0.90).

Vessels in the New England groundfish multispecies trawl fishery, a Category III fishery under the MMPA, were observed in order to meet fishery management needs, rather than marine mammal management needs. An average of 970 (CV = 0.04) vessels (full and part time) participated annually in the fishery during 1989-1993. The fishery is active in New England waters in all seasons. The only reported fishery-related mortalities (two) occurred in 1991. Total estimated mortality and serious injury attributable to this fishery in 1991 was 181 (CV = 0.97); average annual mortality and serious injury during 1989-1993 was 36 striped dolphins (CV = 2.17).

STATUS OF STOCK

The status of striped dolphins, relative to OSP, in the U.S. Atlantic EEZ is unknown. The species is not listed as threatened or endangered under the Endangered Species Act. In Canada, the Cetacean Protection Regulations of 1982, promulgated under the Standing Fisheries Act, prohibit the catching or harassment of all cetacean species. There are insufficient data to determine the population trends for this species. Average annual fishery-related mortality and serious injury does not exceed the PBR; therefore, this is not a strategic stock.

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