

SHORT-FINNED PILOT WHALE (*Globicephala macrorhynchus*): Northern Gulf of Mexico Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

The short-finned pilot whale is distributed worldwide in tropical to warm temperate waters (Leatherwood and Reeves 1983). Sightings of these animals in the northern Gulf of Mexico occur primarily along the continental shelf and continental slope [Mullin et al. 1991; Southeast Fisheries Science Center (SEFSC) unpublished data]. Short-finned pilot whales were seen in all seasons during recent seasonal GulfCet aerial surveys of the northern Gulf of Mexico during 1993-1995 (Hansen *et al.* 1996). There is no information on stock differentiation for the Atlantic population.

POPULATION SIZE

Abundance was estimated using distance sampling analysis (Buckland et al. 1993) and the computer program DISTANCE (Laake et al. 1993) with sighting data collected during 1991-1994 spring-summer, visual sampling, line-transect vessel surveys of the northern Gulf of Mexico (Hansen et al. 1995) (Fig. 1), which includes data collected as part of the GulfCet program (Hansen *et al.* 1996). These surveys were conducted throughout the area from approximately the 200 m isobath along the U.S. coast to the seaward extent of the U.S. Exclusive Economic Zone. The seasonal GulfCet aerial surveys included only a small portion of the stock range, so those data were not used for abundance estimation. Estimated abundance of short-finned pilot whales by survey year [coefficient of variation (CV) in parentheses] was zero in 1991, 909 in 1992 (0.62), 103 in 1993 (1.20), and 240 in 1994 (1.03) (Hansen et al. 1995). Survey effort-weighted estimated average abundance of short-finned pilot whales for all surveys combined was 353 (CV = 0.89) (Hansen et al. 1995).

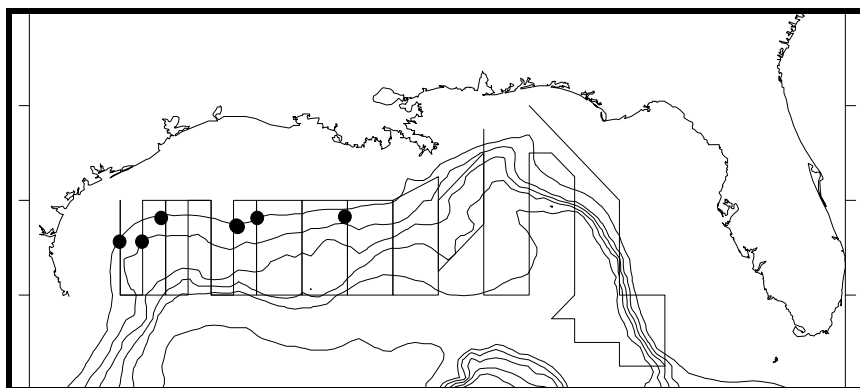


Figure 1. Distribution of short-finned pilot whale sightings during NOAA Ship Oregon II surveys during 1991-1994. The straight lines show transects during two surveys and are examples of typical survey transects. Isobaths are in 183 m (100 fm) intervals.

Minimum Population Estimate

The minimum population size was estimated from the average estimated abundance which was 353 pilot whales (CV = 0.89) (Hansen et al. 1995). The minimum population estimate is the lower limit of the two-tailed 60% confidence interval of the log-normally distributed abundance estimate. This is equivalent to the 20th percentile of the log-normal distribution as specified by Wade and Angliss (1997). The minimum population estimate is 186 pilot whales.

Current Population Trend

The annual abundance estimates were not significantly different using the criteria of no overlap of log-normal 95% confidence intervals. The variation in abundance estimates that was observed may have been caused by lower sampling effort during 1991, by low sampling intensity relative to population size (Hansen et al. 1995), or by inter-annual variation in distribution patterns or spatial sampling patterns, rather than changes in population size.

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. 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 the minimum population size, one half the maximum net productivity rate, and a “recovery” factor (Wade and Angliss 1997). The “recovery” factor, which accounts for endangered, depleted, and 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 this stock is 1.9 short-finned pilot whales.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

The level of past or current, direct, human-caused mortality of short-finned pilot whales in the northern Gulf of Mexico is unknown. This species has been taken in the U.S. longline swordfish/tuna fishery in U.S. Atlantic waters (Lee et al. 1994) and there is a logbook report of a fishery-related mortality or serious injury in the northern Gulf of Mexico (NMFS unpublished data); however, fishery-related mortality or serious injury has not been observed. Total known fishery-related mortality or serious injury is estimated to be 0.3 short-finned pilot whales per year based upon the logbook report.

There were no documented strandings of short-finned pilot whales in the northern Gulf of Mexico during 1987-1994 which were classified as likely caused by fishery interactions or other human-related causes. Stranding data probably underestimate the extent of fishery-related mortality and serious injury because not all of the marine mammals which die or are seriously injured may wash ashore, nor will all of those that do wash ashore necessarily show signs of entanglement or other fishery-interaction. Finally, the level of technical expertise among stranding network personnel varies widely as does the ability to recognize signs of fishery interaction.

Fisheries Information

Pelagic swordfish, tunas, and billfish are the targets of the longline fishery operating in the U.S. Gulf of Mexico. Interactions between the U.S. longline swordfish/tuna fishery and short-finned pilot whales have been reported in the northern Gulf of Mexico (SEFSC, unpublished logbook data), but have not been observed by NMFS fishery observers. Total longline effort for the Gulf of Mexico pelagic fishery, including OCS edge, continental slope, and Mexican territorial waters, based on mandatory logbook reporting, was 4,400 sets in 1991, 4,850 sets in 1992, and 3,260 sets in 1993 (Cramer 1994). This fishery was been monitored with about 5% observer coverage in both the Atlantic Ocean and the Gulf of Mexico, in terms of trips observed, in 1992-1993. There was one logbook report of a fishery-related injury of a pilot whale in the northern Gulf of Mexico in 1991, but no fishery interactions were observed during 1992-1993. Total known fishery-related mortality or serious injury is estimated to be 0.3 short-finned pilot whales per year based upon the logbook report.

Pair trawl fishing gear has the potential to capture marine mammals, but there have been no reports of mortality or serious injury to marine mammals in the Gulf of Mexico. This fishery has not been observed by NMFS observers, and there are no other data available as to the extent of this fishery in the Gulf of Mexico. It is assumed that it is very limited in scope and duration.

STATUS OF STOCK

The status of this stock relative to OSP is unknown and there are insufficient data to determine population trends. This species is not listed under the Endangered Species Act. The total known fishery-related mortality and serious injury for this stock is greater than 10% of the calculated PBR and, therefore, cannot be considered insignificant and approaching zero mortality and serious injury rate. The total level of estimated fishery-related mortality and serious injury is unknown, but because there is a record of a fishery-related mortality or serious injury and because of the extremely low estimated stock size, this is a strategic stock.

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