CUVIER'S BEAKED WHALE (*Ziphius cavirostris*): Western North Atlantic Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

The distribution of Cuvier's beaked whales is poorly known, and is based mainly on stranding records (Leatherwood et al. 1976). Strandings have been reported from Nova Scotia along the eastern U.S. coast south to Florida, around the Gulf of Mexico, and within the Caribbean (Leatherwood et al. 1976; CeTAP 1982; Heyning 1989; Houston 1990). Stock structure in the western North Atlantic is unknown.

Cuvier's beaked whale sightings have occurred principally along the continental shelf edge in the mid-Atlantic region off the northeast U.S. coast (CeTAP 1982; NMFS unpublished data). Most sightings were in late spring or summer. Based on sighting data, this species is a rare inhabitant of waters off the northeast U.S. coast (CeTAP 1982).

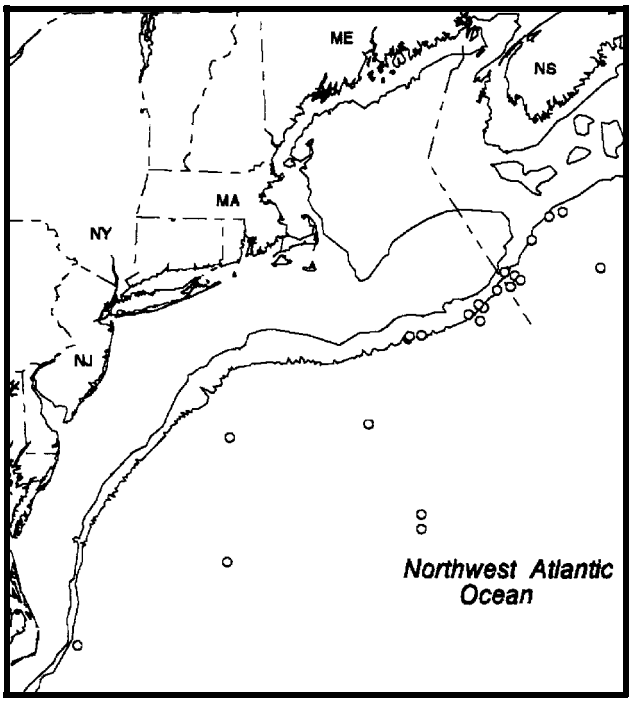

Figure 1. *Distribution of beaked whale sightings from NEFSC shipboard surveys during the summer in 1990-1994. Isobaths are at 100 m and 1,000 m.*

POPULATION SIZE

The total number of Cuvier's beaked whales off the eastern U.S. coast is unknown. Seasonal abundance estimates reported in CeTAP (1982) are based on "probable" sightings; therefore, population size could not be estimated.

Minimum Population Estimate

Present data are insufficient to calculate a minimum population estimate.

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 (Anon. 1994).

Some of the life history parameters which have been estimated include: length at birth is 2 to 3 m, length at sexual maturity 6.1 m for females, and 5.5 m for males, maximum age for females were 30 growth layer groups (GLG's) and for males was 36 GLG's, which may be annual layers (Mitchell 1975; Mead 1984; Houston 1990).

POTENTIAL BIOLOGICAL REMOVAL

No PBR can be estimated for this species at this time, because the minimum population size cannot be determined.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Beaked whales (many unidentified as to species) have been killed in the pelagic drift gillnet fishery off the U.S. Atlantic coast. While there are no reported takes in other continental shelf edge fisheries (i.e., pelagic pair trawl,

longline), observer coverage in these fisheries is low and because beaked whales occupy this habitat, unreported takes may have occurred.

Total fishery-related mortality and serious injury cannot be estimated separately for each beaked whale species because of the uncertainty in species identification by fishery observers. The Atlantic Scientific Review Group advised adopting the risk-averse strategy of assuming that any beaked whale stock which occurred in the U.S. Atlantic Exclusive Economic Zone (EEZ) might have been subject to the observed fishery-related mortality and serious injury. Twenty-two fishery-related beaked whale mortalities were observed between 1989 and 1993. The 1989-1993 total average estimated annual fishery-related mortality of beaked whales in the U.S. EEZ was 34 (CV = 0.69). Although PBR cannot be determined, the total fishery-related mortality and serious injury for this stock is not 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

There is no historical information available that documents incidental mortality in either U.S. or Canadian Atlantic coast fisheries.

Current data sources include the Northeast Fisheries Science Center (NEFSC) Weigh Out Data Program and Sea Sampling Observer Program initiated in 1989. In 1986, NMFS established a mandatory logbook system for large pelagic fisheries. These logbooks are maintained at Southeast Fisheries Science Center (SEFSC). 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 currently provides observer coverage of vessels fishing south of Cape Hatteras. Total fishery-related mortality and serious injury cannot be estimated separately for each beaked whale species because of the uncertainty in species identification by fishery observers. The Atlantic Scientific Review Group advised adopting the risk-averse strategy of assuming that any beaked whale stock which occurred in the U.S. Atlantic EEZ might have been subject to the observed fishery-related mortality and serious injury.

By-catch has been observed by NMFS Sea Samplers in the swordfish/tuna/shark drift gillnet fishery, but no mortalities have been documented in the Atlantic swordfish/tuna/shark longline, Atlantic swordfish/tuna/shark pair trawl, New England multispecies sink gillnet, or New England groundfish trawl observed fisheries.

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). By-catch of beaked whales has only occurred from Georges Canyon to Hydrographer Canyon along the continental shelf break and continental slope during July to October. Twenty-two fishery-related beaked whale mortalities were observed between 1989 and 1993. The estimated annual fishery-related mortality (CV in parentheses) was 60 in 1989 (0.49), 76 in 1990 (0.56), 13 in 1991 (0.57), 9.7 in 1992 (0.53), and 12 in 1993 (0.32).

STATUS OF STOCK

The status of Cuvier's beaked whale relative to OSP in U.S. Atlantic coast waters is unknown. This 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 population trends and the level of human-caused mortality and serious injury is unknown because of uncertainty regarding species identification in observed fisheries. If one were to assume that the incidental fisheries mortality of the four *Mesoplodon* spp. and *Z. cavirostris* was random with respect to species (i.e., in proportion to their relative abundance), then the minimum population estimate for all of those stocks would need to sum to at least 3,400 in order for an annual mortality of 34 animals not to exceed the PBR of any one of these species. Because an assumption of unselective incidental fishing mortality is probably overly optimistic and represents

a best case situation, it is likely that a combined minimum population estimate of substantially greater than 3,400 would be necessary for an annual mortality of 34 to not exceed the PBR of any one of these five stocks. The largest recent abundance estimate available for beaked whales in the western North Atlantic was 612 (CV = 0.73), which would result in a minimum population estimate of 353 beaked whales; however, this estimate does not include a correction factor for submerged animals which may be substantial. This is a strategic stock because of uncertainty regarding stock size and evidence of fishery-related mortality and serious injury.

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