RISSO'S DOLPHIN (*Grampus griseus*):
Northern Gulf of Mexico Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Risso's dolphin 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along the continental shelf and continental slope (Mullin et al. 1991; Southeast Fisheries Science Center, SEFSC, unpublished data). Risso's dolphin were seen in all seasons during recent seasonal GulfCet aerial surveys of the northern Gulf of Mexico during 1993-1995 (Davis et al., in preparation) and in the late spring during vessel surveys (SEFSC, unpublished data). There is no information on stock differentiation for the Atlantic population.

POPULATION SIZE

Seasonal aerial survey data were insufficient for abundance estimation. Estimates of abundance were derived through the application of distance sampling analysis (Buckland et al. 1993) and the computer program DISTANCE (Laake et al. 1993) to 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 (Davis et al., in preparation). 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 and these data were not used for abundance estimation. Estimated abundance of Risso's dolphins by survey year [coefficient of variation (CV) in parentheses] was 667 in 1991 (0.95), 2,325 in 1992 (0.34), 1,408 in 1993 (0.41), and 6,332 in 1994 (0.45) (Hansen et al. 1995). Survey effort-weighted average abundance of Risso's dolphins estimated for all surveys combined was 2,749 (CV = 0.27) (Hansen et al. 1995).
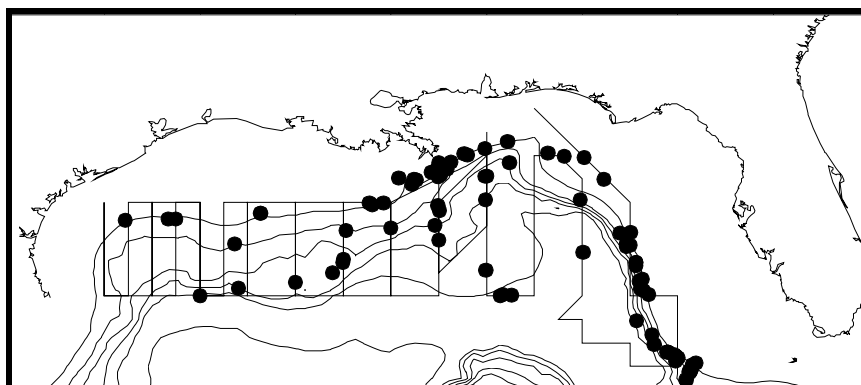

Figure 1. *Distribution of Risso's dolphin sightings during NOAA Ship Oregon II marine mammal surveys during 1991-1994. The straight lines show transects during two surveys and are examples of typical survey transects. Isobaths are in 183 m (100 fm) intervals.*

Minimum Population Estimate

The minimum population size was estimated from the average abundance estimate which was 2,749 Risso's dolphins (CV = 0.27) (Hansen et al. 1995). 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 distributed abundance estimate as specified by NMFS (Anon. 1994). The minimum population estimate is 2,199 Risso's dolphins.

Current Population Trend

No trend was identified in the annual abundance estimates. The 1994 abundance estimate was greater than the other annual estimates, but no annual estimates differed significantly using the criteria of no overlap of log-normal 95% confidence intervals. The apparent differences in abundance estimates may have been caused by lower

sampling effort during 1991 (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 for this stock are not known; therefore, the default maximum net productivity rate of 0.04 (Anon. 1994) was used for purposes of this assessment.

POTENTIAL BIOLOGICAL REMOVAL

Potential biological removal level (PBR) was specified as the product of the minimum population size, one half the maximum net productivity rate, and a recovery factor for endangered, threatened, or depleted stocks, or stocks of unknown status relative to optimum sustainable population (OSP) (Anon. 1994). The recovery factor was set at 0.50 because the status of the stock relative to OSP is unknown. PBR for this stock is 22 Risso's dolphins.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

The level of past or current, direct, human-caused mortality of Risso's dolphins in the northern Gulf of Mexico is unknown. This species has been taken in the U.S. longline swordfish/tuna fishery in the northern Gulf of Mexico and in the U.S. Atlantic (Lee et al. 1994). Estimated average annual fishery-related mortality and serious injury attributable to the longline swordfish/tuna fishery in the Gulf of Mexico during 1992-1993 was 19 Risso's dolphins annually (CV = 0.20).

There were no documented strandings of Risso' dolphins 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.

The total estimated fishery-related mortality and serious injury for this stock is not less than 10% of the calculated PBR and, therefore, cannot be considered 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

Interactions between the U.S. longline swordfish/tuna fishery and Risso' dolphins have been documented in the northern Gulf of Mexico (Lee et al. 1994). Pelagic swordfish, tunas, and billfish are the targets of the longline fishery operating in the U.S. Gulf of Mexico. 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 has been monitored with about 5% observer coverage, in terms of trips observed, since 1992. One Risso's dolphin was observed taken and released alive during 1992; the extent of injury to the animal was unknown (SEFSC, unpublished data). One lethal take of a Risso's dolphin by the fishery was observed in the Gulf of Mexico during 1993 (SEFSC, unpublished data). Annual fishery-related mortality and incidental injury was estimated using a generalized linear model (Poisson error assumption) fit to the available observed incidental take data for the entire fishery and partitioned on the fishery effort (number of sets) in the Gulf of Mexico. Estimated total mortality and serious injury to Risso's dolphins (CV in parentheses) in the Gulf of Mexico in 1992 was 24 (0.19), and in 1993 it was 13 (0.20). Estimated average annual fishery-related mortality and serious injury attributable to the longline swordfish/tuna fishery in the Gulf of Mexico during 1992-1993 was 19 Risso's dolphins annually (CV = 0.20).

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. This species is not listed under the Endangered Species Act and there are insufficient data to determine population trends. This is not a strategic stock because fishery-

related mortality and serious injury does not exceed PBR; however, fishery-related mortality and serious injury is very close to PBR and requires close monitoring.

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