

CLYMENE DOLPHIN (*Stenella clymene*): Western North Atlantic Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

The Clymene dolphin is endemic to tropical and sub-tropical waters of the Atlantic (Jefferson and Curry 2003). Clymene dolphins have been commonly sighted in the Gulf of Mexico since 1990 (Mullin *et al.* 1994; Fertl *et al.* 2003), and a Gulf of Mexico stock has been designated since 1995. Four Clymene dolphin groups were sighted during summer 1998 in the western North Atlantic (Mullin and Fulling 2003), and two groups were sighted in the same general area during a 1999 bottlenose dolphin survey (NMFS unpublished). These sightings and stranding records (Fertl *et al.* 2003) indicate that this species routinely occurs in the western North Atlantic. The western North Atlantic population is provisionally being considered a separate stock for management purposes, although there is currently no information to differentiate this stock from the northern Gulf of Mexico stock(s). Additional morphological, genetic and/or behavioral data are needed to provide further information on stock delineation.

POPULATION SIZE

Estimates of abundance were derived through the application of distance sampling analysis (Buckland *et al.* 2001) and the computer program DISTANCE (Thomas *et al.* 1998) to sighting data. Data were collected using standard line-transect techniques conducted from NOAA Ship *Relentless* during July and August 1998 between Maryland (38.00°N) and central Florida (28.00°N) from the 10 m isobath to the seaward boundary of the U.S. EEZ. Transect lines were placed perpendicular to bathymetry in a double saw-tooth pattern. Sightings of Clymene dolphins were primarily on the continental slope east of Cape Hatteras, North Carolina (Fig. 1). The best estimate of abundance for the Clymene dolphin was 6,086 (CV=0.93) (Mullin and Fulling 2003) and represents the first estimate for this species in the U.S. Atlantic EEZ.

Minimum Population Estimate

The minimum population estimate is the lower limit of the two-tailed 60% confidence interval of the log-normally distributed best abundance estimate. This is equivalent to the 20th percentile of the log-normal distributed abundance estimate as specified by Wade and Angliss (1997). The best estimate of abundance for the western North Atlantic Clymene dolphin stock is 6,086 (CV=0.93). The minimum population estimate for the western North Atlantic stock is 3,132 Clymene 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 productivity rates are unknown for this species. For purposes of this assessment, 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 history (Barlow *et al.* 1995).

POTENTIAL BIOLOGICAL REMOVAL

Potential biological removal (PBR) is the product of minimum population size, one half the maximum net productivity rate, and a recovery factor (MMPA Sec. 3. 16 U.S.C. 1362; Wade and Angliss 1997). The minimum population size is 3,132. The maximum productivity rate is 0.04, the default value for cetaceans. The "recovery" factor, which accounts for endangered, depleted, threatened stocks, or stocks of unknown status relative to optimum sustainable population (OSP) is assumed to be 0.5. PBR for the western North Atlantic Clymene dolphin stock is 31.

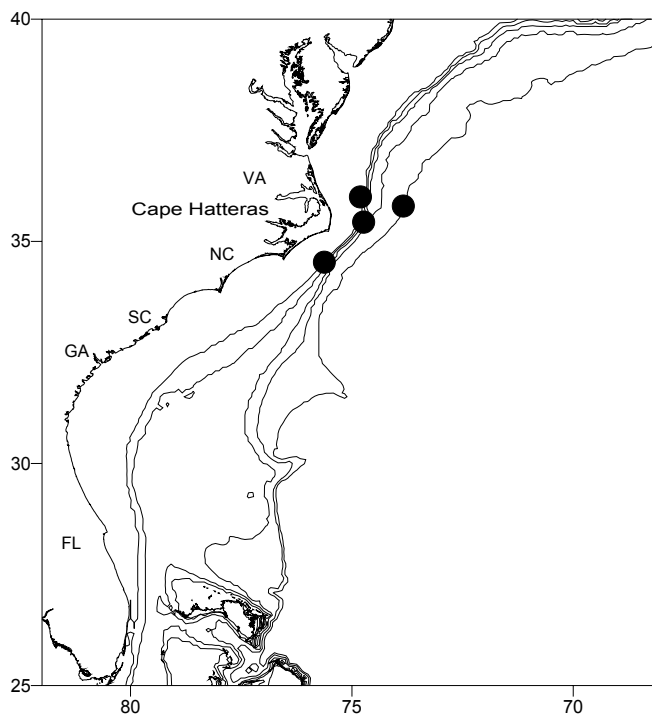


Figure 5. Distribution of Clymene dolphin sightings from SEFSC vessel surveys during summer 1998. All the on-effort sightings are shown, though not all were used to estimate abundance. Solid line indicates the 200, 500, 1000, 2000, and 5000 m isobaths.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Annual human-caused mortality and serious injury is unknown for this species.

Fisheries Information

Fishery-related mortality or serious injury is unknown for this species.

Other Mortality

There have been 2 reported strandings of Clymene dolphins in the western North Atlantic between 1997-2002. No signs of human interactions were noted in either stranding. There may be some uncertainty in the identification of this species due to similarities with other *Stenella* species.

STATUS OF STOCK

The status of the Clymene dolphin stock in the western North Atlantic EEZ, relative to OSP, is unknown. The species is not listed as threatened or endangered under the Endangered Species Act. There are insufficient data to determine the population trends for this species. The total fishery-related mortality and serious injury for this stock is unknown, but assumed to be less than 10% of the calculated PBR and can be considered to be insignificant and approaching zero mortality and serious injury rate. This is not a strategic stock because average annual fishery-related mortality and serious injury has not exceeded PBR for the last two years.

REFERENCES

- Barlow, J., S. L. Swartz, T. C. Eagle, and P. R. Wade. 1995. U.S. marine mammal stock assessment: guidelines for preparation, background, and a summary of the 1995 assessments. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-6, National Marine Fisheries Service, Seattle, WA, 73 pp.
- Buckland, S. T., D. R. Anderson, K. P. Burnham, J. L. Laake, D. L. Borchers and L. Thomas. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, 432 pp.
- Fertl, D., T. A. Jefferson, I. B. Moreno, A. N. Zerbini and K. D. Mullin. 2003. Distribution of the Clymene dolphin *Stenella clymene*. *Mammal Review* 33(3):253-271.
- Jefferson, T. A. and B. E. Curry. 2003. *Stenella clymene*. *Mammalian Species* 726:1-5.
- Mullin, K. D. and G. L. Fulling. 2003. Abundance of cetaceans in the southern U.S. North Atlantic Ocean during summer 1998. *Fish. Bull.* 101:603-613.
- Mullin, K. D., T. A. Jefferson, and L. J. Hansen. 1994. Sightings of the clymene dolphin (*Stenella clymene*) in the Gulf of Mexico. *Mar. Mamm. Sci.* 10:464-470.
- Thomas, L., J. L. Laake, J. F. Derry, S. T. Buckland, D. L. Borchers, D. R. Anderson, K. P. Burnham, S. Strindberg, S. L. Hedley, F. F. C. Marques, J. H. Pollard and R. M. Fewster. 1998. Distance 3.5. Research Unit for Wildlife Population Assessment, University of St. Andrews, St. Andrews, UK.
- Wade, P. R. and R. P. Angliss. 1997. Guidelines for assessing marine mammal stocks: Report of the GAMMS workshop April 3-5, 1996, Seattle, Washington. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-12, National Marine Fisheries Service, Seattle, WA, 93pp.