

ROUGH-TOOTHED DOLPHIN (*Steno bredanensis*): American Samoa Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Rough-toothed dolphins are found throughout the world in tropical and warm-temperate waters (Perrin et al. 2009). Rough-toothed dolphins are common in the South Pacific from the Solomon Islands, where they were taken by dolphin hunters, to French Polynesia and the Marquesas (reviewed by Reeves et al 1999). Rough-toothed dolphins have been observed during summer and winter surveys around the American Samoan island of Tutuila (Johnston et al. 2008) and are thought to be common throughout the Samoan archipelago (Craig 2005). Rough-toothed dolphins were among the most commonly-sighted cetaceans during small boat surveys conducted from 2003 to 2006 around Tutuila, though not observed during a 2006 survey of Swain's Island and the Manu'a Group (Johnston et al. 2008). Photo-identification data collected during the surveys suggest the presence of a resident population of rough-toothed dolphins in the waters surrounding Tutuila (Johnston et al. 2008).

Approximately 1/3 of the individuals within the photo-id catalog were sighted in multiple years (Johnston et al. 2008). One rough-toothed dolphin was taken entangled near 40-fathom bank south of the islands by the American Samoa-based longline in 2008 (Oleson 2009), indicating some rough-toothed dolphins maintain a more pelagic distribution. Nothing is known about stock structure for this species in the South Pacific. For the Marine Mammal Protection Act (MMPA) stock assessment reports, there are two Pacific management stocks: 1) The Hawaiian Stock, which includes animals found within the U.S. EEZ of the Hawaiian Islands, and 2) the American Samoa Stock, which include animals inhabiting the EEZ waters around American Samoa (this report).

POPULATION SIZE

No abundance estimates are currently available for rough-toothed dolphins in U.S. EEZ waters of American Samoa; however, density estimates for rough-toothed dolphins in other tropical Pacific regions can provide a range of likely abundance estimates in this unsurveyed region. Published estimates of rough-toothed dolphins (animals per km²) in the Pacific are: 0.0035 (CV=0.45) for the U.S. EEZ of the Hawaiian Islands (Barlow 2006); 0.0017 (CV=0.63) for nearshore waters surrounding the main Hawaiian Islands (Mobley et al. 2000), 0.0076 (CV=0.32) and 0.0017 (CV=0.16) for the eastern tropical Pacific Ocean (Wade and Gerrodette 1993; Ferguson and Barlow 2003). Applying the lowest and highest of these density estimates to U.S. EEZ waters surrounding American Samoa (area size = 404,578 km²) yields a range of plausible abundance estimates of 692 – 3,115 rough-toothed dolphins.

Minimum Population Estimate

No minimum population estimate is currently available for waters surrounding American Samoa, but the rough-toothed dolphin density estimates from other tropical Pacific regions (Barlow 2003, Mobley et al. 2000, Wade and Gerrodette 1993, Ferguson and Barlow 2003, see above) can provide a range of likely values. The log-normal 20th percentiles of plausible abundance estimates for the American Samoa EEZ, based on the densities observed elsewhere, range from 426 – 2,731 rough-toothed dolphins.

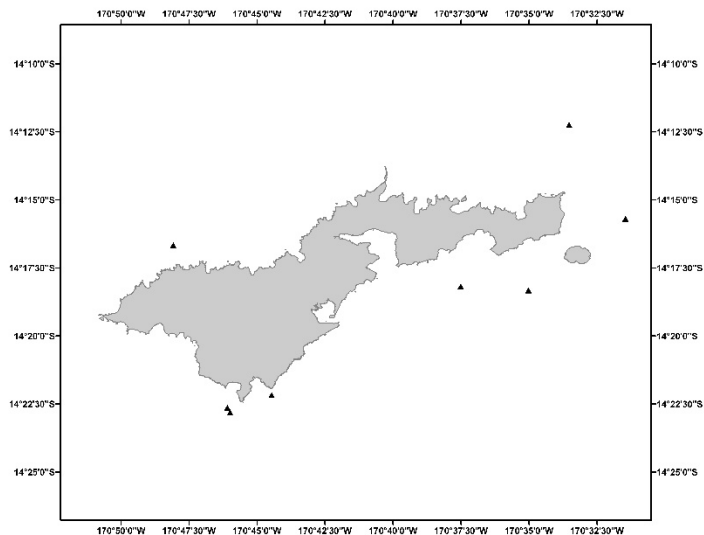


Figure 1. Rough-toothed dolphin sightings during cetacean sighting surveys around Tutuila, American Samoa, 2003-2006 (Johnston et al. 2008).

Current Population Trend

No data are available on current population trend.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate.

POTENTIAL BIOLOGICAL REMOVAL

No PBR can presently be calculated for rough-toothed dolphins within the American Samoa EEZ, but based on the range of plausible minimum abundance estimates (426 – 2,731), a recovery factor of 0.40 (for a species of unknown status with a fishery mortality and serious injury rate $CV > 0.50$ within the American Samoa EEZ; Wade and Angliss 1997), and the default growth rate ($\frac{1}{2}$ of 4%), the PBR would likely fall between 3.4 and 22 rough-toothed dolphins per year.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fishery Information

Information on fishery-related mortality of cetaceans in Hawaiian waters is limited, but the gear types used in American Samoan fisheries are responsible for marine mammal mortality and serious injury in other fisheries throughout U.S. waters. Gillnets appear to capture marine mammals wherever they are used, and float lines from lobster traps and longlines can be expected to occasionally entangle whales (Perrin et al. 1994). The primary fishery in American Samoa is the commercial pelagic longline fishery that targets tunas, which was introduced in 1995 (Levine and Allen 2009). In 2008, there were 28 federally permitted vessels within the longline fishery in American Samoa. The fishery has been monitored since March 2006 under a mandatory observer program, which records all interactions with protected species (Pacific Islands Regional Office 2009). One rough-toothed dolphin was seriously injured by the fishery in 2008 (Oleson 2009).

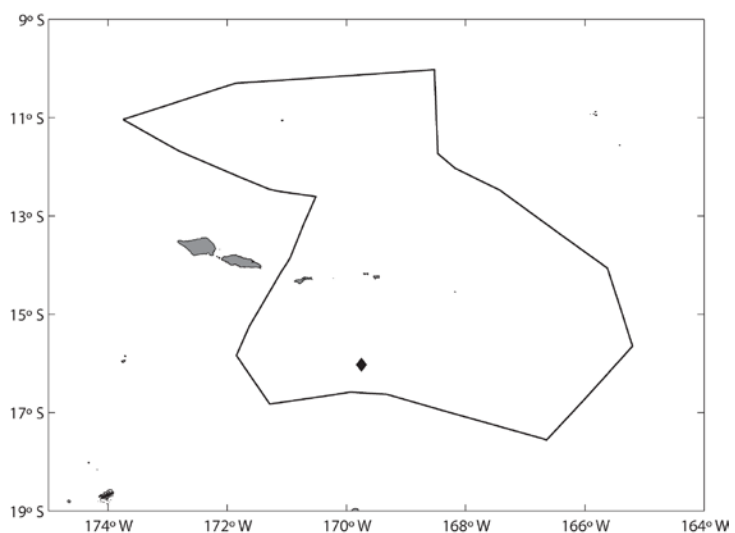


Figure 2. Locations of observed rough-toothed dolphin takes (filled diamonds) in the American Samoa longline fishery, 2006-2008. Solid lines represent the U.S. EEZ. Set locations in this fishery are summarized in Appendix 1.

Table 1. Summary of available information on incidental mortality and serious injury of rough-toothed dolphins (American Samoan stock) in commercial fisheries within the U.S. EEZ (Oleson 2009). Longline fishery take estimates represent only those trips with at least 10 sets/trip (Oleson 2009). Mean annual takes are based on 2006-2008 data unless otherwise indicated.

| Fishery Name | Year | Data Type | Percent Observer Coverage | Observed and estimated mortality and serious injury of rough-toothed dolphins in the American Samoa EEZ | | |
|---|------|---------------|---------------------------|---|----------------|------------------------|
| | | | | American Samoa EEZ | | |
| | | | | Obs. | Estimated (CV) | Mean Annual Takes (CV) |
| American Samoa-based longline fishery | 2006 | observer data | 9.0% | 0 | 0 (-) | 3.6 (0.6) |
| | 2007 | | 7.7% | 0 | 0 (-) | |
| | 2008 | | 8.5% | 1 | 10.9 (2.0) | |
| Minimum total annual takes within U.S. EEZ waters | | | | | | 3.6 (0.6) |

Prior to 1995, bottom fishing and trolling were the primary fisheries in American Samoa but they became less prominent after longlining was introduced (Levine and Allen 2009). Nearshore subsistence fisheries include spear fishing, rod and reel, collecting, gill netting, and throw netting (Craig 1993, Levine and Allen 2009). Information on fishery-related mortality of cetaceans in the nearshore fisheries is unknown, but the gear types used in American Samoan fisheries are responsible for marine mammal mortality and serious injury in other fisheries throughout U.S. waters. Gillnets appear to capture marine mammals wherever they are used. Although boat-based nearshore fisheries have been randomly monitored since 1991, by the American Samoa Department of Marine and Wildlife Sources (DMWR), no estimates of annual human-caused mortality and serious injury of cetaceans are available.

STATUS OF STOCK

The status of rough-toothed dolphins in American Samoan waters relative to OSP is unknown, and there are insufficient data to evaluate trends in abundance. No habitat issues are known to be of concern for this species. It is not listed as “threatened” or “endangered” under the Endangered Species Act (1973), nor as “depleted” under the MMPA. The status of the American Samoan stock of rough-toothed dolphins under the 1994 amendments to the MMPA cannot be determined at this time because no abundance estimates are available and PBR cannot be calculated. However, the estimated rate of fisheries-related mortality or serious injury within the American Samoa EEZ (3.6 animals per year) is between the range of likely PBRs (3.4 – 22) for this region. Insufficient information is available to determine whether the total fishery mortality and serious injury for rough-toothed dolphins is insignificant and approaching zero mortality and serious injury rate.

REFERENCES

- Barlow, J. 2006. Cetacean abundance in Hawaiian waters estimated from a summer/fall survey in 2002. *Marine Mammal Science* 22(2): 446-464.
- Craig, P., B. Ponwith, F. Aitaoto, and D. Hamm. 1993. The commercial, subsistence, and recreational fisheries of American Samoa – Fisheries of Hawaii and U.S. – associated Pacific Islands. *Marine Fisheries Review*, Spring.
- Ferguson, M. C. and J. Barlow. 2003. Addendum: Spatial distribution and density of cetaceans in the eastern tropical Pacific Ocean based on summer/fall research vessel surveys in 1986-96. Administrative Report LJ-01-04 (addendum), Southwest Fisheries Science Center, National Marine Fisheries Service, 8604 La Jolla Shores Drive, La Jolla, CA 92037.
- Johnston, D.W., J. Robbins, M.E. Chapla, D.K. Mattila, and K.R. Andrews. 2008. Diversity, habitat associations, and stock structure of odontocete cetaceans in the waters of American Samoa, 2003-2006. *Journal of Cetacean Research and Management* 10(1):59-66.
- Levine, A., and S. Allen. 2009. American Samoa as a fishing community. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-PIFSC-19, 74 p.
- Mobley, J.R., Jr., S.S. Spitz, K.A. Forney, R.A. Grotefendt, and P.H. Forestall. 2000. Distribution and abundance of odontocete species in Hawaiian waters: preliminary results of 1993-98 aerial surveys. Admin. Rep. LJ-00-14C. Southwest Fisheries Science Center, National Marine Fisheries Service, P.O. Box 271, La Jolla, CA 92038. 26 pp.
- Oleson, E.M. 2009. Characteristics of the American Samoa Longline Fishery and Estimates of Cetacean Take, 2006-2008. PSRG-2009-14.
- [Pacific Islands Regional Office. 2009. Pacific Islands Regional Observer Program American Samoa longline annual status report, January 1, 2008 – December 31, 2008.](#)
- Perrin, W.F., G. P. Donovan and J. Barlow. 1994. Gillnets and Cetaceans. Rep. Int. Whal. Commn., Special Issue 15, 629 pp.
- Perrin, W.F., B. Würsig and J.G.M. Thewissen. 2009. *Encyclopedia of Marine Mammals*. Second Edition. Academic Press, Amsterdam.
- Reeves, R.R.S., S. Leatherwood, G.S. Stone, and G. Eldridge. 1999. Marine mammals in the area served by the South Pacific Regional Environmental Planning Programme (SPREP). South Pacific Regional Environmental Programme and United Nations Environment Programme. 48pp.
- 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. 93 pp.
- Wade, P. R. and T. Gerrodette. 1993. Estimates of cetacean abundance and distribution in the eastern tropical Pacific. Rep. Int. Whal. Commn. 43:477-493.