

INTERNATIONAL DOLPHIN CONSERVATION PROGRAM

SCIENTIFIC ADVISORY BOARD

1ST MEETING

LIMA (PERU)
12 JUNE 2004

DOCUMENT SAB-01-05

**CALCULATION OF MINIMUM ABUNDANCE ESTIMATES AND STOCK
MORTALITY LIMITS**

1. ABUNDANCE OF DOLPHIN STOCKS

The U.S. National Marine Fisheries Service has conducted a series of abundance surveys for the cetaceans in the eastern Pacific Ocean, particularly for populations of spotted and spinner dolphins. The estimates of abundance generated from these surveys not only allow us to monitor trends over time, but the estimates also have comprised one component in the calculation of Stock Mortality Limits (SMLs) for the dolphin populations managed under the AIDCP. The current SMLs are based on average estimates from the 1986-1993 surveys (Wade and Gerrodette, 1993), although more recent estimates from 1998-2000 are now available (Gerrodette and Forcada, 2002).

The SAB could review the history of abundance estimates and investigate how estimates changed with different methods and authors, and review the current NMFS abundance calculations, particularly how environmental factors were integrated into the estimates and inter-annual variability. One question for the SAB is whether the NMFS 1998-2000 abundance estimates should be reviewed by a technical working group composed of line transect experts, as has been done by the IATTC previously (Allen, 2000).

Once the basic data have been reviewed, a further question is the calculation to be used. Because of the long time span of the estimates, a number of different time periods could be averaged to produce an estimate, and a number of different methods could be used to estimate the variance. For example, one could use just the most recent estimates from 1998-2000, or one could use the entire series. Gerrodette and Forcada (2002) found the linear increase in estimates during 1979-2000 not to be significant. Alternatively, the estimates from 1986-1990 could continue to be used.

The SAB (or a workshop of technical experts) could also discuss whether the existing tuna vessel observer marine mammal sightings data (TVOD) can be combined with the research vessel observer sightings data to achieve improved estimates of abundance, and what would be improvements in these data sources would be needed to more accurately estimate absolute abundance on an annual basis.

Literature Cited

- Allen, R. 2000. Chairman's Report. IATTC Scientific Working Group: Review of Dolphin Abundance Estimates. 19-20 October 2000. 9 pp.
- Gerrodette, T. and Forcada, J. 2002. Estimates of abundance of northeastern spotted, coastal spotted, and eastern spinner dolphins in the eastern tropical Pacific Ocean. SWFSC Administrative Report LJ-02-06. 41 pp.
- Wade, P.R., and Gerrodette, T. 1993. Estimates of cetacean abundance and distribution in the eastern tropical Pacific. Rep Int. Whal. Commn 43:477-493.