

INTERNATIONAL DOLPHIN CONSERVATION PROGRAM

SCIENTIFIC ADVISORY BOARD

5TH MEETING

CANCUN, MÉXICO

21 JUNE 2007

DOCUMENT SAB-05-03

WORK PLAN

The Scientific Advisory Board (SAB) reviewed its previous workplan at its 4th meeting in June 2006 in Busan, Korea. Revisions to the Plan made at that meeting are reflected in Appendix A, the current Work Plan to be reviewed at the fifth meeting of the SAB. The ongoing work being done in each topic is summarized below.

1. Prevalence and significance of cow-calf separation.

A paper by Noren and Edwards (2007) entitled “Physiological and behavioral development in delphinid calves: Implications for calf separation and mortality due to tuna purse-seine sets”¹ and another by Noren *et al.* (2006) entitled “Ontogeny of swim performance and mechanics in bottlenose dolphins (*Tursiops truncatus*)”² were published. A more general but related paper by Weihs *et al.* (2006) entitled “Aerodynamic interactions between adjacent slender bodies” was also published³. The U.S. National Marine Fisheries Service (NMFS) is continuing its analyses of the spatial relationship between mothers and new-born calves, and on the potential energetic costs to a mother of swimming in close association with a calf.

2. Life history and fishery-related stress effects studies.

Funding has not yet been obtained to collect new samples from dolphins taken in the fishery. However, using archived samples, two papers on common dolphin life history were published by Danil and Chivers (2006; 2007) entitled “Habitat-based spatial and temporal variability in life history characteristics of female common dolphins *Delphinus delphis* in the eastern tropical Pacific”⁴ and “Growth and reproduction of female short-beaked common dolphins, *Delphinus delphis*, in the eastern tropical Pacific”⁵ were published. NMFS is also researching fetal mortality in dolphins associated with the tuna purse-seine fishery. NMFS has developed a method to diagnose pregnancy status of ETP dolphins from the blubber attached to most skin biopsy samples; this information is being used to estimate pregnancy rates for these dolphin stocks. The IATTC staff has completed a multi-year effort to computerize all its historical data recorded by observers on the Dolphin Life History forms.

3. Review of currently available estimates of abundance for dolphin stocks.

The SAB considered a recommendation at its 4th meeting from the Technical Workshop on a calculation for N_{min} using the most recent population estimates for the abundance of dolphin stocks.⁶ The SAB agreed that the population model used by the Technical Workshop was appropriate, but that it was premature to recommend the adoption of the calculation proposed by the Technical Workshop as the calculation standard for N_{min} .

NMFS conducted a cruise in 2006 to obtain data for new estimates of abundance for dolphin populations,

¹ Marine Mammal Science 23(1):15-29.

² Journal of Experimental Biology 209:4724-4731. <http://jeb.biologists.org/cgi/content/full/209/23/4724>

³ AIAA Journal 44(3):481-484.

⁴ Marine Ecology Progress Series 318:277-286. <http://www.int-res.com/articles/meps2006/318/m318p277.pdf>

⁵ Canadian Journal of Zoology 85:108-121. <http://article.pubs.nrc-cnrc.gc.ca/ppv/RPViewDoc?handler=HandleInitialGet&journal=cjz&volume=85&calyLang=eng&articleFile=z06-188.pdf>

⁶ <http://www.iatcc.org/PDFFiles2/Nmin-Workshop-Report-Aug-2005.pdf>

particularly for the northeastern spotted and eastern spinner dolphins, and to sample the ecosystem. Abundance estimates from the cruise should be completed in 2007. The NMFS is also planning a cruise in 2007 to test line-transect assumptions.

4. Stock assessment of coastal spotted dolphins.

An AIDCP-sponsored coastal ecosystem survey was planned for 2007, but was postponed due to lack of funding. The U.S. plans to work closely with the AIDCP Parties to coordinate this cruise for a future year.

5. Ecosystem effects.

The NMFS and IATTC are currently working on multi-species population models that incorporate ecosystem data. The IATTC, NMFS, and University of Hawaii are collaborating in a study of the tuna-dolphin association using tracking, food habits and observer and environmental data. NMFS is investigating the biological effects of the late 1970s climate shift on larval fish assemblages and apex predator (seabird) diet. Net tow samples collected in the late 1960s (EASTROPAC cruises) and museum specimens collected prior to the climate shift will be compared with samples collected during the MOPS and STAR cruises. Funding for re-identification of the historical net samples has not yet been secured.

6. Mortality estimates.

The IATTC staff has been developing a data screening procedure to identify unusual observer data, particularly as regards dolphin mortality. This procedure, which is intended to supplement other procedures already in place to evaluate data quality, has been applied to data from observers of the IATTC and, on a voluntary basis, of national programs (see Document SAB-05-04). A paper that provides details of the statistical methodology used in this work has been published.⁷ Work is ongoing on the development of methods for revising reported mortalities in sets that were identified as having potentially unusual data. IATTC and NMFS staffs have been working to implement the NMFS-funded additional sampling program that monitors the unloadings of purse-seine vessels of less than 363 t fish-carrying capacity. Over a year's worth of data have been collected to date, although not all vessels have agreed to participate in the program. The IATTC staff has completed a preliminary analysis of these unloadings data. Assuming that the fishing dynamics of large vessels are similar to those of small vessels, this analysis demonstrates the feasibility of using yellowfin length-frequency data and other information to identify unusual samples from small vessels. A report on the progress of this sampling program, and an analysis of the length-frequency data obtained, is currently being prepared.

7. Population modeling.

The NMFS staff is revising and updating previous analyses on dolphin population trends.

8. Development in gear technology and fishing techniques to improve dolphin release.

The Mexican tuna-dolphin program in Ensenada has been conducting research on *alergones* (net panels) to improve the backdown procedure.

9. Capture of mature tuna not in association with dolphins.

The Spanish Institute of Oceanography has been conducting studies to detect tunas acoustically to reduce the catches of juvenile yellowfin and bigeye tunas⁸, and such techniques could be used to detect large yellowfin tuna not in association with dolphins. An archival-tag tracking study of yellowfin tuna by Schaefer *et al.* (in press) provided information on horizontal and vertical movements that can shed light on this question. See also the tuna-dolphin tracking study described in *Ecosystem effects*.

⁷ Lennert-Cody, C.E. and Berk, R.A. 2007. Statistical learning procedure for monitoring regulatory compliance: an application to fisheries data. *Journal of the Royal Statistical Society Series A* Vol. 170 Issue 3:1-19.

⁸ <http://www.iattc.org/PDFFiles2/SAR-8-12j-Acoustic-Selectivity-in-Tropical-Tuna.pdf>

Appendix A. SAB Work Plan for 5th Meeting, June 2007.

Research Topics	Proposed Studies	SAB Recommendations
1. Prevalence and significance of cow-calf separation.	A) Aerial photogrammetry B) At-sea observations C) Spatial distribution of chase time	A-C) Conduct research to discover evidence of cow-calf separation during chase.
2. Life history and fishery-related stress effects studies.	A) Life history studies 1) Reproductive parameters/ vital rates 2) Food habits 3) Trophic interactions B) Stress effects 1) Necropsy studies	A-B) Resume sampling program to conduct studies on these topics.
3. Review of currently available estimates of abundance for dolphin stocks.	A) Review current abundance estimates	A) Review 2006 survey estimates.
4. Stock assessment of coastal spotted dolphins	A) Genetics and taxonomy research B) Historical mortality, abundance, and status of any new stocks.	A-B) Maintain on Work Plan.
5. Ecosystem effects.	A) Trends in other EPO cetaceans B) Predator-prey models C) Effect of large-scale changes in 1970s D) Carrying capacity and R_{max} for dolphins	A-D) Maintain on Work Plan.
6. Mortality estimates.	A) Historical mortality estimates. B) Potential unobserved sources of mortality 1) Comparison of observer programs 2) Class-5 vessels 3) Other fisheries.	A) Review historical estimates B) Monitor ongoing comparisons for IRP ⁹ and maintain on Work Plan.
7. Population modeling	A) Model effects of unobserved mortality B) Other population models	A) Expand NMFS simulation studies to prioritize research. B) Maintain on Work Plan
8. Development in gear technology and fishing techniques to improve dolphin release.	A) Net panels B) Net profilers	A-B) Widen studies, particularly for rescue craft and net profilers
9. Capture of mature tuna not in association with dolphins.	A) Simultaneous tracking of dolphins and tuna	A) Maintain on Work Plan

⁹ Pending consultation with the Parties regarding confidentiality issues.