

INTERNATIONAL DOLPHIN CONSERVATION PROGRAM

INTERNATIONAL REVIEW PANEL

33RD MEETING

ANTIGUA (GUATEMALA)

18-19 JUNE 2003

DOCUMENT IRP-33-11b

CONSIDERATIONS FOR INSTITUTING DOLPHIN SPECIMEN COLLECTION BY OBSERVERS

Sampling of dolphin and tuna tissues has been conducted by observers of the IATTC and national programs at various times since the 1970s. For dolphins, teeth and reproductive organs have been collected to estimate the age and reproductive status of the animals and to study their life history and detect trends in the populations. Stomach contents have been studied to determine the feeding habits of the dolphins and to compare them with tunas. Most recently, a necropsy program was conducted to determine whether stress-related mortality was occurring due to the fishery. A three-year project, funded by the Pelagic Fisheries Research Program, University of Hawaii, is being initiated in 2003 to compare broad-scale trophic structure patterns in the eastern, central, and western Pacific. IATTC observers will take stomach samples from dolphins for diet analysis and muscle and liver samples from dolphins for measurements of stable carbon and nitrogen isotopes.

Biological samples taken by observers from dolphins could address some of the important unanswered questions about stress, dolphin biology, and population trends.

1. SCOPE OF THE SAMPLING PROGRAM

The scope of the program should be determined on the level of funding available, opportunity costs in terms of observer time, and on discussions about the following issues.

1) What research questions should be addressed, and what samples and sample sizes are required for these studies? Trends in vital rates (*i.e.*, birth rates, age at sexual maturity, age-specific survivorship) are key indicators of the status of the populations. At a minimum, teeth and gonads should be collected, along with the sex and length data currently collected on the observer's *Dolphin Life History Form*, because age and reproductive status are basic information required for many population studies. Additionally, stomach contents can also be collected to potentially provide information on ecosystem-level changes in trophic interactions, insight into population status in relation to carrying capacity, and environmental changes. The pathological samples that were most recently collected under the U.S. necropsy program were used to examine the causes of fishery mortality and the general health of the population.

Once a sampling program is initiated, regardless of the research project, significant additional resources are required. Observers must be trained in dissection and tissue-preservation techniques, the use and care of equipment, equipment and preservatives must be purchased, incentive bonuses may need to be paid, storage facilities on land be acquired, shipment to a research laboratory be arranged, and laboratory analyses be conducted.

Equally important is the additional time and effort required of observers, who already have numerous data collection responsibilities during and immediately after a set. As well as considering their existing duties, the Panel should consider whether additional work relating to dolphins is the best use of observer time. The AIDCP has the objective of sustainability of marine resources related to this fishery, taking into consideration the interrelationship among species in the ecosystem. Compared to other species, there is already a lot of information available about dolphins.

An additional full-time scientist or technician (\$45,000-\$55,000) would be required to coordinate the pro-

ject. Costs for training sessions, equipment, storage, and shipping will depend upon the scope of the project. For example, the U.S. National Marine Fisheries Service (NMFS) spent about \$350,000 over three years to place necropsy technicians on vessels and to process dolphins for its Necropsy Program; the expenses were relatively high due to the specialized training and equipment and analyses required. In 1992-1993, the IATTC spent about \$120,000 for observers to collect over 9,300 stomachs of tunas, dolphins, sharks, and other large marine predators during an 18-month period; the sampling procedures were relatively simple, the equipment required relatively inexpensive, and the analyses were conducted by IATTC staff. In terms of observer time, processing one dolphin for basic life history data (age and reproductive status) requires approximately 10-15 minutes, food habits and tissue isotope data an additional 5-10 minutes, and the detailed necropsy workup (stress-related and natural pathology) an additional 40 minutes.

2) Which agency or agencies will process and analyze the samples and interpret and publish the results? In some cases, the IATTC has conducted its own studies, with funding and collaboration from other countries. For example, the food habits study was supervised by IATTC scientists, funded by the U.S. government, and partly conducted by Mexican and Venezuelan scientists contracted by the IATTC to do the laboratory analyses. In other studies, NMFS was the principal investigating agency, with collaboration by the IATTC. For example, life history samples were collected by both NMFS and IATTC observers, with funding provided by NMFS and analyses conducted by NMFS scientists. The necropsy program was funded by NMFS, with samples collected, stored, and shipped by IATTC and Mexican observers and field office personnel, and analyzed by independent researchers contracted by NMFS.

Many options are available for choosing how these studies are conducted and which agency is responsible for leading the effort. There are considerations of data confidentiality which are easiest met if the analysis is carried out by the IATTC staff or if samples from each national fleet are analyzed by the corresponding national research agencies. The IATTC staff, however, does not necessarily have the expertise to conduct all of these analyses on its own, and it currently does not have funding to do so. Some options include:

- a) The IATTC staff could conduct all of the studies, with additional staff hired or outside laboratories contracted as necessary.
- b) Agencies from individual countries, alone or in concert, could conduct the research, with the IATTC collaborating through observer sampling, logistical support of its field offices, and provision of data.
- c) The studies could be conducted under the auspices of the IATTC, with research conducted by IATTC staff and by scientists temporarily seconded to the IATTC by agencies of countries interested in participating in the research.

These studies require specialized scientific expertise and laboratory facilities. The location of the participating laboratories will influence costs and permit issues. The permitting process can be complex and time-consuming. Under the Convention on International Trade in Endangered Species of Wild Flora and Fauna, a permit is required to transport dolphin samples from one country to another; this in turn requires an export and an import permit from the countries involved. National legislation may mandate other permits to be obtained, or may restrict the ability to bring samples back from sea. Typically, conducting analyses within the country on whose vessels the samples were collected is a simpler option from the perspective of obtaining permits.

3) Will the sampling program include any of the national observer programs, or just the IATTC program? The collaboration of the national programs will increase sample sizes, but will make coordination of the program more complex.

4) What will be the priority level of sampling studies relative to the other observer duties? Typically, biological sampling has a relatively low priority compared to other basic tasks, such as recording dolphin mortality, describing fishing operations, estimating catch and discards of tunas and bycatches of other species, and recording the storage location of dolphin-safe tuna, but a higher priority than the continuous

recording the daily activity of the vessel. In the necropsy program, the observers were paid bonuses as an incentive to obtain as many samples as possible, but even so were able to sample only about half of the dolphins that died during those trips due to conflicts with higher-priority duties or fishing operations, or inability to recover carcasses.

2. PROPOSED PROGRAM STEPS

1. Initiate process in cooperating countries for obtaining the necessary permits. Prepare written sampling protocols and arrange for cooperation from industry groups/vessel managers.
2. Ask observers to bring back dead dolphins in the wells or freezer when they are returning to a port with an IATTC field office so that observers can be trained in sampling techniques.
3. Arrange for freezer and storage space to accommodate frozen specimens in field offices.
4. Buy collection gear and preservatives, and distribute to field offices.
5. Conduct training sessions of observers. Cost and length of sessions will depend on whether sampling will be basic (teeth, gonads, and stomachs) or necropsy (basic plus pathology samples).
6. Publicize the research to the fishing industry, as it is vital to obtain cooperation from the fishermen. The fishermen's assistance is needed in getting dead dolphins on deck, providing deck space for sampling and freezer or well space for storage, and off-loading the frozen carcasses.
7. Include in the observer's debriefing procedures the proper storage of well-labeled specimens, review of *Dolphin Life History* forms and reconciling them with other data forms.
8. Arrange for secure shipment of the samples from field offices to laboratories for processing.
9. Conduct laboratory analyses and report results.