U.S. Proposed Plan for 1980

Cooperative Japan-U.S. Research

on Dall's Porpoise in the North Pacific

Submitted to the

International North Pacific Fisheries Commission

by the

U.S. Section

1 February 1980

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The objectives of the Japan-U.S. cooperative research program mandated by the INPFC Convention of 1952 as renegotiated in 1978 are to determine the effect of the Japanese salmon fisheries on marine mammal populations and to reduce or eliminate the incidental take of marine mammals in the fisheries. The data needed to formulate an appropriate management regime are:

1) accurate incidental take data, including previous data;
2) distribution and migration patterns, abundance, identity and discreteness of stocks;
3) life history data including recruitment and natural mortality rates;
4) behavior of marine mammals in relation to gillnets and vessels;
5) ecological relationships between salmon and marine mammals;
6) information on fishing operations and gear; and
7) details of entanglements including environmental conditions and catcherboat deployment patterns.

The platforms for obtaining these data are Japanese motherships, scout boats, catcherboats, salmon research vessels, including the dedicated vessel, and U.S. Platforms of Opportunity Program vessels.

Research Plan

Research proposed for the third year will continue primarily as developed in the previous two years. The following studies, initiated in 1979, will be continued: interactions between salmon and marine mammals, interactions between marine mammals and the fishing gear and vessels, and biological studies of the northern fur seal. During the 1980 field season
emphasis will be placed on obtaining information on the fishery grounds during the fishing season.

Aboard Japanese Motherships.

1. Incidental take data. As in previous years, the Government of Japan (GOJ) is responsible for reporting the incidental take of all marine mammals caught in salmon gillnets (both land-based and mothership fisheries), including those not returned to the mothership by the catcher and scout boats. The U.S. scientists desire additional information on animals taken in the gill nets and propose modification of the form used to report marine mammal take. The modified form includes additional data on reasons the animals are not returned, direction of the gillnet set, sea water temperature, sea condition, approximate size of animal not returned, location of the animal in the net, and swell and wind direction (see attached form).

2. Biological studies. All porpoise captured in the salmon gillnets will be returned to the motherships for examination. The samples and information to be collected are length (to nearest cm), weight (to nearest kg), reproductive tract, stomach (from a limited number of animals), teeth, fetus (if present), liver, muscle, adrenal glands, parasites, sex, standard morphological measurements, date and location of capture. Photographs of each animal will be taken.

The GOJ will provide work space and freezer space aboard each mothership and personnel to assist in handling the animals and collection of the biological samples.
|--------|--------------------|-------------------|--------------------|----------|-----------------|-------------------|----------------|----------|

*Codes for marine mammals (If more than one marine mammal is caught, give number of animals).
P.D. = Dall's porpoise
P.p. = Harbor porpoise
C.u. = Northern fur seal
U.P. = Unidentified pinniped (seal)
U.D. = Unidentified dolphin/porpoise
<table>
<thead>
<tr>
<th>Direction of Wind - Swell</th>
<th>Marine Mammals in net*</th>
<th>Reasons animal not returned:</th>
<th>Other Animals</th>
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<td>Rough Animal Broke</td>
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<td>Weather Out of Net</td>
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<td>bring aboard released</td>
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*Note: The table structure and content seem to be incomplete or missing data. Please provide the correct data to fill in the table.
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<tr>
<td>Too large to bring aboard alive</td>
<td>Released</td>
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Other Animals
In 1979, porpoise taken prior to the embarkation of U.S. scientists were frozen for subsequent examination by the scientists. A maximum of ten porpoise were frozen and we request this procedure be followed again this season. In addition, we request that if more than ten marine mammals are taken prior to the arrival of the U.S. scientists, each of the excess animals be weighed and this information be included on the marine mammal incidental take form (attachment).

During periods when not in U.S. zone during the season and U.S. scientists are not aboard, the following information and samples will be collected from each animal: date and location of capture, length, weight, reproductive organs, stomach, teeth, fetus (if present), blubber, and liver samples. U.S. scientists will instruct a Japanese national aboard each mothership in the collection procedures to ensure that samples are collected uniformly. All samples will be consolidated for shipment to the U.S. at the end of the fishing season.

U.S. scientists will continue analysis of morphological data, tissue samples, catch distribution and osteological material for determination of stock identities and discreteness.

3. Fishing operations and entanglement studies. The U.S. proposes to obtain data on the deployment configuration of all catcherboats and on the environmental conditions for each set. These studies will provide information on the relationship between the deployment patterns, under different conditions, and marine mammal entanglements.

The U.S. proposes to continue placing U.S. scientists aboard Japanese catcherboats throughout the fishing season and area to observe the marine mammal entanglements and the associated biological and environmental factors. The U.S. scientists will record environmental conditions, set direction and duration, position of entangled animal in the net and estimate the
size of the animals lost from the nets during retrieval. Behavior of marine mammals in relation to fishing gear and vessels will also be recorded. During transits of the catcherboat, marine mammal sighting surveys will be conducted to estimate the abundance of marine mammals on the fishing grounds during the fishing season.

If possible without interfering with the gillnet operations, the scientists will systematically untangle the animals to learn how animals become entangled. If possible, the scientists will record the configuration of the net prior to retrieving it to determine whether the net configuration has an effect on entanglement, i.e., whether the formation of large pockets in the net are in part responsible for entanglement. It is important for scientists to work with the fishing fleet in order to develop an understanding of the factors involved in entanglements and methods which may help to reduce or eliminate the mortality.

Aboard Japanese Research Vessels.

The studies aboard Japanese research vessels will continue as in the previous two years and as described in the INPFC Memorandum of Understanding. Briefly, the elements are:

1. GOJ submission of incidental catch data from all classes of research vessels.


4. Collection of data from incidentally taken marine mammals.

U.S. scientists will continue studies of marine mammal behavior near vessels and gillnets to learn how animals become entangled. These studies will also aid in the development of improved mathematical models for the estimation of abundance of Dall's porpoise. Because these animals are often attracted to vessels, present models may overestimate population size.

**Dedicated Research Vessel.**

The objectives of the proposed studies aboard the Japanese dedicated vessel are to:

1. obtain information on the movements and migration of Dall's porpoise by emplacing plastic tags on individual animals;

2. obtain information on marine mammal entanglements on the fishing grounds during the fishing season;

3. obtain information on marine mammal abundance on the fishing grounds.

4. work with the mothership fleets, acting as a "catcherboat" to obtain information on environmental conditions, and biological factors that are associated with entanglement, using commercial fishing gear (121-130 mm mesh, 330 tans gillnet); and

5. obtain information on marine mammal behavior in relation to fishing operations and vessels.

The U.S. scientists have applied for a permit under the U.S. Marine Mammal Protection Act of 1972 to tag up to 300 Dall's porpoise with modified "spaghetti" tags. We propose to use the dedicated vessel as the
platform for tagging. The tags will be applied to animals with a
crossbow or long pole as they ride the bow wave of the vessel. Tagging
would be initiated approximately 2-3 weeks before the opening of the
fishing season (about mid-May) and continue until a maximum of 300
porpoise are tagged. Tagging would be done principally on the fishing
grounds.

The tagged animals will provide information on movements of the
animals, including distance traveled and rate of movement, possible
migration routes, the frequency of resighting of individuals or groups
of animals, coherency of groups and may provide an estimate of abundance
of Dall's porpoise on the fishing grounds during the fishing season.
Information on movement between the northwestern Pacific and Bering
Sea would also be obtained and could provide insight into whether
separate stocks exist in these two areas.

Tags will be recovered from entangled animals returned to the
mothership by the catcherboats. It is important that all tags obtained
be brought to the mothership and, in cases where an animal cannot be
returned, that the tag be reported, including tag number and color,
if possible. We propose that catcherboats and scout boats report all
sightings of tagged animals, including date and location of sighting
(longitude and latitude), number of tagged animals, color of tag, and
if possible, number of tag and total number of animals sighted with the
tagged animal.

U.S. scientists will collect samples of other organisms associated
with the gillnets for ongoing ecological studies. These data will
provide information on factors that may be associated with entanglement,
such as prey abundance. Sampling will include vertical plankton tows,
neuston tows, fish trawls, and environmental data.
Studies concerning how the animals become entangled will be conducted aboard the dedicated vessel again this year. We propose to use the dedicated vessel as a catcherboat working with the mothership fleet, using the same gear as used by the commercial boats. During the setting of the net, environmental conditions, presence of marine mammals and direction of set will be recorded. Prior to retrieval of the net, as conditions permit, we propose to again conduct a "net patrol", surveying the condition of the net, noting marine mammal entanglements and recording number and behavior of marine mammals in the vicinity. Any entangled marine animals will be systematically untangled to analyze the process of entanglement. For each gillnet set, the following information will be recorded: water temperature and visibility (Secchi disk depth), direction and height of sea swell, sea state, wind direction and speed, weather condition, number and behavior of marine mammals.

Marine mammal sighting surveys will be conducted on the fishing grounds, with special attention given to resighting of tagged animals.

Northern Fur Seal

Studies of northern fur seals initiated in 1979 will be continued. Information and biological data will be collected from northern fur seals incidentally taken by research vessels. The information to be collected is as follows:

From live fur seals (to be released unharmed): date and location of capture, number of fur seals, whisker color and sex.

From dead fur seals: date and location of capture, length, weight, all canine teeth, stomach, and female reproductive tract.
Land-based Fishery

In 1978, a total incidental take of 303 Dall's porpoise by the land-based fishery was reported by the GOJ. No biological samples or information were collected from these animals. Little information is available concerning the animals in this region. For a reliable evaluation of the effect of the high seas salmon fishery on porpoise populations we must determine whether the porpoise in the area fished by the land-based fishery are a separate population, or are the same population taken by the high seas fishery. We wish to discuss the possibility of collecting the following samples from porpoise taken in the land-based fishery gillnets: date and location, reproductive tract, liver, muscle and blubber sample, teeth, stomach, weight and length. Presence of a fetus and sex of the adult should be noted. A drawing of the color pattern would be very helpful. Any tags recovered from animals should be returned to U.S. scientists with data on date and location of capture, weight and sex of animal. Tag returns from this area will be particularly important since so little information is available on migratory behavior.