

SC/44/SHB14

The 1992/93
Research Plan of whale Resources
in
the Antarctic

The Government of Japan

June, 1992

INTRODUCTION

Japan implemented the feasibility studies in two successive years in 1987/88 and 1988/89 on the basis of the plan revised from "Program for the Research on the Southern Hemisphere Minke Whale and for the Preliminary Research on the Marine Ecosystem in the Antarctic" submitted to the IWC in 1987. After the feasibility studies conducted for two years, Japan commenced the research program in Area IV in 1989/90 and 1991/92, and in Area V in 1990/91.

The research for 1992/93 is the fourth year of the program with no major changes from the long-term program made in 1987 (which was amended in 1989).

The research plan for 1992/93, as clearly described in the objectives of the plan, aims at the estimation of biological parameters necessary for the management of minke whale stocks in the Antarctic, and the ascertainment of the role of the whales in the marine ecosystem in the Antarctic. In particular, through continuous monitoring by the research over a long period, it aims at the collection of information relating to the stock size, segregation by sex and age, natality, mortality and the change in stock size, which are indispensable for the management of the Antarctic minke whale stocks.

The research is expected to improve the knowledge useful for practical solutions on the various problems associated with the utilization of the whale resources arising from uncertainties of the existing biological knowledge.

The research will be conducted based on the results of reconsideration in this season in a manner similar to that taken in the previous season.

OBJECTIVES

No change from the initial plan.

1. Estimation of the Biological Parameters Required for the Stock Management of the Southern Hemisphere Minke Whale

The primary objective of the program is to estimate the age-specific natural mortality rate by samples through stochastic sampling carried out in combination with systematic sighting surveys. The program is also designed to estimate the stock size and its changes, including the monitoring of the recruitment, required for stock management, and the reproductive parameters and their changes based on the same samples.

2. Elucidation of the Role of Whales in the Antarctic Marine Ecosystem

The program includes, as its another objective, the elucidation of the roles of whales in the Antarctic marine ecosystem. The most important component for this objective is the collection and analysis of data on the prey-predator relationships among krills, fishes, squids and whales.

The description above has been based on the original research plan (SC/39/04) with some amendment made in the research plan in 1989/90 season (SC/41/SHMi13). It is the same with the description made in the communication to the IWC from the Government of Japan in October 1989 for circulation, entitled 'Japanese response and reconsideration on Japanese scientific research proposal for special permits.'

RECONSIDERATION OF THE RESEARCH PLAN

The research plan for 1991/92 was presented to the IWC/SC last year (SC/43/Mi19), on which comments were received from the members. At the 43rd Annual Meeting of the IWC, a resolution on reconsideration of the research plan (IWC/43/35) was adopted.

In light of the views expressed by some members of the SC and the resolution, Japan introduced certain modifications to the performance of the programme. The result of the reconsideration was circulated from the IWC as the Circular Communication RG/JAC/23165 to the contracting governments and members of the SC. The following is the summary of the results of reconsideration:

Reassessment of Research Objectives

The estimation of age-specific natural mortality is one of the major long-term objectives of the Japanese research program. However, for the time being the research will focus on the estimation of average natural mortality. The estimation of recruitment is also an important objective of the research, since this value, combined with natural mortality rate, will enable estimation of the net recruitment rate. The estimation of net recruitment thus obtained will contribute to the rationalization of stock management. The usefulness of the data collected through the preceding years of research already gained recognition by the SC. The analyses of the data for this area of studies merits further encouragement as they are highly contributive to our knowledge of the Antarctic ecosystem.

Reassessment of Sample Size

In pursuit of the estimation of average natural mortality, it is calculated theoretically that a sample size of between 200 and 400 will attain the level of precision similar to that estimated previously. In reality, however, allowances are needed for some factors affecting the sampling and the data analysis. Minke whales are known to segregate by sex and age at different times and in different waters. A research area in which samples are to be collected must be stratified, and a certain number of samples must be taken per stratum in order to obtain necessary biological and ecological information. Furthermore, sample collection must be as extensive as possible in terms of both space and time. In addition, the rate of readability of the age also requires reasonable allowance in the sample size. Taking these factors into account, it is not considered necessary to change the sample size from the $300 \pm 10\%$ proposed to the SC this year (SC/43/M19), while the number of samples to be taken per stratum will be carefully considered, and efforts will be further continued to improve age readability.

Improvement of Sighting Survey

Regarding the trade-off between sighting and sampling, an

attempt will be made to enhance the precision of the estimation of abundance by increasing sighting effort. In 1991/92, one of the three sampling vessels will be assigned exclusively to sighting in the southern sub-area where minke whale density is high. The total sighting distance will be increased by 40%, and the accuracy will increase by 15% in terms of CV compared with that in 1989/90. Sighting effort will be increased by minimizing the steaming without surveying on the predetermined track-line.

Japan carried out the research in Area IV in 1991/92 season based on the above modification. The research in 1992/93 will be conducted with the same manner as the previous season.

NUMBER, SEX, SIZE AND STOCK OF THE ANIMALS TO BE TAKEN

No change from the previous plan except the sampling area.

Three hundred (300) minke whales with allowance $\pm 10\%$, the same as in the proposal of the last year, will be sampled. Samples are to be collected without predetermination of sexes. Samplings are to be made in Area V.

OPPORTUNITIES FOR PARTICIPATION IN THE RESEARCH BY SCIENTISTS OF OTHER NATIONS

No change from the previous plan.

Opportunities for participation in the research by foreign scientists are available as described in the research proposal presented to the IWC in the previous years. The followings are the particulars for participation by foreign scientists:

Opportunities for participation by Foreign Scientists

Opportunities for participation in the research under this program will be given to any scientists to the extent allowed by accommodation and other logistic consideration, provided that such participation does not cause inconveniences in the implementation of the program. The selection of the participants are to be finalized by the Whale Research Coordinating Committee, which

will consider the various conditions such as accommodation and others for determination.

Conditions for Participation

1. Costs

Costs for participation, such as travel expenses to and from the port of embarking on and disembarking from the research vessel, meals on board the research vessel, and any special instruments required by the participant are to be borne by the participant.

2. Indemnification and insurance for casualty or personal injury on board the research vessels

The Institute of Cetacean Research and the crew of the research vessel or research team will not be able to take responsibility for any casualty or personal injury that might be inflicted upon the foreign participants resulting from their negligence or force majeure.

3. Cancellation of the participation

Any participants who are found to have intentionally sabotaged in the course of implementation of the researches and thereby impaired the execution of such researches shall be canceled of their participation in this program.

POSSIBLE EFFECT ON CONSERVATION OF THE STOCK

The IWC Scientific Committee at its 42nd Annual Meeting agreed in the course of Comprehensive Assessment of the stocks that the estimated stock size of the minke whales in Area V was 294,610 (IWC/42/4;p.13). At the same meeting, a conservative interim catch limit of 1,746 for Area V was calculated by the Scientific Committee (IWC/42/4;p.18). As the research in Area V is conducted in every other year, the proposed sample size of 300 to be taken in Area V for 1992/93 would be synonymous to the catch of 150 per year on the basis of the average take over the two years. It is clear that the take of this sample size would not affect the conservation of the stock in any way.

OUTLINE OF THE 1992/93 SURVEY

Number of vessels

One factory ship (research base),
Three sighting-sampling vessels, and
Two sighting vessels*.

Survey period

From November 1992 to April 1993.

Survey area

Area V including all region of the Ross Sea.

Stratification of the research area and research

Cruise-tracks are same as in the surveys in the previous years.

Sighting survey

One of the three sighting-sampling vessels is assigned exclusively to sighting in Southern sub-areas.

Samples/data to be collected

1. Sighting data (including other whale species than minke whales)
2. Biological samples/data
Stock identity, age, maturity, breeding, nutrition, distribution of heavy metal, hormone, parasites and others.
3. Weather, oceanography, and environment
Environmental factors such as weather, sea ice, water temperature, marine debris.

* These two vessels are used for this program after the end of IDCR survey. The area for sighting survey by the Japanese research program will be determined following the finalization of the IDCR cruise plan for 1992/93 season.

4. Biopsy and satellite telemetry (as feasibility studies)

Shooting test for attachment of the satellite telemetry transmitter to the whale body is planned on the shipboard.