

Annex O

Report of the Working Group on Scientific Permits

Members: An, Baba, Bass, Børge, Borodin, Butterworth, Childerhouse, Chilvers, Clapham, Corkeron, Deimer-Schuette, DeMaster, Donovan, Ettyne, Fortuna, Fujise, Funahashi, Gales, Gallego, Galletti, Gedamke, Goodman, Goto, Gunnlaugsson, Hakamada, Hatanaka, Hayashi, Hester, Hyugaji, Ilyashenko, Iñíguez, Ipatova, Ivashchenko, Jackson, Kasuya, Kato, Kawahara, Kell, Lawrence, Leaper, Lens, Litovka, Lovell, Lyrholm, Magloire, Mate, Miasnikov, Mikhno, Miller, Miyashita, Morishita, Murase, Nakamura, Newell, Nishiwaki, Northridge, Ohsumi, Øien, Okada, Okamura, Ottoy, Parsons, Pastene, Podesta, Polacheck, Rambally, Rea, Rebecca, Reijnders, Rogan, Rojas-Bracho, Rose, Rosenbaum, Shimada, Simmonds, Stachowitsch, Strbenac, Tamura, Tichotsky, Van Waerebeek, Víkingsson, Wade, Walløe, Weinrich, Williams, Yamakage, Yasokawa, Yoshida, Young, Zelensky.

1. CONVENOR'S OPENING REMARKS

The Chair noted that at last year's meeting of the Standing Working Group (SWG) it was agreed by the Scientific Committee that (1) the process for reviewing the special permits is less than satisfactory and (2) the approach reported in DeMaster *et al.* (2007) would serve as a starting point for discussions at this year's meeting. It was further agreed that the following points will be discussed as a priority:

- (1) the level to which the suggested process will lead to an improvement to the existing process, if at all;
- (2) if a specialist review group is set up and an intersessional workshop held: (a) what would the composition of participants be and how would they be selected; (b) what should the Terms of Reference (TOR) be; (c) how would the process be funded; and (d) what is the role of proponents at the Workshop and what is their role at the Annual Meeting of the Committee?

The Chair also noted the importance of the intersessional workshop to review the results of the 18 year JARPA research program. A review of the recommendations and findings from this workshop would be a primary responsibility for the SWG.

Finally, the Chair noted that the work plan for the SWG at this year's meeting including the review of the two continuing scientific whaling programs by the government of Japan, as well as results from the scientific whaling programme by the government of Iceland, which will end in 2007.

2. APPOINTMENT OF CHAIR AND RAPPORTEURS

DeMaster agreed to Chair the SWG and to be the rapporteur.

3. ADOPTION OF AGENDA

The Agenda is reported in Appendix 1.

4. DOCUMENTS AVAILABLE

The primary documents used by the members of the WG in its deliberations regarding this agenda of the Scientific Committee were: SC/59/Rep 1, SC/59/O2, 3, 4, 5, 6, 7 and 16. It was recognised that the discussions of substantive findings from the scientific whaling programmes reviewed by this SWG were assigned by agreement of the Convenors to the appropriate sub-committee or working group.

5. PROPOSALS TO FACILITATE THE REVIEW PROCESS OF SCIENTIFIC PERMITS

The Chair summarised the recommendations reported in DeMaster *et al.*, (2007 – i.e. Annex P to last year's report) regarding the review of Special Permit proposals and results within the Scientific Committee. The primary elements of DeMaster *et al.* (2007) include: (1) proposals would be submitted to the Chair of the Scientific Committee at least six months prior to the Annual Meeting following a pro forma supplied by the Secretariat, (2) a review process would be followed, where the initial review of the proposal would take place at a small specialist workshop that would take place at least 100 days before the Annual Meeting. The composition of the invited experts would be determined by the Chair, Vice-Chair and Head of Science in conjunction with Convenors for that year, (3) the terms

of reference for the workshop would be to review the proposal in light of the stated objectives, (4) the report of the workshop would be completed 80 days prior to the Annual Meeting, and (5) the original special permit proposal, the report of the specialist workshop, opinions of the proponents of the proposal, and any revised permit proposal from the Contracting Government would be submitted to the Scientific Committee no later than 40 days before the Annual Meeting. At the Scientific Committee meeting the report of the specialist workshop would be discussed, but not amended. The comments of the Scientific Committee will be included in the Scientific Committee report and provided to the Commission.

The SWG first discussed the issue of whether the suggested way forward was an improvement to the existing process. The SWG concurred that in principal the process reported in DeMaster *et al.* (2007) was an improvement and should be implemented, as approved by the Scientific Committee.

The second issue addressed by the SWG was the process by which the composition of workshop participants would be chosen. Various potential options were identified including deferring this decision to the Commission, the Heads of Delegations to the Scientific Committee, the Convenors of the Scientific Committee, or a standing steering group. After some discussion, three approaches were considered most practical where the composition of the invited participants would be the responsibility of: (1) Chair, Vice-Chair, Head of Science, with input from the Convenors group, (2) Chair, Vice-Chair, Head of Science with input from a Standing Steering Group selected for this purpose, and (3) Chair, Vice-Chair, and Head of Science with input from a professional society. Advantages and disadvantages of each were discussed. After some discussion, it was agreed to go forward with a recommendation to the Scientific Committee with an approach where a Standing Steering Group (SSG) would develop a list of possible candidates, seek input from the Chair, Vice-Chair and Head of Science, develop a final recommended list of participants, which would be finalised by the Chair, Vice-Chair, and Head of Sciences. The Chair of the SWG noted that the selection of members to the SSG would be by appointment by the Chair of the Scientific Committee, as is provided for in its rules of procedure (IWC 2007b). It was agreed that DeMaster should work with the other authors of DeMaster *et al.* (2007) to revise it accordingly to reflect these recommendations (see Annex P of this report). Clapham requested and it was subsequently agreed that the issue of the composition of the SSG would be discussed in plenary.

The third issue addressed concerned the Terms of Reference (TOR) for the workshop participants. Gedamke suggested revisions to DeMaster *et al.* (2007) that he believed were more consistent with guidance received from the Commission regarding special permits. His suggested revisions included a statement that one of the objectives of the specialist workshop will be to review proposals in order to determine whether the information sought is required for the purposes of management. In addition, he proposed that a second objective be included regarding whether information sought could be obtained by non-lethal means. Walløe and others commented that it was important to also include scientific objectives in the TOR and that the issue of non-lethal methods was covered in point 3 of the TOR in DeMaster *et al.* (2007). After some discussion, it was agreed that the authors of DeMaster *et al.* (2007) would make the necessary revisions to accommodate the concerns raised by members of the SWG.

The fourth issue addressed regarding the source of funding to support the proposed intersessional workshop associated with a proposal for a Special Permit or review of findings from the scientific research program carried out under the authorisation of a Special Permit. The SWG recommended that funding to provide for travel of invited participants to workshops associated with the review of new proposals or existing research programs should be budgeted as part of the annual expenses of the Scientific Committee.

The final issue discussed by the SWG was related to the role of scientists from the Contracting government proposing the Special Permit or carrying out scientific whaling at the specialist workshop or the Annual Meeting during which the proposal or results were to be reviewed. The SWG agreed with the underlying principle in DeMaster *et al.* (2007) that scientists selected to be proponents of a proposal for a special permit (or the results of research authorised under such a permit) should participate in the specialist workshop, but that the findings and recommendations in the workshop report would only reflect those opinions of the independent experts. As was the case for TOR, it was agreed that the authors of Annex P would make the necessary revisions to clarify this agreement.

Early in the discussions on DeMaster *et al.* (2007) it became apparent that some members had understood that the annex applied only to new proposals for whaling under special permit, while other members had engaged in the discussions on the basis that the annex referred to both new proposals and the review of existing proposals. The SWG **agreed** that they were close to consensus on wording of a revised version of DeMaster *et al.* (2007) as it applies to new proposals. The SWG further **agreed** that there was a desire to ensure that the process of reviewing

new proposals, and that for the review of existing proposals should be effectively the same and should encompass the process of scientific transparency and independence outlined in DeMaster *et al.* (2007). There were however some differences in the review processes to do with details associated with such things as data availability agreements and the timing associated with the review process.

After some discussion a revised version of DeMaster *et al.* (2007) was **agreed** (Annex P of this report), as it applies to new proposals and in principle to periodic and final reviews. It was recognised that additional work was needed to implement the protocol for the review of research results associated with Special Permits (i.e., periodic and final reviews). The SWG anticipated that this work would result in formal revisions to the protocol agreed at SC/59. It was **agreed** that an intersessional working group be established for this purpose, which would report back to the Scientific Committee at SC/60. The TOR for this working group would inter alia include: (1) the timing as to when a periodic or final review would take place, (2) the role of invited experts in reviewing proposals, research results from periodic reviews, and research results from final reviews, (3) how the Data Availability Agreement would be applied to various data sets and associated reports (e.g., deadlines for submission of documents), (4) whether there should be a *pro forma* or minimum required list of documents, (5) the process by which TOR for a given review would be established, (6) should there be a *pro forma* for the report of the specialist workshop, (7) the role of the Scientific Committee in evaluating research results from periodic or final reviews, and (8) the role of scientists directly involved in research associated with Special Permits in the review process.

While more detail is provided under Item 8, WG members **agreed** that this new protocol would be used for the anticipated reviews of JARPN II and the Icelandic research programmes.

6. REVIEW RESULTS FROM EXISTING PERMITS

6.1 JARPA Review

An intersessional meeting to review the results from the JARPA research program was convened in Tokyo in December 2006. Bannister, the chair of the intersessional workshop, summarised SC/59/Rep 1. The SWG noted their appreciation to the Bannister, the Steering Committee for the Workshop, the rapporteurs and the Head of Science for their efforts in organising, convening and preparing the workshop report.

The SWG reviewed the findings and agreements reported in SC/59/Rep 1. Annex D of Rep 1 indicates that considerable data have been collected by the JARPA programme by both lethal and non-lethal methods, although there was disagreement regarding the analysis and interpretation of some of these data. A summary of main results is provided in Appendix 2 of this report.

The SWG then reviewed the recommendations contained in SC/59/Rep 1. A summary is provided in Appendix 3. Members of the SWG supported all of the recommendations reported in Appendix 3.

It was noted by the Chair that workshop participants agreed that a discussion of the respective merits of lethal and non-lethal methodology was important. However, it was agreed that this issue would be discussed at the Annual Meeting of the Scientific Committee in May 2007 because of time constraints. The Chair noted that discussions regarding this issue were reported inter alia in IWC 2004 and 2006.

SC/59/O2 compared the merits and demerits of lethal and non-lethal research methods based on six biological characteristics of whale populations and on four practical matters related to the planning of whale population research. The author noted that scientific research on large whales was carried out in the Antarctic (JARPA and JARPA II) and the western North Pacific (JARPN and JARPN II) using a combination of both methods, as each method has its own characteristics that must be considered in relation to the research objectives and factors such as whale species, research field, research season, research period, and research cost. They further noted that this paper was prepared in order to provide a road map for the consideration of the issue of application of lethal and non-lethal research methods for JARPA II.

In SC/59/O2 the authors compared the characteristics of both methods on 13 items of practicality and indicated that regarding the JARPA research program lethal methods in general have more merit than non-lethal methods. The authors of SC/59/O2 concluded that the effective combination of both methods was necessary to effectively conduct population research on large whales.

Some members agreed with the conclusions reached by the authors of SC/59/O2. Others did not. Clapham and Gales responded to SC/59/O2 and stated that its characterisation of the abilities and limitations of non-lethal methods was highly inaccurate. They noted that, among many errors in O2, it was not true that non-lethal methods were

inapplicable to large populations or fast-moving species; nor that they were incapable of obtaining large sample sizes or samples over periods shorter than many years; nor that non-lethal studies could only be conducted in good conditions and on small scales with limited funding. They noted that several large-scale non-lethal projects had gathered far more samples (photo-id and biopsies) in a shorter period of time than the JARPA program, and that the results of one of these studies (the YONAH project in the North Atlantic) had formed the foundation for an IWC Comprehensive Assessment. They noted that non-lethal studies are widely used worldwide, and their ability to repeatedly sample the same individuals over often long periods provided a scientific advantage that was not possible with killed animals. Results of such work have been published in numerous refereed journals; the ability of these projects to address issues of importance to IWC management (including abundance, population structure and biological parameters) had been repeatedly demonstrated and was often in excess of the output of lethal-based programs. Molecular-based research, conducted using biopsy samples, was applicable to even the largest populations through genotyping, and such samples could also be used to study a wide range of issues, including contaminants, diet, health status and potentially also age determination. Clapham and Gales further noted that SC/59/O2 had emphasised the importance of cost recovery as a principal motive for JARPA and other lethal sampling programs, and contended that this requirement potentially compromised the research; they said that this problem is not a factor in non-lethal studies that do not need to use base study design on lethal sampling imperatives or to use considerable amounts of field time in hunting and processing whales.

In response, some members noted that the comments of Clapham and Gales related primarily to research on humpback whales. They added that non-lethal research methods cannot be practically applied to other species at least in some cases. They further noted that data on basic biology of large whales, including length and other measurements; various condition indices (e.g., blubber thickness); tissue samples for contaminant analysis, estimation of age, evaluation of reproductive status (e.g., maturity, corpora counts) and overall health (e.g., pathobiology, presence of parasite); and stomach contents could not be obtained from non-lethal sampling. Clapham responded that non-lethal studies have been used worldwide on virtually every species of large whale for a wide variety of research purposes. Others noted that molecular-based research, conducted using biopsy samples, could be used to study a wide range of issues, including contaminants, diet, health status and potentially also age determination.

Hatanaka noted that many of the points raised by Clapham and Gales were discussed in SC/59/O2 and that further discussion of this issue would only be repetitive. He further noted that the traditional label of “lethal versus non-lethal” sampling used by the SWG has led to simplistic and unproductive discussion. He commented that one of the primary objectives of O2 was to present information to refocus discussions towards a more constructive framework of finding an appropriate combination of lethal and non-lethal research methods for a particular research situation. He encouraged members of the SWG to work constructively to this end.

6.2 JARPA II

SC/59/O4 is the cruise report of JARPA II in 2006/07 season. This cruise was carried out as the second feasibility study following the first feasibility study in 2005/2006. An outline of the research activities is reported in Table 1. The research period was 76 days from 15 December 2006 to 28 February 2007. The research activity was interrupted for three days due to external interference by the Sea Shepherd and 10 days due to a fire accident at NM, after which the survey was discontinued.

The total searching distances were 11,968.87 n.miles consisting of 6,091.73 n.miles for the two SVs and 5,877.14 n.miles for the three SSVs. Eight species including dwarf form minke whales were identified during the research period. The Antarctic minke whales were widely distributed in the entire research area. A high concentration area was confirmed in the East-South stratum of Area V. Few Antarctic minke whales were distributed in the northern part of the research area compared to the southern part of the research area. Out of 443 schools (1,043 individuals) primarily sighted by SSVs, 438 schools (1,027 individuals) were targeted for sampling. A total of 505 animals were killed and subsequently sampled. The Antarctic minke whales were widely distributed in the entire research area although segregation by sex and reproductive status was observed.

Fin whales were dominant in the northern part of the research area but not in the southern part (such as the Ross Sea) where Antarctic minke whales were highly concentrated. Out of 19 schools (156 individuals) primarily sighted by SSVs, 3 schools (9 individuals) in the East-North stratum of Area V were targeted for sampling. A total of 3 individuals were killed and subsequently sampled. The maximum body length of the collected fin whales was 21.15 m with body weight of 65.02 tons. This animal was a pregnant female.

Photo-id experiments were conducted on blue and humpback whales. A total of 27 animals were photographed. Photographs of natural markings were obtained on one mother/calf pair of blue and six pairs of humpback whales. A total of 17 skin biopsy samples were collected from blue, fin and humpback whales. Two sets of humpback whale biopsy samples were taken from the mother/calf pairs. CTD and XCTD castings were conducted at 79 and 88 locations, respectively. EPCS survey was conducted for 62 days by SV and 57 days by SSVs in total. One of the SVs conducted a quantitative echo sounder survey for 62 days in the whole research area. The other of SV conducted prey species sampling (krill) using IKMT at 38 locations in the whole research area.

SC/59/O3 evaluated the results of feasibility surveys of JARPA II conducted in 2005/06 and 2006/07 in the Antarctic Areas III -VI. The objectives of the surveys were: 1) to examine the practicability and appropriateness of sighting methods and sampling procedures in the enlarged research area, 2) to examine the practicability of methods of hunting, hauling, flensing and taking biological measurements of large body-sized whales such as fin and humpback whales. The paper concluded that the feasibility surveys of JARPA II were conducted satisfactorily and that the objectives of the feasibility survey were adequately addressed notwithstanding the fire accident of the second cruise. The full JARPA II survey will involve sample sizes for fin and humpback whales as specified in the original research plan (Government of Japan, 2005) and techniques and devices for handling these large animals will be improved continuously through the full-scale JARPA II program.

COMMITTEE DISCUSSION

Discussion regarding this research report focused on the representativeness of samples, as well as the impact on the research of having to terminate the field season prematurely. Childerhouse questioned whether the conclusions of the research would have been different, if the planned sample size for minke whales and complete sampling in Area V-west, had been achieved. Hatanaka responded that one of the objectives of this year's research was to ascertain the composition of I and P stocks in Area V-west. Given that samples were not collected from this area, this question could not be addressed. Childerhouse added that he thought standards used by the Government of Japan to evaluate the success of the JARPA II feasibility study were insufficiently rigorous.

Bass commented that she did not agree with the conclusion for fin whales that sampling was conducted smoothly and successfully, given the reported problem in hauling one of the fin whales onto the research vessel. She further asked whether female and calf minke whales were collected as part of JARPA II. Nishiwaki responded that female-calf pairs have rarely been seen during JARPA II surveys, but that when encountered, efforts are made to biopsy one or both animals. However, mother-calf pairs are not killed and subsequently sampled as part of JARPA II protocol. Clapham asked, given the interruption in the survey design, where research would be targeted next year. Hatanaka noted that the current plans for next year will be to cover Area 5-west to Area 3-east.

Simmonds asked about the methods used to weigh fin whales and whether these methods were comparable to those used in the 1950s. It was noted that fin whales were weighed in sections and that this methodology was similar to that used in the 1950s. Further, no attempt was made to account for the loss of fluids (either as part of JARPA or JARPA II or in the 1950s).

It was noted by some that a catch of 850 ($\pm 10\%$) minke whales during the 2005/6 and 2006/7 feasibility studies for JARPA II was proposed exclusively to meet Objective 2 of the feasibility study, which was to 'examine the practicability and appropriateness of sampling procedures for the increased sample size of Antarctic minke whales.' (SC/57/O1). These members commented that given that this objective was successfully met by extrapolating the sampling rate of the 505 whales taken in the second feasibility study, that the rationale for a quota of 850 ($\pm 10\%$) for both feasibility studies was questionable and furthermore believed that the catch of 856 whales in the first feasibility study could have been reduced. In response, Hatanaka noted in year one of the JARPA II feasibility study, the target sample size had been achieved according to the study design. While a similar sample size could not be achieved in year two of the feasibility study because the survey was terminated mid-season due to a fire on the Nisshan-Marun, the rate at which minke whales were collected was such that the Government of Japan considered Objective 2 of the feasibility study to have been met.

Gales and Childerhouse commented that the majority of the methodological approaches in JARPA II remain effectively unchanged. They further commented that this was surprising in light of the many recommendations reported from the JARPA review (SC/59/Rep 1). Finally, they added that in the absence of appropriate adjustments to the methodological and analytical approaches in programs like JARPA II, there can be little satisfaction in the review process. Hatanaka responded that the research protocol of JARPA II had been improved to reflect recommendations from past Scientific Committee reviews. Although the JARPA review was held after the

beginning of JARPA II, he noted that the increase in survey effort and the parallel sighting survey effort in the northern and southern strata was consistent with recommendations in the JARPA review. Others commented that the research foci of JARPA and JARPA II were considerably different and that some of the recommended changes in methodology and analysis of JARPA did not apply to JARPA II.

Nevertheless, it was noted that no change to the original JARPA II research program had been made since the JARPA review in December 2006. Gales commented that, for example: (1) the JARPA review made no recommendations that larger sample sizes to achieve research results were needed and (2) problems identified in the JARPA review associated with population structure and the role of whales in the marine ecosystem were highly relevant to JARPA II, yet no changes were incorporated into the research protocol. Others commented that JARPA and JARPA II have different objectives and that sample sizes and the research design in JARPA II were established according to its own objectives. Gales and others noted that several aspects of the data analysis (e.g., role of whales in the ecosystem, population structure) associated with information collected as part of JARPA II would be improved if the recommendations from the JARPA review were adopted.

6.3 JARPN II

SC/59/O5 reported on the fifth cruise of the full-scale survey of the second phase of the Japanese Whale Research Program under Special Permit in the Western North Pacific (JARPN II) -offshore component- which was conducted from 16 May to 29 August 2006 in sub-areas 7, 8 and 9 of the western North Pacific. JARPN II combines both lethal and non-lethal methods. A total of five research vessels were used: one dedicated sighting vessel (SV), three sighting/sampling vessels (SSVs) and one research base vessel. A total of 5,541.7 n.miles was surveyed in a period of 106 days by SV. During that period 54 common minke, 15 Bryde's, 244 sei and 220 sperm whales were sighted by the SV. A total of 12,245.3 n.miles was surveyed in a period of 85 days by SSVs. During those 85 days 134 common minke, 172 Bryde's, 326 sei and 330 sperm whales were sighted by the SSVs. A total of 100 common minke, 100 sei, 50 Bryde's and 6 sperm whales were sampled by the SSVs. Biological sampling and research on all whales sampled was conducted on board the research base vessel. The data will be used for developing ecosystem models. Non-lethal methods including biopsy skin sampling, photo-ID experiments and the satellite tag tracking were utilised. A satellite tag was attached to one Bryde's whale. Tracking data was received for a period of two weeks in July.

SC/59/O6 reported the third survey of the JARPN II coastal component off Sanriku (middle part of the sub-area 7) conducted from 12 April to 24 May 2006, using four small-type whaling catcher boats, two echo sounder-trawl survey vessels, and one dedicated sighting survey vessel. In this survey, sampling of common minke whales was conducted in coastal waters mainly within 30 nautical miles from Ayukawa port and all animals collected were landed on the JARPN II research station established in the port for biological examination. During the survey, a total of 6340.0 nautical miles (634.1 hours) was surveyed for whale sampling. One hundred thirty nine schools (143 individuals) of common minke whales were detected, and 60 animals were caught. Average body length of the animals was 6.15m (SD: 1.12, n=26) for males and 5.83m (SD: 1.04, n=34) for females. Dominant prey species found from forestomachs of the animals was Japanese sand lance (*Ammodytes personatus*) during the first half of the survey period. However, both Japanese sand lance and Japanese anchovy (*Engraulis japonicus*) were dominant during the second half of the research period. Krill (*Euphausia pacifica*) was observed from only one individual in the second half of the research period. The seasonal pattern of the dominant prey species throughout the survey period was different from the past two coastal surveys off Sanriku in 2003 in which krill was dominant, and 2005 in which Japanese sand lance was also dominant. These results indicate that feeding habit of common minke whales in coastal waters off Sanriku changes year by year.

SC/59/O7 outlined results of the fourth survey of the JARPN II coastal component conducted off Kushiro, northeastern Japan (northern part of sub-area 7). The survey was carried out from 11 September to 31 October 2006, using four small sampling vessels, one echo sounder-trawl survey vessel, and one dedicated sighting survey vessel. Sampling of common minke whales was conducted in coastal waters within 50 nautical miles from the Kushiro port, and all the animals collected were landed at the JARPN II research station for biological examination. During the survey, a total of 10399.5 nautical miles (958.0 hours) was surveyed for whale sampling. Eighty four schools (85 individuals) of common minke whales were detected with a sei whale sighting, and the 35 common minke whales were collected (25 males and 10 females). In males, 13 animals were sexually mature, but only 2 females had attained sexual maturity. One mature female was pregnant. Composition of sex and sexual maturity recorded in the present survey was almost the same as that in the previous surveys off Kushiro. Japanese anchovy (*Engraulis japonicus*) was the single dominant prey species found from whale stomachs and was detected throughout the

survey period. Four other prey species, Pacific saury (*Cololabis saira*), walleye pollock (*Theragra chalcogramma*), Japanese common squid (*Todarodes pacificus*), and krill (*Euphausia pacifica*) were also detected from the stomach, but their frequency of occurrence was low. These results were different from those in the previous surveys, which indicates that prey species of common minke whales changes year by year. In the present season, the number of common minke whales migrating into the coastal waters off Kushiro was thought to be low. Furthermore, the prey species survey suggested that the prey environment for the common minke whale off Kushiro was poor. These results were thought to be the result of unusually high sea surface temperature off Kushiro during the present survey.

COMMITTEE DISCUSSION

It was recognised that the SWG had insufficient time to fully review all of the papers regarding JARPN II. Therefore, the SWG agreed to forward to the Scientific Committee its comments from the previous review in 2003.

As in previous years, several members commented that the susceptibility of small vessels to inclement weather could lead to bias in the survey results, as a disproportionate amount of survey and sampling effort was conducted in the near shore portion of the study area. In response, it was noted that the near shore area was also the area where commercial fisheries and minke whale distribution overlapped considerably. Therefore, the near shore area was a very important portion of the entire study area. It was further noted that while the sampling protocol was not random in regard to the spatial distribution of survey and sampling effort, there was no reason to believe that the sample data were not representative.

Some members noted the stated achievement of objectives by the Kushiro component of JARPN II despite a reduced catch (35 out of 60 animals). They commented that this called into question the necessity of an annual catch of 60 animals. Yoshida responded that reduced sample size did not *inter alia* affect the research objective related to estimates of prey consumption of whales in 2006 because the diet of minke whales in the most recent research season was composed primarily of a single species. However, in other years where the diet of minke whales could be more diverse, a sample of 35 animals would be insufficient to provide for statistically reliable results.

Bass questioned whether information on the time to death of animals lethally sampled under the JARPN II research protocol was available. It was noted that these data were collected and would be treated by the Commission at its Whale Killing Methods subcommittee.

Finally, some members expressed concern about the impact of the removals on J stock, which was also impacted by bycatch in commercial fisheries throughout much of its range. Others noted that one of the objectives of the JARPN II research program was to estimate the composition of J and O stocks in the study area using lethal and non-lethal sampling methods. Childerhouse responded that a well-designed biopsy program could have produced the same information with no impact on any stocks of minke whales in the study area. Bass commented that as possible, the JARPN II sampling protocol should be revised to minimise the number of J stock animals being lethally sampled (e.g., limit lethal sampling to areas outside of 3 nm from shore).

6.4 Iceland

The Icelandic research programme on common minke whales in Icelandic waters was continued in 2006 (SC/59/O16). The main objective of the project concerns feeding ecology, energetics and multispecies modelling, but several additional subprojects are included in the programme involving scientists from various research institutions and universities in addition to the Marine Research Institute. During 15 June – 22 August, 60 common minke whales were caught under special permit in accordance with the original research proposal. A total of 161 common minke whales have been caught since the start of the research program in 2003.

The sampling has been distributed geographically and seasonally in accordance with relative abundance of the species in Icelandic continental shelf waters. Despite frequently unfavourable weather conditions and lower than expected densities in offshore areas, the sampling to date has been close to representative of the distribution in the continental shelf as judged from sightings surveys in recent decades. Minor changes from the original sampling plan have been made to account for spatial differences in the diversity of diet as judged from the first half of the samples. The sampling phase of the research program will be completed by sampling of 39 in 2007, thereby bringing the total number of sampled minke whales to 200 in accordance with the original plan. Sampling was conducted by scientists onboard four vessels hired by the Marine Research Institute and was similar to sampling in previous years of the study (IWC, 2007a). Laboratory analyses for most of the samples already collected are finished or at a final stage. Interpretation of the results awaits completion of the sampling programme.

COMMITTEE DISCUSSION

Given the Scientific Committee's work plan for next year, which includes an Implementation Review for North Atlantic minke whales, Pastene asked if the genetic data and other data would be made available in sufficient time to be included under the Data Availability Agreement. In response, Víkingsson noted that while the complete analysis of Iceland research program would not be available until the target sample of 200 whales had been achieved, data on stock structure and biological parameters would be made available on request. Simmonds asked when the information on contaminant levels would be available. Víkingsson noted that after the 2007 research season, all of the samples for contaminant analysis would be sent to a contracted laboratory for analysis. He expected the results to be available some time in 2008.

As was the case at last year's meeting of the SWG, there was disagreement as to whether the sampling effort was distributed over the inshore and offshore portions of the study area to provide for unbiased results. A more detailed discussion of this issue is reported in IWC 2007a.

Several members commented that there was insufficient time at this year's meeting to fully review the findings reported in SC/59/O 16. It was noted that the last full review of this research program took place during the 2003 meeting of the Scientific Committee, and reference to findings and recommendations from the SWG was therefore important.

7. REVIEW OF NEW OR CONTINUING PROPOSAL

The SWG did not have time to consider continuing research proposals of Japan (JARPA II and JARPN II) and Iceland. However, it was noted that there were no substantial changes in these proposals since the previous reviews by the Scientific Committee. The SWG therefore refers to its comments and those of the Scientific Committee in previous years.

8. WORK PLAN AND BUDGET REQUEST

The SWG has completed its work on recommendations to facilitate the review of new proposals associated with special permits and in principle has agreed a way forward for the review of results from research programs associated with special permits. However, at present only the implementation of the former is possible according to the revised protocol reported in Annex P. Therefore, the SWG **recommends** that an intersessional working group be established to develop a new protocol or amend the existing protocol that would be appropriate for providing periodic reviews of on-going research programs or reviews of research programs that have been completed. It is anticipated that recommendations from this intersessional working group would be reviewed and adopted at SC/60. This would provide for the orderly review of research results from JARPN II and the research program of Iceland. The former program will have completed six years of data collection and has proposed periodic reviews for each six year period of research. It is anticipated that an intersessional review of the JARPN II research results would take place between SC/60 and SC/61. It is further anticipated that pending the completion of data analysis and report generation, a review of the research results of the Icelandic research program would be undertaken following this protocol. Finally, no new Special Permit research proposals are anticipated in the foreseeable future.

9. ADOPTION OF REPORT

The report was adopted on 14 May 2007. The SWG members thanked DeMaster for his efforts as Chair. DeMaster thanked the members of the SWG for their patience and willingness to secure consensus on a protocol for reviewing Special Permit proposals and associated research results.

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Appendix 1

AGENDA

1. Convenor's opening remarks
2. Appointment of Chair and rapporteurs
3. Adoption of Agenda
4. Documents available
5. Proposals to facilitate the review process of scientific permits
6. Review results from existing permits
 - 6.1. JARPA review
 - 6.2. JARPA I
 - 6.3. JARPN II
 - 6.4. Iceland
7. Review of new or continuing proposal
 - 7.1 JARPA II
 - 7.2 JARPN II
8. Work plan and budget request
9. Adoption of report

Appendix 2

SUMMARY OF MAIN RESULTS OF JARPA

The following summary is based on the findings reported in SC/59/Rep 1.

1. Abundance and trends

Estimates of population trend arising from JARPA are summarised in Table 2 of Rep 1. The Workshop noted that the current confidence intervals for the estimates of trend are relatively wide. These results are, therefore, consistent with a substantial decline, a substantial increase, or approximate stability in minke whale abundance in these geographic areas over the period of JARPA (p. 11).

The workshop recognised that considerable progress has been made in addressing the issues related to abundance and trends and provided the recommendations given under item 2 are followed, the Committee should soon be able to agree estimates (p. 32).

Regarding humpback whales, overall, the Workshop agreed that the abundance estimates provided in SC/D06/J7 represented useful steps forward in working towards acceptable estimates of abundance (p. 11).

2. Population structure

The Workshop recognised the very considerable amount of work undertaken since the mid-term review and the progress that has and can be made given the data collected. Based on the analyses of the genetic and morphometric data presented, it was agreed that there are at least two stocks of Antarctic minke whales present in the JARPA research area. The data do not support the current IWC management Areas for Antarctic minke whales. The data also suggest an area of transition in the region around 150°-165°E across which there is an as yet undetermined level and range of mixing. The Workshop recognised that samples from the breeding areas would greatly facilitate these analyses, and are likely to be required to resolve issues relevant to stock structure and mixing within the JARPA research area (p. 16).

3. Estimation of natural mortality rate

The estimation of this parameter was the main objective of JARPA when the programme was initiated. The natural mortality rate estimates from JARPA data alone (SC/D06/J13), were, at around 0.04, within the plausible range, but the confidence limits (from below zero to above 0.10) spanned such a wide range that the parameter is still effectively unknown.

The ADAPT-VPA provided estimates of natural mortality rates with a CV of about 0.15 but these depend on the use of commercial catch-at-age data, about which, as discussed in the report, there are some problems [p. 23].

4. Other biological parameters

Estimates of several biological parameters according to the one stock hypothesis presented at the Workshop are summarised in Table 3 (p. 20). These parameters are length at sexual maturity, age at sexual maturity, length at physical maturity, age at physical maturity, size at age (i.e., generation of a growth curve), percentage of matured females pregnant, foetal sex ratio (male%) and mean litter size. In general the Workshop agreed that the results confirmed the high pregnancy rates found in this species in the previous commercial data, and corresponds essentially to a 1-year reproductive cycle (p. 21).

The Workshop concluded that there were differing views expressed about the level of reliability that could be assigned to the estimates of historical trends in biological and population parameters of minke whales prior to the JARPA period.

For the JARPA period, no marked trends in biological parameters were found. The growth rates were apparently constant, while the pregnancy rate remained high with some annual fluctuation. The transition phase data suggested a possible small increase in the mean age at maturity over the JARPA period, but the age at first ovulation showed a decrease, at least for the P stock [p. 23].

5. Role of Antarctic minke whales in the ecosystem

A total of ten prey species, including one amphipod, four euphausiids and five fish species were identified based on analysis of stomach contents. Antarctic krill (*Euphausia superba*) was the most important prey species throughout the survey period. The estimates of daily consumption reported to the workshop ranged from 2.6% to 5.0% of body weight per day (p. 24).

In discussion, the Workshop noted that the daily prey consumption estimates were similar to those from North Atlantic common minke whales (Haug et al., 1995) and to those predicted by Lockyer (1981) (p24).

6. Pollutants

Levels of toxic metals and organochlorines were low compared with whales in the northern hemisphere, with some indication of a decrease over time, which was speculated may be related to decreased food consumption.

7. Other results

The Workshop recognised the important contribution of the genetic analyses of dwarf minke whale samples from JARPA to the understanding of the phylogenetic relationships among minke whales from different ocean basins. Genetic results had contributed to the taxonomic review of minke whales conducted by Rice (1998) that confirmed the existence of two species of minke whales, the Antarctic minke whale and the common minke whale (p. 30). Additional work on genetic diversity and spatial pattern of genetic variation in southern humpback whales was reported.

8. Management

The present Workshop concurred with the view in the previous Workshop that:

“The results from the JARPA programme, while not required for management under the RMP, have the potential to improve management of minke whales in the Southern Hemisphere in the following ways: (1) reductions in the current set of plausible scenarios considered in *Implementation Simulation Trials*; and (2) identification of new scenarios to which future *Implementation Simulation Trials* will have to be developed (e.g. the temporal component of stock structure). The results of analyses of JARPA data could be used in this way perhaps to increase the allowed catch of minke whales in the Southern Hemisphere, without increasing depletion risk above the level indicated by the existing *Implementation Simulation Trials* of the RMP for these minke whales.”

Appendix 3

SUMMARY OF RECOMMENDATIONS FROM SC/59/REP1

RT AE	Analyses	In the report	Status
1.	Further investigation of J3 approach using simulation studies to assess correction performance	Suggested	To be considered after 2007 SC meeting
2.	On Skip C, the possibility of post-application of the adaptive sampling to closing mode survey for finding better correction formulae	Suggested	To be considered after 2007 SC meeting
3.	Satellite data may provide more accurate information on the ice-edge for the DSM	Suggested	To be considered after 2007 SC meeting
4.	Regarding abundance estimation of Antarctic minke whale a better approach is to fit a model which is able to account for heteroscedascity in sampling variance and incorporate additional variance	Agreed	To be considered after 2007 SC meeting
5.	Regarding detection function estimation, as a guideline, detection functions should be estimated using an absolute minimum of 15 sightings. Where fewer sightings occur pooling should be undertaken.	Recommended	Considered in SC/59/IA11
6.	Regarding variance estimation from the SSV data, the data to be re-analysed treating all three parallel transect legs as the sampling unit	Recommended	To be considered after 2007 SC meeting
7.	Regarding the accounting for the order that the strata were surveyed (which is relevant for trend estimation), a generalised linear modelling approach (similar to that conducted in J6) be taken whereby appropriately chosen covariates or factors (such as the middle date that a stratum was surveyed in a given year) could be included to enable more valid between-year comparisons	Recommended	Considered in SC/59/IA11
8.	Additional variance be estimated as well as taking due account of estimates of sampling variance for each stratum	Recommended	To be considered after 2007 SC meeting
9.	Regarding estimation of effective strip width and mean school size from the SSV data, sensitivities to the pooling of three SSV tracklines for estimation of effective strip width and mean school size, be investigated	Recommended	To be considered after 2007 SC meeting
10.	Regarding extrapolation into unsurveyed areas, it would be valuable to bound the problem by examining results for which the abundance in the unsurveyed area is treated as zero	Recommended	Considered in SC/59/IA11
11.	Where such (primary E-W) extrapolation are necessary, the ratio of density in the unsurveyed area to the surveyed area be calculated from data in other years. The product of this ratio and the density in the surveyed area in that year would be used as the estimated density to extrapolate into the unsurveyed area in that year	Recommended	Considered in SC/59/IA11
12.	Regarding analysis using the saw-tooth track line design, all transects would be useful at least in estimating effective strip width and mean school size (and their variances). In order to more fully understand the results in Table 4 of J6 and their implications, the sensitivity analyses of J6 are repeated but with appropriate weighting of the data (e.g. in proportion to the number of sightings within a stratum), and/or by bootstrapping (conditional on the total number of sightings)	Agreed, Recommended	To be considered after 2007 SC meeting
13.	Regarding the estimation of trend in humpback whales further refinement of the linear model, as discussed for minke whales,	Recommended	To be considered after 2007 SC

	by incorporating process error as well as a trend parameter, an area effect and the survey sampling error be examined		meeting
SS			
1.	In addition to genetic studies it would be useful to include potential alternative stock markers such as stable isotopes (e.g. Carbon, Oxygen, Hydrogen and Strontium)	Suggested	Will not be Considered
2.	Clustering methods based on individual genotypes, that avoid a priori assumptions about population boundaries may be usefully applied (e.g. MDS or PCA methods).	Recommended	To be Considered after 2007 SC meeting
3.	Spatial correlation and Mantel test were suggested to resolve the position and nature of this transitional pattern	Suggested	Will not be considered
4.	Other analysis based on individual genotypes such as landscape genetics as assessed in the program 'alleles in space' may help resolve the pattern of structure and mixing (though this would likely require but this requires 15+ microsatellite loci to provide sufficient power)	Suggested	To be considered under JARPA II
5.	Transitional area could be studied by fitting a mixing model where the fraction of whales belonging to one putative population is a function of the longitude at which it was sampled. This could be a simple logistic regression model coupled with two-product multinomial models describing the allele frequencies in the two putative stocks either side of the transition area. It could be extended beyond two populations, and incorporate both genetic and morphometric data	Suggested	To be considered after 2007 SC meeting
6.	Satellite tracking to investigate location of breeding grounds	Emphasised	To be considered under JARPA II
7.	Analysis of available samples for the potential extension of the analysis geographically (e.g. Areas III and VI)	Raised	To be considered under JARPA II
BP			
1.	In order to verify age readings using known age animals the feasibility of detecting the bomb radiocarbon signal in earplug laminae be looked into	Recommended	Will not be Considered
2.	The comparability of commercial and JARPA age data be investigated by re-reading a subset of the commercial samples in an appropriately designed blind test	Recommended	Considered in SC/59/O8
3.	The ADAPT-VPA could be run without using the commercial age data	Task identified	Considered in SC/59/IA13
ME			
1.	Determination of the duration of the feeding period is fundamental to estimate total consumption and must be adequately addressed	Recommended	To be considered after 2007 SC meeting
2.	Examination at smaller spatial scales	Recommended	To be considered after 2007 SC meeting
3.	Use of GLM or similar to examine trend, incorporating covariates such as age, size and reproductive status of whales as well as the date and time of day	Recommended	Considered in SC/59/O9
4.	Examination of other factors including age, latitude, distance from the ice-edge and non-linearity in trends in the analysis of blubber thickness	Suggested	Considered in SC/59/O10

5.	Consideration should be given to whether the particular blubber thickness measurement chosen was actually a good proxy for energy storage (for example lipid content can vary considerably within blubber)	Suggested	Considered in SC/59/O10
6.	Analysis should be expanded to incorporate the other extensive information available from the JARPA datasets that relates to energy storage in an integrated manner (e.g. other blubber measurements, organ weights, etc.)	Recommended	Considered in SC/59/O10
OR			
1.	Every effort should be made for scientists to share data from low and high latitude and carry out DNA analysis on southern humpback whales under the IWC Data Availability data access protocol	Reminded	*
2.	Apparent paraphyly of dwarf minke whale should be investigated further	Suggested	To be considered after 2007 SC meeting

RT= Research Topic

AE= Abundance Estimation

SS= Stock Structure

BP= Biological Parameters

ME= Marine Ecosystem

OR= Other Research

*= This recommendation needs to be addressed by the whole SC