Annex P

Report of the Working Group on Scientific Permits

Members: Bjørge (Convenor), An, Baulch, Bell, Brownell, Butterworth, Childerhouse, Chilvers, Cipriano, De Moor, Donovan, Double, Elvarsson, Funahashi, Gallego, Galletti, Goodman, Gunnlaugsson, Hakamada, Holm, Iñíguez, Jaramillo-Legorreta, Kanaji, Kanda, Kasuya, Kato, Kelly, Kim, D., Kim, H., Kishiro, Kitakado, Kock, Liebschner, Marzari, Matsuoka, Miyashita, Morishita, Murase, Nelson, Øien, Palsbøll, Pampoulie, Park, Pastene, Punt, Roel, Rose, Sakamoto, Scheidat, Simmonds, Tajima, Tamura, Tiedemann, Víkingsson, Wade, Walløe, Waples, Weller, Williams, Yoshida.

1. CONVENORS OPENING REMARKS

Bjørge welcomed meeting participants and reminded them that the main purpose of the Working Group on Special Permits is to discuss the special permit activities and results in light of Commission Resolutions and the Scientific Committee priorities.

2. ELECTION OF CHAIR

Bjørge was elected Chair.

3. APPOINTMENT OF RAPPORTEURS

Weller served as rapporteur.

4. ADOPTION OF AGENDA

The adopted Agenda is provided as Appendix 1.

5. AVAILABLE DOCUMENTS

The following available documents contained information relevant to the working group: SC/65a/SP01, SC/65a/O06-O09, SC/65a/Rep03.

6. REVIEW REPORT OF WORKSHOP FOR ICELANDIC SCIENTIFIC PERMIT WHALING

This agenda item is related to the Icelandic Research Programme that was conducted from 2003-07 and the results were subject to an Expert Panel Review in 2013 (see SC/65a/Rep03). This Review, chaired by Kitakado, took place in Reykjavik in February 2013 and followed the guidelines described in Annex P (IWC, 2013a).

6.1 Panel report

Kitakado presented an overview of SC/65a/Rep03. During this presentation, he recalled that in reaching its conclusions and recommendations, the Panel noted the statement from the proponents that no further Special Permit programme was envisaged by Iceland at present. 'Annex P' provides the Terms of Reference for the Panel. The general overview and conclusions of the Panel on the Icelandic programme were summarised by Kitakado during his presentation and are detailed in SC/65a/Rep03 (published in this volume).

6.1.1 Panel Chair's summary of the panel report

The Panel was chaired by Kitakado and its composition was decided upon by a steering group comprising the past four Scientific Committee chairs and the Head of Science. Difficulties in the availability of proposed candidates meant that participation by scientists who had no connection with the Committee proved very difficult. In the event, the Panel comprised the present Committee Chair and the Head of Science (in accord with the guidelines), two ex-Committee Chairs, one current member of the Committee, one scientist who has not participated in the Committee for several years and two scientists who have never participated. Expertise in all areas of the research programme was available. In addition to the proponents, four observers were present. Thirty papers were submitted by proponents (SC/F13/SP01-30) and three additional papers were submitted by other scientists (SC/F13/O01-03).

The Panel report (SC/65a/Rep03) is divided into sections based on the stated objectives of the programme: abundance; stock structure; biological parameters, feeding ecology; energetics; pollution; parasites and pathology. Each of these contained the proponents' summary of their results followed by an analysis of the results by the Panel including conclusions and specific recommendations. The final section presents the Panel's general overview and conclusions followed by a summary of all of the recommendations divided into short, medium and long-term.

The report is a long and detailed review. What follows here is a short Panel Chair's summary of only the broad conclusions (SC/65a/Rep03); it does not provide a substitute for reading the full report. In reaching its conclusions and recommendations, the Panel noted that no further special permit programme was envisaged by Iceland at present. With respect to consideration of the effect of the catches on stocks, it noted that the level of catches was considerably below the level for the CIC *Small Area* that would have been allowed under the RMP (IWC, 2011, p.64). The Panel emphasised that its task was to provide an objective scientific review of the results of the Icelandic programme; its task was not to provide either a general condemnation or approval of research under special permit. Consideration of that would require examination of some issues way beyond the purview of a scientific panel.

The Panel made a number of general points in addition to its review of individual topics. The first related to the objectives of the programme. The general nature of the objectives of the original proposal and its characterisation as a feasibility/pilot study made it difficult for the Panel to fully review how well the programme could be said to have met its own objectives. It agreed that it is important that any special permit programme provides careful objectives and sub-objectives for which performance can more easily be assessed, as is now the case in the guidelines for proposed permits in IWC (2013b), developed since the Iceland permit was presented in 2003.

The Panel also commented that better information on sampling design and an evaluation of sample size and representativeness at the local and population level was required. While the method used was probably sufficient for a feasibility study, it would not be the case for a full programme.

A common thread throughout the report related to the need for integrated analyses of the individual components of the programme; it regarded such work as essential and this was the subject of several recommendations. Given the objective of multi-species modelling to improve management, this should also include consideration of the results in the context of a modelling framework. The Panel noted that the programme had tried to maximise the information obtained from the whales taken. It stressed the importance of archiving material collected as well as storing analytical results and data in a relational database linked to the tissue archive.

With respect to abundance, the Panel agreed that the Icelandic survey data have improved knowledge about the abundance and distribution of the common minke whale in Icelandic waters both for use in the RMP and for input to potential multispecies modelling. Despite the logistical difficulties, the spring and autumn surveys provided valuable new information, especially in the context of any future multi-species modelling.

With respect to stock structure, the Panel agreed that the data will assist in the Committee's work on this topic. With respect to feasibility component, it was of course already well-known that it is possible to collect samples to better understand stock structure from carcases (as well as from biopsy samples as the proponents' note). It welcomed the efforts to compare genetic data across the North Atlantic but recommended further effort to integrate information regarding stock structure from the variety of genetic and non-genetic sources.

With respect to biological parameters, the Panel recognised the extensive amount of field and laboratory work that had been undertaken and presented. It noted that evaluating the feasibility of collecting information on biological parameters of sufficient precision and accuracy to inform multi-species modelling requires examining the sensitivity of model results to the parameters concerned. As the modelling was not as advanced as had been originally planned, this evaluation cannot yet be conducted. One of the most important feasibility questions relates to the issue of ageing common minke whales and the Panel commended the work to examine a new approach for common minke whales, recognising that further work needs to be undertaken.

With respect to feeding ecology, a primary component of the programme, the Panel acknowledged the large amount of effort undertaken and the generally thorough analyses using a variety of techniques. The temporal changes observed as a result of the extension of the sampling period could be related to climate change or a regime shift in the waters around Iceland and this is an important issue for further research. The general nature of the objectives made evaluation of the success of the feasibility study more complex but the Panel agreed that knowledge of the general feeding ecology of common minke whales around Iceland has been advanced. It also acknowledged the efforts to collect data in such a way as to allow a more systematic than usual examination of the results that can be obtained from lethal and non-lethal methods (see SC/65a/Rep03, table 4). Finally, the Panel strongly recommended that integrated analyses including comparison of the information from each approach be developed and submitted to the Scientific Committee.

With respect to energetics, again the Panel recognised the considerable field, laboratory and analytical effort. These provided valuable insights into aspects of the energetics of common minke whales around Iceland but further effort is required to integrate the various analyses to provide quantitative input to energetics models and multispecies modelling and allow an evaluation of the sensitivity of the results to the inevitable uncertainty.

With respect to modelling, the Panel recognised the practical difficulties explained by the proponents but concluded that this important part of the programme is as yet poorly developed. In particular, a simple preliminary model should have been developed to inform discussions of which are key parameters with respect to obtaining robust results, evaluating how sensitive results are to different levels of uncertainty and determining appropriate sample sizes. This was a major weakness in the programme. However, the Panel welcomed the modelling work presented to the Workshop as a small but valuable initial step toward the programme's overall objective.

With respect to pollutant studies, the Panel acknowledged the considerable field, laboratory and analytical work that had resulted in a number of published papers. It also appreciated the effort made to compare results across the North Atlantic and to examine relationships between concentration levels in different tissues including 'pseudo' biopsy samples. However, it agreed that the objective of assessing health status had not been fully addressed and cautioned against broad assumptions that low levels necessarily indicate no effect. The sample size of the feasibility study was insufficient to properly address any toxic-related cause-effect relationships.

With respect to parasites and pathology, the objective had been to investigate the feasibility of monitoring and evaluating the morbidity of potential pathogens. The Panel recognised the difficulty of conducting full post-mortems of animals and undertaking thorough examination for parasites and pathogens at sea. While the study of the epibiotic macro fauna has resulted in a good baseline for future analyses, overall, the Panel concluded that the approaches adopted in the feasibility study would be insufficient to achieve the objective outlined.

The Panel briefly noted that the Commission had passed several resolutions relevant to research on the ecosystem, contaminants and environmental change. It agreed that many aspects of the programme were relevant to these topics and that the information had been made available to the Scientific Committee.

With respect to the utility of lethal and non-lethal techniques the Panel referred to extensive discussions at the JARPN II review (IWC, 2010) and the SORP conference (Baker *et al.*, 2012). The Panel welcomed the efforts of the programme to provide data to allow a more thorough and quantitative comparison of some lethal and non-lethal techniques than has previously been possible (see recommendation in IWC, 2010). The Panel developed a simple qualitative table to summarise the situation for North Atlantic common minke whales but stressed that is not intended to represent a complete or comprehensive evaluation of lethal or non-lethal techniques, either in general or for this specific programme and drew attention to a number of caveats.

Finally the report provided a summary of its recommendations. Seventeen addressed specific issues that might be termed 'short-term' while twelve addressed 'medium to long-term' issues.

6.2 Response to Panel report

Víkingsson presented an overview of SC/65a/SP01. This paper summarises the response of scientists from the Icelandic programme (IRP) to the report of the Expert Panel (SC/65a/Rep03). The IRP scientists consider that in general the evaluation of the IRP by the Independent Expert Panel was constructive, objective and balanced. For both the main and secondary objectives of the IRP, the Independent Expert Panel acknowledged the quality and scientific relevance of the presented results to the minke whale research. At the same time, the Independent Expert Panel identified those areas where further work was required and provided suggestions and recommendations to improve the output of the research presented at the Review Workshop. The suggestions and recommendations of the Panel range from minor changes and corrections to suggestions of future research. SC/65a/SP01 summarises the response of scientists related to the IRP to the scientific output of the Review Workshop. Points of general nature and some minor questions/suggestions are responded to in that report and/or in revised versions of the documents presented at the Workshop (Table 1). The Panel also made several suggestions for further analyses of existing data, integration of results from different sub-projects and future research.

At the request of the Panel, further documentation of the sampling design was given. From the outset it is important to emphasise that the objective of sampling design was to cover the Icelandic continental shelf area and not to be representative for the Central North Atlantic minke whale stock. Sampling was distributed in relation to relative abundance in nine small areas. The sub-areas used were part of the Bormicon framework for multispecies modelling of Boreal systems. This area division is based on oceanographic and ecological characteristics of the Icelandic continental shelf area. In addition to the nine Bormicon areas, the planned sampling was stratified seasonally into five units. The purpose of such a fine-scale stratification (45 spatio-temporal sampling units in a study with n=200) was primarily to secure distribution of the sampling all around Iceland in this feasibility study and to allow for post-stratification as appropriate for the different sub-projects.

The Panel recommended integration of several of the 30 papers presented to the Workshop, in particular papers concerning feeding ecology and multispecies modelling, energetics and stock structure. As a response, the IRP scientists produced integrated papers on energetics that were submitted to the EM Working Group of the Scientific Committee (SC/65a/O02), and a fully integrated paper on 'stock structure' which was submitted to the SD Working Group (SC/65a/SD02). In addition, several recommendations were taken into account in new papers such as SC/65a/EM01 and Daníelsdóttir and Ohf (2013) for the modelling issues and SC/65a/SD01 for issues concerning DNA quality analyses. In addition revisions were made of 11

Table 1

IRPs summary of scientific recommendations from the IRP Review Workshop and status of progress with reference to Table 2 of SC/65a/SP01. Recommendations refer to section numbers in the Panel Report (SC/65a/Rep03). This revised version summarises a list of new and revised papers submitted to the Committee in response to the Panel's recommendations and the sub-committees in which they were discussed at SC/65a.

Recommendations	Sub-committee	Status of work
Abundance	**RMP**	
12.1.1.1		To be addressed in the near future. Further recommendations may be needed as to the approach to take (before the North Atlantic minke whale *Implementation Review*).
Stock structure	**RMP, SD**	
Short term recommendations		
12.1.2.1		A fully integrated 'stock structure' paper was submitted to the SD sub-committee of the Scientific Committee (SC/65a/SD02).
12.1.2.2		A paper describing the genetic protocols employed during the IRP was submitted to the SD sub-committee of the Scientific Committee (SC/65a/SD01).
12.1.2.3		This has been dealt with in the fully integrated 'stock structure' paper (SC/65a/SD02).
12.1.2.4		This has been partly dealt with in the fully integrated 'stock structure' paper (SC/65a/SD20) and has been discussed in the SD sub-committee during the SC/65a meeting.
12.1.2.5		To be addressed in the near future.
Biological parameters	**EM**	
Short term recommendations		
12.1.3.1		Addressed in SC/F13/SP15rev.
12.1.3.2		Addressed and changes in reproductive status were considered in papers of concern: see SC/F13/SP10rev, SC/F13/SP5rev.
12.1.3.3		To be addressed in the near future.
Feeding ecology	**EM**	
Short term recommendations		
12.1.4.1		To be addressed in the near future.
12.1.4.2		A revised paper on the diet composition was proposed (SC/F13/SP2rev).
12.1.4.3		An update of status and response to specific recommendations is given in SC/65a/EM01 and Daníelsdóttir and Ohf (2013).
Energetics	**EM**	
Short term recommendations		
12.1.5.1		A fully integrated paper has been submitted to the Scientific Committee (SC/65a/O02).
12.1.5.2		The revised paper requested (SC/F13/SP10rev) has been produced.
12.1.5.3		The revised paper requested (SC/F13/SP5rev) has been produced.
Pollution	**E, EM**	
Short term recommendations		
12.1.6.1		Addressed in SC/F13/SP22rev and SC/F13/SP23rev.
12.1.6.2		Addressed in SC/F13/SP23rev.

of the papers presented to the Workshop in accordance with suggestions of the Panel. While agreeing with most of the suggestions, the IRP scientists have not been able to fully respond to all of these within the short period determined by the review process protocol (40 days). However, the IRP plan to conclude most of these before the 2014 meeting of the Scientific Committee with a particular emphasis on those considered relevant for the upcoming RMP *Implementation Review* of North Atlantic minke whales. For example, collaboration has already been established to investigate the isotope ratios in baleen plates. Most of the suggestions from the Independent Review Panel are considered useful and constructive and will contribute to improve the research output of the Icelandic research programme and provide guidance for future research.

In addition to the original objectives of MRI (2003) the programme several additional collaborations/studies were initiated during the project, on brain anatomy, radioactivity, climate change aspects, genetic relatedness methodology, and analysis of additional pollutants.

The guidelines for review of scientific permit programmes call for special considerations of the utility of non-lethal and lethal research techniques. Such considerations constituted a special objective of the Icelandic research programme. The Independent Expert Panel welcomed the efforts of the IRP to provide data to allow a more thorough and quantitative comparison of some lethal and non-lethal techniques than has previously been possible. It agreed that this work is valuable and informative not only for future studies on North Atlantic common minke whales but also for other populations and species.

Regarding potential effects of the catches on the stock, the Panel noted that the level of catches were considerably below the level that would have been allowed under the RMP.

The presentation also highlighted the relevance of the present results to IWC Resolutions and discussions, such as marine mammal fisheries interactions (IWC, 2002), environmental changes and cetaceans (IWC, 1995; 1996b; 1999; 2000). The IRP associated scientists welcomed the recognition by the Panel of the relevance of the research programme to management issues in general and the RMP in particular.

6.3 Discussion

In discussion of these presentations, it was noted that the Expert Panel agreed that 'many aspects of the Icelandic programme were directly relevant' to a number of Commission Resolutions and noted that this information has been made available to the Scientific Committee in papers presented at Annual Meetings, including the present meeting. Some members of the Working Group expressed a different view, stating that the results from the Icelandic programme were 'potentially' relevant to Commission Resolutions. It was further expressed that the Icelandic Programme fell short of meeting the Resolution on Whaling under Special Permit (IWC, 1996a). Some members, having taken account of the Expert Review, expressed some broader critical views of the Icelandic programme and these are provided in Annex P1. A response from the proponents is given in Annex P2.

The composition of the Expert Panel was also raised in discussion, with some members of the Working Group expressing the future need for increased expertise from experts outside of the Scientific Committee. Donovan explained that this was the intention for the Icelandic programme review but the availability and/or interest of outside experts proved challenging.

Finally, while the large numbers of scientific papers stemming from the Icelandic programme were noted, the short time given to review these papers by some of the respective sub-committees was limited. However, some of these papers were presented and thoroughly discussed by RMP, SD, EM and E. Some members of the Working Group suggested that further consideration be given to how to better manage this time allocation issue in the future.

7. REVIEW OF RESULTS FROM ONGOING PERMITS

Bjørge reminded the Working Group that the Scientific Committee has decided not to discuss annual cruise reports between the periodic reviews. Therefore, the cruise reports will be very briefly summarised with time allowed for questions of clarification.

7.1 JARPN II

SC/65a/O03 presented the results of the 2012 JARPN II (Second Phase of the Japanese Whale Research Programme under Special Permit in the Western North Pacific offshore component. The survey was conducted in sub-areas 7, 8 and 9. There were three main research components: whale sampling survey, dedicated sighting survey and whale sighting and prey survey. A total of five research vessels were used: two sighting/sampling vessels (SSVs) (whale sampling survey component), one research base vessel (*Nisshin Maru*: *NM*) (whale sampling survey component), three dedicated sighting vessels (SVs) (dedicated sighting survey component) and one whale sighting and prey survey vessel (SPV) (whale sighting and prey survey component). The whale sampling survey was carried out from 16 May to 3 August 2012. A total of 2,326 n.miles was surveyed in a period of 69 days by the SSVs. A total of 86 common minke whales, 304 sei whales, 86 Bryde's whales, 218 sperm whales, five blue whales, 61 fin whales, 35 humpback whales and two right whales were sighted by the SSVs and *NM*. A total of 74 common minke whales, 100 sei whales, 34 Bryde's whales and three sperm whales were sampled by the SSVs. All whales sampled were examined on board the *NM*. Preliminary results of biological and feeding ecology analyses are presented in this document. The dedicated sighting surveys were carried out from 17 May to 30 June 2012 in sub-area 7, from 20 August to 3 October in the area between 30°N to 40°N and 140°E to 170°E (this area contains sub-areas 7, 8 and 9), and from 14 September to 1 October in sub-area 7. A total of 2,728, 5,292 and 728 n.miles were surveyed during each survey by the SVs, respectively (see details in SC/65a/O04). The whale sighting and prey surveys were carried out from 28 July to 15 August 2012. Surveys were conducted with SSVs and *NM* in a part of sub-areas 8 and 9. The purpose of this survey was to estimate habitat and prey preference of Bryde's whales and habitat preference of sei whales in relation to oceanographic and ecosystem information in those sub-areas in summer. Data obtained during the 2012 JARPN II survey will be used in the elucidation of the role of whales in the marine ecosystem through the study of whale feeding ecology in the western North Pacific.

SC/65a/O06 presented the results of the 2012 JARPN II coastal component off Kushiro, northeastern Japan (middle part of sub-area 7CN). The survey was carried out from 9 September to 28 October 2012, using four small sampling vessels. Sampling of common minke whales was made in coastal waters within 50n.miles of Kushiro port, and animals

collected were landed at the JARPN II research station for biological examination. The vessels surveyed 4,843.7 n.miles (464.6 hours), encountered 95 schools (104 animals) of common minke whales, and collected 48 animals. They also obtained sightings of humpback whales (28 schools, 35 animals) and fin whales (two schools, four animals). Average body length of 27 common minke whale males was 6.09m (SD=0.94) and 5.92m (SD=1.32) for 21 females. Six males and four females were sexually mature. Three females were pregnant. Dominant forestomach prey species included walleye pollock (*Theragra chalcogramma*, 45.8%), followed by Japanese sardine (*Sardinops melanostictus*, 31.3%), mackerels (*Scomber japonicus* and *australasicus*, 6.2%), Japanese anchovy (*Engraulis japonicus*, 6.2%), Japanese common squid (*Todarodes pacificus*, 6.2%), krill (*Euphausia pacifica*, 2.1%) and unidentified fish (2.1%). The frequency of whales feeding on Japanese anchovy was much lower in the present survey, in comparison with the previous Kushiro surveys. On the other hand, Japanese sardine and mackerels were first detected from the stomach of common minke whales since the Kushiro survey was started. Japanese sardine was the second dominant species in the present survey. This coincided with an increase in fisheries catch around Kushiro, where Japanese sardine and mackerel catches increased after an interval of around 30 years.

There was a question of clarification regarding the statement on p.2 of SC/65a/O06 regarding how the cruise tracks for the coastal survey off Kushiro were designed to avoid concentrating search effort in one area. The authors explained that search areas and vessel course were determined from weather conditions, whale distribution, and information on fishing ground of coastal fisheries.

SC/65a/O07 presented results of the 2012 JARPN II coastal component off Sanriku (northeastern Japan, corresponding to a part of sub-area 7). The survey was conducted from 12 April to 26 May 2012, using four small-type whaling catcher boats as sampling vessels and one echo sounder trawl survey vessel. Sampling of common minke whales was conducted in coastal waters within 50n.miles of Ayukawa port in the Sanriku district, and all animals collected were landed at the JARPN II research station established in Ayukawa for biological examination. Sampling vessels surveyed 6,488.1n.miles (620.1 hours), and encountered 95 schools (97 individuals) of common minke whales. They also obtained sightings of humpback whales (43 schools, 58 animals) and fin whales (2 schools, 2 animals). A total of 60 common minke whales were sampled. Average body length of 29 males was 5.10m (SD=0.82) and 5.34m (SD=0.97) for 31 females. Two males and three females were sexually mature. Two females were pregnant. Dominant forestomach prey species included Japanese sand lance (*Ammodytes personatus*, 75.0%, juveniles=35.4, adults=39.6%), followed by Japanese anchovy (*Engraulis japonicus*, 14.6%) and krill (*Euphausia pacifica*, 10.4%). Whales feeding on sand lances were collected in Sendai Bay and animals having Japanese anchovy and krill were sampled outside the bay. Information on sighting distribution, biological characteristics, and prey species of whales collected during the 2012 survey was similar to that recorded before the 2011 earthquake and tsunami.

7.2 JARPA II

SC/65a/O09 presented results of the eighth cruise of the JARPA II (Second Phase of the Japanese Whale Research Programme under Special Permit in the Antarctic) survey in the 2012/13 austral summer season. The survey was conducted from 26 January to 14 March 2013 in Areas III east, IV, V west and part of Area V east. Four research vessels were used: three sighting/sampling vessels (SSV) and one research base vessel (*Nisshin Maru: NM*). The SSVs surveyed a total of 2,103.3n.miles in a period of 48 days. Unfortunately, the research activities were interrupted several times by an anti-whaling group, Sea Shepherd (SS), which directed violent sabotage activities against Japanese research vessels. This negatively affected the survey of JARPA II during the whole period. During the research period, 280 Antarctic minke whales, 412 humpback whales, 241 fin whales, six blue whales and five southern right whales were sighted. Ten sperm and 13 southern bottlenose whales were also sighted. Photo-id was conducted on three blue whales, seven humpback whales and one southern right whale. Three skin biopsy samples were collected from humpback whales. Oceanographic surveys were conducted at 55 points using XCTD to investigate vertical sea temperature and salinity profiles. A total of 103 Antarctic minke whales were sampled by the SSVs. All whales sampled were examined on board the research base vessel. The main results of this survey can be summarised as follow:

(1) humpback whales were widely distributed in the research area with a higher density index than that of the Antarctic minke whales in all areas except in the Prydz Bay;
(2) the ice-free extent of the research area was substantially larger than in past seasons;
(3) mature female Antarctic minke whale were observed only in the Prydz Bay; and
(4) all Antarctic minke whales sampled in Area IV east were immature animals.

7.3 Planning for periodic review of results from JARPA II

JARPA II is due for a period review during the next inter-sessional period. According to 'Annex P', the pro-ponents should submit a document expanding the data to be made available to the Workshop one Annual Meeting prior to the Review Workshop. This information is provided in SC/65a/O08.

SC/65a/O08 summarised the data available for the next JARPA II Review Workshop to be held by the Scientific Committee early in 2014. The summary was made for the six first surveys of JARPA II (2005/06-2010/11). The summary of the data followed the guidelines of Annex P:

(a) outline of the data that will be available;
(b) references to data collection and validation protocol;
(c) references to documents and publications of previous analyses; and
(d) contact details.

Data in SC/65a/O08 were summarised into the following sections:

(a) data for abundance estimate for several baleen and toothed whale species;
(b) ecological data;
(c) biological, feeding ecology, pollutant and stock structure data of Antarctic minke whale;
(d) biological, feeding ecology, pollutant and stock structure data of fin whale; and
(e) stock structure data of other species.

Details of these data are shown in Annex P5.

The next step of the review process is that the proponents make data available in electronic form one month after the end of the Annual Meeting. Then the proponents will send a

document to the Secretariat describing the analytical methods to be discussed at the Workshop. This will happen nine months prior to the next Annual Meeting; that is the beginning of September. Based on the description of analytical methods, the Chair, Vice Chair and Head of Science, in consultation with the SWG involved in this process, will start to identify experts to participate in the Workshop.

Some members of the Working Group expressed the need to initiate new discussions concerning Annex P, especially in light of the planning for periodic review of results from JARPA II.

8. GENERAL COMMENTS REGARDING SPECIAL PERMIT WHALING

Some members of the Working Group expressed concern that a lack of review and comment outside the periodic reviews under Annex P should not be interpreted as an indication that any of the serious scientific concerns expressed about Special Permit whaling programmes have been addressed. This statement is included as Annex P3. Other members opposed this view and their statement is included as Annex P4.

9. REVIEW OF NEW OR CONTINUING PROPOSALS

There are no new proposals for Special Permit whaling or any changes to JARPA II or JARPN II. Therefore there was no discussion under this agenda item.

10. ADOPTION OF REPORT

The report was adopted at 11:00 on 10 June 2013. The Working Group thanked Bjørge for his chairmanship.

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Appendix 1

AGENDA

1. Election of Chair
2. Appointment of rapporteur
3. Adoption of Agenda
4. Available documents
5. Review report of Workshop for Icelandic Scientific Permit whaling
6. Review of results from ongoing permits
   - 6.1 JARPN II
   - 6.2 JARPA II
   - 6.3 Planning for a periodic review of results from JARPA II beginning September 2013
7. Review of new or continuing proposals
   - 7.1 JARPA II
   - 7.2 JARPN II
8. Adoption of Report

ANNEX P1

A CONTRIBUTION TO THE REVIEW OF ICELAND'S PROGRAMME OF WHALING UNDER SPECIAL PERMIT

R. Leaper, B. Roel, W. de la Mare, M. Double, S. Childerhouse and N. Gales

Introduction and background

The intention here is to provide a summary of the views of the authors to contribute to the Scientific Committee's review of Iceland's programme of whaling under special permit.

Paragraph 30 of the Schedule to the *International Convention for the Regulation of Whaling 1946*, specifies the role of the Scientific Committee in reviewing special permits issued by any country. In order to assist the Committee in its review function an Expert Panel (SC/65a/Rep03) has provided its conclusions and advice on Iceland's programme, and this has informed our view.

We examine the programme as a whole by comparing the presented outcomes with the programme's objectives, taking into account comments arising in the Scientific Committee addressing the original Icelandic proposal, the criteria set out in Annex P and the Expert Panel's Review. Given that the programme was originally described as a feasibility study, we also comment on whether the broad objectives that were to be evaluated for feasibility were in fact demonstrated to be feasible.

Comments from Scientific Committee on the original proposal

Given that the Committee is now reviewing Iceland's overall programme, it is appropriate to recall comments from the Scientific Committee when the original proposal was reviewed (IWC, 2004, p.40-47):

> 'Some members questioned whether the proposal could appropriately be described as a feasibility study, as there is a large amount of relevant information pertaining from previous studies, and this information should have been sufficient to draw up a more complete proposal. Furthermore, the performance criteria were not specified. Those members concluded that initiating the research on a feasibility basis is therefore not justified and the proponents should be encouraged to prepare a full research proposal that can be reviewed properly next year.
>
> The question was again posed regarding performance criteria in the study. Specifically, the proponents were asked to provide, for any aspect of this feasibility study, an indication of results that would cause them to conclude that the proposed research was not feasible. The proponents re-iterated that they, for example, will determine if it is practical or not, based on whether a clear picture of feeding ecology and life history can be obtained. Some members did not consider this to be an adequate answer to the question raised.
>
> Other members welcomed the research initiative recognising that the overall objective of the programme is to increase understanding of the biology and feeding ecology of important cetacean species in Icelandic waters for improved management of living marine resources based on an ecosystem approach. However they noted that the proposal says too little about the future project that this feasibility study is intended to lead into. An ambitious long term programme might be inferred from the proposed feasibility study, but they suggested that an explicit formulation of this intended study would have been helpful to set the feasibility study in context.
>
> In response the proponents stated that the question of whether the proposal is called a feasibility study or a two-year pilot project of a full scale research programme is merely semantic. The proponents felt that it is clear that the ultimate objectives of the investigations will not be met within the two year time frame, but the results will undoubtedly clarify the situation and provide guidance on how to proceed with these fundamental questions upon the completion of the feasibility period.
>
> Concerns were expressed on insufficient plans to integrate prey research with stomach content sampling, as prey abundance and distribution from regular resource surveys would not be adequate to assess prey selectivity patterns on the micro-scale. Further, it was noted that the sampling of the common minke whale would occur primarily in regions of overlap with cod distribution, and that such samples will not provide information about what the common minke whales eat elsewhere. They felt therefore that large scale information about the prey base, is however not sufficient to assess prey selectivity among individual whales or small groups of whales at the micro-scale. Other members pointed out that estimating the functional responses of these predators at various temporal and spatial scales is theoretically a daunting but not impossible, task.'

The comments from the 2003 meeting make it clear that the Committee as a whole took the view that they lacked a sufficiently detailed proposal of what the feasibility study was intended to lead to, and this – by definition – meant that the review lacked the required criteria by which to undertake the review.

The final Review

General: objectives and sampling design

The justification for the programme was described in 2003 that 'for improved ecosystem based management of fisheries in Icelandic waters, there is an urgent need to increase knowledge on the role of cetaceans in the marine ecosystem in Icelandic waters' (Marine Research Institute, 2003). However, given the clarification in SC/F13/SP1 that the study was 'never expected to give definite answers to the research questions raised' it is not clear to what extent the programme that was completed in 2007 was intended to meet the stated objective of providing input into advice for improved management of living marine resources based on an ecosystem approach, or just as a basis on which to design a future sampling scheme. The Expert Panel repeatedly emphasised that the characterisation of the programme 'as a feasibility/pilot study made it difficult to fully review how well the programme could be said to have met its own objectives'.

If the data from the feasibility study are to be used in their own right rather than just to inform the design of future studies then the adequacy of sampling design needs further consideration. The Panel did agree (SC/65a/Rep03) that the method used to obtain representative samples was 'probably sufficient for a feasibility study'. However the Panel did not comment on the adequacy of design for any other uses. We share their concerns over sampling design and believe it would be necessary to review all the issues with the sampling design before any of the results could be used for input into ecosystem models.

Further to the sampling design issues noted by the Panel there are a number of issues which we believe make the data problematic.

(1) The shift in sampling numbers between the south and the north based on the results obtained part way through the study is problematic when the distribution of whales and prey is also changing between years.
(2) Sampling the first whale encountered after leaving port inevitably biases the sampling distribution towards the coast. Although this was addressed to some extent by stratifying by depth (greater or less than 100m) this was only done after more than half the whales had been taken and only in some areas.

(3) If whales are in aggregations then sampling the first whale encountered will bias samples towards whales on the edge of the aggregation. If whales are interacting such whales may consistently have different feeding opportunities to those more often found towards the middle of the aggregation (for example if the aggregation is centred on the most dense area of prey).

The Panel also note that the multi-species modelling approach is 'as yet poorly developed'. They note that the lack of even a simple model for 'evaluating how sensitive results are to different levels of uncertainty and determining appropriate sample sizes' is a 'major weakness' of the programme. Indeed, it is our strong view that an ecosystem model should represent the starting point from which any genuine research programme that aims to provide ecosystem model parameters should start. Not, as in the case of Iceland, to start with a programme built around lethal sampling of one element of an ecosystem, and then attempt to build a model from that basis.

When the programme was discussed by the Scientific Committee in 2003 the proponents commented that they would judge feasibility based on whether 'a clear picture of feeding ecology can be obtained' (IWC, 2004). A decade later, the lack of progress on modelling and concerns over sampling design mean that there is still no clear picture of the feeding ecology of minke whales around Iceland and so there would appear to be a consensus that the feasibility of this type of study has still not been demonstrated.

Annex P review criteria

The review of Iceland's programme has occurred under Annex P, including the review by the Expert Panel. Annex P is explicit in its terms of reference (IWC, 2009) and provides the framework on which the work should be reviewed. Despite this, in the papers prepared for the final review, and for this meeting, Iceland has not described how the research has met or will contribute to meeting the applicable 'Annex P' criteria.

Importantly:

- Iceland has not described how the information gained will contribute to the 'conservation and sustainable use of cetaceans';
- none of the information gained from the catches is necessary for the application of the RMP; and
- information on stock structure via genetic sampling could have been pursued by non-lethal means.

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ANNEX P2

RESPONSE TO ANNEX P1 CONCERNING THE ICELANDIC MINKE WHALE RESEARCH PROGRAMME

G.A. Víkingsson, C. Pampoulie, Th. Gunnlaugsson and B. Th. Elvarsson

Leaper *et al* (see Annex P1) provide their evaluation of the Icelandic research programme on common minke whales with reference to the objectives of the programme, previous discussions in the Scientific Committee, the criteria in Annex P and in light of the report of the Expert Panel (EP) (SC/65a/Rep03). We find their Review to be biased in many aspects, in particular those related to the interpretation of previous discussions within the Scientific Committee and the content of the report to the EP.

Sampling and research design

As clearly stated in the original research programme the sampling design was based on the Bormicon (later GADGET) multi-species framework developed for Icelandic waters in the 1990s (Stefánsson and Pálsson, 1997). More specifically, the design was based on preliminary multi-species modelling exercises including three species of cetaceans (Stefánsson and Pálsson, 1998; Stefánsson *et al.*, 1997) as well as other studies of multi-species interactions in this ecosystem (Magnússon and Pálsson, 1989; 1991). Therefore the description of the approach taken when designing the feeding ecology/multi-species part of the programme (i.e. that the design was not built on previous multi-species modelling work) is incorrect. The delay in further development of the multi-species modelling part of the programme is indeed unfortunate, but was due to practical reasons beyond the control of the proponents.

Some selected sections of the report from the Scientific Committee discussions in 2003 (IWC, 2004, p.40-47) are taken together as a support to the authors' view that the whole Scientific Committee had a unified view concerning the feasibility aspect of the research proposal. The divided views expressed in the Scientific Committee report (IWC, 2004, p.40-47) clearly indicate that this was not the case. However, we appreciate the view of the EP that some aspects of the programme were difficult to fully evaluate with the guidelines in Annex P. However, as the EP notes, these guidelines were developed and agreed after the implementation of the Icelandic research programme.

The authors of Annex P1 choose to interpret the conclusion of the EP that the sampling design is sufficient for a feasibility study (which the programme actually is) to mean that the programme (and thus the data resulting from the programme) is not sufficient for any other uses. This interpretation is highly inconsistent with the views of the EP as expressed throughout their report regarding the value of the data presented and analyses performed. However we are well aware that data from a feasibility/pilot study like this with a sample size of only 190 animals must be interpreted with caution.

The authors of Annex P1 considered the shift in sampling numbers between south and north based on preliminary results from the feeding study to be problematic. As explained in our response paper (SC/65a/SP01) this was due a pronounced difference in diet composition between the areas north and south of Iceland with much higher diversity in the northern areas. The purpose of increasing sample size in the northern areas was to decrease variation in the estimated diet composition in these areas. As all relevant analysis (e.g. of consumption rates) will be related to abundance in these subareas this change will not bias the results.

The authors of Annex P1 are concerned over the alleged strategy during the initial years of the study to sample 'the first whale encountered after leaving port'. This statement is based on misunderstanding as this was not the strategy applied in the programme. The strategy applied was to target the first whale encountered after entering a pre-determined small area. This was to avoid selective sampling, i.e. to avoid catching the most accessible whales.

Contrary to the views expressed in Annex P1, we believe that the programme has already appreciably increased our knowledge on feeding ecology of common minke whales in Icelandic waters. This in in accordance with the view of the following conclusion of the EP (SC/65a/Rep03, p.20):

> 'However it is clear that knowledge of the feeding ecology of common minke whales has been advanced through a variety of approaches including stomach contents, fatty acid and stable isotope analyses and the collection of data that can be used to inform a more systematic than usual examination of the results that can be obtained from lethal and non-lethal methods.'

In addition to the originally stated objectives, this study has provided important information on the changes occurring in Icelandic waters during the last decade. For example, the observed changes in diet of minke whales during 2003-07 conform well with decrease in abundance of sand-eel and capelin, breeding failure of puffin and other seabirds as well as with decreased abundance of minke whales themselves.

Relevance to the RMP and IWC resolutions and discussions

With reference to the guidelines in Annex P (which were written and agreed after the Icelandic programme) the authors of Annex P1 conclude that Iceland has not described how the information gained from the programme will contribute to the conservation and sustainable use of cetaceans in general and to the RMP in particular. This is contrary to view expressed in the report of the Expert Panel, which made the following conclusions regarding RMP.

Overall, the Panel **agreed** that the Icelandic survey data have improved knowledge about the abundance and distribution of the common minke whale in Icelandic waters, both for use in the RMP and for input to potential multispecies modeling (SC/65a/Rep03, p.10).

The Panel **agreed** that the proponents have conducted and reported research that addresses both of the objectives related to stock structure. The data collected and the analyses presented will provide valuable information relevant to the forthcoming RMP *Implementation Review* of North Atlantic common minke whales and the planned joint AWMP/RMP Workshop on the stock structure of this species in the region (SC/65a/Rep03, p.13).

In addition to the work related to ecosystems and environmental change discussed above, the Panel **agreed** that the work on stock structure and abundance was directly relevant to the Scientific Committee's work on the Revised Management Procedure, in particular with respect to the forthcoming *Implementation Review* for North Atlantic common minke whales and the joint RMP/AWMP Workshop on stock structure of common minke whales throughout the North Atlantic.

The Panel also **agreed** that many aspects of the programme were directly relevant to IWC resolutions and noted that this information has been made available to the Scientific Committee in papers presented at Annual Meetings as well as the present Workshop (SC/65a/Rep03, p.33).

Noting the importance of migration rates to the RMP and AWMP approaches, the Panel **especially welcomed** the efforts made to undertake the kinship analyses with the Norwegian samples and it encouraged further co-operative work in this regard throughout the North Atlantic. (SC/65a/Rep03, p.13).

In addition the EP made several recommendations for further analyses of the data from the programme for submission to the RMP *Implementation Review.*

Regarding the special objective of examining the utility of lethal and non-lethal techniques the EP made the following conclusion (SC/65a/Rep03, p.33-34):

> 'The Panel welcomed the efforts of the Icelandic programme to provide data to allow a more thorough and quantitative comparison of some lethal and non-lethal techniques than has previously been possible (see recommendation in IWC, 2010). It agreed that this work is valuable and informative not only for future studies on North Atlantic common minke whales but also for other populations and species (SC/65a/Rep03, p.33)'.

These conclusions of the EP clearly indicate that the output of the research programme is relevant both directly with respect to the RMP and other IWC resolutions and discussions.

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ANNEX P3

COMMENTS BY SOME MEMBERS ON THE SPECIAL PERMIT WHALING PROGRAMMES: GENERAL COMMENTS

Over the past few years the Scientific Committee has focused its discussions on whaling under Special Permit on methods to evaluate new, existing and terminating programmes (known as 'Annex P'). Notwithstanding the issues raised in relation to whether or not 'Annex P' has led to an improved review process some members are concerned that a lack of review and comment outside the periodic reviews under 'Annex P' should not be interpreted as an indication that any of the serious scientific concerns expressed about special permit whaling programmes have been addressed. These members recognise that it is not a good use of the Committee's time to repeat previous discussions.

These members wish to reiterate the view that the special permit programmes conducted by the Government of Japan (JARPN, JARPN II, JARPA and JARPA II), and the recent programme conducted by the Government of Iceland have not provided results relevant to the IWC and are unnecessary for the conservation and management of whales. Further, while the Committee has had to disrupt its work on other important, genuinely scientific issues to discuss special permit proposals that claimed an urgent need for research, this has not always been reflected in timely presentation of results. This is all the more serious due to the serious potential impact of these open-ended programmes on the status of some whale populations.

These members make reference to the extensive discussions in previous reports of the Scientific Committee that highlight many substantial, general and specific objections to the purpose and operation of Special Permit whaling programmes and their lack of any genuine response to scientific review processes. Whilst the Scientific Committee has on occasion referred to the *potential* relevance of some lethally-acquired data, that potential has never been realised and we believe it unlikely to be realised on any important issue. Moreover, the Scientific Committee has never stated that data from Special Permit whaling programmes are required for its identified research needs, or otherwise for the conservation and management of whales. The current whaling programmes that operate under special permit (JARPA II and JARPN II) continue to kill whales without any defendable scientific rationale or purpose.

ANNEX P4

RESPONSE BY OTHER MEMBERS TO ANNEX P3

It is unfortunate that the political controversy surrounding the Special Permit programmes has been making the scientific discussions at the IWC Scientific Committee unnecessarily difficult and confrontational. The Scientific Committee has been striving to make its working methods related to the Special Permit programmes less controversial by introducing such tools as Annex P. The proponents of the Special Permit programmes share the general desire of the Scientific Committee to make the discussions more scientific and constructive and have been cooperating in designing and following the agreed procedures, such as Annex P and Schedule paragraph 30, to improve the situation.

The scientific contributions of the Special Permit programmes have been recognised and duly recorded in the reports of the Scientific Committee. In the same way as other scientific discussions, conflicting views have been recorded in those reports. As long as they represent constructive scientific discussions, existence of conflicting views is quite useful for the progress of science. We therefore view the recognition of potential scientific contribution as positive evaluation of the programmes. While we do strive to make timely progress, we also recognise some tasks require long-term efforts. Decades of work before achieving scientific objectives are not uncommon, including in the field of population ecology.

We would also like to note that the proponents of the Special Permits have been faithfully responding to constructive scientific suggestions and critiques. Numerous 'homeworks' from the Scientific Committee have been responded to and resolved as recorded in the past reports of the Scientific Committee.

Because of the reasons above, we disagree with the views expressed in Annex P3.

ANNEX P5

DATA AVAILABLE FOR THE JARPA II REVIEW WORKSHOP (JARPA II SURVEYS 2005/06-2010/11) THROUGH THE DATA AVAILABILITY GROUP (DAG) AND PROCEDURE B*

Table 1
Data available for the JARPA II Review Workshop.

	Seasons	Sample size
Abundance estimate several species		
1. Angle and distance experiments	2005/06-2010/11	2,617 tests
2. Ice edge line	2005/06-2010/11	4,234 points
3. Effort data	2005/06-2010/11	43,161 activities
4. Weather data	2005/06-2010/11	34,694 records
5. Sighting Antarctic minke whale	2005/06-2010/11	7,344 schools
6. Sighting fin whale	2005/06-2010/11	605 schools
7. Sighting humpback whale	2005/06-2010/11	4,570 schools
8. Sighting blue whale	2005/06-2010/11	146 schools
9. Sighting southern right whale	2005/06-2010/11	150 schools
10. Sighting sperm whale	2005/06-2010/11	894 schools
11. Sighting southern bottlenose whale	2005/06-2010/11	310 schools
12. Sighting killer whale	2005/06-2010/11	352 schools
Ecological data (oceanographic, marine debris, krill)		
13. Temperature (XBT)	2005/06-2010/11	18 stations
14. Temp. salin. (XCTD)	2005/06-2010/11	347 stations
15. Temp. salin. (CTD)	2005/06-2010/11	361 station
16. Temp. salin. (EPCS)	2005/06-2010/11	482 days
17. Marine debris (stomach)[2]	2005/06-2010/11	3,280 whales
18. Marine debris (sea surface)	2005/06-2010/11	88 cases of debris observations
19. Echo sound (krill abundance/dist.)	2007/08-2008/09	326 days
20. IKMT net	2007/08-2008/09	68 stations
21. Body length krill	2007/08-2008/09	68 stations
Antarctic minke whale (biological, feeding ecology, pollutants, stock structure data)		
Biological data		
22. Catching date	2005/06-2010/11	3,264 whales
23. Catching location	2005/06-2010/11	3,264 whales
24. Sex	2005/06-2010/11	3,264 whales
25. Body length	2005/06-2010/11	3,264 whales
26. Age (earplug)[3]	2005/06-2010/11	3,264 whales
27. Age (racemization)[4]	2005/06-2010/11	41 whales
28. Transition phase[5]	2005/06-2010/11	3,264 whales
29. Presence/absence of corpora[6]	2005/06-2010/11	1,701 whales
30. Testis weight[7]	2005/06-2010/11	1,563 whales
31. Foetus length	2005/06-2010/11	1,127 whales
32. Foetus weight	2005/06-2010/11	1,127 whales
33. Foetus number[8]	2005/06-2010/11	1,701 whales
34. Foetus sex	2005/06-2010/11	1,127 whales
35. Lactation condition	2005/06-2010/11	1,701 whales
Feeding ecology/energetics		
36. Blubber thickness (two points)	2005/06-2010/11	3,264 whales
37. Body weight	2005/06-2010/11	1,598 whales
38. Freshness stomach contents	2005/06-2010/11	1,925 whales
39. Main prey	2005/06-2010/11	332 whales
40. Organ weight including fat weight	2005/06-2010/11	82 whales
41. Girth (two points)	2005/06-2010/11	3,264 whales
42. Stomach content (IWS)	2005/06-2010/11	3,264 whales
43. Stomach content weight	2005/06-2010/11	2,953 whales
44. Lipid content in blubber	2005/06-2010/11	35 whales
Pollutants/health[9]		
45. Heavy metals (whale)	2005/06-2010/11	195 whales
46. Organochlorine (whale)	2005/06-2010/11	10 whales
47. Heavy metal (prey)	2005/06-2010/11	20 preys
48. Gross pathological observations of internal organs[10]	2005/06-2010/11	3,264 whales
Stock structure		
49. Body proportion (8 measurements)	2005/06-2010/11	3,264 whales
50. mtDNA (sequences) (from catches)	2005/06-2010/11	1,803 whales
51. mtDNA (RFLP) (from catches)	2005/06	764 whales
52. Microsatellite DNA (from catches)	2005/06-2010/11	2,553 whales

Cont.

	Seasons	Sample size
Antarctic fin whale (biological, feeding ecology, pollutants, stock structure data)		
Biological data		
53. Catching date	2005/06-2010/11	17 whales
54. Catching location	2005/06-2010/11	17 whales
55. Sex	2005/06-2010/11	16 whales
56. Body length	2005/06-2010/11	16 whales
57. Age (earplug)[3]	2005/06-2010/11	16 whales
58. Transition phase[5]	2005/06-2010/11	16 whales
59. Presence/absence of corpora[6]	2005/06-2010/11	8 whales
60. Testis weight[7]	2005/06-2010/11	8 whales
61. Foetus length	2005/06-2010/11	3 whales
62. Foetus weight	2005/06-2010/11	3 whales
63. Foetus number[8]	2005/06-2010/11	8 whales
64. Foetus sex	2005/06-2010/11	3 whales
65. Lactation condition	2005/06-2010/11	8 whales
Feeding ecology/energetics		
66. Blubber thickness (14 points)	2005/06-2010/11	16 whales
67. Body weight	2005/06-2010/11	15 whales
68. Freshness stomach contents	2005/06-2010/11	14 whales
69. Main prey	2005/06-2010/11	15 whales
70. Organ weight including fat weight	2005/06-2010/11	15 whales
71. Girth (three points)	2005/06-2010/11	16 whales
72. Stomach content (IWS)	2005/06-2010/11	16 whales
73. Stomach content weight	2005/06-2010/11	15 whales
74. Lipid content in blubber	2005/06-2010/11	10 whales
Pollutants/health[9]		
75. Heavy metals (whale)	2005/06-2010/11	16 whales
76. Organochlorine (whale)	2005/06-2010/11	16 whales
77. Gross pathological observations of internal organs[10]	2005/06-2010/11	16 whales
Stock structure		
78. External measurements (41)	2005/06-2010/11	16 whales
79. mtDNA (sequences) (catches and biopsy)	2005/06-2010/11	C: 17; B: 13 whales
80. Microsatellite DNA (catches and biopsy)	2005/06-2010/11	C: 17; B: 13 whales
Stock structure other species		
Humpback whale		
81. mtDNA (sequences) (biopsy)	2005/06-2010/11	133 whales
82. Microsatellite DNA (biopsy)	2005/06-2010/11	0 whales[11]
83. Photo-id data	2005/06-2010/11	1,201 pictures
Blue whale		
84. mtDNA (sequences) (biopsy)	2005/06-2010/11	11 whales
85. Photo-id data	2005/06-2010/11	376 pictures
Southern right whale		
86. mtDNA (sequences) (biopsy)	2005/06-2010/11	34 whales
87. Microsatellite DNA (biopsy)	2005/06-2010/11	34 whales
88. Photo-id data	2005/06-2010/11	671 pictures

*Data for the items in this table are also available for the JARPA period (1987/88-2004/05), which were reviewed by the Scientific Committee in 2006. **Data associated with track-line and distances from the ice-edge in JARPA and JARPA II will be available, if possible.

Annotations

1. Standard Line Transect data. It should be noted that in some JARPA II surveys some areas could not be covered due to external interferences and sabotages from anti-whaling groups, and that some kind of extrapolation will be necessary.
2. The figure given corresponds to the total number of stomachs examined.
3. JARPA II age data of Antarctic minke whale were obtained by a new reader with expertise and training enough for this kind of work. The figure given here are the total number of earplugs examined. Age information could be obtained for 81.8% of the tota samples. An ageing calibration exercise was carried out (Kitakado *et al.*, in press). In the case of the fin whales age information could be obtained for 100% of the samples.
4. This sample size corresponds to the results of a pilot study to investigate the feasibility of the racemisation method for ageing purposes. At this stage these data were not produced for the purpose of biological parameters estimates but for examining the feasibility of the technique.
5. The figure given corresponds to the total earplugs examined. Transition Phase information in the Antarctic minke whales could be obtained for approximately 42.1% of the total samples (mature+immature). In the case of the fin whales transition phase information could be obtained for one animal out of 16.
6. Ovary samples were lost as an effect of the 2011 earthquake and tsunami so information on the number of corpora is not available. Information on the presence/absence of corpora (information necessary for determining sexual maturity in females) is based on examination of the ovaries conducted at the field.
7. While in JARPA both testis weight and histological approaches were used for determining sexual maturity in males, in JARPA II maturity of males was determined only by the testis weight criterion (due to 'man-power' limitation and economical considerations).
8. The figure given corresponds to the total females examined.
9. The 2011 earthquake and tsunami affected heavily the samples collected for pollutant studies. This explains the particular smaller samples size for this item.
10. This figure corresponds to the total number of whales examined for abnormal tissues or organs in gross pathology.
11. It is possible that some microsatellite data are produced at a later stage. People interested in genetic data for stock structure studies of humpback whales should consult the person in charge directly.

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