Annex Q
Report of the *Ad hoc* Working Group on Future SOWER Planning

Members: Baker, Bannister, Best, Borchers, Butterworth, Clark, Donovan, Ensor, Findlay, Kasuya, Kato (Convenor), Moronuki, Nishiwaki, Pastene, Perrin, Pinedo, Tomita, Thiele, Van Waerebeek.

1. BACKGROUND

Kato explained that the group had been formed to produce a plan for the future of both the Antarctic and blue whale components of the SOWER cruise programme, given that (a) the Scientific Committee had recommended that such planning should take into consideration collaboration with GLOBEC and CCAMLR, and (b) that there had been three years of blue whale cruises, and an assessment of progress to date would be timely.

2. ELECTION OF CHAIRMAN AND RAPPORTEUR

Kato was elected Chairman and Best agreed to act as rapporteur.

3. ADOPTION OF AGENDA

The Agenda was adopted unchanged.

4. BLUE WHALE PROJECT

4.1 Brief review of progress on discrimination between two subspecies[1]

4.1.1 Acoustic

The sounds recorded on the 1997/98 SOWER Antarctic cruise still had to be analysed, and the group felt that until the working group under Clark had reported to the sub-committee on Other Great Whales (Annex E, Appendix 2) it was premature to comment on acoustic results to date. It was, however, possible that the existing coverage of 'true' blue whale vocalisations might be more limited in quantity and area coverage than that from 'pygmy' blue whales.

4.1.2 Video-sequence

Results from the first two cruises had been summarised in SC/50/CAWS1. The technique looked promising, but to date, the material from true blue whales was much less than that from pygmy blue whales (although some 27mins was available from the 1997/98 Antarctic SOWER cruise – as well as another 180mins from putative pygmy blue whales off Chile on the 1997 SOWER cruise).

4.1.3 Biopsy

Material had been collected from 3 true blue and 3 pygmy blue whales on the SOWER Antarctic cruise in 1997/98, and from 18 pygmy blue and 1 undetermined blue whale on the 1997 SOWER cruise off Chile. The group felt unable to reach a conclusion on the status of the genetic discrimination between true blue and pygmy blue whales without first checking on the state of analysis of existing samples, including 'voucher' material from known true blue and pygmy blue whales. It agreed to recommend that a report summarising the situation, including the need for further material, should be prepared in time for the next planning meeting.

4.1.4 Photographs

The group noted that these had been collected mainly for the purposes of individual identification, but that the frames taken included some suitable for investigating morphological differences between true and pygmy blue whales (i.e. blowhole and rostrum shape). No analyses of these photographs had been undertaken yet (nor of existing video material which had also been taken for the purposes of documenting possible morphological differences between the two forms). The group recommended that Kato investigate the possibility of analysing this material, which is held in Japan. Thiele volunteered to inspect the photo-identification pictures for photographic quality and distinctiveness.

Although photogrammetry of body proportions had originally been proposed as a means of discriminating between true and pygmy blue whales, based on relative lengths of the tail section of the body, photogrammetry had proved impracticable because of behavioural problems. On the other hand, the photographic and video material could provide data on pigmentation patterns, in which some differences had been described between the two forms in the literature.

4.1.5 Other morphology

Differences in baleen shape had also been described between pygmy blue and true blue whales. Although it could not be used under field conditions, it could be useful in attributing an isolated plate to one or other form, so increasing the number of voucher specimens for genetics.

[1] Note that use of 'true' and 'pygmy' throughout this report refers to putative not confirmed identifications.

4.1.6 Other techniques
The group proposed that dive time experiments should continue. Even if the likelihood of being able to discriminate between true blue and pygmy blue whales might be low, the data might be useful for modelling sightability.

4.2 Necessity for further data and analyses for discrimination purposes

Apart from the need for more samples from true blue whales, the group felt that some progress had been made in developing means of discriminating between true and pygmy blue whales, notably in the fields of acoustics and genetics. However these did not help identification in real time.

The group supported the sub-committee's recommendation that a report be prepared documenting the criteria used on each of the three blue whale cruises to discriminate between the two forms (Annex E, item 9.1.2). However, it urged that the report should be prepared in time for the planning meeting for the 1998/99 cruise. The quantity of high resolution video records of surfacings of both putative forms now available should make it possible for topmen to be interrogated on the characters they use to distinguish between the forms, while viewing tapes of blue whales. This could be used (a) to develop a better understanding of criteria used, (b) to assess or evaluate topmen for accuracy and/or consistency, or (c) for training.

4.3 Next research objective for the blue whale project

Donovan reviewed the terms of reference of the present cruise programme. They were originally (IWC, 1995a):

(a) to refine estimates of abundance of true blue whales in the feeding areas;
(b) to evaluate the potential for competition for krill between (true) blue whales, other baleen whales and other high-level predators;
(c) to determine the distribution of breeding areas and whether animals that utilise a particular low-latitudinal breeding area utilise a particular feeding area in the Southern Ocean.

The group noted that (a) was still the main objective. Item (c) might become more important in due course, but (b) had previously been agreed not to be feasible, at least in the foreseeable future (IWC, 1995b; 1996 and Annex E).

4.4 Action arising

It was felt that more material was needed from known 'true' blue whales for discrimination purposes.

Before deciding on lines of possible future research on blue whales, a table was prepared (by Ensor, Donovan and Findlay) for subsequent presentation to the sub-committee, of the acoustic, genetic, morphological and behavioural data collected on the three blue whale cruises to date, whether it had been analysed, and how useful the results were in discriminating between true and pygmy blue whales. A revised tabulation will be available for discussion at the planning meeting.

5. ANTARCTIC CRUISE

5.1 Review of remaining areas in the third circumpolar coverage

The following regions of the Antarctic still remain to be covered by the SOWER cruise programme:

Sector A - 10 degree sector between 60° and 70°W,
Sector B - 30 degree sector between 110° and 140°W,
Sector C - 30 degree sector between 170°W and 160°E (including the Ross Sea), and
Sector D - 50 degree sector between 80° and 130°E.

The group was reminded that coverage of Area VW when last surveyed (1991/92) had been incomplete. It noted that the survey had not extended up to 60°S, and that this should be added to the area coverage.

5.2 Report from SOWER 2000 Planning Group

5.2.1 GLOBEC
The GLOBEC small-scale process study was now planned for the 2000/2001 Antarctic summer season. The research area would be in the vicinity of the Antarctic Peninsula. The SWG on Environmental Concerns had recommended that a joint survey between IWC and GLOBEC should be conducted at this time and place.

5.2.2 CCAMLR
The CCAMLR synoptic krill survey was planned for the 1999/2000 Antarctic summer season, and the research area would be in the vicinity of the Antarctic Peninsula.

5.2.3 Australian national survey
A fine-scale krill survey incorporating cetacean sightings was planned for the 1999/2000 Antarctic summer season; the research area would be in Area IV (between longitudes 70° and 80°E). The Australian pelagic monitoring programme will continue to run annual surveys on ANARE voyages from 1998/99.

5.3 Scheduling

The working group considered the future schedule of the SOWER Antarctic cruises, given that (a) one season would be utilised for a collaborative survey with GLOBEC, (b) part of another season might be spent working with CCAMLR, (c) the third circumpolar survey should be completed within five years, (d) conflict of interest with the JARPA programme should be avoided if possible, and (e) it was likely that only two research vessels would be available for the SOWER programme.

The working group decided that:

(a) Sector A should be reserved for the GLOBEC and CCAMLR surveys, with the intention that during one of these programmes, a dedicated line transect survey of the area would be possible.
(b) Sector B could be adequately surveyed with two vessels in one season under existing coverage.
(c) Area VW should be added to the missing sectors because of the incomplete coverage of the northern stratum during the last survey, as Sector E. This effectively joins sectors C and D into one very large unit, C+D+E, which (if the timetable was to be adhered to) would have to be surveyed in three years. This would be difficult with two vessels if the existing coverage was maintained. It was therefore proposed that, unless a third vessel becomes available, coverage of this large sector would be reduced so that it could be completed in three years. One of these

years should be reserved for sector C, which poses special problems because of the extended latitudinal coverage required if the Ross Sea was to be adequately surveyed. As the advantages of having three vessels would be especially great in this sector, it was also decided that the survey of sector C should be carried out later in the time series rather than earlier, to give time for negotiations over the provision of an extra vessel.

With these provisos, the following schedule was proposed:

(a) Because JARPA will be taking place in Area V in 1998/99, it is proposed that the opportunity be taken to survey Sector D in 1998/99, starting from the western edge.
(b) Sector B will be surveyed the following year, in 1999/2000.
(c) An effort should be made to survey the 10° sector in Sector A in conjunction with GLOBEC 2000, i.e. in 2000/2100.
(d) After the GLOBEC collaborative project in 2000/2001, the circumpolar surveys will resume in the remainder of C+D+E. Since access to the Ross Sea cannot be guaranteed every year, an attempt to survey sector C should be made in 2001/2002. If access is impossible, the survey that year can be switched to Sector E.
(e) If Sector C is surveyed successfully in 2001/2002, Sector E will be surveyed in 2002/2003. If not, a second attempt will be made to survey Sector C.

6. PLAN FOR THE 1998/99 CRUISE

6.1 Blue whale cruise

The group agreed that, in the absence of a separate, dedicated, blue whale cruise in lower latitudes in 1998/99, a major component of the SOWER Antarctic cruise should involve research on blue whales. This is compatible with the finding that more information is needed from true blue whales for discrimination between them and pygmy blue whales. As the total number of research days available in 1998/99 would be 47 and recent Antarctic SOWER cruises had operated with only 35 days, it was proposed that 12 days would be reserved for blue whale research. A final decision on how this time would be allocated during the cruise was left to the planning meeting.

Nishiwaki informed the group that during early December 1997, JARPA survey vessels had encountered a concentration of blue whales at approximately 61°S, 65°E; 13 schools of 20 blue whales were seen in one day (with another 29 unidentified baleen whales).

Blue whale sightings between 30° and 130°E longitude during the IDCR cruises were extracted from the IWC Database. There had been 33 sightings totalling 91 animals in that region. Of them, 23 (69 animals) were in the vicinity of the ice edge between 45° and 75°E. This concentration is just outside the western border of Area IV, so the cruise design should take into account the possibility of a starting position in the southeastern corner of Area III. One option might be that the 'blue whale' element of the cruise would take place there, as a distinct segment of the cruise. If no blue whales were found, however, the main survey would resume until a concentration of blue whales was encountered.

6.2 Antarctic cruise

6.2.1 Japanese proposal (SC/50/CAWS3)

Given the discussions above, the proposal had been withdrawn.

6.2.2 Alternative proposal

The group recommended that as much as possible of Area IV should be surveyed in 1998/99, starting at 80°E and surveying eastwards. The objective would be to survey as far as 120°E.

6.3 Logistics

6.3.1 Brief review of recommendations from last year's SOWER cruises

(a) 1997-98 SOWER blue whale cruise (SC/50/Rep2)
  - Accepted: Recommendations 5 (subject to funding) ; 6; 13
  - Referred to the Planning Meeting: 1-4; 7-12
(b) 1997-98 SOWER Antarctic cruise (SC/50/Rep1)
  - Accepted: Recommendation 3
  - Referred to Planning Meeting: 4-14; 17-20
  - Other action: 2 (Reilly/Thiele/Secretariat, to act); 15 (Institute of Cetacean Research to act); 21 (Clark to act)

6.3.2 Number and identity of vessels offered, length of cruise

The *Shonan Maru* and *Shonan Maru No. 2* would be offered, as last year. The length of the cruise (from home port to home port) would be 60 days, of which an estimated 13 days would be spent in transit between the home port and the research area.

6.3.3 Research area

The systematic sighting surveys for minke whales would take place in Area IV. Survey would commence at 80°E and would extend as far east as possible, up to approximately 120°E, and from the ice edge to 60°S.

6.3.4 Survey methodology and experiments

The same survey methods and sightings experiments would be carried out as last year, with the provisos that (a) survey coverage per day might have to be adjusted to achieve better longitudinal coverage, and (b) observer searching behaviour in IO mode might have to be changed if the data are to be used to estimate $g(0)$. Details would be discussed at the planning meeting.

For the acoustic studies, it was agreed that at least 60 sonobuoys would be needed for the cruise (19 remained from the last cruise). Clark recommended that re-useable sonobuoys be considered as an option and offered to investigate the availability of such equipment. The group recommended that the use of acoustics to locate blue whale concentrations should also be investigated.

6.3.5 Time allocation and survey methodology for blue whale research

Twelve days have been provisionally allocated for this research, the final details and timing of which will be discussed at the planning meeting.

6.3.6 Possible participants

Kato announced that a total of four researchers would be accommodated on each vessel, as last year. Ensor stated that he would probably be available to act as cruise-leader if required. The group agreed to recommend his leadership.

The group further recommended that the positions of researchers be advertised as usual, and the final choice of participants would be made at the planning meeting.

Table 1

Proposed budget for 1998-99 SOWER Antarctic cruise. (All amounts in pounds sterling). (a) Personnel; (b) Other.

(a) Personnel	Grant	Travel	Ship	Land	Ins.	Bank	Total
Cruiseleader	8,200	1,500	950	520	200	100	11,470
Senior scientist	6,400	1,500	950	520	200	100	9,670
Researcher × 4	20,000	6,000	3,800	2,080	800	400	33,080
Japan A	0	1,500	0	520	200	100	2,320
Japan B	0	0	0	520	200	100	820
Sub total	34,600	10,500	5,700	4,160	1,600	800	57,360

(b) Other	£
Planning Meeting(Tokyo)	
Travel (8 × 1000)	8,000
Subsistence (8 × 6 @ 100)	4,800
Incidentals	100
Airport transport/tax	300
Sub total	13,200
Equipment	
Airfreight of Equipment (computers and sonobuoys)	2,000
Communications	1,500
Photo-identification film	130
Photo processing	70
Purchase of new computer	2,000
Software development and data acquisition interface	1,500
Printer cartridges, disks	50
Hire of directional sonobuoy receiver	1,000
Purchase of *Paxarms* biopsy darts and charges	200
Meeting room hire	100
2 × Annual Reports	250
Sub total	8,800
Cruiseleaders attendance at Scientific Committee Meeting	
Travel	1,400
Subsistence (6 × 90)	540
Incidentals	60
Sub total	2,000
Total	81,360

6.3.7 Planning meeting

It is intended to hold a planning meeting in Tokyo, possibly in early October. It was stressed, however, that it would be desirable to schedule the meeting as early as possible. The group recommended that the duration of the meeting be five days, if possible, with one day reserved for topmen briefing and interrogation about true blue whale/pygmy blue whale differentiation, and another day for track design and acoustic experiment design. Besides the cruise-leader and relevant crew members, the meeting should include the Steering Group (Bannister, Best, Brownell, Kato) together with Clark, Ljungblad, a representative from the IWC Secretariat, and a sightings survey specialist.

6.3.8 Responsible persons in home ports

It was recommended the cruise would begin in Cape Town, South Africa, and end in Hobart, Tasmania. The meeting nominated Best as the responsible person in Cape Town. The responsible person in Hobart was to be nominated.

6.3.9 Budgets

A preliminary budget was prepared (Table 1).

7. OTHER MATTERS

Information on the position of the ice edge will be required during the cruise. Reilly offered to relay such data to the vessels.

REFERENCES

International Whaling Commission. 1995a. Report of the Scientific Committee. *Rep. int. Whal. Commn* 45:53-103.

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