

Fifty first meeting, Scientific Committee of the International Whaling Commission

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1. Introduction

This is my report from the Scientific Committee meeting of the International Whaling Commission (IWC) held in Grenada from 3 May to 15 May 1999. An earlier draft was prepared for Jim McClay, NZ Commissioner to the IWC, for briefing on the issues discussed in the Scientific Committee.

In this report I outline the important discussions that occurred in the Scientific Committee, particularly those issues that directly affect New Zealand. I attended three of the seven sessions, while Scott Baker, Steve Dawson and Mike Donoghue attended various parts of these three plus the other four sessions that I was unable to cover. New Zealand was very well represented at the meeting, which allowed coverage of all sessions even when three or four were running concurrently.

The three sessions that I attended were:

1. Comprehensive Assessment of Other Whale Stocks (CAWS). This covers all the large whale species that are not being considered for commercial whaling operations. It dealt with population assessment and growth, and stock structure;
2. Revised Management Procedure (RMP). This covers the implementation of commercial whaling to some stocks of minke and brydes whales. It deals with population assessment and growth, stock structure, and simulations investigating the impacts of commercial whaling on whale stocks; and
3. Stock Identification Working Group. The aim of this group was to try and create a generic definition of stock structure that can be used across all species and stocks. At present an *ad hoc* approach is used and there is no consistency between decisions.

I also include notes about issues that were raised in full plenary session and some possible ideas on work that could be undertaken prior to next year's meeting to help strengthen the case for continuation of the commercial whaling moratorium. I have tried to keep this document non-technical and have included a glossary of abbreviations at the end.

2. Comprehensive Assessment of Other Whale Stocks (CAWS)

2.1 JARPA - VPA ANALYSIS

There has been a 10 year discussion as to the usefulness of commercial catch and JARPA data to estimate population parameters such as recruitment. The major concern has focused around the selectivity of commercial operations. That is, can it be assumed that the recorded catch was a random sample. It was agreed that the papers presented this year "show that parameters potentially important for management (natural mortality, trends in recruitment) can be estimated from age data". This is a significant statement as it opens the door for more use to be made of the commercial catch data and a justification for JARPA. There were still some doubts expressed about the data, and more work needs to be undertaken to address some concerns outlined in the general discussion. There is still no generally agreed method for population estimates in VPA from JARPA data, which means that JARPA data will still not be used in abundance estimation. Cooke pointed out that the parameters to be derived from VPA are not used in the RMP anyway, so the usefulness of this information is not directly relevant.

2.2 JARPA - POPULATION ESTIMATES

As mentioned above, there is still no accepted method for use in estimating population size from JARPA data. A new method, GAM, was described that provides the least biased estimates of all methods considered to date. This method models spatial and sighting data to construct a reliable estimate. It is still in development but shows more promise than any of the other methods previously trialed. This will open the door for more extensive use of JARPA data.

2.3 MINKE WHALE SIGHTINGS

There has been an increasing trend for species identification in sighting data to be non-specific. Particularly, an increasing proportion of whales have been classified as "like minke", indicating that the observer thought it was a minke but could not be sure. As these are not confirmed sightings they are not used in the estimation of population size. The implications for this are that minke populations may be increasing in size but this is not being detected. This may allow for some later scaling-up of population estimates if the increase seen in this unidentified portion can be quantified. Work is continuing to investigate this further, but it highlights the poor quality of raw data.

2.4 BLUE WHALE SUBSPECIES DISCRIMINATION

Debate continues on whether it is possible to distinguish between true and pygmy blue whales. Field observations as part of SOWER are still unable to provide satisfactory criteria for differentiation. Genetics and acoustics have not been able to offer clear evidence because there are few confirmed reference samples for either subspecies. One of the major reasons behind IWC support of SOWER cruise is to provide information for use in subspecies identification in the field. Few good data have come out of this part of the SOWER programme, and perhaps IWC funding of SOWER should be re-evaluated as to whether it is cost effective and providing science useful to management in regard to differentiation of these subspecies.

2.5 ANTARCTIC BLUE WHALE POPULATION ESTIMATES

New estimates for Antarctic blue whale populations were proposed. There was considerable debate about these, and the subcommittee originally recommended that a new estimate be put forward as the new official estimate. The last official estimates are from 1981. This decision was overturned in full plenary as some serious questions were raised about the estimate technique (i.e. whether the estimate was appropriate for either all blue whales or just true blues; uncertainty over the consistency of coding of sightings in the field; and recommendations for improvements in precision). Therefore there is no new blue whale estimate but it was noted that the present estimate is in need of revision. It is important to note that over the last 20 years of sighting surveys less than 200 blue whales have been recorded in primary sighting mode (the mode used to estimate abundance) although more have been sighted in secondary sighting mode. This is a very small number considering the tens of thousands of miles covered over the 20 year period.

2.6 OFFICIAL CATCH RECORDS

More information was provided outlining the unreliability of Russian catch data. This is a continuing process and more revised data are provided each year from almost all species and areas. The main point of interest is that frequently the actual catch of blue whales was less than reported. The reason given was that this was done so that blue whale quotas would not be reduced. Catch position information was also falsified to hide locations of whaling grounds from competitors. This highlights the inconsistency of commercial catch data and raises more concern about the use of these data in the RMP.

2.7 RIGHT WHALES

It was recommended that the Committee consider North Atlantic right whales as the highest priority next year. It was also recommended that research into the status of eastern North Pacific right whales be intensified and continued.

2.8 ANTARCTIC HUMPBACK WHALE POPULATION ESTIMATES

New estimates for Antarctic humpback whales were proposed. It was agreed that estimates from the second circumpolar surveys (a combination of IDCR and IWC/SOWER cruises) were acceptable and the new estimate is 10 000 (cv=0.27) for 1988. The old estimate was for 1981 and is 7400 (cv=0.38). Although the new estimate is higher there is in fact no statistically significant difference between these and nothing can be postulated about increasing (or decreasing) population size. It was agreed not to use data from the third circumpolar survey series, as the survey has not yet been completed. The full data set may be used next year when the present series is completed.

2.9 RATES OF POPULATION INCREASE IN HUMPBACK WHALES

Although there is no significant change in population size as calculated from the circumpolar surveys of the summer feeding grounds there have been significant rates of increase demonstrated in migratory/breeding areas in Australia. Estimates from JARPA have shown increases in the Antarctic but these estimates are not able to be used as the present estimation method is not approved by the Committee. There are good estimates of population increase for both eastern and western Australian stocks in the order of 10% per annum. Some of the estimation methods used in Australia are very robust and reliable for estimating population growth and are considered more reliable than the estimates from the circumpolar surveys. The discrepancy between a lack of population growth in the Antarctic against significant growth in Australia are difficult to account for, as the Australian population constitutes a large part of the Antarctic population. It highlights the poor information provided from 20 years of circumpolar surveys and throws doubt on the precision and usefulness of these data. There is very little known about the New Zealand migratory population. Are similar changes being seen here? There has been no research undertaken to look at this, so we are unable to say.

2.10 BIOPSY OF MINKE WHALES

There was significant discussion of this issue. The Larsen gun developed by the IWC has proved to be very successful at biopsying blue, humpback and southern right whales in the latest SOWER cruise including samples taken at 70 m. There were no attempts made to biopsy minke, as it was believed that it was difficult and would require too much time. The Japanese continue to assert that it is difficult and not practical based on biopsy trials in the 1997/98 JARPA of only 9 individuals with a success rate of 11% and an approximate time taken of 1 hour for each biopsy. Japan are strongly resisting the testing of this technique as it would remove one of the major aims of JARPA - to collect samples for use in genetic differentiation of minke stocks. There were two recommendations made with regard to this issue: that the feasibility of biopsying minke be investigated in surveys off Greenland and that biopsy trials should be seriously considered at the upcoming SOWER cruise meeting

to be undertaken on the 1999/2000 SOWER cruise. The major justification behind these requests was that samples are required from minke breeding grounds and that as there are no research programmes in these areas it must be trialed in areas of high minke density such as the Antarctic. It was pointed out that no matter how many samples are collected in the Antarctic where individuals from different stocks mix, stock structure will not be clarified until samples are collected from breeding grounds in the tropics. Efforts should be made to ensure that biopsy trials are included in the next SOWER cruise plan to prove that this can be done successfully, independently of JARPA.

3. Revised Management Procedure (RMP)

3.1 UNCERTAINTY OVER MINKE WHALE BYCATCH IN THE NORTH PACIFIC

The present estimate for minke whale bycatch around Japan is unclear. Official figures are approximately 25 per annum but calculations made in 1992 suggest that a more likely figure is 93. Japan recalculated this estimate of 93 with some modifications and indicated, that if this method is to be used, then the actual figure was 57 and not 93, although they still believe that the official figures are the most reliable. It was not possible to discredit this reanalysis of 57 based on the available data. Baker and Cooke, based on information from market samples, indicated that the bycatch could be as high as 171 individuals but that it is "more likely to be larger than 57 than less". The Committee was unable to reach agreement on a best estimate of bycatch in Japanese waters although it was agreed that for use in simulation trials that levels should span a "plausible" range. This plausible range was agreed to be between 25 (official Japanese figures) and 75 (half way between 93 and 57 as estimates of bycatch). It was noted that there is no information known about bycatch in many other areas, i.e. in the Japanese driftnet fishery, and by North Korea, China (Taiwan and PRC), and the Russian Federation. This is of serious concern as it is likely that there is at least some level of bycatch in all of these areas.

3.2 IMPLEMENTATION TRIALS FOR NORTH PACIFIC MINKES

A detailed list of trials was proposed last year and the results of these were presented. There were detailed discussions and a final set of trials to be further tested was slimmed down to about 10 from over 80 originally considered. The most concerning feature of the trials run over the last year was that, irrespective of the combination of factors considered, the J stock (predominantly those whales in the Sea of Japan) is likely to decline markedly because of incidental catch in the area. Implementing the RMP in the O stock (western North Pacific) appeared to have a minimal effect on this decline,

but it is important to note that information on the mixing of these stocks is limited and any catch of minke from O stock will catch some whales that are from J. This will presumably put additional pressure on J stock and lead to greater declines. Although the purpose of these trials was to examine the application of the RMP to O stock, the Committee expressed concern about the resulting depletion of J stock and suggested that additional trials may be required to investigate the application of RMP to J stock.

As there was no agreement on the true figures of bycatch from Japan it was agreed to use a plausible value between 25 and 75 (as discussed above). It was noted that before implementation of the RMP could be considered the Committee would need to determine the best estimate of bycatch. There is still considerable disagreement within the Committee on what this figure is, and this may be one of the major issues in preventing the implementation the RMP.

3.3 WESTERN NORTH PACIFIC BRYDES

The structure of this stock is unclear as there are few data to justify the construction of any small stock areas. As a result, there are large stock areas. It was suggested that it might be necessary to enforce widespread distribution of future catches to prevent the possibility of local depletion. It was therefore agreed to develop a set of implementation trials to assess whether some form of "catch cascading" is required to prevent local depletion. From past commercial catch data it appears that there may have been some degree of serial depletion from west to east in the North Pacific.

The accuracy of commercial catch information was discussed. There was no agreement reached, but it appears likely that there was some mis-reporting by Russian fleets and that there may have been some catches of brydes reported as Sei by the Japanese fleet. Also, there is very little information on catch statistics for China (Taiwan) which may have taken significant numbers of whales. Further investigation of this will be undertaken inter-sessionally.

It was suggested that the value for $MSYL$ be changed to be in line with models by the AWMP. This is a serious change to the RMP and would mean that there would be a slight lowering of productivity. It was agreed that the value would be retained at its original estimate. However, more of concern is the suggestion that there needs to be consistency between the RMP and AWMP. As the AWMP is designed to be less conservative than the RMP it has serious repercussions for the future if the consistency argument is raised again.

The allocation of catches for trials was considered in the context of the extent to which known mis-reporting in other areas and other species could be extrapolated, particularly the catches from China (Taiwan) and the Philippines. It was noted that the RMP is robust to underestimation of historical catches by 50% and it was agreed by the Committee that any mis-reporting probably lay within the ranges being considered. This is of particular concern as it means that there is now a precedent for historic catch data that are to be used in the RMP not to be exact as long as they are greater than 50% of actual

catches. This may be used as a justification for accepting incorrect catch history information.

4. Stock Identification Working Group

This group discussed stock definitions in the hope that it might be possible to create a generic definition of a stock and substock that would be applicable globally across all species. It has been acknowledged that there is no such standard definition available and most stock divisions have been made on an ad hoc basis. Several case studies were considered and it was recommended that this group reconvene next year to examine some other stocks and continue discussion.

5. Other issues

5.1 SCIENTIFIC PERMIT FOR JARPN

Japan presented another proposal for lethal sampling of minke whales in the western North Pacific. This year work was to be concentrated in the Okhotsk sea (area 12) and western North Pacific (areas 7 and 11). Japan asked the Committee to recommend that the Commission urge the Russian Federation to allow access to JARPN vessels. This was rejected by a majority of the Committee as areas 7, 11, and 12 all have an unknown proportion of J stock animals and, as the simulation trials have demonstrated, J stock is likely to be seriously depleted from bycatch alone and the additional catch of J stock animals from these areas would even further impact on the population. It was suggested that, if Japan considered non-lethal sampling, the Committee might be able to support the proposal. Japan restated their position that biopsying of minke whales was not feasible and that other life history information that could only be obtained from lethal sampling was required, and refused to consider non-lethal sampling.

5.2 ABOLITION OF THE SOUTHERN OCEAN WHALE SANCTUARY BY JAPAN

There was a paper presented by Japan that stated that the creation of the Sanctuary was not necessary for management and was not based on scientific criteria. Discussion was cut short as all views had been stated in previous meetings and there was no chance of an agreement.

5.3 SATELLITE TAGS

The use of satellite tags was discussed in several research proposals including JARPA and a West Greenland project. There is still no reliable long-term attachment procedure although it was recognised that the information collected from satellite tags could potentially be very useful in looking at stock divisions. It should be noted that attachment techniques require a barbed head to be shot into the whale to a depth of approximately 10 cm, and the implications of this for the whale may be serious. There is a moratorium in place on the use of these attachment devices on north-eastern right whales because of concern over the impact until implications from existing tags can be evaluated. JARPA has tried to attach some of these tags to minke whales and although they have been able to hit the whales the tags have not stayed attached.

5.4 OVERSIGHT ROLE ON IWC APPROVED CRUISES

On most surveys in which data are to be used in the IWC forum there is a requirement for an IWC member or acceptable person to have an oversight role to ensure that the methodology and techniques are carried out to IWC standards. At present these roles are being undertaken by people intimately involved in the research, such as the cruise director or a senior scientist. In most cases these people are not independent observers. It seems sensible that these "oversight" roles should be undertaken by completely independent people and a report be submitted to the Committee at the end of each trip. It would be useful to consider how this is dealt with in the RMS and perhaps this may be used as a guide.

6. Possible topics for research

6.1 BIOPSY OF MINKE WHALES

It would be very useful if it could be demonstrated that it was feasible to biopsy minke whales. This would remove some of the justification for JARPA and JARPN. A suitable research project should be able to undertake this but might be expensive. It would be useful if a strong push was made at the SOWER planning meeting in September in Tokyo to ensure that biopsy trials on minke whales are included in their work plan and time is allocated accordingly.

6.2 SUMMARY OF RESEARCH IN THE SOUTHERN OCEAN SANCTUARY

It would be useful if there was a complete list of cetacean research being carried out in the SOS. It would also be good to include details of how each project fits within the SOS and meshes with its aims. It may be possible to

get like-minded southern hemisphere nations to consider this or it may be possible to pull it out from National Progress Reports.

6.3 HUMPBACKS IN NEW ZEALAND

Next year there is high priority placed on southern hemisphere humpbacks, in particular stock structure. It would be good if New Zealand could provide information on the status of humpbacks around our shores, particularly in the light of 10% population increases shown in Australia but not described here.

6.4 DESIGNING STUDIES TO ASSESS THE IMPACTS OF WHALE WATCHING

Next year there will be a high priority given to methods of assessing impacts of whale watching on whales. New Zealand leads the way in this and it would be good to see a paper outlining the specifics of what is happening here. The Department of Conservation presently funds a project at Kaikoura undertaking this work.

6.5 BEHAVIOURAL OBSERVATIONS OF BLUE WHALES

It would be useful to try and obtain some information on the normal surfacing behaviour of both true and pygmy blue whales. It was suggested the differences in surfacing behaviour may be due to vessels chasing the whales and so they are not exhibiting normal behaviour. There are sites in Australia and Chile that regularly have blue whales. It may be possible to fund or support some research in an area such as these.

6.6 REVIEW OF DATA COLLECTED FROM JARPA/JARPN

It would be a useful exercise to review all the outputs of JARPA/JARPN and assess how many of these can be done non-lethally including examples. I am sure that reviews have occurred in previous IWC volumes, but nothing appears to have been done recently. It should also be able to indicate how many of the outputs are required for management. It would be useful to highlight what proportion of JARPA/JARPN projects are not producing data usable in management. A summary of information collected to date would also be useful in highlighting how many "samples" (i.e. killed whales) have already been taken and where no more are required.

6.7 INVESTIGATION OF POWER AND MINIMUM SAMPLE SIZES REQUIRED FOR JARPA/JARPN

It would be useful to look at the power of the statistics that are being put out from JARPA/JARPN. Along with calculation of minimum sample size it may be possible to either limit killing of whales or to show that the numbers required are so large that it is not feasible to undertake this work.

7. Acknowledgements

Thanks to Mike Donoghue, Steve Dawson, and Scott Baker for their support and advice at the Committee meeting. It was great to be part of such an effective group of people and to see some tangible results from our hard work.

8. Glossary

AWMP Aboriginal Whaling Management Plan. This is a parallel method to the RMP for calculating sustainable removals from whale populations that are small and harvested by Aboriginal peoples. It is intrinsically less conservative than the RMP specifically to allow for catches in small populations.

CV Coefficient of variation. A measure of precision of an estimate.

GAM General Additive Modelling. A type of model that uses spatial and sighting data to estimate population size.

IDCR Old name for SOWER cruises. A long-term set of circumpolar research cruises run by Japan for estimation of minke whale abundance.

IWC International Whaling Commission.

JARPA Japanese scientific whaling programme in the Antarctic. Whaling and sighting surveys of minkes under special permit.

JARPN Japanese scientific whaling programme in the North Pacific. Whaling and sighting surveys of minkes under special permit

MSYL Maximum Sustainable Yield over the long term.

PRC People's Republic of China.

RMP Revised Management Plan. This is the framework for the calculation of sustainable removals from whale populations.

- RMS Revised Management Scheme. This is the overall framework of management of commercial whaling. It includes the RMP but also regulations for the managing and enforcing of international global whaling.
- SOS Southern Ocean Whale Sanctuary.
- SOWER Southern Ocean Whale and Environmental Research. This is joint IWC and Japanese research programme to investigate and monitor the status of whale stocks and related environmental parameters in the Southern Ocean.
- VPA Virtual Population Assessment. A modelling framework for estimating abundance and time to extinction in populations.