

Editorial

This issue of the Journal follows the 2000 meeting of the International Whaling Commission held in Adelaide, Australia. Details of the Commission meeting will be published in the next *Annual Report of the International Whaling Commission*. The full report of the Scientific Committee will be published as *J. Cetacean Res. Manage.* 3 (Suppl.) in April 2001. However, it seems timely to provide a short summary of the work of the Scientific Committee that updates the summary provided in Donovan (1982). I would also like to draw particular attention to the recommended changes in nomenclature made by the Scientific Committee. These have been adopted by the Journal and the complete list is included in the Guide for Authors at the back of this issue.

REVISED MANAGEMENT PROCEDURE

After the adoption of the moratorium on commercial whaling in 1982, the Committee spent over eight years developing the Revised Management Procedure (RMP) for baleen whales (IWC, 1999b). In brief, the RMP is a generic management procedure designed to estimate safe catch limits for commercial whaling. This was adopted some time ago by the Commission (IWC, 1993). However, the Commission has stated that it will not set catch limits for commercial whaling for any stocks until it has agreed and adopted a complete Revised Management Scheme (RMS). The RMS will also include a number of non-scientific matters, including inspection and enforcement.

At the 2000 meeting, the Committee's work concentrated on *Implementation Simulation Trials* for North Pacific minke whales. These trials are carried out before using the RMP to calculate a catch limit and involve investigating the full range of plausible hypotheses related to a specific species and geographic area. For North Pacific minke whales, the major factors being considered relate to stock identity and levels of anthropogenic removals other than the direct whaling such as bycatches in fishing gear. The Committee will also be considering the development of initial *Implementation Simulation Trials* for western North Pacific Bryde's whales in the future.

DEVELOPMENT OF AN ABORIGINAL WHALING MANAGEMENT PROCEDURE

With the completion of the RMP, the Commission asked the Scientific Committee to begin the process of developing a new procedure for the management of aboriginal subsistence whaling. Such a procedure must take into account the different management objectives for such whaling when compared to commercial whaling. This is an iterative and ongoing effort. Given the results so far, the Commission will probably establish an Aboriginal Whaling Scheme that comprises the scientific and logistical (e.g. inspection/observation) aspects of the management of all aboriginal fisheries. Within this, the scientific component might comprise some general aspects common to all fisheries (e.g. guidelines and requirements for surveys and

for data c.f. the RMP) and an overall AWMP within which there will be common components and case-specific components.

At the 2000 meeting, the Committee continued to make progress, particularly with respect to the Bering-Chukchi-Beaufort Seas stock of bowhead whales. If this progress is maintained, it hopes to be able to present a formal recommendation to the Commission on all scientific aspects of a management scheme for bowhead and gray whales by the 2002 meeting. The situation for the Greenlandic fisheries for fin and minke whales is less promising. A considerable amount of research, especially concerning stock identity, is required and to this end the Committee has developed a research programme. The initial results of this work will be considered in detail at the 2001 meeting.

ASSESSMENT OF STOCKS SUBJECT TO ABORIGINAL SUBSISTENCE WHALING

Aboriginal subsistence whaling is permitted for Denmark (Greenland, fin and minke whales), the Russian Federation (Siberia, gray and bowhead whales), St Vincent and The Grenadines (Bequia, humpback whales) and the USA (Alaska, bowhead and gray whales). It is the responsibility of the Committee to provide scientific advice on safe catch limits for such stocks and until the AWMP is developed then the Committee provides advice on a more *ad hoc* basis, carrying out major reviews according to the needs of the Commission in terms of establishing catch limits and the availability of data. It also carries out brief annual reviews of each stock.

At the 2000 meeting, the Committee reiterated its previous management advice for all of the stocks considered and made a number of research recommendations. These included a strong recommendation that a census of bowhead whales should be attempted in 2001 and that additional monitoring of gray whales (which may be approaching carrying capacity) be undertaken, particularly in the light of increased observed strandings and lower calf production in 1999 and 2000 (see, for example, the paper by Le Boeuf *et al.* in this issue). Catches of bowhead whales are also taken (by Canada, a non-IWC nation) from the Hudson Bay-Foxe Basin and the Baffin Bay-Davis Strait stocks of bowhead whales. The Committee received some information on these stocks about which it has expressed concern in the past. It particularly noted that more information on the latter stock is urgently needed. The Committee also examined the general issue of the relative effect of the taking of calves on stocks.

Finally, under this item, the Committee considered the work needed for it to carry out a major review of the status of North Atlantic humpback whales at its 2001 meeting.

COMPREHENSIVE ASSESSMENT OF WHALE STOCKS

Southern Hemisphere humpback whales

The development of the concept of the 'Comprehensive Assessment' is reviewed in Donovan (1989). It can be considered as an in-depth evaluation of the status of all

whale stocks in the light of management objectives and procedures; this would include the examination of current stock size, recent population trends, carrying capacity and productivity. Clearly, it is not possible to 'comprehensively assess' all whale stocks simultaneously, and the Committee has been working in an objective manner towards this, initially concentrating on stocks that have recently or are presently being subject to either commercial or aboriginal subsistence whaling. It is currently reviewing Southern Hemisphere baleen whales in this context, particularly humpback, blue and right whales (e.g. IWC, 1999e) and at the 2000 meeting priority was given to humpback whales. Considerable progress has been made in recent years and attention has focussed both on data from historic whaling operations and on newly acquired photo-identification, biopsy and sightings data. The Committee made a number of research recommendations to further progress towards an assessment.

Southern Hemisphere minke whales

A considerable amount of time was spent at the 2000 meeting arranging for a major review of abundance estimates for Southern Hemisphere minke whales. The Committee has carried out annual surveys in the Antarctic (south of 60°S) since the late 1970s. The last agreed estimates for each of the six management areas for minke whales (see Donovan, 1991) were for the period 1982/83 to 1989/90 (IWC, 1991). Whilst these represent the best estimates for the years surveyed, the Committee agreed that they are no longer appropriate as estimates of current abundance. It outlined a number of areas where work is necessary to enable it to begin a review of estimates at the 2001 meeting. This is particularly important as an initial crude analysis of available recent data suggested that current estimates may be appreciably lower than the previous estimates.

Southern Hemisphere blue whales

The Committee is also attempting to assess the current status of Southern Hemisphere blue whales. An important part of this work is to try to develop methods to identify pygmy blue whales from 'true' blue whales at sea (IWC, 1999e). At the 2000 meeting, discussion centred on the acoustic work carried out thus far and on investigations of the historic catch record to try and assess the possibility of pygmy blue whales being found south of 60°S (i.e. in the region where the recent abundance cruises have been carried out). The Committee concluded that if pygmy blue whales were present, they were unlikely to have comprised more than 5% of the catch.

In reviewing blue whale abundance estimates, the Committee agreed that a (negatively biased) estimate of abundance of blue whales south of 60°S between around 1980-2000 was 400 (CV=0.4) to 1,100 (CV=0.4). For reasons similar to those with respect to minke whales, it was not in a position to comment on trends at this time.

North Atlantic right whales

The Committee has paid particular attention to the status of the North Atlantic right whale in recent years (e.g. IWC, 2000d; e). The Committee is extremely concerned about this population, which, whilst probably the only potentially viable population of this species, is in serious danger. By any management criteria applied by the IWC in terms of either commercial whaling or aboriginal subsistence whaling, there should be no direct anthropogenic removals from this stock.

It is a matter of absolute urgency that every effort be made to reduce anthropogenic mortality in this population to zero. This is perhaps the only way in which its chances of survival can be directly improved. There is no need to wait for further research before implementing any currently available management actions that can reduce anthropogenic mortalities.

The Committee made a number of research and management recommendations concerning this stock.

STOCK IDENTITY

Of general concern to the assessment of any cetaceans is the question of stock identity (e.g. Donovan, 1991) and examination of this concept in the context of management plays an important role in much of the Committee's work, whether in the context of the RMP, AWMP or general conservation and management. In recognition of this, the Committee has established a Working Group to review theoretical and practical aspects of the stock concept in a management context. At the 2000 meeting, the Committee considered *inter alia* stock structure in bowhead and gray whales; the concept of stocks in the management of non-cetacean species; and a range of analytical and statistical issues.

The Committee also considered management issues (including the tracking of whale products) related to the use of molecular techniques in the context of identifying species, stocks and individuals. As well as considering genetic techniques it also considered the question of the collection and archiving of samples from catches and bycatches.

EFFECTS OF ENVIRONMENTAL CHANGE ON CETACEANS

There is an increasing awareness that whales should not be considered in isolation but as part of the marine environment; detrimental changes to their habitat may pose a serious threat to whale stocks. The Committee examined this issue in the context of the RMP and agreed that the RMP adequately addresses such concerns. However, it also emphasised that the species most vulnerable to environmental threats might well be those reduced to levels at which the RMP, even if applied, would result in zero catches (IWC, 1994). Over a period of several years, the Committee has developed two multi-national, multi-disciplinary research proposals (IWC, 2000a). One of these, POLLUTION 2000+ (IWC, 1999a) has two aims: to determine whether predictive and quantitative relationships exist between biomarkers (of exposure to and/or effect of PCBs) and PCB levels in certain tissues; and to validate/calibrate sampling and analytical techniques. The other, SOWER 2000 (IWC, 2000c) will examine the influence of temporal and spatial variability in the physical and biological Antarctic environment on the distribution, abundance and migration of whales.

At the 2000 meeting, the Committee discussed progress on these two programmes as well as considering: environmental issues with respect to the Arctic; the development of an annual report providing an overview of regional environmental concerns; workshops on habitat degradation and competition between cetaceans and fisheries; linking environmental measures and cetacean demography; and health effects from the consumption of cetacean products.

SMALL CETACEANS

Despite disagreement within the Commission over the management responsibilities of the IWC with respect to small cetaceans, it has been agreed that the Scientific Committee can study and provide advice on them. As part of this programme, the Committee has reviewed the biology and status of a number of species and carried out major reviews of significant directed and incidental catches of small cetaceans (Bjørge *et al.*, 1994).

At the 2000 meeting, the Committee concentrated on reviewing the status of freshwater cetaceans, in particular the boto, tucuxi, Indus susu, Ganges susu, Irrawaddy dolphin, finless porpoise and the baiji. For many of these species, there is a great need for more research into their status. Many populations face actual or potential threats from human activities including water development projects (e.g. dams and barrages) and bycatches in fishing operations. Particular concern was expressed over the baiji whose current population may number only a few tens of individuals. The Committee made a number of recommendations related to future work and practical conservation measures for these species.

Last year, the Committee had expressed concern over certain white whale stocks that were either depleted, probably depleted or were of low absolute size, including three areas in the Okhotsk Sea (IWC, 2000b). At the 2000 meeting it was concerned to learn that catches (*ca* 36) were taken from Russian Federation waters in the Okhotsk Sea.

The Committee has for many years expressed concern over the status of the vaquita. It was pleased to receive a summary of the work undertaken by the International Committee for the Recovery of the Vaquita and commended the government of Mexico for its continuing efforts to conserve the vaquita.

The Committee also examined a number of other issues. In recent years it has concentrated on measures to reduce bycatches of cetaceans in fishing gear and to develop ways of adequately assessing the risks posed by such removals at the population level. In 1999 it had addressed the question of acoustic measures to reduce bycatches (IWC, 2000b). This year it considered other methods including spatial or temporal restrictions on fishing effort (and see the paper by Murray *et al.* in this issue) and modifications to fishing gear and practice. The Committee emphasised the need to develop strategies for reducing bycatches that are applicable to the developing world.

SCIENTIFIC ASPECTS OF WHALEWATCHING

Prior to the 2000 meeting a Workshop was held to examine the assessment of biologically significant long-term effects of whalewatching on cetaceans. The Committee identified a number of areas for further research and a number of possible data types that could be collected from whalewatching operations to assist in assessing their impact.

The Committee also reviewed national guidelines for whalewatching from a number of countries. It received information on dolphin feeding programmes in Australia and the USA and reconfirmed its view that programmes involving the feeding of wild cetaceans should be prohibited. Similarly, the Committee reviewed information on 'swim-with' programmes for wild cetaceans. It agreed that these should be assessed on a case-by-case basis but noted

that evidence existed that they could be considered to be highly invasive. It recommended that further work be undertaken to assess the impact of such programmes on cetaceans.

REVIEW AND COMMENT ON SCIENTIFIC PERMITS ISSUED FOR SCIENTIFIC RESEARCH

All proposed scientific permits have to be submitted for review by the Scientific Committee following guidelines issued by the Commission. However, in accordance with the Convention the ultimate responsibility for issuing them lies with the member nation.

Most discussion at the 2000 meeting centred on a review of the previous research permit catches in the North Pacific (JARPN) and a proposal for a new programme (JARPN II). Japan carried out a research permit programme (100 minke whales per year) in the western North Pacific from 1994-99. The primary aims of the programme had been to clarify questions of stock identity to improve the design of RMP *Implementation Simulation Trials* for the North Pacific and to act as a feasibility study for the development of a programme on feeding ecology. The Committee agreed that the information obtained was useful for management as it had been and will continue to be used in the refinement of *Implementation Simulation Trials* for North Pacific minke whales. No consensus view was reached on whether the results could have been obtained using non-lethal research techniques in a suitable timeframe.

The JARPN II programme involves taking 100 minke whales, 50 Bryde's whales and 10 sperm whales each year. The stated goal was to obtain information to contribute to the conservation and sustainable use of marine living resources in the western North Pacific. It includes sub-projects on: feeding ecology; stock structure; and environmental effects on cetaceans and the marine ecosystem. There was considerable disagreement within the Committee over most aspects of this research programme, including objectives, methodology, likelihood of success and effect on stocks.

Some members expressed concern that most of the objectives of the programme did not address questions of high priority for the rational management of the stocks concerned and would not contribute significantly to research needs identified by the Committee. Although the primary objective of the proposal was scientific in nature, they believed that none of the objectives or sub-objectives were necessary for the management of any of the large whale species being killed.

In response, other members believed that determining the impact of cetaceans on fish stocks was a matter of some urgency and constituted a critically important research need. They also noted that the information on North Pacific minke whale stock structure was relevant to *Implementation Simulation Trials*.

Concern was also expressed that with the sample size and methods proposed, it was unlikely that several of the objectives of the programme would be met, especially with respect to sperm whales. They commented that the ecosystem modelling approach was poorly developed and that the likely precision of any fisheries information (both past data and future) was poor.

In response, other members stated that this was a feasibility study and that one of the aims was to investigate the methodology. They agreed that model development was at an early stage, but they believed that by building on models developed for other regions the programme had the

potential to address fundamentally important questions. They felt that all aspects of the programme would improve as data became available.

There was disagreement as to the amount of data that could be obtained using non-lethal research techniques.

WHALE SANCTUARIES

The Committee had been asked to comment on the scientific aspects of the proposal submitted by the Governments of Australia and New Zealand to the Commission last year to create a Sanctuary for great whales in the South Pacific.

The Committee was unable to reach a consensus view on the need for a Sanctuary in this region.

NOMENCLATURE

The Committee carefully considered the proposals contained in the thorough review provided by Rice (1998). Recognising that further changes will be necessary as more data become available, its main conclusions with respect to large whales can be summarised as follows:

- (1) the genus *Eubalaena* should be retained;
- (2) three species of right whales should be recognised – the North Atlantic right whale (*E. glacialis*), the North Pacific right whale (*E. japonica*) and the Southern right whale (*E. australis*);
- (3) two species of minke whales should be recognised – the common minke whale (*Balaenoptera acutorostrata*) and the southern minke whale (*B. bonaerensis*);
- (4) one species name should be retained at present for the Bryde's whale (*B. edeni*) although it is known that this contains more than one species.

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Editor

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