Editorial

This issue of the Journal follows the 2005 meeting of the International Whaling Commission held in Ulsan, Korea. 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 in spring 2006 as *J. Cetacean Res. Manage*. 8 (Suppl.). However, as is now traditional, here follows a short summary of the work of the Scientific Committee at the recent annual meeting.

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 of baleen whales. 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) which will include a number of non-scientific matters, including inspection and enforcement. The RMS has been the subject of a considerable amount of discussion within the Commission. The Commission had received a proposal by the Chair of the Commission for an RMS package of measures that he believed was a fair and balanced approach to move to the rapid completion of the RMS. Although this was not accepted as a package by the Commission, there will be a special meeting of the Commission's RMS Working Group during the period leading up to the 2006 meeting in St. Kitts and Nevis.

Implementation Simulation Trials

Implementation Simulation Trials are trials that 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, particularly with respect to issues of stock structure.

The process of developing *Implementation Simulation Trials* is not the same as identifying the 'best' assessment for the species/region, but involves considering a set of alternative models to examine a broad range of uncertainties with a view to excluding variants of the RMP that show performance that is not sufficiently robust across the trials. Account needs to be taken of the plausibility of the various trial scenarios when evaluating RMP variants.

In the light of difficulties experienced in recent years, particularly with respect to the North Pacific region (common minke whales and Bryde's whales), the Committee has spent some time discussing the general question of how best to ensure that the process of carrying out *Implementations* (or *Implementation Reviews*) is efficient and prompt, whilst taking into account the available information. To achieve this it agreed that they should be conducted at discrete intervals, using the data available at one point in time. This year, the Committee reviewed the process from '*pre-Implementation Assessment*' to initial *Implementation* and *Implementation Reviews* based on the experience gained thus far, and particularly with respect to the difficulties faced during the *Implementation* process for western North Pacific common minke whales. As a result, the Committee developed a document last year detailing the requirements and guidelines for the *Implementation* process as well as updating its document detailing requirements and guidelines for conducting surveys and analysing data within the Revised Management Procedure.

North Pacific Bryde's whales

The Committee has made relatively slow progress on completing the *Implementation* for western North Pacific Bryde's whales *inter alia* due to its heavy workload. While noting that it was in the *pre-Implementation Assessment* stage, the Committee noted the considerable work already undertaken and agreed that it should be possible to move faster towards *Implementation* than would be the case for new situations. The Committee held an intersessional Workshop in March 2005 and at the 2005 annual meeting it was agreed that the *pre-Implementation* stage had been completed and that the *Implementation* process would now begin, following the new guidelines referred to above. The first intersessional Workshop took place in Shimizu, Japan in October 2005.

North Atlantic fin whales

The Committee reviewed the available information in order to determine whether there was sufficient information to warrant the initiation of a *pre-Implementation Assessment* for North Atlantic fin whales. It agreed that there was and the Commission agreed with its recommendation that the Committee initiate the *pre-Implementation Assessment*. The first stage of this was reviewed at the 2006 annual meeting and it is hoped to complete the *pre-Implementation* stage at the 2007 annual meeting. To progress this work, a co-operative intersessional Workshop will be held in March 2006 with the NAMMCO scientific committee on general scientific issues of common interest, particularly with respect to stock structure, abundance and catch history.

Bycatches of large whales

The RMP estimates a limit for the number of non-natural removals, not simply a catch limit for commercial whaling. It is therefore important to estimate the numbers of whales removed from the population by indirect means including bycatches in fishing gear and ship strikes, for example.

The Scientific Committee began to consider this issue in some detail three years ago. It agreed that priority should be given to those areas where the RMP is likely to be implemented – such as the northwestern Pacific and the northeastern Atlantic. Four steps are required: (1) identification of the relevant fisheries; (2) description and categorisation of those fisheries to allow a sampling scheme to be devised; (3) identification of a suitable sampling strategy or strategies; and (4) design and implementation of the sampling scheme to enable estimation of the total bycatch.

The Committee has reviewed general methods for estimating bycatches. These fall under two headings: (1) those based on fisheries data and observer programmes; and (2) those based on genetic data. The former have been used successfully for several small cetacean populations. The Committee agreed that independent observer schemes are generally the most reliable means of estimating bycatch rates in a statistically rigorous manner, but that they may not always be practical and will require careful design.

Genetic approaches potentially represent a new way of estimating bycatches. The Committee has agreed that although genetic methods based on market samples may not be the primary approach to estimating bycatch, they could provide useful supplementary data that could not be obtained in another way. The use of market samples to provide absolute estimates should not be ruled out. However, further developments in sampling design with input from experts with detailed knowledge of market sampling issues are needed. A Workshop on that subject was held immediately prior to the 2005 meeting, in Ulsan, Korea. The objectives of the Workshop were:

(1) to review available methods that have been used to provide estimates of large cetacean bycatches via market samples, including a consideration of their associated confidence intervals in the context of the RMP; and
(2) to provide advice as to whether market-sampling-based methods can be used to reliably estimate bycatch for use in addressing the Commissions objectives regarding total removals over time and, if so, the requirements for such methods.

The Committee agreed that market sampling provided potentially useful methods to supplement bycatch reporting schemes and agreed to a proposal for a follow-up workshop to investigate this further. It also agreed that any such bycatch estimates obtained from market surveys would be improved considerably if carried out in conjunction with the use of data from DNA registers on whales entering the market. Whilst recognising the political sensitivity of market-related issues in an IWC context, the Committee respectfully requested relevant governments to consider a collaborative effort to investigate these methods as a potentially valuable source of information for management and use in the RMP.

Other work to further explore improved bycatch estimation methods for the two approaches noted above is continuing. Improved data reporting for bycatches was also recommended.

REGIONAL WORKSHOPS TO ADDRESS CETACEAN BYCATCH ISSUES

Outside the context of the RMP, the IWC Scientific Committee and others have identified the incidental capture of cetaceans in fishing gear as one of the most important threats to the conservation and management of their populations and it is known to be a significant threat to survival in certain cases (e.g. the North Atlantic right whale, the vaquita). In order to address the full management implications, reliable information is needed on bycatch numbers, stock identity and movements, the abundance of the affected population(s), and the population dynamics of the cetaceans.

In some areas, considerable advances have been made in the assessment and mitigation of cetacean bycatch since the pioneering IWC La Jolla Workshop held in 1990 (Perrin *et al.*, 1994). In other areas, however, little progress has been made and, as a result, a growing number of cetacean species (both large and small) face critical conservation problems as a result of fisheries bycatch. Rather than holding another large generic workshop, it was agreed that given the case- and area-specific nature of the problem, a series of broad-based regional workshops would be more effective, focusing on regions where bycatch problems:

(1) have been given priority by the Scientific Committee as part of its normal review process; and
(2) are not already being addressed.

The general objectives of such workshops will be to develop a short- and long-term approach to the successful management and mitigation of the cetacean bycatch problems in the region, building upon work already undertaken by the Committee. The Committee agreed a mechanism whereby this process can be facilitated. It also recommended collaboration with other organisations with an interest in this matter (e.g. the Convention on Migratory Species, the Committee on Fisheries of the UN Food and Agriculture Organisation, IUCN and relevant international and regional fishery organisations). Work to set up the first such workshop is continuing.

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. The Commission will 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 2002 meeting, the Committee completed its work with respect to the Bering-Chukchi-Beaufort Seas stock of bowhead whales. It agreed a *Strike Limit Algorithm (SLA)* for bowhead whales and the scientific aspects of a Scheme; this was adopted by the Commission. It noted that should the Commission decide, it would be possible to apply the *Bowhead SLA* at that meeting. After considerable work and two intersessional workshops, the Committee made a formal recommendation to the Commission for a *Strike Limit Algorithm* for gray whales in 2004. It believed that this *SLA* met the objectives of the Commission set out in 1994 and represented the best scientific advice that the Committee could offer the Commission with respect to the management of the Eastern North Pacific stock of gray whales. This was adopted by the Commission.

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 in cooperation with Greenlandic scientists (see below). High priority is being accorded to this work.

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 completed 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.

The present catch limits had been set up to the 2002 season and so at the 2002 meeting, the Committee had to provide management advice for all of the stocks considered. The Commission sets catch limits based on the scientific advice and a 'need' statement from the countries involved.

Eastern gray whales

In 2002, the primary assessment carried out was for the eastern gray whale population (Issue 1 of volume 4 of the *Journal* was devoted to gray whale papers). New information on abundance, distribution, catches and ecology was presented. The population is believed to be close to carrying capacity. The Committee agreed that an annual take of up to 463 whales was acceptable; based on the submitted need statement, the Commission set a total for the 2003-6 seasons of 620 with a maximum of 140 in any one year. The Committee confirmed this advice this year.

Bering-Chukchi-Beaufort Seas stock of bowhead whales

In addition to the work on the *Bowhead SLA*, the Committee has also been examining the status of the Bering-Chukchi-Beaufort Seas stock of bowhead whales. New information in 2002 included a preliminary abundance estimate for 2001 of 9,860 (95%CI 7,700-12,600) giving a rate of increase between 1978 and 2002 of 3.3% (95%CI 2%, 4.7). This year the Committee undertook an in-depth assessment at the 2004 meeting. The primary focus of the in-depth assessment was: (a) the data required for the *Bowhead SLA*; and (b) examining whether the present situation is within the tested parameter space for that *SLA*. The latter effort will include consideration of such issues as stock identity and biological parameters.

The discussions of uncertainty over stock structure issues made it clear that these must form a major component of the forthcoming *Implementation Review*. This *Implementation Review* will begin at the 2006 annual meeting and in particular will examine the robustness of the *Bowhead SLA* with respect to plausible stock hypotheses via simulation trials. If shown to be necessary, this may result in changes to the *Bowhead SLA*. Management advice will be provided at the 2007 meeting based on the best science then available. In providing advice at this meeting, the Committee noted:

(1) the continuing increase in the abundance estimates derived from the census under the recent catch limits and record high calf counts;
(2) the spatio-temporal distribution and opportunistic nature of the hunt and the low numbers of whales struck annually in St. Lawrence Island and Chukotka; and
(3) the development of an extensive research programme that will address questions of stock structure and allow the formulation of one or more plausible stock structure hypotheses.

Given this, the Committee agreed that the *Bowhead SLA* remains the most appropriate tool for providing management advice for this harvest, at least in the short-term. The results of its application at the 2004 meeting showed that no change is needed to the current block quota for 2003-2007. Discussions in 2005 focussed on progress being made in stock structure studies and preparation for the 2007 assessment. A timeline for this work was agreed and the first intersessional workshop will take place in or around March 2006.

Minke and fin whales off West Greenland

In 2002, at the Commission, the same catch limits as previously in force were agreed for the 2003-6 period, i.e. West Greenland minke whales – an annual limit of up to 175 strikes; East Greenland minke whales – an annual catch of up to 12 animals; West Greenland fin whales – an annual catch of up to 19 whales. The Committee had been unable to provide scientific advice on safe catch limits at that time and had stressed that its inability to provide any advice on safe catch limits was a matter of great concern.

This year, the Committee had received abundance estimates from a new photographic aerial survey technique and new assessments from Greenlandic scientists. The Committee had identified a number of problems with these but was still concerned that taken at face value, the preliminary (and not accepted) estimate of abundance for common minke whales suggests that about a 90% decline has occurred since the previous survey in 1993 although there are several indications that such a decline has probably not occurred. Nonetheless, the Committee urged that considerable caution be exercised in setting catch limits for this fishery because it has no scientific basis for providing advice on safe catch limits. It also made a number of strong recommendations for future scientific work.

Similarly, the Committee was not in a position to accept the estimate for fin whales, and also urged that considerable caution be exercised in setting catch limits for this fishery and as interim *ad hoc* advice, the Committee advised that a take of 4-10 animals (approximately 1% of the lower 5th percentile and of the mean of the estimate of abundance) annually was unlikely to harm the stock in the short-term, particularly since this does not take into account the possibility that the fin whale stock extends beyond West Greenland. This advice will be re-evaluated next year in the light of the intersessional work recommended.

Humpback whales off St Vincent and the Grenadines

In 2002, after considerable debate in the Commission, a catch of up to 20 whales for the period 2003-7 was agreed (the Scientific Committee must review this in 2005). This year, the Committee received positive confirmation that eastern Caribbean humpbacks are part of the West Indies breeding population (abundance in 1992/93 – 11,570, 95%CI 10,100-13,200) and agreed that the catch limit set by the Commission would not harm the stock.

HISTORIC ABUNDANCE ESTIMATION, GENETIC METHODS.

In 2004, in the light of the genetic modelling paper by Roman and Palumbi (2002), the Committee had considered the general methodological issue of estimating *K* and/or pre-exploitation population size in the context of the Committee's assessment work. As a result of its discussions, the Committee agreed that such genetic methods have the potential to be one of a suite of tools that can be used to

examine pre-exploitation abundance but that there are a number of limitations and uncertainties that must be considered when examining such data in a present-day management context. The Committee had agreed that the estimates of historic abundance provided in Roman and Palumbi (2002) for the initial pre-whaling population sizes of humpback, fin and common minke whales in the North Atlantic have considerably more uncertainty than reported, and can not be considered reliable estimates of immediate pre-whaling population size. Particularly important in this regard is the mismatch between the time-period to which genetic estimates apply (i.e. the time period is difficult to determine and extremely wide) and the population sizes of whales immediately prior to exploitation. It also agreed that the paper provides no information to suggest that changes are required in either the RMP or AWMP approaches to management.

The Committee had identified further work necessary to assess whether genetically-based estimates of 'initial' abundance can provide useful information for the management of cetaceans and received a progress report on this work at the 2005 meeting.

STOCK IDENTITY

Of general concern to the assessment of any cetaceans is the question of stock identity. 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. The Committee has noted that it is important, in any application of stock structure methods, to examine the sensitivity of conclusions to different *a priori* decisions about the definition of initial units, and as to which population structure hypotheses to examine.

A specialist Workshop to examine the use of simulation testing to assess the performance of methods to identify population structure was held in January 2003 (see IWC, 2004c). The Workshop developed a suitable simulation framework to allow evaluation of genetic methods used in inferring population structure both in general terms (the issue is of great relevance to conservation and management outside the IWC) and from a specifically IWC viewpoint (particularly in an RMP/AWMP context).

This is a complex project that must proceed in an iterative fashion. Great progress has been made on the most challenging module, i.e. the development and validation of a program to simulate realistic genetic datasets and the Committee has agreed to hold an intersessional workshop to build on this and begin the testing of some existing methods. This will take place at the University of Potsdam in Spring 2006. Preliminary testing of various methods under certain simple scenarios will begin during the intersessional period.

COMPREHENSIVE ASSESSMENT OF WHALE STOCKS

The 'Comprehensive Assessment' of whale stocks
The development of the concept of the 'Comprehensive Assessment' is reviewed in Donovan (1990). 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 iterative manner towards this, initially concentrating on stocks that have recently or are presently being subject to either commercial or aboriginal subsistence whaling. Some of these stocks have already been discussed in the sections on the RMP and AWMP.

Antarctic 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). At the 2000 meeting, the Committee agreed that whilst these represented the best estimates for the years surveyed, they were no longer appropriate as estimates of current abundance. An initial analysis of available recent data had suggested that current estimates might be appreciably lower than the previous estimates (e.g. see Branch and Butterworth, 2001).

Subsequently, considerable time has been spent considering Antarctic minke whales with a view to obtaining final estimates of abundance and considering any trend in these. This has included a review of data collection methods and analytical methodology. After considering many of the factors affecting abundance estimates, there is still evidence of a decline in the abundance estimates, although it is not clear how this reflects any actual change in minke abundance. Three hypotheses that might explain these results have been identified:

(1) a real change in minke abundance;
(2) changes in the proportion of the population present in the survey region at the time of the survey; or
(3) changes in the survey process over time that compromise the comparability of estimates across years.

A considerable amount of work has been undertaken and further work is ongoing. The final part of the Third Circumpolar Survey undertaken as part of the IWC's SOWER research programme has been completed and preliminary work suggests that the estimated abundance may be down to about 40% of the estimates from the Second Circumpolar Survey. Experimental work to examine possible causes has been undertaken on the 2004/05 cruise and further work will be undertaken on the 2005/06 cruise. Work to finalise an assessment of Antarctic minke whale is continuing in a number of ways and will again be a priority item for discussion at the 2006 meeting.

Southern Hemisphere blue whales
The Committee is beginning the process of reviewing the 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, 1999a) and progress is being made on this. Work on genetic and acoustic differentiation techniques is continuing and there is considerable progress with morphological methods. Last year, the Committee reviewed a paper by Branch *et al.* (2004) and agreed that this research supported the conclusions that, (1) on average, the Antarctic blue whale population is increasing at a mean rate of 7.3% per annum (1.4–11.6%); (2) had an estimated circumpolar population size of 1,700 (860–2900) in 1996; and (3) that this population is still severely depleted with the 1996 population estimate estimated to be at 0.7% (0.3–1.3%) of the estimated pre-exploitation level.

The Committee has agreed on a number of issues that need to be resolved before it is in a position to carry out an assessment, and progress was made at the 2005 meeting with a view to beginning the assessment process in 2006.

Southern Hemisphere humpback whales

Considerable progress has been made in recent years in working towards an assessment of humpback whales. 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. Considerable progress has been made in this work and the Committee has agreed that it should give high priority to completing the assessment at the 2006 meeting. To this end, an intersessional workshop will be held in Hobart, Australia in early 2006.

North Atlantic right whales

The Committee has paid particular attention to the status of the North Atlantic right whale in the western North Atlantic in recent years (e.g. see Best *et al.*, 2001). The Committee is extremely concerned about this population, which, whilst probably the only potentially viable population of this species, is in serious danger (*ca* 300 animals). 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.

This year, the Committee once again noted that individuals are continuing to die or become seriously injured as a result of becoming entangled in fishing gear or being struck by ships. It repeated that 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 reviewed progress on a number of research and management recommendations concerning this stock.

Western North Pacific gray whales

This is one of the most endangered populations of great whales in the world. It numbers less than 100 animals (see the paper by Weller *et al.*, 2002) and there are a number of proposed oil and gas-related projects in and near its only known feeding ground. The Committee held a Workshop in October 2002 to review this further. The Workshop report was published in IWC (2004b). Overall, the Workshop agreed with the conclusions of previous reviews on western gray whales. Specifically, that the population is very small, and suffers from a low number of reproductive females, low calf survival, male-biased sex ratio, dependence upon a restricted feeding area and apparent nutritional stress (as reflected in a large number of skinny whales). Other major potential concerns include behavioural reactions to noise (notably in light of increasing industrial activity in the area) and the threat of an oil spill off Sakhalin which could cover all or part of the Piltun area and thus potentially exclude animals from this feeding ground. The Workshop had noted that assessments of the potential impact of any single threat to the survival and reproduction of western gray whales

were insufficient and had strongly recommended that risk assessments consider cumulative impact of multiple threats (from both natural and anthropogenic sources).

This year, the Committee welcomed and supported the report (Reeves *et al.*, 2005) and recommendations of the independent scientific review panel (ISRP) that had included five members of the IWC Scientific Committee (Brownell, Cooke, Donovan, Moore and Reeves). It commended SEIC (the Sakhalin Energy Investment Corporation) for requesting this review and IUCN for facilitating the process. Despite some difficulties, it believes that this process represented an important step forward for western gray whale conservation.

The Committee strongly supported efforts to build upon this in the future and to develop a framework for collaborative research, monitoring and mitigation efforts between oil companies, independent experts, national programmes and authorities and the IWC and other intergovernmental organisations. It particularly urged that other companies in the area co-operate with this process.

The Committee also concurred with need identified by the ISRP for a comprehensive strategy to save western gray whales. In addition to time spent in the Sakhalin region, gray whales spend approximately half their time in other waters in eastern Asia (Japan, the Republic of Korea, the Democratic People's Republic of Korea and China) and there is a need for mitigation measures for the many potential threats to the western gray whale throughout its range. The IWC has agreed to play an active and facilitating role in the process.

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 has examined this issue in the context of the RMP and agreed that the RMP adequately addresses such concerns. However, it has 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. One of these, POLLUTION 2000+ (Reijnders *et al.*, 1999) 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, 2000) is to examine the influence of temporal and spatial variability in the physical and biological Antarctic environment on the distribution, abundance and migration of whales. Progress reports on both of these programmes were considered at the 2005 meeting.

The Committee received the report of the intersessional Workshop on Habitat Degradation that took place in November 2004 at the University of Siena, Italy. The Committee stressed the importance of undertaking work relating habitat conditions to cetacean status in the context of conservation and management. It recognised that this is a particularly complex area of study, requiring both theoretical developments in modelling approaches and a commitment to long-term interdisciplinary data collection programmes.

Utilisation of the framework developed at the Workshop will require a much longer-term view to be taken by management and research bodies, although it will eventually result in major improvements in advice to resource managers for conservation and management of cetaceans with respect to predicting the effects of habitat degradation and the effects of many anthropogenic activities, as well as the development of appropriate mitigation measures. The Workshop noted that the continuation of the present *ad hoc* and usually insufficient processes (such as 'Environmental Impact Assessments' based on short-term limited datasets) is unsatisfactory.

The Committee also stressed the value of long-term monitoring of both cetaceans and key aspects of their habitat at appropriate temporal and geographical scales. Baseline data on natural variability in cetacean populations and their habitat are a prerequisite to determining whether anthropogenic changes in the habitat are important to the conservation of cetacean species. Obtaining suitable information on the biotic and abiotic features of habitat will require interdisciplinary efforts and cooperation; spatial modelling approaches are particularly valuable in integrating data on cetacean distribution and abundance with data on their habitat. There is also a need to better understand the feeding and reproductive behaviour of cetaceans, and especially the relationship of cetacean distribution with their prey.

At the 2005 meeting, a symposium entitled 'High Latitude Sea Ice Environments: Effects on Cetacean Abundance, Distribution and Ecology' was held to review information on sea ice environments in the Arctic and Antarctic, and to develop means of incorporating sea ice and similar data into analyses and models used by the Scientific Committee in its work. The symposium identified a number of high priority intersessional projects targeted at issues in both the Arctic and Antarctic. Two Arctic projects were proposed, one focussing on retrospective analyses of sea ice conditions, and the other investigating health status and variability in sea ice. Antarctic projects proposed focussed on issues related to Antarctic minke whale distribution and abundance and sea ice. Finally, the Committee recommended co-operation with two initiatives: Integrated Analysis of Circumpolar Ecosystem Dynamics (ICCED) and the International Polar Year (IPY).

There will be a two-day workshop in advance of the 2006 Annual Meeting to assess the potential for seismic surveys to impact cetaceans.

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).

In 2001, the Government of Japan had indicated that it would no longer co-operate with the Committee on small cetacean related matters. In 2002, the Committee referred to the great value of the information provided by the Government of Japan on the status of small cetaceans in previous years and respectfully requested that the Government of Japan reconsider its position on this matter

and resume the valuable contribution of Japanese scientists to its work on small cetaceans. Unfortunately, this has still not yet happened.

The priority topic for the 2005 meeting was the status of the finless porpoise (*Neophocaena phocaenoides*), of which three sub-species are recognised. Finless porpoises may exhibit multiple populations over relatively small distances (e.g. off Japan), with the result that there may be numerous small and vulnerable populations along their coastal range. No large scale commercial hunts for this species have been recorded, although small scale local hunting may occur. However, incidental mortality is probably substantial throughout the species' range but there is generally little or no bycatch monitoring of these fisheries. Given the limited information on the size of their source populations it is difficult to quantify the population level impacts. The species is in no immediate danger of extinction, but some populations for which the status has been assessed (such as in the Inland Sea of Japan) are apparently declining. A number or recommendations were made to improve knowledge of population abundance, threats and status.

The Committee also reviewed progress on previous recommendations it had made, particularly those concerning the critically endangered baiji and vaquita. The Committee noted that the prospects for the baiji remain extremely poor. It noted that an international Workshop on the Conservation of the Baiji and Yangtze Finless Porpoise took place in late 2004 in Wuhan, China. The Committee did not discuss the pros and cons of *ex-situ* versus *in-situ* approaches but agreed with the conclusion of the workshop that any captured dolphins should be temporarily monitored in a holding-pen prior to their release. It also stressed that the recommendation for a range-wide baiji survey should be implemented as a matter of urgency and any capture efforts be targeted on the most threatened areas while concomitant *in situ* conservation work should be pursued in areas ostensibly subject to lower levels of risk.

The Committee has followed with considerable interest progress on conservation of the highly endangered vaquita (*Phocoena sinus*); several members of the Committee also serve on the International Committee for the Recovery of the Vaquita (CIRVA). This year the Committee was pleased to hear that it had been agreed to declare the highest vaquita concentration area as a refuge for this species.

The Committee has had considerable involvement in the assessment of the harbour porpoise in the North Atlantic and has worked closely with ASCOBANS in the formulation of conservation programmes. Last year the Committee reviewed and endorsed plans for the project Small Cetaceans of the European Atlantic and North Sea, or SCANS-II, which has three primary objectives: to update estimates of abundance from the original SCANS survey area and to obtain estimates for previously unsurveyed areas; to develop a management framework for assessing the impact of bycatches and setting safe bycatch limits; and to develop methods for monitoring small cetacean populations during periods between major decadal surveys. The Committee looked forward to receiving further information on the progress of SCANS-II and raised the possibility of a joint IWC-ASCOBANS workshop.

The Committee also reiterated previous advice concerning the need to minimise or eliminate anthropogenic direct removals or threats to habitat of the humpback dolphin, Irrawaddy dolphin and the Ganges river dolphin.

The Committee agreed to update the present IWC list of recognised species of cetaceans as follows:

(i) Bahamonde's beaked whale (*Mesoplodon bahamondi*) (change to *M. traversii,* recognise common name spade-toothed whale).
(ii) Perrin's beaked whale (*M. perrini*) (recognise species).

Finally, the Committee repeated previous requests for all Governments to submit relevant information on direct and incidental catches of small cetaceans in their national progress reports and for improved information on stock identity and abundance.

SCIENTIFIC ASPECTS OF WHALEWATCHING

In 2000, the Committee had identified a number of areas for further research on possible long-term effects of whalewatching on whales and a number of possible data types that could be collected from whalewatching operations to assist in assessing their impact. The Committee developed this further at the 2005 meeting. Last year the Committee endorsed the recommendations of the Workshop on the Science for Sustainable Whalewatching held in Cape Town in March 2004. This year the Committee received a number of papers detailing progress on those recommendations as well as reviewing: whalewatching guidelines and regulations; and new information on dolphin feeding and 'swim-with' programmes. It was also agreed that next year the Committee should review opportunistic sources of cetacean data (including from whalewatching operations) of potential value to the work of the Scientific Committee.

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.

Two continuing permits were discussed this year. JARPNII is a long-term research programme primarily aimed at feeding ecology in the context of contributing to the 'conservation and sustainable use of marine living resources in the western North Pacific, especially within Japan's EEZ.' The programme involves the taking of 150 minke whales, 50 Bryde's whales, 50 sei whales and 10 sperm whales in the western North Pacific. A proposed permit by Iceland, primarily for feeding ecology studies for 100 common minke whales, 100 fin whales and 50 sei whales in each of two years was presented two years ago; the government had only given a permit for 25 common minke whales from Iceland in 2004. Again, as in the past, different views on the value of this research were expressed in the Scientific Committee.

The major discussions this year centred on a new proposal by Japan (JARPA II). The previous JARPA programme was an 18 year programme that finished last year. The complete programme will be reviewed by the IWC Scientific Committee in 2006, when all of the data and analyses become available. The stated objectives of the new long-term research programme proposal are: (1) monitoring of the Antarctic ecosystem; (2) modelling competition among whale species and developing future management objectives; (3) elucidation of temporal and spatial changes in stock structure; and (4) improving the management procedure for the Antarctic minke whale stocks.

The proposed catches for the full programme are: 850 (with 10% allowance) Antarctic minke whales, 50 humpback whales (not to begin for two years) and 50 fin whales (10 in the first two years). There was considerable disagreement over the value of this research both within the Scientific Committee and the Commission. A Resolution was passed (30 votes to 27 votes with 1 abstention) by the Commission that strongly urges the Government of Japan to withdraw its JARPA II proposal or to revise it so that any information needed to meet the stated objectives of the proposal is obtained using non-lethal means. Japan withdrew a proposed resolution in favour of the research programmes.

As in previous years, there was severe disagreement within the Committee regarding advice that should be provided on a number of issues, including: the relevance of the proposed research to management, appropriate sample sizes and applicability of alternate (non-lethal) research methods.

The Committee continued preparations for a full review of the JARPA programme when the complete set of results is available following the completion of the 16-year programme in 2006.

WHALE SANCTUARIES

Last year, when reviewing the Southern Ocean Sanctuary, the Committee endorsed a number of recommendations that were to be implemented generically to the review of sanctuary proposals.

(1) The purpose(s) of IWC Sanctuaries should be better articulated through a set of refined overall objectives (e.g., preserving species biodiversity; promoting recovery of depleted stocks; increasing whaling yield). In particular, the relationships between the RMP and the Sanctuary programme should be articulated.
(2) Appropriate performance measures both for Sanctuaries in general, and the SOS in particular, should be developed. These performance measures should link the refined objectives of the SOS with monitoring programmes in the field.
(3) Systematic inventory and research programmes should be established or further developed so as to build the required information base for a Sanctuary management plan and subsequent monitoring programmes.
(4) A Sanctuary management plan should clearly outline the broad strategies and specific actions needed to achieve Sanctuary objectives.
(5) A monitoring strategy that measures progress toward achieving the Sanctuary objectives should be developed and subsequently implemented. A key component of this monitoring strategy would be the development of tangible indicators to monitor progress. (6) Review criteria that reflect the goals and objectives of the Sanctuary (as described above) should be established.
(7) The Sanctuary management plan should be refined periodically to account for ecological, oceanographic and possible other changes in an adaptive fashion (IWC, 2005, p.50).

This year, the Committee received a request to review a proposal for a South Atlantic Sanctuary, a modified version of a proposal it had reviewed several times in the past. As in previous reviews, there was disagreement within the Committee over whether such a Sanctuary was justified scientifically. The Committee agreed that the information presented in IWC (2004a) remained a reasonable summary

of the two primary viewpoints of the Scientific Committee regarding this proposal relative to the most recent guidance from the Commission, although some additional information was produced by those in favour of and those against the Sanctuary.

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Editor

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Erratum: Page 33 of the previous issue (*Journal of Cetacean Research and Management* 7(1)), title should have read '*Balaena*' not '*Balaenoptera*'.