Editorial

Welcome to this, the first issue of the *Journal of Cetacean Research and Management.*

The Journal has been established to publish papers on those matters of most importance to the conservation and management of whales, dolphins and porpoises, and in particular papers that are relevant to the tasks of the Scientific Committee of the International Whaling Commission (IWC). These will include papers on:

- population assessment and trends
- population dynamics
- population biology
- taxonomy and stock identity
- risk averse management strategies
- direct and indirect exploitation
- environmental changes and threats in the context of cetaceans
- scientific aspects of whale watching and sanctuaries.

The Journal replaces the scientific sections of the *Reports of the International Whaling Commission.* That series began in 1950 (IWC, 1950), but at that time had little scientific content. The first report of the IWC Scientific Committee was published in 1955 (IWC, 1955). The first scientific papers presented to the Scientific Committee were not published in *Rep. int. Whal. Commn* until the beginning of the 1970s. In 1977, a full time editor was employed and *Rep. int. Whal. Commn* was professionally typeset. Before 1978, papers were more-or-less published as presented at the meeting. By the beginning of the 1980s, however, an anonymous review process was established to try to ensure the scientific quality of the papers published by the Commission. Altogether, over 1,500 papers have been published in *Rep. int. Whal. Commn* and its *special issue* series since 1950, mostly since 1970. References for all of the published and unpublished papers are available in database format (with the program *Papyrus*) from the Office of this Journal. Details of how to obtain IWC publications can be found on the IWC web page or from the IWC Office (details are given on the inside cover).

The rationale for the new Journal is discussed in Donovan (1999).

For those readers unfamiliar with the IWC and particularly the work of its Scientific Committee, a brief introduction is given below.

THE INTERNATIONAL WHALING COMMISSION

The International Whaling Commission was founded in 1946. It was established under the International Convention for the Regulation of Whaling which was signed in Washington DC on 2 December 1946 (IWC, 1999b). The Preamble to the Convention *inter alia* states that its purpose is to provide for the 'proper conservation of whale stocks and thus make possible the orderly development of the whaling industry'. Membership has grown from the original 15 nations to 40 nations today.

The Commission is the decision-making body established by the Convention and comprises one Commissioner from each government who has 'one vote and may be accompanied by one or more experts and advisers' (IWC, 1999b). It normally meets annually. There is also provision for observers to attend and at the 1998 Annual Meeting there were observers from 5 non-member governments, the European Community, 5 Inter-Governmental Organisations and 70 Non-Governmental organisations.

The report of the Commission's meeting ('The Chairman's Report') and other non-scientific material used to be published in *Rep. int. Whal. Commn.* It is now included in a new series called the *Annual Report of the International Whaling Commission* (IWC, 1999a).

The history of the Commission has been dealt with by a number of authors (e.g. Gambell, 1977; Donovan, 1992) and is not considered here. In short, much of the Commission's history has centred around the difficulties in finding a balance between its twofold aims i.e. 'conservation of whale stocks' and the 'orderly development of the whaling industry'.

THE SCIENTIFIC COMMITTEE

An important feature of the Convention is the emphasis it places on scientific advice. The Convention requires that amendments to the Schedule[1] 'shall be based on scientific findings' (IWC, 1999b). To this end, the Commission has established a Scientific Committee that normally meets once a year, immediately prior to the Commission meeting, to which it reports and makes recommendations.

The Scientific Committee comprises scientists nominated by member governments. In addition, in recent years it has invited other scientists to supplement its expertise in various areas. The size of the Committee, as well as the subject matter it addresses, has increased considerably over time. In 1954, it comprised 11 scientists from 7 member nations. At its most recent annual meeting (in Oman in 1998) it comprised over 115 participants (including some 30 invited participants); 22 member nations were represented. After 1955, the full Report of the Scientific Committee was published in *Rep. int. Whal. Commn.* It is now included as a supplement to this Journal. The report of the 1998 Meeting was published in April 1999 (*J. Cetacean Res. Manage. 1 (Suppl.):* 1- 284).

The subject matter considered by the Committee (and see IWC, 1999h) is largely determined by the scientific needs of the Commission. These are expressed in broad terms in the Convention text and are to:

- encourage, recommend, or, if necessary, organise studies and investigations relating to whales and whaling;
- collect and analyse statistical information concerning the current condition and trend of the whale stocks and the effects of whaling activities thereon;
- study, appraise and disseminate information concerning methods of maintaining and increasing the populations of whale stocks.

[1] The Schedule to the Convention contains IWC regulations concerning whaling (e.g. definitions, catch limits, seasons, etc.). To amend a provision of the Schedule a three-quarters majority of those voting (excluding abstentions).

The following sections briefly summarise the main areas of scientific interest to the Commission at present. They are not intended to represent a comprehensive survey of the Committee's work but merely to provide an outline of this work for those unfamiliar with it.

Comprehensive Assessment of whale stocks

When the Commission adopted a proposal to set zero catch limits for commercial whaling (popularly known as the 'moratorium'), it had also agreed to a 'comprehensive assessment' of the effects of this decision on whale stocks (IWC, 1983). Similar terminology was adopted for the aboriginal whaling scheme the following year (IWC, 1984). The development of the concept of the 'Comprehensive Assessment' is reviewed in Donovan (1989). Finally, it was agreed that from a Scientific Committee viewpoint, the Comprehensive Assessment 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 (IWC, 1987). Clearly, it was 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 (e.g. North Atlantic minke whales - IWC, 1991a; North Pacific minke whales - IWC, 1992c; Southern Hemisphere minke whales - IWC, 1991b; North Atlantic fin whales - IWC, 1992a; North Pacific Bryde's whales - IWC, 1997b; Bering-Chukchi-Beaufort Seas bowhead whales - IWC, 1992b; eastern North Pacific gray whales - IWC, 1993b). It is currently reviewing Southern Hemisphere baleen whales in this context, particularly humpback, blue and right whales (e.g. IWC, 1999e).

The Commission has a major research initiative in the Antarctic (SOWER - Southern Ocean Whale and Ecosystem Research Programme) with two main components, one concerning the abundance estimation of minke whales and other baleen whales south of 60°S, and the second concerning the status of Southern Hemisphere blue whales (IWC, 1999j). The initial part of this latter component involves the development of methods to distinguish pygmy blue whales from true blue whales at sea (IWC, 1999e).

The Committee also recently reviewed the status of right whales (e.g. see IWC, 1999e). Whilst certain populations in the Southern Hemisphere, although still heavily depleted, are increasing, the same is not true for the Northern Hemisphere.

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 (see IWC, 1999c, p.8).

The Revised Management Procedure for baleen whales

The history of the management of whaling and the IWC is summarised in Donovan (1995). After the adoption of the moratorium on commercial whaling, the Committee spent over eight years developing the Revised Management Procedure (RMP) for baleen whales (IWC, 1999i). In brief, this is a generic management procedure designed to estimate safe catch limits for commercial whaling (see Cooke, 1995). By way of extensive computer simulations, the RMP has been developed to take into account the inevitable uncertainty in scientific knowledge of whale populations and their environment. In addition, the Committee has developed guidelines and rules for how sighting surveys should be conducted and how the data are to be analysed if the resultant estimates are to be considered to be of sufficient quality to be used in calculating catch limits (IWC, 1997c). Similar guidelines and rules have been developed with respect to data requirements, quality and analysis (IWC, 1995b; 1997d).

These scientific aspects have been adopted by the Commission (IWC, 1993a). The implementation of the RMP for those stocks for which it has been tested is, of course, a political decision. 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 not only include the scientific aspects such as the RMP, but a number of non-scientific issues, including inspection and enforcement (e.g. see IWC, 1999a).

Current scientific work on RMP matters largely centres on the simulation testing of its possible application for specific species and ocean areas: North Atlantic and Southern Hemisphere minke whales were first considered and at present North Pacific minke and Bryde's whales are being examined (IWC, 1999d).

Assessment of stocks subject to aboriginal subsistence whaling

The Commission has recognised aboriginal subsistence whaling as separate from commercial whaling. Such whaling is permitted from 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 (bowhead and gray whales). It is the responsibility of the Committee to provide scientific advice on safe catch limits for such stocks. The Committee has established a timetable (IWC, 1999c, p.37) for the future assessments it intends to carry out (1999 - the development of a research plan for Greenlandic stocks, bowhead whale stocks other than the Bering-Chukchi-Beaufort Seas stock; 2000 - North Atlantic humpback whales; 2001 - fin whales off Greenland; 2002 - minke whales off Greenland; 2003 - gray whales; 2004 - Bering-Chukchi-Beaufort Seas stock of bowhead whales).

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 that takes into account the different objectives for the management of such whaling as compared to commercial whaling. This is an iterative and ongoing effort. Given the results so far (IWC, 1999f), a likely potential scenario is that the Commission might 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.

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 threaten 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). The Committee held two initial workshops, one on the effects of chemical pollutants on cetaceans and the other on the effects of climate change and ozone depletion - these have been subsequently followed up by the development of two multi-national, multi-disciplinary research proposals (IWC, 1999g). POLLUTION 2000+ 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. SOWER 2000 will examine the influence of temporal and spatial variability in the physical and biological Antarctic environment on the distribution, abundance and migration of whales.

Scientific aspects of whale sanctuaries

As well as management measures governing catch and size limits, species and seasons, the IWC may also designate open and closed areas for whaling. A sanctuary in the Antarctic was established in 1938 (pre-IWC), south of 40°S and between 70°W and 160°W because commercial whaling had not taken place there and it was thought desirable that this situation was continued. The IWC adopted this sanctuary until 1955, when it was opened to whaling as a means of reducing the pressure of catches on the rest of the Antarctic whaling grounds.

An Indian Ocean Sanctuary (an area where commercial whaling is prohibited) was established by the IWC in 1979, extending south to 55°S. It was initially established for 10 years and its duration has since been extended twice. It will be reviewed again by the Commission in 2002 (IWC, 1999k).

In 1994, the Commission established a Southern Ocean Sanctuary. The northern boundary follows 40°S except in the Indian Ocean sector where it joins the southern boundary of that sanctuary at 55°S, and around South America and into the South Pacific where the boundary is at 60°S. It will be reviewed by the Commission in 2004 (IWC, 1999k).

In 1998, the Commission stated that the objectives of this Sanctuary were to provide for: the recovery of whale stocks, including the undertaking of appropriate research upon and monitoring of depleted populations; the continuation of the Comprehensive Assessment of the effects of setting zero catch limits on whale stocks; and the undertaking of research on the effects of environmental change on whale stocks (IWC, 1999a).

Small cetaceans

The Convention does not define a 'whale', although a list of the names of twelve whale species (in a number of languages) was annexed to the Final Act of the Convention. Some governments take the view that the Commission has the legal competence to regulate catches only of these named great whales. Others believe that all cetaceans, including the smaller dolphins and porpoises, also fall within IWC jurisdiction. Despite this, it has been agreed that the Scientific Committee can study and provide advice on small cetaceans. 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). The Committee has established a timetable for its future work (IWC, 1999c, p.44-5). In 1999 it will examine the status of white whales and narwhals and in its consideration of bycatch mitigation measures concentrate on acoustic deterrents. In 2000 it will examine the status of freshwater cetaceans and continue to discuss bycatch mitigation measures. After 2000, it will examine the status of Dall's porpoises, the systematics and population structure of *Tursiops*, the status of ziphiids in the Southern Ocean and the status of small cetaceans in the Caribbean Sea.

Scientific aspects of whalewatching

It is only recently that the Committee has been asked to examine scientific aspects of whalewatching by the Commission (IWC, 1995a). The Committee developed general guidelines for whalewatching and has identified four priority areas for future consideration: (a) a more detailed review of the approach distances, effort and activity limitations in place in existing operations for a range of species, and information on the basis for such controls; (b) an assessment of current studies of the effects of different approach distances and platforms; (c) a review of the quantitative methods used to assess the short-term reactions of cetaceans and the basis for judgements of adverse effects; and (d) comparative studies on different approaches/ distances and other controls which may be required on areas important for feeding, resting and reproduction (IWC, 1997a).

Review and comment on Scientific Permits issued for scientific research

The right of national authorities to issue permits for the killing of whales for scientific purposes is given in Article VIII of the Convention (IWC, 1999b). Prior to 1982, over 100 permits had been issued by a number of governments including Canada, USA, USSR, South Africa and Japan. The issuance of such permits has become a major area of discussion since the moratorium and three countries (Japan, Norway and Iceland), have issued scientific permits as part of their research programmes since 1985. Currently permits are issued by Japan to take minke whales in areas of the Southern Hemisphere and the North Pacific. Governments must provide details of proposed permits for review by the Committee (IWC, 1999k). In recent years, the Committee and the Commission have developed a number of guidelines for the review of such proposals (e.g. see IWC, 1998b, pp. 103-5). The Japanese Southern Hemisphere programme is a long-term project and the results have recently been extensively reviewed by the Committee (IWC, 1998a). A similar review of the North Pacific programme is scheduled for the year 2000.

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G.P. Donovan
Editor

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