

Editorial

Welcome to this the first issue of the fourth volume of the *Journal of Cetacean Research and Management*. The Editorial Board has decided to dedicate this issue to papers related to the status of the gray whale (*Eschrichtius robustus*). This is partly as there is to be a major assessment of this species at the forthcoming meeting of the IWC Scientific Committee and partly to publish a number of important papers that had at one time been intended to form a special volume in the old *Reports of the International Whaling Commission* special issue series, but which, for a number of reasons, did not materialise.

This issue therefore includes both recent papers and seminal papers that were originally written for previous gray whale assessments by the IWC, including some that formed the basis for the report of the gray whale workshop published in 1993 (*Rep. int. Whal Commn.* 43: 241-59).

The gray whale represents a fascinating case study. Although heavily depleted on both sides of the North Pacific by whaling in the 19th and earlier centuries, the eastern gray whale has recovered to at or near carrying capacity (over 20,000 animals), whilst the western gray whale remains at critically low levels (less than 100 animals) – and is perhaps the most endangered population of large whales in the world.

The opening paper in this issue (LeDuc *et al.*), for the first time examines genetic differences between these two management stocks and concludes *inter alia*, that they can be genetically differentiated at the population level.

The papers by Weller *et al.* review the history and status of the western gray whale, including results from the recent joint USA-Russia research programme. There is serious concern over the ability of this population to recover. Urgent and co-ordinated action is required to reduce to a minimum anthropogenic threats to these animals.

The following two papers examine aspects of critical habitat for the eastern gray whale. The first (Moore and Clarke) addresses the potential impact of offshore human activities on gray whales, including oil and gas exploration and development. These issues are also relevant to the western population. Findlay and Vidal examine records from two calving sites for the eastern gray whale in the Gulf of California, Mexico and discuss possible reasons for changes in the distribution and presence of gray whales in the study areas. In particular, they highlight the effect of local fishing practices on the whales.

Any assessment of the status of populations requires good estimates of abundance and ideally trends in abundance. Although estimating cetacean abundance is always difficult, the migratory behaviour of the eastern gray whale allows for shore-based censuses to be undertaken relatively easily during the southbound migration. This issue contains four papers of relevance to this topic. The first, by Buckland and Breiwick, presents a major analysis of estimates for almost a 30-year period. The second, by Turnock and Mizroch, examines the effect of different census frequencies on an ability to detect trends in abundance given certain assumptions about CVs of estimates and rates of change in the population. Although concentrating on early census data, the lessons to be learned remain relevant today when designing research programmes for management. The paper

by Sheldon and Laake examines an important factor in the use of shore-based censuses – the offshore distribution of animals and how these may vary over time. The final paper related to abundance looks at a practical way in which to improve our ability to examine offshore distribution of migrating animals during censuses.

The final papers in this issue address various modelling exercises to determine the status of the eastern gray whale. The first paper by Butterworth *et al.* represents the primary analysis of a problem that has affected many attempts to model the eastern population: namely reconciling the observed increase in gray whales since systematic censuses began in the late 1960s with the historical catch information that suggested that the population was commercially extinct at the end of the 19th century. Simple density-dependent models find it impossible to reconcile the known catch history and recent increasing trends in the population.

The remaining three papers (Butterworth *et al.*, Wade, and Punt and Butterworth) consider alternative modelling approaches (dynamic response analysis (DRA) and Bayesian methodology) to examine the present status of the eastern gray whale, particularly in terms of the possibility that it is at or near carrying capacity. Butterworth *et al.* reviewed the results of an earlier DRA study that had concluded that the eastern gray whales had passed through its maximum net productivity level between 1967 and 1980. Their alternative approach suggested that in fact the data indicate that the population was still below that level in 1990.

Wade's paper used Bayesian methods to estimate probability distributions for both input and output parameters in two model types (one simple, the other age- and sex- structured). The exercise also provided evidence that CVs of earlier abundance estimates had been underestimated. The final paper, by Punt and Butterworth, examines this approach and the assumptions behind it, using a different population model.

The papers in this issue have benefited from the editorial work of a number of people and it is important here to particularly thank Howard Braham (now retired) and Marcia Muto of the National Marine Mammal Laboratory in Seattle, Washington USA, who have put in an enormous effort into many of the papers published here and into some of the gray whale papers that will be published in future issues. Similarly, John Bannister of the Western Australian Museum in Perth has assisted with several of the papers.

I would also like to thank all of the many scientists who act as anonymous reviewers for the Journal. Without their dedicated (and often unsung) work, the Journal would not exist. A list of reviewers is kept on the Journal website (<http://www.iwcoffice.org/publications/JCRM>), in addition to the contents of previous volumes.

Finally, I would like to thank Elaine Shield who has been responsible for the artwork and tabulae matter included in the Journal. She is leaving after 5 years to concentrate on her young family.