

Editorial

Welcome to this the final issue of Volume 7 of the *Journal of Cetacean Research and Management*. I must apologise that its appearance is later than usual, but this has been the result of certain logistical problems associated with the desire to dedicate the Winter Issue to one of the least known families of Cetacea, the beaked whales or Ziphiids. I hope that you will agree that the wait was worthwhile.

Ziphiids are particularly difficult to study, both as a result of their oceanographic distribution and the fact that they are long deep divers. Indeed, some species are known only from the bones of stranded specimens. Beaked whales have become particularly 'newsworthy' as a result of increasing evidence of their vulnerability to certain anthropogenic sounds, particularly those associated with airgun arrays and military mid-frequency sonar (2-10kHz). As a result of the temporal and spatial association of certain atypical 'mass' strandings of certain beaked whale species (e.g. Cuvier's and Blainville's) with certain naval manoeuvres in the last 15 years or so, the need to examine such cases in an objective and considered way has become more urgent.

Problems such as this require the co-operation of scientists from a wide number of disciplines. In April 2004, a group of experts in fields as diverse as acoustics, physiology, anatomy, ecology and veterinary medicine, met in Baltimore, USA under the auspices of the US Marine Mammal Commission. The meeting was important, not only in terms of its report but also as a means to develop research recommendations to address this important issue.

Many of the papers in this volume had their origin in the Baltimore meeting. The authors of the major review paper (Cox *et al.*, 'Understanding the impacts of anthropogenic sound on beaked whales') used the report of that meeting as its basis and it will be a valuable reference work for years to come. It reached a number of important conclusions that I would like to highlight here:

- (1) it identified a plausible pathological mechanism for the observed mortality and morbidity of beaked whales that warrants further investigation (gas-bubble disease induced in supersaturated tissue by a behavioural response to anthropogenic noise);
- (2) it identified important deficiencies in current mitigation and monitoring measures;
- (3) it identified four major research priorities that need to be addressed to improve the situation.

The remaining ten papers review and present new information on a number of important topics concerning beaked whales and particularly in the context of better estimating the potential anthropogenic threats facing them at the population level and mitigating such threats as necessary.

Assessing and addressing any conservation issues requires fundamental information on distribution and abundance. These issues are considered in the papers by Macleod *et al.* (Known and inferred distributions of beaked whale species), Barlow *et al.* (Abundance and densities of beaked and bottlenose whales) and Ferguson *et al.* (Predicting Cuvier's (*Ziphius cavirostris*) and *Mesoplodon* beaked whale population density from habitat characteristics in the eastern tropical Pacific Ocean). The latter paper is especially interesting in using the relatively new techniques of spatial modelling to improve our understanding of beaked whale habitat and change some of the general impressions given by the biases arising from the fact that there are only a few areas in which good information is available. Finally, Macleod and Mitchell (Key areas for beaked whales worldwide) recognise the need to focus efforts on key areas and propose an approach to designating these around the world.

Assessing the level of any potential threats requires a better understanding of the nature of those threats and the possible cause-effect relationships. A number of papers examine aspects of this, including Rommel *et al.* (Elements of beaked whale anatomy and diving physiology and some hypothetical causes of sonar-related strandings), Macleod (How big is a beaked whale? A review of body length and sexual size dimorphism in the family Ziphiidae), Macleod and d'Amico (A review of beaked whale behaviour and ecology in relation to assessing and mitigating impacts of anthropogenic noise), d'Spain *et al.* (Properties of underwater sound fields during some well documented beaked whale mass stranding events) and Podesta *et al.* (A review of Cuvier's beaked whale strandings in the Mediterranean Sea).

I hope that the work represented in these papers provides the much needed stimulation to improve our knowledge of beaked whales, particularly with respect to the issue of anthropogenic noise. If we are to understand this problem sufficiently to properly assess its level and develop effective mitigation measures, it is essential that scientists, industry and the military co-operate and provide each other with necessary information. This is particularly true when incidences of atypical mass strandings occur, e.g. as recently occurred in Almeira, Spain at the end of January 2006. In that case, the veterinary scientists worked quickly and hard to perform full autopsies. It is important that relevant military and industrial organisations and authorities co-operate in providing information on any potentially damaging sound sources that may have occurred in the vicinity at the same time.

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Editor