CONSERVATION OF WHALES AND DOLPHINS

by Ray Gambell

Whales, dolphins and porpoises belong to the group of animals known as *Cetaceans,* derived from the Greek and Latin words meaning 'whale.' There are two main groups of living cetaceans - the Mysticeti or *baleen* whales, with 13 different species recognised at present, and the Odontoceti, the toothed whales, which include about 71 species. The largest whale, and the largest animal that has lived on this planet, is the blue whale which can grow up to 30m in length with a weight of 150 tonnes. At the other end of the scale of sizes are some of the dolphins which are little more than 1m in length and weigh just a few tens of kilograms.

DISTRIBUTION AND MOVEMENTS

The large whales occur in most of the world's oceans, with different populations in the Northern and Southern Hemispheres. There is only limited interchange across the equator, and each species comprises a number of breeding groups in the ocean basins. The baleen whales are filter feeders, sieving water through the rows of baleen plates hanging from the upper jaws to trap the shrimp-like krill, other small organisms or fish that constitute their diet.

Most baleen whales carry out extensive annual migrations between the warm-water breeding grounds where they mate and calve in the winter months, and the polar seas in which they feed in the summer. This pattern of movements and the associated reproductive and feeding cycles are characteristic of these animals, although the species which occur in the northern Indian Ocean must be anomalous in this respect, since they cannot go northwards.

Tail of a Humpback Whale

The sperm whale, the largest of the toothed whales, feeds largely on squid or fish, and is able to dive

to great depths in pursuit of these prey. The females of this species carry out limited seasonal movements in the warm equatorial waters and only the larger males enter the colder polar seas of each hemisphere.

The smaller cetaceans are also widely dispersed globally. Some, such as the killer whale, are found world-wide, while many are restricted to particular areas. For example, narwhals and white whales are Arctic species; Peale's dolphin only occurs off southern South America and the Falkland Islands; Heaviside's dolphin is found in the coastal waters of southwestern Africa; and the Atlantic white sided dolphin is limited to the northern North Atlantic. Seasonal movements occur in these species, but their extent is relatively limited.

REGULATION OF WHALING

Commercial whaling

Until comparatively recently the major threat to the survival of whales was direct hunting. No species has actually become extinct through catching, but the population of gray whales in the North Atlantic died out in historical times, and the right whales in the North Atlantic and North Pacific, and the gray whales in the western North Pacific now exist only in critically small numbers.

A series of inter-governmental Agreements were developed in the 1930s but they were not fully effective because of the economic pressures for maintaining large catches. Eventually the nations of the world recognised the need to safeguard for future generations the great natural resources represented by the whale stocks, and in 1946 the International Whaling Commission was established to provide for their proper conservation and thus make possible the orderly development of the whaling industry.

However, it was not until the scientific basis for sustainable management was developed and implemented that effective restrictions were progressively introduced for the most depleted stocks. Acceptance of this process of regulation has been long and slow, and this allowed serious over-hunting of many whale populations to continue. Additionally, there had been major falsification of the true catch records, so in 1982 the IWC agreed to give total protection from commercial hunting to all whale stocks. This so-called moratorium will only be lifted if and when arrangements for comprehensive regulation and monitoring of any future commercial catches are put in place.

As further protection, and to provide large areas where whales will remain free from catching even if commercial whaling resumes, the IWC has also established the Indian Ocean Sanctuary and the Southern Ocean Sanctuary where hunting is prohibited.

Some catching with a commercial character does still continue however. Norway lodged legal objections to the setting of zero catch limits on the stocks of minke whales off its coasts, and is licensing carefully regulated and monitored catches set using a revised management procedure developed by the IWC but which the latter has not yet implemented. Japan is also taking minke whales in the Antarctic, and minke, Bryde's and sperm whales in the North Pacific, for research purposes under a legal provision of the 1946 International Convention for the Regulation of Whaling.

Aboriginal subsistence whaling

The pause in commercial whaling does not prevent hunting by certain native peoples for subsistence purposes. This aboriginal subsistence whaling is regulated by the IWC to allow takes sufficient to satisfy the documented needs of the people concerned, but not at such a level as to endanger the stocks of whales. This hunting is carried out from Greenland (fin and minke whales), Siberia (gray and bowhead whales), St Vincent & the Grenadines (humpback whales) and the USA (Alaska,

bowhead; Washington State, gray whales).

DOLPHIN CATCHES

There is no global organisation responsible for the regulation and oversight of the direct catches of the smaller whales species, dolphins and porpoises. The member governments of the IWC hold differing views on the legal competence of that organisation to regulate direct and incidental catches of the small cetaceans. The IWC does give advice from its Scientific Committee on species and populations considered to require action to conserve and rebuild depleted stocks. There are also a number of regional Agreements which have been negotiated to give protection to these species and their habitats particularly in European waters and the Mediterranean Sea.

However, there are many fisheries for small cetaceans in coastal waters around the world. These include such different catching techniques as the drive fishery for pilot whales in the Faeroe Islands and striped and other dolphins in Japan; net fisheries for the river dolphins; hand harpoon and shoulder gun fisheries for white whales and narwhals in Arctic waters, and dolphins in the Caribbean; and the use of small catcher vessels with a mounted cannon for beaked and pilot whales in the North Pacific.

Incidental catches

A major cause for concern for small cetaceans is the incidental or accidental killing of these animals during the course of other fishing operations. Two particular kinds of fishing activities involve the setting of purse seine nets to catch tuna and the use of drift and set gillnets to capture other fish species. These operations have caused the deaths of many thousands of dolphins.

In the eastern tropical Pacific there is a multi-national fishery for tuna in which the purse seine nets are set around the schools of fish. Tuna often congregate under dolphin schools, and in the past the fishermen deliberately encircled groups of dolphins in the expectation that the valuable tuna would be beneath them. When the purse seine net is drawn in, it traps both the tuna and also the dolphins. Many tens of thousands of dolphins were drowned each year until international agreements were established to reduce these mortalities by modifying the way in which the nets were hauled in to allow the dolphins to escape over the top.

Large numbers of dolphins are also killed inadvertently by becoming entangled in the long drift nets used in oceanic fisheries for species such as salmon. Monofilament drift nets were set at or near the surface and stretching up to 60km from the fishing vessel. Dall's porpoise seemed to be particularly vulnerable to entanglement in these nets in the North Pacific Ocean. International agreements have now banned the use of such nets, or limited their length, but there are still serious mortalities arising from fouling in fishing nets.

Gill net and trap fisheries are carried out in many coastal areas around the world, and are expanding especially in the Indo-Pacific region, and the information on their impact on cetaceans is generally inadequate. Where evidence does exist, it is clear that these kinds of fisheries can cause serious problems. As an example, the vaquita, which only occurs in the Gulf of California, is critically endangered because of the incidental catches in the gill net fishery in those waters. This kind of situation arises not only with smaller cetaceans including the harbour porpoise in the North Atlantic and North Sea, but also involves large whales such as humpbacks, right and minke whales that can become entangled and cause extensive damage both to the nets and to themselves in areas such as the Atlantic coast of Canada. Development of appropriate and cost-effective visual and acoustic deterrents, and modifications to the management of the fisheries, still need to be pursued.

ENVIRONMENTAL CONCERNS

Pollution

Pollution of the marine environment is clearly going to have an impact on the whales and dolphins, since they spend their whole lives in the sea. We tend to use the oceans as the final disposal area for much of our terrestrial waste, so that chemicals, oil, debris, sewage and nuclear materials are all deposited there. Any or all of these materials can impact directly on the animals living in the oceans, and indirectly through the prey species that make up their food. Particularly because cetaceans are long-lived animals, have extensive fat stores, and tend to be top predators, chemical pollutants accumulate in their tissues and these can have significant implications for their survival. Accumulated heavy metals and PCBs also pose health problems for people who eat cetaceans, such as the Faeroe Islanders and Arctic communities. Although there are few records of acute poisoning of cetaceans, evidence of the adverse effects of pollutants on other marine mammals and terrestrial animals suggests that sub-lethal effects probably include increased susceptibility to disease, suppression of the immune systems, and reduced reproductive capacity.

Climate change

Atmospheric pollution from greenhouse gas emissions is predicted to cause changes in global air and sea temperatures, with consequent sea level rise, reduced sea ice cover, and altered stability with regional variations in the marine ecosystems. Apart from anything else, these impacts will shift the distribution of pollution and pathogens and cause general intensification of pollution problems.

Current attempts to evaluate the effects of climate change on cetaceans are severely limited by the inherent uncertainties in the responses of the cetaceans and their prey to such changes, and the data and the models presently available for prediction. The increase in ultra-violet radiation in the polar regions due to depletion of the ozone layer is likely to affect many organisms in these areas, certainly in a negative manner. Because the extent and rate at which climate change will affect cetacean populations is unknown, it is clear that there is a general need to take a precautionary approach and encourage the reduction of the harmful emissions.

CONCLUSION

Whales and dolphins have become for many people a symbol of much of what we have done wrong in our management and conservation of all the earth's resources. The depletion of cetacean populations and the reduced health of the marine environment are plain to see. In addition, the way in which these large-brained and social mammals have been hunted raises concerns with respect to animal welfare. The question is asked whether they should be regarded as a food source at all, or better be afforded a role more as objects of wonder, for our pleasure and education? Whalewatching has now become an important and popular industry, probably causing little harm to the animals viewed, and some people regard it as the new non-consumptive 'whaling industry'. As we experience joy and awe in seeing these magnificent animals we glimpse something of the grandeur of God's creation , and thereby of Him. But nothing in the Bible suggests that these animals have any special status in creation comparable to Man.

Man was made accountable by God to manage His creation, to 'fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over everything that moves upon the earth' (Gen. 1: 28). When God created the heavens and the earth he gave us the picture of Adam tending a garden, to work it and take care of it (Gen. 2: 15). This implies that we have a responsibility to enhance and utilise, but not to plunder and despoil God's creation. Our stewardship responsibilities are inherent in the word ecology, from the Greek *oikonomia* meaning "management,

oversight, administration of other's property." This is true for our relationship with whales and dolphins, and indeed "the fish of the sea and whatever passes along the path of the sea" Ps. 8: 8). Clearly, we have failed to live up to this mandate, in part because of ignorance but more often than not through selfishness and greed. There is no clear indication in the Bible whether whales and dolphins may be utilised or consumed. We therefore have to use our God-given intelligence to decide this issue for ourselves, bearing in mind that we should also have a proper concern for the husbandry and welfare of animals used in the service of Man. 'A righteous man has regard for the life of his beast' (Prov. 12: 10).

The future health of our world, however we decide to use the whales and the other resources of the earth, depends very much on us. The past record with respect to the whales and dolphins is bad, since there has been both gross over-exploitation and lack of concern for the welfare of the animals as they have been hunted and killed. But because of the vitality of God's creation, we have the potential for righting past wrongs. While some people may wish for a non-consumptive 'whaling industry', it is important that the present catching and any expanded whaling in the future recognize that these creatures are God's property, for which we are stewards. Our continuing responsibility is one of wise and responsible use, just as God gave the animals into Noah's care with the words 'I shall demand an accounting.' (Gen. 9: 5).

This brief was prepared for the John Ray Initiative by Ray Gambell. Thanks are due to Canon Stephen Palmer and Dr Tim Smith for many helpful comments.

THE·JOHN·RAY·INITIATIVE

The John Ray Initiative promotes responsible environmental stewardship in accordance with Christian principles and the wise use of science and technology. The JRI organises seminars and disseminates information on environmental stewardship.

Inspiration for the JRI is taken from John Ray (1627-1705), scientist and Christian, who pioneered systematic classification of plants and animals.

For more information contact us at: JRI, QW212, University of Gloucestershire, Francis Close Hall, Swindon Road, Cheltenham GL50 4AZ, UK.
Tel: 012 4254 3580 Fax: 087 0132 3943

The John Ray Initiative is a company limited by guarantee and a Registered Charity
Company Registration No: 3420063
Registered Charity No: 1067614

jri@glos.ac.uk www.jri.org.uk