Australian Government



Department of the Environment, Water, Heritage and the Arts

## AUSTRALIA'S RESEARCH PRIORITIES FOR CETACEANS

Australian Government scientists conduct non-lethal cetacean research that contributes to the conservation and management of whales around Australia, throughout the Indo-Pacific region, in Antarctic waters, and internationally. The Australian Marine Mammal Centre (AMMC), part of the Australian Antarctic Division (AAD), coordinates Australia's marine mammal research expertise to provide scientific research and advice to underpin Australia's marine mammal conservation and policy initiatives. Research priorities include topics such as population structure and distribution, ageing and diet, and surveys and abundance.

### **Population structure and distribution**

Understanding migration behaviour, population structure and the exploitation history of Australia's whale and dolphin populations is important for the conservation and management of marine mammals. Humpback whales are one of the species for which this research is being undertaken principally using satellite tracking and population genetic analyses. Genetic analyses of biopsy samples collected off the east and west coasts of Australia and from Antarctica are used to understand the migration patterns of humpback whales between the two recognised Australian breeding populations. Biopsy samples are also used to investigate the distribution of these populations on their Antarctic feeding ground, where they were killed in huge numbers by commercial whaling operations through the 20th century.

#### Ageing and diet

Developing non-lethal methods for estimating the age of whales is a key goal of current research. At present, there is no reliable method to accurately age whales non-lethally as visual assessment techniques are inaccurate and unreliable. Understanding the age structure of a population is essential to understanding population dynamics and recovery from whaling, and therefore developing a non-lethal ageing method is imperative. The two groups of methods that have been researched most extensively are the analyses of lipids and of nucleic acids (DNA and RNA) in either skin or blubber. These samples can be collected non-lethally using biopsy darts.



The food consumed by any animal is a key aspect of its ecology. The AMMC has pioneered the use of DNA-based analysis of whale faeces to identify prey consumed by whales. DNA identification of prey has been used to investigate the diet of blue whales, fin whales and Bryde's whales.

#### Surveys and abundance

For more than three decades, the International Whaling Commission has been counting whales in the Southern Ocean for management and conservation purposes with a particular focus on Antarctic minke whales. Each year, ships survey about one-tenth of the Southern Ocean up to the edge of the pack ice thus researching the abundance of minke whales around Antarctica approximately every ten years. The AMMC has an aerial survey program to study the minke whales in the pack ice and their use of various pack ice habitats. In 2007–08, aerial surveys in Antarctica were tested for the first time and found to be successful in assessing whale abundance within the pack ice. During the last two years (2008–09 and 2009–10), full surveys have been conducted over Vincennes Bay near Casey station (66° 17' S 110° 32' E) and also in the Davis Sea/Shackleton Ice Shelf (65° 30' S 94° 0' E) in 2009–10. During these surveys, many cetaceans were seen by the observers and also recorded by high definition video cameras that provide a permanent record of the survey. Additional survey research is undertaken on many other Australian cetaceans including humpback, blue and southern right whales plus many small cetaceans.

#### **Movement and migration**

It is important to know about the movement and migration of cetaceans for their proper conservation to reduce and/or eliminate human impacts in areas where they are found. One of the main methods for this is the use of satellite tags. The AMMC has developed a custom-made satellite tag for the tracking of whales. These tags transmit their location to satellites orbiting the Earth that provide daily positions and have enough battery power to provide tracking information for up to 170 days. The tracking data will help with the management of human–whale interactions and threatening processes, and particularly to the economically significant whale watching, and oil and gas industries. As some whale species recover from past over-exploitation, interactions with shipping and industrial activities will also increase, and movement information will assist in reducing these potential impacts. Satellite tags have been deployed on humpback, blue and southern right whales.

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