Murdoch University Cetacean Research Unit

Murdoch University Cetacean Research Unit (MUCRU) is a dynamic research entity, with an international reputation for high quality, quantitative and innovative marine mammal research.

The overall aim of MUCRU is the conservation and management of marine mammal populations. We conduct and design rigorous, applied research to improve the scientific basis for informed decision-making that facilitates industry and government agencies in meeting their environmental, regulatory and statutory responsibilities. We provide scientific advice on cetacean (whale and dolphin) and dugong populations to State, Federal and international ministerial and management agencies, including the Western Australian (WA) Minister for the Environment, WA Department of Parks and Wildlife, the Australian Commonwealth Department of the Environment, and the US National Oceanic and Atmospheric Administration, on issues pertaining to coastal developments, fisheries interactions, cetacean-focused tourism and marine mammal protected areas.

We serve or have served on international advisory boards, chairmanships, and scientific committees for marine mammal conservation. These include representation on the Board of the World Society of Marine Mammalogy; Regional Co-Chairmanship of the International Union for the Conservation of Nature (IUCN) Sirenian Specialist Group; IUCN Cetacean Specialist Group, International Whaling Commission’s (IWC) Whale-watch Committee; and the Scientific Committee of the IWC.

Since 2006, MUCRU have published over 80 peer-reviewed scientific papers and book chapters and attracted significant industry and government research funding.

MUCRU is comprised of Murdoch University academic staff, research fellows, post-graduate students and international collaborators. Our core areas of research are:

1. Abundance estimation
2. Population biology and behavioural ecology
3. Fisheries interactions
4. Development of innovative techniques
5. Marine mammal health
6. Citizen science

Abundance estimation

Many aspects of the research and conservation of marine mammal populations require knowledge of how many individuals are present in a region. For abundance estimation, we employ several techniques, including: (i) capture-recapture based on photo-identification; (ii) tracking from land or boats using theodolites in order to estimate the number of migrating whales; (iii) ‘traditional’ aerial surveys, as well as developing the use of Unmanned Aerial Vehicles (UAVs), for large scale estimations of dugong and cetacean abundance.

LEFT: Dugong surfacing.
Population biology and behavioural ecology

The study of behaviour, coupled with appropriate statistical analyses, underlies much of the research undertaken by MUCRU. Research into population and behavioural ecology has three broad applications: (i) documenting behavioural responses of marine mammals to human activities; (ii) linking human-induced changes in behaviour of individuals to population-level effects; and (iii) using behavioural information to inform decision-making.

Fisheries interactions

The incidental capture, or bycatch, of non-target wildlife in fisheries is a global problem. The overlap of fishing effort and cetacean populations often results in negative outcomes for both the fishers and the cetaceans involved. MUCRU members are assessing impacts of bycatch on dolphins in a north-western Australian trawl fishery and entanglements of migrating humpback whales in cray-pots.

Development of innovative techniques

MUCRU researchers are developing new approaches that use emerging technology including: i) fixed-wing UAVs to survey marine mammal populations for abundance and habitat use; ii) multi-rotor UAVs to infer body condition of marine mammals; and iii) passive acoustic monitoring to detect and characterise cetaceans and their habitat use.

Marine mammal health

An understanding of diseases that affect cetaceans and the causes of mortality is an important component in the identification and evaluation of population threats. This knowledge can help inform wildlife management agencies and allow better conservation and management outcomes. MUCRU veterinarians i) examine factors associated with cetacean strandings and ii) determine epidemiological information on disease.

Citizen science

Citizen science has the potential to harness observations from engaged citizens to maximise information on the spatial and temporal dynamics of marine wildlife. In collaboration with colleagues from Duke University, USA, GAIA Resources and Marine Ventures Foundation, we developed the Coastal Walkabout (CW) initiative, which is an open-access citizen science project that uses smart-phone technology and social media to motivate community members to gather scientific observations on cetaceans in marine and estuarine environments.

More information

For more information, visit our website www.mucru.org, or contact Prof. Lars Bejder (l.bejder@murdoch.edu.au). You can also follow our research activities on Facebook www.facebook/MUCRU

Sponsors include


If you are interested in our research and would like to know more, then please contact us on vlsresearch@murdoch.edu.au

Our research bulletins can be downloaded from www.murdoch.edu.au/School-of-Veterinary-and-Life-Sciences/Our-research/Our-Bulletins/

If you are interested in undergraduate or postgraduate degrees, please see www.murdoch.edu.au/School-of-Veterinary-and-Life-Sciences/Our-courses/