

Research



Acoustic tags can be used to track under ice movements of animals, such as this Weddell seal, in three dimensions. This animal also has a GPS logger, allowing scientists to reconstruct long-range movements. Dr Rob Harcourt

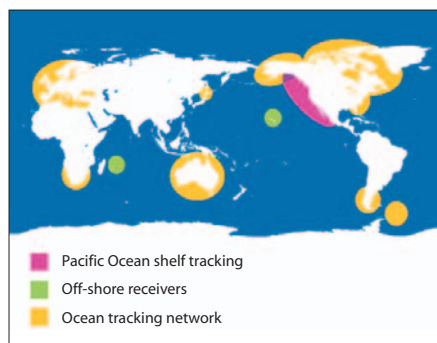
Ocean management goes global

As climate change and overfishing take their toll on ocean ecosystems, an ambitious new project is underway to monitor physical ocean changes and track the movement and behaviour of sea creatures, on a global scale.

The Ocean Tracking Network (OTN), headquartered at Dalhousie University in Nova Scotia, Canada, will put in place infrastructure and a research network that will provide, for the first time, a clear and ongoing picture of marine life and ocean conditions around the globe.

Australian scientists are playing a key role in the high-tech project, and will co-ordinate the first rollout of infrastructure in Australian waters this year.

The US\$168 million¹ OTN will see marine animals, from fish to whales, tagged with small transmitters, while a network of acoustic receivers will be deployed on the sea floor to track their



A map of the Ocean Track Network's approximate coverage areas. OTN

movement and behaviour. When tagged animals swim near a receiver, data will be recorded, in the same way barcoded information on groceries is swiped at the supermarket. Other sensors attached to the receivers will collect oceanographic data such as temperature, salinity and depth.

OTN leader, Dr Ron O'Dor of Dalhousie University, says the network will operate in the Atlantic, Pacific, Indian, Southern and Arctic oceans. Ultimately, some 60 lines or 'listening curtains' of acoustic receivers, each up to 50 km long, will be deployed in 14 key regions to track up to one million animals simultaneously.

The resulting data will assist the conservation and management of overfished and endangered species, by providing critical information on animal migration, habitat ranges and mortality, predator-prey interactions and climate-induced changes in physical ocean properties such as temperature, salinity and currents.

The OTN will utilise technology developed and trialled through two projects: Pacific Ocean Shelf Tracking Project (POST) and Tagging of Pacific Pelagics (TOPP), both part of the larger Census of

¹ The OTN project includes core funding of \$35 million from the Canada Foundation for Innovation, \$10 million for equipment from the Canadian Natural Sciences and Engineering Research Council, and in-kind support from some 45 international scientific, government and industry partners.

Marine Life, which aims to assess and explain the diversity, distribution and abundance of marine life in the oceans.

'In many ways POST is the flagship program of what OTN will become around the world,' OTN scientist, Dr George Jackson of the University of Tasmania, says.

POST uses acoustic transmitters to track the movement of 7000 young wild

'There are many animals where management will be greatly enhanced when we know more about their movements, including sharks and tuna.'

salmon from Oregon to the Alaskan panhandle. TOPP uses a range of tag technologies (satellite and acoustic) to track 21 top predator species in the Pacific Ocean, including whales, seabirds and seals.

'Broadly, the OTN aims to expand POST tracking around the world, and then combine the tagging technologies used in POST and TOPP to revolutionise under-

water tracking of marine organisms,' Dr Jackson says.

More than 30 institutions from 20 countries are involved in the OTN. Each has signed a memorandum of understanding to undertake the tracking and servicing of equipment, which will be provided by the OTN.

Australia will deploy the OTN through the newly established Australian Acoustic Tagging and Monitoring System (AATAMS), which receives \$4.1 million, over five years, from state and federal governments.

Dr Rob Harcourt, of the AATAMS scientific committee, says three listening curtains, spanning about 200 km of coastline, will be deployed off Ningaloo Reef in Western Australia to look at the movement of animals into, within, and out of Ningaloo Marine Park.

'There are many animals where management will be greatly enhanced when we know more about their movements, including sharks and tuna. These curtains will also help us understand species interactions and determine whether the Marine Protected Area is

effective,' Dr Harcourt says.

Other receivers are likely to be deployed off the coasts of New South Wales and South Australia.

AATAMS will also assist existing tracking projects run by others, including CSIRO projects tracking tuna and great white sharks, and a Department of Primary Industries project studying grey nurse sharks.

'We will freely provide these projects with any information collected by our receivers when their tagged animals swim past,' Dr Harcourt says.

One year on from its genesis, the OTN is shaping up well in its ambitions to have ocean management addressed at a global level.

● Wendy Pyper

More information:
www.oceantrackingnetwork.org

Contact:
Dr George Jackson,
george.jackson@utas.edu.au
Dr Ron O'Dor, rodor@coreocean.org
Dr Rob Harcourt, rhcourt@gse.mq.edu.au



ECOS: A gift that lasts all year

Recognised for 30 years of excellence in environmental science reporting, *ECOS* now brings you timely, easy-to-read articles on key sustainability research and news topics from across Australia and the Asia Pacific.

Published bi-monthly by CSIRO both in print and online, *ECOS* is for anyone interested in our evolving approaches towards a more environmentally sustainable future.

Subscribe or buy online | www.publish.csiro.au/ecos | Available at your local newsagent

