GETTING A FAST LOCK ON DUGONG LOCATIONS

New generation satellite tag technology that can locate and record the position of tagged animals faster and more efficiently than previous instrumentation, promises to vastly improve scientific understanding of dugong movement and habitat use.

Through the Australian Centre for Applied Marine Mammal Science, Dr Ivan Lawler of James Cook University, and Mr Dave Holley of Edith Cowan University, will test the ability of new 'Fastloc®' GPS (Global Positioning System) technology (developed by Wildtrack Telemetry Systems Ltd, UK) to track the fine scale movements of dugongs in deep water and sub-tidal seagrass meadows.

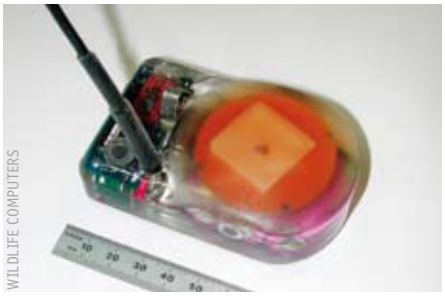
Dugongs have traditionally been tracked with standard GPS tags, which need to remain above the water's surface long enough to download 'ephemeris' data relating to the positions of the passing GPS satellites. The longer a tag is submerged between one position fix and the next, and the further the animal travels before resurfacing, the longer it takes to record the next position. In practice, this often means that the dugong (and tag) re-submerges before a location is calculated, leaving significant gaps in the data. Fastloc® tags, in contrast, do not download ephemeris data and need only 0.02 seconds at the surface to record data that can be processed to provide an animal's position.

'When dugongs are in deep water and/or moving quickly, we get fewer location fixes using standard GPS technology, because the tags do not breach the surface for long enough,' Dr Lawler says.

'This introduces a serious bias that can interfere with modelling of dugong habitat use and our ability to detect migratory corridors.

'If we don't know what routes dugongs take when they move between areas, we don't know what threats – such as nets – they could potentially be exposed to, and we can't assess the importance of deep water seagrass beds to the animals. This has implications for the conservation and management of both dugongs and their habitat.'

The research team will test the effectiveness of Fastloc® tags in two very different habitats – Shoalwater Bay in central Queensland and Shark Bay in Western Australia. Both areas are important for dugong conservation. However, Shoalwater Bay has a high tidal range of 7-8 m while Shark Bay has a tidal range of 1.7 m.



A Fastloc® tag, similar to this one produced by Wildlife Computers in the US, but with a dugong-specific housing that allows the tag to be tethered to dugongs' tails, will be used to track the fine scale movements of dugongs in deep water and sub-tidal seagrass meadows.

'The habitat use of dugongs within inshore seagrass meadows is poorly understood at low tide because the animals are in deeper water than at high tides when they move up into the intertidal shallows,' Dr Lawler says.

'So fewer locations are received from dugongs at low tides than at high tides. We'll compare the frequency of location fixes between these two areas and if similar numbers of locations are received in both habitats it will demonstrate that the Fastloc® system can acquire position fixes from animals in deep water.'

The tags will also be tested for their ability to acquire location fixes from dugongs moving rapidly between seagrass habitats in different bays.

The tag units will be deployed on five dugongs in each region for 2-3 months, along with time-depth recorders to measure the animals' dive profiles. Tags will be attached to the tail of the dugong via a harness with a remotely triggered release. The Argos satellite system will then be used to locate the tag and to decode the dugong location information recorded by it.

WENDY PYPER
Information Services, AAD

A dugong is restrained during attachment of a tag to its tail.

A dugong is released with its tag (a traditional GPS unit) attached.