

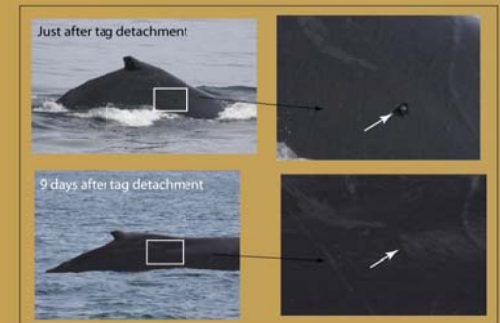


Using a new short-term dermal attachment tag to study bowhead whale foraging ecology in the western Beaufort Sea

Mark F. Baumgartner and Terence R. Hammar
Woods Hole Oceanographic Institution

Introduction

Bowhead whales visit the waters off of Barrow, Alaska where little is known about their foraging behavior. Previous attempts to deploy suction-cup attached tags on the whales to observe their diving and feeding behavior have been unsuccessful owing to their evasive behavior and rough uneven skin that is not amenable to suction cup attachment. A new projectile, short-term, dermal attachment tag consisting of a small implantable anchor and a trailing, recoverable instrument housing was developed (1) to increase the distance at which a tag can be deployed and (2) to ensure attachment regardless of skin condition.



Methods

- Projectile tag fired with air-compressed launcher (Restech Norway)
- Uses detachable "carrier rocket" to provide stability in flight
- Tag attaches to whale via implantable needle (dermal anchor)
- "Stop" at base of needle prevents excessive inward migration
- Monofilament tether connects needle to instrument housing
- Housing carries time-depth recorder (Lotek), acoustic transmitter (Vemco), and radio transmitter (Telonics)
- Tag parts from needle after corrosive release allows tether to slip through endcap

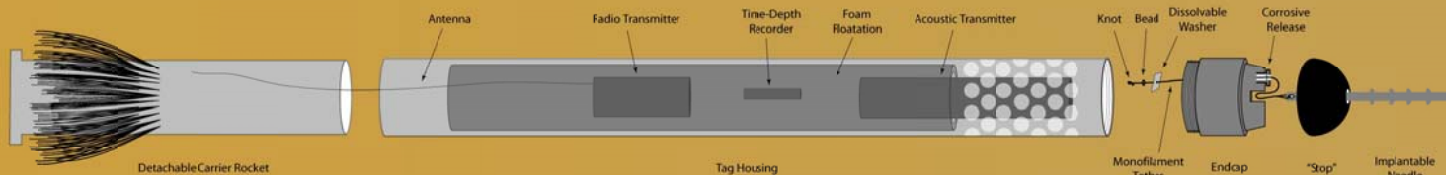
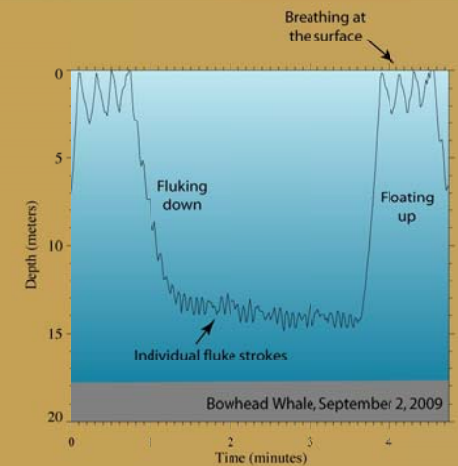


Testing

- Initial testing on beached fin whale carcasses
- First live testing on photographically monitored population of humpbacks off Cape Cod, Massachusetts during spring 2009
- Mild to no reaction to tagging
- Follow-up photographs indicate implanted needle is shed within 1 week and the wound site heals quickly

Results

- Successfully tagged 3 bowhead whales in 2009 and achieved 0.5-5 hours attachments
- Measured temperature, salinity, chlorophyll fluorescence, and krill abundance near tagged whales



Acknowledgements: This study was funded by the U.S. Department of the Interior Minerals Management Service (MMS) through Inter-agency Agreement No. M08PG20021 with NOAA as part of the MMS Alaska Environmental Studies Program. Indispensable help in the field was provided by Lewis Brower, Carter Esch, Craig George, Ken Houltler, Gary Lawley, Nadine Lysiak, Mark Mertz, Sarah Mussoline, and Kate Stafford. Humpback whale follow-up photographs provided by Jooke Robbins.

