

Environmental Studies Program: Ongoing Studies

Study Area(s): National

Administered By: Headquarters

Title: Development and Support of a National Animal Telemetry Network: Phase I Support for the Network Coordinator (NT-16-05a)

BOEM Information Need(s) to be Addressed: The systematic and expanded use of animal tags via a national animal telemetry network will enable BOEM to improve its impact assessment through an ecosystems approach in addition to the more common but still important assessments of impacts to individual species/populations. With the advent of multi-sensor tags, ancillary environmental information can be obtained, such as temperature, salinity, pH, etc. as well as recorded animal vocalizations. These kinds of observations, made concurrently with animal locations and diving behavior, add important context for better understanding of the roles that potentially impacted animals play in marine ecosystems. This should improve BOEM's impact assessments and, perhaps, in formulating mitigation strategies.

Total Cost: (in thousands) \$1,750

Period of Performance: FY 2016-2020

Conducting Organization(s): NOAA IOOS Office

BOEM Contact(s): COR: James Price; DES Contact: Jonathan Blythe

Description:

Background: Some of the earliest applications of animal tags (instrumentation physically attached to animals to (principally) observe their movements over time and (secondarily) any other associated variables of biological interest) have radically altered our understanding of how animals utilize their environment and interact with other members within a shared ecosystem. A prominent example has been the tagging of elephant seals in the Pacific northeast (Robinson, et al., 2012), wherein these animals previously understood as coastal were seen foraging at great distances from their coastal haul-out areas. And, quite remarkably, tagged elephant seals in the Antarctic helped discover a previously unknown source of Antarctic Bottom Water (Ohshima et al., 2013). BOEM-funded research has also made use of animal tags that have filled-in missing ecological information such as the seasonal migratory range of the bowhead whales during winter, spring, and summer. (The fall migration of bowheads had been exhaustively studied by more than three decades of aerial surveying.) There have been many other studies of terrestrial and aquatic animals using remotely tracked tags which resulted in much more comprehensive understanding of the animals and their relationship to the ecosystems they inhabit, and often in situations where comparable information via other means would have been prohibitively expensive or technically impractical.

In 2011 and 2012, several U. S. scientists with prior experience with tagging marine animals met to discuss the concept of a national animal telemetry network (ATN) of current and potential collectors and users of animal tag data for the purpose of initiating more comprehensive and coordinated monitoring of the U. S. marine environment over many spatial and temporal scales. Tag data archiving and data standardization was to be a part of the network, and the effort was to be conducted through the U. S. Integrated Ocean Observing System (U. S. IOOS) to be better integrate the ATN with other long-term observing of the marine environment.

The result of these meetings and many subsequent teleconferences and e-mail exchanges is a strategic plan to initiate and co-fund a national ATN (http://www.ioos.noaa.gov/observing/animal_telemetry/national_atn_sp_draft_final1.pdf) for the purpose of facilitating conservation and sustainable management of commercially harvested species, protected species, and other living marine resources. The ATN is intended to be a multidisciplinary approach, integrating physical, chemical, geological, and biological variables of ecological relevance and to establish common data and metadata structures so observations from many projects can be easily combined for subsequent analyses by future investigators requiring greater temporal or spatial coverage.

The cost of this effort will be shared with other federal agencies. In particular, NOAA, through the IOOS Program Office, and the Navy, through the Office of Naval Research's Marine Mammals Program Office, have been the principal drivers of this effort and are expected to make a major financial contribution to the ATN. Objectives: The objective of this study is to advance the state of development of Tethys metadata standard and accompanying Tethys user software to facilitate the generation of metadata documenting of PAM data sets in a manner that best meets the needs of the wider scientific and other PAM user communities.

Methods: The objective of this study is to initiate (launch) the national ATN in collaboration with other interested, co-funding federal agencies for the purpose of:

1. providing a scientific basis for marine fisheries and protected-endangered species management;
2. determining and delineating critical habitats;
3. providing real-time (or near real-time) monitoring of marine fish, turtles, birds, and mammals;
4. evaluating the potential effects of anthropogenic disturbances; and
5. improving coupled ocean-atmosphere observation and forecasting models.

Current Status: The Network Coordinator conducted several high-level, in-person meetings with all the IOOS regional nodes and secured agreements for data sharing and coordination of observational work using animal tagging. All the annual reports from the first year's activities have been received and were in good order. The Steering Group (an oversight committee) has been constructed and had its first meeting. The Data Assembly Center (DAC) developed into a functioning archive, however, as a university facility, it will not be able to give users and contributors adequate service. So the developed archiving structure at Stanford University, home of the DAC, will be exported to Axiom Data Science (<http://axiomdatascience.com/>), a private data services company

Final Report Due: September 30, 2020

Publications Completed: (none so far)

Affiliated WWW Sites:

Implementation Plan:

[http://www.ioos.noaa.gov/observing/animal telemetry/national atn sp draft final1.pdf](http://www.ioos.noaa.gov/observing/animal%20telemetry/national%20atn%20sp%20draft%20final1.pdf)

Program Web Site: <https://ioos.noaa.gov/project/atn/>

Revised Date: February 12, 2018