Movement and Behavior of Ocean Sunfish, *Mola mola*, in the Northwest Atlantic

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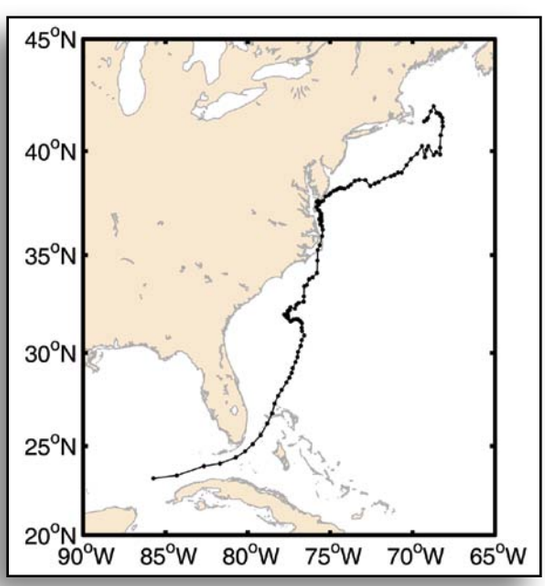
The ocean sunfish, *Mola mola*, is found in every ocean in the world. Known for its unusual body shape resembling a large "head" with no tail and long fins, and its large size (up to 5,000 lbs), the biology of this species is poorly understood. Most of

Photo by Inga Potter

Tagging of an ocean sunfish off of Nantucket Island, Massachusetts.

the basic biological questions about ocean sunfish remain a mystery. These include areas of growth and development, reproduction, feeding ecology, population size and distribution, movement, and behavior. Recent studies have shown that ocean sunfish make up a large portion of the bycatch in commercial fisheries in the Pacific and Mediterranean, and they are increasing in popularity as a food fish in Asia. Because there is little information on its basic biology, scientists have no idea how the global population of ocean sunfish is faring.

The current project at the University of New Hampshire's Large Pelagics Research Center is the first to study ocean sunfish in the North Atlantic Ocean, where they are a common resident. The project seeks to gain an understanding of the biology of ocean sunfish in the region including information on their movement, behavior, temperature and depth preferences. To date, 19 fish have been tagged with pop up satellite archival tags (PTT-100's) during the summer and fall of 2005 and 2006. Tags were deployed from Nantucket Island, MA, Harwichport, MA, and York, ME.



Track does not include uncertainty. Methods of F. Royer UNH Large Pelagics Research Center

Most probable track of tag ID 14538. Tag was deployed on 9/3/2005 and popped off on 1/15/2006.

Preliminary analysis from the tags reveal that ocean sunfish are capable of making large scale movements (as far as 3000 km in 130 days) and diving to depths of over 800 meters. *M. mola* found off of New England in the summer months appear to migrate southward along the continental shelf or shelf edge and to move as far south as the Caribbean or Gulf of Mexico before moving north again in the spring. During this migration the fish are spending considerable time at depth, rather than exhibiting the primarily surface oriented behavior thought to be typical of the species. Significant changes in vertical behavior in both dive depth and dive frequency have been observed as the fish move southward. As the tags continue to pop-off and relay data, more information about the movement and behavior of *M. mola* in the northwest Atlantic will become available, leading to a better understanding of the biology of this unique and mysterious creature.

Photo by Josh Eldridge

Mola mola with Pop-Up Archival tag attached.

Results of the project will establish a baseline of information for the species in the region, and will improve the understanding of the habitat, migration routes, behavior and environmental associations of *M. mola*. In addition, data on distribution of *M. mola* may serve as a useful indicator of nutrient rich areas with high productivity, where other important marine organisms may be found.

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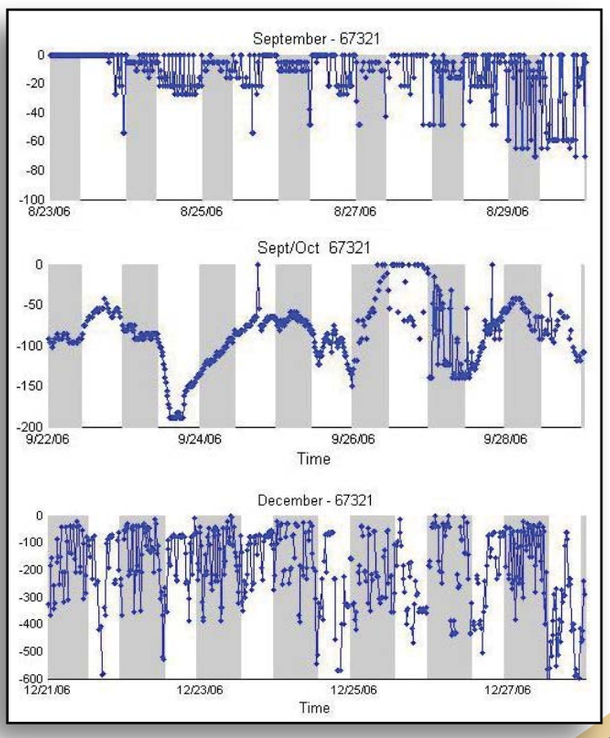

Depth profiles for tag ID 67321 for 3 week-long periods during the tagging period. Gray bars indicate night. Fish was tagged on 8/23/2006 off of Nantucket Island, Massachusetts. Tag was attached for 143 days and surfaced off the coast of southern Florida.