

Program Overview: The Cooperative Tagging Center

The Cooperative Tagging Center (CTC) at the National Marine Fisheries Service's Southeast Fisheries Science Center (SEFSC) works with recreational and commercial fishermen as well as scientists to deploy tags and gather recapture information as part of research on a suite of species. At one time, both highly migratory species (HMS) and various coastal species were specified as targets for tagging activities, but due to budget constraints the CTC currently requests that anglers restrict tagging efforts to swordfish, billfish and tuna species. The information gathered helps researchers gain insight into the movement patterns, population boundaries, growth and mortality estimates, as well as longevity of the targeted species.

The CTC began as the Cooperative Game Fish Tagging Program (GTP) at Woods Hole Oceanographic Institute (WHOI). Frank J. Mather III started the GTP in 1954 with an initial focus on bluefin tuna. The program quickly expanded to include billfish and jacks and, in 1973, became a joint effort between the National Marine Fisheries Service (NMFS) and WHOI. In 1980, the SEFSC took complete responsibility for the operation, funding, and maintenance of the GTP (CTC History). In 1992, the program was renamed as the CTC due to an increase in tagging efforts for in a wider variety of species, as well as an increase in tagging research needs and requests for tag data. Program participation continued to expand until its apex in the early 1990's. The inception of The Billfish Foundation's (TBF) tagging program coupled with a brief lapse of funding for the CTC has led to a steady decline in angler participation. To further the mission of both programs there is a memorandum of understanding between both programs which results in TBF making annual submissions of their tagging data to the CTC.

The CTC's major responsibilities are; to provide tags to constituents, standardize tagging protocols, database management and data analysis. The CTC oversees the longest running constituent-based cooperative tagging program in the world, as well as managing the Cooperative Tagging System-the largest Atlantic wide billfish and tuna tagging database. Other organizations around the world have used the CTC as a model for developing their own tagging programs. Tagging kits are provided to anglers free of charge. Each tag kit comes with 5 tags, a tagging applicator, and written instructions on how to properly tag fish. Anglers record the date, location, species, size, and condition of the fish tagged on a prepaid post card which is then mailed back to the CTC. When anglers need more tags there is a box on the post cards to check off and request additional tags. Tag recaptures are reported in three manners, calls to our toll free number, written correspondence, and emails. For reporting recaptures, anglers are provided with a reward incentive of either a hat or a face shield.

Since 1954 the CTC participants have tagged more than 269,000 fish of nearly 80 species. The database is currently web-based, but all data is entered by CTC staff. Each animal and angler is given a unique id number, and all tagging interactions follow each unique animal id. With such a large constituent tagging database there are bound to be numerous errors. Throughout the programs history we have developed new methods to quality control the database. Recently we have begun the process of scanning all historic release cards and recapture paperwork allowing users to quickly access original documents when the accuracy of a data record is identified as

suspect. Through the use of ArcGIS we have been able to identify hundreds of suspect data points based upon bad locations (either plotting on land or outside the species range) and made corrections to our database.

The CTC also serves as the liaison to The International Commission for the Conservation of Atlantic Tunas (ICCAT) for U.S. tagging data. On a yearly basis, the CTC collects data on both conventional and satellite tags from all U.S. researchers and tagging programs. This data is submitted to ICCAT to aid in the stock assessments of various highly migratory species (HMS).

Selected Publications:

Orbesen, E.S., J.P. Hoolihan, J.E. Serafy, D. Snodgrass, E. Peel, and E.D. Prince. 2008. Transboundary movement of Atlantic istiophorid billfish amongst international and U.S. domestic management areas, inferred from mark-recapture studies. *Marine Fisheries Review*. 70(1): 14-23

Kerstetter, D.W., E.S. Orbesen, D. Snodgrass, and E.D. Prince. 2009. Longbill Spearfish *Tetrapturus pfluegeri* movements in the Eastern Tropical South Atlantic Ocean. *Bulletin of Marine Science* 85(2-3):

Prince, E.D., D.B. Holts, D. Snodgrass, E.S. Orbesen, J. Luo, M.L. Domeier and J.E. Serafy. 2006. Transboundary movement of sailfish, *Istiophorous platypterus*, off the Pacific coast of central America. *Bulletin Marine Science*, 79(3): 827-838.

Ortiz, M., Prince, E.D., Serafy, J.E., Holtz, D.B., Davy, K.B., Pepperell, J.G., Lowry, M.B., and Holdsworth, J.C. 2003. Global overview of the major constituent-based billfish tagging programs and their results since 1954. In "Marine and Freshwater Research." 54, 489-507.

Prince, E.D., Ortiz, M., Venizelos, A., and Rosenthal, D. 2002. In-water conventional tagging techniques developed by the Cooperative Tagging Center for large highly migratory species. In "Catch and Release in Marine Recreational Fisheries." *American Fisheries Society Symposium* 30, 155-71.

Scott, E.L., E.D. Prince, and C.D. Goodyear. 1990. History of the Cooperative Game Fish Tagging Program in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea, 1954-1987. Pages 841-853 in N.C. Parker et al. (eds.), *Fish-Marking Techniques*. Proceedings of the International Symposium and Workshop on Fish Marking Techniques. Am. Fish. Soc. Symp. 7, Bethesda, MD.