

The U.S.-Cuba Hemingway Commemorative Project: Protecting the Natural Resources of the Florida Straits

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Highly Migratory Species in the Florida Straits

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Atlantic tuna, billfish and sharks are important resources for the U.S. and Cuba. The major research efforts on these resources are conducted under the auspices of the International Commission for the Conservation of Atlantic Tuna (ICCAT). Unfortunately, because Cuba is not part of ICCAT, there is limited exchange between Cuba and the United States (and other members of ICCAT) regarding the science that supports the management of these extremely important resources for the fishing and tourism industries, and thus the economies, of Cuba and the United States.

Cuba does provide ICCAT with catch reports, but additional scientific information Cuba may be collecting on the biology, ecology and the fleets harvesting these resources is rarely presented to ICCAT, thus limiting more comprehensive assessments of the populations of these fish. Our project could help provide a thorough review of the information on these highly migratory species that is available in Cuba, as well as provide Cuban marine biologists and ecologists with the opportunity to increase their participation in ICCAT, for example as co-authors of scientific papers. In particular, our project could seek to facilitate the reporting to ICCAT of information on tagged fish recovered in Cuba, enhancing our understanding on the migration pathways followed by Atlantic tuna, billfish and sharks. As ICCAT is seeking funds to conduct a large, basin-wide tagging program, this project could provide additional opportunities for Cuban scientists to learn from and get involved in the ICCAT tagging program.

One way of obtaining important information about these species would be through genetic sampling of DNA of selected billfish species (white marlin and spearfishes). This is an Ocean-wide program supported by ICCAT that seeks to resolve one of the remaining questions on the fisheries for Atlantic billfish: the identification of white marlin (*Tetrapturus albidus*) and of spearfishes.

Among the three species of spearfishes, one is strictly present in the Mediterranean (*Tetrapturus belone*). The other two co-exist in the rest of the Atlantic basin with white marlin. It is difficult to distinguish these two species from white marlin unless you are a trained person. Genetic analysis has shown that

fishermen and even scientific observers often mis-identify them. Collecting samples of these three species would allow for the testing of the reliability of identifications made by fishermen and scientific observers through a full proof process: genetic analysis of tissue samples.

Genetic sampling kits could be provided that consist of envelopes with ziplocks and a special paper that would be used to take a mucus swab of marlin tissue, next to the dorsal fin or in the gills to reduce the chance of contamination. Samples would be collected and sent to appropriate labs for analysis. Cuban scientists could then collaborate with colleagues from other nations in reporting the findings.

In 1934, it was Henry Weed Fowler's interest in identifying Western Atlantic billfish that partially started the collaboration between Ernest Hemingway and the Philadelphia Academy of Natural Sciences. Although Fowler described three of the species present: blue marlin, sailfish, and white marlin; yet another species was described in the 1960s, longbill spearfish (*Tetrapturus pluegeri*), and we only confirmed the fifth species unequivocally eight years ago (round-scale spearfish *Tetrapturus georgii*). More importantly, most people do not precisely distinguish the last three and that makes managing them for sustainability a difficult job. How significant and appropriate if this new U.S.-Cuban scientific cooperation could continue the legacy of taxonomical billfish work that was started by Hemingway and Fowler 80 years ago.

The Hemingway Commemorative Project visit in September 2014 will explore this and related topics for U.S.-Cuba scientific cooperation that can be of direct scientific and environmental benefit to both countries. At the conclusion of the week-long visit to Cuba, the project co-directors will work with various members of the delegation to draft a multi-year research proposal to focus on one or more of the marine resource issues of the Florida Straits that will be so important to the coastal communities, local economies, and marine ecosystems shared by of Cuba and the United States.

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