The Big Fish

Riddle: What has been swimming in our oceans since prehistoric times, can grow larger than the average man, live longer than 50 years and be one of Florida's biggest moneymakers? The Answer: The “silver king,” better known as the tarpon.

At the Rosenstiel School, researchers are studying both tarpon and bonefish -- not only big fish, but big money for the Florida economy. Their remarkable strength, stamina, and fighting ability make these creatures very popular game fish. With an annual contribution of approximately $5.5 billion, sport fishing now surpasses the citrus industry in state revenues.

Unfortunately, despite “no-take” laws in the United States, both bonefish and tarpon seem to be diminishing in numbers, according to long-time sports fishermen. For the marine biologists at Rosenstiel School, that information is troubling because it could also indicate the ecosystem's declining health.

The Rosenstiel School began its Bonefish and Tarpon Conservation Research Program in 1998 in cooperation with Bonefish and Tarpon Unlimited to link fishery scientists, professional guides, leaders from Florida's angling industries, and state and federal management entities in a focused research program. Tarpon, which can reach sizes up to eight feet and weights up to 280 pounds, range from Virginia to central Brazil in the western Atlantic, along the coast of Africa in the eastern Atlantic, and all through the Gulf of Mexico and Caribbean Sea. Bonefish, the rocket of the flats, grow to 36 inches and 19 pounds and are found in more tropical areas around the globe. Fishermen have been coming to Florida for more than 125 years to fish for tarpon and bonefish, principally because Florida's waters account for more than 75 percent of the recreational world records kept by the International Game Fish Association.

Tracking from space

To get a handle on bonefish and tarpon migratory patterns, spawning, and habitat choices, Rosenstiel School researchers employ three types of tracking devices. Pop-up archival transmitting (PAT) tags are space-age tags that can collect and archive minute-by-minute data on swimming depth, water temperature, and light levels. The tags are preprogrammed to detach themselves from the fish at a certain time and date and pop up to the surface where this data is transmitted to a satellite and relayed back to the lab. Additionally, a multi-year anchor-tag-and-recapture program for bonefish allows researchers to track their movements upon recapture. Lastly, advanced acoustic telemetry (AT) tagging provides new, unique insight into bonefish movement relative to spawning or repeat-feeding areas.

321,000 and counting

If you're looking for bonefish from Miami down to the Marquesas Keys, you have about 321,000 to choose from. That's the outcome of the Rosenstiel School's most recent Florida Keys bonefish census, which helps evaluate the stability of the bonefish population in this area. In the long-term, annual censuses will allow researchers to identify trends in population changes. It is estimated that currently each bonefish is worth about $3,500 per year to the tourism industry and about $75,000 per fish over its lifetime.

Bonefish feed on smaller marine organisms, thus the health of their population is dependent on the status of the ecosystem as a whole. A change in the bonefish population may also provide clues to ecosystem health and how other fish populations are doing. In addition to the census, researchers use mathematical modeling to examine the relationships between different clusters of bonefish, suggesting multiple bonefish species.

Outreach that supports decision-making

To help preserve the bonefish and tarpon stocks in this area of the world, Rosenstiel School researchers have embarked on a speaker's circuit and are disseminating their research findings to guides, anglers, scientists, and the general public. While bonefish and tarpon are caught and released in U.S. waters, this is not the case elsewhere, so public education is important to sustaining the current population and determining what it needs to expand.