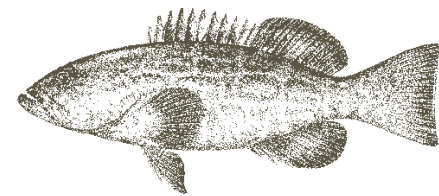




Wanted: Fish taggers

FISHERIES BIOLOGY



Mote Marine Laboratory needs fishers to help tag and release black grouper, red grouper, cobia, greater amberjack and mutton snapper in the Florida Keys.

Recreational, commercial and charter fishers can help with the project by contacting Mote.

Returned tags will give scientists information about the species' life cycles.

The study will help to determine the movement of the fishes and their survival after being caught and released. The information will help the Gulf of Mexico Fisheries Management Council make species management decisions, said Senior Biologist Nick Parnell.

After the fish is tagged, if it is caught again, the researchers will know where it has been, how far it has traveled and how much it has grown, said Karen Burns, manager of Mote's Fish Biology Program. "When you have fish that migrate, you know that they're going to be in an area at a certain time," she said. "Then they're going to disappear, and they're going to go someplace else. Then they're going to be back at a certain time."

Cobia and greater amberjack are thought to have unusual migration habits. Researchers believe the two species move between the Gulf of Mexico and the South Atlantic. The issue is that they aren't necessarily managed as a single population, Parnell said. He wants to determine how far the species are moving, how much they're moving and how much crossover there is between the two populations.

The study also focuses on movement of fish inside the Keys sanctuary, where fishing is prohibited. Special permits will allow Parnell and other researchers to tag and release fish there to see whether the protected population spills over into the population that can be fished.

"We'll have information on the position that those fish are captured, and then hopefully we'll get tag returns from people that have caught fish outside of the sanctuary," Parnell said. "So, that would tell us if fish are actually recruiting from the sanctuary to outside where they enter the fishery. That's the whole key behind the sanctuary. They'll kind of be a grow-out place where the fish can grow up without being caught, and then they'll move out into the fishery."

Some fish die after being caught and released. The study will help scientists determine the survival rate of released fish. "When we tag them and we get a tag return, we know that fish survived being caught and then released back into the water," Parnell said. "We're looking at their ability to survive being caught, brought up from depth, de-hooked and released back into the water."

"If you're releasing undersized fish, and they're dying from some sort of injury from depth or hooking, then you're not actually putting them back into the population."

To participate, call Mote Marine Laboratory at 800-388-3966. In the Keys, contact the Florida Sea Grant Program at the UF/IFAS/Monroe County Extension, 1100 Simonton St., Suite 2-260, Key West, FL 33040. (305) 292-4501. E-mail Monroe@mail.ifas.ufl.edu or visit <http://monroe.ifas.ufl.edu>.

Tropical Storm Gabrielle, 2001

Hanging out with black grouper

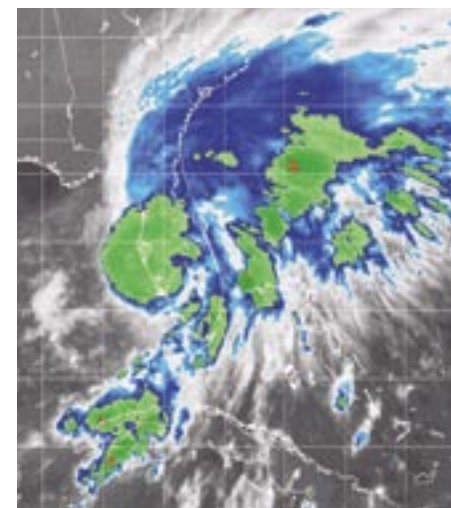
LANDSCAPE ECOLOGY

Black grouper habitat is also being studied in the Florida Keys marine sanctuary, where scientists are interested in how the fish relate to underwater structures and where spawning aggregations locate, said Dr. Brad Robbins, manager of Mote's Landscape Ecology Program. "Our study will use scientific-quality sonar systems and scuba-based surveys to find, identify and delineate underwater structure," he said. "Fish will relate to some sort of bottom structure — any kind of hard bottom or shipwreck. Artificial reefs or natural reefs attract fish."

And artificial and natural reefs attract people who fish. If certain habitats or structures attract groups of spawning fish, then fishers targeting spawning aggregations could affect the fish population. "It's just really easy to put a big dent into the population," said Nick Parnell, senior biologist. "We're interested in seeing what features, if any, that they're aggregating around, what different structures and habitat types they like."

A sharky evacuation

ELASMOBRANCH BEHAVIORAL ECOLOGY



Sometimes shark research yields unexpected results — especially when the barometric pressure drops.

As Tropical Storm Gabrielle bore down on Southwest Florida in the summer of 2001, scientists from Mote's Center for Shark Research wanted to pull their remote acoustic listening stations in Terra Ceia Bay, below Tampa Bay, out of the water. There wasn't enough time.

After the storm, the data from the listening stations was downloaded onto a computer that mapped shark movement. What the scientists saw was astounding: Thirteen tagged juvenile blacktip sharks fled their nursery habitat in the bay before the tropical storm battered the coast; the sharks returned five to 13 days later.

"I was just hoping my equipment would still be there when the storm was over," said Dr. Michelle Heupel, staff scientist in Mote's Center for Shark Research. "In the end we didn't have enough time to get it out of the water, so I said leave it, and crossed my fingers, and it turned out to be a pretty fortuitous thing."

Before the storm, Heupel was conducting a study to see how young blacktips used the nursery habitat. Twenty-five underwater acoustic listening stations in Terra Ceia Bay recorded the movements of blacktips tagged with transmitters. "The nursery area is considered to be their safety zone," said Heupel. "We don't normally see them leave the nursery for extended periods."

"Usually in late September and October you see them migrate and move in and out a lot more. They usually don't leave until the water temperatures drop. We think the threshold is around 20 degrees Celsius (68 degrees Fahrenheit). It varies with when the cold fronts come through. The earliest I've ever seen them leave is late October. Usually it's not until November. They all leave for the winter and go down to the Keys."

Heupel looked at all the variables that might have led to the exodus.

Changes in salinity and noise associated with heavy rainfall and wind were ruled out. The blacktips left before any of these changes occurred. "I think that it was the change in pressure coupled with the fact that it came sort of out of synch with the tidal change," said Heupel. "It was just a really odd pressure change that probably triggered them to leave."

When the barometric pressure drops, the sharks' perceptions of how deep they are is altered, she said, which might make them feel unsafe because they think they are in shallow water.

Here's how it works:

Air presses down on the water of the bay. If the barometric pressure decreases, a shark in 3 feet of water feels as if it is in 1 1/2 feet of water. Scientists think that the blacktips, which are normally in about 10 feet of water, went into Tampa Bay to get to deeper water: 17 feet of water with the decreased pressure would feel like 10 feet.

"This is a really interesting look at these animals actually using their systems to detect a pressure change and respond to it in a natural environment," said Heupel. "I just happened to be in the right place at the right time to record this behavior that no one has reported before. I think it certainly contributes to our knowledge of the biology and behavior of these animals."

Identifying look-alike whales



STRANDING INVESTIGATIONS

Identifying the difference between pygmy sperm whales and dwarf sperm

whales has been difficult because of their similar external appearance and overlapping morphological characteristics. Nélio B. Barros, program manager, and others have identified a new way to differentiate the species.

"*Identifying Pygmy and Dwarf Sperm Whales Using Electrospray Ionization Mass Spectrometry of Myoglobin and Hemoglobin*" discusses using electrospray ionization mass spectrometry to measure the molecular weights of myoglobin and hemoglobin alpha-chain molecules.

This method is a fast and effective test that only requires a very small blood or muscle sample to make a determination. Decomposed tissue can also be used to test for species and samples can be freeze dried for long-term storage or more convenient shipping.

Proper species determination is critical in the management and conservation of these poorly known, deep-water species of whales.

Where the dolphins are

OFFSHORE CETACEANS

While previous research has concentrated on the number of species between Tampa Bay and Charlotte Harbor, Dr. Robert B. Griffin and Nancy J. Griffin have focused on the location of animals and use within habitats.

In "*Distribution, Habitat Partitioning, and Abundance of Atlantic Spotted Dolphins, Bottlenose Dolphins, and Loggerhead Sea Turtles on the Eastern Gulf of Mexico Continental Shelf*" they've shown that bottlenose dolphins were mostly found in shallow shelf waters less than 66 feet deep. Atlantic spotted dolphins were mostly found in deeper shelf waters, 66 to 594 feet. And loggerhead sea turtles were found at intervals in between the two dolphins' habitats.

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