

Shedding light on artificials' impact

A local study showed man-made reefs don't have a negative impact on surrounding natural reefs -- at least if they're ships.

by Susan Cocking
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For decades, fisheries scientists and managers have debated the pros and cons of deploying artificial reefs, the major issue being whether man-made underwater structures draw fish away from natural coral reef habitats.

A recent study by researchers at Nova Southeastern University Oceanographic Center shows the answer is no -- at least if the man-made structures are ships.

"We know that ships are not having a negative impact on surrounding natural reefs," said Nova's Richard Spieler, who supervised the four-year, \$150,000 study.

Nova marine biologist Paul Arena studied six shipwrecks, all sunk about 70 feet deep off Broward County: tugboats *Merci Jesus*, *Peter B. MacAllister* and *Jay Scutti*; a no-name barge; the cutter *Edmister*; and the freighter *Tracy/Vitale*. Divers counted fish on each shipwreck four times a year. They performed similar fish counts on natural reefs shoreward and seaward of the shipwrecks in about the same depth.

Said Spieler: "If you anticipate a difference between ships and natural reefs, you'd see it there."

There was a difference, but it was in the species of fish -- not the numbers. Arena and his colleagues found fish thriving on both kinds of reefs. But there were species inhabiting artificial reefs that were not only absent from adjacent natural structures but weren't found anywhere else in Broward County. Some of those included blackfin snapper, snowy grouper and amberjack -- mostly juveniles.

Theorizing that shipwrecks might serve as nurseries for some species, rather than attractants for mature fish, the scientists studied a relatively new wreck for two years, the *Ebinizer II*, sunk in 70 feet of water off Hollywood in 2002.

They found it was dominated by young fish, with few adults. "There were 18 species on it, mostly juvenile grunts, purple reef fish, amberjacks too," Arena said. "You could see juveniles growing on the ships. Groupers are usually the first predators to show up and we didn't have any."

The researchers wondered what happened to the grouper, snapper and amberjack that were raised on the ships and then disappeared from local waters.

David Bryan, a Nova master's degree candidate, set to find out. Bryan deployed a remotely-operated vehicle (ROV) -- a video camera with three propellers on a tether -- to survey Broward's deep-water wrecks and reefs.

Bryan and his colleagues sent the ROV down on the *Bill Boyd*, *Caicos Express*, and *Papa's Reef* -- all shipwrecks deployed between 240 and 300 feet deep two miles offshore. In the absence of deep-water coral reefs, the ROV scanned adjacent sand/rubble bottom for comparison.

The scientists found few fish of any type or size on the natural bottom, but plenty of adult blackfin snapper, grouper and amberjack on the deep shipwrecks.

Said Arena: "They may be using shallow water habitats as a nursery and then moving to the deep-water habitats."

The study -- paid for by the county, the Florida Fish and Wildlife Conservation Commission, NOAA Fisheries and the Guy Harvey Research Institute -- did not address any other of the myriad artificial habitats commonly deployed in South Florida waters such as oil rigs, Army tanks, radio antennae nor water towers.

But it vindicated the long-held practice of sinking ships as fish havens.

Said Spieler: "There seems to be great potential for artificial reefs in deep water in Broward County because there's little relief out there and little habitat and the ships out there are providing habitat."