Conservation Corner

A blueprint for raising red snapper.

By Andrew Canulette

When most people think about red snapper, they think about loading the boat for a day of fishing offshore. They think of tying up near a rig on a warm spring day and throwing pogies or sardines into the green Gulf of Mexico. They think of the fight the snapper will offer and they think of the delicious meal the same snapper will offer later that night back on shore.

When Reginald Blaylock thinks of red snapper, he thinks of “sampling cruises” and “stock enhancement.” He thinks of “rotifers” and “copepods.” He thinks of “internal and external tags.”

In other words, Blaylock thinks differently than most.

That’s because Blaylock is a research associate professor and the Assistant Director of the Thad Cochran Center for Marine Aquaculture at the University of Southern Mississippi’s Gulf Coast Research Laboratory (GCRL). His job is to think of strengthening the species’ numbers and to explore the possibilities of an aquaculture program for the troubled fishery. Such work might better allow anglers to focus on enjoying those warm summer days catching red snapper than worrying over other aspects of the fishery.

“We are working on developing stock enhancement as a potential tool for management of red snapper,” Blaylock said. “And in the process we’re also interested in looking at how the rearing technology can be applied commercially.”

The work is being done in a co-operative program with the Mississippi Department of Marine Resources (MDMR) and GCRL, with the support of the Coastal Conservation Association. The studies started around the year 2000, and work began in earnest in 2006 when Hurricane Katrina indirectly had an effect on the program by making more fisheries rehabilitation money available.

A staff of approximately 25 people works in Ocean Springs, Mississippi — some from the University of Southern
Mississippi and GCRL, some from the MDMR. Some are graduate students, some are full-time, and some part-time, but all are dedicated to developing techniques for responsible stock enhancement of the red snapper population.

A CHALLENGING FISH

But what exactly is “stock enhancement?” In short, Blaylock and company are looking for ways to make the species’ population stronger. They study the best ways possible to have snapper spawn in captivity and to produce a tank broodstock. They are developing technologies so that if someone from the private sector wanted to begin “farming” snapper, they would have the best possible blueprint to do so.

“Everything we do to raise fish is the same as people would do it in commercial aquaculture,” Blaylock said. “We’re developing culture techniques so if someone wanted to do this commercially, they would have the ‘know how’ to do every aspect of it.”

In an established animal husbandry program, like the chicken industry, each step of the process is fine tuned. One segment might only produce the chicks, another may just collect the eggs and another might focus only on selling chicks, while still another may buy the chicks to raise to broilers. Not everyone has to do everything in that situation. With red snapper, GCRL is in the demanding stage of having to manage every link in the chain to establish protocols for each segment.

“You just can’t go out and buy fingerling red snapper to grow out,” Blaylock said.

And that’s where the “micro-science” of the project enters the picture. At GCRL, wild-caught snapper are induced to spawn, and the eggs are fertilized artificially. The eggs are hatched in incubators and the larvae are fed copepods (a common microorganism). The post-larval juveniles are reared in larger tanks and then implanted with coded wire tags. The juveniles then are taken offshore and released onto artificial reefs constructed by the MDMR.

That is how everyone would like the system to work. In reality, red snapper are a very difficult species to decipher.

“Red snapper is a very challenging process,” he said. “There are different categories of fish and some are easy to spawn. Snapper is very, very hard. That’s in part because we don’t understand everything about their reproductive physiology, their nutrition, their reproductive behavior. We know a lot about sea trout. They’re easy to spawn and rear. So we took some things we learned from trout and applied that to snapper. Some of it worked, some of it didn’t.”

For starters, the staff soon learned that red snapper do not spawn well in tanks.

“Why does it not happen?” Blaylock ruminated. “We can get them to spawn in the wild to get the larvae, but we have to raise the larvae. We don’t understand a lot about it. But live food has to be the first food they get. We give them small invertebrates that are easy for the fish to catch.”

When the program first started, the team tried to feed the snapper microscopic animals called rotifers. That proved problematic for two reasons. One, the mouth on the young snapper isn’t large enough to eat the rotifer and two, the scientists found they might not be an ideal nutritional source for the fish.

Instead, they began collecting copepods from the wild. Team members would filter water from area bayous and such to get the correctly sized copepods for the snapper to eat. But they soon found that the filtered water introduced diseases that killed the snapper. Now, the GCRL has indoor systems for raising the animals — a system that began in 2006.

But again, a minor setback.

“We’re making strides, but the problem with indoor production is you can’t produce as many,” Blaylock said.

In one year prior to 2006, the GCRL released 15,000 fish into the wild. Now, they produce an average of 2,000 per year.

“So, we’re looking into how to increase copepod production to see if we can improve the nutritional quality of what we’re feeding them,” he said.

DATA GOLD MINE

The fish that are released have delivered a great deal of statistical data for the scientists to study. The average size fish that is released is approximately four inches long and has a coded wire tag in its nose.

“A high level of coding with alphanumerical characters in the tag can tell us where it spawned, where it was released,” Blaylock said. “You can see how much the fish grew and how it has moved.”

Genetic tagging, as well as acoustic tagging, is possible for red snapper, though Blaylock said the internal wire tagging is highly efficient and a less expensive alternative. He said released snapper have been recaptured as long as two years after being tagged and initially released.

Red snapper, and the management of the species, has been a hot-button issue recently, with federal and state authorities disagreeing over the length of the red snapper season and the boundaries of state and federal waters, as well as over fundamental issues like the overall health of the red snapper population. Against that backdrop of seemingly endless controversy, the steps the GCRL has taken to augment the species (certainly for commercial, and possibly for recreational applications) appears promising.

“We would love to transfer our technology to the private sector,” Blaylock said. “It’s difficult working with the red snapper, but we’re making positive strides. It’s exciting work.”

For more information, check out the Research section of the GCRL website at www.usm.edu/gcrl/.

Andrew Canulet is a lifelong Louisiana resident who grew up fishing and hunting in the outdoors. He was an award-winning writer for the New Orleans Times-Picayune and currently works as a freelance writer for publications both regional and national.