UF/IFAS RESEARCH DISCOVERIES

UF | IFAS Research
UNIVERSITY of FLORIDA

NATURAL RESOURCES

HUMAN SYSTEMS

AGRICULTURE

AQUACULTURE

Aquaculture, the practice of breeding and raising aquatic organisms in controlled environments, occupies a growing niche in Florida's economy. In 2012, Florida aquaculture producers reported total sales revenues of $69 million, which stemmed from about 400 operations.

Our state produces an estimated 1,000 freshwater and saltwater species via aquaculture, some raised for food, others used as ornamentals, baits, biocontrol agents and biofuel feedstocks. Florida is the No. 1 U.S. producer of ornamental fish, aquatic plants, clams, cultivated coral and alligator.

Currently, freshwater ornamental fish are Florida's No. 1 aquaculture crop, accounting for about one-third the value of the state's total aquaculture production. The greatest concentration of fish farms is in the Tampa Bay area, which is also home to the UF/IFAS Tropical Aquaculture Laboratory in Ruskin, the only UF facility dedicated exclusively to aquaculture.

At the Ruskin lab and at numerous locations statewide, UF/IFAS experts conduct research and outreach programs designed to help producers provide better environmental conditions, nutrition and health care to the fish, plants and other organisms they raise.

Ongoing Research

PINFISH

Baitfish are an important component of Florida's $6.6 billion marine sport fishing industry, but currently almost all marine baitfish used in Florida are harvested from the wild. Baitfish aquaculture is a growing industry with great economic potential. Cortney Ohs with UF/IFAS' Indian River Research and Education Center indicates that the pinfish, *Lagodon rhomboides*, is an ideal candidate because it can be bred and cultured to market size with high survival rates and several crops can be produced per year. With a maximum length of about 5 inches, the pinfish is a common prey item for redfish, sea trout and flounder, popular marine gamefish species, thus making it a desirable baitfish.

Photo by Thomas Winter, http://thomaswinter.com

SUNRAY VENUS CLAM

Over the past two decades, UF/IFAS has helped the fishing village of Cedar Key become the state's No. 1 producer of hard clams. But because the industry is built on one clam species, researchers believe crop diversification could help ensure future economic stability. Numerous research projects by UF/IFAS' Leslie Sturmer and colleagues have shown that the native sunray venus clam, *Macrocallista nimbosa*, appeals to diners and has commercial potential. The bivalve grows to market size in one year, similar to the hard clam, and its shell turns an appealing pink color when cooked. Producers interested in culturing sunray venus clams are signing up to take part in a commercial demonstration in 2014.

MARINE ORNAMENTALS

Florida supplies about 95 percent of the nation's ornamental fish, but only a small fraction of the marine species farmed here are captive-bred. The rest are wild-caught, sometimes using methods that seriously damage local ecosystems. To help protect wild populations, the UF/IFAS Tropical Aquaculture Laboratory in Ruskin has launched a program focused on developing commercial production protocols for popular marine ornamental species. One of the program's first efforts is helping the sought-after Banggai cardinalfish, *Pterapogon kauderni*, escape possible extinction. Aquaculture veterinarian Roy Yanong of the Ruskin facility investigated health and disease issues surrounding the fish, which is native to Indonesia. Yanong is among the authors of a new book on the cardinalfish.

Research with Impact

BALA SHARK

A member of the carp family, the Bala shark, *Balantiocheilos melanopterus*, is a popular freshwater aquarium fish noted for its silvery sheen. The species is native to Southeast Asia and is classified as endangered, its numbers dwindling due to pollution and habitat loss. Most commercial supplies are now provided by Asian fish farms. With funding from the U.S. Department of Agriculture, faculty at the UF/IFAS Tropical Aquaculture Laboratory in Ruskin and Louisiana State University developed protocols for breeding Bala sharks domestically. Craig Watson, director of the Ruskin lab, said two major fish farms now follow the UF/IFAS protocols and produce their own Bala sharks, rather than paying an estimated $1 each for imported specimens.

BARRAMUNDI

The barramundi perch, *Lates calcarifer*, is a predatory fish that grows to 6 feet in length and has intrigued Florida anglers for years. But because barramundi are native to the Indo-Pacific, concerns arose when a Florida business began offering the species to the public via fee fishing that offered a chance to catch pond-raised barramundi. Scientists warned that specimens might escape or be released, and eventually begin breeding. A study by UF/IFAS' Jeffrey Hill and a colleague with the Florida Fish and Wildlife Conservation Commission suggested there was high risk of barramundi becoming established in Florida waters if they were freed; the results convinced state officials to establish tighter controls on farming the fish.

OYSTERS

Populations of the Eastern oyster, *Crassostrea virginica*, collapsed in the famed Apalachicola Bay area in fall 2012, drastically reducing harvests of the mollusk. In response, UF/IFAS researchers led by Florida Sea Grant Program Director Karl Havens immediately moved to help assess the situation. One fundamental finding: Contrary to popular belief, overharvesting was not linked to the oyster population collapse. Instead, evidence suggested that the collapse was a consequence of low freshwater flow from the Apalachicola River into the bay. This finding helped persuade the U.S. Secretary of Commerce to declare a federal fisheries disaster for the area, which paved the way for federal assistance funds that began to be authorized in February 2014.

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