# JEWELS OF THE SEA

## OUR LOCAL AQUACULTURE INDUSTRY SHINES, AND THE REST OF THE COUNTRY IS TAKING NOTICE.

By Suzanne Wentley
Photography by Thomas Winter

Stepping into a large greenhouse structure tucked into mangroves along the Indian River Lagoon, past its large blue water tanks propped up on cement blocks and through a door of thick, hanging plastic sheets into a cramped space, the temperature drops to 65 degrees.


University of Florida's aquaculture facility located in Fort Pierce.

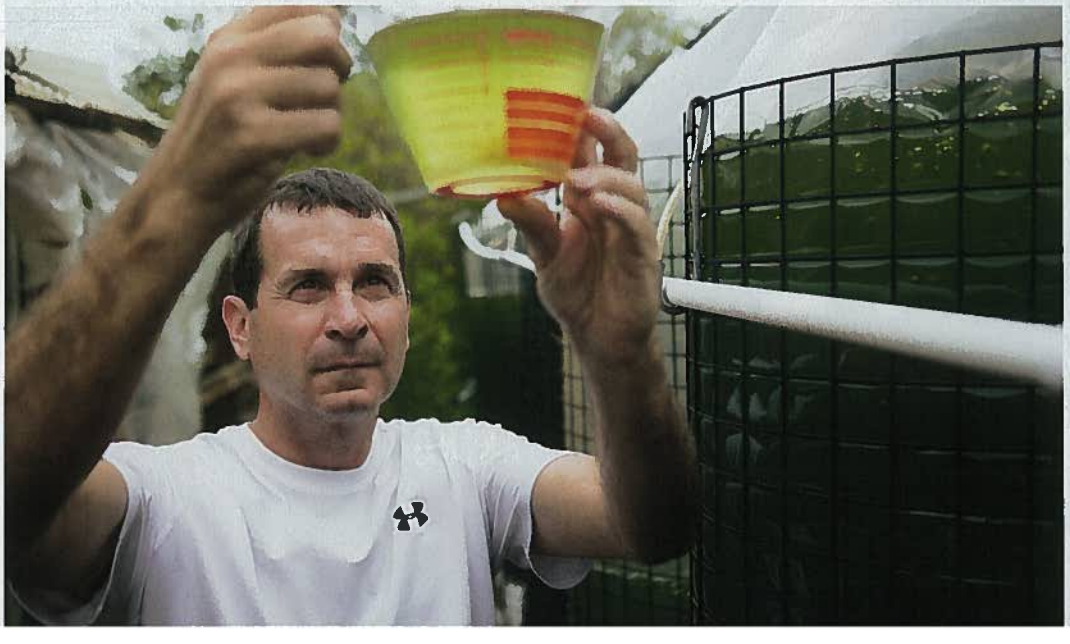
Open tanks packed with clams and sunrays line the shelves, while a tube runs from apple juice jars filled with green liquid algae to an eyedropper doling out small squirts into the tanks. Inside those tanks, each animal has a small siphon sticking out from partly open shells, slurping up big gulps of algae.

This is what Tom McCrudden, owner of Research Aquaculture, likes to see.

"We're tricking them into thinking it's winter," he says, dunking a hand in the cool tank waters to show off the pretty gray streaks of his sunray venus clams. "Soon, we'll heat them up and trick them into thinking it's springtime. Spring and fall are their spawning periods."

Here in Stuart, it's the start of the cycle known as aquaculture, or the farming of fish, shellfish and other marine life. With a mix of in-depth, technological science and tried-and-true farming techniques, entrepreneurs are working to bridge the widening gap between nature's limited capacities and man's growing appetite for seafood, our need to restore damaged habitats and our love of aquariums and recreational fishing.

Throughout the state, nation and world, there are thousands of farms working to efficiently grow everything from pinfish for bait to shrimp for your plate. The Treasure Coast is no exception, with businesses and academic facilities paving the way for research to expand the industry as demand increases.



"Aquaculture in the state of Florida is more diverse than in any other region in the nation because of our climate," says Dr. Cortney Ohs, an associate professor of aquaculture at the University of Florida in Fort Pierce. "I take thousands of phone calls a year to answer questions of current and prospective producers, providing them with information. Research has played an important role in defining methods to

Dr. Cortney Ohs inspects larvae under a microscope.

"Over the last 20 years, about 800 million metric tons of seafood was harvested from the ocean," he says. "We don't know if that's a sustainable number. Twice that amount is not sustainable. As the human population goes up, the only way we can fill in that gap is through a cultured product."

In order to support small business owners looking to tap into that market, research is vital to the success of the industry – and much of the research is happening right in our backyard.

Along with the University of Florida's 7,200-square-foot hatchery building, 3,600-square-foot greenhouse and approximately 80 different systems using recirculated water, there is also substantial work happening at Florida Atlantic University's Harbor Branch campus.

By working on a commercial scale, the experiments at Harbor Branch are designed to help efficiency by studying improvements that would allow farmers to work inland with recirculating water systems instead of relying on expensive, waterfront land to work.

Dr. Paul Wills, an associate research professor at FAU Harbor Branch, researches methods for grow-

culture new species and increase the efficiency."

## A GROWING DEMAND

Aquaculture in America is a $1.4 billion industry, with Florida farms netting nearly $71 million in sales, according to the U.S. Department of Agriculture.

But that's nothing. Worldwide, more than 50 percent of the world's seafood is grown on farms, and more than 90 percent of that seafood is imported mostly from Asia and South America. By 2030, it is estimated

ing a variety of marine species for stock enhancement as well as food fish, like pompano, cobia, red drum and black sea bass. Since the research to determine a way to make growing food fish economically competitive is grant-funded, his research facility also serves as a hands-on laboratory for students seeking associate degrees through Indian River State College in aquaculture or agribusiness.

Last summer, Wills hosted a free workshop for 50 fish farmers to learn what researchers have found in economic and engineering studies. They also shared information about reducing disease, avoiding thievery and improving cost-effectiveness.

"There are a lot of advantages to this part of the country, and it has a lot to do with the seasons," Wills says. "We should expect to see this type of development throughout the region and throughout Florida."

## FOOD, PETS AND BAIT KEY MARINE MARKETS

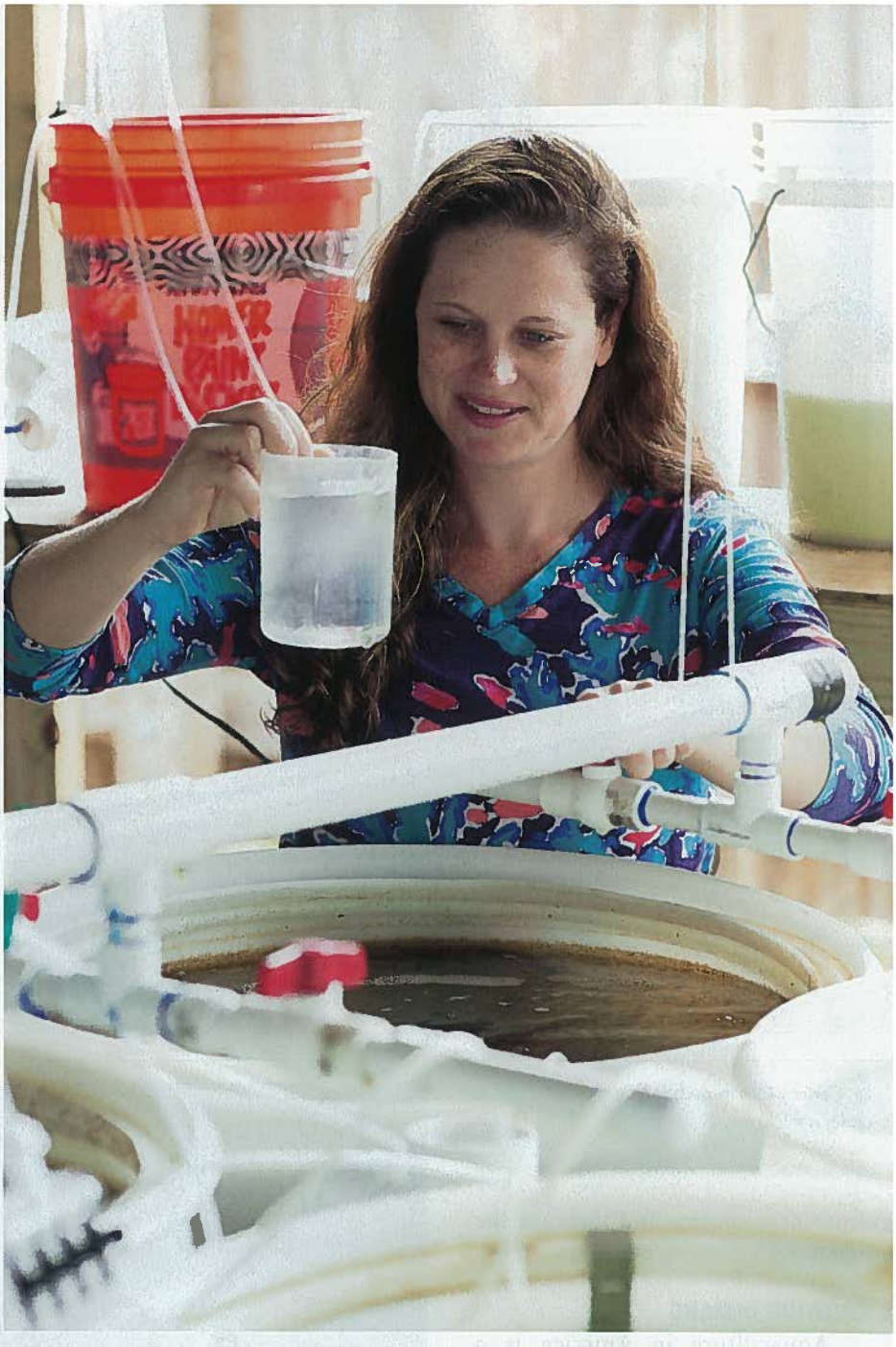
In Florida, the largest type of aquaculture production is ornamental fish sold to the aquarium trade – a growing market thanks to big-box stores like Petco and Wal-Mart filling demands for trendy species.

There are many ornamental fish farms along the west coast and also in Fort Pierce, where they grow seahorses, corals and clownfish made popular by the movie "Finding Nemo." More exotic species are also grown and sold to smaller mom-and-pop aquarium stores, Ohs says.

In general, raised seafood is less abundant in Florida because Asian markets are able to dramatically undercut costs, making it difficult for local businesses – with tighter regulations and more expensive land, labor and energy – to compete.

There is a new organic shrimp farm under development in Fellsmere.

However, for food production, most state farmers turn to mollusks,



Dr. Nicole Kirchhoff is the only commercial farmer in the nation focusing on pinfish.

clams and sunrays grow to about one millimeter long, McCrudden also works two nurseries in Port Salerno and Jupiter that grow the bivalves to about four millimeters in length.

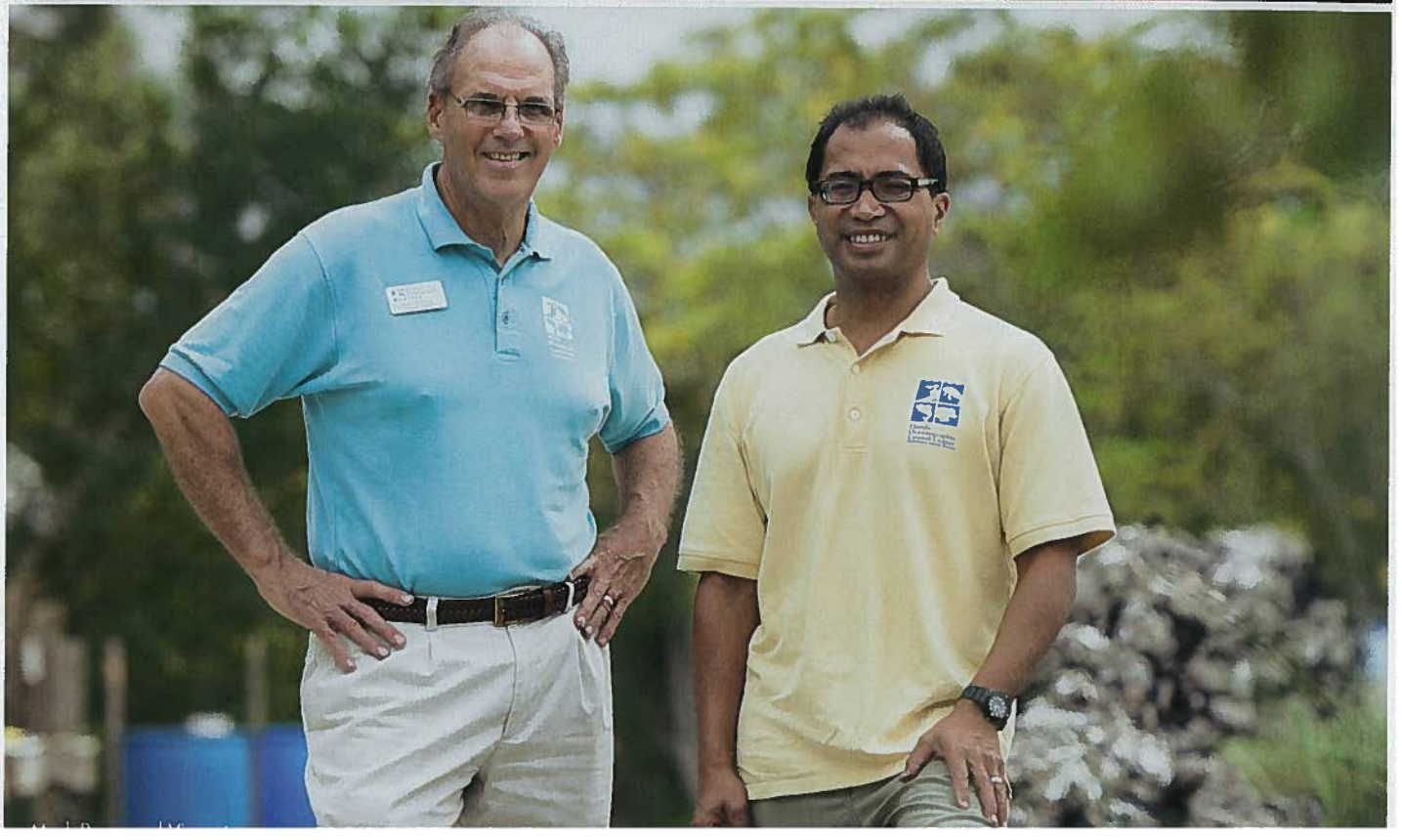
He'll then send those animals over to his grow-out facility in the

to both wholesale distributors and restaurants.

Growing bait is also a big business, with about a dozen bait shrimp farms throughout the state. Farmers can compete with foreign markets because bait is sold alive to local bait

species, including pompano.

Tom McCrudden's sunray venus clams were a hit at last year's Boston Seafood Show.



Dr. Cortney Ohs inspects a pinfish.

Dr. Nicole Kirchhoff, who owns a baitfish production facility near the game fish lagoon at Florida Oceanographic Coastal Center, is the only commercial farmer in the nation focusing on pinfish.

"The issue with growing baitfish is that no one has done it before," she says. "Scaling up production of an animal isn't as easy as just doubling the size of the tank. We're trying to solve the bottlenecks and biological problems in the first months of life."

## EXPERIMENTS, SCIENCE VITAL TO SUCCESS

McCrudden, who has been working in aquaculture for nearly 20 years, knows how important trial and error is to the success of a farm. But consistent weather is paramount.

His facility was decimated by the BP oil spill stopped his business, since no one was buying from the West Coast grow-out facilities that usually purchased his seed oysters. Plus, a red tide outbreak on the West Coast ruined his sunray venus clam crop last year, after he presented them at the Boston Seafood Show.

"People flipped out over them. I had orders to Chicago, New York, Miami. When you cook them, they turn pink and they say it's like a mini lobster," he says. "I was the only one able to commercially spawn and grow these in the U.S."

To keep up with demand, he's now working to improve his facilities so problems in nature won't be as big of a problem for business.

McCrudden is also collaborating with scientists from Florida Oceanographic Society to use his oysters natives) to restock the natural environment in both Martin and Brevard counties, after the freshwater discharges from Lake Okeechobee and heavy rains decimated the local oyster population.

By providing larval oysters, known as spat, along with their habitat of oyster shells, scientists are able to improve water quality quicker as a single oyster filters about 50 gallons of water a day, improving water clarity while stabilizing eroding shorelines and strengthening biodiversity, says Dr. Vincent Encomio, a research scientist with Florida Oceanographic.

"In the St. Lucie River, from what we could tell, the oysters were all dead by mid-August," he says of the 2013 rainy season.

"Aquaculture is going to play


## NEW FACILITIES PLANNED

And a new facility under development in Stuart will play a key role to the future of aquaculture throughout the state and possibly nation.

Mark Perry, the executive director of the Florida Oceanographic Society, is working with county officials to amend the coastal center's lease to include a 7.5-acre adjacent property with decommissioned water treatment ponds that once served the Hutchinson Island Marriott.

"The concept is to change the utility site into a facility that could include family fishing, education, marine habitat restoration and enhancement and also do aquaculture production and fishery restocking," the whole life cycle of the fish and shellfish, which isn't usually done in aquariums. This will really enhance the visitor experience."

He hopes to partner with Indian River State College, the Martin County School District and other local researchers like Ohs and Wills to help high school, undergraduate and graduate students master the hands-on skills they need to succeed in the agri-business. Soon, the nation may even be able to compete economically with Costa Rica, China and Japan, where aquaculture has been a strong (and sometimes polluting) industry for decades, he says.

Perry's proposed facility would more permanent presence for the aquaculture farmers currently working nearby.

Kirchhoff is awaiting final word on a grant that would allow her to grow pinfish in one of the facility's seawater-filled ponds to sell and to help restock the Indian River Lagoon. She also plans to share her knowledge with the bait shop owners, who struggle to keep the pinfish alive for their customers.

Growing fish, she says, is a lot like gardening.

"You start them from little eggs and you see them sold as big, robust fish," she says. "You have to have a great deal of patience, but it's very