

REGIONAL NOTES

CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

Ocean Rider set to launch two new species

By many accounts the largest seahorse farm in the world and the only one in the United States, Ocean Rider will soon close the life cycle of two seahorse species. “We are working with two new species and hope to have animals ready for market by winter,” says Craig Schmarr, who cofounded the Kailua-Kona-based company with his wife Carol Cozzi-Schmarr. “[We have] more species in production than anywhere else.”

If closing the life cycle on two marine ornamental species does not seem remarkable, then consider that the couple has already closed the life cycle on 10 seahorse species. Or consider that the privately-owned business makes enough profit to be self-sufficient, continues to see growing demand for its products, and plans further expansion.

This success stands out in Hawaii. The ornamental sector is one of the most promising areas for aquaculture in the state, but few aquafarms have yet to fully realize that potential. “Ocean Rider has capitalized on their success and created a business that not only pays the bills and provides income but also provides enough for continuing their own R&D. That’s impressive,” says Clyde Tamaru, an extension specialist with the University of Hawaii Sea Grant College Program.

The company began in March 1998 in the Florida Keys but nine months later moved to the island of Hawaii at the Natural Energy Lab of Hawaii Authority (NELHA) on the Keahole Coast. Water quality and the seawater pumping infrastructure at NELHA were relocation factors.

Ocean Rider sold its first seahorse in July 1999, a *Hippocampus erectus* given the brand name Mustang. The company rarely refers to products by their species names, instead giving product lines trademarked brands like Sunburst, Zulu-lulu, and Yellow Brazillero.

A premium line called Fire Red today costs \$300 for a single horse. For most seahorses, the company charges much less, selling them as pairs because seahorses typically bond for life with a mate and perform a dance ritual to sync their reproductive cycles. Also, specials combine seahorse pairs with feed, aquarium supplies, and FedEx shipping.

Marketing savvy doesn’t end there. Brand names and packaging are part of an overall approach that comes from viewing the business as a lot more than rearing and selling seahorses. The company deals directly with end customers only — garnering its largest customer base from the Midwest — and puts great effort into transferring knowledge to them about caring for seahorses and other aquatic life.

“They have thought the aquaculture process all the way through,” says Tamaru. “They have provided the end user with the means to keep their purchased horses alive and well to enjoy.”

Visitors to Seahorse.com can shop for and purchase the company’s full range of products from zooplankton to accessories, as well as browse a wealth of information on seahorses. They can also join for free the Ocean Rider Club for access to moderated message boards and product discounts. Further community-building comes from a photo gallery where members have submitted hundreds of images.

Still, Ocean Rider offers customers more than instruction and one-stop shopping. The company provides a product that is pathogen-free and relatively easy to feed.

Wild-caught seahorses survive in aquariums for weeks, maybe months, because shipping can damage and distress them and starvation can be a problem. In contrast, tank-raised seahorses from Ocean Rider will live for five to 10 years, the company claims on its web site, if customers follow feeding recommendations.



Photo By Clyde Tamaru

Ocean Rider does not recommend the delicate Brazillero Red (*Hippocampus redii*) for beginners.

Letter from the director



Making our project development responsive to industry needs is always our goal. The stakeholders' meetings, for example, held in May and June this year, gave producers and researchers valuable opportunities to dialogue about objectives for projects that may become part of our Year 20 Plan of Work. The meetings were a good start, yet industry attendance could have been better. Don't miss our stakeholders' meetings next year.

CTSA wants industry more involved. Aquafarmers have another chance. At the Sept. 26 joint meeting of our Industry Advisory Council (IAC) and Technical Committee (TC), CTSA will develop problem statements around problem areas identified by the IAC. These statements will form the basis of our Year 21 Request for Pre-proposals. If you're not on the IAC, contact a member and ask them to voice your need at this meeting. Also, we may have a few openings on the IAC and TC for the upcoming three-year term (See Page 7).

Cheng-Sheng Lee



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AQUACLIPS

Oyster producer will join NELHA

By Staff, Pacific Business News, August 17, 2006 and July 19, 2006

The Big Island's Natural Energy Laboratory of Hawaii Authority (NELHA) will get a new tenant. Kona Coast LLC., a shellfish producer from Bellevue, Wash., received approval from NELHA's board this week to move into a 2.2-acre lot at the 870-acre Kailua-Kona park. The company is considered one of the nation's leading sources of oysters.

Kona Coast says it will bring larval shellfish from its West Coast operations to the NELHA site because they will grow faster in Hawaii waters than they do elsewhere. Once the animals reach the juvenile stage, the company will ship them back to its West Coast operations to be grown to market size.

Kona Coast will be NELHA's 15th aquaculture company. NELHA is growing in other ways, winning in July more than \$6 million in new funding from the federal government. The Defense Advanced Research Projects Agency has awarded NELHA a \$6,155,000 modification to a previously awarded cooperative agreement for research and development in multiple areas of ocean sciences.

Kauai shrimp farm permit approved

By Staff, Pacific Business News, July 24, 2006

The Hawaii Department of Health has approved a permit for Sunrise Capital to restart a shrimp operation in Kekaha, on the west side of Kauai's south shore. Janice Okubo, a spokeswoman for the department, said a permit had been approved in recent days for Sunrise, which acquired the assets of Ceatech USA Inc. a year ago for less than \$500,000 after Ceatech entered Chapter 11 bankruptcy.

Sunrise Capital includes Hawaii Community Foundation executive Kelvin Taketa, Maui Land & Pineapple CEO David Cole, Digital Island CEO Ron Higgins and developer Bill Mills. They acquired a 20-year lease on the state land where the shrimp farm is located.

In the original permit application, the investors requested permission to operate up to 44 acres of shrimp ponds and discharge billions of gallons of shrimp waste. Residents feared this would bring sharks to nearby surf spots. State officials said the permit would be amended to address such concerns.

Oceanic Institute is working on strategies to replenish the ocean's ulua

By Katherine Nichols, Honolulu Star-Bulletin, July 5, 2006

Move over moi. There's a new fish in town.

The Oceanic Institute — which played a crucial role in making the once-rare moi a marketable aquaculture product — has started raising omilu, with the aim of replenishing the wild stock with hatchery-raised fish. Scientists recently experienced the breakthrough they needed to nurture the larvae past the first few critical days.

"Finding the first meal, the feed they'll eat so they can grow, is a challenge," said Bruce Anderson, president of the Oceanic Institute.

Omilu, also known as Blue Fin Trevally, is primarily a trophy fish but also makes a good meal. Locally, an omilu under 10 pounds is called papio. Prized ulua are more than 10 pounds.

Scientists tag omilu in the institute's tanks, then release them in undisclosed locations at night, so that fishermen don't deplete the stock immediately. At later dates, scientists catch, study, and release the fish to better understand their behavior, how fast they grow, and where they move. This activity, along with their efforts to communicate with local fishermen and fishing companies, will help the institute better manage replenishment efforts.

It all started with a years-long effort to develop a microscopic feed that tiny omilu would actually eat. "Raising the feeds is a science in itself," said Anderson.

One temperature-controlled room is filled with plastic containers of all shades of green and brown — algae bubbling with a constant infusion of oxygen to keep it alive. It's used to feed the crustacea (copepods and rotifers) that are given to the fish larvae.

NMFS allots \$59M in loans

If direct, long-term loans from the U.S. government for aquaculture and fisheries ventures sound too good to be true — especially at low, fixed rates for terms up to 25 years — then read on. The National Marine Fisheries Service (NMFS) of the National Oceanic & Atmospheric Administration, U.S. Department of Commerce, provides such loans through its Fisheries Finance Program.

By the time fall begins, NMFS officials expect to have committed all \$59 million allocated to this program in 2006, since the federal government's fiscal year ends Sept. 30. The agency won't know the loan program's funding level for 2007 until next January. Still, don't wait until then to seek assistance.

"October, because we're in between years, is a good time to contact us and begin telling us about a project," says Scott Houghtaling, a loan specialist in the Northwest regional office of the NMFS.

Interested? Begin with a call to the Northwest Financial Services Branch at (206) 526-6122. Callers can learn more about the program and begin to discuss their projects. If a project appears to meet requirements, then the office will send out an application form. As conversations continue, Houghtaling says, specialists typically request information like company finances for the last three years, background on the business, and purpose of the loan. The office, however, cannot legally accept an application until it has the money to cover its loan request.

Aquaculture business proposals may have a leg up on fisheries loan requests. "Originally designed for fishing vessels and fish processing facilities, including aquaculture, the program's emphasis is on aquaculture now," says Houghtaling.

"At the same time, it's not easy to find good aquaculture projects," he quickly adds. "They have to present us with a good package." Good means positive cash flow for three years and working capital to cover annual operations, he says. "A lot of aquaculture businesses are in early stages, so it's tougher for them."

"It's not easy to find good aquaculture projects ... a lot of them are in early stages, so it's tougher."

—Scott Houghtaling

At a minimum, applicants and their businesses must meet these requirements: U. S. citizenship; good earnings record, net worth, and liquidity behind project; no venture capital risks; no startup projects for parties without successful fisheries experience; good credit; fully secured with debtor's assets, recourse against debtor's principals.

NMFS has supplied loan assistance for many years under the authority of Section 303(a) of the SFA amendments to the Magnuson-Stevens Fishery Conservation and Management Act and of Title XI of the Merchant Marine Act of 1936. Currently, the Fisheries Finance Program can finance or refinance construction, reconstruction, reconditioning, and purchasing of aquaculture facilities, including land; fisheries shoreside facilities, including land; fishing vessels; halibut and sablefish individual fishing quotas; and fishing capacity reduction buybacks.

Loans can be for up to 80 percent of eligible project costs, and interest rates are fixed at loan inception at 2 percent above the U.S. Treasury's borrowing costs for similar maturities (Use the 10-year T-bill rate as a guide). Applicants must pay a one-time filing fee equal to ½ of 1 percent of the proposed loan amount. Loans do not have prepayment penalties.

The bad news: "We can't meet demand," says Houghtaling, who spoke at the Hawaii Aquaculture Association Conference on June 15, noting that all (NMFS financial services) offices compete for money."

The good news: The program expects funding of about \$59 million for the loan program next year, a level the agency has enjoyed only for the last three years, says Houghtaling. Previous funding levels were less than \$25 million. —KD L



Albert Tacon, at an HAA gathering, reviews his wish list for UH's aquaculture program.

He wants to create five new positions: offshore marine aquaculture specialist, aquatic vet/pathologist, aquatic geneticist, aquatic microbiologist, stock enhancement specialist. Other wishes: new undergraduate and graduate courses, one new aquaculture instructor, lab updates, and a research facility at NELHA. Aquahana could also provide seed money for research.

Finally, Tacon said he wants to form an Aquaculture Advisory Committee with representatives from the industry and state and federal agencies, as well as researchers. —KD L

Tacon defines Aquahana. Albert Tacon, Ph.D., aquaculture coordinator for the University of Hawaii 10-campus system, calls his vision for a world-class aquaculture program "Aquahana." Using the Hawaiian word for family, "ohana," is the easy part. Getting all aquaculture endeavors to work in a "more coordinated fashion," as he puts it, is a difficult if worthy goal.

"UH has one of the largest groups of aquaculture researchers in the U.S.," Tacon enthused at the 8th Annual Hawaii Aquaculture Association Conference on June 15. UH has a total of 115 faculty and staff either directly or indirectly related to aquaculture, 74 of them with doctorate degrees. Tacon is currently gauging their interest in activities such as an open seminar series, he said.

AQUA TIPS

Coral farm project helps village in American Samoa start business, learn about reef management

Michael R. King, Karolyn J. Braun, and Paramount Chief Faumuina S. P. Satele

Coalition of Reef Lovers and American Samoa Community College

This article was written as part of the work for the project "Alofau Village Coral Farm Project for Village-based Industry and Community Coral Reef Management," which is funded by the Center for Tropical and Subtropical Aquaculture (CTSA) under a grant from the U.S. Department of Agriculture Cooperative State Research, Education, and Extension Service.

Given the rapid loss of the world's coral reef habitats, the marine ornamental industry is in need of drastic change. So far the industry has returned very little to the habitats from which it derives its living products. Damaging practices and over-collection of rare species have added to the devastation of marine resources. Groups like the Marine Aquarium Council are approaching conservation by creating standards and certification for organizations involved in the collection and care of ornamental marine life. Yet, these broad attempts to create a sustainable industry, for many coral reef areas, are too little too late.

The island of Tutuila in American Samoa is one such place. The reefs near Tutuila are in poor to fair condition, and any collection of corals or fish would further strain a coastal habitat already in decline. What's needed, then, is a new type of business — one that is village run and that empowers communities to preserve coastal resources.

With this view in mind, the American Samoa branch of the Coalition of Reef Lovers (CORL) together with the American Samoa Community College began a project that seeks to restore lost and degraded coral reef habitats and to develop community-based coral farming as a viable business. The project will also use coral farms to educate villagers about the importance of their local coral reefs and why they need to protect, preserve, and restore them.

Potent Blend: Farming and Rehabilitation

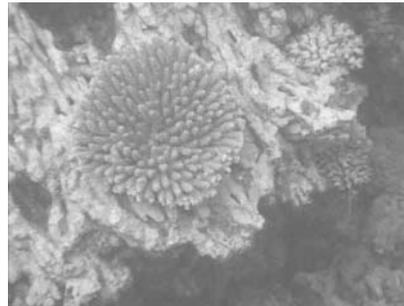
This project focused on one village: Alofau, a medium-sized village with a population of about 200 families in the Eastern District of

Tutuila. The Coalition of Reef Lovers (CORL) selected Alofau as the best site for a demonstration coral farm due to its proximity to a large, shallow inner-reef area. Such a lagoon is rare in American Samoa. We also chose Alofau because the American Samoa Department of Marine and Wildlife Resources already had created a marine management area (MMA) through which the village restricts fishing to help the recovery of near shore fish stocks.

Over the last 30 years, the coral cover has dramatically decreased in Alofau's lagoon and other areas around Tutuila. Contributors include pollution; destructive fishing; overfishing; coral bleaching; coral diseases; a devastating outbreak of crown-of-thorns, a starfish that preys upon corals; and hurricanes.

Propagating coral to reintroduce organisms where populations have declined isn't a new endeavor (Arvedlund 2003). Still, very little has been done in the field of community-based coral reef rehabilitation. Mainly scientists and private companies have conducted coral reef restoration — at the cost of hundreds of thousands of dollars per acre restored (Spurgeon 2000). Coastal communities have proven they can operate coral farms to generate products for export in the marine ornamental trade (Peletta 1999). Similarly, then, communities should be capable of rehabilitating colonies of primary coral species that provide critical cover for near shore fisheries.

If a community is to take on a mission to restore degraded coastal habitats, then villagers must be provided with the necessary tools, skills, and knowledge. Filling these needs, along with establishing a coral farm, is the crux of this project.



Photos By Michael King

Rehab works: A dead reef patch (left) and a planted coral table one year after substrate attachment. Villagers hope to give new life to a coral reef in the Alofau lagoon.

Rehabilitation of any marine habitat involves three main steps: 1) Educate the public about stressors; 2) initiate community action to eliminate or reduce them (Yap 2003); and, 3) with stressors corrected, prompt the community's active role in repairing damaged resources. The creation of an MMA or a marine protected area (MPA), a no-touch habitat left to natural recovery, could help with the final step. The Alofau project adds mariculture of corals to this step. Ultimately, the village will cover rehabilitation costs and other resource management needs with sales profits from the farm.

CORL has been working with the village of Alofau since 2003, conducting beach cleanups and helping address pollution issues. This long-term commitment has led to a high level of community involvement that continues with the coral farm project, begun this spring with funding from CTSA.

Both of the project's first two workshops, focused on awareness and making an action plan — were attended by 17 villagers. Later, 24 people from Alofau and five more from nearby villages took part in a beach cleanup. The village is considering a no-littering rule and a recycling area.

The first eight of many planned training workshops have also experienced high participation levels. The project goal was to train

at least four villagers in how to set up a farm and in coral propagation techniques, yet 14 volunteers continue to show up to these one-day-a-week workshops.

Establishing the Alofau coral farm required some initial analysis: assess the condition of existing coral reefs, determine the

primary coral cover species, and determine if the local variety includes enough desirable species to make a coral farm profitable. We selected a farm site with very few existing coral colonies and adequate water conditions. The site has low levels of nitrates and phosphates, moderate water flow throughout the day, no rip tides, and a water level higher than 4 feet at low tide.

Next, as part of the training workshops, we salvaged fragments from broken corals and began to propagate them in order to create future donor colonies. Given the large amount of injured corals available, we decided not to take cuttings from existing corals even though it's possible to do so without causing long-term harm. Volunteers started propagating several of the coral species most common to American Samoa's coastal waters, *Acropora Formosa*, *A. nobilis*, *A. Porites cylindrica*, and *Pavona frondifera*.

These species, as do many other corals, propagate naturally by fragmentation. From donor colonies previously planted by CORL staff in 2003 and 2004, volunteers collected fragments of between 3 and 12 inches in diameter and cut them down to 1 to 2 inches using common wire cutters. Then, they either tied or glued these cuttings to a coral plug, a cement disk with a 2-inch diameter. They placed the plugs in trays made from 1-inch-square, PVC-coated wire mesh. Finally, they took these trays to the 12-foot-square rebar trestles that they had already constructed and anchored at the farm site.

Coral fragments will grow out for three to six months, then the village volunteers will relocate them to targeted rehabilitation areas or sell them to the marine ornamental industry. Only 20 percent of corals grown will be sold. For each one sold, villagers will receive \$1.50, a solid profit for them given production costs of less than 10 cents. CORL will handle all marketing and shipping of corals.

Conclusion

The extraordinary community involvement in this project has been welcome if overwhelming. Support from the late Eastern District Governor Paramount Chief Faumuina S. P. Satele and coral farm volunteers, as well as donations from the American Samoan community, have helped create the Alofau Community Ecology Center and a coral farm office. The center, located on land adjacent to the farm, will serve as a resource for local schools (and tourism operations) and as a location from which to monitor the village's environment. Also, CORL is assisting the village in efforts to secure funding for water analysis that would identify nutrient pollution and their sources. Near shore nutrient levels are high, causing algal blooms that are approaching the farm's reef area.

The coral farm has yet to make a profit. Farm volunteers and other community members, however, are realizing that the Alofau coral reef and lagoon have value beyond subsistence fishing. The more value they place on the lagoon and reef, the more effort they will put into protecting it. Plans now underway include creating a snorkeling trail, renting gear out at the new center, and using the lagoon and center for school trips focused on marine conservation. In the near future, we hope to add to the inside of the center a 180-gallon tank with a coral propagation system, so we can give hands-on demonstrations to students and visitors.

Will we be able to restore the Alofau coral reef to its former condition? It's doubtful. Global warming and rapid population increases in American Samoa reduce chances of a full recovery. We can, however, reduce local stressors causing coral reef decline and, thus, increase chances for a partial recovery that allows some functionality of the former coral reef ecosystem to survive. What's more, the Alofau community can eventually do so on its own, given proper training and sustainable management tools.

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Acknowledgment

Paramount Chief Faumuina S. P. Satele, who died on Aug. 15 at the age of 57, wished to make Alofau a model for other villages. His hands-on support was instrumental in the project's current success. L

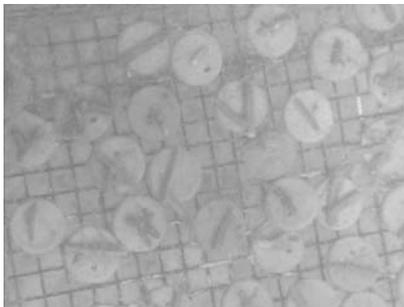


Photo By Michael King

Coral fragments tied to cement plugs grow out in the Alofau farm's rebar trestles.

Ocean Rider continued from Page 1

Feeding is the most critical issue in raising and caring for seahorses, agrees Schmarr when asked. Ocean Rider raises seahorses to eat frozen food, specifically frozen mysis shrimp, which is more convenient to obtain and less likely to introduce disease than live food. Additionally, the company developed a proprietary feed supplement called Vibrance, which contains vitamins, minerals, astaxanthin, and long-chain fatty acids, he says.

As for keeping disease at bay, biosecurity amounts to “barbed wire and never bringing any wild-caught species onto the farm,” Schmarr says. The company uses no chemotherapeutics. He had little success with them when working at shrimp hatcheries. “If you look after your broodstock and have the appropriate nutrition and clean conditions, you won’t get sick animals,” he adds.

Ocean Rider touts its seahorses as high-health animals. To help build and protect such positioning, the company has begun a tag certification program. The company randomly (for now) selects seahorses as they’re sold to receive a micro-coded wire tag. All customers can request paper certifications of identity and health.

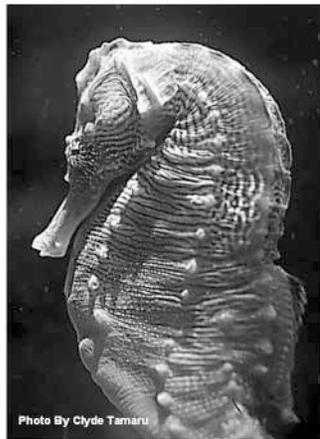
This tag authentication comes in part in response to a sales environment where some retailers buy Ocean Rider seahorses and mix them with wild-caught animals but call them all Ocean Rider seahorses, says Schmarr. The company’s dealings with wholesalers were worse, so the company cut them out long ago, he says.

Unscrupulous businessmen and nutrition weren’t the company’s only obstacles. Disbelief was once a challenge. “Very early on, getting folks to believe we had captive-bred seahorses [was a problem],” says Schmarr. “Most people believed they were wild caught and put into a feed lot to be sold later.”

No feed lot, the company’s facility is divided into larval rearing, nursery, and growout systems and includes more than 150 tanks, ranging in size from 90 L to 16,000 L, with most at 3,000 L.

Research achievement has come with persistence. “We had a big struggle with survival in the early days even with our most popular species,” says Schmarr about fry rearing. Carol Cozzi-Schmarr, who completed post graduate work in aquaculture at San Diego State University, attributes her success to “on the job training” and considers the academic process “too linear,” says Craig Schmarr. “My wife says, ‘Aquaculture is not that way, it is where science meets art.’”

The entrepreneurs have funded their research and met Ocean Rider’s financial obligations largely from business profits and their own pockets. An important financing source was a Small Business Administration loan that was later converted to an agricultural loan from the Hawaii Department of Agriculture, says Schmarr. The couple has also made a few family members shareholders and benefited from small grants from the state’s Pacific Tropical Ornamental Fish Program (PTOFP), he says.



Seahorses like this Mustang (*Hippocampus erectus*) help engage people in marine conservation.

Schmarr won’t put specific figures to Ocean Rider’s financial condition, saying only that business has grown steadily — a state he expects to continue. Already, Ocean Rider has expanded its staff to three full-time (including Carol and Craig) and three part time employees. By the end of the year, the company plans to add new species of marine fish to its catalog, he says.

Agro-tourism became the biggest move to diversify the business when the company a year ago began offering \$30 tours of its 2.5-acre farm to the public. Customers can touch and feed some of the seahorses. “Most of the seahorses in the petting area are 4 to 5 years old. They have been handled approximately every two weeks of their life due to tank fouling as a result of the sun at Keahole Point, so they are very used to being handled, and we often have trouble getting [the seahorses] to let go,” says Schmarr. Ocean Rider plans to add another educational component to its business in 2007.

Seahorses make “great ambassadors” for marine conservation, says Jeff Boehm, senior vice president for animal health and conservation science at Chicago’s Shedd Aquarium, which held a ground-breaking exhibit “Seahorse Symphony” for five years beginning in 1998. “We found by displaying seahorses, finally, we had a charismatic small fish that attracted attention and enthusiasm from kids and adults alike.”

Besides being cute and colorful, seahorses have a fascinating biology: the male has a pouch into which the female puts her eggs and from which he gives birth; to blend into their environment,

they change colors and grow filaments; a prehensile tail can grasp vegetation; they suck in food through a tubular snout; their eyes independently rotate; and, instead of scales, they have a thin layer of skin stretched over a series of bony plates.

“Seahorse farming should be a model for the power of aquaculture.”

—Carol Cozzi-Schmarr

Most important to their role as flagship species, seahorses live in lagoons, mangroves and coral reefs — all habitats most affected by human activities. Seahorses help represent the impact of major problems such as overfishing, bycatch, and habitat degradation, Boehm says.

“To save the seahorse, you need to save the sea,” says Keith Martin-Smith, senior program manager of Project Seahorse, an international organization devoted to seahorse conservation. He’s based at the School of Zoology, University of Tasmania. The saying may be trite, he admits, but the idea behind it is compelling: interest people in the endangered seahorse, and then introduce them to issues regarding the threatened ecosystems in which they live.

The entire genus of *Hippocampus*, covering all 34 currently recognized seahorse species, was listed in 2002 on Appendix II of the Convention on International Trade in Endangered Species in Wild Fauna and Flora (CITES) — a move that took effect in 2004 and means more than 160 signing nations agreed that trade of seahorses must be controlled to ensure their survival. Also, all known species of seahorses

appear on the World Conservation Union (IUCN) Red List of Threatened Species as endangered, vulnerable, or data deficient.

More than 24 million seahorses are traded each year among at least 77 nations, according to Project Seahorse material. That consumption comes largely from traditional medicine, for treating many conditions from erectile dysfunction to respiratory disorders, but also from the aquarium and curiosity trades. Project Seahorse wants to stop curiosity trade and encourages more sustainable practices by the aquarium and medicine industries.

Aquaculture is not a cure-all for the plight of seahorses and their habitats, cautions Martin-Smith. "Potential is there," he says, "[But] until proven otherwise, there isn't an effect."

Aquaculture definitely has made a difference, asserts Carol Cozzi-Schmarr, who estimates that a total of 50,000 seahorses (most of them farm raised) are consumed by the pet trade, significantly less than the more than 1 million seahorses thought to be taken from the wild for the aquarium trade in the years before seahorse farms began providing alternatives. "We know what market demands are," she says, noting that she regularly talks with other breeders and wholesalers.

"Seahorse farming should be a model for the power of aquaculture, because it works," says Cozzi-Schmarr. "Look what can be done. People thought we were nuts and that it couldn't be done scientifically and financially. But we did it, and the animals are better."

Not all aquaculture outfits are equal. Craig Schmarr contrasts Ocean Rider with some of the farms started in Sri Lanka and Vietnam within the last three years. "The animals they produce are 'captive bred' but not hand raised," he says. "Males are taken from the wild, spawned, and raised in pen-like situations." These farms yield a substantial number of seahorses, but the animals are like wild-caught seahorses: affected by ectoparasites, unaccustomed to frozen feed, lethargic, and short-lived, he says.

Ocean Rider follows environmentally conscience policies. The company, for example, does not discharge water into the ocean. The farm does not sell seahorses within the state of Hawaii, to prevent accidental release and protect a native species, and does not sell seahorses for use in traditional Chinese medicine.

The company also does not collect broodstock from the wild to sustain its breeding program. Even in the beginning, Ocean Rider started with bycatch from fishermen in Biscayne Bay in South Florida, says Schmarr. Additional species have come from other breeders.

The farm's founders believe they can kindle understanding of and, perhaps, participation in ocean conservation. "We want to provide young children with a marine awareness program and inspire them by teaching alternatives to wild-caught animals. We would like to concentrate on children between 5 and 8 years old," says Schmarr.

The parents undoubtedly gain motivation from their 3-year-old twin boys. "We were paying a full-time nanny and realized we'd rather be doing that job. So, we now work less hours, and each of us shares the time with Cooper and Dylan," Schmarr says. "It makes for peculiar hours on site but still more regular than shrimp hatcheries I know." —*Kathryn Dennis* L

Around the Pacific

A group of 12 farmers and aquaculture professionals from Guam, the Commonwealth of the Northern Mariana Islands, and American Samoa traveled together in Thailand for almost two weeks last June. They went to study aspects of the nation's commercial aquaculture industry that contribute to its renowned success in worldwide markets.

"Many participants considered the trip a once in a lifetime opportunity," says David Crisostomo, the extension aquaculturist from the University of Guam who led the visit.

"It is costly and time consuming to arrange an opportunity like this one."

The Asian Institute of Technology (AIT) provided training in inland aquaculture development and management. Faculty from AIT covered development policy and strategy, pond design and construction, feeds production, and hatchery production and management. After this series of lectures, the group visited small and large farms, feed mills, processing plants, and marketing co-ops.

Such education didn't end in June. Trip participants are forming teams in their respective island nations to conduct workshops on a local level. Crisostomo says, "With farmers and aquaculture professionals contributing to the learning experience, the synergy is sure to benefit the islands for years to come." For more info about workshops and the trip, contact Crisostomo at dcrisost@uog9.uog.edu. —*KD* L



Photo By David Crisostomo

Thailand trip reveals industry secrets via lectures, farm visits.

ANNOUNCEMENTS

Call for Nominations: IAC and TC. CTSA has a few openings for members on its Industry Advisory Council (IAC) and Technical Committee (TC) and is accepting nominations. IAC members represent major sectors of the aquaculture industry and/or political entities in Hawaii and the Pacific island nations in our region. TC members come from research institutions, state extension services, other state or territorial public agencies, and nonprofit private organizations. For more details, please go to Page 5 of our procedures document at <http://www.ctsa.org/ProceduresManual.pdf>. Please submit nominations to Kathryn Dennis at kedennis@hawaii.edu by **October 31, 2006**.

Conference on Business Opportunities in the Islands. The U.S. Department of the Interior has opened registration for a forum on economic development in U.S.-affiliated insular areas to be held at the Waikiki Marriott Resort in Honolulu from **November 13–14, 2006**. Hear from and meet with island businessmen and government leaders, as well as industry experts, about infrastructure development, tax incentives, and specific industry outlooks. Plans include a panel on aquaculture. For more information and to register, go to <http://www.BusinessOpportunitiesConference.com>.

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The Center for Tropical and Subtropical Aquaculture (CTSA) is one of five regional aquaculture centers in the United States established by Congress in 1986 to support research, development, demonstration, and extension education to enhance viable and profitable U.S. aquaculture. Funded by an annual grant from the U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service (USDA/CSREES), the centers integrate individual and institutional expertise and resources in support of commercial aquaculture development.

CTSA currently assists aquaculture development in the region that includes Hawaii and the U.S.-affiliated Pacific Islands (American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Republic of Palau, and Republic of the Marshall Islands).

In its 18 years of operation, CTSA has distributed more than \$9 million to fund more

than 185 projects addressing a variety of national aquaculture priorities.

Each year, the Center works closely with industry representatives to identify priorities that reflect the needs of the aquaculture industry in its region. After consultation with appropriate technical experts, CTSA responds with a program of directed research that has these predetermined priorities as the focus of project objectives. The Board of Directors is responsible for overseeing CTSA's programmatic functions. The Center disseminates project results through its print publications, hands-on training workshops, and Web site.

CTSA is jointly administered by the Oceanic Institute and the University of Hawaii. The main office is located at the Oceanic Institute's Makapuu Point site on the island of Oahu in Hawaii.

For more information, contact Cheng-Sheng Lee, Ph.D., Executive Director, by telephone (808) 259-3107, fax (808) 259-8395 or e-mail (cslee@oceanicinstitute.org).



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