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The Art (and Science) of Breeding Fish in Captivity

To reduce the impact of harvesting fish from natural habitats, RWU experts to teach aquarists to breed fish for exhibit tanks



November 27, 2012 | Jenna Mulvey '13

Work at an aquarium or zoo, by chance? Then get ready – you may be learning a thing or two about breeding tropical fish from the New England Aquarium and [Roger Williams University marine biology](#) faculty and students.

As part of the next chapter in the University's historic partnership with the [New England Aquarium](#), marine science experts at RWU will train aquarists from public institutions to successfully breed fish for their exhibit tanks in an effort to reduce reliance on harvesting species from natural habitats.

Thanks to a \$221,382 grant from the [Institute of Museum and Library Services](#) – to be administered by the New England Aquarium – [Andrew Rhyne](#), assistant professor of biology at RWU who holds a joint position with the Aquarium, will lead training workshops for 18 aquarists at the University's aquaculture facility.

"We're very interested in increasing the capacity of public aquariums across the country – the world, really – to be able to rear the fish they have on exhibit in their own facilities," Rhyne says. "This grant is designed to facilitate that capacity through an educational component."

The grant will allow Rhyne to hold workshops on the Roger Williams campus for three years; the first sessions will likely begin during January 2013. Rhyne adds, with a smile, that he will be teaching "the art of keeping fish alive in captivity."

With experts at RWU already leading the way in raising captive-bred tropical fish, the University is a natural fit to host the country's first-ever training program on raising larval fish specifically designed for the public aquarist. It's a difficult endeavor – and it all starts with the eggs. Some institutions need to obtain eggs. But most aquariums do an excellent

job of keeping their adult fish healthy enough to lay eggs, only to watch the next generation be consumed by competing species or go down the drain in the tank – instead, those juvenile fish can be harvested from the tank and reared in hatcheries.

Much of what Rhyne will teach the aquarists has been modeled after the University's marine biology courses. From eggs to larvae to juvenile fish, Rhyne will offer instruction on how to provide the right habitat and feed the fish during those stages of life.

"When larvae hatch, many are nothing more than a 'notochord' – the precursor to a spine," he says. "They're basically a sliver of tissue and they often don't even have eyes when they hatch. They have to develop all of these components over a couple of days."

In those few days, the larvae develop a mouth and gut; if they are not able to eat immediately they will die. It's critical to have a source of zooplankton to feed the larval fish, which is often the most daunting aspect of rearing fish, according to Rhyne. Raising zooplankton takes up a lot of space and time, both of which many institutions don't have in excess. That's where RWU students come in.

"We always include the students in what we do," Rhyne says. "Students are essential, because they do a lot of the rearing of the food in our Wet Lab."

RWU-grown zooplankton will be shipped to the aquarists in the program to help them raise their fish.

After the aquarists have completed the training, Rhyne will keep in contact with them through online forums and discussion boards to answer questions and troubleshoot any problems as the aquarists build their fish stock.

Rhyne says the program could have far-reaching environmental benefits beyond decreasing reliance on wild-caught fish used in exhibit tanks. Moving forward, he says there will be opportunities for private-sector companies to use the same methods of rearing fish for the aquarium hobbyist trade or to develop spin-off technologies like aquacultured fish food.

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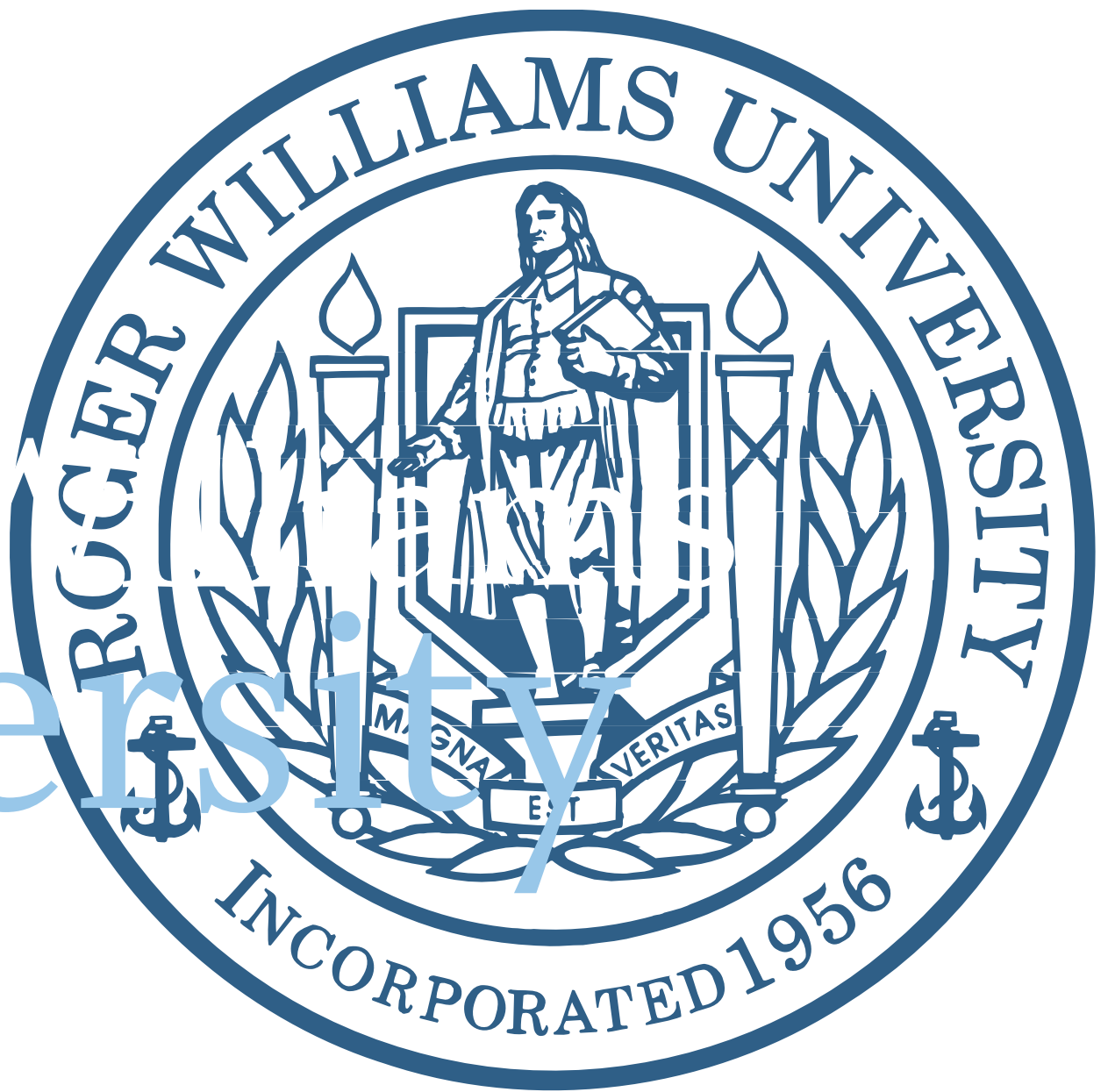
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