

From the Director's Desk

Dr. Pete Stoffella, IRREC Director

Dr. Jiaqi Yan and
Dr. Mark Ritneour,
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Members of our faculty started to mentor graduate students in the mid-1980s when I first arrived at IRREC. At the time dormitory facilities were not yet present so for that reason all of our graduate students were situated at the main UF campus in Gainesville. Our professors served as members on their graduate committees.

While this issue of IRREC News highlights three IRREC graduate students, I would like to note that a total of 35 graduate students are mentored by members of our faculty. By mentoring I mean that the students are either studying here at the center, or are situated in Gainesville at UF's main campus or at another UF Research and Education Center in Florida. Five graduate students conduct their studies out of state.

Of the total 35 students, 12 are local. Local students either stay in the IRREC dormitories, or they live in apartments near the center.

Members of the IRREC faculty either serve as Chair, Co-Chair, or as a member of a graduate student's academic committee. Dr. Courtney Oh's is Chair on eight graduate students committees, seven of which are pursuing master's degrees; one, Bryan Danson, is pursuing a doctorate, and is featured in this newsletter. Another of Dr.

Oh's graduate students conducts her work in New York, and another is in Missouri.

Dr. Mark Ritenour serves five students who are seeking PhD's. Of the five, Dr. Ritenour chairs two student committees, co-chairs another and serves as a committee member for two additional students. A recent graduate to whom he served as committee chair, Jiaqi Yan, is featured in this newsletter. Having graduated, Jiaqi is now a post-doctoral student under Dr. Ritenour's supervision.

Our newest faculty member, Dr. Alan Wright, is serving the most students of all our faculty members. He chairs five student committees and serves on committees of five additional students. His doctoral candidate, Paul Julian, is featured in this newsletter. A recent award recipient, and a full time employee for the Florida Department of Environmental Protection, Paul is working to restore the Everglades.

Please read about our accomplished graduate students. As research students they have already made important contributions to the advancement of agricultural and natural resources industries in Florida and at locations throughout the nation and the world. IRREC professors will continue to welcome graduate students to our research programs.

Peter J Stoffella

DR. JIAQI YAN, DOCTOR OF PHILOSOPHY, HORTICULTURAL SCIENCES, MINOR, PLANT PATHOLOGY



The new Dr. Jiaqi Yan on her graduation day alongside her committee chair, Dr. Mark Ritenour. Both Dr. Yan and Dr. Ritenour are dressed in doctoral regalia. Dr. Ritenour's regalia is from his own doctoral graduation event that took place at the University of California Davis

Indian River Research and Education Center student Dr. Jiaqi Yan graduated the University of Florida in Gainesville, alongside her graduate committee Chair, Dr. Mark Ritenour, as he escorted her across the commencement stage during ceremonies held at UF in Gainesville on December 18.

Dr. Yan is now a Doctor of Philosophy in Horticultural Sciences with a minor in plant pathology. As a post doctorate, she will continue her work at IRREC for the next year to expand her work with essential oils in the use of decay control for fresh citrus, said Dr. Ritenour.

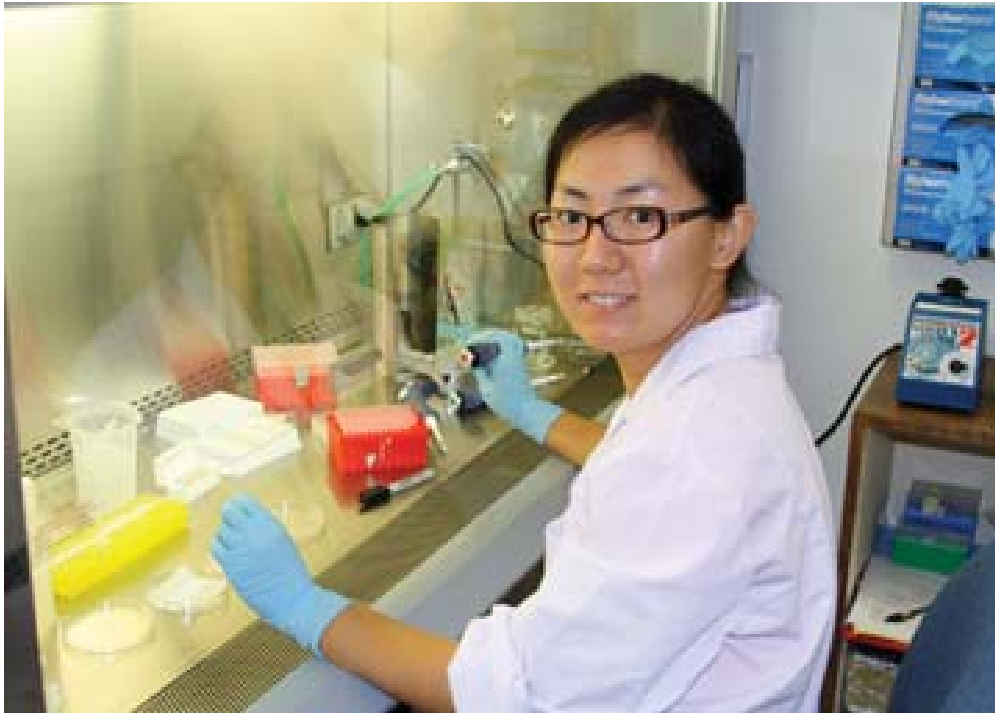


Dr. Jiaqi Yan in a citrus grove

Her career goal is to become a college professor and research scientist who will make contributions to agricultural production as it relates to postharvest science.

"Her work is important because it will give us alternatives for decay control methods," said Dr. Ritenour. "This work will provide opportunities by which the oils may be improved and delivered in wax used to protect fresh fruit."

Dr. Yan's doctoral work involved black spot fungal disease on fresh citrus; her conclusions were that essential oils and fungicides worked well to control and even prevent the development of the fungal disease. Dr. Ritenour noted that Dr. Yan is now in a position to follow-up with her primary research and to look further into the potential of applying similar applications to a second disease which effects citrus, deplodia stem rot.



Dr. Jiaqi Yan at work in the Postharvest Quality Laboratory

During her IRREC tenure Dr. Yan was selected as a 2014 Simpson Family Foundation Scholarship Award recipient. She earned a Master degree in Processing and Storage of Agricultural Products, from China Agricultural University, the College of Food Science and Nutritional Engineering in 2011. She completed a Bachelor degree in Food Science and Technology in 2008, at the Northeast Agricultural University, College of Food Science and Engineering, in China.

An accomplished scholar, Jiaqi has been recognized with paper and scholarship awards, including "Excellent Paper on National PhD Student Forum on Food Safety and Human Health," and four scholarships from the universities she attended in China. During her doctoral studies Dr. Yan was selected for the 2014 Simpson Family Foundation Scholarship Award and for the 2015 Bobby F. McKown Scholarship Award.

Jiaqi's research projects have been published in science journals such as the *Journal of Food Protection* and *Scientia Horticulturae*.

She is a member in the American Society for Horticultural Science (ASHS) and the Florida State Horticultural Society (FSHS). During her doctoral studies she presented a poster and two oral presentations at the ASHS and FSHS annual meetings. In addition, she is a member of the Horticultural Science Graduate Student Club. She served as a volunteer at the 126th Florida State Horticultural meeting.

A native of Harbin, China, in the Asian nation's northeastern range, Dr. Yan has enjoyed her time in Florida, with its yearlong warm weather, and the Atlantic Ocean.

"I am very comfortable working here with Dr. Ritenour in the postharvest laboratory and facility," she said, "Before I came here I had never before seen an ocean."

Dr. Yan said that the state's citrus industry is still strong and that she believes effective methods to control HLB, or citrus greening, will be developed in Florida.

PAUL JULIAN, DOCTORAL CANDIDATE Soil and Water Science



Paul Julian at work in the Everglades

Graduate student Paul Julian was recognized recently by the University of Florida College of Agricultural and Life Sciences Graduate School faculty with the Wetland Biogeochemistry Fellowship Award. The award will fund his biogeochemistry research conducted under the leadership of Dr. Alan Wright, an Associate Professor of Soil and Water Science at IRREC.

Paul is studying under the leadership of IRREC's Soil and Water Science Associate Professor, Dr. Alan Wright. In his capacity

as a student Paul's doctoral research will focus on wetland nutrient dynamics.

In his capacity as an Environmental Specialist III for the Florida Department of Environmental Protection, (FDEP) Paul has for more than four years. When asked what it was like to work in the Everglades, Paul's response was: "The Everglades are amazing—the sheer enormity of the water system is overwhelming," he said. "Not many realize how big and diverse and wild it can be."

Paul explained that he works cooperatively with both State and Federal agencies and their

UNIVERSITY OF FLORIDA COLLEGE OF AGRICULTURAL AND LIFE SCIENCES GRADUATE WETLAND BIOGEOCHEMISTRY FELLOWSHIP AWARD



Paul Julian and Dr. Alan Wright, on the day Paul was recognized with the Wetland Biogeochemistry Fellowship Award

contractors on restoration projects which involve heavy land moving equipment. He can recount a day when two dump trucks were moved to separate positions on levees where both of the gigantic trucks fell over, into the moist earth.

In describing his professional interests, Paul responded with, "I am an ecologist with a multi-disciplinary background and can easily straddle the line between biologist and chemist."

A native of Trenton, New Jersey, Paul is now a resident of Lehigh Acres, just east of Fort Myers. Paul said that his interest in environmental protection began as a youth when his grandmother provided him with Ranger Rick magazines.

Paul's career goal is to apply the knowledge he will gain with his doctoral research to the Everglades restoration work he performs, as he enjoys working in the field. Perhaps later, he said, he may pursue a second career as a university professor. For now, he concludes, "I want to stay with

the field research. There is still a lot more to do and we are making great progress right now."

Paul earned a Master of Environmental Sciences at Florida Gulf Coast University, and a Bachelor of Science degree in Biochemistry at Benedictine College in Atchison, Kansas. His master's thesis topic was: Habitat Selection by the Florida Panther in Response to *Melaleuca* Removal within Big Cypress National Preserve.

His work has garnered a long list of prestigious awards and recognitions. They include: a 2015 UF/IFAS Travel Award; a 2014 Prudential Productivity Award—Team Award, made by Florida Tax Watch; A 2013 Florida Department of Environmental Protection Star Award; an Exceptional Service Award by the Florida Fish and Wildlife Conservation Commission in 2010, for "exceptional dedication and service in response to the Deepwater Horizon Oil Spill in the Gulf of Mexico".

During his tenure at Benedictine College, Paul was recognized as a Discovery Scholar. He attended the school on an Athletic football scholarship.

BRYAN DANSON, DOCTORAL CANDIDATE

Fisheries and Aquatic Sciences



Bryan Danson in the IRREC Aquaculture Demonstration Hatchery Facility

By: Bryan Danson

My overall study relates to the spawning and rearing of commercially important suckermouth catfishes for the tropical fish hobbyist industry.

The fish are typically kept by hobbyists for cleaning ornamental fish tanks of algae and detritus and for the unique look and habits of the fish.

The particular species of suckermouth catfishes that I'm studying are very popular fish; several tens of thousands of one species are sold per week in the United States. All of my study species are

currently collected in the wild as they are not commercially produced. And while none of the fish collected are endangered, there is a potential for over collection. In addition, captive raised fish are generally hardier to the water conditions present in the typical U.S. hobbyist's tank. Because it is not necessary to package and ship the fish more than once or twice from a producer, the fish do tend to be less stressed upon arrival. For this reason, the likelihood that the fish will thrive in their new home aquarium is greater.

Finally, determining the methodology for spawning and rearing these fishes presents a new area for the Florida Tropical Fish Farmers Association to expand into and increase their market.



I recently received fish and was conditioning them for spawning experiments. I have been able to spawn one of my species, *Otocinclus*. They produce small yellow, greenish eggs about a millimeter in diameter and attach them to the undersides of plants. As a surrogate for live plants, I found that they will attach the eggs to green plastic cheerleading pompoms!

When attached to a weight and allowed to float in the water column, they resemble the leaves of a live plant. Therefore, the fish continuously swim and hide in and around the individual pieces of plastic. The first juveniles of *Otocinclus* that I spawned last winter have matured in approximately one year; just last week they spawned!

I now have two generations of *Otocinclus* growing in the lab.

Another species, the rubberlip pleco, will be more difficult to spawn. These fish are from cool, fast flowing mountain streams in the Andes Mountains and likely need a similar environment to stimulate them to spawn.



To accomplish this, I'll be placing them in shallow rectangular tanks with various types of caves (made out of rocks, slate, or PVC). A pump will be utilized on one end of the tanks to generate and provide strong flow. I'll give them as many options of caves as possible so that they hopefully find something suitable.

Finally, I am also studying the clown pleco. This species is native to rivers in the Amazon which experience distinct wet and dry seasons. During the dry season there is little rain, and the volume of the



rivers shrink. When this occurs the density of fish becomes higher, and food resources become scarce. Few species spawn at this time as their offspring would not have enough resources to survive.

Instead, most species spawn during the wet season. During this time a large amount of rain floods the rivers increasing the available habitat and food resources. The fish take advantage of the abundant resources available for their offspring to thrive during the wet season.

To stimulate the fish to spawn, I take advantage of this change of the seasons trigger and provide the fish with a simulated dry season (heated water, less feeding). During this time I also do a large number of water changes with clean, cool water, and then feed the fish abundantly.

Providing them with caves in which the male will pick, guard and then entice a female to enter and lay her eggs. The fish will then be fertilized and guarded until they hatch and start feeding on their own for a minimum of two weeks.

IRREC FACULTY MEMBER GRADUATE STUDENTS

Members of the IRREC Faculty serve as Committee Chair or as a member on a graduate student committee to students who are enrolled with departments in Gainesville. Many of the students are carrying out the research portion of their graduate program at IRREC.

STUDENTS PURSUING DOCTORATES

Ferdous Chowdhury, Horticultural Science
Bryan Danson, Fisheries and Aquatic Science
Christopher Ference, Plant Pathology
Paul Julian, Soil and Water Science
Aaron Kinty, Soil and Water Science
Liquang Li, Soil and Water Science
Matthew Moore, Entomology
Anita Neal, Entomology
Angie Nino Beltran, Entomology
Ramadhani Majubwa, Horticultural Science
Daniel Mancero Castillo, Plant Medicine
Silvia Marino, Horticultural Science
Cristina Pisani, Horticultural Science

STUDENTS PURSUING MASTER'S DEGREES

Denise Breen, Soil and Water Science
Richard Brown, Fisheries and Aquatic Sciences
Carter Cyr, Fisheries and Aquatic Sciences
Deborah Foster, Soil and Water Science
Tyler Ferguson, Fisheries and Aquatic Sciences
Robin Irwin, Fisheries and Aquatic Sciences
Kimberly Jones, Master of Soil and Water Science
Isaac Lee, Fisheries and Aquatic Sciences
Megan Lougee, Soil and Water Science
Alejandro Ramos, Agronomy
Diego Ramirez Acosta
Matt Szatkowski, Soil and Water Science
Haley West, Soil and Water Science
Ashley Witkowski, Soil and Water Science
Richard Yudin, Soil and Water Science
Lisa Zell Soil and Water Science