Greetings from the Fisheries and Aquatic Sciences Program!

By Bill Lindberg, PhD, Associate Director, Fisheries and Aquatic Sciences Program

Our last issue of WaterWorks (June 2016) acknowledged the retirement of Dr. Tim White as long-time Director of the School of Forest Resources and Conservation, within which the Fisheries and Aquatic Sciences Program (FAS) resides. As this New Year begins, we are very pleased to announce the selection of Dr. Terrell “Red” Baker as the next SFRC Director; you can learn more about Red inside.

Red will be joining us on April 1st, just in time for the SFRC Spring Celebration (March 31st and April 1st), the FAS Graduate Student Symposium (April 14th) and the FAS Program Advisory Committee and SFRC Advisory Board meetings on April 20th and 21st, respectively. We’re excited to welcome Red aboard with his first month packed with students, alumni and stakeholders!*

We also welcome two new additions to our FAS faculty, Vince Lecours and Will Patterson. Vince has a cross-disciplinary background that bridges geomatics and ecology, and is part of a cluster of faculty hired to strengthen work across UF/IFAS related to sustainable fisheries. Vince’s spatial expertise directly addresses a priority identified by the FAS Program Advisory Committee and SFRC Advisory Board.

Will Patterson joins us in mid-career thanks to our strong relationship with the Florida Fish and Wildlife Conservation Commission (FWC). The SFRC faculty and administration worked closely with FWC and Dr. Jack Payne, UF Senior Vice President for Agriculture and Natural Resources, and others to recruit Will to FAS to further strengthen our considerable capacity in population dynamics, trophic dynamics and community structure of marine fisheries. More about Will and Vince can be found inside.

This edition of WaterWorks has three articles with a freshwater focus. The first is by Dan Canfield, founder of the Florida LAKEWATCH program, and the second is by Karl Havens, director of the Florida Sea Grant College Program. Both offer perspectives on decades-long efforts (and considerable expense) to reduce the eutrophication of Florida lakes, largely in response to algal blooms. Dan explores research done in Florida and elsewhere and asks whether nutrient enrichment of lakes is human caused or natural. Karl provides an overview of why, in 2016, a massive bloom occurred in Lake Okeechobee and made its way to the St. Lucie Estuary. Both authors highlight complexities of and debates about algal blooms as they challenge assumptions that underlie traditional management approaches.

Our student article by Zach Siders addresses the attraction-production debate surrounding artificial reefs. Small lakes in Florida are the “laboratory” for Zach’s on-going research. These relatively closed systems offer advantages in his quest to “track causality” after he performs habitat manipulation in his four sample lakes.

The life of a graduate student can be stressful. Among the many resources available to our students here at UF is the Aquatic Research Graduate Organization (ARGO), a group organized and led by FAS graduate students with guidance from professor Rob Ahrens. ARGO has a timely article inside on the importance of a balanced student life, with examples of events they organize to help achieve one.

Speaking of students, we are quite proud of our summer and fall 2016 graduates. They include two PhD’s, three Masters of Science, and nine Masters of Fisheries and Aquatic Sciences. We also had two students who won international awards and another who was awarded a Fulbright. Heartiest congratulations to them all!

*On behalf of FAS faculty, staff and students, the newsletter editors wish to thank Drs. Bill Lindberg and Tim Martin for serving as interim directors of SFRC and guiding us through this transition period.
Nutrient Enrichment of Florida Lakes: Human Caused or Natural?

By Daniel E. Canfield Jr., PhD, Professor, Fisheries and Aquatic Sciences Program

Cultural eutrophication, the addition of nutrients to a water body by human activities, has been an important water quality issue for Floridians since the 1960s due to a linkage between nutrients and algal blooms. The State of Florida first addressed the eutrophication issue by improving wastewater treatment and diverting point sources (e.g., municipal wastewater and industrial treatment plants). However, Florida’s Lake Okeechobee, the 2nd largest (1900 km²) lake in the continental U.S. (Figure 1), had a massive (311 km²) algal bloom in August 1986. This bloom garnered extensive national and local public awareness because of concerns that the lake was dying; and Floridians did not want another Lake Apopka (Nordheimer, 1986).

The Florida Legislature responded in 1987 with the passage of the Surface Water Improvement and Management Act (SWIM: Chapter 87-97, Laws of Florida and Rule 17-43.035, F.A.C.) to combat non-point source (e.g., agriculture) nutrient enrichment. Governmental agencies subsequently adopted a host of management strategies to try to mitigate the non-point source eutrophication problem and billions of taxpayer dollars have been spent on those efforts since the 1986 Lake Okeechobee algal bloom.

Concerns were raised early regarding the non-point mitigation approach because analyses of the available Lake Okeechobee data in the 1980s indicated that the rise in total phosphorus concentrations (TP) was not correlated to external inputs from dairy farms. The rise in TP was related to natural factors (i.e., water level fluctuations and wind resuspension of bottom sediments) and it was concluded that the Lake Okeechobee Technical Advisory Committee’s proposed 40% reduction in TP inputs would not significantly improve the lake’s water quality. It was also concluded that the massive expenditure of public funds to reduce nutrient inputs would fail to prevent algal blooms and improve water clarity over the long-term (Canfield and Hoyer, 1988).

Many scientists, citizens and elected officials rejected the conclusions reached for Lake Okeechobee. In the 1980s, the United States Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP) were promoting the control of non-point source nutrient inputs. Florida was also in a period of rapid population growth (now over 19-million people) and the human-footprint on the land could no longer be ignored. Consequently, there arose a widespread acceptance of the belief that anthropogenic activities have led to the extensive cultural eutrophication of Florida’s lakes. This belief has been reinforced because algal blooms continue to occur (e.g., Lake Okeechobee in 2016) and the USEPA and FDEP have promoted the establishment of Numeric Nutrient Criteria to protect the long-term ecological health of lakes. BUT, the United States and Florida have now established extensive water quality databases that provide evidence that the “belief” that anthropogenic activities have led to the extensive cultural eutrophication of lakes needs to be challenged.

Paleolimnological data (sediment cores) from 240 lakes sampled during the USEPA’s 2007 National Lakes Assessment were used to estimate the extent that natural lakes in the coterminous United States have been changed by anthropogenic activities since European settlement. No statistically significant increases in the average concentrations of total nitrogen (TN) were found, while TP decreased by 14% in this population of lakes. The proportions of lakes categorized as oligotrophic, mesotrophic, eutrophic, and hypereutrophic for the pre-settlement time period were not significantly different from the proportions found in 2007 (Bachmann et al., 2013).

Maine has some of the clearest water in the United States, but an analysis of satellite-inferred Secchi depths had suggested that cultural eutrophication had severely degraded many lakes. Field measurements of Secchi disk depths in several hundred lakes in the summer months by volunteer samplers, however, showed a small, statistically significant increase in water transparency during the period 1976 through 2013.

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Figure 1. General location of Lake Okeechobee, Lake Apopka, Lake Thonotosassa, and Santa Fe Lake.
Nutrient Enrichment of Florida Lakes...

In addition, diatom-inferred Secchi depths from short sediment cores in a randomly selected group of Maine lakes analyzed by the USEPA showed no statistically significant difference between the average Secchi depths in a pre-1850 time period and the early 1990s. Similarly, the same was true for randomly selected lakes in the states of New York, New Hampshire, Massachusetts, Vermont, Connecticut, New Jersey, and Rhode Island. Lake maximum depth was the most important morphological variable associated with water clarity among Maine lakes and drought years led to increased Secchi depths, thus the Maine data indicated that natural factors may be more important than cultural eutrophication in determining Secchi depths in Maine lakes. Consequently, focusing solely on cultural eutrophication by nonpoint sources may not be the best use of financial resources for managing Maine lakes (Canfield et al., 2016).

Florida, like Maine, has an extensive water quality database for large numbers of lakes due to the efforts of governmental agencies and citizen scientists. Phytoplankton biomass (chlorophyll concentration) has been measured since 1969 to assess algal abundance and blooms. For a 508-lake database with chlorophyll measurements for 10+ years and a 153-lake database with 20+ years of measurements, 448 (88%) and 132 (86%) lakes, respectively, showed no significant trends over time. Only 30 (6%) and 18 (12%) lakes, respectively, had positive trends. Algal blooms in the lakes with over 20 years of chlorophyll measurements increased in fewer than 7 (<5%) lakes. Rather than increasing over the years as might be expected with Florida population growth, phytoplankton abundances and bloom occurrences have been stable for most Florida lakes.

The State of Florida has experimented with nutrient mitigation efforts at Lake Okeechobee, Lake Apopka, and Lake Thonotosassa for over 25-plus years (Figure 1). In these three lakes, no significant trend, a negative trend and a positive trend in chlorophyll concentrations were observed (Figure 2). Because expensive non-point source watershed nutrient control programs have been less than successful in altering the water quality of Florida’s major SWIM lakes, there is evidence that implementation of costly total maximum daily loads (TMDL) is not needed for most individual waters and that other environmental factors, not just nutrients, are influencing algal abundance in Florida lakes.

All of this evidence led to an investigation of water quality changes in the Santa Fe Lake System (SFS), an Outstanding Florida Water system (OFW) in northern peninsular Florida (Figure 1). Citizen scientists have collected water samples monthly since 1986 and SFS receives special protection from governmental agencies to prevent impairment of water quality due to anthropogenic activities. Since 1986, there have been periods of sudden nutrient increases and declines along with changes in water clarity documented within the 28-yr monthly database. Changes were linked to stochastic events like an influx of gulls in 1986, the adjacent 5,100-ha Dairy Road forest fire in 2007, three CAT-3 hurricanes that struck Florida in 2004, and droughts. There, however, were also increasing trends at SFS for the yearly measured minimum water chemistry values. Synchronous changes in these baseline conditions were also observed at other nearby lakes, suggesting the lakes were being impacted by a regional environmental factor. These changes corresponded to a period of decreasing precipitation and were related to climate variability, perhaps reflecting phase changes in the Atlantic Multidecadal Oscillation (AMO) (Canfield et al., 2016).

The possible mechanism for the observed changes at SFS most likely relates to alterations in regional precipitation/evaporation rates and resulting changes in groundwater chemistry and hydrology. Long-term trends in water quality at SFS could, therefore, reverse if Florida enters a long-term period of increasing precipitation. Examining long-term variability in lake and groundwater quality is an area of future research, but chlorophyll concentrations in many individual lakes fluctuate with changes in aquatic plant abundance and aquatic plant management activities. Because expensive non-point source watershed nutrient control programs have been less than successful in removing lakes from Florida’s nutrient-impaired list, aquatic plant management may become the most cost-effective in-lake management tool for attaining desired water quality goals at many Florida lakes, negating the need for the implementation of costly total maximum daily loads (TMDL).
The Summer 2016 Cyanobacteria Bloom in Lake Okeechobee and the St. Lucie Estuary: Linkage with Weather and Water Management

By Karl Havens, PhD, Professor, Fisheries and Aquatic Sciences Program

This essay explains why a massive bloom of toxic cyanobacteria ('blue-green algae') occurred in the open water (pelagic) zone of Lake Okeechobee (Figure 1) in 2016 and it provides a perspective about whether it is necessary and feasible to control these events.

During May 2016 a surface bloom of the toxin-producing cyanobacterium *Microcystis aeruginosa* began to form in the central pelagic area of Lake Okeechobee, and by July it covered approximately 40 percent of the lake surface (Figure 2). The Florida Department of Environmental Protection and the South Florida Water Management District (SFWMD) reported high levels of the cyanotoxin microcystin in surface water samples. Lake Okeechobee connects to the St. Lucie River and St. Lucie Estuary by a canal constructed in the 1960’s by the US Army Corps of Engineers (USACE). The USACE was releasing water from the lake to the canal at the time of the bloom. Therefore, the cyanobacteria bloom was transported downstream where it led to blooms in the estuary and, when the tide was going out, blooms in a freshet in the nearshore water of the Atlantic Ocean (Figure 3).

**Figure 2.** Satellite image of Lake Okeechobee in July 2016 showing the extent of the *Microcystis* bloom. The close-up image shows the proximity of the bloom to the St. Lucie canal.

**Figure 1.** Lake Okeechobee and the St. Lucie Estuary system.

Why did this event happen in 2016, given that the last one occurred in summer 2005? The central pelagic waters of the lake have an abundant amount of dissolved inorganic nitrogen (N) and phosphorus (P) to support blooms, yet in most years they do not occur. The extreme event was driven proximally by a ‘perfect storm’ of weather conditions that allowed *Microcystis* to flourish where it normally cannot maintain surface blooms. The same thing happened in summer 2005, and before that in 1986.

In both 2004 and 2015 (the years before the blooms) there was heavy rainfall over the watershed. The resulting runoff carried large amounts of phosphorus (P) and nitrogen (N) into the lake. In both cases, blooms did not form immediately because of high turbidity. But in both 2005 and 2016, unusual long-lasting periods of calm weather occurred in spring and early summer and the weather was unusually hot. Taken together, these conditions allowed inorganic sediment particles to settle from the water column, allowing for sufficient light to support rapid growth of *Microcystis* at and just below the water surface. The blooms were fueled by the high levels of available nutrients and high water temperature. While high nutrient levels are the underlying cause of blooms in Lake Okeechobee and some other Florida lakes, it has been shown that climate variability or weather extremes are proximal drivers of the year-to-year wax and wane of blooms (Havens et al., 2016a) and that this also holds true for shallow eutrophic lakes in other regions of the world (Havens et al., 2016b).

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The bloom in the St. Lucie Estuary was caused by another chance event. The water level in Lake Okeechobee in 2016 was sufficiently high as to trigger flood control releases to the St. Lucie canal by the USACE. In general, the lake is allowed to be highest going into the dry season, and is drawn down before the hurricane season to reduce the risk of dike failure. Currently, the lake is being maintained at a lower level than usual while the USACE implements repairs to the Herbert Hoover Dike that surrounds it. So it just happened that when the *Microcystis* bloom formed in the pelagic zone of the lake, water was being released to the St. Lucie canal that is located immediately adjacent to the place where the bloom was occurring. Another chance event in the perfect storm.

What is the solution for these cyanobacterial bloom events?
First, in the case of Lake Okeechobee and the St. Lucie Estuary, it is important to note that the events are relatively rare compared to other similarly nutrient-enriched lakes, such as Lake George. In Lake Okeechobee, they only happen every ten or more years. More often the blooms happen in areas along the lake’s western shoreline and they are not long-lasting.

The ecological and societal costs of the pelagic blooms have not been quantified, so it might be asked whether anything more should be done. If it was determined that the negative impacts of these rare but extreme events is worth action, then controlling nutrient inputs to the lake may seem to be a reasonable option because weather control is not possible.

Yet nutrient control for this lake is a huge challenge. The SFWMD and other state agencies have been implementing programs to control phosphorus export from agricultural lands north of the lake since the 1980’s, spending tens of millions of dollars and, to date, there has been no reduction in annual mean phosphorus inputs to the lake. No efforts have been put towards controlling nitrogen, even though information is emerging to indicate that nitrogen control is important for curtailing cyanobacteria blooms (Paerl et al., 2016).

The watershed of the lake is saturated with phosphorus to the extent that if all agricultural sources immediately were reduced to zero, it could take decades for that phosphorus to leach out of sediments, soils, wetlands, etc. The lake has a huge amount of phosphorus in its mud bottom sediments and this acts as a buffering mechanism to negate impacts of external phosphorus load reduction:

less input from tributaries = more input from sediments

The ultimate solution, if deemed necessary given the huge expenditure of money that would be required, is to perhaps treat inflowing water with a material that removes phosphorus (e.g., calcium) and also ‘cap’ the lake sediments with a phosphorus-inactivating chemical (calcium or aluminum sulfate) as has been done in smaller lakes. On the other hand, if the negative effects of rare pelagic and estuary blooms are found to be minimal, the only reason to reduce phosphorus in the lake might be that it is intended to be a water source for Everglades restoration. In that case, phosphorus reduction programs downstream of the lake could be a better option. This has not been investigated, nor have the full range of negative impacts of the aforementioned smaller but more common blooms along the western lake shore. We know that those events can be controlled by holding the lake at a lower water level.

The events of 2016 reflect a situation that occurs when a lake reaches a point where nutrient levels are high enough to fuel intense blooms, so that weather variation becomes the proximal driver. Optimally, nutrient control measures would be pro-active so that lakes do not reach this point. However, in the USA there is a long history of waiting for lakes to display symptoms before taking action, reducing success rates compared to pro-active protection of nutrient-poor lakes.

For lake managers it is a worst-case scenario, and when the lake is as large as Okeechobee, it brings up for discussion the question ‘are control measures needed and are they feasible?’ Resource management agencies typically are reluctant to ask this question, yet in extreme cases such as this and in other lakes around the world that have experienced decades of high nutrient inputs, it might be the most realistic discussion to have.
Exploring Attraction and Production in Florida’s Small Lakes

By Zach Siders, PhD Candidate in the Fisheries and Aquatic Sciences Program (Mike Allen and Rob Ahrens, Advisors)

Florida’s small lakes—those not included in the approximately 7,700 lakes that are named or greater than 10 acres—likely number over 20,000. From collapsed sinkholes to sandy bowls to muddy saucers, small lakes range from the geologically recent to the ancient. They are dotted throughout the Florida landscape and provide wildlife corridors for charismatic transients such as Wood Storks and Florida Panthers, as well as habitat for some of Florida’s most peculiar freshwater fishes, such as Florida Flagfish, Pirate Perch, Tadpole Madtoms, and others. Often private or limited-access, small lakes are prized resources for outdoor enthusiasts as well as for recreational fishers seeking naïve gamefish.

Large enough to allow for natural behavior and variation, but small enough to reasonably observe and experiment with, small lakes are a boon to fisheries and aquatic scientists. This “goldilocks” point in spatial scale is hard to achieve in artificial systems and it is difficult to track causality after manipulation in open systems. It is for this latter attribute that small lakes are useful to explore the attraction-production debate. Started in the 1980s, this debate was a response to the observations of higher fish biomasses on artificial reefs than on natural ones. The mechanisms behind this difference in biomass was argued to be artificial reefs improving fish production or the attraction of fishes to new structures.

Closed experimental systems are necessary to not only answer the attraction-production question, but also are useful for determining if artificial habitat can noticeably influence a species’ ecology.

A partnership between Mike Allen, the Florida Fish and Wildlife Conservation Commission, and the land manager of BJ Bar Ranch led to an 2013-16 experiment on the effect of brush piles on Florida Bass production. With the help of Rob Ahrens, we took advantage of the small lakes closed system and the “goldilocks” spatial scale.

Our goal was to determine whether, under a presumed “best case” scenario, production of gamefish resulted from habitat augmentation in a small, closed system. We also sought to determine if colonization rates were related to brush pile size or distance to shore and changes in the fish community on brush piles as a result of habitat filtering.

Four small lakes on BJ Bar Ranch were used: two larger lakes (12 ha) with complex littoral zones and two smaller lakes (4 ha) with simpler littoral zones. One large and one small lake were augmented with brush piles (5 ha). We hypothesized that the smaller lake would benefit more from habitat augmentation than would the larger one. The augmented habitat was stratified into brush piles of one and three trees and placed into two spatial groups: one nearshore and one offshore. We hypothesized that large, nearshore brush piles would attract more Florida Bass.

To measure attraction and production, we used boat- and diver-based camera surveys and electrofishing surveys before augmentation and quarterly for 18 months after augmentation. Camera surveys were integral for tracking distributional and compositional changes in the fish community. Electrofishing surveys were used to obtain mark-recapture based estimates of population size, survival, and recruitment. The 373 hours of camera footage were watched and the fishes enumerated through the efforts of numerous technicians, undergraduate interns, research technicians, and graduate students.

We found only four fish species colonized the brush piles indicating a strong habitat filtering effect on the larger lake with a total of 22 species and a weaker effect on the smaller lake with a total of six species. Colonization occurred quickly—within three months—for Florida Bass, Brook Silversides, and Taillight Shiners, but slower—over nine months—for Bluegill. Florida Bass in the smaller augmented lake were quick to use the new habitat for spawning nests, and fry were observed on all but one augmented brush piles. Bluegill fry used the brush piles for refuge in the small lake and to a lesser extent in the large lake. Using our camera counts and electrofishing mark-recaptures, we have occupancy, N-mixture, and mark-recapture models under way. With estimates of fishes’ distributional shifts as well as gamefish abundance and recruitment, we hope to provide insight into the attraction-production question and give recommendations on other systems where habitat augmentation will have the greatest return of investment for managers.
Taking a Break with ARGO

By Natalie Simon, Master’s Student and Secretary, Aquatic Research Graduate Organization (ARGO), Fisheries and Aquatic Sciences Program

ARGO's Mission
Support FAS graduate students by promoting interaction among students and facilitating communication between students and faculty. This organization acts as a voice for the graduate students at both the Department and University levels, and provides and promotes professional development.

Is your PhD to-do list out of control? Are you an overwhelmed grad student? Remember it's important to have a balance between your grad school work and the rest of your life. Maintaining this balance is not only important for personal, mental, social and physical health, but often leads to a rejuvenation of the mind. As a student, taking breaks from the daily grind can aid in mental focus and awareness for the next task, whether it be lab work or field work. Finding a work-life balance can be challenging, but the Aquatic Research Graduate Organization (ARGO) offers numerous opportunities for your learning, enjoyment, and stress relief.

ARGO is a student-run organization created in support of graduate students in the Fisheries and Aquatic Sciences Program at the University of Florida. The current executive board includes President: Allison Durland Donahou, Vice President: Katie Zarada, Treasurer: Claudia Friess, Secretary: Natalie Simon, and Faculty Adviser: Dr. Rob Ahrens.

This organization provides students with the opportunity to gain exposure to other research projects, interact with other students and colleagues, and enhance professional and personal development through active participation. ARGO achieves this through monthly meetings, annual symposia, social activities, community service, and the encouragement of involvement in other professional societies.

For instance, on September 16th and 17th, 2016, ARGO joined the world's largest volunteer effort for our ocean and waterways by participating in the International Coastal Cleanup. Students visited Seahorse Key Marine Lab and stayed overnight in the lighthouse before participating in cleanup efforts in Cedar Key. The cleanup took place post-hurricane Hermine and we collected over 6,100 pieces of garbage including bottles, cans, and pieces of wood. If you are interested in community involvement and service, ARGO is the place for you!

Or maybe you're interested in blowing off steam while making money? ARGO hosted a Trivia Night at First Magnitude on Thursday, September 29th, 2016. The event included raffles and prizes, including hats and t-shirts, drink specials, and ocean-themed trivia. Proceeds from this fundraiser will go towards two $250 Student Travel Grants to attend academic and professional conferences and showcase their research and skills. Travel Grant applications will be posted January 2017.

On October 28th, 2016, ARGO took a trip to Ruskin to visit the UF/IFAS Tropical Aquaculture Laboratory. Students received a tour of the facilities, including fish ponds and greenhouses, where they saw Arapaima gigas (Arapaima), Polypterus senegalus (Sengal Bichir), Halichoeres melanurus (Melanurus Wrasse), and Paracanththurus hepatus (Blue Tang). The Tropical Aquaculture Lab runs a twice monthly seminar series which consists of a journal article discussion. Taylor Lipscomb, a new PhD student from Montana, headed the discussion as students learned about fish physiology and development.

These are just a handful of events ARGO has organized for students to participate in, ranging from social activities, service and extension, and professional development. Future events for the 2017 school year are in the planning process, including a camping trip and the FAS Graduate Student Symposium.

If you would like to get involved with ARGO please visit https://www.facebook.com/UFARGO/.

Enjoy your Grad School journey and remember to take Brain Breaks with ARGO!
New SFRC Director

From article by Beverly Melinda James, UF/IFAS

We are excited to announce that Dr. Terrell “Red” Baker will become our new director on April 1st, 2017. Baker, an esteemed educator and researcher, is currently chair of the forestry department at the University of Kentucky (since 2010) and the James Graham Brown Endowed Professor of Forestry. He replaces Tim White, who retired.

“We are pleased to welcome Dr. Baker, who has a rich background in Extension, research and teaching,” said Jack Payne, UF senior vice president for agriculture and natural resources. “Dr. Baker brings a wealth of knowledge that can only help UF’s program in forestry, fisheries and geomatics become even stronger.”

Baker earned a PhD in forest biology from Auburn University, a master of science in forest resources from Clemson University and a bachelor’s in economics from the University of the South. He has considerable experience working with stakeholders and partners of the land-grant university system and said he is “ready to roll up his sleeves and get to work for the people back in my home state of Florida.”

Baker spent a dozen years as an Extension specialist in riparian, or stream-side, environments and has conducted research in streamside management zones, watersheds, and on fire ecology and management. While doing so, he always kept one foot in the water, working with farmers, ranchers, and foresters to maintain the integrity of aquatic environments in agricultural pursuits.

Those of us with the SFRC’s Fisheries and Aquatic Sciences Program (FAS) were glad to learn that, while growing up in Florida, he developed an early passion for the state’s rivers, lakes, and marine habitats, logging countless hours in a 17-foot Boston Whaler.

He looks forward to getting reacquainted with his home state, learning more about the vital work being done by faculty, staff, and students in the SFRC, and working with the diverse group of people and industries who depend on, as well as advocate for, our important aquatic resources.

Baker said he plans to work with the UF/IFAS School of Forest Resources and Conservation to focus on core issues for the future. “The school is home to an impressively productive and diverse group of faculty with a wide array of expertise,” he said. “I want to capitalize on those existing strengths as well as explore new horizons that are important to the people of the state of Florida and beyond.”

A hearty “Welcome Aboard, Red!” from the faculty, staff and students of the Fisheries and Aquatic Sciences Program.

Faculty Awards

Peter Frederick and fellow UF/IFAS researchers, Bill Pine and Leslie Sturmer, were awarded up to $8.3 million from the National Fish and Wildlife Foundation’s Gulf Environmental Benefit Fund to restore shrinking oyster reefs off Florida’s Big Bend coastline.

In less than 30 years, 3,000-year-old oyster reefs have declined by 88 percent, according to the researchers. For residents who depend on the fishing grounds and other coastal resources protected by these reefs, it’s a worrying trend. The project will help coastal ecosystems — and economies — become more resilient in the face of climate change and rising tides.

“This grant is one more way UF/IFAS can help foster sustainable communities and ecosystems on the Nature Coast,” said Jack Payne, senior vice president for agriculture and natural resources. “This work also dovetails with efforts by our state and local partners to conserve land and water resources in our coastal areas,” he said.
New Faculty

Vincent Lecours has a multidisciplinary background that bridges geomatics and ecology. His research program focuses on improving the extraction of valid and relevant information from the marine environment through the use of geospatial technologies. He seeks to better integrate spatial concepts and methods in applications like habitat mapping and environmental characterization.

Will Patterson’s areas of research include population dynamics, trophic dynamics, and population structure of marine fishes. His interests include how populations are structured in space and time and in describing factors that affect population dynamics and demographics, as well as population connectivity. Many questions he works on have direct implications for fisheries management. However, the techniques developed or employed to examine these questions in exploited species also have been applied to non-exploited species to gain greater insight into the ecology of the systems in which he and his team work.

Student Awards

Erangi Heenkenda, a Fulbright scholar from Sri Lanka who is completing her Master in Fisheries and Aquatic Sciences (Huipeing Yang, advisor), received the Scarborough-Maud Fraser Award at the UF International Center’s 22nd Annual International Student Awards Ceremony. The award is given annually to an international graduate student in good academic standing who exhibits outstanding service/contributions to their department, UF and the broader community. Erangi also received an Outstanding Achievement Award at the same ceremony for her dedication to her studies and the school.

Joy Hazell, a doctoral student in the Fisheries and Aquatic Sciences Program (Kai Lorenzen and Jennifer Brewer, co-advisors) was awarded a Fulbright U.S. Student Program grant to Dominica from the U.S. Department of State and the J. William Fulbright Foreign Scholarship Board. Joy has been a Florida Sea Grant Extension Agent for the past nine years with program concentrations in fisheries and natural resource conflict management. She is on a one year sabbatical to conduct her PhD research on property rights and institutional linkages in fishery governance of Dominican pelagic FAD fisheries.

Preyanan Sriwanayos, a PhD student in the College of Veterinary Medicine (Tom Waltzek and Jeff Hill, co-advisors), was honored with the International Merit Award for outstanding accomplishments.

Upcoming Events

GIS Workshop
May 1–4, 2017
This training provides novices with practical, hands-on instruction in the use of GIS using natural resource exercises.
For more info go to: https://goo.gl/JTD2yr

Summer and Fall Semester FAS Graduates

Doctor of Philosophy

Bryan Matthias
“The Effects of Environmental Variation, Density, Reproduction and Size-Selective Fishing Mortality on Fish Life History Traits”
Chair: Rob Ahrens

Clzharruddin Kamaruddin
“Fishing Motivations, Catch Attitudes and Livelihoods of Pier Anglers in Florida”
Chair: Kai Lorenzen

Master of Science

Fernando Betancourt Noriega
“A Comparative Analysis of the Spatial and Temporal Distributions of Bottlenose Dolphin (Tursiops truncatus) and Recreational Boating in Sarasota Bay, Florida”
Chair: Bob Swett

Isaac Lee
“Natural Spawning and Larval Development of Three Atlantic Marine Ornamental Fishes and Prey Preferences of Larval Marine Fish Utilizing Fluorescent Microspheres”
Chair: Cortney Ohs

Andrew Schaefer
“Discard Mortality of Black Crappie in Florida”
Chair: Mike Allen

Summer
Meghan Marie Fellner
Evan B. Hill
Courtney Stachowiak

Fall
Katie Anderson
Gabriela Canas
Megan Di-Lernia
Christina Guevara
Erica Rudolph
Christopher Runyan
Recent Publications By Our Faculty


