the Shellcracker

FLORIDA CHAPTER OF THE AMERICAN FISHERIES SOCIETY

http://www.sdafs.org/flafs

January 2019

President's Message:

New Year's Resolution: Let's Do What We Can To Give Back

Being a member of the Florida Chapter of the American Fisheries Society has definitely helped me professionally and personally throughout my career. It is amazing the connections that can be made by attending and participating in annual meetings. I definitely have quite a list of entertaining memories from these meetings and the associated bonfires. Like many of you, I always look forward to the annual meeting each year and whatever new work connections or memories it may bring. As the professional society for our line of work, it is important that we attend these annual meetings and continue to push fisheries science forward and improve the communication of this science and why it is important. I hope though that we all realize that being a chapter member of a fisheries society means more than just participating in the annual meeting.

In order to something to benefit the state we all work in, we put together a committee to come up with an idea for an annual project which members of the chapter could participate in and give something back. The committee has decided that an annual trash cleanup on some of our aquatic resources around the state would be a great way for the chapter to help out. The idea will be that various chapter members around the state will host cleanups in their area. This will help spread the effort out and allow for more people to participate as it would be very difficult to get everyone together in one place. Our first cleanup events will be held in March of 2019 before the next chapter meeting. All the regional cleanups may not be on the same date, but all will be in March. Following this year, we plan on moving the cleanup events to September to tie in with the International Coastal Cleanup Day and all the events associated with it. We did not want to wait that long to begin though. More information and advertisements will be coming along shortly as to dates and specific locations. Please try to help out with one of these events and spread the word to anyone that may be interested in helping out.

The following is a list of who has volunteered to host a cleanup event, what part of the state it will be located, and their contact info:

Angela Collins and Allison Durland Donahou– **Tampa Bay Area,** abcollins@ufl.edu and adurland@ufl.edu

Beth Bowers – **Southeast Florida,** mebowers5@gmail.com

Amy Brownfield – **Northeast Florida,** brownfieldamy@yahoo.com

Nick Trippel – **Central Florida,** nick.trippel@myfwc.com

Meghann Bryant and Sherry Carpenter -**Panhandle,** Meghann.Bryant@myfwc.com and sherry.carpernter@floridadep.gov

Please contact any of these folks if you would like to participate, or contact me if you are interested in hosting a cleanup event in your area.

Hope everyone has a great 2019!

Sincerely,
Nick Trippel
Florida Chapter President

Getting in Touch

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Florida Atlantic University
Email: mebowers5@gmail.com

University Liaison
Lauren Kircher
Florida Atlantic University
Email: lkircher2015@fau.edu

Upcoming Events

January 24–27, 2019: Southern Division- American Fisheries Society meeting. Galveston Island, Texas.

March 1, 2019: Chapter Award nomination deadline.

April 3–5, 2019: Florida Chapter Annual Meeting Haines City, Florida.

Sept 29–Oct 3, 2019: National AFS & TWS Joint meeting.

Interested in contributing something to the Shellcracker?

Email: Scott Bisping at *Scott.Bisping@myfwc.com* with any articles or information that you would like to be included in the next issue. The deadline for the next issue is March 15, 2019, so start fishing...

Feature Article

A Brief Glimpse into the Reproductive Biology of Florida Fishes

Contributions by Kevin Kroll (University of Florida), Carole Neidig (Mote Marine Lab), Lynne Parenti (Smithsonian Institution), Wes Porak (FWRI retired), Mari Carmen Uribe (Autonomous National University of Mexico), Jan Landsberg (FWRI), and Cheree Steward (FWRI)

Our collective knowledge of fisheries biology is constructed from small building blocks of information that are provided by research across many scientific disciplines. Dr. Harry J. Grier, a scientist and mentor to many, studied the reproductive biology of fishes in Florida, as well as other parts of the world. This Feature Article provides a brief overview of some of Harry's findings from research on two of Florida's iconic sportfish: Common Snook and Florida Bass. Harry also collaborated with a close colleague at the Smithsonian Institution, which allowed him to study fish species from around the world. A few citations are provided to direct readers to papers highlighted in this article.

Harry Grier dedicated much of his time at the Fish and Wildlife Research Institute (FWRI) working in collaboration with Mote Marine Laboratory scientists to further knowledge on the reproductive biology of Common Snook, *Centropomus undecimalis*, for application in improving production for stock enhancement. His leadership led to many notable contributions, including assessing reproductive condition in captive and wild Common Snook stocks, developing "Adaptable Oocyte Staging" techniques (Rhody, Neidig, Grier, et. al. [2013]), understanding the development and fate of the postovulatory follicle complex, postovulatory follicle, folliculogenesis (Grier, Neidig, & Quagio-Grassiotto, I. [2017]), ovarian germinal epithelium and folliculogenesis (Grier, 2000), and oocyte atresia. Harry selflessly engaged and shared his passion for discovery with all who worked along-side him, enriching each of our lives.

Harry initiated studies of Florida Bass *Micropterus floridanus,* collaborating with FWRI freshwater biologists and colleagues at the University of Florida. This collaborative research yielded the first of its kind molecular, hormonal, and histological documentation of the complete reproductive cycle. Two publications from this research summarized hormonal gene changes in the pituitary and ovary of female Florida Bass throughout an entire reproductive cycle (Martyniuk et al. 2009 and Dominguez et al. 2012). These data are critical to discern between normal vs perturbed gene pathways in bass exposed to pollutants. Harry also described morphological changes in oocytes and eggs of Florida Bass during various stages of pre- and post-ovulatory development using his staging schema that is based on mitosis and meiosis (Grier et al. 2018). During this study, Harry captured a *one-in-a-million* micrograph of histology that illustrates the failed attempt of sperm to enter a fertilized egg after the orifice of the micropyle was blocked because of cortical alveoli release (see Figure 1).

Harry Grier was introduced to museum science in the 1960s by Donn E. Rosen, Curator of Ichthyology, at the American Museum of Natural History. Rosen was also the major professor of Lynne Parenti. Harry and Lynne, who, like Rosen, were native New Yorkers, began their collaboration in the late 1980s exploring the use of preserved, archival museum specimens [primarily at the Smithsonian Institution] to study fish reproductive biology and its application to fish systematics. Harry's standards were high. Results of this collaboration were published in a series of papers, in particular Parenti & Grier (2004), all illustrated richly with photographic plates of fine detail and scientific import. Harry's scholarship was exemplary as he could see what others could not.

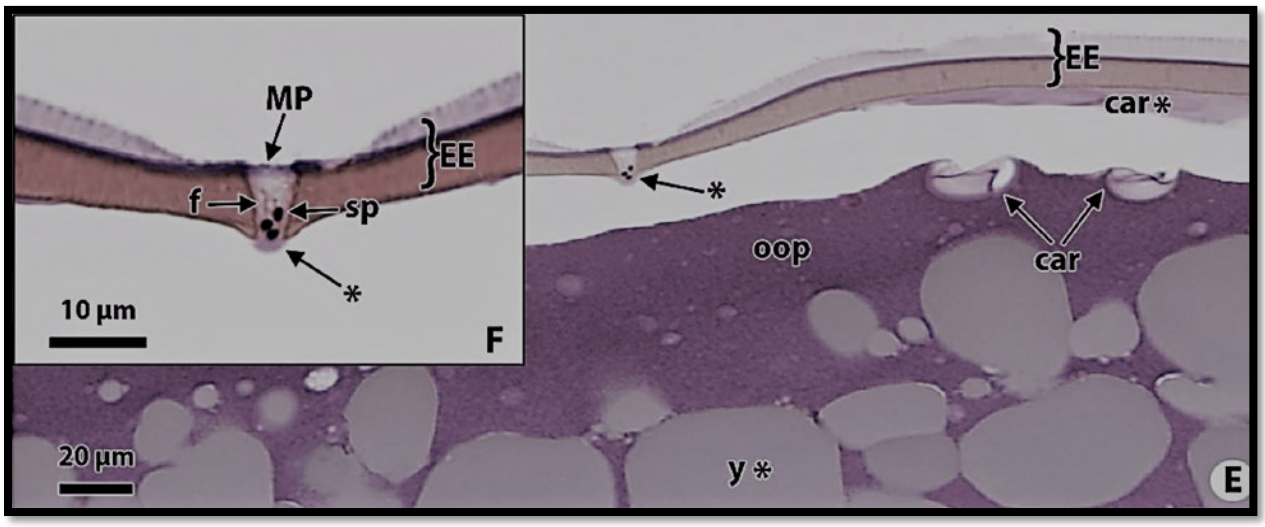


Figure 1. Histological section of a fertilized egg (**E**) of *Micropterus floridanus* illustrates the animal pole egg surface 1.5 minutes after activated sperm were poured onto swirled eggs. Cortical alveoli are still being released (**car**) from the fertilized egg at the animal pole; the released contents (**car***) have accumulated beneath an egg envelope (**EE**). Animal pole ooplasm is labelled **oop**. Enlargement of the egg envelope (**F:** upper left corner) to illustrate the micropyle (**MP**) with three sperm (**sp**) that are blocked from passing through the orifice of the micropyle by cortical alveoli release (arrow, asterisk). Note that sperm flagella (**f**) are visible in this enlarged photographic plate.

Literature Cited

Dominguez,G.A., J.M. Quattro, N.D. Denslow, K.J. Kroll, M.S. Prucha, W.F. Porak, H.J. Grier, and T.L. Sabo-Attwood. 2012. Identification and Transcriptional Modulation of the Largemouth Bass, *Micropterus salmoides*, Vitellogenin Receptor During Oocyte Development by Insulin and Sex Steroids. Biology of Reproduction, 87(3):67, 1–12.

Grier, H.J., W. F. Porak, J. Carroll, and L.R. Parenti. 2018. Oocyte Development and Staging in the Florida Bass, *Micropterus floridanus* (LeSueur, 1822), with Comments on the Evolution of Pelagic and Demersal Eggs in Bony Fishes, Copeia 106(2):329-345.

Grier, H.J. 2000. Ovarian germinal epithelium and folliculogenesis in the common snook, *Centropomus undecimalis* (Teleostei: Centropomidae). Journal of Morphology, 243(3):265.

Grier, H.J., Neidig, C. L., Quagio-Grassiotto, I. 2017. Development and fate of the postovulatory follicle complex, postovulatory follicle, and observations on folliculogenesis and oocyte atresia in ovulated common snook, *Centropomus undecimalis* (Block, 1792). Journal of Morphology, 1-16.doi: 10.1002/jmor.20652.

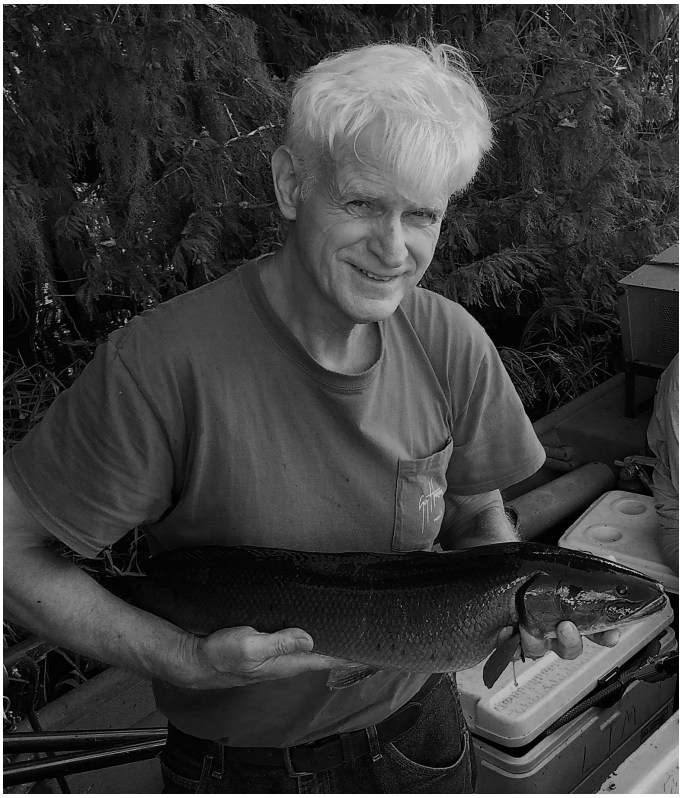
Martyniuk, C.J., K.J. Kroll, W.F. Porak, C. Steward, H.J. Grier, and N.D. Denslow. 2009. Seasonal relationship between gonadotropin, growth hormone, and estrogen receptor mRNA expression in the pituitary gland of largemouth bass. General and Comparative Endocrinology, 163 (2009) 306–317

Parenti, L. R. & H. J. Grier. 2004. Evolution and phylogeny of gonad morphology in bony fishes. Integrative and Comparative Biology, 44(5):333-348.

Rhody, N. R., C.L. Neidig, H.J. Grier, K.L. Main, H. Migaud. 2013. Assessing Reproductive Condition in Captive and Wild Common Snook Stocks: A Comparison between the Wet Mount Technique and Histological Preparations. Transactions of the American Fisheries Society, 2013 142(4):979-988.

Feature Article

Remembering Harry Grier



The fisheries world lost a valuable colleague last summer. Dr. Harry Grier was an expert in the reproductive biology of fishes, and a research scientist with the Florida Fish and Wildlife Research Institute (FWRI) for more than 30 years before passing away in July. Harry brought his colorful, unique, and gregarious personality to work each day. Those who knew Harry well appreciated that he was a sensitive, caring, and giving person. He would make the rounds to visit coworkers to simply talk about life. Humor was an integral part of these discussions, and the conversations frequently morphed into one of Harry's impromptu lectures about the stages or staging of fish gonads

Harry's life and career were dedicated to learning about the secrets of fish reproduction; his contributions to the science are recognized worldwide. When he was in the field collecting fish, it was difficult to keep him on task because every species offered new and fascinating possibilities for information about fish reproduction. After Harry left his work at the institute each day, he frequently spent evenings and weekends caring for fish in his personal aquaculture facility. When he wasn't caring for fish there, Harry was studying histology or working on manuscripts. Harry's dedication and attention to detail were impressive. One of his closest colleagues once said, "Harry made me a better scientist"; a sentiment shared by others.

Not only was Harry a groundbreaking scientist in his field of study, but he was also a superb photographer who enhanced the quality of his scientific publications with photographic plates of fine detail and scientific import. As the informal, resident photographer at FWRI, Harry captured natural human moments when people were unaware of his presence. He took hundreds of photographs at various FWRI functions and activities, both work and play. Harry will be deeply missed as a scientist, a photographer, and a genuinely unique and pleasant human being.

39th Annual Meeting of the Florida Chapter American Fisheries Society

April 3-5, 2019
Florida FFA Leadership Training Center

We invite you to submit abstracts for the 2019 annual meeting of the Florida Chapter of the American Fisheries Society. The meeting will take place April 3–5, 2019 at the Florida FFA Leadership Training Center, located in Haines City, on the shore of Lake Pierce. We hope you can join us!

The meeting will consist of both invited and contributed oral presentations and posters. The 2019 symposium is titled **'Technology-the Catch in Fisheries'**.

Technology is the big game changer. The shift from analog to digital and wired to wireless has changed how we do our jobs, how we spend leisure time, how we communicate with peers and family, how we manage our lives. Fisheries, both freshwater and marine, are no exception. While still using boats, hook & line, and nets as the main tools of harvesting, most fisheries have been transformed by advances in communication, precision navigating, detection and characterization of both fish and seabed, and even boating itself. Fishery managers depend on fishery scientists to provide the best available data to make good informed decisions**.** Hopefully the technology for harvesting is not outstripping the resource faster than fishery scientists can detect it. The resource pie is still the same but there are many, many more players and they want bigger slices to justify the cost of their new technological marvels. Agencies and institutions both public and private are now cultivating stakeholders in preparation for organized challenges to normal management strategies. Are fishery scientists keeping up? This symposium is your chance to present cutting edge ideas and tools that can be used to successfully navigate some stormy high waters.

We strongly encourage submissions for the symposium, but will also accept submissions outside the scope of the symposium topic. Therefore, in your abstract submission please specify if you would like your presentation to be part of the symposium.

Deadline for abstract submission and early registration: **Friday, February 22, 2019.**

Meeting details
The 2019 meeting will be held at the Florida FFA Leadership Training Center, 5000 Firetower Road, Haines City. Maps and directions will be available in the next issue of the Shellcracker or can be found on the Florida FFA Leadership Training Website at www.flaltc.org.

The meeting's schedule of events will be similar to past meetings. We will begin in the afternoon on Wednesday, April 3rd with the presentation of contributed papers. The poster session will take place following dinner on Wednesday evening. The **'Technology-the Catch in Fisheries'** symposium will start on Thursday morning. The business meeting and raffle will follow dinner on Thursday night. We will hear more contributed papers on Friday morning, followed by lunch and the presentation of awards immediately following lunch.

Registration, Lodging, Meals, and Chapter Dues
Early registration deadline is **Friday, February 22, 2019.** The cost for early full registration is $60.00. The cost for full registration after Friday, February 22, 2019 is $80.00. **We strongly encourage folks to register early because the venue needs estimates for meals and rooms several weeks in advance.** If you are staying at the FFA Leadership Training Center for this year's meeting, the cost for full meals and lodging is $272.00. Costs of meals and lodging are higher for this year's meeting than they were in past years because the amenities offered at the FFA Leadership Training Center will be much better and gratuity is built into the cost. The full cost of meals and lodging is still cheap compared to most meetings. Linens will be provided including pillows, towels, and sheets.

For your convenience, **all registrations will be made online at** https://FLAFS.regfox.com/florida-chapter-of-the-american-fisheries-society-2019-39th-annual-meetin

This link to the registration website will also be made available on our chapter's website at https://units.fisheries.org/fl/. **There will be no mail-in registration forms this year, however, you can still mail a check for your meeting costs.**

If you can't attend the meeting, we have a link on the chapter's website (https://units.fisheries.org/fl/chapter-dues/) where you can pay your $10 annual dues electronically, or you can still mail a check for $10 to the Secretary/Treasurer made payable to Florida Chapter AFS.

Opportunities for student support
As in previous years, student travel awards will be available for the annual meeting. Master's and doctoral students are also eligible for the Roger Rottmann Memorial Scholarship, for which the recipient(s) will be announced at the annual meeting. More information and the application materials are available on the chapter's website at https://units.fisheries.org/fl/awards-and-scholarships/.

2019 Student Raffle
We need your help to make this meeting's raffle a great one. If you are interested in helping or donating items please email Amanda Croteau (acroteau@ufl.edu) or Chelsey Crandall (kicksea@ufl.edu) Remember all proceeds fund our student travel grants for the following year's meeting. Please contact us to get involved!

We look forward to seeing everyone in Haines City for our 2019 annual meeting!

Thanks,
Bob Heagey

DRAFT PROGRAM SCHEDULE

39th Annual Meeting of the Florida Chapter of the American Fisheries Society

April 3-5, 2019
FFA Leadership Training Center, Haines City, Florida

Wednesday, April 3rd

11:00am – 6:00pm	Registration
1:00pm – 5:00pm	Contributed Papers
5:00pm – 7:00pm	Poster Setup
6:00pm – 7:00pm	Dinner
7:00pm – 8:00pm	Formal Poster Session…Followed by Bonfire Social

Thursday, April 4th

7:30am – 8:30am	Breakfast
7:30am – 6:00pm	Registration
8:30am – 11:30am	Symposium: Technology-the Catch in Fisheries
11:30am – 1:30pm	Lunch
1:30pm – 5:00pm	Symposium: Technology-the Catch in Fisheries
5:00pm – 6:00pm	Student Subunit Meeting
6:00pm – 7:00pm	Dinner
7:00pm – 8:00pm	Chapter Business Meeting and Award Presentations Student Awards: Travel and Roger Rottman Scholarship Professional Awards: Rich Cailteux Award Followed by the Raffle, Auction, and Bonfire Social

Friday, April 5th

7:30am – 8:30am	Breakfast
7:30am – 9:00am	Registration
8:30am – 8:40am	Announcements
8:40am – 12:00pm	Contributed Papers
12:00pm – 1-00pm	Lunch and Awards Presentation Best Papers/Best Posters Power Tie Lampshade Award

2nd Call for Oral & Poster Presentations!

Abstract Submission

Please submit your abstract as a MS Word document to bob.heagey@myfwc.com. Please follow these instructions for submission:

In the email subject line, please enter FLAFS 2019: followed by the author names in your abstract (e.g., FLAFS2019 SmithTaylorRosen)

Use the same name for the abstract file, e.g., FLAFS2019 SmithTaylorRosen.doc
Please include the associated information requested above with the abstract

Abstract format

Abstract *word limit is 300 words* and should include the following information:

Presenter: Williams, Brian
Email: BrianWilliams@FloridaFish.net
Author(s): Williams, B.[1], K. Rowley[1], and P. George[2]
[1]Affiliation with address.
[2]Affiliation with address.

Title: Recommendations for New Limits on Some of Florida's Most Targeted Fish Species

Abstract: 300 word maximum

Student Presentation: No or Yes (work presented was completed while a student)

Presentation type: Oral or Poster

Would you like to be considered for the symposium? Yes or No

Are you willing to be a moderator? Yes or No

Are you willing to be a judge? Yes or No If so, oral presentation or poster?

Presentation details

Speakers will be given 20 minutes for talks (15 minutes for presentations and 5 minutes for questions and/or discussion). We will have PowerPoint on a laptop capable of accepting your presentation on a flash drive or other device.

All posters will be presented on *Wednesday evening, April 3rd*, and can be left up for the entire meeting. Posters should be no larger than 150 X 100 cm (60" X 40"), but they can be set up either as portrait or landscape format on an easel.

If you require other options for projection or poster formats, please contact the annual meeting's Program Chair, Bob Heagey, bob.heagey@myfwc.com.

Award Nominations

The Florida Chapter American Fisheries Society is seeking nominations for the Outstanding Achievement and Rich Cailteux Awards. Our membership is full of dedicated professionals, and it's time to recognize their efforts. Please review the award criteria below and send nominations to Eric Nagid (eric.nagid@myfwc.com) by **March 1st, 2019**. Applications should be limited to one page, but descriptive enough to convey why the individual is deserving of the award.

Outstanding Achievement Award

The purpose of the Outstanding Achievement Award is to recognize individuals for singular accomplishments and contributions to fisheries, aquatic sciences, and the Florida Chapter. The award aims to honor individuals for distinct contributions to the fisheries profession and enhancing the visibility of the Chapter. The Outstanding Achievement Award is the highest honor Florida AFS may bestow upon an individual member or collaborating group.
Candidates will be evaluated according to the following criteria:

- Original techniques or research methodology
- Original ideas, viewpoints, or data which contributed to fisheries management or our understanding of aquatic resources
- Important ecological discoveries
- An original fishery research or management program of statewide importance
- Activities in public education and outreach that have statewide impacts

Rich Cailteux Award

The purpose of the Rich Cailteux Award is to recognize individuals who have maintained a long-term commitment to research, management, and/or conservation of Florida fisheries and aquatic re-sources. This award aims to honor individuals for their career contributions to the fisheries profession and enhancing the visibility of the Florida Chapter.
Candidates will be evaluated according to the following criteria:

- A minimum of 20 years spent in a fisheries related field in Florida
- Substantial career contributions to Florida aquatic resources and the fisheries profession
- An imaginative and successful program in fisheries and aquatic sciences education
- A history of mentoring young fisheries professionals, and involvement and leadership with the Florida Chapter of the American Fisheries Society

Florida Chapter of the American Fisheries Society

2019 Annual Meeting Registration Information

Florida FFA Leadership Training Center
April 3-5, 2019

All registrations will be made online:
https://FLAFS.regfox.com/florida-chapter-of-the-american-fisheries-society-2019-39th-annual-meetin

Payments for registration, meals, lodging, and chapter dues prior to the meeting will be made online via credit card or by mailing a check to the address listed on the registration website.

EARLY-REGISTRATION: registration paid online or check postmarked by Friday, February 22, 2019
$50.00 One-day Registration $60.00 Full Registration

LATE-REGISTRATION: registration paid online or check postmarked after Friday, February 22, 2019
$60.00 One-day Registration $80.00 Full Registration

Meals and Lodging (lodging price based on double occupancy rooms)

Wednesday, April 3, 2019	Thursday, April 4, 2019	Friday, April 5, 2019
No Lunch This Year	$6.00 Breakfast	$6.00 Breakfast
$19.00 Dinner	$11.00 Lunch	$11.00 Lunch
$100.00 Lodging	$19.00 Dinner	
	$100.00 Lodging	

Full Meals and Lodging $272.00
Linens (provided)

Florida Chapter dues (calendar year 2019) $10.00

Registrations will still be accepted at the meeting, but with a late registration fee.
We can accept VISA, MASTERCARD, AMEX, DISCOVER, cash, or check at the meeting.**

Note: This is a buffet-style service and food must be ordered one week in advance.
Since meals are pre-paid, **please** submit your registration online as soon as possible.

**FWC employee's may only use a state-issued P-Card to pay for the cost of registration and lodging.
However, it is recommended to pay for all meeting costs with personal funds and seek reimbursement.

Driving Directions to the FFA Leadership Training Center 5000 Firetower Road, Haines City, FL

From the North:

Take I-4 to Highway 27 South. Travel south approximately 12 miles to Highway 544, turn left (east). Continue east to Route 17 (1st stop light), turn right (south), go 3 miles. Turn left (east) on Highway 542 - Lake Hatchineha Rd. (look for a green "FFA Training Center" sign) go 8 miles. Watch for the next green sign on the right on Highway 542 - Lake Hatchineha Rd., turn right on Firetower Rd. Travel 4.5 miles to FFA Leadership Training Center.

From the Northwest:

Travel south on I-75 to the Florida Turnpike. Exit turnpike at US Highway 27, go south. Travel south approximately 35 miles to Highway 544, turn left (east). Continue east to Route 17 (1st stop light), turn right (south), go 3 miles. Turn left (east) on Highway 542 - Lake Hatchineha Rd. then go 8 miles. After green "FFA Training Center" sign on right on Highway 542 - Lake Hatchineha Rd., go 8 miles and turn right on Firetower Rd. Travel 4.5 miles to FFA Leadership Training Center.

From the Southeast:

Take the Turnpike or I-95 to State Road 60. Travel west on Highway 60 to U.S. Highway 27, turn right (north). Travel north on U.S. Highway 27 to Dundee (Approx. 9 miles). Turn right at the stop light in Dundee onto Highway 542. Travel east to the first stop light, turn left on Route 17. Travel north for 1.25 miles to Lake Hatchineha Rd. (Highway 542), turn right. After green "FFA Training Center" sign on right on Highway 542 - Lake Hatchineha Rd., go 8 miles and turn right on Firetower Rd. Travel 4.5 miles to FFA Leadership Training Center.

From the Southwest:

Take I-75 to State Road 60 East to U.S. Highway 27. Travel east on Highway 60 to U.S. Highway 27, turn left (north). Travel north on U.S. Highway 27 to Dundee (Approx. 9 miles). Turn right at the stop light in Dundee onto Highway 542. Travel east to the first stop light, turn left on Route 17. Travel north for 1.25 miles to Lake Hatchineha Rd. (Highway 542), turn right. After green "FFA Training Center" sign on right on Highway 542 - Lake Hatchineha Rd., go 8 miles and turn right on Firetower Rd. Travel 4.5 miles to FFA Leadership Training Center.

Student Subunit Update

Travel Grant Opportunity

The Florida Chapter of the American Fisheries Society – Student Sub-unit is proud to announce a travel grant opportunity for students to attend the Southern Division American Fisheries Society meeting in January 2019 in Galveston, Texas. Two merit-based travel grants will be made available in the amount of $200 per recipient. These funds are intended to help defer the costs associated with meeting attendance and encourage participation at the divisional level of the American Fisheries Society.

In order to be eligible to receive the travel grant, students must be registered members of the Florida Chapter of the American Fisheries Society and be either a graduate student advanced in the pursuit of their degree or a 'new contributor' to fisheries science (undergraduates or 1st or 2nd year graduate students) at a university or college in the state of Florida. The following application packet needs to be completed and submitted by 5pm, January 4th for consideration. Applications should be sent directly to: flafsstudent@gmail.com.

The application and additional information can be found here: FLAFS 2019 Southern Division Travel Grant Application https://flafsstudentsubunit.wordpress.com/travel-grant/

Sheepshead Shuffle

Be on the lookout for the 3rd Annual Sheepshead Shuffle Virtual 5K. This event raises funds for the Florida Chapter of the American Fisheries Society Student Subunit and promotes awareness of World Oceans Day! Funds raised by this event will fund 2 travel awards to send students to the 149th Annual Meeting of the American Fisheries Society in Reno, Nevada.

Get Involved

Are you a student interested in promoting your research or developing your science communication skills? Become a contributor to our blog Reefs to Rivers (https://flafsstudentsubunit.wordpress.com) or have your research featured on our Instagram (Instagram.com/flafsstudent).

Contact us at flafsstudent@gmail.com for information on how you can get involved. Don't forget to follow our blog, Instagram, and Facebook (Facebook.com/AmericanFisheriesSocietyFlStudentChapter)

Do you use Amazon? By shopping with our Amazon Smile account, https://smile.amazon.com/ch/52-1208319, Amazon donates to FLAFS. Funds go to support student travel awards. Sign up today!

Student Research Highlight

Differences in life history traits between domesticated and wild African Clawed Frogs *Xenopus laevis* with invasion implications

Allison Durland Donahou
PhD Student
University of Florida Tropical Aquaculture Laboratory

Domestication can alter life history traits due to the relaxation of environmental pressures, such as food scarcity and predation (Thorpe 2004). The goals of culturing an organism for profit can lead to altered life history traits – selection for the largest, most fecund, fastest growing individuals can alter reproductive output and growth (Doyle 1983). The goal of this research is to evaluate the tradeoffs that have occurred due to domestication in the African Clawed Frog *Xenopus laevis* (Figure 1). This species was selected because it was historically cultured for use in pregnancy testing and as a model organism for research laboratories

Figure 1. Wild (top) and domesticated (bottom) Xenopus laevis spawning pairs.

Figure 2. Allison Durland Donahou injecting chorionic gonadotropin into a wild female Xenopus laevis.

(Gurdon and Hopwood 2000). It has a relatively young age at maturity for vertebrates, as well as high fecundity and is easily reared in captivity. Additionally, this species is a recent invader to Florida. While *X. laevis* has invaded all over the world, a reproducing population was not discovered in Florida until 2016 (Hill et al. 2017). This species is native to South Africa, but has been shipped around the world since the 1930s (Van Sittert and Measey 2016).

The first two studies of this larger research project analyzed the differences in reproductive output and growth between wild and domesticated *X. laevis*. Domesticated broodstock of *X. laevis* were obtained from a local Florida breeder and wild broodstock were collected directly from the native range in South Africa. These broodstock were induced to spawn using chorionic gonadotropin and a change in water temperature (Figure 2).

Tadpoles from these spawns were combined into one group (wild and domestic separately) and then used to examine growth (Figure 3). Preliminary results indicated that there was no difference in relative fecundity between domesticated and wild *X. laevis*. However, the average egg size was significantly larger for wild than for domesticated *X. laevis*. This indicates that the reproductive output by number of eggs of domesticated and wild *X. laevis* may be the same, but larger egg size indicates a competitive advantage of wild offspring survival in the natural environment. Wild tadpoles grew faster than domesticated tadpoles under the same conditions. Domestication does not seem to have affected the reproductive output of *X. laevis*, but faster growth combined with potentially higher egg quality indicates that domestication has reduced the fitness of *X. laevis* tadpoles. This is important to understand, as this species is a new invader in Florida and the effects of its invasion are yet to be determined.

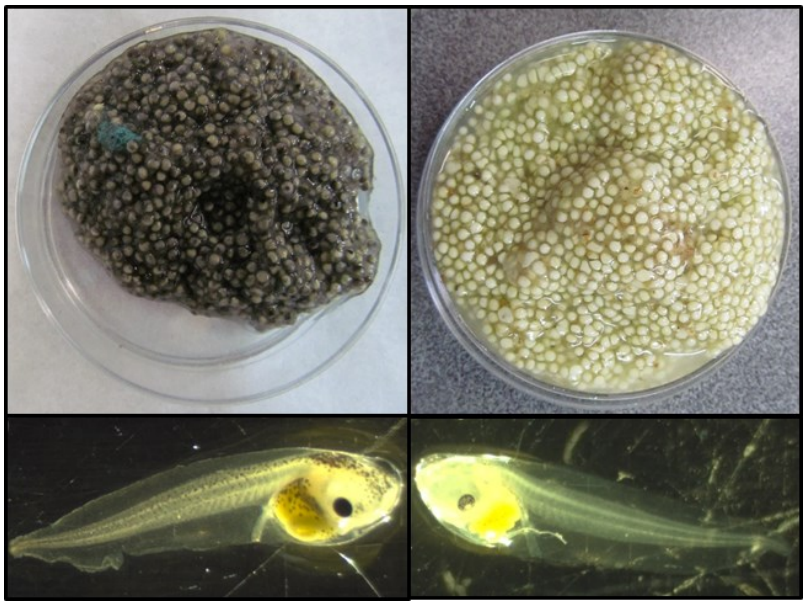


Figure 3. Wild (top left) and domesticated (top right) Xenopus laevis eggs. Wild (bottom left) and domesticated (bottom right) Xenopus laevis tadpoles (3 dph).

This research is ongoing and is part of a larger study assessing life history tradeoffs of three groups: plants, amphibians, and fish. Other studies to be conducted on *X. laevis* include anti-predator behavior, predator evasion, and recruitment in a simulated Florida environment. The overall goal is to gain insight into the life history tradeoffs due to domestication and how these may affect the invasiveness of the species in Florida.

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