the shell-cracker Florida chapter of the American Fisheries society



President's Message: The Life History Stages of Graduate School

Working with graduate students is the most fun part of my job at UF, because the advisor watches a transformation! Although no two graduate students are alike, there are stages that almost all students go through, and these stages have similarities. I believe that recognizing the stages involved in graduate school can help both the student and the advisor in working toward a successful thesis defense and graduation. So, here goes a batch of purely personal observations, referring mainly to Master's-level students.

Stage I - Larval Naivety

An incoming graduate student usually goes through a brief period of relaxation. This is because they often join the group and participate in field work, but don't yet have the rigors of coursework. They recently finished their undergraduate degree and need a bit of a breather, and hey, field and lab work is fun! They enjoy being free of classes and begin asking some questions, but really don't apply themselves outside of a normal workday. As their specific project comes into focus through discussions with the advisor, they are asked to write a proposal. Seems easy enough, and the student has confidence that the proposal will be no problem. "It can probably be done in a week, maybe two." The summer of field and lab work on other projects has been fun!

Stage II - Early Juvenile - Look Out: there are Predators!

Our juvenile graduate student obtains some example proposals from other students and begins to read the literature on their thesis topic. Classes begin, field work continues. Their initial search of the literature reveals nearly 200 published papers related to their study. They are overwhelmed, with confidence shaken. They turn in their proposal and, in response, find comments perceived as harsh and requests for more detail and more literature. Their proposal is eventually finished after 3-4 revisions, with the major advisor attempting to focus their ideas and clarify their writing, as a means of torture. A committee meeting is held, and to their surprise, they leave the meeting alive (but not well). They are requested to expand their literature to other fields such as wildlife studies, zoology, etc. To the student, it seems that challenges are ahead, but I actually believe that this is the "critical period." Surviving this stage means the probability of success is high! The thesis study design and sampling plan have been completed.

Stage III - Age I -- Past the Bottleneck

The graduate student begins their project, conducting field work and lab analysis, entering data into spreadsheets, taking courses. This is the "meat and potatoes" of graduate school, and their attitude and confidence begin to improve. They develop a strong sense of ownership in their project and begin working independently, making decisions on their own, reading literature, etc. They learn that field studies aren't perfect, and there are problems to solve and challenges they didn't foresee initially. They begin to mentor new students and direct lab technicians to help with data processing. They are maturing and their project has been challenging, but they've made decisions that worked out just fine. This data-collection oriented stage is probably the most fun part of the journey.

Stage IV - Reaching Maturity

As data collection winds down, they begin analyzing their data and writing. Statistical analysis of their data is much different than coursework, and the field-oriented project requires analyses that can be found in no textbooks. The maturing student spends hours working on the computer doing correlations, plots, looking for outliers. They begin writing and send in some





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President's Message...Cont'd

chapters for inspection. Their writing is better now and the comments a bit less harsh. They are surprised to find that each analysis will be repeated and changed as they navigate the sea of ideas dancing in their head. The student gives a presentation at the Florida Chapter AFS Meeting, which creates a period of stress followed by relief and better confidence when it is done. They are working tirelessly on their thesis and have become a recluse to friends and family away from work. Over a period of months, their thesis takes shape as a complete document.

Stage V - Maturity - Well Almost

The thesis goes out to the committee, and the thesis defense is approached with a sense of caution. Their confidence again takes a slight downturn, and they ask everyone with an opinion about the looming meeting. They review course materials and prepare for the day. In most cases, the defense is unlike what they expected because the questions are more general, the topics covered range more widely, and the atmosphere of the defense is good natured. The student worries about it greatly, but their prior work ethic has all but insured the outcome. They pass, they make final corrections, they are done!

Stage VI -- Adulthood

The graduate student has become a colleague. After working together closely for about two years, we know each other very well. The student and advisor can anticipate each other's reactions to problems. The former student now serves as a sounding board for proposal ideas, personnel hiring in the lab, and working on manuscripts (sometimes even unrelated to their thesis). The advisor wishes he or she could keep them around forever, because they are a true friend and valuable working partner. As expected, all good things must come to an end, and they find a job and leave for greener pastures and better pay. The student and advisor have built a lifetime bond because of the journey, and it's a unique one for each student!

Watching and steering this process is exciting, and challenging, for both the student and the advisor. A mutual understanding of these life stages of graduate school can help along the way, because the student and adviser should know what to expect, and what not to expect, during each stage of the process. As I said, it is the most fun part of my job!

Author note: sometimes, as in this past June 12th, two of the advisor's students move into the state fish and wildlife agency (FWC), and then they get married! Congratulations Tim and Kim Bonvechio, you guys are the best!

Mike Allen, FAFS President Uncovering the Slimy Truth about American Eel Anguilla rostrata

Kimberly Bonvechio Biological Scientist III Florida Fish and Wildlife Conservation Commission Eustis Fisheries Research Lab

American eels are found over a large latitudinal gradient in the Western Atlantic Ocean, and associated rivers and estuaries, from Greenland to the northern reaches of South America (Van Den Avyle 1984). They are considered catadromous as they spawn in the Sargasso Sea but spend most of their lives in estuarine or riverine systems where they grow and mature (Van Den Avyle 1984). Much of this species' life history, however, remains a mystery. Research has primarily focused on more northern populations, such as Virginia (e.g., Smogor et al. 1995; Goodwin and Angermeier 2003), Rhode Island (e.g., Oliveira 1997; Oliveira 1999), and Canada (e.g., Gray and Andrews 1971; Jessop 2000), rather than on southern populations such as Florida. The few studies on American eel in Florida's inland systems have primarily focused on artesian spring populations such as those found at Vortex Blue Springs (Holmes County) (Helfman 1986) and Peacock Springs (Suwannee County) (Streever 1992). The lack of information from southern populations is likely a product of the low value of the commercial eel fishery in these states. Reported landings of American eel in the United States have historically been concentrated in the central states, from New Jersey to North Carolina (80%), with only about 1% of landings reported for southern states from 1950 to 1999 (Casselman 2003).

Recent reports have raised concerns over the status of the American eel stock and have urged increased protection (Casselman 2003; Dekker et al.2003). Observed declines in the abundance and recruitment of this stock may be due to overfishing, habitat degradation, chemical contamination, and/or oceanographic changes (Castonguay et al. 1994). An exotic swim bladder nematode, *Anguillicola crassus*, has infected some U.S. populations; this parasite may affect eel behavior and even cause death (Barse and Secor 1999). Other factors in the decline may include mortality due to turbine operations of hydroelectric dams and the harvest of *Sargassum* weed from their breeding habitat (Casselman 2003). Due to its complex life history, it is extremely difficult to determine cause and effect between these factors and the observed declines. Furthermore, because it is a panmictic spawner (i.e., all individuals are considered one interbreeding stock), populations throughout its entire range must be monitored simultaneously using similar methods to determine what factors are most important and how best to protect the species.

In 1999, the Atlantic States Marine Fisheries Commission (ASMFC) developed a Fishery Management Plan for American eel, which is an interstate cooperative effort to protect and enhance the Atlantic stock of American eel in the United States, while providing for a sustainable harvest of the spe-



oung-of-year, or glass, eel collected at Guana River Dam in January 2004. cies. A total of fifteen Atlantic coastal states are involved in this effort, and each state agency is mandated to collect specific fishery-independent and -dependent data. As part of this requirement, Florida Fish and Wildlife Conservation Commission (FWC) and University of Florida (UF) personnel conduct routine monitoring of young-of-year eels at Guana River Dam (St. Johns County) and juvenile eels at Rodman Reservoir, or Kirkpatrick, Dam (Putnam County) from January to March of each year. Over an eight-week period in January and February, dip net sweep samples are collected twice every half hour during flood tide at the Guana River Dam site on four randomly selected nights each week. During February and March, lift nets are used to sample juvenile eels

twice per week at Rodman Reservoir Dam during randomly selected periods at night. In addition to obtaining catch-per-unit-effort data, length, weight, and pigmentation stage are recorded. These data have been collected since 2001 and, along with data from the other participating states, will be used in a coastwide_stock assessment scheduled for late 2005. Environmental parameters, such as conductivity, flow, and moon phase, are also recorded to determine what factors may be driving the inland migration and movement of this species.

There is a small commercial fishery for American eel in Florida, which operates almost exclusively in the St. Johns River system. Annual landings of American eel have been reported since the early 1980s, and commercial eel harvest has declined continuously since the early 1990s (Figure 1). To better understand the characteristics of the commercial catch, 50-lb. subsamples are purchased from known harvesters on the St. Johns River twice each winter. The length and weight of each individual in the subsample are measured, and the heads are preserved for future otolith extraction and age determination. Sex cannot be accurately determined by macroscopic



visual inspection, so histological samples of gonadal tissue are obtained and analyzed when possible.

Despite current efforts, there is still much to learn about American eel populations in Florida. Efforts are currently underway to increase this knowledge, but statewide cooperation among biologists and researchers and improved reporting methods are critical.

• Fisheries Independent Monitoring (FIM) data have been collected by the Fish and Wildlife Research Institute (FWRI) (formerly the Florida Marine Research Institute) since: 1989 in Charlotte Harbor and Tampa Bay, 1990 in Northern Indian River, 1996 in Cedar Key, 1997 in Appalachicola and Southern Indian River Lagoon, and 2001 in Jacksonville. Eels have been collected each year in the Jacksonville area, but only intermittently in all other areas of the state except for Cedar Key (Table 1). Intra-agency cooperation will allow for a better understanding of the distribution of larger eels that inhabit or migrate through brackish waters.

Field Lab	Year	Months	Total Number Caught
Appalachicola	1998	Oct.	1
	2001	June	1
Charlotte Harbor	1989	Oct.	1
Indian River	2003	Dec.	1
Jacksonville	2001	April/Oct./Dec.	6
	2002	Nov.	1
	2003	March/May/July	1
Tampa Bay	1989	March	1
	1990	Nov.	1
	1992	May/Sept./Oct.	3

• Observations from FWC inland biologists indicate eels are present throughout most regions of Florida, from canals in south Florida to river systems in the Panhandle region. Eels are most commonly observed or collected using electrofishing methods, and future efforts will be made to compile available data for inland waters.

• Currently, FWRI's Fisheries Dependent Monitoring (FDM) program does not have a species code for American eel. This species is included in the species grouping "eel", but attempts are being made to separate out American

eel from this group due to the ease in differentiating these from other eel species (J. O'Hop, personal communication). Another option being investigated is to combine inland and marine landings data into one program and incorporate them into a single database. This would streamline commercial landings data statewide, particularly for species like American eel that can be landed in both freshwater and marine systems.

• The ASMFC's American Eel Technical Committee has proposed an amendment to require all states to establish a permit system for any commercial harvest of American eel. Currently, in the state of Florida, only individuals that use horseshoe crabs as bait to harvest eels are required to have a permit. By requiring a harvest permit for all commercial eelers, we can improve landings data and gain a better understanding of this fishery in Florida.



personnel to sample juvenile, pigmented eels along the walls of Rodman Reservoir Dam.

There is great opportunity for collaboration among biologists and researchers in the state to study and increase our knowledge of American eel. For example, partnerships between university personnel and FWC researchers can be used to learn more about the life history of this species, information which is critical but nearly nonexistent for Florida waters. Although we are starting to uncover the mystery of the American eel, there is still a long road ahead. It will take a long-term commitment and statewide cooperation to learn about and preserve this fascinating species.

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Upcoming Events

August 1-5, 2004 - AFS Internation Congress on the Biology of Fishes, Manaus, Brazil.

August 21-26, 2004 - AFS 134th Annual Meeting: The Gathering: Leopold's Legacy for Fisheries, Madison, WI.

September 12-15, 2004 - Restore America's Estuaries' 2nd National Conference on Coastal and Estuarine Habitat Restoration, Seattle, WA.

September 26-October 1, 2004 - International Association of Fish and Wildlife Agencies 94th Annual Meeting, Atlantic City, NJ.

October 25-28, 2004 - Seventh Annual Wetlands Workshop: The Protection of Aquatic Ecosystems Using Watershed-Based Approaches, Atlantic City, NJ.

October 28-29, 2004 - 31st Annual Conference on Ecosystems Restoration and Creation, Tampa, FL.

October 31-November 3, 2004 - Annual Meeting of the Southeastern Association of Fish and Wildlife Agencies, Hilton Head, SC.

November 3-5, 2004 - 24th International Symposium of the North American Lake Management Society, Victoria, British Columbia, Canada.

November 5-7, 2004 - 4th Annual Fisheries Student Colloquium: Migrate South this Winter, Marineland, FL.

November 9-11, 2004 - Fifth Florida State University Fisheries Symposium: The Good, the Bad, and the Ugly: Integrating Marine and Human Ecology in Fisheries Management, Sarasota, FL.

Interested in contributing something to the Shell-Cracker? Email Kimberly Bonvechio at *kimberly.tugend@fwc.state.fl.us* with any articles or information that you would like to be included in the next issue. The deadline for the next issue is September 30th, 2004, so start fishing...



The 2005 Annual Meeting of the Florida Chapter will <u>NOT</u> be in Brooksville!

By: Mike Allen, Rich McBride, Eric Nagid, and Kim Bonvechio (Time and Place Committee)

Why? The Brooksville Withlacoochee Training Center (WTC) – and their excellent staff – have been very popular and consistently met our needs, with one important exception: the number of beds of the WTC declined in recent years and our registrations have increased! Overcapacity registrations have been met in a variety of creative ways, for several years now, and the Executive Committee felt that change was necessary. Moving this meeting to another facility has become not a matter of "if", it's a question of "when", so we searched for a site that would meet all the needs of the Chapter and keep the meeting activities intact. This should come to no surprise to anyone, actually, since this problem has been discussed repeatedly at recent Annual Business Meetings (you did come to the Business Meetings, didn't you?). The 2005 meeting - which will be our 25th annual meeting – is an auspicious time to move forward to a larger facility. So how did we come to our final decision?

The size of the facilities was a critical issue. We have settled on the Ocala 4-H Camp that has a conference hall rated for 180 people. The dining hall is rated for a similar size. Most importantly, this new facility can sleep 120 comfortably (1.5X the WTC; and there is spillover sleeping capacity for a total of 240 sleepy fish biologists). In the short and long term, this facility meets our needs to grow. In addition, the gymnasium hall is highly suitable for our poster session, which is welcome news. Posters have been increasing in importance for presentation of research and management activities.

The location was a very important consideration. Florida is a large state and we regarded Ocala as a natural mid-point to our state. Moving from Brooksville to Ocala may make the location more accessible to the largest number of people. Although we could not expect the venue to be exactly like the WTC, we found an environment that is adjacent to the Ocala National Forest. As an added bonus, the bonfire area is in view of a lake.

The cost was also very important, and the WTC was judged as a great value. We considered it critical that the meeting venue be affordable, and even for those that are supported through institutional funds, we want as many people from each institution to be supported for travel. Fortunately, this new facility will not be more expensive than the WTC.

The new facility will accommodate the social activities that we know are important. After a full session of talks, there is

Student Section

Destruction of the Pygmy Octopus Population in St. Joseph Bay, Florida following a Harmful Algal Bloom

Bridget Nicole Tiffany, Nann A. Fangue and Wayne A. Bennett Department of Biology, University of West Florida, Pensacola, Florida

Prior to 1990, *Octopus joubini* (Robson, 1929) was believed to be the only resident pygmy octopus species within the Gulf of Mexico. Closer investigation by Forsythe and Toll (1990), however, revealed that the Gulf of Mexico pygmy octopus population is actually comprised of two distinct species, *Octopus joubini*, and a second, similar species that is either a synonym of *Octopus mercatoris* or a previously undescribed species. While both octopuses are morphologically similar, egg size, fecundity, hatchling type, and habitat preference vary markedly (Forsythe and Toll, 1990). We refer to the seemingly ubiquitous pygmy octopus species residing in St. Joseph Bay as *Octopus* cf. *mercatoris*.

The proclivity of *O*. cf. *mercatoris* for shallow seagrass beds leave them vulnerable to rapid changes in habitat quality. Consequently *O*. cf. *mercatoris* must strike a precarious balance between access to abundant resources in seagrass environments and potential exposure to near lethal hyperthermal and hypoxic conditions. As a result their preference for demanding habitats may predispose them to extirpation by unpredictable environmental perturbations of unusually severe intensity or duration. For example, from 17 August-14 October 1999, St. Joseph's Bay experienced a severe and prolonged harmful algal bloom (HAB) with cell counts reaching 1,000,000 cells/L at its peak. The event killed thousands of fish and several invertebrate species including menhaden, redfish, hardtails, pinfish, horseshoe crabs, and blue crab. (Florida Marine Research Institute, 2004b; Fangue, pers. obs.) *Octopus* cf. *mercatoris* populations were also devastated during the bloom. Prior to the 1999 HAB, Mather (1982) measured octopus densities within St. Joseph Bay of one per 33m² and anecdotal catch per day values ranging from 5-40 animals were also consistently reported. Since the HAB event, exhaustive monthly efforts to locate the mollusk have turned up only one brooding female in February 2003.

While the specific reasons behind the disappearance of *O*. cf. *mercatoris* may never be known with certainty, the occurrence of the 1999 HAB, was no doubt, an important contributing factor in their decimation. During a HAB event, *O*. cf. *mercatoris* already coping with abiotic extremes imposed by their environment may be readily victimized by the added physiological stress associated with the bloom. Brevetoxins released by *K*. *brevis* have been shown to produce neurological impairment in fish, resulting in paralysis and respiratory dysfunction, ultimately leading to death (Quick and Henderson, 1974). Similar responses may occur in the advanced cephalopod nervous system as well. In addition, accelerated oxygen demand of a *K*. *brevis* population combined with elevated bacterial activity on decomposing animals often create moderate to severely hypoxic conditions, suffocating active fishes and invertebrates (Florida Marine Research Institute, 2004a).

Octopus populations surviving this onslaught and struggling to reclaim native habitat may have little reprieve from recurrent, severe HAB episodes. In addition, land use in and around St. Joseph Bay is increasing rapidly. The resulting increase in boat traffic, foot traffic and eutrophication may have a negative impact on the seagrass/pen shell habitats preferred by *O*. cf. *mercatoris*. The combination of increasing anthropogenic insult and recurrent water quality perturbation imply that the mollusk may never achieve historical population levels, and may in fact be at high risk for regional extirpation.

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Student Research Highlight

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If you would like contact Bridget Tiffany about this research, she can be reached by email at bridgettiffany@hotmail.com.

Student Subunit Update Jeff Grim

I am pleased to announce that revisions on the proposed bylaws for the Student Subunit have been completed and are awaiting review by the Florida Chapter bylaw committee. Once we have their approval, the next and final step in establishing the subunit will be a vote by the entire membership at the 2005 Annual Meeting. If you know of any students who would like to be involved in the Student Subunit not and have made contact with myself of UF (jmgrim@bellsouth.net) or Mark Rodgers (MWRogers@mail.ifas.ufl.edu), please encourage them to do so. I would also like to call attention to the most recent issue of Fisheries, which contains a great article about existing Student Subunits across the country. Take note of the wonderful work these groups have been doing and also learn about some of things you can expect from the Florida Chapter's Student Subunit.

Best Fishes!

Important Dates for the Student Colloquium

The 4th Annual Student Colloquium will be held at the Whitney Laboratory in Marineland, Florida, November 5-7, 2004. The time is fast approaching, as are deadlines, so keep these dates in mind. For more information on this year's colloquium, visit surf.ifas.ufl.edu/colloquium.htm.

Early Registration Begins: August 2, 2004

Early Registration Ends: September 17, 2004

Abstract Deadline: Electronic abstract submission will begin on September 17, 2004

Abstract Acceptance Notification: October 1, 2004

a need to walk by the lake, shoot hoops, or relax with a beverage of your choice by the bonfire. This facility will accommodate all of those needs! You may take a look at the facility on their web site: http://4h.ifas.ufl.edu/ocala.htm.

You were our most important consideration. Many people said they liked the ambiance and level of luxury that the WTC offered. We listened to you and reviewed your suggestions for new venues. We searched the internet, we compiled the details, and we made site visits. We went through this effort, because we were concerned that people might avoid future meetings if we did not expand to meet the number of registered attendees. It was a challenge, but we believe we have found a venue that has the feeling of the WTC site that we loved, but will meet the Society's need for a larger facility, for now and the future.

We have done our best; so what is there left to do? Come to the silver anniversary meeting of the Chapter, which is set for February 22-24, 2005! Preparations are being made for an engaging symposium on diadromous fishes that incorporates freshwater, estuarine, and marine themes. As always, we anticipate varied and stimulating contributed paper and poster sessions as well. We look forward to this meeting every year and we hope to see you there in 2005.



Newly Restructured FWC

After nearly two years of planning, the newly restructured Florida Fish and Wildlife Conservation Commission became official on July 1, 2004. The newly created divisions include: Hunting and Game Management, Marine Fisheries Management, Freshwater Fisheries Management, Law Enforcement, Fish and Wildlife Research Institute (FWRI), and Habitat and Species Conservation. To view the news release formerly issued by FWC, refer to the following website: myfwc.com/whatsnew/04/newfwc-st.html. There will be many exciting changes in the future workings of the agency...stay tuned!



Change in Venue...Cont'd

Rottmann Memorial Scholarship Fund Larry Connor

As most of you know, the Florida Chapter voted at our 2002 annual meeting to conduct a fund raising campaign over the following two years and set aside \$6,000 for dollar-for-dollar matching funds. Our efforts were quite successful. We raised \$1,525 that were matched by the Chapter to bring the total to \$3,050. We also received an additional \$995 shortly after the matching funds campaign ended. All together the fund raising campaign brought in \$4,045 to the Rottmann Memorial Scholarship Fund. I think that is a pretty good effort for a bunch of fish heads and we should give ourselves a big round of applause.

So where does this put the Rottmann Fund? We're in pretty good shape. The fund had approximately \$24,000 in assets as of 30 June 2004 including the \$15,000 pledge by the Florida Chapter. I say approximately since I do not know the exact amount of dividends received in June. I think this puts the Rottmann Fund in an excellent position to meet its financial obligations. However, we can still strengthen this position. We are working with our financial advisor to reallocate the Rottmann Fund's investments to produce more income. Finally, don't forget that you can still solicit contributions to the Rottmann Fund. Fund raising is a never-ending task. The more assets in the Rottmann Fund the more we can do with them.

The Florida Chapter and the Rottmann Memorial Scholarship Fund would like to thank all our charter contributors.

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