the shell-cracker

FLORIDA CHAPTER OF THE AMERICAN FISHERIES SOCIETY

http://www.sdafs.org/flafs

July, 2005

President's Message:

After the buzz of our 2005 annual meeting died down, I got together with the other Chapter officers and we prepared an application for the American Fisheries Society's (AFS) "Outstanding Chapter Award". The Florida Chapter has received this award before (1984, 1990, 1991), and as we reached this 25 year milestone, it seemed like an auspicious time to apply for this award again.

In the application, we listed the current officers (5), committees (12), and total membership (239). Then we listed our many accomplishments this past year, such as: holding our silver anniversary meeting; finding a new venue to accommodate the growing attendance at annual meetings; establishing the Rottmann Scholarship endowment; formation of a new AFS Student Subunit; recognizing excellence with our Chapter awards; supporting student travel to the annual meeting; and sustaining our presence on the web (http://www.sdafs.org/flafs/) and in print (The Shellcracker).

We do many things right. At the annual meetings, we produce timely, thought-provoking, and professional symposia – year after year – while keeping the costs low and the fun high. We embrace the freshwater, estuarine, and marine interests of our membership. We offer opportunities for leadership and education. We recruit for the future with scholarships, awards, and grants to students. We are generous to a variety of deserving causes, such as our support for Caribbean scientists to attend our chapter meetings at a time when they expressed interest in forming their own chapter. Our excellent website and quarterly newsletters keep everyone connected throughout the year.

The announcement about the 2005 AFS Outstanding Chapter will come later this year, but as we pass such a milestone year, it seems relevant now to look forward and ask: What about the next 25 years? These criteria for the AFS Outstanding Chapter Award[1] represent a diverse set of touchstones for those interested in this question. These criteria are listed under three foci: 1) aquatic stewardship, 2) information transfer and outreach, and 3) member services. Each of these foci has more specific areas of action, such as: developing leadership or professional stature; expanding our visibility or building partnerships; creating new educational opportunities or information networks; or contributing to public policy. I have to admit, when first reading these criteria I was overwhelmed, because I initially viewed them as a checklist to accomplish. I became intrigued, however, when I thought of these criteria as a resource center of new project ideas. Should we use this list to expand our Chapter activities this year, next year, or in the near future? Absolutely!

This process of reviewing these award criteria got me to thinking so I am spreading the word. I encourage you to take the time – perhaps during today's lunch break – to review this website (see below) as well.

Getting in Touch

President
Richard McBride, Ph.D.
Florida Marine Research Institute
100 8th Ave. S.E.
St. Petersburg, FL 33701
phone: (727) 896-8626 ext. 1506
email: richard.mcbride@myFWC.com

President-Elect
Chuch Cichra, PhD.
University of Florida
Department of Fisheries and Aquatic Sciences
7922 N.W. 71st St.
Gainesville, FL 32653
Phone: (352) 392-9617 ext.249
Email: fish@ifas.ufl.edu

Secretary/Treasurer
Eric Nagid
FWC
7922 N.W. 71st St.
Gainesville, FL 32653
phone: (352) 392-9617 ext. 242
email: eric.nagid@myFWC.com

Newsletter Editor
Jaclyn Debicella
MACTEC
404 SW 140th Terrace
Newberry, FL 32669
phone: (352) 332-3318 ext. 6604
email: jmdebicella@mactec.com

Past President
Mike Allen, Ph.D.
University of Florida
Department of Fisheries and Aquatic Sciences
7922 N.W. 71st St.
Gainesville, FL 32653
phone: (352) 392-9617 ext. 252
email: msal@mail.ifas.ufl.edu

Think about some of your goals, particularly a goal that you believe may not be achievable in your current position, and consider the Chapter as a vehicle for moving it forward. We all have a stake in maintaining ours as an outstanding Chapter during the next 25 years.

Rich McBride, President FL AFS

[1] for more ideas on where you can take the chapter in the next 25 years, see (http://www.fisheries.org/html/Professional_Development/Awards/2005OutstandingChapterAwardApplication.doc).

Upcoming Events

Jul 6-11—American Society of Ichthyologists and Herpetologists, Tampa, FL.

Jul 11-14—29th Annual Larval Fish Conference, Barcelona, Spain.

Jul 18-22—Seventh International Congress on the Biology of Fish, St. John's, Newfoundland, Canada.

Jul 27-29—American Fisheries Society Fish Health Section Annual Meeting, Minneapolis, MN.

Sep 11-15—American Fisheries Society 135th Annual Meeting, Anchorage, AK.

Sep 25-29—The Wildlife Society 12th Annual Conference, Madison Wisconsin.

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Check out our Parent Society's calendar at http://www.fisheries.org/Calendar.shtml for other events not listed here!

Feature Article

Bay Scallops: The Past, Present and Future of the Fishery

Jamie Greenawalt
Sanibel-Captiva Conservation Foundation
Marine Laboratory
900A Tarpon Bay Rd.
Sanibel, FL 33957

This year at the annual meeting, Bill Pine challenged us Fisheries Biologists and managers to ensure the future of Florida's fisheries. It seems more often than not we see graphs of declining populations and degrading water quality. This holds true for Florida's bay scallop fishery over the past forty years. However, with a combination of judicious management and restoration the future of this bivalve may be bright.

Past

Bay scallops, *Argopecten irradians*, supported a valued commercial fishery in the mid-1900's. Pine Island Sound represented the southern most extent of the historical commercial bay scallop fishery, and in the early 1950's was one of the most lucrative areas in the state. The highest landing, in pounds of meat, was 186,572, in 1952, a value then of approximately $37,000. Murdock (1955) suggested that the fishery would be sustainable without regulation as long as the environment was not altered and the fishing intensity did not change. However, the last notable commercial harvest was in 1963, coinciding with the construction of the Sanibel Causeway. Many locals, to this day, believe the construction of the causeway lead to the decline of the scallop fishery. However, the causes for this decline and the decline of populations state-wide are unknown, but are most likely the result of one or several synergistic processes, e.g., over fishing, habitat degradation, and/or recruitment limitation (Blake 1996; Arnold et al. 1998; Marelli et al. 1999).

Invertebrate fisheries are generally thought to not suffer from recruitment limitation due to their broadcast spawning life history. However, bay scallops live on average for only one year, spawn once and die. Therefore, the success is dependent upon one spawning event. If conditions are not right at the time of their spawn, the population may show a marked decline. Recruitment the following year will be limited by the number of scallops that survived the poor conditions. If the animals are few and far between, successful spawning may be limited by distance that the gametes must travel before fertilization can occur. This pattern can lead to a downward spiral, especially if there is continued harvest on an already depleted population, and if neighboring populations also become depleted.

Harvest regulations were first placed on the Florida bay scallop fishery in 1985, and in 1994 commercial harvesting was banned, while recreational harvesting was restricted to those areas north and west of the Suwannee River. Along with these restrictions, the allowable harvest in open areas was lowered from five gallons to two gallons of whole scallops per person per day, and the season was drastically shortened from nine months to 72 days (Florida Department of State 1998). Some local populations, south of the Suwannee River, have recently increased to densities believed sufficient to maintain sustainable populations, specifically in the near-shore area between the Weeki Wachee River and the Crystal River and were open to recreational harvest as of July 2002. The restoration of neighboring populations to the south (e.g. Tampa Bay, Sarasota Bay, and Pine Island Sound) may be critical to the continued health of the more northern populations, since in years of bad local recruitment other populations may provide seed to the effected population.

Present

Four researchers from three organizations are working together to study the distribution and abundance of both adult and recruiting scallops (spat) within Pine Island Sound; Bill Arnold and Steve Geiger from the Florida Wildlife Research Institute (FWRI) Molluskan Division, Jay Leverone from Mote Marine Laboratory, and myself (Jaime Greenawalt) from the Sanibel-Captiva Conservation Foun-

-dation Marine Laboratory. The distribution of bay scallops in Lee County was not studied until FWRI initiated annual spring surveys of adult scallops in the Northeastern region of Pine Island Sound in 1994. From 1994 through 2004, scallop densities only rose slightly above the state defined level of a collapsed population (less than 5 scallops per 600 m^2) once. SCCF began surveying the southern portion of the estuary in 2004, to provide a more complete picture of the entire estuary; only 1 scallop was found in a total of 12,000 m^2.

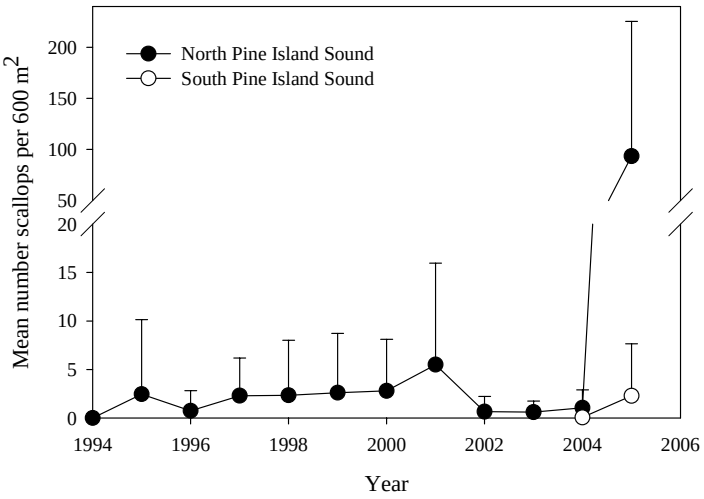
In the spring of 2003 recruitment monitoring was launched, in attempts to determine if the population is recruitment limited, if there are differences in recruitment in the North and South portions of the sound, and what time of year peak recruitment occurs. After a year of monitoring, only three recruits were detected, demonstrating that the population may be recruitment limited. All three recruits were found in the northern area, so there may be a difference between the north and south. But with only three recruits nothing is certain.

In fall 2003, a restoration effort was initiated in Northern Pine Island Sound using a novel technique in scallop restoration. Adult scallops were spawned in the laboratory, and the larvae were reared for about two weeks until "sticky" (the point when they are ready to attach to seagrass). The scallops were released into circular construction booms in the estuary. The booms were removed after the scallops were given several days to settle onto seagrass. Monitoring several months later showed elevated scallop numbers at the release sites as compared to the control site. This pattern continued through the summer of 2004. Now that there was a patch of adult scallops, we wondered, will this elevated population, albeit small and localized, help increase recruitment on a larger scale?

In November, December and January 110 recruits were detected (quite a significant increase from three for the entire prior year). Only four of these recruits were found in the southern portion of the estuary. This pattern of increased recruits in the north by two orders of magnitude and an increase in the south by only one order of magnitude also held true in the adult population. In June, we conducted our annual surveys. We were excited to find nearly 50 scallops in the southern portion of the estuary (<3 per 600 m^2), but ecstatic when we turned up over 1,800 in the northern area (~90 per 600m^2).

Future

The future of this species within Pine Island Sound looks brighter than it has in quite some time. We are encouraged by the status of the population this year. However, several years of data will be needed to demonstrate the stability of the population. We will be continuing our work monitoring recruitment continually, and in the fall we will be focusing restoration efforts on southern Pine Island Sound. In addition we hope to begin studying the water quality conditions necessary for these organisms to survive and spawn. The lower Pine Island Sound area is greatly affected by the management of Lake Okeechobee and the resultant manipulated flow rates of the Caloosahatchee River. For this fishery to truly recover, a more stable environment may be required. The Comprehensive Everglades Restoration Plan (CERP) aims to restore a more natural flow to the Caloosahatchee River, and therefore more stable conditions within the estuary. We hope that with a combination of restoration efforts and increased knowledge of the biology of these animals we can ensure the future of this fishery, allowing future generations to enjoy searching in seagrass beds for these little blue eyed beauties.



The mean number of scallops per 600 m^2 (+ SD) in the North and South Pine Island Sound areas are determined annually as a measure of population condition. In 2001 the North population was slightly above the FWRI defined level of a collapsed population (5 scallops per 600 m^2). In 2005 the North population reached a "healthy" level (> 20 scallops per 600 m^2) for the first time since initiation of surveys.

Who Took the "mo" Out of Potamodromy?

The Florida chapter of the American Fisheries Society had a fun annual meeting this year in Ocala National Forest. I attended to participate in a mini-symposium on diadromy. Although the main focus was on Florida fishes, they let a few of us non-Floridians in to add spice to the meeting.

Although most of this symposium dealt with fishes that moved between fresh and salt water, reference was made to in-river migrations as well. In this regard, I was quite surprised to hear several talks refer to "potadromy" and "potadromous" migrations. Where did this come from?

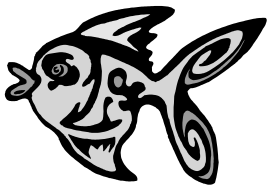
Retreating to our university library, I found the 1949 volume of *Copeia* and looked up George S. Meyers' article, "Usage of Anadromous, Catadromous and Allied Terms for Migratory Fishes" (1949, No. 2, pp. 89-97). In this work Meyers bemoans the disarray of terminology that relates fish behavior to habitat. Even long-used terms like "anadromous" and "catadromous" held different meanings to different scientists. He proposed to straighten out the terminology, using existing words and coining several new ones, including the term **potamodromy** (from the Greek roots ποταμοσ (potamos, or river) and δρομοσ (*dromos*, or running). He defines this as the behavior for "truly migratory fishes whose migrations occur wholly within fresh water…This term is proposed especially for those exceedingly numerous species of fluviatile fishes (particularly in the tropics) which migrate long distances upstream to spawn, but is also available if necessary for any truly migratory, permanently fresh-water fish." The root "potamos" is also familiar to us as part of the word for what most of the world calls a "river horse," or hippo*potamus*.

Thus, to represent riverine migrations, Meyers urged us to use a word with an ancient Greek root meaning "river," which seems perfectly reasonable. My reaction to the presented word "potadromy" was much like a salmonid expert hearing their favorite family referred to as "salmids" – it just did not ring true.

Backed by Meyers' authority, I then went online and did a word search on the terms *potamodromous*, *potamodromy*, *potadromous*, and *potadromy*. I searched through four search engines: Google, Google Scholar, Biosis, and Science Citation Index Online. The latter two are well accepted academic search engines, whereas Google casts a broader net, so to speak. The results of my search are in Table 1:

Table 1. Number of hits on "potamodromy" and its allies.

Term	Google	Google Scholar	Biosis	Web of Science
potamodromy	103	37	9	5
potamodromous	2000	104	29	18
potadromy	7	6	0	0
potadromous	76	15	1	0



It is clear from these results that Meyers' original terms are still predominant in usage, but that "potadromous" appears to be creeping in to common parlance as well. A quick check of a number of web-sites did not find a particular geographic bias in the use of "potadromy" or "potadromous." Rather, these terms crop up at random. It is unclear how the usage began, or whether it will take hold.

As a language "stickler" (see Lynne Truss's book on punctuation, *Eats, Shoots & Leaves: The Zero Tolerance Approach to Punctuation* to understand our mindset), I believe that words should live up to their meanings and that they should have sound roots when possible. The term "pota**mo**dromy" fits this need, whereas "potadromy" does not. I encourage fisheries scientists to take the time to include the extra syllable and make this word etymologically correct.

Karin E. Limburg, State University of New York, College of Environmental Science & Forestry, Syracuse, NY 13210 KLimburg@esf.edu

ANNOUNCEMENTS

Are You a Student?

If you are a student and have not been receiving emails pertaining to the student subunit then please contact: Jennie Sandberg jss18@students.uwf.edu

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2006 Florida Chapter Meeting

Mark your calendars! The Florida Chapter AFS next annual meeting has been scheduled for 21-23 February 2006. Due to the positive feedback of those that attended this year's meeting, the 2006 meeting will be held at the same location - the University of Florida's 4-H Camp Ocala.
The 2006 meeting will consist of both a symposium on Exotics in Florida and contributed topics. The meeting format will consist of both invited and contributed oral presentations and posters.

Symposium: What exactly are exotics? How did they get here? What is their current status? What effects have they had on Florida ecosystems? Do we know? What do the data show? Risk Assessment - What is it and does it work? What are prohibited and restricted species?

More than 50 species of fresh and saltwater exotic fish, along with numerous invertebrates, have been accidentally or purposefully introduced into Florida. Species include peacock bass, grass carp, flathead catfish, blue tilapia, spotted tilapia, oscars, Asian swamp eels, Mayan cichlids, armored catfish, plecos, lionfish, Corbicula, Daphnia lumholtzi, Chinese mitten crab, and green mussels.

Dig into your file cabinets and help us better understand these animals! Plan on giving a talk or a poster. The first call for both symposium and contributed papers and posters will be made this fall, with a second and final call in January 2006.

If you want to suggest possible speakers or to get involved in the planning of the symposium or contributed sessions, please contact Chuck Cichra, Program Chair, at the University of Florida -- phone: 352-392-9617 ext 249 or e-mail: Fish@ifas.ufl.edu

Student Section

Student Research Highlight

Separating Environmental and Genetic Influences to Largemouth Bass Hatching Periodicity

Mark Rogers
Department of Fisheries and Aquatic Sciences
7922 NW 71st St., Gainesville, FL 32653

In general, fish spawning occurs later in the year and for a shorter duration with increased latitude. Environmental and genetic factors affect spawning timing, but their relative contributions are often hard to discern. We evaluated the relative contribution of genetic and environmental effects on spawning periodicity of largemouth bass *Micropterus salmoides* by rearing intergrade largemouth bass *M. s. salmoides* and Florida largemouth bass *M. s. floridanus* from two different latitudes and genetic stocks in a common environment. Intergrade broodfish were captured at Lake Seminole on the Florida-Georgia border, and Florida broodfish were captured at Lake Okeechobee in south Florida. Broodfish were translocated to experimental ponds at an intermediate latitude in Gainesville, Florida in September 2003. We compared the hatching periodicity in our ponds to hatching distributions at brood source populations for 2004. Florida largemouth bass began spawning earlier (prior to February 14th in all ponds) than intergrade largemouth bass (after March 7th in all ponds) in ponds and Florida fish had a longer hatching duration (17-72 d) than intergrade fish (7-11 d) in ponds. We saw similar results for each source population because Florida largemouth bass at Lake Okeechobee began spawning earlier and fish hatched over a longer duration than intergrade fish at Lake Seminole. We concluded that both environmental factors and genetic composition influenced spawning periodicity. Environmental factors affected hatching periodicity because the onset of hatching was later for Florida fish in research ponds than at Lake Okeechobee and earlier for intergrade fish in research ponds than at Lake Seminole, which was likely due to water temperature. Genetic influences were also evident because translocated brood fish spawned at times that reflected characteristics of their source population. Thus, environmental factors may cause temporal shifts in the onset of spawning of translocated largemouth bass broodstock, but hatching periodicity will be similar to that of broodstock source populations due to genetic influences.

Florida Chapter AFS
601 W. Woodward Ave.
Eustis, FL 32726

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