the shell-cracker

FLORIDA CHAPTER OF THE AMERICAN FISHERIES SOCIETY

http://www.sdafs.org/flafs

October, 2006

President's Message:

Our next annual Chapter meeting is scheduled for 20-22 February 2007 at 4-H Camp Ocala. That seems like a long time in the future, but before too long, our meeting will be upon us. Start planning now!

In this issue of the Shellcracker, Jackie Debicella has included Eric Nagid's first call for papers. The feature symposium will be on Lake Okeechobee. Dust off your data and start submitting your papers now. Even if you have not worked on or around 'The Big O", contributed papers on any topic are always welcome. Trust me, having been last year's Program Chair, it sure is nice having papers come in steadily over time rather than at the last minute! Last year, it seemed like we wouldn't have enough papers and posters, then it was a frenzy of last-minute submissions.

Speaking of presentations, if you have a topic that you are really excited about, consider gathering up several speakers and submitting them to Eric as a mini-symposium. It's your society and your meeting! Have a say in what is being presented!

Students need to start on their travel grant applications. The number of applications has been increasing yearly. In the past, we have been able to fill most, if not all, requests for travel. This past year, we had more applications than we had money. Being the person that oversees the selection process, one thing becomes clear - students, that received funding in the past and those that will be funded in the future, spend a bit more time in completing their applications than those who did not receive funding. Start on your application early!

Students should also consider submitting applications for the Roger Rottmann Memorial Scholarship. Our Chapter has two fully-funded $500 scholarships – one is for Masters students and one for Ph.D. students. Start now! Don't wait to the last minute! Applying is no big task, but don't wait until the last minute to start!

On a final note, one of the "Shakers and Movers" in our Chapter, Rich McBride (FWC), has left us for the Great North (NMFS at Woods Hole). Rich has been instrumental in moving our society forward. He has been a leader in our Chapter. Now is the time for other members in the Chapter to step up and help out. Contact Eric Nagid, the 2007 FAFS Program Chair (eric.nagid@MyFWC.com), to see what help he will need for the 2007 meeting. Also, start gathering up those raffle prizes and chum. Raffle proceeds fund all of those student travel grants.

Chuck Cichra
President FL AFS

Getting in Touch

President
Chuck 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

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

Secretary/Treasurer
Linda Lombardi-Carlson
NOAA/NMFS/SEFSC
3500 Delwood Beach Road
Panama City, FL 32408
Phone: (850)234-6541 ext. 213
Email: linda.lombardi@noaa.gov

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

Past 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

Upcoming Events

Oct 17-20—15th International Salmonid Conference sponsored by the Fisheries Management Section, Newcastle, UK.

Oct 25-28—Fourth North American Reservoir Symposium: Balancing Fisheries Management and Water, Uses for Impounded River Systems, Atlanta, GA.

Oct 27-29—Sixth Annual AFS Student Colloquium, Auburn, AL.

Oct 30-Nov 3—International Council for the Exploration of the Sea Symposium on Fishing Technology in the 21st Century: Integrating Fishing and Ecosystem Conservation, Boston, Massachusetts.

Nov 2-3—33rd Annual Conference on Ecosystems Restoration and Creation, Plant City, FL.

Nov 5-8—60th Annual Southeastern Association of Fish and Wildlife Agencies Conference: Wildlife Management in the Next New World, Norfolk, VA.

Nov 5-10—Large Pelagic Fishes in the Caribbean Sea and the Gulf of Mexico: Current Status and Integrated Management, Belize City, Belize.

Nov 6-11—59th Gulf and Caribbean Fisheries Institute, Belize City, Belize.

Nov 8-9—Second Annual Coral Reef Conservation and Management Conference, Miami, FL.

Dec 9-13—Restore America's Estuaries, Third National Conference and Expo on Coastal and Estuarine Habitat Restoration: Forging the National Imperative, New Orleans, LA.

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

Feature Article

Observer programs at the Southeast Fisheries Science Center-Panama City Laboratory: The directed shark gillnet and bottom longline programs

By Ivy E. Baremore, Lori Hale, John K. Carlson, and Dana M. Bethea
NOAA Panama City Laboratory, Panama City, FL

The National Oceanic and Atmospheric Administration (NOAA) Fisheries National Observer Program annually monitors 42 fisheries in the United States by deploying at-sea observers aboard commercial fishing vessels. Fishery observers monitor and record data (e.g. species composition, size, disposition of landed species and protected species interactions) from commercial fishing from US flagged vessels and processing facilities. Observers also collect biological samples (e.g. otoliths, gonads, stomachs) from select species and information on fishery characteristics (e.g. length and type of fishing gear, soak time, etc.). The data collected by observers is used to enhance research and aid in the management of US living marine resources. The authority to place observers on commercial fishing is provided either by the Magnuson-Stevens Fishery Conservation and Management Act or the Marine Mammal Protection Act. These two acts require the government to collect data on activities that affect marine resources. Many of the programs also satisfy requirements of the Endangered Species Act. The data collected by the observer programs are often the best means to get current data on the status of many fisheries. Without observers and observer programs, there would not be sufficient data in many fisheries for effective management. The NOAA Fisheries Laboratory in Panama City, FL is home to two fisheries observer programs, both of which deal with directed shark fisheries in the Gulf of Mexico and northwest Atlantic Ocean. As observer coordinators, we are involved in all aspects of observer coverage for these fishing vessels, from observer training and deployment to data entry and analysis.

Shark gillnet fishery

The shark drift gillnet fishery developed off the east coast of Florida and Georgia in the late 1980's. As the fishery expanded, some fishers used drift gillnets to fish for sharks from October through April before and after the king mackerel seasons (Schaefer et al. 1989, Parrack et al. 1992). By 1987, many fishers were drift gillnetting for king mackerel during April-September to compensate for their reduction in quotas in their winter fisheries. However, as the king mackerel drift gillnet fishery was further restricted around 1990, more fishers began drift gillnetting for sharks during all times of the year.

The drift gillnet fishery observer program began in 1993, and was established because of concerns about possible unrecorded marine mammal and sea turtle interactions coupled with a lack of coverage during the Right Whale Calving Season (15 November-31 March). Currently, 100% observer coverage is required for all shark drift gillnet boats that fish during the Right Whale Calving Season, and outside of this season a level of coverage is established such that estimates of marine mammal and turtle interactions are obtained with an expected coefficient of variation of 0.3 (66 FR 17370). Originally only drift gillnet boats that exclusively targeted sharks were selected for observer coverage, but beginning in 2005, the program was expanded to include all vessels with an active directed shark permit and that fish with gillnet gear (Carlson and Bethea 2006). The coverage of all gillnet boats enables NOAA Fisheries to assess their impact on shark resources even when these vessels are not targeting sharks (Carlson and Bethea 2006).

Shark gillnet boats are generally small (~12-20m long) and when targeting sharks carry net between 275 and 1800m long, with panels of different stretched mesh size between 12.7 and

27.9 cm (Trent el al. 1997, Carlson and Bethea 2006). Shark gillnet vessels currently fish three types of gillnet; drift, strike, and sink or stab. Drift nets are basically set in a straight line off the stern off the vessel. The net soaks or fishes at the surface for a period of time, is inspected at various occasions during the soak, and then is hauled onto the vessel when the captain and crew feel the catch is adequate. The net is hauled in by hydraulic power rollers, and sharks are removed from the gear as the net is brought aboard.

Strike gillnets are similar in configuration to drift gillnets except that the net fishes from the surface to the bottom and are actively set around a school of sharks with the aid of spotter planes (Carlson 2000).

Often two gillnet boats work in concert with two nets and two smaller "strike boats," which aid in setting and tending the net (Fig. 1). The soak time is much shorter when vessels strike their nets but the nets are hauled in the same manner as the drift nets (Fig. 2).

Vessels fishing sink or stab nets that target sharks fish nets in a manner similar to drift except the net fishes at or near the bottom. Sink nets are often hauled aboard by hand because vessels are generally small and do not possess a power roller system. These vessels are generally involved in a number of other different fisheries and at times will target Spanish mackerel (*Scomberomorus maculatus*), bluefish (*Pomatomus saltatrix*) or kingfish (*Menticirrhus* spp.), for example (Carlson and Bethea 2006).

Trips are usually shorter than 24 hours in duration, though some of the larger vessels are able to stay at sea for as many as three days. As trips are generally daily, the observer is deployed in the port where the fishery is active and boards all trips for up to 10-14 days to attain a sufficient level of coverage. While aboard, the observer records the species, length, and sex (sharks only) of all animals caught in the nets. Interactions with marine mammals and/or sea turtles are also recorded and additional forms are filled out.

Sharks make up between 80-99% of the total observed catch depending on whether a vessel is fishing drift, strike, or sink gillnet gear. Atlantic sharpnose (*Rhizoprionodon terraenovae*), blacktip (*Carcharhinus limbatus*), blacknose (*C. acronotus*) and finetooth (*C. isodon*) are caught most frequently (Carlson and Bethea 2006 and references therein). By-catch includes little tunny (*Euthynnus alletteratus*), cownose ray (*Rhinoptera bonasus*) and king mackerel (*S. cavalla).*

Shark bottom longline fishery

The shark bottom longline fishery is active in the Atlantic Ocean from about North Carolina to south Florida and throughout the Gulf of Mexico. Vessels in the fishery are typically fiberglass and average 50 feet in length (Fig. 3). Longline characteristics vary regionally with gear normally consisting of about 5 to 15 miles of longline and 500 to 1500 hooks (Fig. 4). Gear is set at sunset and allowed to soak overnight before hauling back in the morning.

Observations of this fishery have been conducted since 1994 (Burgess and Morgan 2003; Smith et al. 2006). This program began as a cooperative effort of the Florida Program for Shark Research at the Florida Museum of Natural History and the fishers of the United States Atlantic commercial shark fishery. The program was historically supported by grants from two U.S. Department of Commerce funding programs,

Marine Fisheries Initiative (MARFIN) and Saltonstall-Kennedy (SK), and by the Highly Migratory Species division of the National Marine Fisheries Service. From 1994 through 2001, observer coverage was conducted on a voluntary basis. Beginning with the 2002 fishing season, observer coverage of the Atlantic shark directed bottom longline fishery became mandatory under authority of 50 CFR 635.7. .Coverage of this fishery has ranged from 5% to the current level of about 4% of total fishing effort.

While onboard the vessel, the observer records fishery characteristics, for example, the type and length of the mainline used, number and length of gangions, and make and model of hooks used. When an animal is brought onboard the vessel, the observer records the species identification, sex (sharks only) and length information. In the event a protected resource (i.e. sea turtle or marine mammal) is encountered, the observer is also required to fill out additional sea turtle or marine mammal forms.

The bottom longline fishery targets and lands primarily two species of sharks; sandbar shark, *C. plumbeus*, and blacktip shark. However a wide variety of sharks and teleosts are also caught and landed. Currently, total observed catch composition is approximately 80% sharks and 20% teleosts and rays. On some trips tilefish, *Lopholatilus chamaeleonticeps*, and red grouper *Epinephelus morio* make up a significant portion of the overall non-shark species.

Observers

Due to the nature of the work, our observers are required to have at least a Bachelor's degree, preferably in the sciences. The work conditions aboard these mostly small vessels can be arduous and the hours are long, therefore a certain adventurous spirit is also necessary. Observers are broadly trained for everything from safety-at-sea to species identification to biological sampling. Because both fisheries occur during the same seasons, observers are trained cooperatively so that they are able cover either fishery. The fishing vessels covered by these programs range from Texas to Massachusetts and fishing trips are typically 1-15 days, therefore observer work in these fisheries is unpredictable and highly mobile. If you'd like to know more about these programs, please visit http://www.sefscpanamalab.noaa.gov/shark/default.htm. More information on these fisheries are also available for download at this website.

LITERATURE CITED

Burgess, G.H. and A. Morgan. 2003. Renewal of an observer program to monitor the directed commercial shark fishery in the Gulf of Mexico and south Atlantic: 2002(2) and 2003(1) fishing seasons. Final Report, U.S. National Marine Fisheries Service, Highly Migratory Species Management Division Award NA16FM1598, 15p.

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Annual Meeting and Symposium Announcement – 1st Call for Papers
27th Annual Meeting of the Florida Chapter of the American Fisheries Society

February 20-22, 2007
Ocala 4H-Camp, Altoona, Florida

The 2007 annual meeting is almost upon us, and with it comes another year of presenting and discussing the current research and management of our Florida fisheries resources. The meeting will consist of contributed topics and a symposium focusing on Lake Okeechobee and its associated waterways to the east and west coast estuaries. This largest freshwater resource of Florida has been a popular topic over the last two years among biologists, academics, water regulators, stakeholder conservationists and newspaper columnists. Most of this recent interest and concern has centered on issues such as water level management, physical habitat loss, freshwater sport fishery declines, and excessive flows to the estuaries.

So…, is Lake Okeechobee dying, as mentioned in countless articles? What is fact and what is fiction surrounding the issues mentioned above. What historical perspective do we have on ecological communities or populations following droughts and floods? What marine fishes make use of Lake Okeechobee and its waterways? Can there be a management plan that encompasses the majority of issues while optimizing each? These are just a few of the issues we hope to address in February 2007.

The meeting format will consist of both invited and contributed oral presentations and posters. **All abstracts are due Friday, January 12, 2007 for full consideration in the symposium or contributed sessions**. Send your abstract (<300 words) and associated information in formatted fields (follow format in box below) to eric.nagid@myfwc.com; in the subject line of your email, please list the author(s) as they will appear in the program (e.g., MoeLarry-Curly.doc). Platform presentations will be 20 minutes (15 minutes for presentation and 5 minutes for questions or discussion). We will have PowerPoint 2003 loaded on a laptop capable of accepting your presentation on a CD, DVD or flashdrive. All posters will be formally presented on Tuesday evening, February 20, 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 Eric Nagid at eric.nagid@myfwc.com.

The 2007 meeting will be held at the Ocala 4-H Camp, on beautiful Sellers Lake in the Ocala National Forest. This venue is located east of Ocala, south of SR 40, just off SR19. Maps will be available in the next issue of the Shellcracker and are currently on the Chapter's website at http://www.sdafs.org/flafs/doc/ocala4h.html. The schedule will remain the same as in the past. We will begin with lunch followed by presentation on contributed topics on Tuesday, February 20; symposium platform presentations will be organized for Wednesday, February 21; the meeting will end with presentations on contributed topics, followed by lunch and awards on Thursday, February 22, 2007. Please note the late registration fee on this year's form: Help reduce everyone's registration time, give us a head's up on the head count, save money, get the correct-size meeting shirt, and don't miss any talks by filling out the pre-registration form and sending in your deposit to the Chapter's Secretary-Treasurer Linda Lombardi-Carlson by January 12, 2007 (see pre-registration form in this newsletter). In addition, you should plan to bring your own linens or sleeping bag if you are planning to sleep at the camp. Linens will only be available in limited supplies for $6.00.

Students: There will be travel awards available for students. The application form is available on the Chapter's website at http://www.sdafs.org/flafs/awards.html Master 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 at http://www.sdafs.org/flafs/doc/rottmann.html

We're looking forward to our 2007 annual meeting, and hope to see you there!

AFS Chapter Meeting Abstracts

Limit abstracts to < 300 words and follow this format (WORD is preferred):

Presenter: Howard, M.; Tel. 888-888-8888; Email: http://www.threestooges.com
Author(s): Howard, M.[1], L. Fine[2], and C. Howard[3]. Affiliation. Address. Telephone. [1]Moe's email; [2]Larry's email; [3]Curly's email.

Title: Stooge Bios

Abstract: Moe Howard was born on June 19, 1897, in Bensonhurst, New York, a small Jewish community on the outskirts of Brooklyn. Moe's real name was Moses Horwitz. Moe's mother's name was Jennie Horwitz, and his father was clothing cutter Solomon Horwitz. Moe was the fourth eldest of five Howard brothers. Two of Moe's brothers, Jerome (Curly), and Shemp performed with him as members of The Three Stooges. Moe's other two brothers, Jack and Irving, never entered show business. Larry Fine was born Louis Fienberg on October 5, 1902 on the south side of Philadelphia, Pennsylvania. His father, Joseph Fienberg, and mother Fanny Lieberman, owned a watch repair and jewelry shop. Larry had two brothers, Morris, a younger brother Phillip who died prematurely, and a sister, Lila, who became a school teacher. Curly Howard's real name was Jerome Lester Horwitz. He was born to Jenny and Solomon Horwitz on October 22, 1903 in Bath Beach, a summer resort in a section of Brooklyn. He was the fifth and youngest of the five Horwitz brothers. Curly's interest in show business grew as he watched his brothers, Shemp and Moe perform as stooges in Ted Healy's act. After Shemp left the Healy act, Moe suggested to Healy that his kid brother Jerome was available and would make an excellent replacement for Shemp.

Student Presentation: no (versus yes, to indicate work reported was completed while a student)

Presentation type: oral (versus poster)

GENERAL ANNOUNCEMENTS

AFS Listserv

Due to a computer crash, the AFS listserves, including AFS-L, were lost. In order, to re-subscribe to the AFS listserve, please go to http://groups.google.com/group/afs-fisheries and enter your information...you will be automatically subscribed and will start receiving messages from AFS as before. You will not need to repeat this process in the future.

Passing of a Member

We mourn the passing of Dr. Raymond E. Johnson. Dr. Johnson was a Past President of AFS, the respected Department of the Interior Assistant Director of Research for the Bureau of Sport Fisheries and Wildlife, and Deputy Director of the Division of Environmental Systems and Resources for the National Science Foundation. He had many friends in this field and his professional and personal contributions will not be forgotten.

Interested in contributing something to the Shell-Cracker? Email Jackie Debicella at *jmdebicella@mactec.com* with any articles or information that you would like to be included in the next issue. The deadline for the next issue is Dec. 28th, 2006, so start fishing...

Florida Chapter of the American Fisheries Society – 4H Camp Ocala, FL
Annual Meeting Registration: February 20 to 22, 2007

NAME: _____ STUDENT (YES/NO):_____

ADDRESS*:_____

_____

DAY-TIME PHONE: _____E MAIL:_____

AFFILIATION: _____

ARRIVAL DATE/TIME:_____

**This address will be used in our mailing list and should be the one where you want to receive newsletters and other materials.*

PRE-Registration Fees prior to Friday, January 12, 2007 (5pm post-mark):

One-day Registration:	($25.00) _____
Full Registration:	**($35.00)** _____

LATE-Registration Fees after Friday, January 12, 2007 (5pm post-mark):

One-day Registration:	($28.00) _____
Full Registration:	**($40.00)** _____

Partial Meals and Lodging

Tuesday: 20 February, 2007	Lunch	($7.00) _____
	Dinner	($13.00) _____
	Lodging	($25.00) _____
Wednesday: 21 February, 2007	Breakfast	($4.00) _____
	Lunch	($7.00) _____
	Dinner	($13.00) _____
	Lodging	($25.00) _____
Thursday: 22 February, 2007	Breakfast	($4.00) _____
	Lunch	($7.00) _____

Full Meals and Lodging: **($105.00)**_____

Linens (Bring your own or limited supply): ($6.00) _____

FL Chapter dues (calendar year 2007): **($10.00)** _____

Total Amount: _____

Total Enclosed: (Minimum $10.00 Deposit) _____

Balance Due: _____

Dietary Needs: (vegetarian, low fat, etc.) Note: This is a cafeteria-style service and food must be ordered at least a week in advance. Please respond promptly if you need something special, training center staff will try to accommodate:

Please Make Checks Payable to Florida Chapter, AFS and mail to:

Linda Lombardi-Carlson
NOAA Fisheries Service
3500 Delwood Beach Road
Panama City, FL 32408

Phone: (850) 234-6541 x. 213
Fax: (850) 235-3559
Email: Linda.Lombardi@noaa.gov

We can only accept **non-FWC VISA** or **MASTERCARD** on the meeting date.
If you would like to pay your meeting fees with a credit card, then please send a $10 check for your deposit.

SECOND CALL FOR PAPERS!

The Southern Division AFS Reservoir Committee invites abstracts for contributed oral and poster presentations for the

4th North American Reservoir Symposium

June 6-9, 2007
Atlanta, Georgia

The symposium's theme is "Balancing Fisheries Management and Water Uses for Impounded River Systems" and will address the challenges of managing reservoir fisheries in the context of competing water uses. Within this scope, topics for contributed papers and posters include: (A) Balancing fisheries issues with basin-wide water uses; (B) Aquatic habitat; (C) Human dimensions; and (D) Catch and release and use of regulations.

Due to limited space in the program, poster submissions are encouraged. Both contributed oral and poster abstracts should be submitted electronically to Dr. Mike S. Allen at msal@ufl.edu by October 16, 2006. An e-mail confirmation of the abstract submission will be sent upon receipt. A formal acceptance to the symposium will be sent by December 1, 2006.

When submitting the abstract, please indicate the topic above that best fits the presentation and indicate your format preference as: (A) Oral presentation only; (B) Poster presentation only; or (C) Oral presentation preferred, but poster presentation acceptable.

Proceedings of the symposium will be published in an AFS book, with manuscripts due for submittal by June 1, 2007. The external review process and publication is expected to take no longer than one year from June 2007. Oral presentations will be limited to 20 minutes with a 15-minute presentation and 5 minutes for speaker introduction and questions.

Additional information about the Symposium can be found at: www.sdafs.org/reservoir/symposium.

Student Section

Student Research Highlight

Fish compensatory demographic responses following whole-lake experimental density reduction

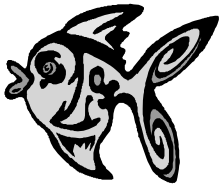
Matthew J. Catalano, PhD Student
Department of Fisheries and Aquatic Sciences
University of Florida, Gainesville

Recent reductions in the abundance and sustainability of the World's fish populations have led to negative changes in aquatic ecosystem function, and have resulted in financial hardship for fishers who make a living from the sea. In this context, it is critical to have knowledge of a fish population's ability to compensate for losses of individuals due to harvest. A fish population must compensate by increasing reproductive rates or decreasing natural mortality rates when individuals are harvested. This compensation is thought to result primarily from density-dependent changes in juvenile survival, although increased growth and fecundity may also contribute. The strength of compensation in fishes varies widely across species and depends on life history strategy and ecosystem dynamics. Determining the magnitude of compensation in individual populations remains problematic because of the lack of controlled population-level studies of compensatory processes. Most studies to date have been limited to a time series of data showing an increase in exploitation and resulting decrease in estimated abundance with no control populations to account for random environmental variation or ecosystem regime shifts. These uncertainties complicate assessments of optimal harvest strategies and have contributed to the commercial extinction of several fish stocks.

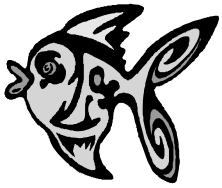
My study will evaluate the compensatory response of a fish population following whole-lake density-reduction. My model species is gizzard shad *Dorosoma cepedianum*, which are an important component of freshwater aquatic food webs in North America because they are abundant and their omnivorous feeding may increase lake productivity via excretion of sediment-derived nutrients into the water column. Thus gizzard shad have been a target species for biomanipulation to alter lake primary productivity and food web structure. The St Johns River Water Management District has manipulated gizzard shad abundance at Lake Dora in the Harris Chain of Lakes in an attempt to reduce lake primary productivity. This provided a unique opportunity to evaluate the response of a previously unexploited fish population to den-

sity reduction to assess the magnitude of compensation. My objectives are 1) to evaluate demographic (recruitment, growth, fecundity) responses of gizzard shad to density reduction, and 2) to assess the population-level consequences of these changes by constructing age-structured population models that assess the contributions of changes in each demographic parameter to the change in population growth rate after harvest, and 3) to determine optimal harvest strategies that maximize gizzard shad density reduction and therefore the efficacy of the biomanipulation.

Gizzard shad density reduction was carried out at Lake Dora in spring of 2005 and 2006 via a commercial gillnet fishery. The removal was size-selective capturing fish greater than 300 mm. I collected demographic information on gizzard shad such as size and age structure, growth, recruitment, fecundity, and larval fish production before and after harvest. Changes in demographic variables were evaluated after density reduction at the harvested lake (Lake Dora) relative to unharvested control lakes (Eustis and Harris). As expected, density reduction shifted the age and size structure toward smaller younger fish. However, this shift was not accompanied by detectable changes in growth at Lake Dora relative to control lakes. Fecundity (as measured by the gonadosomatic index) increased after density reduction at Lake Dora. Larval fish density decreased to about half of pre-harvest levels after density reduction, but this change also occurred in control lakes indicating system-wide changes in larval abundance related to environmental factors rather than shad harvest. I am currently compiling pre- and post-harvest shad data for use in age structured models to evaluate changes in population growth rate and optimal harvest strategies for biomanipulation. The study will continue through 2007.



Student Announcements



- Applications for Student Travel Grants to the Annual Florida AFS meeting can be found on the website at http://www.sdafs.org/flafs/PDF/travelap.pdf Please start your applications early!
- Instructions and applications for the Roger Rottmann Memorial Scholarship can be found at http://www.sdafs.org/flafs/doc/rottmann.html. This is a $500 scholarship available to PhD and Master's level students. Apply now!

Florida Chapter AFS
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