the Shellcracker

FLORIDA CHAPTER OF THE AMERICAN FISHERIES SOCIETY *http://www.sdafs.org/flafs*

October, 2011

President's Message:

"Where do you want to be, both next year and five years from now?"

It's a thought that likely brings back unpleasant memories of college or job interviews, even when asked with the most innocent of expressions and intents. However, it's also something that we should all do with our own careers, and for those of us with our own research groups, for our groups as a whole. I try to sit down and do this every six months for me and my own research lab; here are three of the main ones should you decide to do so yourself:

Publications. I remember when past-President Will Harrison wrote in one of his columns about the guidance he was given in graduate school to devote time each day to writing scientific manuscripts. Now, I won't claim to have done this myself (at least not as much as I would have liked to), but it's indeed a great goal. Just remember the backwards planning concept, which applies to manuscripts just as it did to theses and dissertations: pick a target date for something, then work your way back through all of the minimum times needed at each stage. Manuscript reviews take at least two or three months at each stage, so plan for two reviews (six months). Often it takes a month for the editor to assign a junior editor and for that junior editor to find and send it out to reviewers, then another month for that junior editor to collate the responses and get back to you (two months). It's been my personal experience that having more than three co-authors, especially if they're at another location, adds at least another month for their edits and comments at each stage (two months). Very quickly, you're up to 10 months, and that's *after* you've done your research. *What publications do you want next year? In five years?*

Directions. This can be a pretty broad concept, whether geographic or research. For example, in my own lab, I want us to do more research throughout the Caribbean. I also want us to work as much with the recreational marine fisheries as we currently do with the commercial ones. Remember that changing a research group focus is a lot like turning a supertanker – you've got to give everyone time to move. This applies to several different ideas, including your current lab staff and their career trajectories, your lab's own research infrastructure needs (large items like -80°C freezers aren't exactly cheap), and developing the connections within the fishery participants. *Where do you want (your lab) to be next year? In five years?*

Culture. No, I'm not talking about the latest music or fashion, but rather what is the culture within your research group? What motivates them, what sets your group apart from others? In my own situation, I wanted to foster an environment of collaboration and cohesion – in the terms of author Seth Godin, to create a "tribe." Most institutions and agencies do this on a larger scale, but you may be surprised to find that your own group can do this much more strongly and effectively. It's about people voluntarily coming together to accomplish a common goal, which is already pretty well defined in most research groups. You can encourage this natural action through some fairly simple actions, whether regular lab meetings or lab events (our neighboring lab does an annual Christmas "ugly sweater" party). In my own lab, we have "NSUOC Fisheries" t-shirts, which are oddly already a collector's item elsewhere at the Oceanographic Center. From a practical perspective, a strong tribal culture fosters inter-lab training and assistance in field and lab duties. *How can you develop this intra-laboratory culture to best meet those above objectives?*

Finally, speaking of backwards planning, remember that the calls for the 2012 Southern Division and Florida AFS Chapter meetings are now out, and deadlines for abstract submissions will be approaching shortly. Other meetings in 2012 will soon be sending out similar calls for abstracts soon. Best wishes as you plan your coming year's activities, and I hope to see you at the annual Chapter meeting.

Dave Kerstetter
FL AFS President

Getting in Touch

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Upcoming Events

October 18 – 20, 2011: Institute of Fisheries Management 2011 42nd Conference. Oxford, England. www.ifm.org.uk/events/

October 26 – 27, 2011: The Lakes Ecosystem Conference. Erie, Pennsylvania. http://ec.gc.ca

October 26 – 28, 2011: 31st International Symposium of the North American Lake Management Society. Spokane, Washington. www.nalms.org

November 6 – 10, 2011: 21st Biennial Conference of the Coastal & Estuarine Research Federation. Daytona Beach, FL. www.erf.org

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

New Titles

Conservation, Ecology, and Management of Catfish: The Second International Symposium. Paul H. Michaletz and Vincent H. Travnichek, editors. 800 pages, Symposium 77. Published by the American Fisheries Society. August 2011.

Interested in contributing something to the Shellcracker? Email Kevin Johnson at *kevin.johnson@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 December 31st, 2011, so start fishing...

Feature Article

Improving data inputs to stock assessments: a case study in the reproduction of sandbar sharks

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Introduction

During fishery stock assessments, scientists strive to use the best available science to establish informed decisions, while the stakeholders participate in each level of the process to be sure to make their interests known and to better understand the final outcome. In the southeastern United States, stock assessments are generally carried out by the SouthEast Data Assessment and Review (SEDAR) process. These assessments consist of three workshops (data, assessment, and review), which take place over the course of about one year.

Among those participating in these public workshops are scientists, stakeholders (fishing industry), independent reviewers and non-governmental organizations (NGO). At the first meeting, the data workshop, three working groups (life history, indices, catch statistics) are formed in order to review previous and new data and put forth recommendations as to which data should be used for the stock assessment. These working groups are populated by both laypersons and those considered experts in the field. Representatives from each working group must present their recommendations to the entire assembly during separate panel discussions, during which the merits of the data are debated. While agreement by consensus is preferable, it may not be reached, hence dissenting opinions are noted in the record, and the process moves forward by majority opinion.

During panel discussions scientists may interpret the results of models in a slightly different manner, so the procedure allows participants to convey their arguments to support their scientific perspective. The discussions are part of the scientific method, and often lead to more robust data inputs. However, in a public forum in which laypersons participate, these technical debates can be misunderstood, which may be interpreted as a lack of confidence in the data. During certain portions of the meetings, the public may ask questions. Scientists will take the time to explain in order to develop a better understanding of the data, methods, and overall science being used. Scientists are trained to focus strictly on the science which means the quality of an assessment may be limited based upon the data available. Unfortunately, data limitations can lead to a lack of confidence in the results of an assessment especially when the stakes are high, such as when the stock is assessed as overfished.

Here we discuss how the scientific method has been used to determine whether and to what degree changes in life history inputs affect the outcome of stock assessments. To that end, we developed a case study using the recent sandbar shark *Carcharhinus plumbeus* stock assessment (SEDAR 2010). During the data workshop, the frequency of the reproductive cycle was an issue of much discussion and debate.

Case study

Sandbar shark

The sandbar shark is a common coastal shark in US waters of the Atlantic Ocean and Gulf of Mexico (Compagno 1984). It was the most important commercial shark species in the US until 2006 when the stock was assessed as overfished with overfishing occurring (SEDAR 2006). Because of the stock status, the sandbar shark was listed as "prohibited" (no landings allowed). However, scientists and managers worked closely to develop a management strategy that would minimize fishing mortality of sandbar sharks while allowing continued life history data collection. In 2008, a research fishery was established (NMFS 2008) in which a small number of permits was issued to commercial fishers who had historically landed sandbar sharks. A monthly quota was put in place in an effort to spread sampling throughout the year and throughout the geographic range of the stock. To obtain updated biological data, 100% observer coverage was mandated for the fishery. Observers collected biological samples for age, growth, and reproduction studies in order to improve data inputs for future stock assessments.

Life history inputs

Between 2008, when the research fishery began, and the 2010 SEDAR 21 sandbar shark stock assessment, updated age, growth and reproduction studies (n=1194) were completed by scientists at the National Marine Fisheries Service (NMFS) (Baremore and Hale 2010; Hale and Baremore 2010). An additional reproduction study was completed for sandbar sharks and submitted during the data workshop at SEDAR 21 (Piercy 2010). The reproduction studies were complementary, and most data inputs from these studies were used in the stock assessment model. In comparison to the previous assessment (SEDAR 2006), the two most recent studies found decreased age at maturity for females, an increase in fecundity with size and age, similar fecundity, and the possibility of a three year reproductive cycle.

While consensus agreement was reached for most reproductive parameters for the sandbar shark, the length of the reproductive cycle was a matter of debate. Though the hypothesis of a three year cycle was reached independently by both studies and the sample sizes were robust, other life history experts in attendance did not agree with the conclusions. However, due to general agreement that the data were compelling, a compromise was reached and the base assessment model included a 2.5 year cycle with sensitivities run for 2 and 3 year cycles.

Assessment model

The assessment model for the sandbar shark was age-structured, requiring a discrete value for the reproductive cycle rather than a range of possibilities. Because SEDAR 21 was a benchmark assessment, all new data had to be considered. When there was evidence for multiple hypotheses, they all had to be taken into account. In addition, all previous data were subject to new validation or substitution by "better" data. For the full model and input parameters refer to the SEDAR 21 final report (SEDAR 2010). In terms of the assessment model, reproductive output is in the form of pup production, or:

$$\text{Pup production} = \sum \frac{(\#\ pupsperfemale)}{(lengthofcycle(years))} \times maturityatage$$

Therefore the difference between the 2, 2.5, and 3 year cycles is seen in the length of the cycle in years.

In simplified terms, stock status (overfished, overfishing) can be described by examining the current (CUR) spawning stock fecundity (SSF) and fishing mortality (F) as they relate to maximum sustainable yield (MSY). Therefore, where $SSF_{CUR}/SSF_{MSY} < 1$ the stock is considered to be overfished, and when $F_{CUR}/F_{MSY} > 1$ the stock is undergoing overfishing. Visually, when plotted on a phase diagram (Fig. 1), the values in the left half of the quadrant represent an overfished status, while those in the upper half represent overfishing. When the values occur in the upper left hand quadrant, the status is overfished with overfishing occurring.

Results

The outcome of the base model (2.5 year reproductive cycle) indicated that the sandbar shark stock in the US Atlantic Ocean and Gulf of Mexico was still overfished, but overfishing was no longer occurring (Fig. 1). When the model was run with each of the two alternative reproductive scenarios, the status of the stock remained unchanged. However, though SSF_{CUR}/SSF_{MSY} values were similar among scenarios, the F_{CUR}/F_{MSY} values were quite different, ranging from 0.46 (2 year) to 0.93 (3 year).

While the stock status was unchanged in this example, it is clear from the results of the 3 year cycle sensitivity analysis that reproductive parameters can have a profound impact on stock status. In this case, the model reacted to lower reproductive output by allowing for a larger F_{MSY}. Therefore, in the 3 year scenario, any other factors affecting population productivity could easily change the stock status to undergoing overfishing. This is illustrated by the RW-4 (low prod) sensitivity outcome (Fig. 1), which modeled a 3 year reproductive cycle, a low maximum reproductive rate, and high natural mortality (maintaining the same growth rate).

Discussion

As expected, we found that life history inputs do affect the output of stock assessment outcomes, and that the length of the reproductive cycle can have a great effect on the stock status. In the case of the sandbar shark, a longer reproductive cycle lowered the population productivity. The assessment model adjusted to the reduced productivity by allowing for a larger mortality, which affected F_{MSY}.

In addition to noting the results of the case study, we as scientists need to focus on the scientific method by evaluating the data quality and adequacy, appraising the quality and appropriateness of the analyses, and compare the data to previous studies with an objective approach. This is especially true when there are opposing scientific opinions presented in a public forum. While the process is open and every attempt is made to eliminate bias, following these simple processes will help to further improve the quality and acceptance assessments have among stakeholders.

The results of this case study should help to guide scientists and mangers when considering conflicting life history data. In the future, more cases studies should be examined investigating everything from changes in age-length keys to the rigorousness of the SEDAR process in comparison to peer-review. Continued updates to life history information, along with other data sources, are vital to the assessments of stock status.

References

Baremore, I. E., and L. F. Hale. 2010. Reproduction of the sandbar shark *Carcharhinus plumbeus* in the U.S. Atlantic Ocean and Gulf of Mexico, SEDAR21-DW-06.

Compagno, L. J. V. 1984. Sharks of the World. An annotated and illustrated catalogue of shark species known to date. FAO Species Catalogue Volume 4, Part 1, Rome.

Hale, L. F., and I. E. Baremore. 2010. Age and growth of the sandbar shark, *Carcharhinus plumbeus*, in the Gulf of Mexico and southern Atlantic Ocean, SEDAR21-DW-21.

NMFS. 2008. Final Amendment 2 to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA Office of Sustainable Fisheries, Highly Migratory Species Management Division. Public Document, Silver Spring, MD.

Piercy, A. 2010. Reproductive cycle of sandbar sharks in the northwestern Atlantic Ocean and Gulf of Mexico, SEDAR 21-DW-26.

SEDAR. 2006. SEDAR11, Stock assessment report: Large coastal shark complex, blacktip and sandbar shark. NOAA Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD.

SEDAR. 2010. SEDAR21 Complete stock assessment report: HMS sandbar shark, Charleston, SC.

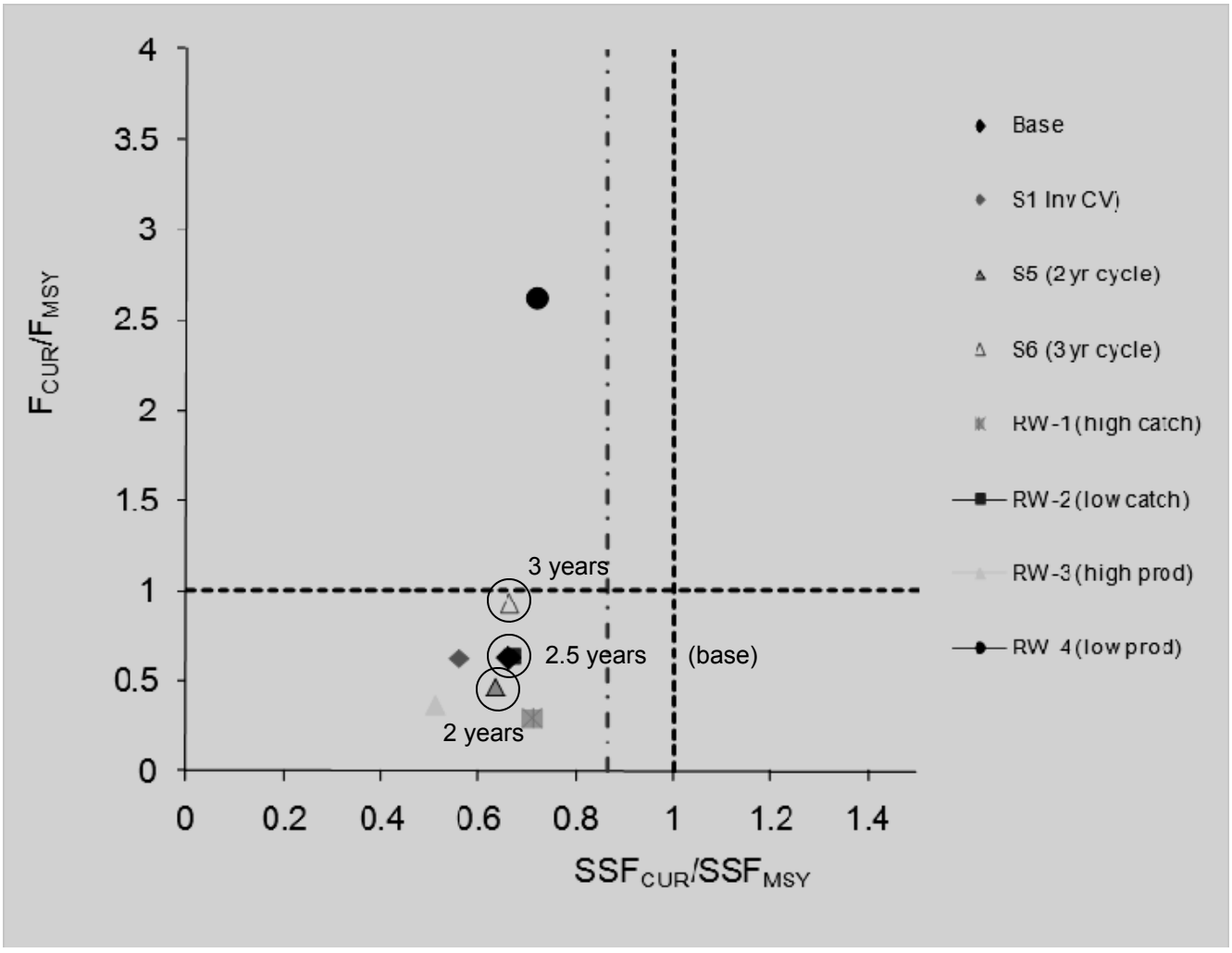

Figure 1. Phase plot of the base assessment model and all sensitivities run for the sandbar shark stock assessment (SEDAR21). Base, S5, and S6 (circled) are the outcomes from the assessment model run with 2.5, 2, and 3 year reproductive cycles, respectively.

Florida Chapter of the American Fisheries Society
4H Camp Ocala, Florida
Annual Meeting Registration: February 21-23, 2012

Official Use Only:
Postmarked:_____
Entered: _____
Deposited: _____

First: _____ **Last:** _____ ☐ **Student (please check)**

Affiliation:_____
This address will be used in our mailing list and should be the one where you want to receive materials.

Street Address:_____

City:_____ **State:**_____ **Zip Code:**_____

Work Phone:_____ **Ext:**_____ **Email:**_____

T-Shirt Size: (Select One) Small Medium Large X-Large XX-Large XXX-Large

Arrival Time: (Select One) Tue Noon Tue PM Wed AM Wed Noon Wed PM Thur AM

Please check the appropriate boxes below.

PRE-REGISTRATION: registration form postmarked by Friday, January 13, 2012
☐$ 30.00 One-day Registration ☐$ 40.00 Full Registration

LATE-REGISTRATION: registration form postmarked after Friday, January 13, 2012
☐$ 35.00 One-day Registration ☐$ 47.00 Full Registration

Meals and Lodging

Tuesday, February 21, 2012
- ☐ $7.00 Lunch
- ☐ $14.50 Dinner
- ☐ $26.00 Lodging

Wednesday, February 22, 2012
- ☐ $6.50 Breakfast
- ☐ $7.00 Lunch
- ☐ $14.50 Dinner
- ☐ $26.00 Lodging

Thursday, February 23, 2012
- ☐ $6.50 Breakfast
- ☐ $7.00 Lunch

Full Meals and Lodging ☐ **$115.00**
Linens (please bring own, limited supply) ☐ $ 6.00

Florida Chapter dues (calendar year 2012) ☐ **$10.00** ☐ FL Chapter dues paid via AFS annual membership.

Total Amount: _____

Total Enclosed: _____ ○Cash ○Check
(Minimum $10)

Balance Due: _____ ○Cash ○Check ○Credit

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

Travis Tuten
FWC
7922 NW 71st Street
Gainesville, FL 32653

Phone: (352) 955-3220 ext. 113
Fax: (352) 955-3210
Email: travis.tuten@myfwc.com

*****Checks not payable to 'Florida Chapter AFS' will be returned to sender.
Registration Forms may be sent via fax (attention: Travis) or via email: (subject: 2012 AFS FL).
A minimum amount of $10 must be mailed to validate your registration.

Note: This is a cafeteria-style service and food must be ordered a week in advance.
Since meals are pre-paid, **please** submit your registration form as soon as possible.
Registrations will still be accepted at the meeting, but with a late registration fee.
We can only accept **non-FWC VISA** or **MASTERCARD** on the meeting date**.**
Credit card charges are submitted by our parent organization, AFS, after the meeting.
If you would like to pay your meeting fees with a credit card, then please send a $10 check for your deposit.

Annual Meeting and Symposium Announcement – 1st Call for Papers
32nd Annual Meeting of the Florida Chapter of the American Fisheries Society

Fish habitat use over environmental gradients: response or selection?

February 21-23, 2012
Ocala 4H-Camp, Altoona, Florida

Well Florida Fishheads, after successfully hosting the Southern Division spring meeting in Tampa during 2011, it's time to begin planning a return to the Ocala 4-H Camp to enjoy the company of friends and colleagues at the annual Florida Chapter AFS meeting. The 2012 meeting is still a few months away, but it is never too early to plan to attend. The meeting format will consist of both invited and contributed oral presentations and posters. The symposium on Wednesday will be 'Fish habitat use over environmental gradients: response or selection?'

Variability in habitat characteristics and abiotic factors within aquatic systems can contribute to differences in nekton habitat use. For example, freshwater inflow can have a broad influence on estuarine systems by affecting factors such as transport of larval and juvenile fishes, nekton community structure, salinity regimes, and nutrient dynamics. Water quality may affect fish communities directly, through species' tolerances, or indirectly, through effects on habitat. Previous research has shown that large-scale patterns in nekton community structure and species abundance are usually in response to environmental gradients (i.e., temperature, depth, salinity), while small-scale patterns may be associated with habitat selection, food availability, or predator avoidance. The value of a particular habitat can differ based on interrelated factors such as geographic location, associated shoreline or benthic habitat characteristics, and environmental conditions such as the amount of freshwater inflow. Therefore, management decisions regarding urban development and freshwater withdrawals or releases need to be made with full consideration of the complex relationships governing the value of habitat for nekton.

This symposium will review these relationships and methods (i.e., multivariate statistics, indices of abundance, etc.) to explain their influence on fish populations, community structure, and ontogeny.

All abstracts are due ***Friday, January 13, 2012***, for full consideration in the symposium or contributed sessions. Please send your abstract (<300 words) and associated information (following the format given below) to **kerry.flaherty@myfwc.com**; in the subject line of your email, please list the author(s) as they will appear in the program (e.g., SchaubMooreMajikowski.doc). Platform presentations will be 20 minutes (15 minutes for presentation and 5 minutes for questions or discussion). We will have **PowerPoint 2007** 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 21, 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, Kerry Flaherty, at kerry.flaherty@myfwc.com.

The 2012 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 and directions 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 meeting's schedule will be similar to recent past meetings. We will begin at noon on February 21st. Lunch will be served and then followed by the presentation of contributed papers. The 'Fish habitat use over environmental gradients: response or selection?' symposium will be on Wednesday. The business meeting and raffle will follow dinner on Wednesday night. We will hear more contributed papers on Thursday morning, followed by lunch and the presentation of awards immediately following lunch.

For your convenience, we are trying something new this year with registration. Registration can now be completed through an online form: https://docs.google.com/spreadsheet/viewform?formkey=dDRPT2E0d18xZVh6UjZXSXk2cTFESmc6MQ. Once you fill out the online form, you can either pay online through PayPal or print the completed form and mail it in with your check, cash, or money order.

If you would rather not use the online form, a hard copy of the registration form as used in previous years can found in this issue of the Shellcracker or on the Chapter's website: http://www.sdafs.org/flafs/meetings.html

Please note the savings available if you register on or before January 13, 2012. This helps in many ways: reduces everyone's registration time, gives us a head's up on the count for meals, saves money, gets you the correct size of the meeting t-shirt, and you don't miss any talks. Therefore, please **pre-register by completing the registration form** (online or hard copy) **and sending in your deposit** online through PayPal or by mail to the Chapter's Secretary-Treasurer, Travis Tuten (see registration form for Travis' contact information), **by January 13, 2012**. Lastly, 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 and for a small fee.

Students: 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 at http://www.sdafs.org/flafs/awards.html.

We're looking forward to returning to the beautiful 4-H camp for our 2012 annual meeting, and hope to see you there!

Sincerely,

Kerry Flaherty
FL AFS President-Elect

Abstract Format:
Limit abstracts to ≤ 300 words and follow this format (2007 MS WORD is preferred):

Presenter: Schaub, M.; Email: MattShaub@HoustanTexans;
Author(s): Schaub, M.[1], S. Moore[2], and D. Majikowski[3]. Affiliation. Address.

Title: The Sometimes Rocky Road of a University of Virginia Quarterback

Abstract: You know how this works: <300 words (MS Word will count it for you!)

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

Presentation type: oral (versus poster)

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

Are you willing to be a moderator? Yes or No

Award Nominations!?!

The Awards Committee is seeking nominations for the Florida Chapter's, Outstanding Achievement and Rich Cailteux Awards. Send nominations to Eric Nagid (eric.nagid@myfwc.com) by January 13, 2012. Applications should be limited to one page, but descriptive enough to convey why the individual is deserving of the award. Nomination letters should outline the accomplishments of the individual that meet the criteria of each award below.

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 resources. 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.

Candidate Biography for Upcoming Secretary-Treasurer Vacancy:

Cheree Steward,

The Florida Chapter of the American Fisheries Society has been a valuable organization to me since I entered the field of fisheries research. Our annual meetings provide a great place to find out what others are doing around the state, network and get input from colleagues and generally expand our vision. I am a fisheries biologist with the Florida Fish and Wildlife Research Institute's Freshwater Fisheries Research Lab in Eustis. I received a BS in Biology from Florida State University, and a master's in Marine Biology from Florida Institute of Technology. I attended my first Florida Chapter meeting in Brooksville in 2004, presented a poster in 2005 and have attended every since. Every year I look forward to seeing everyone, and to hearing about all of the great fisheries science going on in our state. It takes a lot of work on the part of many people to make these meetings happen for us all, and I am interested in serving as Secretary-Treasurer of the Florida Chapter AFS to contribute to that effort.

Our February 2012 Student Raffle:

Thanks, Andy—Andy Strickland will not be leading the Raffle at the meeting because he and his wife are expecting a baby in January 2012. It is their first, so Andy should be a busy man at home in February. Thank you Andy for doing such a great job the last several years -- especially at the Southern Division Meeting in Tampa. We hope that Andy, in the next couple months, will still be able to help us obtain some new donations from the many businesses and organizations he worked with the last few years to make our recent Raffles so successful.

Janice Kerns of UF was kind enough to volunteer to stand in for Andy in February. She will be up front for the big event and **Alan Collins** is organizing the effort to bring in great prizes and donations from all over the state.

Kerry Flaherty, our President-Elect, and **Joy Young** of FWC/FAU have also already volunteered to get donations from some businesses in St. Pete/Tampa and Jupiter.

We need your Help to make the 2012 Raffle a big one! We need at least several more of our members to volunteer to cover some of their local businesses and organizations to get Raffle and Silent Auction donations. If you can spare a little time the next few months, please e-mail or call Alan Collins at lac96@bellsouth.net or 850-303-4434 and he will be glad to help you.

We would ALL appreciate it!

Student Section

Student Research Highlight

Carla Garreau

University of Florida

I'm currently a graduate student at the University of Florida in the School of Forest Resources and Conservation in the Fishery and Aquatic Sciences Department, a student of Dr. Ruth Francis-Floyd and Dr. Lou Guillette. I also work full-time for NASA at the Kennedy Space Center for Innovative Health Applications. I have started my research project this spring which is to develop a non-lethal health assessment for adult red drum in the de-facto no-take reserve in the Banana River. The goal of my study is to apply non-lethal techniques to assess the external and internal "health" of a free ranging sportfish population of red drum. I plan on incorporating the external health index from FWC Stock Enhancement Research Facility with blood analyzers to assess physiology and reproductive status. Previous information on the reproductive biology of the red drum is limited to age and growth studies with a histological approach for gonadal maturation rates. Given the lack of data in the literature for blood plasma parameters, not only for sex steroids but also glucose, lactate, and cortisol in wild red drum, data from this study will fill a gap of knowledge for the species. These data will help enable researchers and agencies interested in the well-being of fish for management or sport a better understanding of the animal's overall health. Some of my objectives are to determine if there are seasonal changes in metabolic disturbance by measuring the blood glucose and lactate levels of red drum; evaluate the seasonal variation of the sex steroid profiles of red drum using 11-KT, E_2, and testosterone, and; evaluate the seasonal variation in the primary endocrine stress response by measuring the cortisol levels of red drum.

My plan was to sample three times this year to detect changes in stress and sex hormones by collecting fish during pre-spawning, spawning and post-spawning seasons. I was able to catch and release 38 fish during my pre-spawning collection this May. I'm currently attempting to reach a similar sample size during spawning season to try to reach a ratio of 50:50 males to females. Adult red drum are not sexually dimorphic, so unless the fish is drumming the sex is most likely undetermined in the field. Through the sex hormone radio immuno-assays (RIA) in the laboratory I will learn how close of the 50:50 sex ratio I achieved. The spawning sampling has been more difficult to a persistent algal bloom which started in May and has many management agencies concerned as the water clarity has decreased so much that seagrass beds have declined to almost winter transect readings. This has a drastic ecosystem effect due to the high importance of seagrass beds to the Indian River Lagoon system. Many species of fish, including red drum, *Sciaenops ocellatus*, utilize these beds for protection and foraging. A small fish kill of pinfish, mullet, and puffers has been observed for a few weeks in September. The poor water quality of"pea soup" coloration makes sighting for reds extremely difficult, however currently the minimum sample size has been achieved for this period, but more will be attempted. Hopefully the change in the diel fall and winter light cycles will lower the algae bloom's ability to reign and will die out. My last sampling season will be post-spawning which will begin in December.

Currently the fish were hooked and brought to the boat in an average time of 1:30, a blood sample is taken in less than 5 minutes from initial hook-up and the entire external assessment is done in less than 10 minutes. So far the external exam which includes: a skin scrape, gill clip, fin check, eye check, oral cavity check for hook wounds, any body deformities, and length weight measurements has concluded only a few external parasites, three species and in very low amounts. I presented my fish health non-lethal assessment techniques as a poster at the Seattle American Fisheries Society meeting this September. I'm currently learning about the endocrinology techniques that I will be using in January 2012 to process the blood plasma samples using the RIA's at the Medical University of South Carolina in Dr. Guillette's lab. All of the above research has been conducted under the stipulations of NASA IACUC protocol # GRD-11-077, Merritt Island National Wildlife Refuge special use permit # 014, and the state of FL permit SAL-09-0512-SR. If you have any questions or comments please feel free to contact me at Carla.M.Garreau@NASA.Gov or 321-476-4102

The Southern Division of the American Fisheries has a limited number of complimentary student rooms available for the **2012 Spring Meeting (January 26-29) at the IP Casino Resort and Spa in Biloxi, Mississippi**. Rooms are available for 2 nights (January 27 and 28). If you are interested in taking advantage of these rooms, please contact John Jackson, the Chair of the Student Affairs Committee. These rooms will be assigned on a first come, first served basis. Please send John your name, complete mailing address, email address, phone number, and your gender (so that appropriate room assignments can be organized). In exchange for free lodging, students will be expected to assist the Mississippi Chapter as needed during the meeting.

John's contact information is...

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