the shell-cracker

FLORIDA CHAPTER OF THE AMERICAN FISHERIES SOCIETY *http://nersp.nerdc.ufl.edu/~fafs/*

August, 2002

Good day, Everyone!

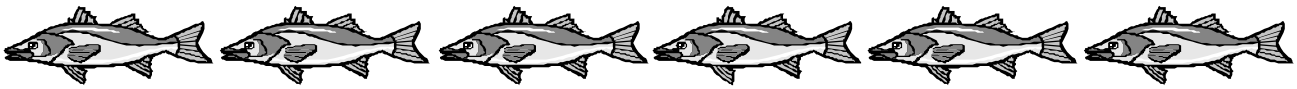
I hope this finds all of you relaxed from a summer full of fun, vacation, time home with the kids, picnics in the park, fishing from the pier and re-energized for fall festivities. And if you didn't get that vacation or fishing trip this summer, may you at least enjoy a few moments of peace to read the Shell~Cracker and catch up with what is going on with the chapter.

Some of you may recall from our meeting in February that we are soliciting donations for the Rottmann Memorial Scholarship Fund to award scholarships to graduate students in fisheries and aquatic sciences at Florida colleges and universities. Some donations have slowly trickled in but not enough. I encourage each one of you to hand out the chapter's solicitation letter to people, clubs or companies you interact with who might like to donate to a scholarship fund. This letter can be accessed from the website or myself. You could also consider a personal donation toward this fund. If each of us sent a personal check for only $10 to the fund it would grow substantially!!! Remember that the chapter will match all donated funds up to $6,000.00. The Rottmann Committee will be assembling in Sept. or Oct. to review the scholarship details and plan how the donated money and matched funds from our chapter will be invested and put to use.

Well what about members who are not students you ask? The executive and membership committees have been developing some informational material. We will soon have a letter of welcome for all new members, a letter of encouragement for participation to touch base with our former members who are no longer active, and also a brochure about the Florida Chapter than can be included with these letters. Of course, our fine newsletter editor keeps the rest of us informed right here! Please read the other articles to see what else is going on around the region.

For the rest of us…. The plans for the next chapter meeting in February 2003 have been started and I hope to see you there if not before. I know I shall see some of you in Baltimore for the 132nd Annual AFS Meeting. Thanks to those of you who have contacted me since the last meeting to share your ideas and discuss your thoughts about other articles. I appreciate your interest and desire to better our chapter. I hope that everyone has a terrific "fall", and if ever in St. Pete, feel free to drop by and say hello!

Kathy Guindon-Tisdel
President



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Upcoming Events

Aug. 18-22 – 132 AFS Annual Meeting – Turning the Tide: Forging Partnerships to Enhance Fisheries, Baltimore Convention Center, MD.

Oct. 20-22 – AFS/EPA 2002 Forum on Contaminants in Fish, Burlington, VT.

Nov. 12-14 – Symposium on Effects of Fishing on Benthic Habitats: Linking Geology, Biology, Socioeconomics, and Management, Tampa, FL. Contact: Peter Barnes, pbarnes@usgs.gov.

Dec. 10-11 – Flatfish Biology Conference, Westbrook, CT. Contact: renee.mercaldo-allen@noaa.gov.

Feb. 12-16, 2003 – AFS 11th Annual Southern Division Midyear Meeting, Wilmington, NC. Contact: Kent Nelson, nelson3@earthlink.net.

Feb. 25-27, 2003 (tentative) – Florida Chapter AFS Annual Meeting, Brooksville, FL.

The Florida Chapter will be providing a few goodies to the raffle in Baltimore for the 132nd Annual AFS Meeting. We will be bringing two beautiful, signed and numbered Diane Peebles Prints to the raffle. One print is of a red drum from her scientific series and the other is the freshwater bream/habitat print that we had at our meeting last Feb. Kathy couldn't decide which one to get so she decided to appeal to both freshwater and marine folks alike. In addition, we will donate two of our Florida Chapter 2002 Meeting t-shirts and a copy of the FL AFS publication entitled Florida Aquatic Habitat and Fishery Resources.

Thank you, Diane Peebles, for your generosity and continued support. You are a gem.

Feature Article

Modeling to Assess Fish Populations: Hocus Pocus or Valuable Tool?

Mike S. Allen
Department of Fisheries and Aquatic Sciences
The University of Florida

Fish population models are used to aid management decisions in both freshwater and marine fisheries. Webster's dictionary defines modeling as 1. "*To plan or form after a pattern*", or 2. "*To produce a representation or simulation*". Thus, a model is a simplified depiction of a natural system or process. Age-structured, size-structured, and life-stage based models are used in many fisheries to assess impacts of a change in management (i.e., size limits, creel limits, closed seasons).

However, the perceived effectiveness of models ranges widely. Some fishery managers would consider population models to be essential for management. Others would consider models as a "black box" that are doomed to fail because of oversimplification or bias in the model, or errors and uncertainty in the data that goes into the "black box." Both viewpoints have merit, because many cases of modeling success and failure are evident in the literature. Here, I discuss the uses and limitations of population models to aid fishery management decisions. My focus regards models for predicting effects of harvest restrictions on wild fish stocks.

A common concern for modeling is that parameters needed for the model are not available for a specific population. A model may require estimates such as fishing and natural mortality or length-at-age estimates, but some of the data may not exist for a specific fishery. This reduces but does not eliminate the potential for modeling to help an investigation. Borrowing data from other regions for a given species can serve as a baseline for simulations to begin. For example, we often do not have a weight-length relationship for a particular population, but regional or national standards can be used to approximate these values for the model. Other estimates, such as fishing mortality and growth rates, can often be found in review papers and can serve as starting points for a given population. Having data for all portions of a specific population, however, may or may not make a significant difference in the model output or management decisions (see below).

Students who are first introduced to population models often presume that the goal of modeling is to predict exactly what will happen when a management change is made (e.g., size limit, fishing season). Conversely, fishery researchers who use modeling as a tool usually aim to find out the general response that is most likely to happen after a management change. Modelers seldom expect to predict the exact population response. Instead, they simulate a range of conditions (e.g., varying growth and recruitment) in response to the proposed management change and evaluate how the simulated population responds across that range. Frequently, the recommended management strategy results from simulating varying conditions that may be experienced by the population.

For example, Figure 1 depicts simulations of a largemouth bass *Micropterus salmoides* population under no length limit and three length limits (14-inch minimum, 18-inch minimum, 15-24 inch slot limit). The management goal in this example is to increase angler catch rates (both harvested and released fish) by implementing a size limit. Let's assume that we have uncertainty in our estimates of natural mortality androwth for this population, so simulations were conducted for three different growth rates and two rates of natural mortality. Regardless of natural mortality, fast growth increased the benefit of the size limits on total catch (Figure 1). If natural mortality was low (10%), an 18-inch length limit was predicted to triple angler catch rates over those found with no length limit if growth is medium or fast (Figure 1). The 14-inch minimum size limit and slot limit

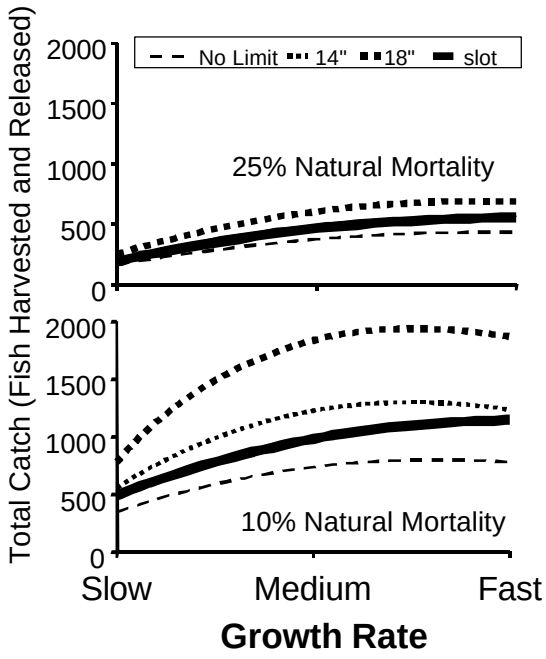

Figure 1. Total catch of largemouth bass under three levels of growth and high (top panel) and low (bottom panel) natural mortality.

certainty in our estimates of natural mortality and growth for this population, so simulations were conducted for three different growth rates and two rates of natural mortality. Regardless of natural mortality, fast growth increased the benefit of the size limits on total catch (Figure 1). If natural mortality was low (10%), an 18-inch length limit was predicted to triple angler catch rates over those found with no length limit if growth is medium or fast (Figure 1). The 14-inch minimum size limit and slot limit provided intermediate angler catches. However, at high natural mortality (25%), the model indicated that length limits would slightly increase but not greatly change total angler catch (Figure 1). Thus, implementing a size limit is predicted to either increase or not greatly change angler catch rates for the range of growth and mortality simulated. Even with uncertainty in our data estimates, the model provides useful information to managers that when combined with social and economic factor can form the basis of sound management decisions.

One of the most powerful uses of models is to assess where additional field data should be collected or improved. A population model allows biologists to incorporate all available data into the simulations. Areas where data are missing will be recognized and can be prioritized for collection in future sampling efforts. Alternately, modeling across a range of parameters often identifies specific parameters that greatly influence model output. This is often termed "sensitivity analyses,", which simply describes the procedure of modifying each input parameter by a certain level or percentage (e.g., percent change in growth, recruitment, mortality) to assess which factor has the most influence on total catch, yield, or population size. Model parameters that greatly influence the simulated population can then be targeted for improved estimates from field data. For example, the magnitude and variation in fish recruitment across years may greatly influence population responses to a size limit, and this can be assessed by modeling. Agency resources could then be allocated to attain more precise estimates of these influential parameters.

Johnson (1995) noted that variation and bias in field data is common, as are biases in simulation models. Thus, differences between model outputs and the population response could result from error in the field data, error in the model, or both (Johnson 1995). Students using population models should realize the limitations of both the model and the input data! Population models will continue to serve an important role in fisheries management, but they will not make decisions for us. Models are just one tool in the overall assessment of fish populations. However, when modeling is conducted as an exploratory venture to guide future collection of field data, it can be a powerful tool for assessing fish populations.

Johnson, B. L. 1995. Applying computer simulation models as learning tools in fishery management. North American Journal of Fisheries Management 15:736-747.

Mike Allen is an Assistant Professor at the University of Florida's Department of Fisheries and Aquatic Sciences. Contact him at msal@mail.ifas.ufl.edu or visit his website at http://grove.ufl.edu/~msal.

The Roger Rottmann Memorial Scholarship Fund
Is
Soliciting Donations

Your Money Will Go Toward Graduate Student Scholarships For Students In Fisheries And Aquatic Sciences At Florida Colleges And Universities

The Florida Chapter AFS Will Match All Donations On A Dollar-For-Dollar Basis!!!

All Donations Should Be Made Payable To:
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The Florida Chapter AFS is a not-for-profit organization and all donations are fully tax deductible.

**** For a copy of the solicitation letter or list of donors already contacted, please go to the Chapter's website.***

***** For more information concerning the Rottmann Scholarship and current fund-raising efforts, contact Larry Connor at (352) 742-6438 or larry.connor@fwc.state.fl.us***

The Chapter created the Roger Rottmann Memorial Scholarship in 1997 in the memory of Roger Rottmann. Roger was the first fisheries biologist hired by the State of Florida University System and worked for more than 20 years at the University of Florida. He was a founding member of the Florida Chapter and played an important role in the early development of the Chapter.

Please do your part to support graduate students and to keep the legacy of Roger alive!

Expectations of the American Fisheries Society for Fisheries Conservation by the U.S. Forest Service

Recently, Fred Harris and I attended a strategy session at the invitation of the US Forest Service Fisheries Program. The purpose was to discuss the future of the program; expectations of the program by other organizations like AFS, Trout Unlimited and others; expectations by the program of those organizations; budgeting process; and the role of Fishnet in supporting fisheries at USFS.

President-Elect Fred Harris presented a paper that outlined some of AFS' concerns [see below for excerpt].

During the ensuing discussion, it became very clear that the management style and budgeting process at USFS has shifted toward more regional and local responsibility. The Washington DC office has much less responsibility for setting priorities. Given that, it was very clear to all attending organizations that if we wanted to support fisheries programs at USFS we must work locally.

With that in mind, we want to remind you of the importance of local interaction with your Forest Regions and to take a look at the general points made by the parent society and see if you want to use them and add to them in your local interactions.

Dr. G. N. Rassam
Executive Director, American Fisheries Society

General points addressed by AFS:

- *AFS urges the leadership of the Forest Service to fully assess the needs of a comprehensive fisheries program and actively seek the resources to accomplish such program.*
- *AFS looks to the Service to provide strong national leadership in the conservation of aquatic habitats. Such leadership entails the protection of high quality habitats and the restoration or enhancement of degraded habitats.*
- *The Forest Service should continue to emphasize the conservation of native species. As degraded waters are restored and become capable of supporting more diverse faunal communities, the Service should initiate efforts to reestablish extirpated or severely depleted populations of native species.*
- *AFS strongly encourages the Forest Service to maintain access to waters on the national forests by the nation's anglers. Access to the waters of the national forests and grasslands is crucial for meeting current recreational fishing demand and the projected increases in coming years.*
- *Close collaboration and cooperation with state fisheries management agencies and other related stakeholder groups are essential to the accomplishment of the Service's mission in the areas of habitat conservation, native species conservation and recreational fishing.*
- *Also AFS strongly urges USFS to continue and enhance its partnerships with professional societies such as AFS. Increased participation by the fisheries staff in the publication, certification, and meeting programs of AFS will benefit the profession and promote effective accomplishment of staff duties within the USFS.*

World Fisheries Congress

The American Fisheries Society has been honoured to be selected as the host of the 4th Congress at the Beijing, China assembly of the 3rd World Fisheries Congress, thanks to the fine efforts of the International Fisheries Section. Vancouver, British Columbia, has been selected as the host city, thus will provide an opportunity for all to easily attend the upcoming Congress, 2-6 May, 2004. This is the first time this global event has been held in North America.

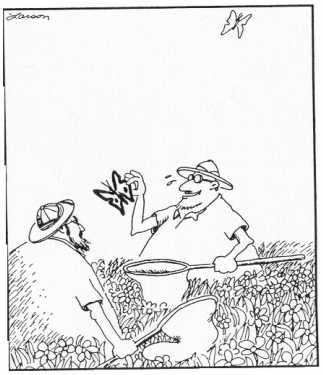
The Theme of the 4th Congress is: "Reconciling Fisheries with Conservation: The Challenge of Managing Aquatic Ecosystems"

An international array of prestigious fisheries scientists will be giving keynote addresses, and chairing program sessions. In addition, the program contains over 40 sessions that address the most pressing issues in fisheries management in both freshwater and marine ecosystems, along with a special forum for interested industry representatives and non-governmental organizations. The details of the program and venue are provided as they become available on the web page.

An expression of interest form is included on the web page to ensure you are kept current on all future announcements. We will periodically provide you with an update notice concerning any news and pertinent deadlines related to the Congress. We will also be calling on all of the Chapters, Sections, and Divisions of the American Fisheries Society to ask assistance in putting on the Congress to ensure the international family of fisheries professionals that visit North America will experience a World Class event.

This event will likely be a once-in-a-lifetime event for most of us, so please put these dates on your calendar and make plans to attend now.

'An excellent specimen ... symbol of beauty, innocence, and fragile life. ... Hand me the jar of ether.'



Announcements

New Book Releases from AFS

F *Biology, Management, and Protection of North American Sturgeon*
Webster Van Winkle, Paul J. Anders, David H. Secor, and Douglas A. Dixon

F *Incorporating Uncertainty into Fishery Models*
Jim Berkson, Lisa. L. Kline, and Donald J. Orth

F *Fish Hatchery Management, Second Edition*
Gary A. Wedemeyer

F *Whirling Disease: Reviews and Current Topics*
Jerri L. Bartholomew and J. Christopher Wilson.

F *Fishes of Alaska*
Catherine W. Mecklenburg, T. Anthony Mecklenburg and Lyman K. Thorsteinson

To order these books or other AFS publications, visit the AFS Online Bookstore at: http://www.fisheries.org/cgi-bin/hazel-cgi/hazel.cgi

Web Sites of Interest

* Shell~Cracker Picks:

Website for the Symposium on Effects of Fishing Activities on Benthic Habitats: Linking Geology, Biology, Socioeconomics, and Management:

http://walrus.wr.usgs.gov/bh2002

The 4th World Fisheries Congress website www.worldfisheries2004.org

* Other sites:

AFS Job Center Online:
http://www.fisheries.org/jobs.html

FISHERIES magazine:
http://www.fisheries.org/fisheries/fishery.shtml

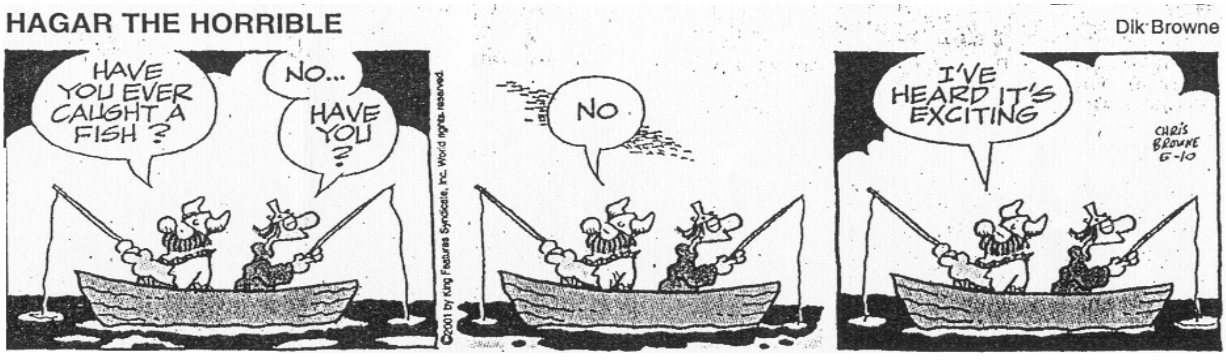
Southern Division AFS web site:
http://www.sdafs.org

Interested in submitting an article or announcement to the Shell~Cracker?

Send Materials To:

Kim Tugend (kimberly.tugend@fwc.state.fl.us)

deadline for next issue is Nov. 1!



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