#### THANK YOU JUDGES!



A big thank you goes out to the folks who so graciously agreed to judge the papers and posters presented at our meeting in February. This is a difficult job as the papers continue to get better and better each year – I know that seems impossible. Thank you Bob Wattendorf, Nicole Dunham, Larry Connor, Bob Heagey, Chris Metcalf and Troy Tuckey! We couldn't have done it without you!

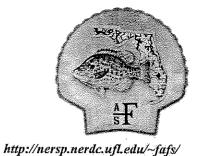
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# the shell-cracker



HAPTER OF THE AMERICAN FISHERIES SOCIETY

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May, 2002

#### First, A Word from our President...

Hello fellow fisheries folk! What an honor it is to be your President this coming year, and thank you for your trust and support. We have a great executive board and a most ambitious newsletter editor (who volunteered for the position) with an amazing amount of patience trying to get all of my newsletter contributions from me. I am writing this from a hotel room in Panama City. My work has kept me busy trying to track down pompano in order to figure out their life history, and there is never a dull moment. I sincerely hope that this letter finds all of you keeping your schedule fun-filled with your own fisheries interests whether business, pleasure, or lucky enough to be both.

The chapter had a great meeting this past February, and we are thankful to the Withlacoochee Training center for hosting our meeting for many years now. We are also fortunate in that we are most likely going to have next year's meeting there again during the last weekend in Feb., so keep those dates in mind for your travel calendars.

Several things to be proud of....we supported 20 students at this year's meeting. A record since I have been attending the chapter meetings. Please read the newsletter to hear about more of our active students in the chapter. All of the talks were of superior quality and very informative – our list of winners is mentioned in another article. While the campfire was a bit more subdued than year's past, we had a few that chose to be the "Wrong Canoe Crew" and rose to the status of the Lampshade. For those of you who don't know what that is, use it as a conversational piece the next time you want to meet someone new that you don't know in the Florida Chapter.

Items for our future: We have formed a committee to review our Chapter By-laws and maybe change some things if we feel they need revamping. If you are interested in serving on this committee, please contact Peter Hood, our past President. We are also going to try and promote membership. Wayne Price and I have talked about this a bit in the past, and we would like to see better attendance at our chapter meetings. We have a very large state full of fisheries people all trying to help preserve and protect Florida's resources and we should to be in communication with one another. The meeting is a great way to learn, make contacts, and share ideas and information with fellow scientists and shareholders of Florida's fisheries. Did you know that as many people from Wyoming (a less populated state than FL) attend their chapter meeting as do folks from FL? We have some work to do. Our other big challenge this year will be raising funds to place into our Rottmann Scholarship investment funds in order to support two full scholarships to deserving graduate students. It is anyone and everyone's job to take a copy of the solicitation letter found on the website and to distribute it to individuals or companies whom you think would like to donate to this charitable cause. The chapter will match all raised income up to \$6,000.00. If you have any questions about this fund raising, please feel free to contact me.

So, friends, I bid you farewell until the next meeting, letter, email, or phone call. Keep in touch and let's help make our chapter grow!

Kathy Guindon-Tisdel



C'mon, See What's Inside!



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## **CONGRATULATIONS!**

Kudos to the following who did an outstanding job on their presentations at the 2002 Florida Chapter Annual Meeting

#### **Best Student Paper:**

Jessica Beck and R. Turingan. Predator-prey interactions in the marine plankton: the effect of prey swimming behaviour on the feeding performance of *Sciaenops ocellatus* larvae.

And to runners-up Jeff Grim and Kristin Henry.

#### **Best Professional Paper:**

Rich Cailteux and C. Mesing. Preliminary evaluation of stocking advanced fingerling largemouth bass to supplement non-drawdown year classes in Lake Talquin, Florida.

And to runners-up Joe Mikulas et al. and Troy Tuckey.

#### **Best Student Poster:**

Paul Thurman and R. McBride. Age and growth of roughtongue bass (Serranidae: Holanthias martinicensis) in the Northeastern Gulf of Mexico.

#### **Best Professional Poster:**

Chris Powell, K.Guindon-Tisdel, and L. Barbieri. A preliminary assessment of the life history of the Florida pompano (*Trachinotus carolinus*) in the Tampa Bay area.

#### The Power Tie Award:

And a special thanks to Chris Metcalf for his enthusiasm in delivering his talk on stream restoration using natural channel design techniques. If everyone loved his or her work as much as he does, this world would be in great shape.

Well done to all of you and be proud of your accomplishments!



# **Rottman Scholarships Awarded**

Congratulations to our winners, Bridget Tiffany and Jodie Rummer! Below are excerpts from the essays they submitted to help win this award.

Winner - Bridget Tiffany (University of West Florida)

"In recent years loss of habitat and poor fisheries management has led to the collapse of fisheries worldwide. Over the last 30 years tourism and development have resulted in the loss of habitat for many organisms inhabiting Florida's waterways. Poor management of commercial and recreational fisheries and overfishing has stressed fish populations to the limits. Exploitation of Florida's aquatic resources has made managing Florida's aquatic resources of paramount importance. Through collaboration with scientists in other subdisciplines the role of fisheries scientists is to manage today for tomorrow by laying the foundation for management legislation based on a multidisciplinary understanding the whole ecosystem and its interactions."

#### Honorable mention - Jodie Rummer (University of West Florida)

"Some of my recent research involvements reflect my motivation in the area of fish ecology and conservation and include studies in hyperthermal rockpool environments in the Dry Tortugas National Park, and this summer we have similar studies planned in the Wakatobi Marine Reserve of Indonesia. However, my perspective on the importance of fisheries science to Florida's aquatic resources is most evident in my thesis research entitled, "Effects of acute swimbladder deflation and catastrophic decompression on juvenile red snapper, Lutjanus campechanus". Through my project, I am identifying how physiological attributes have contributed to the persistent decline of this important Gulf of Mexico fishery in association with release mortality. "



# DID YOU KNOW?

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.

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

# 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!!!

All Donations Should Be Made Payable To:
Florida Chapter AFS
And Sent To:
Florida Chapter AFS
ATT: Larry Connor
601 W. Woodward Avenue
Eustis, FL 32726

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!

# Bottom Line Statistics for the 22<sup>nd</sup> Annual Florida AFS Meeting

#### **Meeting Statistics**

Total number of attendees: 104

Student attendees: 34 Professional attendees: 70

#### **Meeting Finances**

Total meeting collections including T-shirt sales, dues, registration, meals, and lodging, but NOT including dues paid to the parent organization: \$7486.00

FAFS dues received from AFS parent: \$690.00 (not included below)

#### Meeting expenses:

Withlacoochee Training Center	\$6003.00
Snacks and Goodies	\$615.27
T-shirts	\$665.25
Awards	\$100.00
Name tags	\$13.00

Total expenses \$7396.52 (mail/print costs not included)

Net + \$89.48

#### Raffle Finances

Raffle collections:		\$ <u>1371</u>
Raffle expenses:	5	\$ <u>610.48</u>

Net +\$760.52 (\*student travel available next year)



#### **Student Travel Grants**



Well done Florida Chapter meeting participants – Thanks for buying those raffle tickets!!! Feature

Article

This year the chapter had a fantastic turn out of students. One of the chapter's goals is to get more student involvement from around the state and we succeeded. Proceeds from last year's raffle at the Southern Division mid-year meeting in Jacksonville enabled us to support 20 students at this year's meeting!!! They were there early helping to get things set up, they helped run the meeting, participated in the presentations, and stuck around to help clean up. Who could ask for anything more?

Each year the proceeds from the annual meeting raffle go toward funding student travel for the next year's meeting. The awards cover the costs for their meals and lodging while they are at the meeting. The student's applications are reviewed and evaluated based on their answers to questions, care in completing the form, colleges attended, past involvement in FAFS, whether or not they are giving a presentation or poster, expected graduation date, past travel grants received, students current enrollment, etc. This year we had students from the U. of Tampa, FIT, U. of West Florida, U. of Florida, U. of Central Florida, FSU, and Santa Fe Community College. There are many more colleges and universities than that in Florida, so we have a challenge for next year!

Below is a letter of thanks from one of our students:

I wanted to take this opportunity to personally thank you for the student travel grant award I received to attend last weeks AFS Florida Chapter meeting. The meeting proved to be quite informative to me personally for I have just started my second semester as a graduate student. I am currently working under the direction of Dr. Wayne Bennett at the University of West Florida. Once again I thank you for your assistance in allowing me to attend the meeting, and I look forward to next year.

Heidi L. Wallman

# The use of fish scales for aging fish – backcalculating to the future

Richard McBride Florida Fish & Wildlife Conservation Commission Florida Marine Research Institute

Patterns of growth ridges on fish scales associated with annual cycles are referred to as annuli. Scale annuli were first used to age carp, *Cyprinus carpio*, as early as 1898 (Carlander 1987), and during the early 1900s this new methodology lead to seminal research in ecology and fisheries science (Sinclair 1988). By the early 1920s, Welsh and Breder (1924) reported age and growth information for fish from southwest Florida using scales. Aging fish by the scale method was so common by then that Lee (1920) and van Oosten (1929) reviewed this method for a number of freshwater, anadromous, and marine species. Early on it was noted that difficulties could arise in the use of scales from: 1) false annuli, 2) compaction of annuli near the edge, and 3) variation in appearance of growth ridges between fish from different localities. These problems still persist for many species, and critical reviews of the scale method for aging fish (e.g., Summerfelt and Hall 1987), coupled with the success of using otoliths for aging teleosts has led many scientists away from the scale method. The purpose of this article is to present a brief overview of the methodology and applicability of using scales for aging fishes, particularly for species of the southeastern United States, and to comment on the potential for their continued use in age and growth studies for this region.

One of the main advantages of scales, over other anatomical parts used for aging fish (e.g., otoliths, vertebrae, opercle, spines, rays), is that scales are easy to collect and process from teleosts. Once a fish is collected, scales can be removed quickly by using forceps or a knife. The scales can be stored indefinitely in inexpensive envelopes. Almost no processing is necessary, except a simple cleaning, if the raw scales are examined directly. Over time, however, the scales may become translucent or brittle so they can not be considered archival records of fish age. In addition, the thickness of larger scales reduces the scale transparency, and scales are not typically flat, which causes diffraction and distortion of light transmitted through a scale. Problems related to archival needs and readability are common and may be resolved by making impressions of the sculptured side of a scale onto plastic slides (Arnold 1951, Dery 1983, Everhart and Youngs 1981, Jearld 1983, Carlander 1987), Regardless of the specific technique, the goal is to have clean scales or clear impressions of scales that reveal the concentric ridges on the outer surface of a scale (i.e., the circuli). These circuli are found on both cycloid and ctenoid scales and may be interrupted by scale radii that extend from the scale focus to the margin (i.e., from the origin of the circuli to the scale edge) (e.g., Hubbs and Lagler 1947). The criteria for counting annuli is to examine for patterns of cutting over, discontinuity, or crowding of the circuli (Everhart and Youngs 1981, Jearld 1983, Summerfelt and Hall 1987). Another advantage to using scales versus most other anatomical parts is that samples can be obtained without affecting the appearance of a fish in the market or even sacrificing the fish in the field. Scales are often removed from the middle of the body, below the dorsal fin, but many species have precedent for removing scales from other locations. If no precedent is available, some preliminary work will be required to determine which location is most suitable for collecting scales. Regardless of where scales are sampled from, many individual scales need to be collected from that area, because some scales will be unsuitable

10

#### McBride - The use of fish scales for aging fish - backcalculating to the future

from that area, because some scales will be unsuitable for aging. In particular, regenerated scales will be missing the interpretable ridges (i.e., circuli and radii) that define the annuli in the central portion (i.e., the focus) of the scale. Scales can be viewed with a light microscope using transmitted light, with a microfiche reader, or with a microprojector (Brigham and Jensen 1964, Banks and Irvine 1969, Everhart and Youngs 1981, Jearld 1983, Carlander 1987, Tsumura 1987). Reading of the scales should include multiple readers, or multiple reads by the same reader, to determine within-scale variability in annulus count. There is also a variety of statistical procedures for modeling growth of fishes or backcalculating size at age (e.g., Carlander 1981, Campana and Jones 1992).

Several species, of several Families, that occur in the southeast United States have been aged using scales including American shad (Clupeidae: Alosa sapidissima), Atlantic menhaden (Clupeidae: Brevoortia tyrannus), ballyhoo (Hemiramphidae: Hemiramphus brasiliensis), bluefish (Pomatomidae: Pomatomus saltatrix), dolphin (Coryphaenidae: Coryphaena hippurus), tomtate (Haemulidae: Haemulon aurolineatum), knobbed porgy (Sparidae: Calamus nodosus), whitebone porgy (Sparidae: Calamus leucosteus), black drum (Sciaenidae: Pogonias cromis), red drum (Sciaenidae: Sciaenops ocellatus), southern kingfish (Sciaenidae: Menticirrhus americanus), and striped mullet (Mugilidae: Mugil cephalus) (Broadhead 1958, June and Roithmayr 1960, Judy 1961, Beardsley 1967, Berkeley and Houde 1978, Manooch and Barans 1982, Waltz et al. 1982, Smith and Wenner 1985, Matlock et al. 1987, Barger 1990, Horvath et al. 1990, Matlock et al 1993). In these studies<sup>1</sup>, scale annuli were validated using a marginal increment analysis, or from recaptured fish, or they were simply judged to be valid based on the appearance of continuous growth of the scale and circuli patterns.

The importance of validation has been stated clearly by others (e.g., Beamish and McFarlane 1983), and investigators ignore this at their own peril because scales may not always be useful for aging fishes. Beamish and McFarlane (1987) demonstrated that the scale method provided erroneous ages for 16 freshwater and marine species. In general, scale ages underestimated validated age or age determine by some alternative method, typically by otoliths. Otoliths are fundamentally different in their organic structure compared to scales and they continue to grow as a fish ages, while scales do not continuously grow in older fish. In addition, calcium can be resorbed from scales of stressed fish but this does not appear to occur for otoliths. Interpretation of the annulus location also appears to be more difficult in scales than in otoliths, which can lead to inter-reader error in assignment of annuli and ultimately in the calculation of growth rates or backcalculation of size at age (Casselman 1983). In a recent exaple using a regional species, Lowerre-Barbieri et al. (1994) concluded that crowding of annuli on the scale margin was problematic in older weakfish (Cynoscion regalis) and demonstrated that sectioned otoliths provided more accurate ages and more precise indications of annulus location. As another example, Davis (1976) concluded that scales were unsuitable to age hogfish (Lachnolaimus maximus) older than 3 years, so McBride (2001) validated annulus formation using sectioned otoliths and used these to age this species. Casselman (1983) regarded scales as unsuitable in general for aging tunas, billfishes, and sharks. This broad level of criticism of the scale method can make it difficult, without independent age data, to evaluate the results of unvalidated scale ages reported in previous studies. For example, McBride (2002) noted that sizes at age were larger for two searobin species (Prionotus carolinus and P. evolans) in published reports from New England compared to independent reports for the Chesapeake Bay region. However, this result could have been the result of different aging structures used, because the New England study used scales

<sup>1</sup> Marine and anadromous species are listed here, but the point should be the same for freshwater species

Peter Hood called for other nominations. None were forthcoming.

Kevin Grant made a motion that nominations from the floor be closed. Mike Allen seconded and the motion was carried unanimously.

The membership elected Wayne Bennett and John Benton to their respective posts.

#### New Business

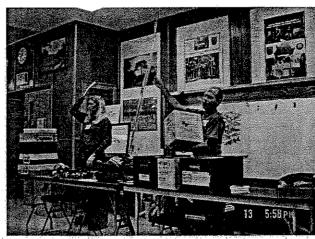
- Peter Hood relinquished the floor to Kathy Guindon-Tisdel who was installed as the new Chapter president.
- The Chapter recognized Peter Hood for his service as president with a framed Certificate of Appreciation.
- Peter Hood called for a review of the Chapter by-laws and asked that volunteers interested in helping with the project contact him following the
  meeting.

#### Adjournment

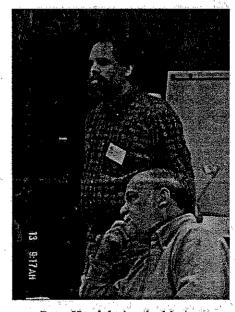
Larry Connor made a motion to adjourn the meeting. Rich McBride seconded. The motion was unanimously carried and the meeting was adjourned at 7:40

# Pictures

Memorable Moments from the 2002 Florida Chapter Meeting



Bridget Tiffany and Tom Maher handing out raffle prizes to the lucky winners.



Peter Hood during the Marine Protection Area (MPA) discussion.



Meet your officers. From left to right is Wayne Bennett, Peter Hood, Kathy Tisdel, and John Benton



Student, Jodie Rummer, hard at work. on the computer

Rich offered a modification to the original motion stipulating that up to \$6000 of Chapter funds would be placed in the Rottmann Fund on the condition that one-to-one matching funds were secured from outside sources over the next two-years. Kathy Tisdel and Paul Thurman seconded the motion.

In further discussion, Chuck Cichra, and Rich McBride agreed to oversee and follow-up on the donation process. Larry Connor volunteered to write the initial draft of the donation letter draft that would be sent to potential donors. Peter Hood recommended that other members interested in helping with this cause contact Chuck Cichra, or Rich McBride.

The McBride modification of the Connor proposal was unanimously passed by the membership.

#### Newsletter

- John Benton reported that three newsletters were sent out along with one special edition advertising the 2002 FAFS Brooksville Meeting. He also
  thanked Jodie Rummer for her UWF Institutional Profile contribution, and hoped other programs would also make similar contributions.
- John reported that he would not be in charge of the newsletter for the upcoming year.
- Peter Hood called for volunteers to take over the newsletter duties.
- Kimberly Tugend volunteered to take over newsletter duties with unanimous member support. Her e-mail address is: tugendk@gfc.state.fl.us

#### Student Concerns

Jon Shenker could not attend the meeting and no topics were forwarded for discussion.

#### Legislative

Pat Fricano could not attend the meeting and no topics were forwarded for discussion.

#### Raffle

Tom Maher related that this year's raffle prize donations were at an all-time high, largely due to a single generous donation by "Uncle Homer." Tom Maher went on to encourage all members present to donate generously to the raffle, as the proceeds go to pay for student lodging and meals at Chapter Meetings. As an update, the funds raised this year - \$761.52 are available for next year's student travel.

#### Website Update

Bob Wattendorf reported that website support by the parent organization was not in the Chapter's best interest due to uncertainties about the host server and cost. He stated that the University of Florida would continue to host the Chapter website for the upcoming year. Several members commented on the good look and professional quality of the current web page and thanked Bob for his hard work.

#### Southeastern Division Update

Larry Conner acting as the current AFS Southern Division -Vice President conveyed greetings from the Southern Division. He also relayed that this year marks the 50th annual Southern Division Meeting. The meeting will be held in Cooksville Tennessee and will include presentations on the history of various Southern Division Chapters as well as a revival of the Student Leadership Committee seminar and meeting. A key focus at the Southern Division Mid-year meeting will be mentorship with a special luncheon on the topic and the announcement of a Hutton Junior Fisheries Biology Scholarship for High School students interested in Fisheries Biology. Scholarship recipients will serve an internship with a fisheries biologist mentor and receive a \$1000/month stipend.

On a different topic, Larry Connor noted that voter response to recent Southern Division elections was miserable. In an attempt to improve voter response, ballots will no longer be included in the Southern Division newsletter but will be sent to members as a special mail out. In addition, Southern Division elections will move away from the South Eastern to the mid-year meeting in hopes of attracting more voters.

#### Important Announcement on the FAFS 2003 Meeting

- Peter Hood announced (to raucous cheers) that the Florida Chapter AFS meeting would be held in Brooksville at the Withlacoochee Training Center again next year. We were told it would be during the last week of February 24<sup>th</sup> 28<sup>th</sup>.
- He also conveyed a message from the Training Center personnel, that due to a shift in the Forestry Department's training focus, there is no guarantee that the meeting could continue to be held at the training facility.
- Peter asked that all members investigate other potential meeting sites capable of providing meals and accommodations for approximately 70 to 100 people. These suggestions were submitted to Peter who compiled a list and circulated it to the Executive Committee.

#### Nominating committee

Bob Wattendorf announced the nominees for each FAFS office.

- President-elect candidate running unopposed was Wayne Bennett (current Secretary-Treasurer)
- Secretary-treasurer candidates were John Benton and Jeff Hill

#### McBride - The use of fish scales for aging fish - backcalculating to the future

and the Chesapeake Bay studies used otoliths. Thus, McBride (2002) used otoliths from new fish collected along a latitudinal cline to demonstrate that this geographic pattern in size at age did in fact exist.

In summary, the widespread lack of annulus validation in previous aging studies, most of which used scales, has come back to haunt the value of these studies. Scales are not appropriate for aging many species, particularly slow-growing, long-lived species. Scales may be useful for aging faster-growing, short-lived fish, or they may be useful for aging young fish of long-lived species (i.e., for sizes that scales can provide accurate ages) when mortality from scientific sampling needs to be reduced. When the advantages of scales appear applicable for a proposed study, then the investigators should pursue some level of validation before too much effort is expended toward collecting, processing, and aging fish scales.

As recently as the early 1980s, Everhart and Youngs (1981) regarded scales as the most popular means of estimating the age and growth of fishes. This is no longer true today, particularly following the critical assessment of scale ages by several scientists in Summerfelt and Hall's (1987) "Age and Growth of Fish" book (see also Hales 1989). Moreover, the considerable attention paid to otoliths in recent years has overshadowed the use of scales in age and growth studies (Summerfelt and Hall 1987, Stevenson and Campana 1992, Secor et al., 1995). Some of this increased emphasis towards using otoliths is justified. Scales are, however, relatively easy to use and may be become more widely used in the future where non-lethal sampling is desirable or required. Aside from aging fish in annual increments, scales may also be used to measure growth across periods shorter than annual cycles (Ottaway and Simkiss 1979, Busacker et al. 1990, Talbot and Doyle 1992). Daily rings have been validated on scales of weakfish (Cynoscion regalis) although the use of circuli for estimating daily age appears to be limited to this species alone (Szedlmayer et al. 1990, 1991). In addition, scale shape has long been used for stock identification of modern collections or species identification of archeological collections (e.g., Ihssen et al. 1981, Daniels 1996), and recently Moran and Baker (2002) demonstrated that archival scale samples are valuable for genotyping of historical collections. The ease of collecting scales without killing fish has led to archived material at many labs, and these historic and newer collections can continue to play a part in understanding the population dynamics of fishes.

The author is interested in divergent viewpoints of using fish scales for age and growth studies. Please contact him at richard.mcbride@fwc.state.fl.us.



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

**Send Materials To:** 

Kim Tugend (tugendk@gfc.state.fl.us)

#### Reference List

- and growth analysis. Prog. Fish-Cult. 13: 11-16.
- Banks, J. W. and W. Irvine. 1969. A note on the photography of fish scales, operculas and otoliths using an enlarger, J. Fish Biol. 1: 25-26.
- Barger, L. E. 1990. Age and growth of bluefish Pomatomus saltatrix from the northern Gulf of Mexico and U.S. South Atlantic coast. Fishery Bulletin, U. S. 88 (2): 805-809
- Beamish, R. J. and G. A. McFarlane. 1983. The forgotten requirements of age validation in fisheries biology. Trans. Am. Fish. Soc. 112 (6): 735-
- Beamish, R. J. and G. A. McFarlane. 1987. Current trends in age determination methodology. IN: Age and Growth of Fish. (R.C. Summerfelt and G. McBride, R. S. 2001. Age, growth, and reproduction of hogfish, Lachnolaimus E. Hall, ed). Iowa State University Press. Ames. pp: 15-42.
- Beardsley, G. L. Jr. 1967. Age, growth, and reproduction of the dolphin, Corvphaena hippurus, in the straits of Florida. Copeia 1967 (2):
- Berkeley, S. A. and E. D. Houde, 1978, Biology of two exploited species of halfbeaks, Hemiramphus brasiliensis and H. balao from southeast Florida. Bull. Mar. Sci. 28 (4): 624-644.
- Progressive Fish-Culturist 26: 131-135.
- Broadhead, G. C. 1958. Growth of the black mullet, Mugil cephalus L., in west Ottaway, E. M. and K. Simkiss. 1979. A comparison of traditional and novel and northwest Florida. Fla. Dep. Nat. Resour. Mar. Res. Lab. Tech. Ser. No. 25: 1-33.
- Busacker, G. P., I. R. Adelman, and E. M. Goolish. 1990. Growth. IN: Methods for Fish Biology. American Fisheries Society. Besthesda, MD. pp:
- Campana, S. E. and C. M. Jones. 1992. Analysis of otolith microstructure data Can. Spec. Publ. Fish. Aquat. Sci. 117: 73-100.
- Carlander, K. D. 1981. Caution on the use of the regression method of backcalculating lengths from scale measurements. Fisheries 6 (1): 2-4. See also corrections to the Lee equation in Fisheries 8(5): 25-26.
- Carlander, K. D. 1987. A history of scale age and growth studies of North American freshwater fish, IN: Age and Growth of Fish, (R.C. Summerfelt and G.E. Hall, ed). Iowa State University Press. Ames.
- Casselman, J. M. 1983. Age and growth assessment of fish from their calcified structures -- techniques and tools. Proceedings of the international workshop on age determination of oceanic pelagic fishes: tunas, billfishes, and sharks. E. D. Prince and L. M. Pulos (eds). NOAA Tech. Rep. NMFS 8.: 211.
- Daniels, R. A. 1996. Guide to the identification of scales of fishes of northeastern North America. Biology Bulletin, New York State Museum 488.
- Davis, J. C. 1976. Biology of the hogfish, Lachnolaimus maximus (Walbaum), in the Florida Keys. M. S. Thesis. University of Miami. Coral Gables, FL, pp; 86.
- Dery, L. M. 1983. Use of laminated plastic to impress fish scales. Prog. Fish-Cult. 45 (2): 88-89.
- Everhart, W. H. and W. D. Youngs. 1981. Principles of Fishery Science, Second ed. Ithaca, NY. Cornell University Press.
- Hales, L. S. Jr. 1989. Age and grow! Env. Biol. Fish. 26: 153-158.
- Horvath, M. L., C. B. Grimes, and G. R. Huntsman, 1990. Growth, mortality, reproduction and feeding of knobbed porgy, Calamus nodosus, along the southeastern United States coast. Bull. Mar. Sci. 46 (3): 677-687.
- Hubbs, C. L. and K. F. Lagler. 1947. Fishes of the Great Lakes Region. Cranbrook Institute of Science, Bloomfield Hills, Michigan, pp. 186.
- Ihssen, P. E., H. E. Booke, J. M. Casselman, J. M. McGlade, N. R. Payne, and F. M. Utter. 1981. Stock identification: Materials and methods. Can. J. Fish. Aquat. Sci. 38: 1838-1855.
- Jearld, J. Jr. 1983. Age determination. IN: Fisheries Techiques. American Fisheries Society. Besthesda, MD. pp. 301-324.
- Judy, M. H. 1961. Validity of age determination from scales of marked American shad. Fishery Bulletin, U. S. 61: 161-170.
- June, F. C. and C. M. Roithmayr. 1960. Determining age of Atlantic menhaden from their scales. Fishery Bulletin, U. S. 60: 323-342.
- Lee, R. M. 1920. A review of the methods of age and growth determination in fishes by means of scales. Fish. Inv. Ser. II 4 (2): 1-32.

- Arnold, E. L. Jr. 1951. An impression method for preparing fish scales for age Manooch, C. S. I. and C. A. Barans. 1982. Distribution, abundance and age and growth of the tomtate, Haemulon aurolineatum, along the southeastern United States coast. Fishery Bulletin, U. S. 80 (1): 1-
  - Matlock, G. C., R. L. Colura, A. F. Maciorowski, and L. W. McEachron. 1987. Use of on-going tagging programs to validate scale readings. IN: Age and Growth of Fish. (R.C. Summerfelt and G.E. Hall, ed). Iowa State University Press. Ames. pp: 279-286.
  - Matlock, G. C., R. L. Colura, and L. W. McEachron. 1993. Direct validation of black drum (Pogonias cromis) ages determined from scales. Fishery Bulletin, U. S. 91: 558-563.
  - maximus. IN: Final Report for Marine Fisheries Initiative (MARFIN) Program (NOAA Award Number NA87FF0422). Florida Marine Research Institute Report FO723-98-00-F. St. Petersburg, FL. pp: 35.
  - McBride, R. S. 2002. Spawning, growth, and overwintering size of searobins (Triglidae: Prionotus carolinus and P. evolans). Fishery Bulletin, U. S. 100 (3): xx-xx.
- Brigham, R. K. and A. C. Jensen. 1964. Photographing otoliths and scales. The Moran, P. and J. Baker. 2002. Polymerase chain reaction inhibition in historical fish scale mounting cards. Trans. Am. Fish. Soc. 131 (1): 109-119.
  - ways of estimating growth rates from scales of natural populations of young bass (Dicentrarchus labrax). J. mar. biol. Ass. U. K. 59:
  - Secor, D. H., J. M Dean, and S. E. Campana. 1995. Recent Developments in Fish Otolith Research. Belle W. Baruch Library in Marine Science Number 19. University of South Carolina Press.
  - Sinclair, M. 1988. Marine populations: an esay on population regulation and speciation, Washington Sea Grant Program, Seattle WA.
  - . W. and C. A. Wenner. 1985. Biology of the southern kingfish in the South Atlantic Bight, Trans. Am. Fish. Soc. 114: 356-366.
  - Stevenson, D. K. and S. E. Campana (Eds). 1992. Otolith Microstructure Examination and Analysis. Can. Spec. Publ. Fish. Aquat. Sci. 117:
  - Summerfelt, R. C. and G. E. Hall. 1987. Age and Growth of Fish. Iowa State University Press. Ames.
  - Szedlmayer, S. T., K. W. Able, J. A. Musick, and M. P. Weinstein. 1991. Are scale circuli deposited daily in juvenile weakfish, Cynoscion regalis? Env. Biol. Fish 31: 87-94.
  - Szedlmayer, S. T., M. P. Weinstein, and J. A. Musick. 1990. Differential growth among cohorts of age-0 weakfish Cynoscion regalis in Chesapeake Bay. Fishery Bulletin, U. S. 88 (4): 745-752.
  - Talbot, A. J. and R. W. Doyle. 1992. Statistical interrelation of length, growth, and scale circulus spacing: use of ossification to detect nongrowing fish. Can. J. Fish. Aquat. Sci. 49: 701-707.
  - Tsumura, K. 1987. Simple techniques to improve microfiche prints of fish scales. North Am. J. Fish. Management 7: 441-443.
  - van Oosten, J. 1929. Life history of the lake herring, (Leucichthys artedi Le Suer) of Lake Huron as revealed by its scales, with a critique of the scale method, U. S. Bureau of Fisheries Bulletin 44: 265-428.
  - Waltz, C. W., W. A. Roumillat, and C. A. Wenner. 1982. Biology of the whitebone porgy, Calamus leucosteus, in the south Atlantic Bight Fishery Bulletin, U. S. 80 (4): 863-874.

Now, that's something to think about! matech Florida Chapter American Fisheries Society 22<sup>nd</sup> Annual Business Meeting Minutes 13 February 2002

Withlacoochee Training Center, Brooksville, Florida

#### Meeting Agenda, Minutes, & Treasurer Report

President Peter Hood called the meeting to order at approximately 6:30 pm. It was determined that a quorum was present and the meeting agenda was adopted.

Secretary-Treasurer Wayne Bennett stated that current Florida Chapter AFS assets as of 11 February 2002 were \$29,840.78. The assets were presently divided into two accounts: a money market account containing \$21,091,78, and a mutual fund containing \$8,713.00.

Poor performance by the money market account over the last year had resulted in net losses to the Chapter's investment (the total loss was not known). Wayne related that the Morgan Stanley-Dean Witter accounts manager (Dave Shougal) had suggested moving the money market funds into a managed account that would insure the fund remained balanced and continued to serve the objectives and goals of the Chapter. Several concerns were voiced by the membership:

- Members were concerned over having funds controlled by someone not directly involved with the Chapter who may not be as responsive to our financial objectives.
- Some members would rather have the money moved to a lower risk/lower return account.
- It was unclear how fees associated with a managed account may be assessed and how or if they may affect future asset growth
- Several members were reluctant to abandon the money market account at this low point in market performance, citing the possibility of compounding current losses by not having a fund in place to take advantage of future market rebounds.

Doug Scheidt made a motion to take no action at this time with regard to moving the Society's money market account into a managed fund. The motion was seconded by Russ Lower and unanimously approved.

Bob Wattendorf moved to accept the meeting minutes and move on, the motion was seconded and approved.

#### **Committee Reports**

Rottmann Scholarship

Chuck Cichra gave a brief history of the Rottmann Scholarship now in its 6th year. Four Masters Degree students applied this year, and there were no Ph.D. applicants. He reminded members that applications are due in mid-January and suggested more effort be put into Scholarship advertising next year. Winners were then announced:

- The Masters category winner was Bridget Tiffany (University of West Florida)
- Honorable mention went to Jodie Rummer (University of West Florida)

It was decided that \$400 would be awarded to the winner and \$100 to the runner-up.

#### Student Travel Scholarships

Chuck Cichra announced that 20 travel scholarships were awarded to students. He also noted that 15 of these students were also giving papers at the meeting. The following students were recognized for having been awarded a travel scholarship:

Jessica Beck (FIT), Tim Bonvechio (UF), Kevin Dockendorf (UF), Rebecca Drake (UF), NannFangue (UWF), Katie Fitchett (UWF), Jaime Greenawalt (UF), Jeffrey Grim (U Tampa), Chad Hanson (FSU), Kristen Henry (UF), Jeff Hill (UF), Jean Lockwood (SFCC), Earl Lundy (UCF), Linda Martin (UWF), Chevenna Reber (UWF), Jodie Rummer (UWF), Phil Stevens (UF), Bridget Tiffany (UWF), Troy Thompson (UF), Heidi Wallman (UWF)

Special Report on the Rottmann Scholarship Fund

Larry Connor reported that the Rottmann Scholarship Fund had not faired well in the current depressed economic market. The current fund value of \$5170 generated an income of \$322. Larry noted that with a yearly expenditure of approximately \$550, it is clear that the fund cannot support itself at current

Larry Connor made a motion that \$6000 of the \$7580 that the Chapter made hosting the 2001 Southern Division Meeting be placed into the fund to insure that it remain self-sustaining. Kevin Grant seconded the motion.

In discussion, Rich McBride stated that the original concept of donations from outside sources had never materialized. Larry confirmed that only \$600 had been donated to the fund since its inception. Correspondence since the meeting put the actual figure at \$315.

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