

The Newsletter of the Freshwater Mollusk Conservation Society

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In this issue: Workshops! November Board Meeting Minutes Membership Renewal Form

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Submissions for the April 2004 issue of *Ellipsaria* may be sent in at any time but are due by March 15, 2004. Anyone may submit an article but you must be a member of FMCS to receive *Ellipsaria*. Categories for contributions include news, new publications, meeting announcements, current issues affecting mollusks, job postings, contributed articles (including ongoing research projects), abstracts, and society committee reports. Electronic submissions are preferred; please send submissions to the editor. Submissions to *Ellipsaria* are not peer reviewed, but are checked for content and general editing.

Please send change of address information to the Secretary, Rita Villella.

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http://ellipse.inhs.uiuc.edu/FMCS/

President's Report

Our Society has been busy the past several months. In many ways it has exceeded what most people would expect from a fledgling society. While it is not my goal here to rehash the Committee Reports, let me boast about several of our accomplishments and upcoming projects.

FMCS has helped sponsor two very important documents. One of these you have already received, and we hope to get a discount for members on the other. The first is "A Guide to Sampling Freshwater Mussel Populations" by Dave Strayer and Dave Smith, and published as the American Fisheries Society Monograph 8. Over the past few decades the need for a mussel sampling protocol has become acute and at times the debate grew contentious. What was needed was for someone well-versed in sampling statistics and wellversed in the realities of sampling mussels to step forward, synthesize the literature, distill the procedures, and establish guidelines for sampling mussels. Not just any guidelines, but procedures and protocols that can stand the test of litigation and peer scrutiny. The Dave's accomplished this Herculean task and are to be commended for their excellent work. The second document is "Investigation and Monetary Values of Fish and Freshwater Mussel Kills" by Robert Southwick and Andrew Loftus (eds.), published as the American Fisheries Society Special Publication 30 (see description elsewhere in this issue). Despite our best efforts, mussels are often killed by environmental accidents and other activities. Regulatory agencies, at both the state and federal level, are usually at a loss as to how to mitigate and obtain recompense for mussel kills. How much is a mussel worth? Are they all worth the same? One state charges \$7.00 per mussel killed whereas another state may charge \$70.00. How can these agencies arrive at a reasonable monetary value that may be used in litigation? With the assistance of many FMCS members, Robert and Andrew have devised an exhaustive plan for recovering restitution from mussel kills. Patterned after the successful fish kill plans already in place, the mussel recovery takes into account much more than just a set fine for each dead mussel. Included are the costs for rearing replacement mussels, personnel time, travel, etc. More than just a table of numbers, this document is a primer on how to investigate, document, and obtain restitution for a kill. I anticipate that this document will become invaluable, not just as a means of mitigation, but also as a deterrent to future accidents. FMCS is proud to have helped produce these two publications, clearly demonstrating our active commitment to the conservation of freshwater molluscs beyond the usual newsletters, symposia, and workshops. The contributors and the heavily-overworked members of the Guidelines and Techniques Committee should be commended for their work. (And other publications are in the works as well...)

Although 2004 is not a Symposium year, it certainly will not be a sleeper. We will be supporting two workshops, on several very timely and important subjects: freshwater gastropods, water quality, and mussel genetics. Be sure to mark your calendars and support these FMCS efforts. See enclosed literature for more information.

The Outreach Committee decided we needed a logo and a brochure and it was obvious that nothing was going to stop them (they're an excitable lot). But I agreed, and with a simple "Make it so" we have both. Several copies of the brochure have been included with this newsletter. If you would like to have some to distribute, please contact that Committee or any board member. I think the logo is excellent, and the brochure is very professional. Kudos to the Outreach Committee.

We continue to fight the good fight under the aegis of Patty Morrison's Environmental Quality/Affairs Committee. FMCS currently is responding to such proposed projects as the Sunflower River dredging and the Tennessee River mussel relocation experiment. FMCS is a force to be reckoned with (excuse the English) and our voice is an important one.

These are just a few of the FMCS activities – your activities. Your support made them possible. I think it is clear we are not a hand-full of tree-huggers trying to stop progress while using other peoples' perfectly good and hard-earned tax money to protect a bunch of living rocks that you can't even eat for crying out loud. We are a small army of knowledgeable, energetic, and only occasionally raucous people devoted to the preservation of our natural heritage.

Here's hoping everyone has a joyous and safe holiday season!

Tom Watters, FMCS President

Guide to the Freshwater Mussels of Kentucky

Each FMCS member received a copy of "A Guide to the Freshwater Mussels of Kentucky" by Ronald R. Cicerello and Guenter A. Schuster with this newsletter. Published by the Kentucky State Nature Preserves Commission (KSNPC), the guide is being furnished to FMCS members courtesy of the Mussel Mitigation Trust, the Kentucky Division of Water, and KSNPC.

Additional copies can be purchased for \$6 each:

Kentucky State Nature Preserves Commission 801 Schenkel Lane Frankfort, KY 40601

Telephone: (502) 573-2886 Email: Evelyn House (Secretary): Evelyn.House@mail.state.ky.us http://www.naturepreserves.ky.gov/inforesources/

Workshop on Conservation Genetics of Freshwater Mollusks and Fishes NCTC, Shepherdstown, WV June 29-30, 2004

The Freshwater Mollusk Conservation Society and U.S. Fish and Wildlife Service will host a workshop on conservation genetics, June 29-30, 2004, at the National Conservation Training Center, Shepherdstown, West Virginia. The workshop will provide resource managers and biologists with an opportunity to learn the principles of conservation genetics as applied to recovery of freshwater mollusks and fishes. A workshop flyer, registration form, lodging information, and location information are included on inserts with this newsletter. Additional forms can be downloaded at the FMCS website or contact Dr. Richard Neves, Workshop Coordinator, at 1-540-231-5927 or mussel@vt.edu

Pre-registration is due before March 1, 2004. Participants interested in having a poster presentation at the workshop should submit an applicable title and abstract to Dr. Neves before March 31, 2004.

Genetics Workshop Program* Plenary Session (Day 1)

Morning Session I (8:00-10:00)

- 1) Conservation and restoration of freshwater fauna in the United States. R. Neves and J. Jones, Virginia Tech
- Gene, allele, locus: what's the difference? A population genetics refresher. D. Berg, Miami University, Ohio
- Demystifying molecular methods, resulting data, and our ultimate interpretations in biodiversity and conservation science. R. Mayden, R. Wood, N. Lang, A. George, C. Dillman, and J. Allen, Saint Louis University, Missouri
- 4) The role of random genetic drift and selection in shaping genetic structure of natural populations.M. Ford, National Marine Fisheries Service, Seattle, Washington

Morning Break (10:00-10:20): refreshments served. Morning Session II (10:30-12:00)

- 5) An introduction to systematics, species concepts, and defining the units of conservation. R. Mayden, Saint Louis University, Missouri
- The biological species concept and conservation of freshwater gastropods. R. Dillon, University of Charleston, South Carolina
- Integrating ecological, life history, and genetic data in the identification of conservation units. R. Waples, National Marine Fisheries Service, Seattle, Washington

Lunch (12:00-1:20): served at NCTC dining room. Afternoon Session I (1:30-3:00)

8) The role of quantitative genetics in the conservation of biological diversity. J. Hard, National Marine Fisheries Service, Seattle, Washington

- Effects of hatcheries and cultured organisms on natural populations. J. Epifanio, Illinois Natural History Survey
- 10) Proposed genetic management guidelines for captive propagation of endangered freshwater mussel species.E. Hallerman, J. Jones, R. Neves, Virginia Tech

Afternoon Break (3:00-3:20): refreshments served.

Afternoon Session II (3:30-4:30): genetic and computer analysis demonstrations.

- An introduction to phylogenetic analysis using DNA sequences. K. Roe, Delaware Natural History Museum
- 12) An introduction to population genetic analysis using DNA microsatellites. T. King, Leetown Science Center (USGS-BRD), West Virginia

Dinner (5:00-7:00): served at NCTC dining room.

Evening Poster Session (7:00-9:00): refreshments served.

Case Studies (Day 2)

Morning Session I (8:00-10:00)

- Conservation goals: genes, species or ecosystems.
 B. Bowen, University of Hawaii
- A holistic approach to taxonomic classification of two endangered freshwater mussel species, the oyster mussel *Epioblasma capsaeformis*, and tan riffleshell *Epioblasma florentina walkeri*. J. Jones, R. Neves, Virginia Tech, S. Ahlstedt, USGS, E. Hallerman, Virginia Tech
- Genetic introgression in freshwater fish and the Endangered Species Act. N. Hitt, Virginia Tech, and F. Allendorf, University of Montana
- The utility of molecular and reproductive characters to assess genetic diversity in the western fanshell *Cyprogenia aberti*. J. Serb, University of California Santa Barbara, N. Eckert and C. Barnhart, Southwest Missouri State University

Morning Break (10:00-10:20): refreshments served.

Morning Session II (10:30-12:00)

- The endangered *Lampsilis higginsi*: using mitochondrial and microsatellite DNA data for developing propagation and recovery plans.
 B. Bowen, Iowa State University
- Using microsatellite and mitochondrial DNA data to define ESU's and MU's in topminnows and springsnails. P. Hedrick and C. Hurt, University of Arizona
- Population genetics of three extant populations of *Cumberlandia monodonta* using allozymes and mtDNA. C. Elderkin and D. Berg, Miami University, Ohio

Lunch (12:00-1:20): served at NCTC dining room.

Afternoon Session I (1:30-3:00)

- Estimating the genetic diversity of freshwater mussels: what a "mussel-head" can learn from freshwater fishes. K. Roe, Delaware Natural History Museum
- Extensive allozyme monomorphism in a threatened species of freshwater mussel, *Margaritifera hembeli* (Bivalvia: Margaritiferidae): a result of family-level biology? J. Curole, Bodega Marine Lab, University

of California, D. Foltz and K. Brown, Louisiana State University

10) An additional case study presentation will be announced

Afternoon Break (3:00-3:20): refreshments served. Afternoon Session II (3:30-4:30)

Final Discussion: E. Hallerman, Virginia Tech, Moderator

Submitted by Jess Jones

*program subject to revision

FMCS Gastropod Workshop Tuscaloosa, Alabama March 15-19, 2004

The FMCS Gastropod workshop will actually be one of two events held during the week of March 15, 2004. Both will be hosted by the Department of Biology at the University of Alabama and held at the Paul "Bear" Bryant Conference Center in the Four Points Sheraton Hotel in Tuscaloosa, Alabama. The formal gastropod workshop will be preceded by a 2-day general water quality conference. The audience for the water quality conference is expected to be individuals for industry, watershed groups, and the public utilities industry. The 2-day gastropod workshop will follow and highlight freshwater gastropod identification to the genus level. This hands-on workshop is intended to appeal to FMCS members, state and federal natural agency resource personnel, and others interested in freshwater snail A single registration fee will cover identification. attendance for both events. The programs for each event are listed below.

A registration form is included as an insert with this newsletter. Additional forms can be downloaded at the FMCS website. Pre-registration is due by March 1, 2004. For more information please contact Dr. Charles Lydeard, University of Alabama, Department of Biodiversity and Systematics, Box 870345, Tuscaloosa, AL 35487, Phone (205) 348-1792, e-mail: clydeard@bama.ua.edu

General Water Quality Conference – Part I

From the river to the faucet – what biodiversity losses indicate about our water quality.

1st Day - Monday, March 15, 2004

Threats

- 8:30 am Opening remarks. Speaker to be determined, and Tom Watters, President of the Freshwater Mollusk Conservation Society
- 8:45 am Emerging contaminants for water quality. Dr. Elizabeth Nichols, N.C. State Department of Toxicology, Raleigh, NC
- 9:30 am Morning break
- 9:50 am Toxicity events in rivers past and present. Dr. Don Cherry, Virginia Polytechnic Institute, Blacksburg, VA

- 10:35 am Water quality study of the Flint River. Mrs. Anne Hoos, United State Geological Survey, Nashville, TN
- 11:20 am Linking coastal marine habitat degradation to river sediment, toxicity, and nutrient issues in the Gulf of Mexico. (tentative speaker) Dr. Nancy Rabalais, Department of Oceanography and Coastal Sciences, Louisiana State University, Baton Rouge, LA
- 12:05 pm Lunch, on your own
- 1:15 pm Dewatering of our rivers, lessons in watershed modification. Dr. Byron J. Freeman, University of Georgia, Institute of Ecology, Athens, GA
- 2:00 pm How surface water quality impacts water treatment costs. Dr. Chuck Bohack, Tennessee Valley Authority, Chattanooga, TN
- 2:45 pm Afternoon break
- 3:20 pm Reducing your regulatory burden through river recovery, or utilities considerations. Speaker from TN Association of Water Utilities
- 4:05 pm Industrial wastewater recycling. (tentative speaker) Mr. Carl Kurtz, Toyota Motor Company of America, Georgetown, KY
- 4:50 5:30 pm Panel discussion: Speaker question & answer
- 5:30 pm Dinner, on your own

2nd Day - Tuesday, March 16, 2004

Assessments

- 8:30 am The Nature Conservancy's Freshwater Initiative. Mr. David Braun, The Nature Conservancy
- 9:00 am TNC and WWF, Process for biodiversity coverage in the Tennessee River Basin and Mobile River Basin. Mr. Ryan Smith, The Nature Conservancy, Raleigh, NC
- 9:30 am World Wildlife Fund's Southeastern Rivers Program. Ms. Wendy Smith, World Wildlife Fund, Nashville, TN
- 10:00 am Morning break
- 10:20 am Status of freshwater fishes in the Southeast. Dr. Melvin Warren, United States Forest Service Research Station, Oxford, MS
- 11:00 am Status of freshwater crayfish in the Southeast. Dr. Chris Skelton, Middle Georgia State University, Watkinsville, GA
- 11:45 am Lunch, on your own
- 1:00 pm Status of freshwater mussels in the Southeast. Dr. Richard Neves, VPI / USGS Co-op Unit, Virginia Polytechnic Institute, Blacksburg, VA
- 1:40 pm Status of freshwater snails in the Southeast. Dr. Kenneth Brown, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA
- 2:20 pm Afternoon break
- 2:40 pm Tennessee Valley Authority, Reservoir Release Initiative (RRI). Dr. Chuck Bach, Tennessee Valley Authority, Knoxville, TN
- 3:20 pm Freshwater mussel recovery in the Duck River basin. Mr. Steve Ahlstedt, U.S. Geological Survey, Knoxville, TN

- 4:00 pm Utilities planning on the Duck River basin. Mr. Larry Murdock, Duck River Utilities District, Shelbyville, TN
- 4:30 5:00 pm Speaker panel discussion

7:00 – 9:00 pm Evening mixer, Four Points Sheraton Hotel

FMCS Gastropod Workshop – Part II

Showing Your Shells – An Introduction to Freshwater Gastropod Identification

3rd Day – Wednesday, March 17, 2004

"Prosobranchs"

- 8:30 am Review of gastropod anatomy, phylogeny, and classification. Dr. Ellen Strong, Bell Museum, University of Minnesota, St. Paul, MN
- 9:00 am Viviparidae and Ampullariidae. Dr. Paul Johnson, Tennessee Aquarium Research Institute, Cohutta, GA
- 9:30 am Pleuroceridae. Mr. Jeffrey Sides, University of Alabama, Tuscaloosa, AL
- 10:15 am Morning break
- 10:45 am Hydrobiidae. Dr. Stephanie Clark, University of Alabama, Tuscaloosa, AL
- 11:30 am Assimineidae, Neritinidae, Valvatidae, Pomatiopsidae. Dr. Russ Minton, University of Louisiana at Monroe, Monroe, LA
- 12:15 pm Lunch, Four Points Sheraton Hotel

"Pulmonates"

- 1:30 pm Lymnaeidae. Dr. John Burch, University of Michigan, Department of Zoology, Ann Arbor, MI
- 2:15 pm Physidae. Dr. Amy Wethington, Purdue
- University, West Lafayette, IN
- 3:00 pm Afternoon break
- 3:20 pm Planorbidae. Ms. Katherine Perez, University of Alabama, Tuscaloosa, AL
- 4:05 pm Ancylidae. Ms. Andrea Walther, University of Michigan, Department of Zoology, Ann Arbor, MI
- 7:00 9:00 pm Taxonomic Grab Bag & Mixer: Taxa working groups by family bring your shells!

4th Day - Thursday, March 18, 2004

Gastropod Identification, Biology, and Conservation

- 8:30 am Introduced freshwater snails. Dr. David Robinson, Academy of Natural Sciences, Philadelphia, PA
- 9:15 am An introduction to terrestrial gastropods. Ms. Katherine Perez, University of Alabama, Tuscaloosa, AL
- 10:00 am Morning break
- 10:30 am Systematics 101: a primer in molecular phylogenetics. Dr. Charles Lydeard, University of Alabama, Tuscaloosa, AL.
- 11:15 am Introduction to shell morphometric analyses. Mr. Jeffery Sides and Ms. Katherine Perez, University of Alabama, Tuscaloosa, AL
- 12:00 1:15 pm Lunch, Four Points Sheraton Hotel

- 1:15 pm General ecological principles of freshwater gastropods. Dr. Robert T. Dillon, College of Charleston, Charleston, SC
- 2:00 pm Conservation and recovery activities with freshwater gastropods. Mr. Steve Ahlstedt¹ and Ms. Sabrina Novak², ¹United States Geological Survey, Knoxville, TN and ²Tennessee Aquarium Research Institute, Cohutta, GA
- 2:45 pm Afternoon break
- 3:15 5:15 pm Working towards a National Conservation Strategy for the Recovery of Freshwater Gastropods, comments to the draft strategy. A roundtable discussion led by Paul Johnson¹, Ken Brown², and Chuck Lydeard³, ¹Tennessee Aquarium Research Institute, Cohutta, GA, ²Louisiana State University, Baton Rouge, LA, ³University of Alabama, Tuscaloosa, AL

5th Day - Friday, March 19, 2004

FMCS Board Meeting

9:00 a.m. - 5:00 p.m. FMCS Board Meeting, Presidents Room, Four Points Sheraton Hotel

Submitted by Paul Johnson

Walkerana Call for Papers

This is a Call for Papers for submission to Walkerana, soonto-be the new journal of the FMCS. Walkerana is a serial publication on mollusks named in honor of Dr. Bryant Walker, one of the most prominent malacologists of the first quarter of the Twentieth Century. Walkerana was closely affiliated with the international journal Malacological Review and will be the new journal of the FMCS in 2004. Walkerana is open to publication by authors of all countries, and does not limit the topic or the size of papers it publishes. All manuscripts are reviewed by competent authorities before decisions are made regarding acceptance for publication. Currently, each volume contains approximately 300 pages. *Walkerana* was published irregularly, depending on material that was available for printing. FMCS hopes to produce one volume with two issues per year. However, this is a work in progress and we will see how things develop.

Directions to Authors

Walkerana will publish the results of original scientific work of either descriptive or experimental nature. The articles must not be published elsewhere. *Walkerana* aims to provide a common medium for such different aspects of biology as anatomy, biochemistry, cytology, ecology, genetics, medical zoology, paleontology, physiology, taxonomy, and zoogeography.

Walkerana is especially concerned with maintaining scholarly standards. All manuscripts will be reviewed by competent scientists. Papers will be judged on their contribution of original data, ideas, or interpretations and on their conciseness, scientific accuracy, and clarity.

Manuscripts should be in English, and should follow *Walkerana* style. All research articles must contain a concise but adequate abstract, which should be an informative digest of significant content and should be able to stand alone as a brief statement of the conclusions of the paper. Review papers and short notes do not need an abstract. Key words that indicate the main subjects of the paper should be provided by authors.

Papers are accepted on condition that copyright is vested in the journal. All statements made and opinions expressed in any article are the responsibility of the author.

The publishers will set the text in the style adopted for the journal, and it would be helpful if authors would follow this style as closely as possible in preparing the manuscript. In particular, simplified practices, such as the following, are favored: numbers one through nine and numbers at the beginnings of sentences are written out; numerals are used when the number is followed by units of weight and measure; percentages following a number are expressed as %; units of weight and measure (mm, ml, kg, etc.) are abbreviated when preceded by numerals, and the abbreviations have neither a period nor an "s" in the plural.

Prospective authors are encouraged to submit their manuscripts electronically in addition to normal paper copies to speed processing and reduce production costs. Disks can be in Mac or PC format and prepared with (preferably) Microsoft Word or WordPerfect, or saved as a text (ASCII) file. Latin names of genera and species should be underlined or italicized, and all Latin specific names of all organisms must be followed by the authority when the name is first mentioned in the text or table. Generic names should be written out when first used in a paragraph or at the beginning of a sentence; thereafter in the paragraph, generic names are abbreviated when used with a specific name.

Illustrations must be carefully executed and so planned that they may be printed as figures of an appropriate size. Drawings and lettering must be in black India ink or carbon black printing on white or blue-lined paper. Letters and numbers must not be less than 1 mm in height, preferably larger, after reduction. Photographs should be printed on white glossy paper, showing a full range of tones and good contrast. Literature Cited: see the current number of *Walkerana* for desired form of citing. In particular, it should be noted that in addition to the volume number, the complete page numbers of articles and books must be cited. The publisher and city must also be cited for books. Journal names in references in the Literature Cited must be written in full, i.e., they cannot be abbreviated.

Voucher specimens of all species used in research papers published in *Walkerana* must be lodged in a recognized repository, i.e., sample specimens must be sent to a museum and, preferably, the registered numbers and full data of these specimens published. This insures that future workers will have access to this material and that species determinations can be checked. Proofs should be returned with minimal delay. Authors are requested to pay particular attention to the checking of numerical matter, tables, and scientific names. Reprints (separates; off-prints) may be obtained at cost price if ordered at the time off-set proof is returned. Order forms will accompany proof sheets sent to authors.

Please send papers or questions to:

Kevin Cummings *Walkerana*, Editor-In-Chief Illinois Natural History Survey 607 E Peabody Dr. Champaign, IL 61820

ksc@inhs.uiuc.edu 217-333-1623

First Ever Methods for Recovering Mussel Kill Damages Now Available: Part of AFS Fish Kill Valuation Guidelines

Recently, the American Fisheries Society released the latest version of its fish-kill investigation and restitution guidelines. For the first time, guidelines are provided to help agencies investigate and recover financial restitution for mussel kills.

Titled "Investigation and Monetary Values of Fish and Freshwater Mussel Kills," this document is an update of a series of similar publications used by resource agencies since 1970 to recover damages from parties causing fish kills. In many states, this publication has legal standing, meaning restitution awards based on its contents are written into law and are difficult to challenge. With the addition of mussel guidelines, this publication can help many states recover funds after mussel kills for use in various mussel conservation or restoration efforts.

This document was developed under the guidance of Rob Southwick, Southwick Associates, Inc. of Fernandina Beach, Florida, and Andrew Loftus, Professional Natural Resources Consulting Services of Annapolis, Maryland. The Freshwater Mussel Conservation Society played a major role in developing these guidelines through an advisory panel of FMCS members that helped devise workable methods and mussel replacement costs. Credit also goes to John Van Hassel of American Electric Power for leading the FMCS' efforts to develop field investigation techniques (Chapter 5). FMCS members (especially Steve Ahlstedt, Beth Whetsell and Kevin Cummings) were critical in organizing funding for this effort, with funding provided by the U.S. Fish and Wildlife Service, National Fish and Wildlife Foundation, the Illinois DNR, and the Burlington River Terminal, Inc. Nonmonetary support was also provided by the American Fisheries Society and many state resource agencies.

Many state statutes automatically defer to this AFS handbook to determine levels of restitution to recover after fish kills. However, some states may need to edit their statutes to permit the use of AFS guidelines for recovering mussel kill restitution or update their statutes to allow use of the most recent version of the publication. The editors strongly encourage state resource agencies to review their state statutes and make adjustments, if needed, to permit restitution for mussel kills. Copies of the handbook can be purchased directly from the AFS (see page 13 for details).

FMCS Brochure

The FMCS Outreach Committee is pleased to provide you with copies of the new FMCS Membership brochure/handout for your use, distribution, and general enjoyment. We are providing brochures as part of a threeprong effort to get the word out. The effort consists of:

- 1. One shrink-wrapped package of 250 to each officer and committee chair.
- 2. A notice of availability of the brochure and 5 copies in this issue of *Ellipsaria*.
- 3. Establishment of "the clearinghouse" to field and fill requests from members for multiple copies for use at conferences, workshops, and other events where spreading the word and recruiting new members is desirable. Requests can be submitted to Bob Szafoni via mail, phone, or email. Please allow adequate lead-time.

If you have additional suggestions or ideas, please feel free to contact me. We have 15,000 of these, so do not be bashful! Go forth and multiply the membership!

Bob Szafoni Illinois DNR 1660 W. Polk Charleston, IL 61920

217-345-2420 rszafoni@dnrmail.state.il.us

FMCS Board Meeting Minutes November 6-7, 2003 Columbus, Ohio

Current 2003/2004 FMCS membership is 379 members, including 51 student memberships.

Treasurer's Report:

The checking account balance is \$55,442.02. Income from the symposium was \$39,000 with total symposium cost of \$32,000. Other 2003 expenses include funds for the guide to sampling freshwater mussels, a display booth for AFS, and funds to secure the Athearn collection. Credit cards were ordered for Paul Johnson and Jess Jones for the 2 workshops.

Gastropod Committee:

AFS has given preliminary permission to generate a review of status of North American gastropods (north of Mexico) similar to the Williams et al. 1993 paper. The committee would like AFS to adopt the TNC-Heritage rankings but may use both rankings in the review. By the end of last year 655 taxa were described, 60 species are extinct. G1 and G2 species make up about 55% due mainly to the endemism of the Hydrobiidae. The AFS review process includes updating the database, forming a subcommittee within AFS, and having an outside committee review the final draft. The review will be done by state similar to the mussel checklist. Noel Burkhead is chair of the endangered species committee and is the contact.

National strategy for the conservation of freshwater gastropods will be addressed at the FMCS workshop in March 2004. A draft strategy will be placed on the FMCS website at least one month prior to the workshop; comments will be discussed at the workshop. The revised strategy will be published in *Ellipsaria* for final comments and review. The committee may publish the strategy in-house.

FMCS Gastropod Workshop:

The FMCS Gastropod Workshop has been combined with a conference on water quality and its impact on aquatic fauna, entitled "From the river to the faucet - what biodiversity losses indicate about our water quality." Dates for the conference, workshop, and FMCS board meeting are March 15-19, 2004. The meeting will be held at the Paul "Bear" Bryant Conference Center at the University of Alabama. There will be one registration form with one registration fee The workshop committee expects for the week. approximately 200 attendees, with the highest attendance at the water quality conference during first 2 days; they expect about 75 participants at the 2-day gastropod workshop. The 1st day of the water quality conference will include a discussion of toxicity issues, including a presentation on the cost of treating contaminated water. The 2nd day will focus on the impacts of degraded water quality on southeast crayfish, mussel, snail, and freshwater fish. The conference will conclude with presentations on species recovery while maintaining viable industry, using the mussel recovery in the Duck River basin as an example. The 1st day of the gastropod workshop is dedicated to the identification of North American aquatic snail genera, primarily prosobranchs and pulmonates. Review of the draft aquatic snail conservation strategy will take place during the morning of the 2nd day. Any comments on the agenda should be forwarded to Paul Johnson.

Early registration is due by March 1, 2004 (see registration form for fees). The Sheraton Four Points Hotel is located on campus; the meeting room can seat 400. Hotel rooms are about \$75 per night. Workshop expenses include hotel conference room rental at \$300 per day and break expenses at \$1000 per day. Overall facilities rental with 2 breaks cost \$2300 per day. Alabama Rivers Alliance, World Wildlife Fund, Southeast Rivers, and TNC are helping sponsor the event. The workshop committee will put together a press release on the conference that will include the WWF and TNC logo. TVA may pitch in funds, with the Alabama Daphne Field Office also contributing. A separate workshop announcement will be mailed. A registration form will be included in *Ellipsaria* and available on the FMCS website. Chuck Lydeard will be the on-site coordinator. The committee will schedule time for the FMCS board meeting and general business meeting.

Guidelines and Techniques Committee:

The sampling guide for freshwater mussel populations monograph has been published and every FMCS member has received a copy. The AFS special publication on determining monetary values for fish and mussels, which also includes the mussel kill assessment guidelines has also been published and is available. It is hoped this document will be reviewed every 5 years and updated. The document had a thorough review by lawyers so it is a solid document. AFS member cost is \$32 for the book and accompanying CD and \$27 for the book only; non-member cost is \$45 and \$39 for the book without the CD. Additional information is available on the AFS website. Rob Southwick will prepare information on the publication and its availability for the FMCS president to submit to the Unio Listserv. Kurt Welke will check with AFS to determine whether FMCS members can receive the same break in cost as AFS members. Not all states have chosen to participate in fish or mussel recovery. A letter from FMCS will be sent to state Fish and Game Directors that this publication is available. Rob Southwick will draft the letter for Tom Watter's review. Kurt will send Rita Villella the list of all state directors. The board recommended several projects for the Guidelines and Techniques Committee to consider: 1) develop guidelines for relocation, 2) develop a mussel or mollusk IBI, and 3) develop a guideline on basic information that should be collected in a mussel survey, such as number of live animals, number of recent dead, shell, number of species, etc., which would be useful for status reviews.

Information Exchange Committee:

Kevin Cummings circulated an outline for the Walkerana editorial board. The editorial board will have 20 people, including an editor and associate editors. The committee tried to get a cross section of FMCS members and nonmembers. Provide any comments on the editorial board framework to Kevin. Once finalized Kevin will contact folks to see if they are willing to serve as associate editors. Dr. Burch will publish at least one more issue of Walkerana. A collection of manuscripts is needed for the first issue; to date Kevin has received 2 manuscript submissions in response to the first call for papers. Several issues to consider: the number of copies to publish and the option of putting issues on CD-rom for printing extra issues or back issues. The journal will be called "Walkerana - the journal of the Freshwater Mollusk Conservation Society". The committee may recommend mailing Ellipsaria and Walkerana together to lower mailing costs. The FMCS webpage will be updated with the new FMCS logo.

Mussel Status/Distribution Committee:

The committee is considering either publishing the atlas as a series in *Walkerana* (which would provide manuscripts for the journal and hopefully stimulate others to participate on working on species accounts), publishing it as a supplement to the journal, or including it as inserts in *Ellipsaria*. Three species accounts have been completed; volunteers have

signed up for 94 more. The *Walkerana* editorial board may be used for reviewing the accounts.

Outreach Committee:

The committee received a request for FMCS to cost share or purchase copies of the Tennessee mussel book for schools in the upper Tennessee drainage to have as a reference. The board decided FMCS is not the appropriate entity to provide this type of support. It was suggested the committee tell the individual to approach University of Tennessee Press for a discount and work with Roberta Hylton and Shane Hanlon to write a proposal for flex funds.

The Freshwater Mussels of the Upper Mississippi River booklet has been updated and revised. So far, commitments totaling \$19,500 were received from UMRCC, FWS, USGS, and NPS to produce 14,000 copies. Design for the document hasn't been paid for as of yet. Original plates for the document are gone and cannot be reproduced. UMRCC would like to produce 20,000 copies. The Outreach Committee would like the society to provide any level of support. Format will be slightly larger, less technical, better quality photographs. Board voted in favor of spending \$3000 with a set number provided to FMCS for distribution.

The committee hopes to produce a lay edition of a brochure of the freshwater mussel life cycle.

FMCS display - Kurt Welke is involved with the AFS 2004 meeting in Madison, WI. AFS would be an effective venue for communicating freshwater mussels to fisheries professionals. The committee would like to have a booth with a display for a cost of about \$4500. A draft was developed and emailed to the Outreach Committee and the board. The portable display will show the relationship between fish hosts and mussels. Kurt has reserved floor space for \$800 though FMCS is not yet committed. To reduce costs it was suggested that existing display frameworks at facilities such as Ohio River Islands NWR and other offices be borrowed and FMCS pay for designing and printing material. We could purchase a display structure at a later date. Provide comments on the draft display to Kurt by January 30, 2004. Motion that FMCS provide \$2000 for display graphics after review and \$800 for rental of floor space for a total of \$2800 was voted on and approved. White Sulphur Springs may be willing to purchase the actual display structure.

The first call for papers and symposia for AFS 2004 was in the September issue of *Fisheries*. Kurt submitted to the board that FMCS sponsor a special session at the meeting. Kurt will ask members of the Outreach Committee to organize and run the session. Motion made and passed to sponsor a special session on freshwater mussels and their connection to fish. We need a catchy name for the session. Need to have a submission by Dec. 21. If nobody volunteers from the committee, Kurt will contact Tom Watters.

Al Buchanan has a couple hundred copies of "Naiades (Mussels) of the Meramec River Basin, Missouri" available. If interested, contact Al at al.buchanan@mdc.mo.gov

Symposium 2005:

There is a great deal of interest in bringing the symposium back to the Midwest. Folks in Minnesota have expressed interest in hosting the symposium. Kurt Welke will contact the Minnesota folks and get back to Tom Watters within the next 2 weeks.

Environmental Quality and Affairs Committee:

The Sunflower River EIS should be published this month. The committee will review and comment for the society. Paul Hartfield will participate in the review. The board suggested the committee take the new cost assessment guidelines to run costs of mussel loss and mitigation to include in the comments.

The committee is preparing a letter from FMCS on the Tennessee River experiment to use dredging equipment to relocate freshwater mussel populations. The letter is addressed to the district engineer in the Nashville District COE and has been sent to the committee for review. This is a joint project between TVA and the COE. The proposed protocol has been revised to include sieving all material collected with a dredge (3 full scoops and 2 half scoops of material) and assess damaged shell and mortality. In the letter, the FMCS does ask what will be the restitution or mitigation to compensate for lost mussels. The biological opinion does not render a jeopardy opinion therefore this is an incidental take. The experimental EA has no experimental design with which to compare results. Should the FMCS stance be the loss of the mussel community and its habitat is unacceptable? The FMCS can suggest using the mussel kill document to calculate the value of the lost resource. Comments should be sent to Patty Morrison by the end of next week.

The board also suggested the committee comment through a letter from FMCS to the FWS regional director on the Allegheny River sand and gravel dredging. Letter will be drafted and sent to committee members and the president for review.

<u>Propagation, Restoration, and IntroductionCommittee:</u> FMCS Genetics Workshop:

The genetics workshop is scheduled for June 29-30, 2004 at the FWS National Conservation Training Center in Shepherdstown, West Virginia and 100 rooms have been reserved on site. At least 150 are expected to attend. All registration will be handled by Virginia Tech then sent to Cost for staying on site for non-FWS Heidi Dunn. employees is \$115 including meals (FWS about \$78). Jess Jones will check on reserving additional rooms. There will be a plenary session the first day, 2 computer demonstrations - one on phylogenetics and one on basic population genetics analysis using microsatellites. All speakers have been contacted and they have received commitments from most so the program is 90% finalized. A flyer has been posted on the FMCS website along with the registration form and it will be published in the next Ellipsaria. A mailing list has been created with about 200 contacts. The goal of the workshop is to cover basic freshwater mollusk conservation genetics issues. The extended abstracts may be published in

Walkerana. The committee would like to develop a set of guidelines that will be available for captive propagation of mollusks that address conservation genetics of the fauna. An additional sum of \$2,000-3,000 has been contributed to help support the workshop. These funds will be used to cover transportation costs for speakers, especially those from the western US. The workshop is co-sponsored by FWS (Bob Butler), which helps waive some of the costs at NCTC.

Student Awards Committee:

Approximately \$4000 will be available for student awards. Instead of cash travel awards, some societies offer the free rooms provided by the hotel to students. Only 5 students applied for travel to the last symposium. We need to do a better job of getting the word out that this award is available. A notice on student awards will be published in *Ellipsaria* and on the Unio listserver. The board suggested the committee mention to the next symposium hosts the idea of offering free rooms instead of a cash award as the travel award to students giving a presentation. Specific arrangements with the hotel would be made by the symposium committee. It was suggested that scoring of presentations needs to be refined.

AIBS Meeting:

Tom Watters attended the March meeting in Washington, DC. Basic thrust of the meeting was how to get your lobbyist to do a better job on Capital Hill. AIBS did not want to support conservation groups, preferring to remain apolitical. FMCS can place a free add in BioScience and since we have a new logo we may take advantage of this. It may not be worth maintaining our membership.

<u>Ellipsaria</u>:

There will be a lot of inserts this next issue. Registration forms for both workshops will be inserted as well as the membership renewal form and copies of the new FMCS flyer. All FMCS members will also receive the Kentucky mussel book. There are about a dozen copies of the sampling guide left that we will keep for the next meeting – possible auction items. The board will consider cutting back issues to twice a year after *Walkerana* is published. The board suggested the first call for volunteers to host the 2007 symposium be in the next issue of *Ellipsaria*.

Nominations Committee:

Tom Watters will contact Leroy about drafting policy for nominations.

Next meeting:

The board will next at the gastropod workshop in Alabama in March 2004.

FMCS Committee Reports

Award Committee Report

No activities to report. Submitted by Gregory Cope

Gastropod Status and Distribution Report

See article on Gastropod Workshop, page 4.

Guidelines and Techniques Committee Report

A new publication titled "Investigation and Monetary Values of Fish and Freshwater Mussel Kills" by Robert I. Southwick and Andrew J. Loftus, editors is now available from the American Fisheries Society, Special Publication 30. Thanks to everyone who participated in this process and keep in mind that this is a first cut on an evolving challenge that over time will be changed and updated to reflect recovering damages for mussels during pollution events. *Submitted by Steve Ahlstedt*

Information Exchange Committee Report

See Walkerana call for papers on page 5.

Mussel Status and Distribution Report

The Atlas of North American Freshwater Mussels has been moving along at a rather slow pace. Despite the efforts of several individuals, we seem to have reached a bit of a logjam. Currently only twelve individuals have signed up to prepare accounts for 97 mussel taxa, of those only a handful of completed accounts have been submitted. Many thanks to those individuals who have sent in accounts. Prior to the November FMCS Board meeting, I was contacted by the new editor and managing editor of Walkerana with the idea of publishing individual accounts serially as a supplement to Walkerana. This method of publishing accounts has several advantages: 1) As envisioned the accounts would be in standard (8.5" x 11") format and would be perforated to allow their inclusion in a binder that we also hope to make available to the membership. 2) Accounts would be included with the subscription to Walkerana at no extra cost to members. 3) It is hoped that once several accounts have been published it will encourage other individuals to follow suit. The idea was presented to the board during the November meeting in Columbus and met with approval. Any individuals who are interested in preparing accounts are encouraged to contact Kevin Roe (kroe@delmnh.org or 302-658-9111 ext. 319). A list of available taxa is available on the FMCS web page under the Mussel Distribution and Status Committee, as is an example of the format accounts. Submitted by Kevin J. Roe

Outreach Committee Report

The FMCS membership brochure is out. All Society members will receive 5 copies with *Ellipsaria* and should be aware that they can easily get more by contacting any executive board member or Bob Szafoni at Illinois DNR (rszafoni@dnrmail.state.il.us), who acts as the stock keeper. Please spread these around at professional venues to alert others of our existence. Speaking of which.... a "layman's" brochure for distribution at fairs, schools, civic clubs, and other general audiences will be available within the next few months. Stay tuned while we tighten up the draft and go through printing and distribution. Look for something tangible in spring 2004.

The Society is ramping up efforts to have a presence at the 2004 AFS parent society meeting in Madison, Wisconsin (August 22-26, 2004). It's time to get mussels on the radar of the fisheries professionals who have responsibility for surface waters and aquatic resources all across the US. We will be sponsoring a symposia "Mussels and Fish...A Primer for the Field Biologist" (tentative title – if you have a winner, let us know!), as well as having our own tradeshow booth. A solicitation for the best images to include on our pop-up display will be put out on UNIO soon. Please help by sending your best photos and ideas – we want to "wow" folks. Forward submissions to kurt.welke@dnr.state.wi.us We also need volunteers who are willing to staff our booth. Information on the AFS meeting can be found at http://www.fisheries.org/html/index.shtml

We will be trying to update the Tools for Outreach that links off of our website – many new and excellent posters, videos, guides, and websites have come along since we last compiled the list and these will be added to the updated version. If you have new outreach materials, please drop us an e-mail and tell us about it! One new site that we like is http://midwest.fws.gov/mussel/ Remember, we also have the master list of all state and federal permit contacts.

As always, it is our pleasure to serve the membership and we remain committed to delivering the most useful, highest quality products possible – *just let us know of your needs and we'll put our best people on it!* Submitted by Kurt Welke

Propagation, Restoration, and Introduction Committee Report

See flyer and article on Genetics Workshop, page 3.

News

UMRS Draft Mussel Conservation Plan

The Upper Mississippi River Conservation Committee's ad hoc mussel committee is developing and implementing a conservation plan for native mussels in the Upper Mississippi River System. This plan will follow the format and recommendations of the National Strategy, include portions of the 1988 strategic plan that have not been implemented, and use the implementation of the 2000 Biological Opinion as a real-world model. Review drafts and the final plan will be posted online at http://midwest.fws.gov/mussel/conservation.html as they become available. To download a pdf of the current draft, go to http://ellipse.inhs.uiuc.edu/fmcs/umrsdraft.pdf (1 MB). *Submitted by Kurt Welke*

Freshwater Gastropod Studies – Pennsylvania Natural Heritage Program

The Pennsylvania Natural Heritage Program (PNHP) is undertaking a multi-year inventory of the state's gastropod fauna. There have been various regional or county focused inventories in Pennsylvania but no recent effort to catalog the entire state. The last large scale collections across the state were undertaken by Arnold Ortmann in the early 20th century.

This project will focus on gathering museum data, data from private collectors and institutions, and conducting fieldwork in appropriate regions of the state. Habitats of interest include streams and rivers, lakes and reservoirs, wetlands, and springs. Currently partnering in this effort is the Carnegie Museum of Natural History, Section of Mollusks.

We anticipate this being a minimum of a five-year cataloging effort, contingent on support from the Pennsylvania Wild Resources Conservation Fund program. If anyone is interested in this work or have an interest in volunteering, please contact me at (412) 586-2332 or revans@paconserve.org. *Submitted by Ryan Evans*



Historic Film Re-Discovered

In 1925 Milwaukee Public Museum staff members conducted fieldwork to prepare for the creation of a Mississippi River Fishery habitat diorama at the museum. Museum director Dr. Samuel Barrett (shown in the photo) documented the activities of fishery workers on motion picture film, including that of commercial clammers near "Stram's Point" in the vicinity of Lynxville, Wisconsin. Museum artist George Peter did field studies for a background painting depicting the rugged palisade-like hills just above Lynxville. The museum crew also received the cooperation and assistance of the U.S. Bureau of Fisheries in securing materials for the exhibit. The short documentary film from this work has now been re-discovered and is maintained in the museum's Photo Archives along with still photographs taken by zoologist T.E.B. Pope during this fieldwork. Send requests for further information to:

Susan Otto, Photo Archivist Milwaukee Public Museum 800 West Wells Street Milwaukee, WI 53233, USA

Phone: 414-278-2743 Fax: 414-414-278-6100 Email: otto@mpm.edu

Submitted by Joan Jass, Curator of Non-insect Invertebrates, Milwaukee Public Museum

Course on Mollusca - Australia

A comprehensive course on the biology of molluscs will be held over two weeks in early February (2-13th), 2004 at the University of Wollongong, New South Wales, Australia.

Run by Winston Ponder, Peter Middelfart, Bill Rudman (all Australian Museum), and Andy Davis (U. of Wollongong), the course comprises lectures, laboratories, and field studies and covers all groups of molluscs. Overseas as well as Australian students are very welcome to participate. Details can be found at

http://www.uow.edu.au/science/biol/molluscs/

Triannual Meeting of the WAS, AFS (FCD), and NSA

The triannual meeting of the World Aquaculture Society, the Fish Culture Division of the American Fisheries Society, and the National Shellfisheries Association meets in March 2004 in Honolulu, Hawaii.

Dick Neves and Catherine Gatenby have put together a session on freshwater mussels. For anyone involved in aquaculture of mollusks, whether it is in hatchery-propagation, grow-out, field translocation, or transplant work, this meeting is a must. The trade show alone will knock your socks off. You will see the latest in state of the art culture technology from algae to zooplankton to finfish to shellfish to decapods. It will all be at this meeting.

This is a rare opportunity to attend a meeting on Aquaculture that will draw many of the Southseas/Asian aquaculturists that normally cannot make it to meetings held in North America. In addition, they expect to draw many of the South Americans as well as the usual participants from Scandinavia and Europe. The learning opportunities are endless. Imagine being able to communicate with aquaculturists from Norway to Tahiti, from Chile to Nova Scotia, not to mention the usual NSA members that have been so helpful and influential to us in freshwater mussel propagation efforts. Also, note that while the meeting is on Aquaculture, there will be many talks on the ecology and environmental issues surrounding aquaculture. This meeting could be very helpful to state and federal biologists involved in restoring habitat, developing environmental regulations, and developing partnerships within communities. Go to the WAS website for more information: http://www.was.org *Submitted by Catherine Gatenby*

New Website for The Veliger

The new World Wide Web site address for the malacological quarterly *The Veliger* is http://www.theveliger.org/ Any former web addresses are no longer connected with this journal or its publisher, the California Malacozoological Society, Inc. Sites or individuals wishing to link to *The Veliger* should ensure that they use this current URL.

The Veliger's web site contains information about how to obtain the journal, instructions for authors wishing to submit manuscripts, and tables of contents of issues from volume 44 (2001) forward.

15th World Congress of Malacology

The 15th World Congress of Malacology will be held at the University of Western Australia in Perth from 11 to 16 July 2004. For more information and to download a registration brochure, go to the Unitas Malacologica website http://www.inter.nl.net/users/Meijer.T/UM/um.html or the Malacological Society of Australasia website

or the Malacological Society of Australasia website http://www.amonline.net.au/malsoc

Job Announcements

Aquatic Ecologist, Western Pennsylvania Conservancy/ Pennsylvania Natural Heritage Program

Candidates for this position are responsible for primarily working to assist in developing a classification for stream systems in Pennsylvania. This work requires a fundamental understanding of the ecology of aquatic systems. The candidate should have an understanding of macroinvertebrates, mussels, or fish as well as understanding of ecological principals and zoogeography relating to stream systems. The candidate must be proficient with statistics, with some experience using multivariate statistics and/or ordinations. In addition, the aquatic ecologist will be responsible for coordinating and conducting some surveys with the staff zoologist during the field season for various aquatic groups pursuant to classification work. The candidate will assist in data collection and organization, processing of specimens, and implementing quality control measures for field data.

The minimum qualification for this position is a Master's Degree in Biology, Ecology, or related sciences. A strong background in aquatic and community ecology is preferred. Emphasis will be given to candidates with experience in characterizing aquatic communities. The work will involve using canoes, snorkeling equipment, macroinvertebrate equipment and various techniques and equipment for sampling aquatic communities. Some of the work may involve strenuous fieldwork in remote locations in a variety of field conditions. Good oral and scientific writing skills are essential as well as the ability to organize and present scientific data. Experience using Windows software and some experience with ArcView is preferred. This position will involve travel throughout Pennsylvania and is based out of our downtown Pittsburgh, Pennsylvania office. Closing date for the position is Jan. 15, 2004.

We offer a competitive salary and excellent benefits package. Western Pennsylvania Conservancy is an Equal Opportunity Employer. Interested parties should contact:

> Nancy Bassett, SPHR Director of Human Resources Box R Mill Run, PA 15464 nbassett@paconserve.org

Publications

New Chippewa River Mussel Book

A new book is available on the mussels of the Chippewa River system of western Wisconsin: *Unionidae of the Chippewa River, Wisconsin, and Selected Tributaries. 1986-2002* by Terry Balding. The 59-page book (slick paper) has a colored photo cover and 37 pages of colored distribution maps (20 of 34 species are system records) and is a good supplement to the other Wisconsin mussel books. To order send a check for \$19.00, made out to Terry Balding to:

> Terry Balding S 7071 County Road B Eau Claire, WI 54701

Cope, W.G., Newton, T.J., and Gatenby, C.M. 2003. Review of techniques to prevent introduction of zebra mussels (*Dreissena polymorpha*) during native mussel (Unionoidea) conservation activities. Journal of Shellfish Research. 22(1):177-184.

Contact Greg Cope (919-515-5296 or greg_cope@ncsu.edu) to obtain a reprint of this article.

Molecular Systematics and Phylogeography of Mollusks

Edited by Charles Lydeard and David Lindberg Foreword by Geerat J. Vermeij December 2003; 328 pages; 6" x 9"; 40 b/w photographs Hardcover: \$80.00s; ISBN 1-58834-148-8 Rights: World Hardcover £62.00 http://www.sipress.si.edu/books/titles_books/1-58834-148-8.html

Leading scientists provide the most up-to-date information on the systematic relationships and phylogeography of mollusks.

This richly detailed book is the first complete review of molecular systematics and phylogeography of mollusks. Ten chapters cover issues such as research opportunities, molecules and evolution, bivalve evolution (including unionoids), gastropod evolution, and how mollusks have evolved into so many species.

The concluding title in the Smithsonian Series of Comparative Evolutionary Biology, this book brings together experts from around the world. Each explores their topic in a way that reveals not only the evolutionary history of mollusks, but also how evolution operates. Anyone seriously interested in living mollusks, fossilized shells, or evolution will find this book to be an invaluable resource.

Investigation and Monetary Values of Fish and Freshwater Mussel Kills American Fisheries Society Special Publication 30

Edited by Robert I. Southwick and Andrew J. Loftus September 2003; 177 pages Book & CD: \$45.00; (AFS: \$32.00); ISBN 1-888569-48-4 CD only: \$39.00 (AFS: \$27.00); ISBN 1-888569-49-2 http://64.224.98.53/publications/catbooks/x51030.shtml

This book is an update and expansion of the widely accepted monetary values of fish that have been published by AFS since 1975 (last updated in 1992 as Special Publication 24). This publication has been adopted as the legal basis for restitution or fines in more than half the states and has been upheld in numerous legal challenges. In this current version, freshwater mussels are included for the first time. The publication contains comprehensive methods for assessing fish kills and freshwater mussel kill events and for assessing restitution based on replacement cost for organisms lost in the kill. Tables containing updated replacement cost values for most major fish species that are cultured and for all freshwater mussel species in the USA are included. This book is a must for anyone involved with fish or freshwater mussel kills, propagation, and water pollution policy

Contributed Articles

Mussel Studies: Hiwassee River (Appalachia Cut-Off)

Steve Ahlstedt U. S. Geological Survey, Knoxville, TN 37921 ahlstedt@usgs.gov

A 14-mile reach of the Hiwassee River bordering the Cherokee National Forest was surveyed for the presence of federally listed Epioblasma walkeri and Villosa trabalis and non-listed mussel species. Both endangered species are known to occur here, but the US Forest Service was interested in recent reproduction, recruitment, and establishing fixed station monitoring sites. Of concern was whether E. walkeri still existed in the Hiwassee since it had not been seen since 1992. No E. walkeri were found but the Hiwassee River contains the best population of V. trabalis in the Tennessee River system. This 14-mile reach is being studied for future reintroductions of extirpated species and recommended minimum flows downstream from TVA's Appalachia Dam. At least 24 mussel species are reported in archaeological, pre-impoundment, and recent studies.

The Flambeau River below Ladysmith, Wisconsin – 2003

Terry Balding Eau Claire, Wisconsin

During the summer of 1994, my wife and I surveyed 8 sites in the Flambeau River between the Thornapple and Ladysmith Dams, including the area just below Ladysmith, Rusk County, WI. Since *Dreissena polymorpha* veligers had been discovered in Ladysmith, we revisited these two sections again on 8/17/2003 to determine if there was any evidence of zebra mussels; we only noted when a unionid species was found alive.

When we visited these two sections of the Flambeau River, water was low and very clear. There was no evidence of zebra mussels in either section. The search for Unionidae in Section 3 indicated mussels collected/minute was similar to 1994: 0.38 in 1994 (6 man-hours) and 0.41 in 2003 (2.5 man-hours). Lampsilis radiata, Lampsilis ventricosa, Lasmigona costata, Ligumia recta, and Quadrula pustulosa were found alive in 2003 in approximately the same proportions as in 1994. However, in 1994 we also found 41 Elliptio dilatata, 4 Pleurobema sintoxia, and 3 Cyclonaias tuberculata. In 2003, we found only 2 or 3 E. dilatata and no P. sintoxia or C. tuberculata.

In Section 4 there was nearly double the mussels/minute in 1994 compared to 2003. The results in mussels/minute were 0.67 in 1994 (3 man-hours), and 0.39 in 2003 (2 man-hours).

During the 2003 survey of Section 4, *Lampsilis radiata*, *Lampsilis ventricosa*, *Ligumia recta*, and *Quadrula pustulosa* were found in similar proportions to 1994. However, in 1994, 30 *Elliptio dilatata*, 7 *Pleurobema sintoxia*, 1 *Cyclonaias tuberculata*, and 1 *Lasmigona costata* were found alive; none of these species were found alive in 2003.

While it was good to know there were no zebra mussels, there was a difference with the Unionidae in mussels/minute in Section 4; there seemed to be fewer *Elliptio dilatata*, and no *Cyclonaias tuberculata* or *Pleurobema sintoxia* in both sections in 2003 than in 1994. While we tried to survey the exact same sites within sections 3 and 4 in 2003 as we had in 1994, we may not have, and the differences between the two years could be explained by variations in the exact survey site, or variability within the observers. There was also a major flood (Northern States Power said a 500 year event) at these 2 sites in the fall of 1995, and perhaps this could explain the differences. Is there a real difference, and if so why?

Current Status of Freshwater Mussels (Bivalvia: Unionidae) in the Big South Fork National River and Recreation Area of the Cumberland River, Tennessee and Kentucky (1999-2002) (Evidence of faunal recovery)

Steven A. Ahlstedt¹, Steve Bakaletz², Mark T. Fagg³, Donald Hubbs⁴, Maurice W. Treece¹, and Robert S. Butler⁵

- ¹US Geological Survey, 1820 Midpark Drive, Suite A, Knoxville, Tennessee 37921
- ²National Park Service, Big South Fork NRRA, 4564 Leatherwood Ford Road, Oneida, Tennessee 37841
- ³Tennessee Wildlife Resources Agency, 3030 Wildlife Way, Morristown, Tennessee 37814
- ⁴Tennessee Wildlife Resources Agency, P. O. Box 40747, Nashville, Tennessee 37204
- ⁵US Fish and Wildlife Service, 160 Zillicoa Road, Asheville, North Carolina 28801

Key Words: Big South Fork Cumberland River, National River and Recreation Area, National Park Service, Unionidae, endangered mussels, recruitment.

Abstract: In 1974, the Big South Fork Cumberland River was designated a National River and Recreation Area and managed by the National Park Service. The Big South Fork River drainage basin has been affected by extensive pollution from coal mining, forestry and agricultural practices, domestic runoff, and oil and gas exploration and extraction. Information concerning the mussel fauna in the drainage is based upon a few sites sampled in Kentucky (1910-1911, 1947-1949) and Tennessee (1938-1939). At least 55 species are reported from the Big South Fork but the river at its confluence had access to the rich mussel fauna of the Cumberland River prior to impoundment. Past pollution problems were recently thought severe enough that the fauna was destroyed. However, in the mid-1970s and 1980s, 23 mussel species were found live in the river and larger tributaries, providing the first indication that some mussels had survived. Recent surveys from 1999-2002 have identified 26 species including five that are federally listed endangered (Alasmidonta atropurpurea, Epioblasma brevidens, E. florentina walkeri, Pegias fabula, and Villosa trabalis) and three thought extirpated (Alasmidonta marginata, A. viridis, and Elliptio crassidens). The National River and Recreation Area of the Big South Fork contains some of the best mussel populations that remain in the Cumberland River system and some species appear to be recovering. Restoration of extirpated mussels is feasible via culture, propagation, and translocation of adults. The Big South Fork could serve as a mussel refuge and seed source for other streams in the Cumberland River system following pollution abatement.

Additional information concerning the conquest of Europe by the invasive Chinese Pond Mussel Sinanodonta woodiana 8. Where are the records from the Netherlands?

Henk K. Mienis National Mollusc Collection Dept. Evolution, Systematics & Ecology Hebrew University of Jerusalem IL-91904 Jerusalem, Israel mienis@netzer.org.il

Since its first discovery in some fishponds in Hungary in 1983, the invasive Chinese Pond mussel *Sinanodonta woodiana* (Lea, 1834) has been reported from at least eleven other countries in Europe: Romania, Ukraine, Serbia, Slovakia, Czechia, Poland, Austria, Germany, Italy, France and Belgium. Still missing in this list is the Netherlands.

This is a rather strange situation, because it is one of the countries in which one of the major host fishes for the glochidia of this exotic pond mussel, the grass carp, *Ctenopharyngodon idella*, is being used for the biological control of submerged aquatic vegetation on a large scale. For example, grass carp have been released at a rate of 30 ton each year between 1978 and 1983 (de Groot, 1985). Ever since this situation has hardly changed. Even caught grass carp have to be released immediately in the same water according to the Dutch law.

Although the cultivation, sale, and introduction of grass carp are being monitored by a government organization, juvenile specimens of this fish species are also readily available in pet shops and so-called garden centers. In the same places, one can buy a wide range of other fish species that are probable suitable hosts for the Chinese pond mussel: silver carp Hypophthalmichthys molitrix; bighead carp Aristichthys nobilis, blackhead carp Mylopharyngodon piceus, common carp Cyprinus carpio, goldfish Carassius auratus, several species of bitterlings like Rhodeus amarus, R. ocellatus and R. sericeus, and the stone moroko or topmouth gudgeon Pseudorasbora parva. Most of these species have already been encountered here and there under (semi-) natural circumstances in the Netherlands!

Strangely enough, all these things happen in a country where live specimens of *Sinanodonta woodiana* are for sale in the same garden-centers and pet-shops as bio-filters for use in fish and garden ponds (see website)! Therefore, I repeat my question: Where are the records of the Chinese pond mussel from the Netherlands?

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Websites: http://www.vijvervisinfo.net/index.html

New records of freshwater mollusks (Gastropoda & Bivalvia) from Santa Catarina State, Southern Brazil - II

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Projeto Naiade (Naiade Project)

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Keywords: Freshwater mollusks; Gastropoda; Bivalvia; Continental malacological fauna survey; Santa Catarina state; Southern Brazilian country; New Reports - II

The Santa Catarina State is part of Brazil's southernmost region (Agudo 2002). Previous field studies of the continental mollusk fauna in this region resulted in the determination of 32 confirmed freshwater species (21 Gastropoda & 11 Bivalvia) and 2 not specifically determined - 1 Gastropoda and 1 Bivalvia (Agudo 2003 a, b).

Recently, 5 new reports (2 specific confirmations: 1 Gastropoda & 1 Bivalvia - and 3 new Gastropoda) were included in the regional inventory, elevating the known number of freshwater mollusks species from this southern region of Brazil to 37 species, 21 genera, and 13 families, occupying every locality of the hydrographical portion corresponding to Atlantic coastal plain and the Uruguay River basin (for a complete list of the zoogeographical records in the Santa Catarina territory. see http://www.intergate.com.br/malacologia/levantamento/leva ntamento.html).

Species List: Class GASTROPODA Subclass Prosobranchia Family CHILINIDAE (1) -Chilina fluminea (Orbigny, 1835) Family HYDROBIIDAE (1) -Heleobia piscium (Orbigny, 1835) Subclass Pulmonata Family PHYSIDAE (1) -Physa acuta (= cubensis) Draparnaud, 1805 Family SUCCINEIDAE (1) -Omalonyx unguis (Ferussac in d'Orbigny, 1841) Class PELECYPODA = BIVALVIA Order Unionoida Family HIRIIDAE (1) -Diplodon hildae Ortmann, 1921

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Gyraulus heliciformis (Roth, 1839): a little known species from the Levant (Gastropoda, Planorbidae)

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The German zoologist J.R. Roth (1839: 23, plt. 2, figs. 9a-c) described a tiny Planorbid species found by him in a little stream near Canneytram (=Quneitra) on the Golan Heights as *Planorbis heliciformis*. Unquestionably it belongs to the genus *Gyraulus*, but differs from all other species occurring in the Levant by its wide umbilicus, the descending aperute, and the widely spaced axial ridges, sometimes carrying periostracal fringes. In the latter character, it resembles *Gyraulus crista* (Linnaeus, 1758), although in all other features (size, form, etc.) it is quite different. Since this little known species is not mentioned in the excellent monograph of the genus *Gyraulus* published by Meier-Brook (1983), some information concerning the distribution in the Levant is given here.

During fieldwork carried out on behalf of the Inland Water Ecological Service of the Israel Nature Reserves Authority on the Golan Heights during the years 1980-1985, *Gyraulus heliciformis* had been collected at the following localities: Berekhat Gamla; Berekhat Sha'al (Qarhata); Berekhat Tovim; Birket Bab el Hawa; Birket Hafar; Birket Mughaiyir; Birket Za'arta; Enot Gamla; Masil Nov; Nahal Aniam (Nuchile); Nahal Daliyyot; Nahal Kanaf; Nahal Moisa; Nahal Qazrin; Nahal Samakh; Nahal El-Al; Nahal Yahudiya and Nahal Yardenon. These localities are scattered over the entire Golan Heights, a considerable area covering some 1200 km; however, nowhere does it occur in large numbers.

The habitats in which *Gyraulus heliciformis* had been encountered consisted of temporary rainpools (berekhat and birket), small, slow flowing "streams" (masil), and more permanent streams (nahal – however, here in most cases with rather low velocity). Most of these aquatic habitats are in constant danger of drying out or being polluted.

Gyraulus heliciformis likely occurs on the Syrian side of the Golan Heights and on Gebel Druse. In the last case, it is noteworthy that Pallary (1939: 73, plt. 3, figs. 52-54) described a *Planorbis (Gyraulus) hebraicus* var. *drusensis* from Birket Soueïda, which is probably a junior synonym of *Gyraulus heliciformis*.

Mienis & Ortal (1994) considered *Gyraulus heliciformis* a rare species within the framework of the IUCN Threatened Species Categories. However, due to its restricted range in Israel and Syria and the unstable aquatic habitats in which it was found on the Golan Heights, *Gyraulus heliciformis* should be raised to the status of a vulnerable species.

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The Yellow River (Cadott, Wisconsin) – August, 2003

Terry Balding Eau Claire, Wisconsin

The Yellow River begins in the Chequamegon National Forest, Wisconsin, where the North and South Forks of the Yellow River join in Taylor County. About 7 miles downstream of the Miller Dam, the Yellow River forms the Chequamegon Flowage. The Yellow flows from the Flowage southwest 30 miles into Chippewa County, and it is dammed again where there was a natural falls in Cadott, WI. The Yellow River then flows west 6 miles and empties into Lake Wissota. The stream is very rocky, including boulders and bedrock in some areas. When sand/gravel is present, it is usually very limited between the rocks or in areas where the current has dropped it in pile. In pools there is a silt/algae deposit on the bottom with smaller and fewer rocks.

Venustaconcha ellipsiformis is a Wisconsin threatened species found in only two streams in the Chippewa River Basin. These populations are far removed from the ones in southeastern Wisconsin. Baker (1928) collected a *Venustaconcha ellipsiformis* (ellipse) in Chippewa Falls, WI, but he did not identify the stream he found it in. This shell is at the University of Michigan. Dr. David Stansbery, Marian Havlik, and I agreed that from a photo, it does appear to be the ellipse.

Both Duncan Creek and the Chippewa River are in Chippewa Falls, WI, with the Yellow River nearby. I have surveyed Duncan Creek upstream of Chippewa Falls and found very few live shells, all *Anodontoides ferussacianus*. Therefore, it is unlikely Baker found the ellipse in Duncan Creek, and I suspect he got the shell from the Chippewa River. Then the ellipse could have been a species originally found in the Chippewa River, which may have ranged upstream into tributaries such as the Yellow River.

In 1992, a student, Andrew Stortecki, told me of many dead shells along the Yellow River below the dam in Cadott, WI. He brought in a bag of shells, and one of these was a mystery to me. Coincidently, David Heath of the WI DNR and I were having a conversation about my starting a master degree student on a stream in the vicinity. He suggested that the Yellow River would be a good candidate as he had seen some shells that appeared to be the ellipse. When I re-examined the mystery shell I decided it might be the ellipse. Dr. Stansbery verified the identification. In 1994, my wife and I looked at a site north of Cadott, WI, where County Trunk O crosses the Yellow River. We found the ellipse in good numbers and sent vouchers to Dr. Stansbery. Since then we have also found the ellipse alive in Oneil Creek, but this creek and the Yellow River are the only streams in all of Northwest Wisconsin that have currently known populations of the ellipse.

In 1998, my wife and I completed a survey of 9 sites on the Yellow River and found the ellipse at several sites. In 2003, we completed 12 additional sites (Table 1). We usually found the ellipse in shallow rocky areas, with a good flow, frequently not dug

into the substrate. In 2003, at one site, there were many dead shells and most of them were the ellipse. At another site, 14 of 22 dead shells were ellipse. People who live along the river claimed it is a foot or so lower than normal in 2003. Judging by the number of dead shells found, and the number of shells in very low water, the drought of 2003 had a devastating affect upon the ellipse. Of 15 mussel species found, the ellipse is the fifth in abundance, and was found at 90.4% of the survey sites; its relative abundance was 11%. Ellipse shells were 3-6 cm long; one was 4 and one was 15 years. The most common size was between 4 -5 cm, and about 8–12 years old.

An algal bloom flowing from the Cheqaumegon Flowage made it necessary to survey the first downstream site by feeling on the bottom. We only found a dead ellipse shell, and no live ones. Possible reasons are that there were none there, or possibly we overlooked them because of poor visibility. At one site there was high turbidity because of nearby livestock, but we did find 3 live specimens. Most of the stream at this site did not have the shallow, rocky, flowing habitat we usually found the ellipse to inhabit.

Amblema plicata was the most abundant species in the Yellow River, but 77% of these were found at 3 sites. Likewise, 65% of *Fusconaia flava* were found at 3 sites. Amblema plicata and Lasmigona costata were not found below the dam in Cadott, and they, plus *Fusconaia flava*, had stronger representation in the upper portions of the Yellow River. Actinonaias ligamentina reversed the trend of the last three species and was found more frequently in the lower reaches of the Yellow River. I was surprised to see Lasmigona complanata present, as it is a shell predominantly on the Chippewa River main stem below the dam in Eau Claire. Anodontoides ferussacianus was only found in the uppermost portions of the Yellow.

Table 1. Mussel species found at 21sites in the Yellow River of Wisconsin.

Species	<u># Specimens</u>	# Sites Found	Rel. Abundance	<u>Rel. Freq. %</u>
Actinonaias ligamentina	234	15	10.9%	71.4%
Alasmidonta marginata	27	12	1.3	57.1
Amblema plicata	418	14	19.6	66.7
Anodonta grandis	52	8	2.4	38.1
Anodontoides ferussacianus	7	3	0.3	14.2
Elliptio dilatata	252	17	11.8	80.9
Fusconaia flava	181	14	8.5	66.7
Lampsilis radiata	40	14	1.9	66.7
Lampsilis ventricosa	289	20	13.5	95.2
Lasmigona complanata	10	4	0.5	19.0
Lasmigona costata	188	18	8.8	85.7
Ligumia recta	118	20	5.5	95.2
Pleurobema sintoxia	37	9	1.7	42.8
Strophitus undulatus	49	13	2.3	61.9
Venustaconcha ellipsiformis	236	19	11.0	90.4
Totals: 15 species	2138			

Historical range expansion of winged mapleleaf provides possibilities for additional reintroduction sites

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Winged mapleleaf, *Quadrula fragosa* (Conrad 1835), once inhabited at least 34 river systems in 12 states (USFWS 1997). This federally endangered species is now thought to be limited to the St. Croix River, Wisconsin, Kiamachi River, Oklahoma, and Ouachita River, Arkansas. Until recently, winged mapleleaf were recorded only from a relatively short reach of the lower St. Croix River downstream of the St. Croix Falls dam (Doolittle 1988), a barrier to fish movement. However, a few years ago old, winged mapleleaf valves were found upstream of St. Croix Falls suggesting the species may still occur upstream of the dam (Hove *et al.* 1999). This discovery prompted the National Park Service to support a survey of mussel communities in the St. Croix and Namekagon rivers.

This summer we completed a three-year, qualitative mussel survey of the St. Croix National Scenic Riverway, to describe the range of winged mapleleaf and identify high quality mussel habitat. Macalester College surveyed 65 sites above and below the

St. Croix Falls dam. The Minnesota and Wisconsin departments of natural resources (MN DNR & WI DNR) surveyed 64 sites downstream of the dam during 2001.



The range of winged mapleleaf in the St. Croix River has decreased over time. Prior to this study, it was thought the species occurred along an 8 km reach downstream of the St. Croix Falls dam. During 2001, the WI DNR observed a live winged mapleleaf 9.6 km downstream of the previously thought downstream edge of its range. During this and previous survey efforts, we collected empty winged mapleleaf valves from eleven locations, revealing a historic range of at least 50 km in the St. Croix River. Winged mapleleaf may have had an even greater downstream distribution since subfossil winged mapleleaf valves have been collected at nearby locations in the Mississippi and Minnesota rivers (vouchers at Bell Museum of Natural History).

Survey results support plans to improve winged mapleleaf conservation. Potential winged mapleleaf reintroduction sites are being reviewed by the USFWS. Results from this survey show that live winged mapleleaf and diverse, dense mussel communities appear to be very rare in the lower half of the St. Croix River. We observed several high quality mussel habitats and diverse mussel communities upstream of St. Croix Falls dam. Winged mapleleaf valves have been observed at two locations upstream of the dam at St. Croix Falls (Hove *et al.* 2001). Channel catfish is a suitable host species for winged mapleleaf glochidia (Hove *et al.* 2002) and is common throughout higher order reaches of the St. Croix River. We believe select sites in the St. Croix River upstream of the St. Croix Falls dam should be considered as potential winged mapleleaf reintroduction areas.

Several people supported this project. We thank Randy Ferrin, Byron Karns, Robin Maercklein, Jill Medland, and Bob Whaley, and National Park Service who provided administrative, logistic, and financial support for this project. We also thank David Heath and Ron Benjamin, Wisconsin Department of Natural Resources, and Dan Kelner and Mike Davis, Minnesota Department of Natural Resources, for sharing their winged mapleleaf survey results.

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High School Students

Participate in Snuffbox Host Suitability Trials

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Identification of host fishes for native mussels ranks among the highest research priorities in a national conservation strategy organized by the Freshwater Mollusk Conservation Society. High school students from Breck High School and Grantsburg High School worked with the University of Minnesota and Macalester College to complete host suitability trials using snuffbox, *Epioblasma triquetra* (Rafinesque, 1820), glochidia.

We followed standard methods (Zale and Neves 1982) to conduct glochidia host suitability trials at the University of Minnesota's Wet Laboratory (UMN), and Grantsburg High School's Science Laboratory (GHS). Between 1-11 individuals of 11 fish species were exposed to glochidia and split between the laboratories. Infested fish species were held in separate flow through (UMN) or static aquaria (GHS) at 17-18 °C. We collected 75 juveniles from logperch 32-57 d post-infestation (Table 1). Other species did not facilitate glochidia metamorphosis (Table 2).

Logperch have been shown to be suitable hosts for snuffbox in previous studies (Sherman 1993, Yeager and Saylor 1995, Barnhart *et al.* 1998). Other darter (*Percina*) species have been shown to be suitable hosts (*e.g. P. maculata* (Hove *et al.* 2000)), but two *Etheostoma* species tested in this study did not facilitate glochidia metamorphosis. Yeager and Saylor (1995) also found snuffbox glochidia did not metamorphose on six *Etheostoma* species and *P. copelandi*.

We plan to expand our research team in the future by including additional high schools in the watershed, and in so doing, broaden appreciation of St. Croix River resources.

Table 1. Fishes that facilitated metamorphosis of snuffbox glochidia.

	Number	Number	Excystment	No. juveniles
Species	infested	survivors	period	recovered
logperch	9	2	32-57	75

Table 2. Fishes that did not facilitate glochidial metamorphosis.

End of
attachment
period (days)
27-29
4-6
9-13
20-23
20-23
4-6
*
1-4
*
18-20

*Study incomplete, fish died before the end of the trial

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Helpful Hints from Hoppy:



For long-term trend data, establish fixed station monitoring sites...measure mussels for size-class distributions as evidence of recent reproduction and recruitment.

Submitted by Steve Ahlstedt

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