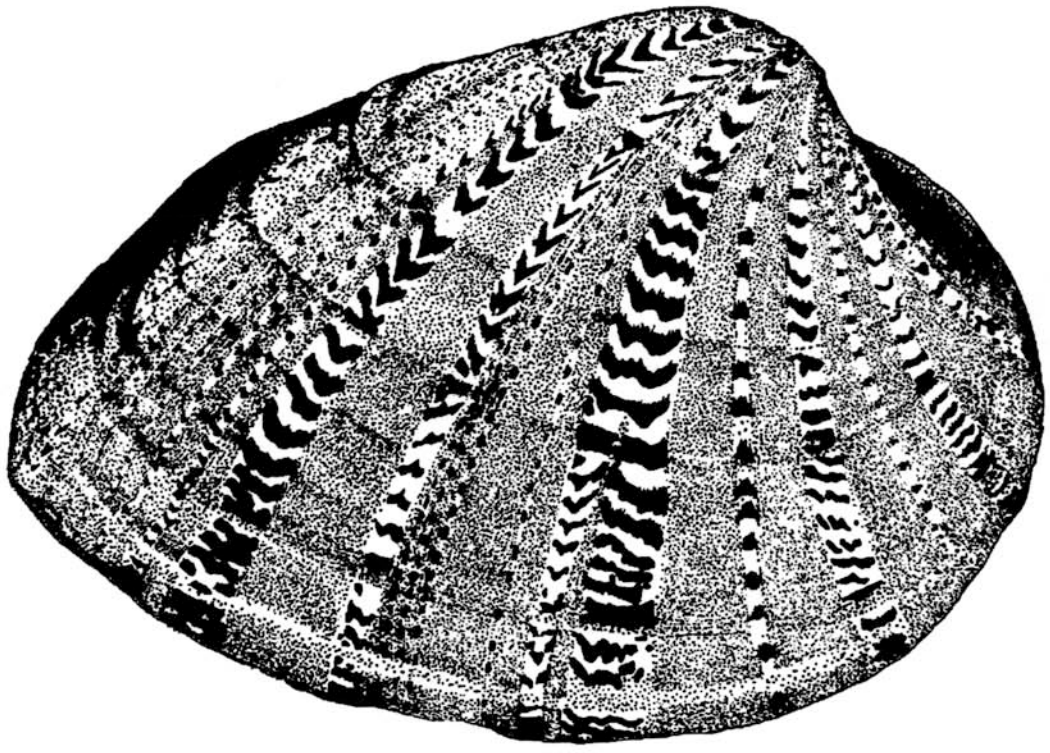
Ellipsaria

The Newsletter of the Freshwater Mollusk Conservation Society

Volume 2 – Number 3 **December 2000**



This issue of *Ellipsaria* contains:

2001 FMCS Symposium Information and the Last Call for Papers
2001 FMCS Officer Election Ballots
2001 FMCS Membership Renewal Form

Ellipsaria – Volume 2, Number 3 – December 2000

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Freshwater Mollusk Conservation Society
Officers for 2000 - 2001

Ellipsaria – Volume 2 – Number 3 – Winter 2000

Table of Contents

FMCS Reports

FMCS 2001 Symposium Update 2

FMCS 2001 Officer Nominations and Candidate Position Statements 2

FMCS November 2000 Board Meeting Minutes 5

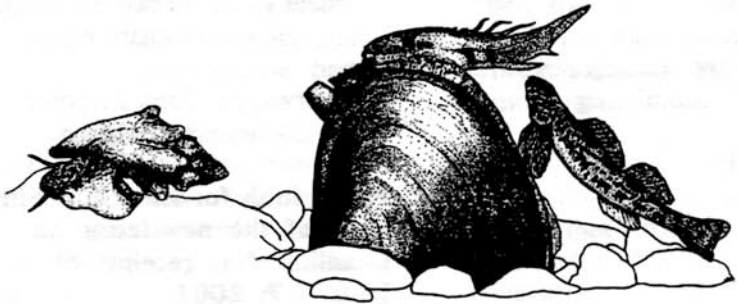
Other FMCS Activities 8

Announcements 9

Submitted Reports 10

FMCS 2001 Symposium Information 15

Freshwater Mollusk Conservation Society



FMCS Reports:

FMCS 2001 Symposium 2001
"Biological Assessments: Evaluation of Endangered Mollusks"
March 12 - 14, 2001
DoubleTree Hotel
Pittsburgh, Pennsylvania

Registration & Abstract Submission Reminder
The early registration date for the this symposium is fast approaching. To avoid the late registration rate, please get your completed registration form, abstracts, and payment to Tom Proch by **DECEMBER 15, 2000.** For your convenience, a registration form is include in this newsletter. Complete symposium information can be found on page 13 of this newsletter and also on the symposium website:

http://www.dep.state.pa.us/dep/deputate/fieldops/sw/tom/fmcs.html

A Reminder for Presenters
Remember that no overhead projector presentations will be accepted. The only methods supported at the March meeting will be LCD projectors for computer presentations, and 35mm slide projectors. In order to make things move smoothly and not have notebook computers lying around everywhere, we will pre-load your presentation on a Window based notebook. PowerPoint is the software of choice, so if you develop your presentation in other software, either convert it to PowerPoint, or provide us with a copy of the software you use. This will not violate licensing agreements as long as the software is erased at the end of the meeting. You can provide the presentation on diskettes or (preferred) CD ROM. Be sure to burn your CD Rom according to ISO 9660 standards (a choice in all CD burning software) to ensure compatibility.

We will try to provide the same service for Macs, but be prepared to bring your Mac. You will be notified well before the meeting, if we are unable to accommodate Mac computer presentations. **Be sure to indicate your platform (PC or Mac) when submitting your abstract.**

Address any presentation questions to:

Tom Proch
400 Waterfront Drive
Pittsburgh, PA 15222
412 442-4051
e-mail: proch.thomas@dep.state.pa.us
or tproch@stargate.net

Symposium Auction

Hey you! Yeah, you!!

The auction brings the Society needed income that supports a variety of things including workshops, this newsletter, printing, and mailing costs, ad infinitum. The Chattanooga meeting auction netted $1700. This year, the auction will generate money to develop a student travel award. We need your help to make the Pittsburgh auction a success.

Do you have an item or items to donate? Or, perhaps you can solicit an item for the auction? We want items with broad appeal: tools, art, literature, seeds, food, beverage, fishing items (poles, lures, tackle boxes), old fishing lures, decoys, SCUBA gear..... anything nice or novel is saleable. Think about items you would find appealing, then bring them with you! We will try to assure that all items are eligible for a charitable donation designation (we'll try to issue a receipt) for tax purposes.

Please contact Kurt Welke (WelkeK@dnr.state.wi.us) (608-273-5946) or Steve Ahlstedt (ahlstedt@usgs.gov) (865-545-4140 ext. 17) before the symposium and let them know what you are bringing. Bring your items to Pittsburgh Symposium and let the registration folks know who you are and what you have.
Get out there and solicit!!

Submitted by Kurt "I see master & I obey" Welke & Steve "Hoppy" Ahlstedt

FMCS 2001 Officer Elections

Nominations for the FMCS offices of president-elect and secretary closed November 15, 2001. The following people accepted nominations to become FMCS officers for 2001. Our thanks to Leroy Koch for compiling the nominations and contacting the nominees

President-elect: Robert Anderson
Richard Neves

Secretary: Patty Morrison
Rita Villella

Please look for the 2001 FMCS ballot insert in this issue of the newsletter and cast your vote today. Deadline for receipt of 2001 FMCS ballots is January 7, 2001.

President elect
The office of president-elect is a one-year term before the individual becomes society president. After the year as

society president, the individual must then serve an additional one- year term as past-president, for a total of 3 years of service to the board.

Position statements of the 2001 FMCS President Elect Candidates

Richard J. Neves
Virginia Cooperative Fish and Wildlife Unit
Department of Fisheries and Wildlife
Virginia Tech, Blacksburg, Virginia

When I first entered the discipline of freshwater malacology in 1978, we were considered to be extremists, rabble without a cause, in pursuit of the protection of shelled critters of ill repute. No one knew or cared much for freshwater mussels, let alone snails. A lot has changed in these last 20 plus years. Our Society is new, but its roots are steeped in the traditions of early naturalists and their enthusiasm for what was to become recognized as the greatest diversity of freshwater mollusks in the world. Along with that world-class species richness comes a supreme responsibility for its conservation and management. Therefore, we should be the Society that sets the standard for others to follow.

As a federal research biologist and university professor, I have learned that you often need to stir things up to make things happen (Charlie Brown mentality). But with conservation as our righteous cause, and science as our cudgel, there are no adversaries who can refute our message or justify our exclusion from the democratic process of decision-making in today's society. If I were to become president of FMCS, I have a modest number of goals and objectives to accomplish or to further along in 2002. Let me describe briefly what major activities and what course I would like us to follow in order to strengthen FMCS internally and externally.

In my opinion, FMCS should become proactive and not merely reactive to the needs of mollusk conservation. We need to be perceived as the champion of freshwater mollusks by governmental agencies, aquatic biologists, and other professional societies, in possession of the best available data, expertise and experience among our members to provide sound biological assessments to conservation and management questions. They need to think of us first when mollusk conflicts arise. How many times have ill-conceived projects been approved to the detriment of riverine mollusks? For too long there has not been an organized voice to provide input on such projects. Each of us can serve as the eyes and ears of FMCS, to sound the alarm on projects that pose a threat to freshwater mollusks with or without federal status. The American Fisheries Society has been very effective in using committees to prepare position statements on topics and projects involving environmental quality, endangered species, non-indigenous species, and a suite of other issues, threatening to the integrity and management of fishes and aquatic ecosystems. FMCS should emulate their efforts.
I would like to see FMCS continue to move forward with such projects as the mussel atlas and the establishment of approved methods for conducting mollusk sampling in various types of waterways, to include gear, sampling design, and the minimal effort needed to meet project goals. The establishment of guidelines as opposed to standard methods is certainly within our purview. Although effective sampling will always remain contentious, FMCS should attempt to provide non-molluscan biologists with sufficient guidance to enhance the credibility of their survey results. We should provide the grout and not the grouse to their efforts.

I would like to expand our membership by actively recruiting other aquatic biologists to our cause. Many potential members are hidden within the rolls of the American Malacological Society, North American Benthological Society, National Shellfisheries Association, and other regional and national societies. I also would like to promote better interaction and mutual cooperation with these societies, as the health of aquatic ecosystems is everyone's common goal. There must be a team approach to aquatic conservation in the U.S., and we need to be part of that team.

Finally, I intend to be a threat to all members with a malaise for becoming active participants in FMCS. We need more disciples to preach the molluscan gospel to the adversarial unwashed and truly uninitiated in society. FMCS cannot continue to function and progress on the backs of a few zealous souls. Each of us can be dangerous in applying our limited level of knowledge, so I will be coming after you to keep FMCS dynamic, well informed, and on its proper path.

Robert M. Anderson
USGS Biological Resources Division
Pittsburgh, Pennsylvania

As a young naturalist canoeing the Allegheny River, I never imagined the freshwater mussels, visible almost from bank to bank, could be endangered. I completed a BS in Biology at the University of Pittsburgh and soon realized that my interests did not fit those of a traditional fisheries biologist that I had thought I wanted to be. In 1989, I completed a MS program at Tennessee Technological University where my thesis subject was examining the impact of coal mining on endangered species. In Tennessee and Kentucky this, of course, included mollusks, which became my passion. I was able, again, to observe these animals in abundance, but I also began seeing a pattern of loss. Locations that recently had

abundant populations now had few animals. Upon graduation, I became the State of Indiana's, Nongame Aquatic Biologist. The conservation issues in the Midwest, although much different from those in the lower Appalachians, showed that freshwater mollusks here too existed in isolated and diminishing stream segments. I have been doing research for the U.S. Geological Survey back in the upper Ohio River valley for the past 5 years. The USGS has allowed me to collaborate with water quality chemists, hydrologists, and GIS experts and has greatly expanded my understanding of stream function, water quality, and the conservation implications of both on mollusks.

It has been a wonderful experience to be involved with FMCS, first as an active member and now serving on the board of directors as chair of the Water Quality, Habitat, and Zebra Mussel Committee. The societies design of alternating years with a national meeting and a topical workshop meets the worthy goals of communication, education, and outreach. The FMCS newsletter Ellipsaria will soon incorporate the communication role previously served by the Triennial Unionid Report and the society may soon have a technical journal to facilitate an additional level of communication.

FMCS has accomplished a great deal for such a young society and is now poised to do much more. As the political climate for mollusk conservation fluctuates at all levels of government, FMCS serves as a steady voice for a group of organisms largely neglected by other professional societies and conservation groups. I want to see the formal and informal communication roles of FMCS play an expanding role in our professional lives. A well-informed membership is key to FMCS continuing to accomplish its goals. I would also like to see an expanded effort to garner public attention for the plight of freshwater mollusks. The global demise in amphibian populations has been effectively communicated to the public and to governments. The result has meant a greatly increased research budget into the causes of that decline. Freshwater mollusks are arguably in worse condition than amphibians and, like amphibians, mollusk declines may be a harbinger of a broader ecological collapse. I would like to see FMCS continue to strive to help the public understand these organisms and the importance of their conservation.

Secretary

The society secretary is selected to a 2-year term, which may be repeated for one additional term if desired (2 consecutive terms for a total of 4 years service).
The change in officers will occur at the end of the business meeting at the FMCS Pittsburgh Symposium in March 2001.

Rita Villella
USGS-BRD
Leetown Science Center
Kearneysville, West Virginia

I have had the privilege of serving as the FMCS secretary for the last 2 years. I also served as the secretary for the National Native Mussel Conservation Committee – the organization that became the FMCS - for 2 years prior to the founding of the society. I would like to have the additional opportunity to serve the FMCS, for another 2 years, in order to assist this young society with its transition to a well-developed society.

In the past 2 years, working with others in the society we have made great strides in our membership growth, membership accounting, and the creation of our membership databases. However, in the future, we will need to be more proactive in recruiting new members and expanding the size and influence of the society. I would like work on assisting the international growth of the FMCS, as well as improving the societies advocacy actions in the next 2 years. It has been a pleasure serving as your society secretary.

Patty Morrison
USFWS
Ohio River Islands NWR
Parkersburg, West Virginia

We all agree that the formation of the FMCS was a turning point in our effort to coalesce A "need" with "action" for the protection and recovery of mollusks. There are now literally hundreds of people committed to the Society and its objectives, and I am, personally and professionally, proud to be a part of it. I am willing to step up my commitment by serving as Secretary, if asked. But this is only the beginning of concerted action. I would like to see the Society step up its advocacy role (e.g., more position papers and letters on projects and decisions which affect mollusks), and begin outreach efforts to non-traditional audiences and decision-makers at all governmental levels (e.g., presentation to the Sportsmen's Caucus on Capitol Hill). If we are able to turn the corner on stopping the decline of freshwater mollusks, it will be only because we have convinced other people to care about them.

Time and tide wait for no clam...

Freshwater Mollusk Conservation Society
Board Meeting Minutes
November 2-3, 2000
Pittsburgh, PA

Minutes from the April 2, 2000 board meeting held at the USFWS National Conservation and Training Center were read and accepted.

Treasurers Report

There are approximately $15,000 in society funds primarily from membership dues and almost $7,000 was generated from the outreach workshop last April. As of October 30th there are now 210 society members. For initial long-term financial planning, the board voted that all but $5,000 of society funds placed into an interest bearing money market account. Also, the funds can be accessed with out an interest penalty. The remaining $5,000 will be maintained in a checking account. There is approximately $15,000 currently in the symposium account from the Chattanooga meeting, with the publication and mailing of the proceedings expected to cost around $8,000. After the proceedings are published and mailed, the remaining dollars will be transferred to Pittsburgh to be made available for the 2001 symposium costs.

2001 Symposium Update

The symposium will run from Monday, March 12 through Wednesday the14, at the DoubleTree Hotel in downtown Pittsburgh, PA. A special session will occur Monday morning featuring 6 speakers. The focus of this special session will be on river development projects and freshwater mussels. This will be followed by a lunch served in the same room. The afternoon will be either concurrent or a plenary session based on number of abstracts received. A mixer will occur Monday evening featuring a small band, cash bar and finger foods. The Tuesday morning plenary session features invited speakers, including Gerry Mackie speaking on Sphaeriidaae, Dan Brooks on data needs for developing phylogenies, and Harold Silverman will talk on feeding and diet needs of mussels. This session will be followed by a served lunch with afternoon plenary or concurrent sessions. The poster session will be held Tuesday evening in the foyer on the 3rd floor outside of the ballroom. There will be a cash bar and snacks available at the poster session. Contributed sessions are scheduled for Wednesday morning and one of 2 field trips in the afternoon - a tour of the Carnegie museum or a tour of the new aquarium at the Pittsburgh Zoo. The FMCS general business meeting will be held on Tuesday at noon. Another FMCS auction is also being planned for the symposium. Funds raised from the auction will go towards establishing a FMCS student travel award fund.

The FMCS symposium will have the entire 3rd floor of the hotel for this meeting with 2 additional rooms set aside for presenters to practice their talks and for committee meetings. Morning breaks will include beverages and pastries, with beverages provided for afternoon breaks. An additional hour will be set-aside after lunch on Monday, Tuesday and Wednesday for committee meetings. An evaluation form should be included in the registration packet and possibly other amenities such as drink coupons. T-shirts will be sold only as ordered.

A break in the registration fee is being given for students. Without sponsorship funds registration fees will not cover the costs of the symposium. Therefore, sponsor money will be solicited for the symposium. Steve Ahlstedt will contact TVA, Tennessee Wildlife Resources, and USGS; Paul Johnson will contact World Wildlife Fund and The Nature Conservancy; Rita Villella will contact the National Wildlife Federation; Kurt Welke will contact COE Upper Mississippi District, UMRCC and Mussel Mitigation Trust; Tom Proch will contact ORSANCO; Patty Morrison and Tom Proch will contact the Fish and Wildlife Service through Kari Duncan or Susan Mangin. Patty had submitted a proposal to the Mussel Mitigation Trust for funding and it was suggest that Tom send the proposal to the Freshwater Mussel Conservation Fund. Deadline for proposals is November 15, 2000.

Committee Reports

The committee reports include information about the tentative agenda of each committee meeting, to be held during the Pittsburgh Symposium.

Water Quality, Habitat, Zebra Mussels Committee

Agenda lists 5 major topics for discussion:

1) The status of the water quality manuscripts (2 are in limbo, 3 are published in NABS, 1 is draft ready for publication)
2) The zebra mussel-protocol that USFWS has requested the FMCS to assist with developing.
3) Development of a database to identify high-risk areas for zebra mussel invasion.
4) Development of a committee web page to improve communications.
5) Hold election for committee chair.

Propagation Committee

1) Main topic in the works is the planning for a propagation, conservation genetics, and habitat workshop for 2002 (report following).
2) Preventing the loss of existing populations through augmentation
3) Development of criteria towards establishing new populations

4) Improvement of transformation methods and juvenile mussel holding protocols
5) Improvement of culture methods
6) Development of a criteria for project prioritization
7) Begin a process to for the society to address funding, animal health, wildlife regulatory, and political concerns towards artificial augmentation efforts.
8) Begin to develop an integrated genetics and adult mussel holding database.
9) Election of a committee chair

Status of Gastropods Committee
1) Election of a committee chairperson
2) An update on the progress of the National Conservation Strategy for Freshwater Gastropods
3) An update on the Freshwater Gastropods of North America Project

The freshwater gastropods of North America project now has 91 participants. An online demonstration of a publicly accessible database unifying all the freshwater gastropod collections held in North America was completed in September, and can currently be viewed on the web at http://herman.itlab.musc.edu/fwgna/fwgna_enteries_search.html

The revised FWGNA proposal, exceeding 900 K in requested funds was resubmitted to NSF in early November to fund the first phase of this 3 phase project. Phase 1 will is scheduled to be a 3-year project.

Outreach Committee
Janet Butler and Kurt Welke are committee co-chairs. An agenda with specific projects was developed at the last outreach committee meeting in April. It included the following:
1) Development of a slideshow - Kurt Welke took the lead for this project which was completed and will be reviewed by committee members.
2) Update Mussel Tool List - Project leader is Janet Butler. A draft updated tool list was prepared to the board. The committee will try to have this packet printed to be ready for distribution by the March meeting.
3) Sportsman Caucus - Not much progress has been made on developing a briefing for presentation to this caucus.
4) Aquatic Biodiversity Seminar - Hilary Vinson is the project leader. The seminar is scheduled for December 4th at the National Conservation Training Center in Shepherdstown, WV. An invitation was sent to national environmental education program representatives. Presentations will be made on mussels and status of aquatic biodiversity. This will be followed by discussion on incorporating aquatic biodiversity education into current national education programs (project wet, project wild, etc.).

Hilary Vinson was contacted by the FWS Public Affairs Office to provide information and contacts about freshwater mussels for the media. Several folks responded and a special hot news media site was posted on the FWS web site this summer.

Information Exchange Committee
Mark Hove and Tom Watters are serving as co-chairs until a new chair is selected in March. Primary responsibility of this committee remains the newsletter. Chris Mayer is the newsletter editor and an editorial board has been established. It was agreed that a specific agenda for this committee needs to be developed prior to meeting in March. Newsletter submission guidelines and policies need to be discussed and finalized.

Techniques and Guidelines Committee
Agenda will include election of a new committee chair and discussion of the format for techniques and guidelines paper that was developed at the Chattanooga Symposium.

Commercial Committee
Though Tennessee Shell is still in business there is little to no commercial shell activity at this time. Steve Ahlstedt prepared a draft guideline on establishing a monetary value of freshwater mussels to be used in the case of a pollution event. Currently, states have no guidelines for pursuing monetary damages for restoring mussel resources. It is proposed that a value be placed on each mussel species that occurs in North America. This would be similar to the monetary value placed on fish species that was established by the American Fisheries Society. This item will be the topic for discussion at the committee meeting in March.

Status of Unionids Committee
Funding was used to prepare drafts of several species accounts. Primary item of business for the committee meeting is discussion of preparing a grant proposal to NSF for funding the atlas and election of a new committee chair next March

Newsletter Report
The majority of comments on *Ellipsaria* format have been favorable, so no major changes will be made to the newsletter at this time. Deadline for contributions for the next issue was November 1. The next issue will be mailed in early December and will include 3 inserts: a membership renewal form, a ballot for the election of the 2001 officers, and symposium registration form. A call for auction items will also be included. The board agreed the newsletter will remain in hard copy format only, with potential for an online issue of the newsletter at a later date.

Walkerana
The board agreed we should pursue developing a journal, whether it is *Walkerana* or another publication, as it is vital to FMCS being recognized as a professional society. Tom Watters and Kevin Cummings will meet with Dr. Burch and prepare a package to present to the board on current distribution of the journal, costs for journal publication and distribution, and cost to the membership. This will be an item of discussion by the membership at the general business meeting in March. Points of concern are perceived to be the limited distribution of *Walkerana*, reticence of libraries to add journals, costs of publication, need to increase membership to support publication costs.

2002 FMCS Workshop
The workshop curriculum includes propagation of freshwater mussels, conservation genetics, and habitat restoration. While the board agreed the workshop curriculum is good, the board will request the workshop organizers change the date from July 22-23 and consider change in location. The preferred time is early March or November. It was believed that a July date could have poor attendance, and this time also conflicts with the AMS 2002 in Charleston, SC. There was some discussion about exploring having the workshop in conjunction with AMS. However, the preferred workshop location would be the FWS National Conservation Training Center. The advantage to this location is the facility itself and the cost savings to FMCS. Workshop participants can prepare video of their propagation techniques that can be shown to all workshop participants, which may be more effective than crowding 200 participants into a single propagation facility. Kevin Cummings will contact the committee co-chairs and Rob Dillon to discuss location and time for the workshop and financial options.

Criteria for student travel awards
The board decided to review the criteria used by NABS and see what we can develop for future symposia. Al Buchanan will draft the FMCS student travel award criteria using other societies criteria as a guideline. It was agreed the proceeds from the auction should be used to develop a fund for the student awards. The 2001 auction will be run by Steve Ahlstedt, Kurt Welke and Dick Biggins.

Liability Insurance for FMCS Officers and Society
Liability insurance is an issue of discussion due to the advocacy activities of the society. The bylaws state that members and officers of the society shall not be personally liable for any debt, liability or obligation of the society. However, all persons, corporations or other entities may look to the funds and property of the society for the payment of any such contract or claim, or for the payment of any debt, damages, judgment or decree, or of any money that may otherwise become due or payable to them from the society. The board agreed that Paul Johnson will obtain information on both professional and business insurance and present the pros and cons and cost at the next board meeting.

AIBS
FMCS is now officially a member of the American Institute of Biological Sciences. The board passed the motion that the AIBS membership dues ($70) for the member that represents FMCS at AIBS be paid by the society. AIBS costs for the society will be a total of $170 annually. Kari Duncan and/or Paul Johnson will serve as FMCS representatives for the first year. In the future, serving as the FMCS representative on the AIBS board may become the duty of the past president.

Other Business
Two items will be presented to the membership for vote at the general business meeting in March. A motion was passed to have Paul Johnson draft the amendments for the board to review prior to the meeting. The first item is a change in the bylaws to change tenure of committee chairs from one year to two, and the second is a change in the bylaws stating a member while serving as an officer cannot also serve as a committee chair.

Nomination for Meritorious Service Award and FMCS Lifetime Achievement Awards
The first 4 Lifetime achievement awards were presented to the following individuals at the first symposium in Chattanooga: Russell Hunter, Jack Burch, David Stansbery and Paul Parmalee. Members of the board nominated 2 new recipients of the FMCS Lifetime Achievement award. The recipients of this year's award will be formally notified by letter, and the winners will be announced at the symposium in Pittsburgh. There was discussion of the need for an additional award to recognize significant field collections and field contributions. The board passed the motion to establish a new award that will be called the **William J. Clench Award for Pioneers in Freshwater Malacology**, and 2 recipients of the award were selected. The recipients of the award will be formally notified, and the winners will also be announced at the symposium. The board also agreed to make any recipient of the Lifetime Achievement Award would be an honorary member of the society.

Other Business
The board recommended the society send a letter to the governor of Kentucky weighing in on the massive coal slurry spill that recently occurred. In the letter the society should encourage the state pursue full recovery of the resource. This advocacy activity was originally put in the information exchange committee. Al Buchanan will contact Wayne Davis for information and draft a letter for the board to review. Hopefully the objective will be to get

mollusks considered in any recovery activities and financial settlements. Also, the board will consider setting up an ad-hoc committee to handle advocacy issues. This item will be tabled until the next board meeting in March.

Issue: Discussion on issuing federal collecting permits to those individuals applying for permits from outside the basin. The board recommended it be normal practice to ask the applicant for references documenting relevant experience in the specific drainage.

The Next FMCS Board Meeting:
The next FMCS board meeting will occur on Sunday March 11, 2001 at the DoubleTree Hotel in Pittsburgh beginning at 8:30 am. The board needs to finalize the 2 amendments prior to the general business meeting that will be held on Tuesday. *FMCS board meetings are open to any member, and members can participate in discussion of the various issues in front of the board. However, only FMCS Board members (officers and committee chairs) may vote on any issue.*
Motion made to adjourn.
Submitted by Rita Villella

FMCS Gastropod Status & Distribution Committee Report

The roster of the Freshwater Gastropods of North America project has grown to include 91 participants. Our "Phase I" objective is the construction of a publicly-accessible database unifying all the freshwater gastropod collections held by North American museums. In late September we brought online a demonstration to unite eight database samples, including a FWGNA standard, the Academy of Natural Sciences of Philadelphia, the Delaware Museum of Natural History, the Field Museum of Natural History, the Florida Museum of Natural History, the Milwaukee Public Museum, the North Carolina Department of Fish & Game, and the University of Alaska Museum. See:
http://herman.itlab.musc.edu/fwgna/fwgna_entries_search.html

Our proposal to the NSF Biotic Surveys and Inventories Program will be resubmitted in early November. This year's version directly involves 12 senior investigators: R.T. Dillon, K. M. Brown, R. Hershler, R. F. McMahon, D. L. Strayer, E. H. Jokinen, S. A. Ahlstedt, P. D. Johnson, R. Bieler, J-M. Gagnon, R. P. Guralnick, and G. T. Watters. Funding is requested to bring taxon working groups to Washington, for the purpose of assembling a national reference collection of freshwater gastropods. The 3-year budget will total approximately $900k. For the latest news and information on the FWGNA project, bookmark:
http://www.cofc.edu/~dillonr/fwgnahome.htm

Rob Dillon, Chair
Department of Biology, College of Charleston
Charleston, SC 29424
dillonr@cofc.edu

New FMCS Web Site

Members of the Information Exchange Committee are in the process of constructing a web page for our society. Presently there are a couple of sites providing information on society activities. Paul Johnson generously offered his web site for society use and produced a fine site describing society objectives and background, officer contact information, proceedings from the 1999 annual meeting, and a FMCS membership registration form (http://www.sari.org/MUSSEL_SYMPOSIUM_ANNOUNCEMENT.HTM). We expanded his page to a small degree so it now includes plans for the 2001 meeting. The FMCS's web page is presently on a server at the Illinois Natural History Survey (INHS) (http://ellipse.inhs.uiuc.edu/FMCS/).

It may be moved to another server at INHS in the near future. This site includes a link to Tom Proch's web site with details on the upcoming meeting at Pittsburg, PA (http://www.dep.state.pa.us/dep/deputate/fieldops/sw/tom/fmcs.html).

Our web site offers the opportunity for us to facilitate many of the activities we are striving to achieve. Please share your ideas with me to improve our web site. I look forward to sharing your ideas with the Executive Committee for their direction on adding them to the site.

Mark Hove, Co-chair
Macalester College
Mark.Hove@fw.umn.edu or hove@macalester.edu

Pollution Event – Monetary Value of Freshwater Mussels

The monetary value of almost 300 species of freshwater mussels in North America has never been determined with the exception of mussels harvested as commercial species in states where musseling occurs. Commercial buyers and harvest license fees and a tax on number of pounds harvested generate money for respective state wildlife agencies. Little consideration is given when episodic events kill mussels in our rivers. Respective state agencies need guidelines for pursuing monetary damages in conjunction with federal legal actions for restoring damaged mussel resources. Establishing a guideline that state agencies can use will give justification for pursuing legal action and help in the mussel restoration process.

I propose that a value be placed on all native mussel species occurring in North America. This would be similar

to the monetary value established by the American Fishery Society for each species of fish.

Some ideas to consider:
Federally Listed Species - $1,000/each individual
State Listed Species - $1,000/each individual
Candidate Species (state or federal) - $500/each individual
Commercial Species in states where it is allowed - $100/each individual
Common Species - $50/each individual

*Add 50% of the total cost of a mussel kill for life-history studies where host fish identifications are needed.
*Add another 50% on the total for mussel culturing, reintroduction, and monitoring for at least 10 years. This would allow for at least two age classes.

I request comments or help from anyone on this idea/proposal and I think snails, Asian clams, and fingernail clams should also have monetary value assigned to each. Please feel free to contact me with any suggestions/recommendations.

Steve Ahlstedt
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Announcements

New Publication on Freshwater Mussels

The Maine Department of Inland Fisheries and Wildlife is pleased to announce the publication of "The Freshwater Mussels Of Maine" by Ethan J. Nedeau, Mark A. McCollough, and Beth I. Swartz. This 118 page soft-cover book is a comprehensive guide to the freshwater mussels written in non-technical language, and includes chapters on Systematics And Diversity, Biology And Ecology, Importance To Aquatic Ecosystems And Humans, A Conservation Crisis, Conservation And Management, The Distribution Of Maine's Mussels, and Finding And Documenting Freshwater Mussels. Species Accounts are presented for all New England (outside Vermont's Champlain Basin) and Canadian Maritimes species, as well as for the exotic zebra and quagga mussels. Range maps and distribution tables for Maine are included for each species, and identification guides are aided by hand drawings, photographs and all the tips and tricks Maine biologists have learned in the field to tell these species apart. The book is heavily illustrated with drawings, diagrams, and color photographs, and contains both a glossary of terms and a bibliography.

Copies may be obtained from:
Maine Department of Inland Fisheries and Wildlife
Attn: Information Center
41 State House Station
Augusta, Maine 04333-0041
phone: 207-287-8000

Cost is $10 plus $2 shipping and tax.
Make checks payable to: Endangered And Nongame Wildlife Fund
Submitted by Beth Swartz

Freshwater Gastropods – Milwaukee Public Museum

A basic computer inventory of the Milwaukee Public Museum mollusk collection was completed in 2000. Analysis of the results reveals that freshwater gastropods comprise about half of the specimens, with an average lot size of 26. Eighteen freshwater gastropod families are represented, the 5 largest being Pleuroceridae, Planorbidae, Lymnaeidae, Viviparidae and Physidae (in decreasing order). These gastropods are largely North American, from 29 U.S. states and Canadian provinces, the top three being Wisconsin, Tennessee and Alabama. However, about a quarter of the lots are from foreign localities. Of historic importance are the specimens originally part of the Charles M. Wheatley Collection, acquired by MPM in 1888. Inquiries and loan requests may be directed to: Joan Jass, Assistant Curator, Zoology, Milwaukee Public Museum, 800 West Wells, Milwaukee WI 53233, email: jass@mpm.edu, ph: 414-278-2761, fax: 414-278-6100.
Submitted by Joan Jass

The Malacological Society of London Freshwater Bivalve Meeting

FRESHWATER BIVALVES
19th and 20th March 2001, Department of Zoology, University of Cambridge, UK

CALL FOR REGISTRATIONS AND PAPERS

This meeting covers all aspects of the biology of freshwater bivalves. Titles of offered papers and posters are welcome and should be sent to the organiser (below). Paper presentations will be 20 min, including 5 min for questions.

It is hoped to arrange a field outing on the 20th or 21st. The outing will be to the River Ouse and Wicken Fen (Britain's oldest nature reserve), where a wide range of bivalves and other molluscs can be found.

More specific details regarding the programme and accommodation details will be announced in due course.

Organiser: Dr David Aldridge, Aquatic Ecology Group
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Submitted by David Aldridge

Submitted Reports

Feeding Selectivity by Native Freshwater Mussels and Potential Competition with Zebra Mussels

Shirley M. Baker* and Jeffrey S. Levinton
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State University of New York, Stony Brook

Current address: Department of Fisheries and Aquatic Sciences, University of Florida, Gainesville

We examined the ability of several species of native mussels to sort food particles, determined the particle preferences of native mussels, and compared particle preferences among species of native mussels and zebra mussels (*Dreissena polymorpha*). Mussels were fed 50:50 mixtures of particle types. The ratios of particle types in water samples and pseudofeces were compared using flow cytometry. We found that: 1) Native mussels were capable of sorting particles and were usually as efficient as zebra mussels in doing so. The exception was the lack of sorting by *Margaritifera margaritifera*, *Amblema plicata*, and *Pyganodon cataracta*, between cattail detritus and the cyanobacterium *Microcystis aeruginosa*. In contrast, the ability of zebra mussels to reject small non-living particles, thereby increasing the quality of ingested material, may give them a competitive edge over native mussels in terms of energy acquisition. 2) Native mussels, like zebra mussels, preferentially ingested *Microcystis* over most other particle types. However, *Amblema plicata* and *Elliptio complanata* preferentially ingested the diatom *Cyclotella meneghiniana*, when paired with *Microcystis*. These mussel species may gain some advantage in systems where diatoms now dominate the phytoplankton. 3) Feeding selectivity varied among the four species of native mussels examined. Differences in food preferences, and in the inability to efficiently reject less nutritious particles, may contribute to species-specific declines in condition and abundance of native mussels. Competition with zebra mussels for some of the same particle types, as well as the inability to compensate for shifts in phytoplankton communities to small, low-quality particles, may contribute to the demise of native mussels.
Submitted by Shirley Baker

Impact of Drought Conditions on a Mussel Bed in the Kiamichi River, Southeastern Oklahoma

D.E. Spooner and C.C. Vaughn
Oklahoma Biological Survey and Department of Zoology
University of Oklahoma, Norman, OK 73019-5112, USA

The Kiamichi River of Southeastern Oklahoma is one of the last pristine river systems and currently a stronghold for freshwater mussel populations. The river is represented by twenty-nine mussel species found at densities as high as fifty individuals per m^2 (Vaughn et al. 1996). The Kiamichi also houses one of the last viable populations of the federally endangered species *Arkansia wheeleri* as well as the recently rediscovered species *Leptodea leptodon* currently under consideration for federal listing (Vaughn and Pyron 1995). The river is currently impacted by Sardis Reservoir, an impoundment of an upstream tributary, Jack Fork Creek, which supplies 30% of the Kiamichi mainstem and is managed by the Army Corps of Engineers.

The summer of 2000 was one of the warmest and driest seasons recorded in Oklahoma. Minimal precipitation and above average temperatures coupled with reduced flow from upstream Sardis Reservoir created shallow pools isolated by reaches of dry riverbed. These pools and dry riverbed exposed mussel populations to extreme water

temperatures ($< 39\ ^{o}C$) and desiccation resulting in mass mortality of multiple species including individuals of *A. wheeleri* and *L. leptodon*. With the help from the U.S. Fish and Wildlife Service, we were able to convince the Army Corps of Engineers to release a pulse of water from Sardis Reservoir into the Kiamichi River. This release created thermal refugia potentially minimizing any further drought related mortality. Future management considerations should include the establishment of minimum flow regimes relative to physiological measures of mussel health to circumvent any future mass mortality events.

Literature Cited.

Vaughn, C.C., C.M. Mather, M. Pyron, P. Melhop, & E.K. Miller. 1996. The current and historical mussel fauna of the Kiamichi River, Oklahoma. Southwestern Naturalist 41:325-328.

Vaughn, C.C. & M. Pyron. 1995. Population ecology of the endangered Ouachita Rock Pocketbook Mussel, *Arkansia wheeleri* (Bivalvia: Unionidae), in the Kiamichi River, Oklahoma. American Malacological Bulletin. 11:145-151.

Submitted by Daniel E. Spooner

What's Happened to *Truncilla donaciformis* (Lea, 1827) in the Upper Mississippi River?

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La Crosse, WI 54601-4969 USA

Fuller (1978) considered *Truncilla donaciformis* the second most abundant mussel in the Upper Mississippi River (UMR), and perhaps even most abundant than *Amblema plicata*. In work we did at that time, we also found many *T. donaciformis*, in the La Crosse, WI, area. While Fuller found many specimens by wading, we found most of our specimens entangled by their byssus on a brail bar. In the early 1980's we still found large numbers of this small unionid species, in shallow waters lying on top of soft (mud) substrata, 1.0 m from the waters edge. By the early 1990's this situation had changed completely. In 1991 we provided ~2000 unionids for research at the Upper Mississippi Environmental Sciences Center. Using modified rakes we found many small *Truncilla truncata* and *Obliquaria reflexa*, but few *T. donaciformis*. Is *T. donaciformis* a cyclic breeder? It does not appear to be long-lived in the UMR (~10 years), so what could explain the decline of this non-commercial species? We've found small *Truncilla truncata* (< 10 mm) in many areas, so there is no reason why divers shouldn't also find *T. donaciformis*. Any ideas or theories? UMR hosts (drum, sauger) should not be a problem.

YEAR	LOCATION	*T. donaciformis*	TOTAL
1977	UMR Pools 1-21 [a]	13.5%	8502
1980	UMR Pool 10 [b]	6.7%	12150
DECLINE THEREAFTER (Malacological Consultants)			
1990	UMR Pool 10 [c]	0.56%	1240
1991	UMR Pool 8 (of those kept)	[d]3.25%	1907
1996	UMR Pool 6 [e]	0.21%	7076
1996	UMR Pool 8 [d]	0.03%	12710
1997	UMR Pool 2 [f]	0.14%	738
1997	SEA [g] (total)	0.41%	18387
	SEA, UMR Pool 9	0.44%	4300
	SEA, UMR Pool 10	0.07%	1510
	SEA, UMR Pool 11	0.58%	4633
	SEA, UMR Pool 12	0.24%	411
	SEA, UMR Pool 14	0.24%	2933
	SEA, UMR Pool 15/16	0.07%	1509
	SEA, UMR Pool 19	0.65%	3091
Post-1990 Mean %:		0.40%	
Post-1990 unionid Total:			42058

[a] COE, (Fuller 1978)
[b] (Duncan & Thiel 1983)
[c] Prairie du Chien, WI
[d] La Crosse,WI
[e] Winona, MN
[f] Grey Cloud Island, MN
[g] SEA = Shell Exporters of America
[h] Sylvan Slough

Fuller, S.L.H. 1978. Fresh-water mussels (Mollusca: Bivalvia: Unionidae) of the Upper Mississippi River: Observations at selected sites within the 9-foot channel navigation project on behalf of the U.S. Army Corps of Engineers. Academy of Natural Sciences, Philadelphia, PA. 401 pp.

Submitted by Marian Havlik

2000 St. Croix River Research Rendezvous Abstracts

The following abstracts were selected from presentations made at the 12th annual meeting of the St. Croix River Research Rendezvous. The meeting was held on October 17, 2000 at Marine on the St. Croix, Minnesota and sponsored by the Science Museum of Minnesota. The next Rendezvous meeting will take place on October 16, 2001 at the same location. In time all abstracts presented at the

meeting will be available on the web at http://www.smm.org/SCWRS/Rendezvous.html.
Submitted by Mark Hove, Macalester College, hove@macalester.edu

Ongoing and Planned Trace Element Studies in The St. Croix River Basin, 2000-2003

Mark E. Brigham[1] and Randy Ferrin[2]
[1]U.S. Geological Survey, Mounds View, MN
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Diffuse and point sources of trace element contaminants may be adversely affecting the aquatic ecosystems of the St. Croix River Basin. Other studies have found that in mussels from the St. Croix River Basin mussel growth rates were inversely correlated with mussel-shell concentrations of several trace elements; the highest trace-element levels were typically in the downstream reaches of the St. Croix River, where human disturbance is the greatest[1]. There are also fish-consumption advisories in the basin due to high mercury concentrations in game fish. We seek to better define the occurrence, variability, and natural and human factors that govern trace element concentrations in the Basin.

During the summer of 2000, we collected stream-bottom sediments from 30 tributary and mainstem sites in the St. Croix River Basin. Sites were selected upstream of and downstream of the larger cities in the basin, so that the effect of urban runoff on trace element levels could be studied. Analysis of these sediments will commence during the fall of 2000 for a suite of 40 elements by inductively coupled plasma spectroscopy; arsenic, mercury, and selenium by atomic absorption spectroscopy; and carbon (total and carbonate). Included in the analyses are elements that may be governed entirely by composition of geologic source material (such as aluminum and titanium), and elements for which atmospheric deposition from diffuse sources may be the dominant source (such as lead and mercury).

Also in the summer of 2000, we sampled selected sites to investigate total mercury and methylmercury concentrations and loads and their potential relation to land use/land cover, and other basin attributes. We sampled 10 small streams (indicator sites; drainage areas ranged from 264-448 km^2), which span a large range in land use/land cover (percentage of basin area noted in parentheses): wetlands (0-26%); forest (4.6-78%); agriculture (1.8-92%). Two more rounds of sampling are planned at these sites, during the summer of 2001.

[1] Troelstrup, N.H., Jr., and Foley, J.L., 1993, Examination of mussel growth and shell chemistry as indicators of water quality within the Lower St. Croix National Scenic Riverway: Minnesota-Wisconsin Boundary Area Commission B.5.

Effects of Sedimentary Ammonia on Juvenile Unionid Mussels in the St. Croix National Scenic Riverway

Michelle Bartsch[1], John Allran[2], Teresa Newton[1], LeeAnne Thorson[2], and Bill Richardson[1]
[1]U.S. Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, WI. [2]University of Wisconsin-La Crosse, River Studies Center, La Crosse, WI

The St. Croix River basin is experiencing rapid land-use changes, from forest and agriculture to suburbanization, as the metropolitan area of Minneapolis-St. Paul expands. One result of urbanization may be an elevation of ammonia in sediment porewater. The St. Croix contains an extremely rich fauna of unionid mussels-animals sensitive to changes in habitat quality and increased sedimentary ammonia poses a significant threat to this fauna. We have initiated a combination of laboratory and field studies to examine the effects of sedimentary ammonia on juvenile unionids. Through field studies, our objective is to characterize the existing concentrations of sedimentary ammonia to determine what effects, if any, these concentrations are having on survival or growth of juveniles. Through laboratory studies, we will determine the lowest concentrations of sedimentary ammonia that adversely affect the survival and growth of juveniles. The difference between the existing and lowest effects concentrations can be used by the National Park Service and other resource agencies to help guide future monitoring of ammonia in the Basin. We conducted a 10-day *in situ* toxicity test with *Lampsilis cardium* at 12 sites in the St. Croix River, including 2 tributaries (Sunrise and Snake rivers). The sites were chosen based on sedimentary ammonia concentrations at 28 sites during sampling in August 1999. At each site, we placed 5 chambers, each containing 15 juveniles; 2 chambers were placed in the water column and 3 were buried in the sediment. We recovered all 60 chambers, however, survival was highly variable and ranged from 0% to 73% in the sediment chambers and 33% to 87% in the water column chambers. We hypothesize that the low survival in the sediment chambers was a result of anoxic conditions in the sediments. Furthermore, the placement of the chambers in the sediment may have prevented the juvenile mussels from burrowing to areas with sufficient dissolved oxygen. In the laboratory, we conducted a 96-hour toxicity test with *L. cardium* exposed to sedimentary ammonia concentrations ranging from 0 to 1000 ug NH_3/L. Survival averaged 78% in the controls and the

nominal 96-hr LC_{50} was 233 ug NH_3/L. Future laboratory tests will include tests of longer duration and lower ammonia concentrations to better bracket existing concentrations in the River. Both studies will continue through September 2001 with additional species and a variety of test duration's.

SUGGESTED READING:

Frazier, B.E., T.J. Naimo, and M.B. Sandheinrich. 1996. Temporal and vertical distribution of total ammonia nitrogen and un-ionized ammonia nitrogen in sediment pore water from the upper Mississippi River. *Environmental Toxicology and Chemistry* 15:92-99.

Warren, L.W., S.J. Klaine, and M.T. Finley. 1995. Development of a field bioassay with juvenile mussels. *Journal of the North American Benthological Society* 14:341-346.

Long-Term Dynamics of Mussel Populations in the St. Croix River

Daniel J. Hornbach[1], Mark Hove[1, 2], Sonya Clarkson[1], Liz Gilles[1], Ian Harmon[1], Erik Nelson[1], Kelly Paulson[1], Cristina Salazar[1], Emily Peters[1] and Jessica Lynch[1]
[1]Dept. Biology, Macalester College, St. Paul, MN.
[2]Bell Museum, University of Minnesota, St. Paul, MN

In the summer of 2000 we quantitatively assessed 4 mussel communities in the St. Croix River downstream of St. Croix Falls. We had sampled these populations at least once before: 1992 at Bayport, 1993 at Osceola, 1995 at Lakeland and 1992, 1995 and 1998 at Interstate Park. Population density was greatest at Interstate Park (average 29-39 mussels/m^2), followed by Lakeland (14-18 mussels/m^2), Bayport (5-10 mussels/m^2) and Osceola (7-9 mussels/m^2). Twenty-eight species of mussels were found at Interstate Park, with 25, 24 and 16 species at Lakeland, Osceola and Bayport, respectively. The endangered *Lampsilis higginsii* was found at all locations except Bayport and the endangered *Quadrula fragosa* was found at Interstate Park. The Lakeland location had the highest species diversity ($H'=2.0$) followed by Osceola ($H'=1.88$), Interstate Park ($H'=1.87$) and Bayport ($H'=1.44$). Lakeland had 5 dominant species while Bayport and Osceola had 2 dominant species and Interstate Park only had 1 dominant species. Zebra mussels were found at Lakeland in 2000.

At all 4 locations mussel density was lower in 2000 compared to earlier periods. The most dramatic decline, 51% was at Bayport; other populations had declines of 22-26%. None of the changes were statistically significant. However, juvenile mussel density (mussels < 30mm), at all locations except Osceola showed a significant decline over the period. Two possible reasons for the decline in juvenile density could be high juvenile mortality, or lack of recruitment. Shell-length frequency diagrams for dominant species show a general lack of recruitment during this time period. Since mussels require approximately 6 years to mature, long periods of low recruitment may be possible.

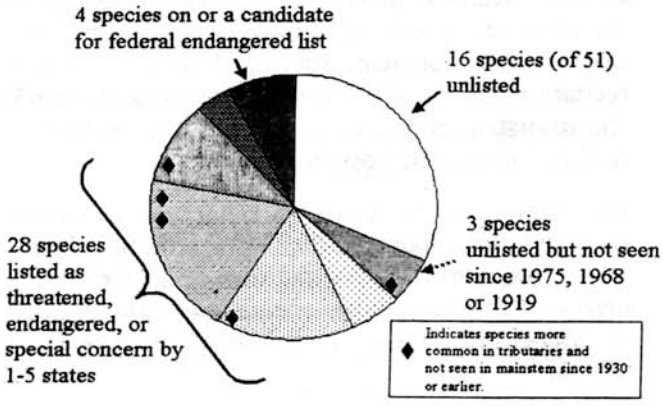
An increase in fine sediments was noted at all locations. Previous studies found neither increased sedimentation nor lack or recruitment above the dam at St. Croix Falls. This suggests that increased sedimentation below the dam may be influencing mussel recruitment or juvenile mussel survival.

Native Freshwater Mussels of the Upper Mississippi River System: How does the St. Croix River Fit in the Picture?

Marian E. Havlik[1], Jennifer S. Sauer[2], and Kenneth S. Lubinski[2]
[1]Malacological Consultants, La Crosse, WI
[2]Upper Midwest Environmental Sciences Center-Environmental Management Technical Center, La Crosse, WI

Historically, 51 of the 304 native freshwater mussel species (Order Unionoida) in the United States have been documented in the Upper Mississippi River System (UMRS = Upper Mississippi and Illinois Rivers). Three of these species are federally endangered, and one species is under federal review. Although 28 species have some type of special status designation in the five states that border the UMRS, only 44 species have been documented in surveys conducted in the UMRS within the past 35 years. This loss of UMRS species richness may be linked to habitat changes after the locks and dams were built. Nearly all of the seven species not found recently were considered infrequent inhabitants of the UMRS mainstem by late 19th and early 20th century biologists, but they were more commonly found in UMRS tributaries where they all still survive. Havlik and Sauer (2000) give the status of all 51species historically found in the UMRS. The conservation status varies from state to state, because each state describes the status of a species population within that particular state, not the UMRS as a whole. Some species, such as the scaleshell and slippershell, have usually been found in UMRS tributaries, but very rarely in the UMRS. Some species reported in the early literature were apparently misidentified, or else vouchers do not seem to exist. Some rare species may easily go unrecognized, indicating the importance of having unusual specimens deposited in a museum, and the identification verified by an experienced malacologist.

UMRS Mussel Species Status in 2000



Source: Havlik and Sauer (2000)

SUGGESTED READING:

Witter, F. M. 1883. The mollusca of Muscatine County and vicinity. The Muscatine Conchological Club, Muscatine, Iowa. S.E. Cassino and Company. Boston. 24 pages.

Havlik, M.E. and J.S. Sauer. 2000. Native freshwater mussels of the Upper Mississippi River System. PSR 2000-004. USGS, UMESC, 2630 Fanta Reed Road, La Crosse, Wisconsin 54603. Download at: http://www.umesc.usgs.gov/reports_publications/psrs/umesc_psr.html

Developing a Sampling Strategy to examine Population Trends for the Endangered Winged Mapleleaf Mussel *Quadrula fragosa*

Daniel J. Hornbach[1], Mark Hove[1], Jill Medland[2] and Randy Ferrin[2]
[1]Dept. Biology, Macalester College, St. Paul MN.
[2]St. Croix National Scenic Riverway, St. Croix Falls WI

Sampling for endangered species is an extremely difficult task, especially in riverine systems where sampling involves SCUBA in areas of high current and low visibility. There are also statistical issues surrounding sampling rare species. Managers must decide the level of population change and the degree of statistical confidence that should be used to trigger management actions. If population density is low it takes a large sampling effort to detect small changes with great confidence.

In 7 years of quantitative sampling at Interstate Park and Franconia, MN *where* Q. *fragosa* is found, Hornbach collected 4594 mussels from 30 species (mean density = 22 mussels/m^2). Only 5 Q. *fragosa* were found. Given the rarity of Q. *fragosa*, it would require over 15,000 0.25 m^2 quadrat samples to detect a significant change in the population density of Q. *fragosa* with any degree of certainty. This is an unacceptably high level of sampling activity.

On May 16, 2000 a team of managers and researchers met to discuss a sampling protocol for sampling Q. *fragosa*. Given the difficulties of sampling this rare species quantitatively a two-step approach was suggested: 1. Sample the entire mussel community, quantitatively, to examine whether there are major shifts in mussel density; 2. Qualitatively sample the Interstate Park area to determine whether the proportion of the community that Q. *fragosa* constitutes changes over time. To focus the sampling effort we will limit sampling to mussels that contain pustules. Of these species, Q. *fragosa* constitutes 3.7% (95% confidence range = 2.5-5.0%).

We developed a resampling model that allowed us to examine the statistical power obtained with a range of sample sizes. Based on this model if Q. *fragosa* constitutes as little as 2.5% of the mussels with pustules, we could detect a 20% decline in the proportion of the population constituted by Q. *fragosa* with 88% confidence with a sample size of 2500. This represents a compromise between sampling effort and statistical power and confidence.

Construction of a Taxonomic Key to the Mussels of the St Croix River Using Restriction Fragment Length Polymorphisms

M. Albert, J. Straka, C. Harrison, M. Hove, C. Acidera, L. Lawson, D. Hornbach
Department of Biology, Macalester College, St. Paul, MN

During the life cycle of native freshwater mussels, they undergo a larval or glochidial period of parasitic encystment on fish or amphibian hosts. These relationships play a vital role in the maintenance of mussel populations and in order to preserve the notable diversity and abundance of North America's freshwater ecosystems, species-specific mussel-host relationships need to be more clearly defined. One of the major difficulties in clarifying these relationships in nature involves identification of the microscopic juvenile forms, both as encysted glochidia and as successfully transformed juveniles. In this study, molecular techniques are used in determining species-specific genetic markers. An intron in the genes encoding ribosomal RNA within the mussel genome, the ITS-1 region, was chosen that was suspected to display interspecies polymorphism. This region is amplified using the Polymerase Chain Reaction (PCR). The amplified DNA is fragmented with selected restriction endonucleases (REs), which cut the DNA at sequence specific sites. The amplified and cut DNA is analyzed by agarose gel electrophoresis. If sequence polymorphism sensitive to the

chosen REs appears within this region (Restriction Fragment Length Polymorphism, RFLP), unique DNA fragmentation patterns are generated.

The goal of this RFLP analysis is the construction of a taxonomic key for the St. Croix River mussel populations that would allow species level identification of glochidia or transformed juveniles. To date, RFLP patterns have been obtained for a total of 24 species. Distinguishing patterns for a number of species, including members of the genus *Quadrula*, are reported.

FMCS 2001 Symposium
March 12 - 14, 2001
DoubleTree Hotel
Pittsburgh, Pennsylvania

The Pennsylvania Department of Environmental Protection is pleased to host the 2001 Symposium of the Freshwater Mollusk Conservation Society in Pittsburgh. We are excited about the potential of the special session dealing with river projects and the affect mussel and snail resources have on their design and implementation. When conservationists, developers and industry work together in a proactive manner during the early phases of projects, preservation of valuable resources, the protection of rare species and successful project implementation can result. The program also includes timely talks from renowned researchers and provides a unique opportunity for mollusk scientists to exchange information. Pittsburgh has much to offer participants. The city is excited about the two new sports stadiums that will open in 2001, and the expansion of the Convention Center. The Downtown area has numerous restaurants, bars and clubs. We hope you will join us for an exciting time, both intellectually and recreationally.

Program
FMCS 2001 will feature both invited and contributed sessions dealing with a wide variety of mollusk topics. The plenary session will feature a talk by Gerry Mackie on the Sphaeriidae; Dan Brooks will speak on data needs for developing phylogenies; and tentatively Harold Silverman will discuss mussel feeding. Contributed papers and posters are solicited on any topic dealing with freshwater mussels and snails. Format requirements for contributed papers are given in the **Author Information** section (below).

Special Session
On Monday, March 12 a special session will be held dealing with the impact of mollusk resources on river projects and how to resolve existing and potential problems. Presentations will provide examples and solutions. Panel discussions will address issues of planning, sampling protocols, translocation, mitigation and jeopardy. Various state and federal agencies and private industry have already committed to participate, including PennDOT, USFWS, USGS, TVA, USACE, gravel mining industry, and commercial shell harvesters.

Registration
Note the early registration deadline of December 15. The registration fee includes beverages and snacks for breaks and mixers during the meeting and lunch on 2 days, along with program materials and meeting souvenirs. A symposium **Registration Form** is enclosed in this newsletter. Additional registration forms and other symposium information are available on the web at:

www.dep.state.pa.us/dep/deputate/fieldops/sw/tom/fmcs.html

Accommodations
The DoubleTree hotel special meeting rate is $89.00 per night single or double occupancy. These rates are below the current Federal allowance for Pittsburgh. Contact the hotel directly at 412 281-3700 for reservations. The FMCS is not responsible for symposium attendees room reservations.

Travel
The official airline for the Conference is US AIRWAYS. They provide nonstop flights to Pittsburgh from many locations throughout the United States. They have provided attendees with a substantial discount. Fares are 5% off the lowest applicable fare, or 10% for 60 day advanced purchase. These rates are applicable for the period March 8 – March 17, and do not require a Saturday stay. To obtain these rates be sure to provide your travel agent with the Gold File Number 65651533. Reservations can also be made directly with US AIRWAYS at (877) 874-7687 using the same file number.

The DoubleTree Hotel operates a bus shuttle from the Airport directly to the hotel for $12.00 one way or $21.00 roundtrip.

Car rentals will be unnecessary, as all scheduled symposium activities will be held at the DoubleTree Hotel. Numerous restaurants and bars are adjacent to the hotel. The Pittsburgh subway provides access to the entire downtown area for free. The subway fare to locales outside the downtown area is $1.00.

Parking at the hotel is $15.00 per day for valet service, which provides in and out privileges, or $10.00 per day for self-parking. Outside parking lots range in price from $5.00 to 8.50 per day.

Instructions for Authors

The symposium program format will be both oral and poster. Oral presentation time is limited to 20 minutes (including the question and answer period). Practice your talk before the meeting because **time limits will be strictly enforced (lights on – microphone off).** Poster size is limited to 8 feet wide by 4 feet tall, although if you wish to bring a display unit, special arrangements can be made.

The overall theme of the meeting will be:

"Biological Assessments: Evaluation of Endangered Mollusks"

Topics of interest may include:
Mollusks: Locating, sampling, analyzing and relocating
Development: Project examples, problems, solutions
Coordination: Public-private relationships, agency cooperation, regulations

In addition to the special sessions contributions dealing with the biology, life history, ecology, distribution, taxonomy, genetics, rearing, feeding strategies, environmental requirements, invasive species impacts, and fish-host relationships will also be accepted.

Abstracts for posters or presentations are limited to 300 words. The abstract title should be followed by the author(s) name(s), affiliation(s), mailing address(es), and e-mail address(es). Abstracts should include the clearly stated objectives, brief methods, general results, and basic conclusion of your presentation. Video playback equipment will be available for the sessions, so videotape will be accommodated. At the bottom of your abstract please indicate if your presentation is oral or poster. Also indicate the type of audio video equipment you will require for your presentation. Video monitors will not be provided for the poster session.

All Abstracts must be received by December 15, 2000. Authors will be notified of acceptance by January 15, 2001. Abstracts must be submitted on 3.5 inch diskettes, in PC Word, WordPerfect or ASCII format or emailed similarly to **tproach@stargate.net** by the deadline.

Abstracts can also be mailed to:
Tom Proch, PA Dept. of Environmental Protection, 2721 Cedric Avenue, Pittsburgh, PA 15226. Phone (412) 442-4051, Fax (412) 442-4328, e-mail: trpoch@stargate.net

All abstracts must adhere to the following guidelines and include:

1. Title, author(s) names, presenter if more than one author, address, phone, email address, of contact person, and keywords.
2. Clear summary of presentation including objectives, results and conclusions.
3. Indicate type of presentation, whether poster or oral.
4. Total abstract should not exceed 300 words.

Presentation requirements

-Not to exceed 20 minutes (15 minutes for talk and 5 for discussion).
-Slides and LCD projector visual aids only (no overheads).
-we will pre-load your presentation on a Window based notebook
-we will try to provide the same service for Macs, but be prepared to bring your Mac.
-Powerpoint is the software of choice, if you develop your presentation in other software, either convert it to Powerpoint, or provide us with a copy of the software you use
-Be sure to indicate your platform (PC or Mac) when submitting your abstract

Posters requirements
-The poster should be readable from 5 feet, titles from 10 feet.
-Poster should not exceed a size of 4 feet high by 8 feet wide.
-Authors must be present at the poster session on from 7:00 to 9:00 on Tuesday, March 16, 2001.

The following abstract, from the 1999 Chattanooga FMCS symposium, is presented here as an illustration of the proper format.

SAMPLE ABSTRACT

The Global Status and Geographic Hot–spots of North America's Unionid Mussels. Melissa Morrison and Lawrence Master. The Nature Conservancy, 201 Devonshire Street Floor 5, Boston, MA 02110. (617) 542-1908. Mmorrison@tnc.org or lmaster@tnc.org

The Nature Conservancy and the Network of Natural Heritage Programs maintain databases that gather, organize, and distribute biodiversity information. Given the threats posed to our freshwater systems increasing emphasis is being placed on gathering information for aquatic organisms in order to prioritize areas and species to conserve. Species are prioritized using a 1-5 ranking system ranging from critically imperiled (G1) to demonstrably secure (G5). Over the past year, with assistance from many experts, we reviewed these ranks for all unionid mussels and the results will be displayed on the poster along with our process for evaluating species. One of the applications of this ranking system, when combined with geographic data, is to identify 'hot spots' for unionids at risk (G1-G3) by watershed (map to be included in poster). The 23 watershed areas containing the greatest number of at risk mussel species are in four river basins alone, the Tennessee, Ohio, Cumberland, and Mobile.

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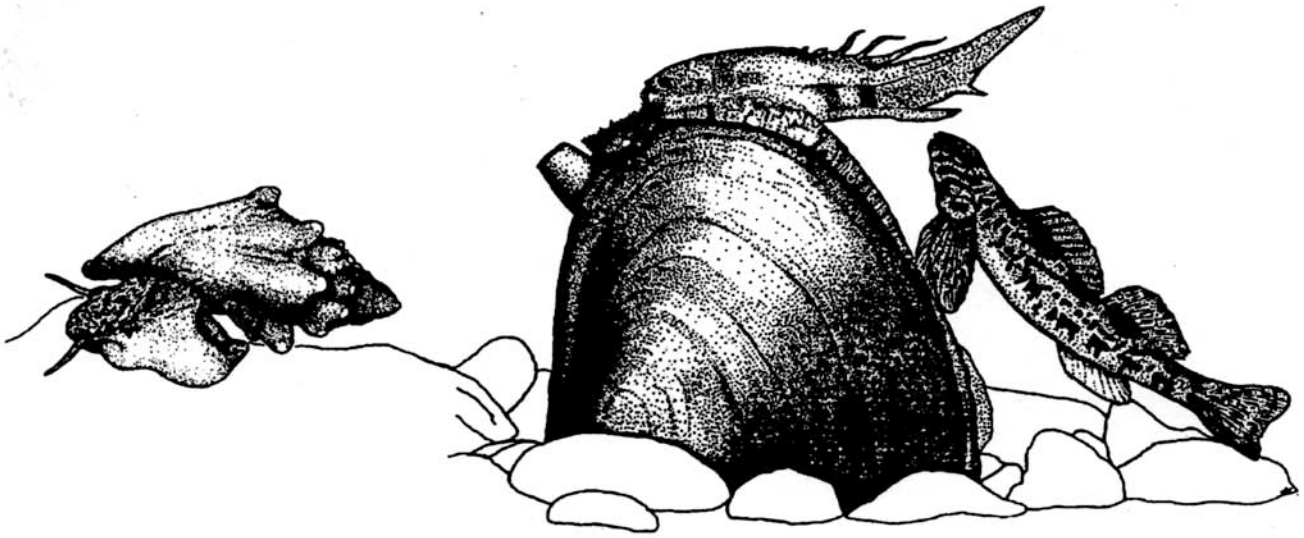

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