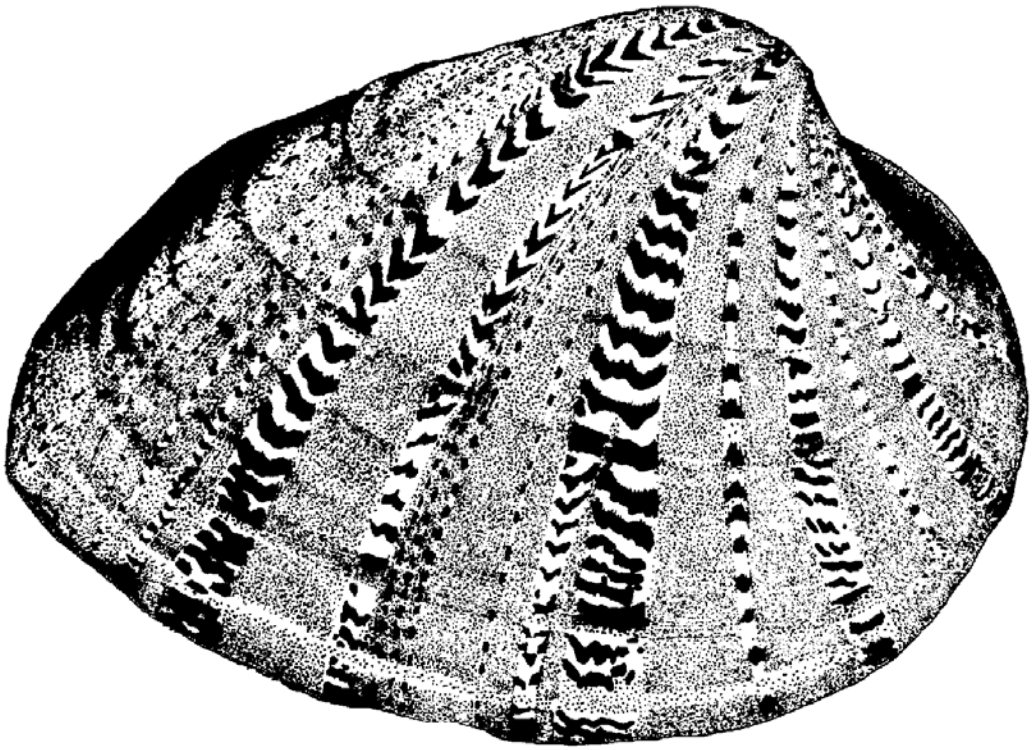
Ellipsaria

The Newsletter of the Freshwater Mollusk Conservation Society

Volume 3 – Issue 1 **April 2001**



This issue of *Ellipsaria* contains:

2001 FMCS Symposium Summary
2001 FMCS Officers and Committee Chairs
Other General News and Information

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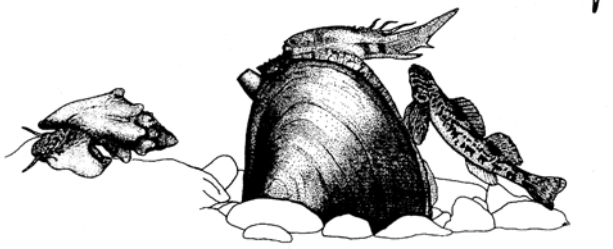
Freshwater Mollusk Conservation Society



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

FMCS Reports

FMCS 2001 Symposium 2001 "Biological Assessments: Evaluation of Endangered Mollusks" March 12 - 14, 2001 Westin Convention Center Pittsburgh, Pennsylvania

The second symposium of the FMCS was a great success. Thanks to all of the people that donated their time and effort to make it a great meeting. A special thanks to Tom Proch and his staff and the Pennsylvania DEP for pulling it together. I also would like to thank the following organizations that sponsored the meeting and helped keep the FMCS in the black: Department of Environmental Protection, Pennsylvania Department of Transportation, ES Enviro Science, Inc., Mississippi Interstate Cooperative Resource Association, Mussel Mitigation Trust, The Nature Conservancy, Tennessee Valley Authority, U.S. Fish and Wildlife Service, Upper Mississippi River Conservation Committee, and Virginia Department of Game and Inland Fisheries.

As a new society we are learning as we go. The comments received on the meeting are still be evaluated, but thanks to all that took the time to fill out the questionnaire; your suggestions will be helpful in planning future meetings. Personally, I prefer not to have concurrent sessions because I often wanted to be in more than one place at a time, but with our success it looks like a necessity.

I also want to welcome all of the newly elected committee chairs and thank the outgoing chairs for all of your time and effort on behalf of the society. It is in the committees that the bulk of the work is accomplished. I hope to bug and prod the committees as regularly and diligently as Paul did this past year. While on the topic of committees, the Board formed an ad-hoc committee on Advocacy and Awards (see details in the minutes of the board). Al Buchanan has agreed to serve as chair of that committee and has a first draft of a document relating to student travel. I had two other members approach me and volunteer to serve. We still need four other people to help fill the committee. If you are interested, please e-mail me and Al ASAP.
<ksc@inhs.uiuc.edu, buchaa@mail.conservation.state.mo.us>

The auction/raffle was a huge success this year pulling in $3,597! I want to thank all those people and organizations that donated items for the auction. Also a big thanks to auctioneers Steve Ahlstedt and Kurt Welke–you may have a future after all of the mollusks are gone. Another note on the monetary side of things: we had two contributing members to the FMCS this year, Al Buchanan and Malcolm Pierson. Thank you for your generous support of the society. Finally, I want to remind all of those people out there that have not renewed their membership to please do so today.

The following is a summary of the meeting posted on various listservers by Rob Dillon. He did such a fine job on the summary that I thought I would steal it–thanks Rob.

The Freshwater Mollusk Conservation Society convened its second biennial symposium March 12 - 14, 2001, at the Westin Convention Center in downtown Pittsburgh, Pa. The largest fraction of the 220 registrants were state and federal natural resource managers, with a substantial contingent of aquatic biologists from research institutes large and small, private firms, and small consultancies. Academia was fairly well represented, and a fair number of graduate students were in attendance. The meeting was organized by Tom Proch and hosted by the Pennsylvania Department of Environmental Protection.

The 80 talks were organized into seven general topic areas over the three days – Biological Assessment (plenary), Status Surveys, Reproduction/Propagation/Juveniles, Life History & Ecology, Methods, Assessment & Conservation, and Evolution & Phylogenetics. There was also a nice poster session, with 40 contributions. Unionacean mussels were unquestionably the primary focus of the meeting, although there were a few gastropod talks, and even a bit of interest in pisidiid/sphaerid clams.

Most of the work of the FMCS is done in its nine committees, which met in the late afternoons. Evening social events included a "blues party" and a lively auction to the benefit of a nascent endowment supporting graduate student travel. Outgoing president Paul Johnson crowned incumbent Kevin Cummings with a Viking "Raiders" helmet at the business luncheon on Tuesday. Opportunities to visit the Carnegie Museum and the Pittsburgh Aquarium were offered Wednesday afternoon.

A volume of proceedings from two 1998 meetings, published by the Ohio Biological Survey, was released in Pittsburgh (contact Paul Johnson, pdj@sari.org). The FMCS already publishes a strong newsletter (*Ellipsaria*) three times a year, and is studying the possibility of supporting a journal. Plans are currently underway for two workshops in 2002 – Mussel propagation in Shepherdstown WV (March) and gastropod conservation with the AMS in Charleston (August). The next full symposium is scheduled for March, 2003, in Raleigh NC.

Although almost entirely North American in its membership at this point, the FMCS continues to invite and encourage worldwide participation. We would especially welcome new members from the museum-based community, and researchers from any broader discipline with a molluscan focus.

For information on the 2002 mussel propagation workshop, see: http://unionid.smsu.edu/

Information on the 2002 gastropod workshop will be available at: http://www.cofc.edu/~dillonr/fwgnahome.htm

General information on the FMCS may be obtained at: http://ellipse.inhs.uiuc.edu/FMCS/

Or contact the Society secretary:
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Submitted by Kevin Cummings

2001 Election Results for FMCS President-Elect and Secretary

It is part of the constitutional process of the FMCS to hold a yearly election for the office of president-elect. Our constitution stipulates that any member can nominate another member for office and those with the most nominations from the membership, and who agree to be nominated, become an official candidate. The names of the nominees are then placed on a ballot and are elected by the society membership; the winner will become the society president the following spring. The new president-elect for 2001 is:
Richard J. Neves
Virginia Polytechnic and State University
Congratulations to Dick!

In addition, we also hold an election for the society secretary every two years. The new (and former) secretary is:
Rita Villella
Leetown Science Center, West Virginia
Congratulations to Rita and keep up the good work!
Submitted by Kevin Cummings

New Officers and Committee Chairs

The FMCS Executive Board is comprised of the Society officers and the chairs of the standing committees. The FMCS board meets twice each year. Meetings are open to any FMCS member and members can participate in discussions of the various issues in front of the board. However, only FMCS Board members (officers and committee chairs) may vote on any issue. Participation in any of the standing committees is open to any FMCS member.

The 2001 FMCS Officers are:

President - Kevin S. Cummings
President-Elect - Richard J. Neves
Past President - Paul D. Johnson
Secretary - Rita Villella
Treasurer - Heidi L. Dunn
Executive Assistant - Not filled at this time
(see front inside cover for contact information)

The 20001 FMCS Committee Chairs are:

Gastropod Distribution & Status - Rob Dillon
Mussel Distribution & Status - Kevin Roe
Guidelines & Techniques - John Van Hassel
Information Exchange - Tom Watters
Outreach - Kurt Welke
Propagation, Restoration & Introduction - Chris Barnhart
Symposium - John Alderman
Water Quality, Habitat Alt. & Zebra Mussels - Bob Anderson

Note: The Commercial Committee has been combined with Guideline and Techniques
(see back inside cover for contact information)
Submitted by Kevin Cummings

FMCS Board Meeting March 11, 2001 Pittsburgh, PA

The minutes of the November 2000 board meeting were read and accepted.

Symposium
Total income for the society in 2000 was $22,807.75. Total dues collected were $6379.75. The outreach workshop generated $7,950.00 with $7,975.00 generated from the Chattanooga symposium. Sales of hats, t-shirts and posters generated another $305. Total expenses for the society in 2000 were $9,520.88, including $960 for the workshop, $2,204 for hats, t-shirts and posters, and $1,130.52 for the symposium. Total expenses was $5028.36, including awards, newsletter, etc. for an operating net profit of $13,286.72. The society currently has no liabilities. So far the 2001 symposium has generated $8,979.22 resulting in total assets of $36,562.97. We will at least break even with the 2001 symposium, and there are some funds remaining from the first symposium and workshop.

Committee Reports
The board reviewed the committee agendas.

Symposium
The next symposium will be in Raleigh, North Carolina, 2003. Tentative dates are Monday through Wednesday either the 2nd or 3rd week of March. The symposium will be held at a Sheraton which is capable of hosting large meetings. The Sheraton will honor government room rates, and if we can fill a certain number of rooms they will waive room fees for the meeting. Have yet to see costs for breaks and meals. We do not have a site selected yet for 2005. The board needs to consider how the symposium committee is structured. The board suggests the committee chair be whoever is responsible

for hosting the upcoming symposium and the host of the past symposium be the co-chair. Guidelines for setting up a symposium should be developed in booklet form.

Status of Unionids

This committee needs to elect a new chair. Not much activity has occurred over the past year. A format for a mussel atlas has been developed, with a major funding commitment needed to move the project forward. Seed money from the Fish and Wildlife Service allowed a handful of people to developed 4-5 species accounts to demonstrate the atlas format. The committee would like to submit a proposal to NSF to get this project funded. Estimated at one time funding of about $250,000 would be needed to develop the atlas. It can be done for less by doing it piecemeal (state by state atlas information) and people volunteering their time. Anticipated problems with this approach are the different atlas formats between states and the Atlantic Slope species. It will be important to source back every dot on the map, ideally to a database. This is at least a 10 year project.

Status of Gastropods

To increase interaction between FMCS and international biologists, FMCS is proposing to hold a workshop July 22, 2002 at the AMS meeting in Charleston, South Carolina. Goals of the workshop are:

1. Finish the draft conservation strategy for freshwater gastropods and have it reviewed at the workshop.
2. Use the workshop as a mechanism to deal with proposed gastropod of North America project. The proposal was revised and resubmitted based on comments received on the first proposal.
3. Approach the FWS or TNC to sponsor a strategy workshop for gastropods should the second proposal not be funded.

Cost to the society would be minimal but details are not yet available as Rob Dillon could not be present at the board meeting. There may be a registration fee to pay for the cost of a professional facilitator and for travel costs of some professionals. The board suggested the committee consider a facilitated session at the FWS National Conservation Training Center.

Propagation, Restoration and Introduction

The propagation workshop is tentatively set for March 14-15, 2002 at the FWS National Conservation Training Center in Shepherdstown, West Virginia for 2 full days. The program is still under development. The topics include propagation, conservation genetics, and habitat/ecology. There will be a full day of invited presentations. The second day would be contributed reports describing specific projects or case histories, with a panel session to end the workshop. Specific topics under each major category are almost set. The habitat session will stress that propagated individuals should be restored to already restored habitat. Also there is evidence of drainage specific mussel host co-habitation so we need to be careful in moving species between drainages. The committee will prepare a list of invited presenters for the first day. The committee will structure the program by having a lead person for each topic area that can integrate the talks. Dave Berg has volunteered for the conservation genetics session and Chris will ask Dave Strayer to lead the habitat/ecology session. The board suggested getting the conservation geneticists together prior to the workshop to decide how the session should be presented. Point out the questions, methods and the issues involved. The board agreed that the society should pursue a centralized online location for sources of already preserved specimens for analysis. Suggested the genetics session be held the second day since the first day appears to be a full day and there will likely be a lot of questions dealing with methods. Chris Barnhart has set up a website to see what kind of attendance this workshop might attract. The 250 seat auditorium has been reserved.

A total of 51 rooms have been reserved at the Days Inn in Shepherdstown, for $55, and rooms can be reserved at the Bavarian Inn for $85. Fourteen rooms are reserved at NCTC for Mar 12-15. The FWS rate is $78, others are $101. Chris will check into getting someone from FWS to co-sponsor the workshop to reduce facility costs.

There was discussion on how to advertise the workshop to the hatchery audience. Provide suggestions to Chris Barnhart on who to contact and how to reach different groups. There will be a workbook generated from this workshop.

Water Quality/Habitat/Zebra Mussels

One of the water quality manuscripts will be published in the Chattanooga proceedings and the remaining 2 likely won't be published. The zebra mussel protocol for holding mussels is a priority item on the committee agenda. The Fish and Wildlife Service contracted with the committee for $10,000 for FMCS to develop a protocol, have it reviewed and published. Volunteers were solicited from the committee to work on this protocol and but there is currently on one taking the lead to draft the protocol. The committee will also discuss putting together a webpage along the lines of a bibliography. The webpage should be organized under information/exchange.

Guidelines and Techniques

The committee needs to elect a chair and new co-chair. Format for the guideline documents has been done and the committee now needs to motivate its members to accomplish the tasks. The guideline needs have been established and broken into 8 subgroups which have been assigned to individuals. The board should decide how we want to title and publish these "guidelines". The committee sees these documents not so much as set guidelines but documents that provide sources of information. One of the documents the committee needs to consider is guidelines for permitting and collecting (such as temperature guidelines). The committee originally talked about putting together guidelines for propagation but this will be placed under the propagation committee. The role of the techniques and guidelines committee can shift to reviewing the protocols written by the other committees. The committee is meeting on Tuesday.

Dave Strayer has provided an outline for sampling that may turn into a 30 page document.

Information Exchange
Tom Watters and Mark Hove are co-chairs until a committee chair is elected. The newsletter is the primary charge of the committee. The grant from the Fish and Wildlife Foundation was received and a server has been ordered and used to house the bibliography and webpage. The bibliography is on Filemaker, with some gray literature included. Also plan to put on a fish host database as well as a type catalogue of mussels of the world. There are 3000 nominal species in it now. This webpage will link to the webpages of the society committees. The committee meets on Monday to discuss the editorial board of the newsletter and the webpage and development of the journal. Chris Mayer will take over publishing the newsletter.

Commercial
Virtually no commercial activity. The state of Tennessee sold about 150 licenses. There is still high mortality of oysters in Japan. The committee will focus on establishing value of mussels in a polluting event. There have been a number of big kills in various parts of the country over the past 2 years. Outside of the Federally listed species, the states don't have a way of going after funds to reestablish mussel species. The FWS and AFS are interested in pursuing a way of getting money for mussels. Bill Tolin, Don Hubbs, Jeff Garner, John Harris, Janet Clayton, and Steve Fraley are involved in helping Steve Ahlstedt on this effort. There was discussion of combining this committee with the techniques and guidelines committee. The board decided to consider making the commercial committee inactive until such time commercial activity becomes relevant again and move the activity of developing value assessment to techniques and guidelines. Steve Ahlstedt will discuss this option and overall commercial activity with Don Hubbs and Jeff Garner and prepare a report for the next board meeting.

Outreach
The committee met last fall to work on a seminar on aquatic biodiversity to be presented at NCTC for educators. The seminar was canceled due to timing. They have since regrouped and a proposal was prepared to hold a workshop at the North American Environmental Educators conference with a tentative date of October 11 in Little Rock, Arkansas. Hillary Vinson is the lead on this activity with help from Susan Rogers. The outreach mussel tool list will be printed by FWS and distributed through the webpage. The committee is talking with Project Wet and they are in the preliminary stages of possibly doing a joint publication on aquatic biodiversity, including mussels, to be included in materials they sell.

Old Business
Walkerana
Tom Watters met with Dr. Burch to discuss the society taking over Walkerana. Dr. Burch was extremely supportive and offered the journal to the society. Dr. Burch has offered to help continue to edit the journal until we can get a full time editor on board.
Suggested we start with the current review board that put together the proceedings until we could hire an editor that would be paid contingent on getting out 2-3 issues per year.
Current printing costs for the subscriber list of 100 people (500 copies) runs about $2100 if there are a lot of photographs, or about $1200 with few photos. There is the need to decide what to do with back issues, some place would have to be the repository. Dr. Burch does not charge page charges and the journal does not pay for itself. A questionnaire has been prepared for symposium attendees and the membership on whether they would support a journal and would they support an increase in dues to support the journal. The committee will report their findings at the next board meeting.

Student Travel Award
Five requirements were drafted and 7 potential criteria. The draft student travel award will be in the next Ellipsaria for review. Comments are to be sent to the chair of the ad hoc committee for awards. Al Buchanan will be the point person.

Liability Insurance
Paul has given information to the insurance agent and the information packet will be presented to the board at the next meeting. If the society doesn't get involved in active lobbying costs will not be high.

Amendments to the FMCS Constitution
The proposed amendment to article V paragraphs 5.1, 5.2 and 5.3 of the by-laws will be presented to the membership for a vote at the general business meeting. The amendment will a) allow for the election of committee chairs every other year, b) permit the election of one co-chair for each committee, and c) prohibit an executive officer (president, president elect, past president, secretary, treasurer) from also serving concurrently as a committee chair or co-chair.

5.1 The affairs of the society shall be managed by a self-perpetuating Board of Directors consisting of not less than five (5) nor more than twenty-seven (27) persons (as decided, from time to time by the Board of Directors) elected by a majority of the Board in a manner specified in Section 5.4 hereof.
5.2 The Board of Directors shall consist of the President as the presiding officer, the President-Elect, Past President, Secretary, Treasurer, and Chairs of the Standing Committees as defined in the By -laws. Chairs of the Standing Committees are to be nominated by members of that committee every other year with election held at the Society Symposium.
5.3 The committee co-chair assists the committee chair with the performance of their duties. Committee co-chairs are appointed by the committee chairs, and also serve two (2) year terms. If a chair resigns or is advanced as an executive officer, the co-chair automatically becomes the new committee chair, filling out that term. Committee co chairs cannot vote on business issues before the board, except in the

absence of the committee chair (only one vote per committee). As all other chairs and officers, committee co-chairs must be members in good standing.

Coal Slurry

The issue of letter writing representing the stand of the FMCS has come up several times. All letters must go through the board of directors before being sent. Written procedures have been tabled until new business. Will not send a letter to the governor until we establish a process.

New Business

FMCS Environmental Stewardship Award

Proposed means to recognize agencies and/or companies for their environmental awareness and commitment and activities to restore the resource. Steve Ahlstedt will draft the award language to be reviewed by the board at the next board meeting. This should be regarded as a prestigious award.

Ad hoc Committee for Advocacy and Awards

The society needs a committee to establish the criteria for current awards and criteria for establishing new awards. The by-laws will need to be changed next year if this is elevated to a full committee. Kevin will establish the new ad hoc committee with a lead person and no more than 6 individuals. This will be brought up at the general business meeting to solicit volunteers.

Setting a date for membership role over

Paul will look into having AIBS help us with membership enrollment, having members join online. We will set Nov. 1 as membership for the current year. If payment is after November 1 the membership will be for the following year. The board may want to consider having memberships paid for 2 to 3 years instead of one year at a time. Rita will send the information on who has not yet paid for 2001 to Paul and he will send out a reminder to the membership. The membership form will be revised to include a billing address and affiliation address. About a third of the members have renewed by credit card.

AIBS Representative

Council meetings are now held in March. Paul proposed that FMCS pay for travel costs to AIBS and that be one of the duties of the past president to serve as the representative to AIBS. Another suggestion is to assign someone to serve as a representative for a period of 5 years. The pro for being a member is so many organizations have joined it has become a major lobbying group for biological science issues and the policies that affect the science. They also publish BioScience and FMCS is to have an ad in the publication. This is a good way to let people know who we are and a way to advertise the symposium. Paul will attend this next meeting and report back to the board at the next board meeting.

FMCS White Papers/Policy Statements

General guidelines, no more than 3 pages, are needed on several topics such as a zebra mussel quarantine protocol, that can be sent to states as guidance they can follow as they face these issues. Steve Ahlstedt and his group are working on guidelines for assessing a monetary value for mussels, Dave Strayer has drafted general guidelines to follow for sampling, Bob Anderson and his committee are working on the zebra mussel protocol. These will be the first 3 position guidelines to be drafted. There is funding to develop the zebra mussel protocol but the society needs funding for developing 2 of these policy statements. Recommended that Heidi contact Kari Duncan about applying for a Federal assistance grant. The guidelines will be reviewed by the board prior to being presented to the membership.

Strategies to Improve Membership

FMCS should pursue opportunities to recruit member biologists in other countries. The board needs to consider the type of recruiting material needed to increase membership. It was recommended that a trifold brochure on FMCS be developed soon and available for AFS this summer. The board suggested that at least 1 co-author on presentation materials be a member of the society. Paul will put together an email to send to those that work exclusively with molluscs as to why they have not joined the society. The board should evaluate what materials should be made available to the membership only in the future, for example, the bibliography. The outreach committee will be responsible for finalizing the trifold display unit to setup at meetings and the brochure on general information on mussels and snails.

Thank You Letters for 2001 Symposium:

2001 sponsors are TNC, TVA, UMRCC, VA DIGF, MMT, and $2500 from the Fish and Wildlife Foundation. Kevin will draft the letter and will get the complete list from Tom Proch. Kevin will send the draft letter to the board to review.

Other New Business

Heidi did receive an application for a society credit card which may facilitate transactions for meetings and workshops. The board decided the names of the officers and Chris Mayer's name should be on the card.

Next FMCS Board Meeting:

The next board meeting will be held November 8-9, 2001 in Louisville, Kentucky.

The meeting was adjourned.

Submitted by Rita Villella

FMCS General Business Meeting
March 13, 2001
Pittsburgh, PA

A summary of the treasurer's report was presented: The society generated over $13,000 with over $6,000 collected in dues last year. Total assets of the society are $36,562.97. The fiscal strategy is to keep spending down until membership

increases and a decision made on whether the society will publish a journal.

FMCS will hold an auction and raffle on Tuesday evening with proceeds earmarked for the new student travel award.

The proceedings of the Columbus and Chattanooga meetings are now available for all those who attended either or both meetings. Reprints are available for the authors.

Amendment to the By-laws:
Paul Johnson read the proposed amendment to Article V of the by-laws that were first drafted in 1998:

5.1) allow election of committee chairs every 2 years,
5.2) allow appointment of committee co-chairs, and
5.3) that no current FMCS officer can serve as a committee chair or co-chair.

A motion was made to accept the amendment and the motion was carried by the members.

Ad hoc committee on awards and advocacy:
The board is seeking volunteers to serve on this committee. All interested members should contact Kevin Cummings.

Presentation of Awards:
The first FMCS W.J. Clench Award for outstanding contributions to the field of malacology was awarded to Herb Athearn for his field collection and contributions to freshwater malacology through curation and taxonomy. Jayne Brim-Box made the presentation.

The second recipient of this award is Frieda Schilling for her exemplary contribution and collections in freshwater malacology. Al Buchanan and Sue Bruenderman made the award presentation.

The 2001 recipients of the FMCS Lifetime Achievement Award are:

William Heard for his significant contributions to bivalve reproductive biology and Unionacea and Sphaeriidae structural systematics. Randy Hoeh mad the award presentation.

Doug Smith made the award presentation for Richard Johnson for his contributions in unionid taxonomy, biogeography, and bibliography.

Change in Officers:
Kevin Cummings was elected president of FMCS for 2001-2002. Paul Johnson will serve as past president. Dick Neves is the new president-elect and Rita Villella was re-elected as secretary.

Workshop in 2002:
The 2002 workshop on propagation, conservation genetics, habitat and ecology will be held at the Fish and Wildlife Service National Conservation Training Center in Shepherdstown, West Virginia. The 2 day workshop will be held March 14-15. The workshop will result in a how-to document for propagation of unionids, including the issues of conservation genetics and restoration ecology. We are hoping for 20-25% of the attendees to be from state hatcheries. Copies of the draft workshop agenda are available from Chris Barnhart.
A website is available for pre-registration. The url is http://unionid.smsu.edu

2003 Symposium:
The next FMCS symposium will be held in Raleigh, North Carolina in 2003. The membership is being asked to comment on holding the meeting over a weekend to take advantage of less expensive hotel and airline rates. We need to hear from you. Please send any comments to John Alderman.

2005 Symposium:
The board is looking for volunteers to host the 2005 symposium. If anyone is interested, please contact Kevin Cummings. There is discussion of holding the meeting in conjunction with the National Shellfisheries Association in Philadelphia, Pennsylvania.

Ellipsaria:
Submissions for the next issue of Ellipsaria are due to Chris Mayer by the end of March. Submissions previously made to the triannual report are welcome. Either email your submission to Chris at c-mayer2@uiuc.edu or mail your submission to Chris at Illinois Natural History Survey, 607 E. Peabody Dr., Champaign, IL 61820.
The information exchange committee is working on a FMCS home page.

FMCS presented to Paul Johnson the Meritorious Service Award to show our appreciation for and acknowledge his years of service to FMCS and serving as its president from 2000-2001.

The board and members also acknowledged the efforts of Tom Proch for hosting the 2001 Symposium.

The meeting was adjourned.
Submitted by Rita Villella

FMCS Committee Reports
March 12-14, 2001
Pittsburgh, PA

Commercial Committee Report

Very little activity is occurring in the commercial harvest of shell for the cultured pearl industry. Over the last 3 years, the

Japanese have lost over 70 % of nucleated shell to die-offs related to polluted water. This has affected the commercial industry in the states with less demand for shell. Until the commercial shell industry gets back into production, the commercial group has undertaken a more urgent need of placing a value on all freshwater mussels and snails (?) that are killed by polluting events. Polluting events have killed many hundreds if not thousands of mollusks all across the United States. States need a guideline to follow for establishing the monetary value of damages to molluscan faunas. This would be similar to monetary values for each species of fish established by the American Fisheries Society. The commercial group is now temporarily placed under the Guidelines and Techniques committee because guidelines and techniques are needed to establish how a kill would be evaluated. Contacts are currently being made with an economist(s) to determine how to proceed with this.
Submitted by Steve Ahlstedt

Gastropod Status & Distribution Committee Report

1) Attending: Rob Dillon (chair), Amy Wethington (sec.), Ken Brown, Tamara Anderson, Jayne Brim Box, Janet Butler, Betty Crump, Ryan Evans, Jeff Garner, Paul Hartfield, Marilyn Hemker, Mark Hove, Paul Johnson, Jacquie Lee, Russ Minton, Malcolm Pierson, Dusty Proctor, Doug Smith, Brian Watson, Charles Watson, Tom Watters, Jeri Wood.

2) Administrative matters: Rob Dillon was nominated and elected as committee chairperson and Ken Brown was appointed as co-chairperson.

3) National Strategy for Gastropod Conservation: Paul Johnson described the progress to date on the national strategy for freshwater gastropod conservation. The strategy will incorporate a series of papers given at the Chattanooga meeting, along with a conservation strategy authored and edited by the presenters. Paul hopes to have the strategy finished soon, and plans a presentation and discussion group at the AMS meetings in Charleston in 2002. Paul noted that the strategy will be loosely based on similar strategy papers developed for freshwater fish and mussels, but will be more concise. Rob Dillon encouraged everyone to attend the AMS meetings in Charleston on August 3 - 7, 2002. Lodging will be available at $85 in hotels, or at $20-25 in the dorms. Palmetto bugs will be provided free of charge.

4) Freshwater Gastropods of North America Project: Rob Dillon summarized the status of this project, and the NSF grant proposal written to fund it. The project, initiated in 1998, is designed in three phases. The first phase involves an inventory of the gastropod lots at the 10 major North American museums, that have approximately 90% of our snail holdings. The NSF proposal involves ten co-PI's, each of whom will have specific responsibilities for museum work. The data will be entered into an electronic data base, a demo of which is available at Rob's College of Charleston web site. Data fields will include precise localities, etc. The proposal also includes the building of a national reference collection including lots from all described species in North America. This collection may be housed at the Leetown Science Center. The reference collection will prove valuable to investigators as well as providing a way to check the validity of lots in existing museum collections. If the proposal is not funded, Paul Johnson suggested a workshop at the AMS meetings involving a large group of malacologists to re-design the proposal, and a professional mediator to help arbitrate the changes so that future proposals would have higher chances of success. Paul Hartfield pointed out that there is still a lot of disagreement about proper classification, especially in groups like the pleurocerids.

Phase II of the project will involve an extensive field survey that will emphasize geographic regions that are not well covered in museums, or where losses in diversity have occurred. A renewal from NSF will also fund this work, with a group of co-PI's responsible for specific geographic regions, and using subcontractors or students to do most of the field work. Doug Smith pointed out that a specific protocol is needed for collections. Tissues cannot be preserved in formalin if DNA work will be necessary, etc. Paul Johnson requested that Doug develop such a protocol, and Doug agreed. Doug will forward the protocol to Paul or Rob, and requests suggestions as to the specifics that different workers (e.g., anatomists, biochemists) will need. Rob will send material from a book by Charles Sturm on collecting snails to Doug. Proper field notes with precise location, habitat type, abundance, size distribution, etc. will also be necessary. A workshop for proper collection and preservation methods would be a good idea for the next AMS meetings.

Phase III of the project will be a monograph for all North American species. The monograph will have several pages per species with descriptions, range maps and recommendations for conservation. The monograph will also be in an online version eventually. Jayne Brim Box noted she is building a data base of snails in western states and provided some data on diversity in each state. It was also suggested that we use school children to help collect data, or use collections or databases compiled by state agencies. Benefits would involve harvesting a lot of information at a relatively small price, although concerns were voiced about how to standardize such collections, or make sure voucher specimens were available. Participants were urged to contact Rob Dillon if they have additional suggestions for the project.

5) The meeting was adjourned.
Submitted by Rob Dillon, Chair

Guidelines & Techniques Committee Report

Committee chair Heidi Dunn opened the meeting. Items covered included:

- Several groups set up in 1998 to develop guidelines on several wide-ranging topics have made little progress to date, mostly because available manpower has been spread too thin among the groups. It was decided to temporarily suspend these efforts in order to focus committee resources on a few topics where there is a pressing need for a standardized approach (see following item).
- Steve Ahlstedt initiated a discussion of the need for monetary valuations of mussel species similar to those established for fish by the American Fisheries Society. Steve will lead a committee effort over the coming year to develop these valuations. Concurrent with this effort, the committee will undertake development of guidelines for the assessment of mussel kills.
- Another issue that received some discussion was the need for guidance to the states in administering scientific collection permits for unionids. No decision was made to address this issue, but the committee will continue discussions on possible actions.
- John Van Hassel (American Electric Power, Columbus, OH) was elected committee chair for the coming year.

Submitted by John Van Hassel, Chair

Information Exchange Committee Report

The FMCS webpage developed by Mark Hove is being moved and modified, see: http://ellipse.inhs.uiuc.edu/fmcs/. The freshwater mollusc on-line bibliography developed by Kevin Cummings, Art Bogan, and Tom Watters is on-line at: http://ellipse.inhs.uiuc.edu/mollusk/biblio.html, and will be linked with the FMCS site. A similar on-line database of mussel-host relationships also will be added to the site. The issue of whether FMCS should adopt its own journal was discussed, and this item is at least temporarily under the scope this committee, although it may be moved to its own committee later. Tom Watters talked with J.B. Burch concerning turning over Walkerana as the FMCS instrument. Dr. Burch was very supportive of this idea should the membership of FMCS wish to pursue it. Tom Watters was elected as Chair of the committee.

Submitted by Tom Watters, Chair

Mussel Status & Distribution Committee Report

Kevin Roe agreed to chair the committee. Several issues were discussed during the meeting including the preparation of a grant to secure funding to cover the expenses associated with producing an atlas of North American freshwater mussels. After some discussion it was decided that rather than focus on obtaining funds, the committee should concentrate on the production of a number of individual accounts using existing distribution information. The committee was of the opinion that due to the efforts associated with the production of several state mussel books, a substantial number of species accounts were practically completed. It was felt that preparation of a substantial number accounts would facilitate securing funds to cover production costs of the atlas.

A list of mussel species that require accounts and guidelines for account preparation will be available from the chair (roe001@bama.ua.edu) along with a digital base map of North America that can be used to prepare distribution maps. An updated list of accounts that have already been prepared or have been earmarked for preparation will be posted on the society web page.

The committee intends to provide the chair with at least ten completed accounts before the executive board meeting in November.

Submitted by Kevin Roe, Chair

Outreach Committee Report

The Outreach Committee met as part of the FMCS symposium with 12 members in attendance.

The Committee will be co-chaired by Kurt Welke and Janet Butler for the next 2 years until new election of the chair(s) at Raleigh in 2003.

Outreach accomplishments for 2000 included:

1. Hosting a comprehensive Outreach Workshop which detailed the methods in developing and implementing a successful outreach effort
2. Finalizing the ***"Tools for Outreach"*** directory of outreach resources. The directory was distributed to interested parties at the Pittsburgh meeting. Hardcopies may be obtained by contacting either Kurt Welke (welkek@dnr.state.wi.us) or Hillary Chapman (hilary_chapman@fws.gov).
   The directory is being temporarily housed on-line at: http://training.fws.gov/deo/education.html. The Outreach committee will have this resource permanently installed on the FMCS website once the site is fully functional.

Upcoming "action items" for Outreach in 2001-2003 include:

1. Sponsorship of a 1.5 day teacher workshop entitled "From Orange Belly Darters to Fanshell Mussels!" to be presented in October 2001 to the North American Association of Environmental Educators meeting in Little Rock, AR. Outreach members (with help from Arkansas Fish and Game and USFWS) will teach educators about the hidden biodiversity represented by non-game fishes, mussels, snails, and crayfish by getting them into the river. A teachers guide will be developed and distributed.
2. Outreach is exploring a cooperative project with PROJECT WET to develop and produce a mussel component with project WET.
3. Finishing the Societies' poster which highlights the FMCS, mussels, and snails for use at other professional meetings and symposia.

4. Producing a briefing summary as a 1st step for a future effort directed at the Congressional Sportsman's Caucus.

We will also be working with the newsletter editor to include an *"Outreach Tips"* segment to help members better spread the word about the fauna.
Submitted by Kurt Welke, Chair

Propagation and Restoration Committee Report

Plans for the 2002 FMCS workshop were discussed at the committee meeting in Pittsburgh. Arrangements have been made for the workshop to be held on March 14-15 at the National Conservation Training Center in Shepherdstown, West Virginia. Topics will include propagation methods, habitat requirements, and conservation genetics. Both invited and contributed presentations will be included. Heidi Dunn suggested that guidelines for holding adults and evaluating their condition should also be the responsibility of the propagation committee, and that these methods should be discussed at the workshop.

Information about the 2002 workshop and an online pre-registration form are at http://unionid.smsu.edu (also linked to the FMCS homepage). Several persons pointed out the need for a directory of ongoing projects to facilitate communication among persons working to propagate unionids. An online survey for this purpose is at http://unionid.smsu.edu/projects.asp. Results will be posted on the FMCS website.

The need for a database listing the location of stored tissue samples for genetic analysis was discussed briefly. Tim King pointed out that the repository of unionid tissues at Leetown Science Center is available and that persons wishing to obtain or to donate specimens should contact him or Rita Villella. The holdings are catalogued in a database but there are no current plans to place this online or expand it to include other holdings.
Submitted Chris Barnhart, Chair

Symposium Committee Report

Chair and co-chair, John Alderman and Judith Johnson, were selected at the committee meeting held during the 2001 Symposium in Pittsburgh, PA. Committee members in attendance included Al Buchanan, Paul Johnson, Kevin Cummings, Tom Proch, Greg Cope, and Jay Levine. Raleigh, NC was selected as the site for the 2003 Symposium. The 2003 Symposium is tentatively scheduled for early March and both weekday and partial weekend dates are being considered. Philadelphia, PA was suggested as a potential site for 2005 Symposium.
Submitted by Judith Johnson, co-chair

Water Quality, Habitat, and Zebra Mussel Committee Report

The Water Quality, Habitat, and Zebra Mussel Committee met on Wednesday March 14, 2001 at 2:00 PM with 10 members present. Bob Anderson was elected to chair the committee, Greg Cope was elected co-chair.

Four of the six topical papers regarding freshwater mussels and water quality developed at a workshop sponsored by USGS and held in Atlanta, March 4, 1997, have been published. Three in the Journal of the North American Benthological Society (JNABS) and the forth as an addendum to the joint symposia publication from FMCS along with reprints of the abstracts of three articles previously published in JNABS. The remaining two, on taxonomic and contaminant issues, have not completed the review process. Although these manuscripts represent important contributions from the water quality workshop, the committee agreed that while we encourage the authors to publish these manuscripts, it would be their responsibility to due so.

Last September, the U.S. Fish and Wildlife Service (USFWS) contracted with FMCS to review methods being used to control the spread of zebra mussels during unionid quarantine and relocation activities and to publish a set of general guidelines that could be adapted for use in local situations. Due to personnel changes at the USFWS Office that issued the contract and subsequent uncertainty regarding draft responsibility and USFWS expectations, the committee work on this project has not proceeded. Technicalities with the period of performance of the contract with USFWS and clarification on whether the USFWS still wishes to have this document produced are in the process of resolution. Pending resolution of these items, Greg Cope has agreed to be the focal contact to collect existing federal, state, and industry protocols on this topic and to develop a draft for review by the committee.

Several new business topics were discussed. FMCS is developing a website with space for each committee. The WQ/H/ZM committee listed information we considered useful for internal and external communication including "hot topics", water quality criteria, membership list, and possibly, a database of mollusk surveys and contacts to assist in targeting areas for mussel surveys, public education and protection from zebra mussel infestation. There was a general concern that the conservation community has become complacent about zebra mussel prevention while the need to protect the significant unionid mollusk resources remains. The committee will also draft technical information regarding zebra mussels such as vectors, environmental requirements, and important unionid conservation areas to give to the Outreach and Legislative committees for distribution and action.
Submitted by Bob Anderson

Outreach Tips

The Outreach Committee sponsors this little series of useful hints and tips that we've found of value …try it, you'll like it!

Break the Ice

Wondering how to "break the ice' and get folks warmed up for a mussel presentation? Janet Butler offers this: Bring a set of distinct shells (all different species) with the individual valves separated and labeled with the common and Latin name. Give one valve to each person. Direct the group to "find their match." Give them a few minutes to find their partner and to contemplate the shell that is now complete. Have the newly united mussel "teams" take turns introducing themselves and their shell to the larger group. Have them offer their insights as to why they bear that name and the special features they now embrace.

Power Point Tips

Hey ! So what's with the massive Power Point melt down at Pittsburgh? We found ourselves wishing that presenters didn't have the trials the new technology offers. Here are a few useful websites that go over things like Font size, color selection, and text arrangement and so forth to optimize your next presentation. Check these out:

http://www.osti.gov/em52/workshop/tips-exhibits.html
http://members.mva.net/rizvanov/training/DeliverEP.html
http://www.geocities.com/tmartiac//classes/powerpt.htm

These sites came up under the search: "proper size fonts for presentations using Power point"

Join the UNIO Listserver

Want to get a message (job announcement, data request, information search) out to the entire mussel community ?. If you do, then UNIO Listserver is the tool you've been looking for! The listserver is intended to facilitate and foster communication among the mussel community. Here's how to sign up:

Send an email to: Majordomo@lists.umbc.edu
The first line of the text of the message (not the subject line) should contain the following statement:
subscribe UNIO your email address
Leave the rest of the message blank(including signature information)

For more information, go to:
http://research.umbc.edu/~tankersl/unio.html

If you have any outreach tricks you'd like to share with the FMCS membership, please do so by sending an email to *welkek@dnr.state.wi.us*. We'll run them in upcoming issues.

Announcements

World Congress of Malacology
Vienna, Austria 19–25 August 2001

14th UNITAS Congress of Malacology
67th Annual Meeting of the American Malacological Society
xx. Jahresversammlung der Friedrich Held Gesellschaft

The American Malacological Society will be meeting jointly with Unitas in Vienna this summer. Five symposia on the following topics are presently being organized:

- Evo-Devo in Molluscs (organizer Gerhard Haszprunar, W. A. G. Dictus)
- Chemosymbiosis (organizers Carole Hickman, Penelope Barnes, Martin Zuschin)
- Mollusca in Long-lived Lakes (organizers Frank Wesselingh, Ellinor Michel)
- Molluscan Conservation (organizers Ian Killeen, Mary Seddon)
- Functional Morphology of Molluscs (organizers Dianna Padilla and Shirley Baker)

The program also includes workshops, field trips, and social gatherings.

Registration is available on line at the meeting website:
http://www.univie.ac.at/WCM2001/index.htm

or via snail mail to:
L. Salvini-Plawen, Gerhard Steiner
Institut für Zoologie, Univ. Vienna
Althanstr. 14, A-1090 Vienna
Austria

For more information regarding AMS and our meeting in Vienna please contact:
Dr. Janice Voltzow
President
American Malacological Society
Department of Biology
University of Scranton
Scranton, PA 18510-4625
570-563-1499
voltzowj2@scranton.edu
Submitted by Dr. Janice Voltzow

Natural Resource Communications Course

Training Opportunity: Natural Resource Communications, August 6-10, 2001, National Conservation Training Center, Shepherdstown, West Virginia

This course is designed to help resource professionals communicate more effectively with both general and technical audiences through oral presentations. Topics will include

developing communication strategies for specific audiences, creating graphics, and solving equipment problems. Upon completion of the course you will be able to:

* develop a plan for communicating natural resource information to a target audience;
* design and prepare effective presentation graphics (title slides, data graphics, illustrations etc);
* operate and troubleshoot audiovisual projection equipment problems;
* deliver a short presentation using graphics developed during the workshop.

For more information, go to http://training.fws.gov/catalog/OUT8106.html or call Sharon Howard at 304-876-7494 for registration information.
Submitted by Hilary Chapman

Tools for Outreach: Native Freshwater Mussels and Zebra Mussels

This catalogue is meant to be a resource for anyone interested in obtaining information and products on freshwater mussels. While by no means all inclusive, it provides the user with a range of tools to find the materials and people to answer questions, design educational units, and understand this fauna. The catalogue is broken into the following content areas: booklets/brochures, contacts, displays/exhibits, education materials, fact/information sheets, posters, videos, web sites, and zebra mussels.

Until the Freshwater Mollusk Conservation Society web page is posted, the "Tool for Outreach" will be temporarily posted at the following address:
http://training.fws.gov/deo/education.html

If you would like to make a change or contribution to the "Tools for Outreach" please contact Hilary Chapman:

Hilary Vinson Chapman
National Conservation Training Center
Division of Education Outreach
Route 1, Box 166, Shepherd Grade Rd.
Shepherdstown, WV 25443-9713
hilary_chapman@fws.gov
304-876-7783 phone
304-876-7231 fax
Submitted by Hilary Chapman

Freshwater Mollusk Bibliography Online!

A searchable database of literature on freshwater mollusks is now available online at:
http://ellipse.inhs.uiuc.edu/mollusk/biblio.html. It is also linked via the Illinois Natural History Survey Mollusk Collection page:
http://www.inhs.uiuc.edu/cbd/collections/mollusk.html, and we plan on placing a link to the database on the FMCS web page in the near future. To date the bibliography database includes over 10,000 references on freshwater mollusks. The database was a collaborative effort by Kevin Cummings, Illinois Natural History Survey; Art Bogan, North Carolina Museum of Natural Sciences; Tom Watters, the Ohio State University Museum of Biological Diversity; and Chris Mayer, Illinois Natural History Survey. The project was funded by the National Fish & Wildlife Foundation: http://www.nfwf.org/. The initial goal of the bibliography was to build a database of every published reference on freshwater mussels in North America. The project has grown to include freshwater mussels worldwide, gastropods, sphaeriids, corbiculids, and dreissenids. However, the references entered for those groups are far less comprehensive, particularly with respect to the literature pre-1980. The types of publications covered include journals, books and book chapters, theses and dissertations, popular articles, and gray literature (government documents, consulting reports, etc.). Abstracts from symposia or conference proceedings have also been entered but are not exhaustive.

In addition to searching on the standard fields (author, date, title, journal, and volume) searches can be broadened or restricted by using a combination of geographic, taxonomic, or subject fields. The geographic fields include check boxes for specific continents and a data entry field for a specific state or country (some river systems are also included in this field, but be sure to use a hard (option) space between the name of the river or lake). The taxonomic fields include check boxes for the major groups of freshwater mollusks (Unionoida, Gastropoda, Sphaeriidae, Corbiculidae, and Dreissenidae). A data entry field for family is also available but the vast majority of records on the database lack information for that field at this time.

A number of admittedly subjective subject headings are also available for searching broad topics with one keystroke. The fields at present include: systematics, zoogeography, life history (in a very broad sense), age & growth, food habits, glochidia, parasites, physiology, genetics, anatomy, methods, management, endangered species, paleontology, pollution, biographies and obituaries, bibliography, collections, reproduction, predation, buttons & pearls, native Americans, exotics, habitat, and behavior. We hope to refine these subject categories in the future and ideas for additional fields are welcomed. The check box field can be used in conjunction with other data entry fields to narrow down a search. For example, checking gastropods, North America, and genetics will return a set of references without having to type in numerous key words in the title field.

It is hoped that this will be a dynamic database. It is still very much in the beta phase so if you notice that a particular reference is incorrectly cited or missing please forward changes and additions to ksc@inhs.uiuc.edu. Although we would like to be able to provide reprints or copies of papers to those without access to a good research library it is impossible to do that at this time, so don't ask ☺.
Submitted by Kevin Cummings

Publications

Two New Publications from Dave Strayer

Marangelo, P.J., and D.L. Strayer. 2000. The freshwater mussels of the Tonawanda Creek basin in western New York, Walkerana 11: 97-106.

Strayer, D.L. Endangered freshwater invertebrates. Pages 425-439 in: S.A. Levin (editor). Encyclopedia of Biodiversity, Volume 2. Academic Press.

Contact Dave at strayerd@ecostidies.org for copies.
Submitted by Dave Strayer

Ecology and Evolution of the Freshwater Mussels Unionoida

by G. Bauer and K. Wächtler (Eds)

2000. Ecological Studies Analysis and Synthesis, Vol. 145, Springer Verlag, 400 pp., 156 figures, 39 tables
ISBN 3-540-67268-0, Hardcover (U.S. $ 129)

Unionoida (naiads) are characterized by larvae which have to pass through a parasitic stage on a host fish. Some of these host-parasite systems are unique, since the generation time of the parasite exceeds that of its host by a factor of ten. There is tremendous life history variation. With a life span of more than 200 years, some naiad species belong to the longest-lived invertebrates, some are highly host-specific, some are extremely fertile, some produce very peculiar larvae, and some occur at very high population densities. This volume describes and explains the characteristics and life histories of the naiads, the interactions with their hosts, and their evolution. It elucidates the manifold implications of their presence or absence in a lake or stream. Further, aspects of nature conservation are covered, as many naiad species are seriously threatened. Some have been used successfully as sensitive pollutant indicators in habitat monitoring and as "archives" for environmental changes.

Requests

Carnegie Museum - Mollusk Support

The Carnegie Museum's director, Dr. Bill R. DeWalt, is considering funding a full-time Malacologist for the mollusk collections. It could make a considerable difference if the director received letters encouraging him to do so.

Please send a simple statement on the value of the collection, the importance of continuing to support systematic research on mollusks to better understand their biology, evolution, and ecology so that we can better manage and protect them as important elements of biodiversity. Just three or four sentences stressing your group's interest and enthusiasm for hiring a malacologist at CMNH is important. Dr. DeWalt is very big on local relevance (to the region as well as exotic taxa), and strong on biodiversity-related issues, so stressing those is important. Right now he is faced with deciding amongst options for new curatorial positions, and he will value reasons why THIS PARTICULAR collection is important and should be given strong consideration for curatorial appointment. Stressing positive aspects, not the obvious negative ones, is the best approach to him. Sending me c.c.'s of letters is appreciated, as I have a good relationship with Bill DeWalt, and the music is louder the more ears can hear it!

I really appreciate your efforts to help us get something going here, especially on the freshwater and terrestrial front.

The key address is:
Dr. Bill R. DeWalt
Director
Carnegie Museum of Natural History
4400 Forbes Avenue
Pittsburgh, PA 15213
E-mail: dewaltb@carnegiemuseums.org

My address is the same:
Dr. John E. Rawlins
Curator in Charge
Section of Invertebrate Zoology
Carnegie Museum of Natural History
4400 Forbes Avenue
Pittsburgh PA, 15213
E-mail: rawlinsj@carnegiemuseums.org

THANKS!
Submitted by John Rawlins, via Betty Crump

Diving Workgroup

Since the last FMCS meeting in Pittsburgh I have had several conversations with divers that conduct mussel conservation work. If there is further interest among FMCS members that are interested in diving safety and underwater techniques for mussel conservation, I would like to form a Diving Workgroup. Members of this workgroup would communicate with each other and share information primarily about diving safety and underwater techniques. A list server could be set up to share information and the Diving Workgroup could schedule a meeting during the next FMCS workshop next year. If you are interested, please call me at 612-725-3548 x210, email me at nick_rowse@fws.gov or write to me at the following address:
Nick Rowse
Twin Cities Field Office
U.S. Fish and Wildlife Service
4101 E. 80th Street
Bloomington, MN 55425-1665
Submitted by Nick Rowse

Job Announcement

Ecological Specialists, Inc. currently has an opening for a freshwater mussel biologist to assist with long term monitoring, relocation, and impact analysis unionid projects throughout the Ohio River and Mississippi River basins.
Position may include proposal preparation, project management, supervision of field crews, equipment maintenance, data analysis, and report preparation.
Two Freshwater mussel biologist positions available:

Senior malacologist, malacologist (Permanent positions)

Requirements for both positions:

- Masters degree in biology, aquatic ecology, fisheries, or related field
- Working knowledge of Ohio and Mississippi River unionid fauna
- Diving certification
- Boat operation and maintenance skills
- Computer experience with spreadsheets, databases, word processing, graphics, statistics
- Ability to prepare professional quality reports
- Willingness to travel

Requirements for senior position:

- At least 5 years experience
- Experience working with the public, industry, and regulatory agencies
- Supervisory experience
- Project management experience

Start date: May 15, 2001 or as soon as possible
Salary and Benefits:

Competitive salary depending on experience, Health Insurance, SIMPLE savings/retirement plan, Paid vacations and holidays, Professional society membership, Flexible hours, Opportunity to travel the Midwest and collect unionids

Please send resume by May 1, 2001 to:

Heidi L. Dunn
Ecological Specialists, Inc.
114 Algana Ct.
St. Peters, MO 63376
Fax: 636-447-4101; E-mail: Ecologists@aol.com

Submitted by Heidi L. Dunn

Contributed Articles

Dwarf Wedgemussel Survival Survey

Thomas P. Gloria, Ph.D.
Tufts Institute of the Environment
Tufts University
tgloria@mediaone.net

A joint investigation on the upper reach of the Connecticut River was conducted in August, 2000, for the Vermont Agency of Transportation (VAOT) and the New England Field Office of the USFWS. The purpose of the investigation was to assess the occurrence and survival of dwarf wedgemussels within the area of influence of a 150m riverbank stabilization project adjacent to US Route 2 in Lunenburg, Vermont. In June, 1997, SCUBA was employed to relocate all dwarf wedgemussels from the stabilization site. The relocation project resulted in the removal and relocation of 536 specimens (87 tagged) to a relocation site 100m upstream of the stabilization site.

The August, 2000, the search by SCUBA was extensive and resulted in finding 4382 dwarf wedgemussels (23 tagged). There was no significant evidence of mortality and the relocation project was determined successful in mitigating the destruction of a substantial population of dwarf wedgemussels. In addition to the area of investigation, a reconnaissance survey was conducted in the adjacent upstream area. This survey involved traversing 600m upstream of the relocation area, mid river, and far shore area of the stabilization bank (New Hampshire side of the Connecticut River). With the exception of mid river areas, dwarf wedgemussels were found to be present in all areas investigated. In particular, mussels were found in abundance 150m upstream from the relocation area (greater than 20 specimens/m2). Moreover, mussels were found in moderate population densities (2 specimens/m2) within the entire 600m by 5m vegetation area of the New Hampshire shoreline. Based on the collective counts obtained within the survey area, the estimated counts of the reconnaissance survey, and extrapolation of subsurface mussels relative to observed mussels, it is estimated that this contiguous subpopulation of dwarf wedgemussels is in excess of 50,000 specimens.
Submitted by Thomas Gloria

Spiny Mussel Found in the Dan River (Roanoke River Basin) North Carolina.

Timothy W. Savidge and Michael G. Wood.
North Carolina Department of Transportation Project Development & Environmental Analysis Branch, 1548 Mail Service Center Raleigh, NC 27699-1548. (919) 733-3141.
Tsavidge@dot.state.nc.us

On October 03, 2000 a spiny mussel was found in the Dan River (Roanoke River Basin) in Stokes County North Carolina. Aquatic species surveys were conducted for the North Carolina Department of Transportation's (NCDOT) plans to replace a number of bridges along the river. Tim Savidge and Michael Wood from NCDOT, John Cecil from the NC Wildlife Resources Commission (WRC) and Fritz Rohde from the NC Division of Marine Fisheries surveyed a six-mile river reach. Despite very poor survey conditions, Michael Wood discovered one individual spiny mussel.

Subsequent surveys by NCDOT, WRC and US Fish and Wildlife Service (FWS) personnel have since been conducted. A total of 15 individuals ranging from 23.45 mm to 74.0 mm have been found at six sampling stations within this six-mile reach. The number of spines range from 0 to 5. The mussel found in the Dan River has shell characteristics similar to the

James River spinymussel (*Pleurobema collina*) and the Tar River spinymussel (*Elliptio steinstansanna)*. Two specimens have been collected for genetic analysis. Other mussel species found in this reach include *Elliptio complanata*, *Elliptio angustata* (?) and *Villosa constricta*. The green floater (*Lasmigona subviridis*) has also been found further downstream.

The bridge replacement projects have been delayed and are being redesigned to address concerns for the mussel. Further survey work is needed to determine the range of this species within the Roanoke River Basin. This work will continue in the upcoming year and will be a cooperative effort by NCDOT, WRC and FWS.
Submitted by Tim Savidge

Are Unionids Capable of Reproduction in Upper Mississippi River Areas with Large *Dreissena polymorpha* (Pallas 1771) Populations?

Marian E. Havlik, [havlikme@aol.com]
Malacological Consultants
1603 Mississippi Street
La Crosse, WI 54601-4969 USA

The results of a cursory study are described to stimulate further discussion, field and lab work, on the possibility of interference with unionoid reproduction in the presence *of D. polymorpha*. More research must be done, or, for reasons that apparently have barely been considered, we risk losing even more of our unionid fauna. On 23 September 1999, I did qualitative survey work between Mississippi River Mile 632.2-636.0, near Prairie du Chien, WI. Sites included 1) Hunters Slough, downstream of, and parallel to the East Channel of the Mississippi River, Prairie du Chien; 2 & 3) two East Channel sites downstream of an area heavily impacted by a commercial harbor, and thus by *D. polymorpha*, Prairie du Chien; and 4) Mississippi River main channel border, N of Marquette, IA, 30 m downstream of a barge fleeting area. Hunters Slough was sampled extensively for the Shell Exporters of America, July 1997. Since age and growth were the emphasis of that study, (few fresh-dead unionoids, no smothering effect seen), almost none of the unionids were checked for gravidity. The July 1997 target species would not have shown evidence of gravidity, although a few *M. nervosa* aborted in September, 1997. In some areas commercial clammers reported *Megalonaias nervosa* (Rafinesque 1820) gills "loaded with eggs."

In September 1999, 4 female *Lampsilis higginsi* (Lea 1857), and ~20 female *L. cardium* Rafinesque 1820, were visually inspected for gravidity. None of these females appeared to have eggs in their gills. I don't ever remember seeing a Mississippi River lampsiline without eggs, in late summer. Although not sexually dimorphic, none of the 20+ *M. nervosa* examined appeared to have eggs in their gills. If there had been eggs in the gills, we could not have easily determined if fertilization had occurred. But, if there is no evidence of eggs, there can be little or no possibility for reproduction.
Are we beginning to see a "concentration camp effect"? Apparently some Mississippi River mussels get enough food to survive, but not enough to produce gametes. This raises serious, and apparently unresolved, questions. Are the large numbers of dead and live *D. polymorpha* preventing unionids from obtaining enough food support gametogenesis? Are males producing sperm? If males cannot produce sperm in areas heavily impacted by either large numbers of live *D. polymorpha*, and/or 2-5 cm layers of mostly dead *D. polymorpha*, then, even if females are producing eggs, the eggs may not be fertilized. Commercial clammers could help by providing animal tissue taken during times when commercial species should be producing gametes. The level of food necessary to enable gamete production in male and female unionoids, must be determined.
Submitted by Marian Havlik

Winged mapleleaf glochidial metamorphosis on channel catfish verified

Mark Hove[1], Jill Medland[2], Pat Cliff[1], Matt Haas[1], Bob Whaley[2], Jeff Woods[2], and Anne Kapuscinski[1]

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Last year we recovered two juvenile mussels from a channel catfish infested in the laboratory with winged mapleleaf glochidia (Hove *et al*. 2000). This fish was collected from the same reach of St. Croix River where federally endangered winged mapleleaf (*Quadrula fragosa* (Conrad, 1835)) are still found. We probably would have recovered additional juveniles if the catfish hadn't died at the initiation of the juvenile excystment period. This year we wanted to determine if additional juvenile winged mapleleaf could be recovered from artificially infested channel catfish. Unlike most Amblemines, which brood glochidia during spring and summer, winged mapleleaf brood glochidia during a relatively short period in September and October (Heath *et al*. 1999). A brooding winged mapleleaf collected in late September 2000 released glochidia that were used in host suitability tests. Trials were conducted using standard protocol (Neves *et al*. 1985) at water temperature 11±1 ˚C.

Thirty-four fish species (eight families) were tested. Results from some of the tests are described in Table 1. Ictalurid species showed variable results. Glochidia were quickly sloughed by tadpole madtoms, doubled in size while attached to yellow and black bullheads (Figure 1), and quadrupled in size and metamorphosed into juveniles while attached to channel catfish (Table 2). For the last two months we have been collecting pre-metamorphosed winged mapleleaf juveniles. During the last three weeks the number of juveniles we have recovered has grown. To date we have collected 18

juveniles and we anticipate collecting more in the coming weeks.

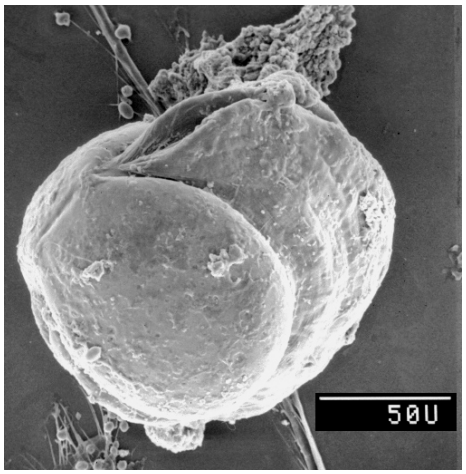

Figure 1. Winged mapleleaf glochidium exhibiting growth.

Table 1. Glochidial transformation not observed.

Species	Number tested	Encystment period (d)
slender madtom	1	66-70
yellow bullhead	19	77-84
black bullhead	17	112-120
tadpole madtom	16	1-6
mimic shiner	10	1-4
blackside darter	24	4-7
central mudminnow	1	6-15
brook stickleback	3	15-21
largemouth bass	13	6-15
lake sturgeon	1	1-6

Table 2. Glochidial transformation observed.

Species	Number tested	Juvenile collection period (d)
channel catfish	12	139-170+

Last fall we attempted to collect fishes naturally infested with winged mapleleaf glochidia from the St. Croix River. Unfortunately, ice formed over the river earlier than we had anticipated. During late March - early April 2001 we will attempt to collect naturally infested catfish from the St. Croix River with assistance from the Minnesota Dept. of Natural Resources. Collected fish will be transported to the University of Minnesota's Wet Laboratory to determine if mussel species infest fishes during the winter.

Several organizations were instrumental in completing this project. We thank Lynn Lee, Upper Midwest Environmental Science Center, for providing the channel catfish that facilitated metamorphosis of winged mapleleaf glochidia this year. Funding was provided by the National Park Service, St. Croix National Scenic Riverway, and University of Minnesota. Roger Hugill, Minnesota Department of Natural Resources, is coordinating electrofishing activities planned for this spring.

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Submitted by Mark Hove

Release of endangered juvenile mussels in Tennessee and Virginia in 1998-2000

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Tennessee Wildlife Resources Agency has committed funds to continue another 5 year project to produce, culture, and release juvenile mussels of numerous endangered species into rivers of eastern Tennessee. The goal of this project is to augment natural reproduction in current populations, expand current ranges, and eventually to release juvenile mussels into historic habitats to restore extirpated populations. After years of research to identify host fishes, produce the juveniles in laboratory tanks, and culture them for several weeks, the propagation facility at Virginia Tech can now proceed with larger scale production of endangered juvenile mussels to expedite recovery of populations. We hope to focus on critically endangered species in the next few years before they become functionally extinct.

In 1998-2000, a total of over 245,000 endangered juvenile mussels of 9 species were released into the Clinch, Powell and Hiwassee Rivers, TN. The following table is a summary of our juvenile production results for the last 3 years:

Mussel Species	Release Site	Number Released	Age (weeks)
fanshell (*Cyprogenia stegaria*)	Clinch River	7,992	1-4
dromedary (*Dromus dromas*)	Clinch River	851	1-3
combshell	Clinch River	12,701	1-2
(*Epioblasma brevidens*)	Powell River	12,369	1-2
oyster mussel	Clinch River	72,646	1-2
(*Epioblasma capsaeformis*)	Powell River	120,475	1-2
tan riffleshell	Hiwassee River	7,312	1
(*Epioblasma f. walkeri*)	Indian Creek, VA	2,113	1-11
snuffbox*	Clinch River	2,146	1-2
(*Epioblasma triquetra*)	Powell River	1,970	
purple bean	Clinch River	138	1-2
(*Villosa perpurpurea*)	Indian Creek, VA	4,910	1-2
birdwing pearlymussel (*Lemiox rimosus*)	Clinch River	44	4-6
cracking pearlymussel (*Hemistena lata*)	Clinch River	5	1-2
Total juveniles released		245,672	

*TN and VA state endangered

Submitted by Jess Jones

Determination of Basic Reproductive Characteristics of the Winged Mapleleaf Mussel (*Quadrula fragosa*) Relevant to Recovery. Job 1: Determination of Gravidity Period

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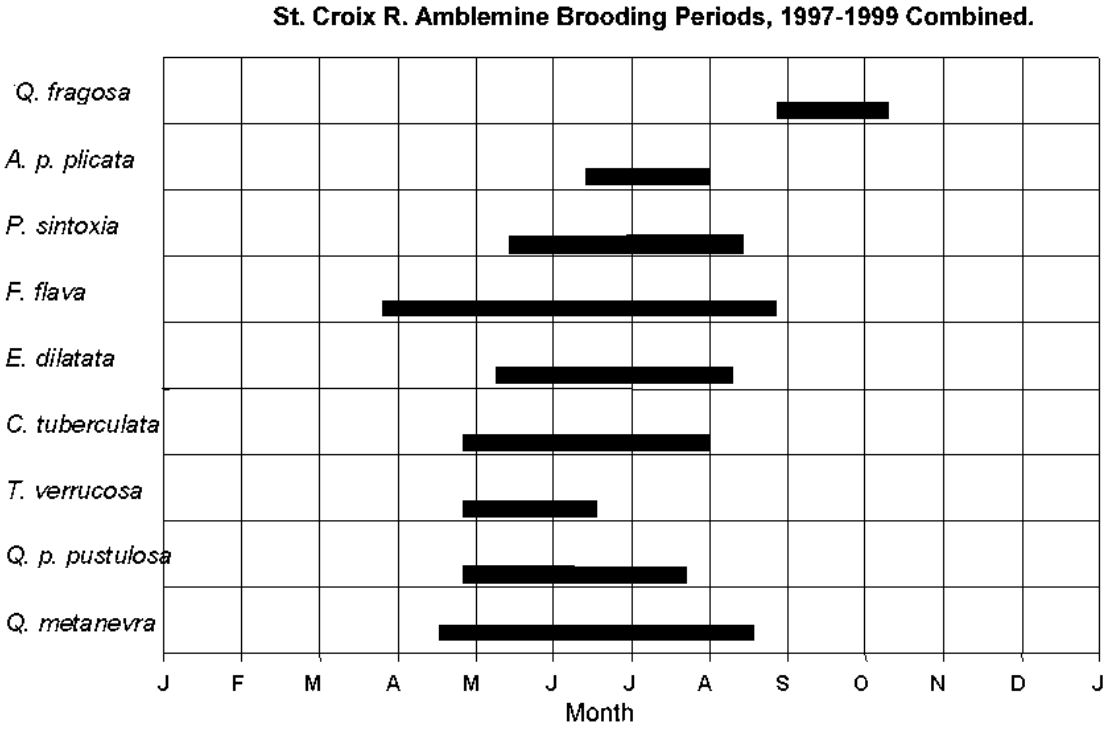
The purpose of the investigation was to determine the brooding period of the federally endangered freshwater mussel Quadrula fragosa (Conrad, 1835) in the St. Croix River, Minnesota and Wisconsin. Approximately every two weeks, we examined the brooding condition of ten amblemine species during the open-water seasons of 1997-1999.

Four temporal subsets of brooders were found. The first, very early brooders, included *Q. metanevra*, *Q. p. pustulosa*, *T. verrucosa* and *C. tuberculata*. These brooded from April 21 to July 29. The early subset, which included *E. dilatata*, *F. flava* and *P. sintoxia*, brooded from May 4 to Aug. 26. The mid-season subset included a single species: *Amblema p. plicata*. It brooded from June 10 to Aug. 5; about half as long as the previous two subsets. The final subset, late season brooder, included only one species: *Q. fragosa*. It had a very short 5.8-week brooding period extending from Aug. 31 to Oct. 11. Brooding duration was less than 75% of other species. Brooding periods for all species from all four subsets overlapped except for *Q. fragosa* (Figure). This species had a distinct, late and

short brooding period that did not overlap with any other amblemine. Its brooding period did not overlap with brooding period literature records of the closely related *Q. quadrula* suggesting species goodness.

The frequency of brooding during the brooding period of *Q. fragosa* was correlated with water temperatures. Growth rates were also examined.



Submitted by Dave Heath

Creeper glochidia appear to be host generalists

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The creeper (*Strophitus undulatus* (Say, 1817)) has a relatively broad distribution in North America extending from south central and eastern United States north to central and eastern Canada (Williams *et al*. 1993). Although the species is relatively widespread in Minnesota we have rarely seen it locally abundant. The species is recorded as somewhat vulnerable to extirpation in West Virginia, threatened in Iowa and North Carolina, and extremely rare in Delaware.

Creeper host suitability trials were conducted this winter at the University of Minnesota, Wet Laboratory. Methods for host suitability tests followed standard methods. Thirty of thirty-four fish species exposed to creeper glochidia facilitated glochidia transformation (Table 1). Those species that did not facilitate metamorphose include: goldfish (n=1), hornyhead chub (6), stonecat (1), and tadpole madtom (11). We tried twice and failed to infest freshwater scuds (*Gammarus* sp.) with glochidia. Also, we placed 584 glochidia in a water-filled beaker with aeration to determine if glochidia would transform without a host. After 32 d none of the glochidia had transformed and none of the soft parts remained within any of the valves. Average glochidial transformation rates ranged from 15 to 23 days, with a minimum of 10 days and maximum of 29 days. Assuming equal juvenile production rates among test fishes, logperch produced 71.5 juveniles per fish, or 10 to 140 times more juveniles per fish than other host species. Yellow bullhead produced the fewest number of individuals per fish with 0.2.

Table 1. Suitable host species for creeper glochidia.

Species*	No. of individuals inoculated	No. of survivors	Juvenile recovery period (d)	No. of juveniles recovered
black bullhead	6	5	12-19	4
black crappie I	2	2	15-25	13
black crappie II	3	3	12-18	16
blacknose dace	1	0	17-32	6
blackside darter	8	7	9-23	30
bluegill	6	6	9-21	33
bluntnose minnow	6	3	14-17	1
brook stickleback	12	7	12-26	37
burbot	2	2	14-18	1
central mudminnow	1	1	14-29	4
channel catfish I	1	1	9-16	3
channel catfish II	3	2	14-23	37
common shiner	6	6	14-27	8
creek chub	1	1	17-20	1
fantail darter	7	4	9-21	59
fathead minnow**	8	0	7-17	9
green sunfish	7	6	9-24	18
Iowa darter	3	3	14-26	12
Johnny darter	8	6	14-26	7
largemouth bass	4	4	9-18	11
logperch	2	2	9-23	143
longnose dace	1	1	13-25	47
northern redbelly dace	3	2	10-15	13
pumpkinseed	2	2	12-20	15
rainbow darter	9	7	14-29	11
slenderhead darter	2	2	9-18	53
smallmouth bass	6	6	9-21	25
spotfin shiner	4	2	10-22	34
spottail shiner	4	1	20-26	6
stoneroller	1	1	17-27	2
yellow bullhead	17	17	12-22	4
yellow perch	10	9	9-20	33

* Nomenclature follows Robins *et al.* 1991

** Incomplete study

Creeper glochidia utilize a diverse group of host fishes. Thirty of the thirty-five species (86%) exposed to creeper glochidia in this study facilitated metamorphosis. These results suggest that a greater range of fish species may serve as glochidial hosts. Perhaps other faunal groups could serve as hosts for this species. Although glochidia did not attach to scuds in our study, insects and amphibians with external gills would be interesting candidates for future host suitability trials. Additionally, future host suitability tests could include infesting the gills of a brooding creeper or other mussel species.

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Submitted by Mark Hove

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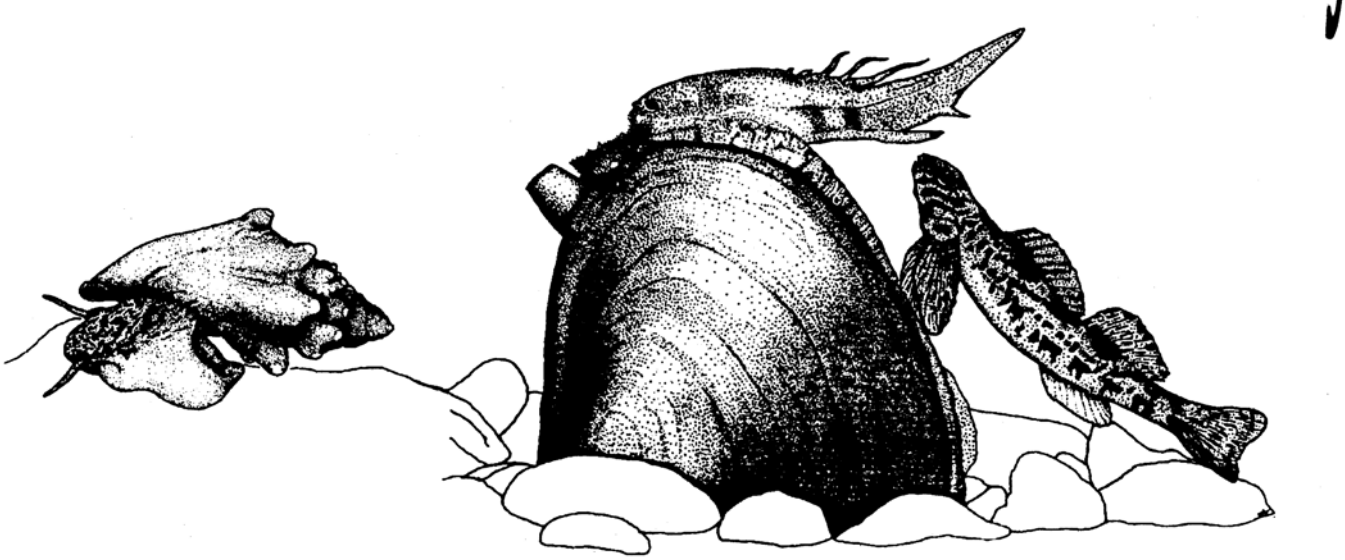

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