

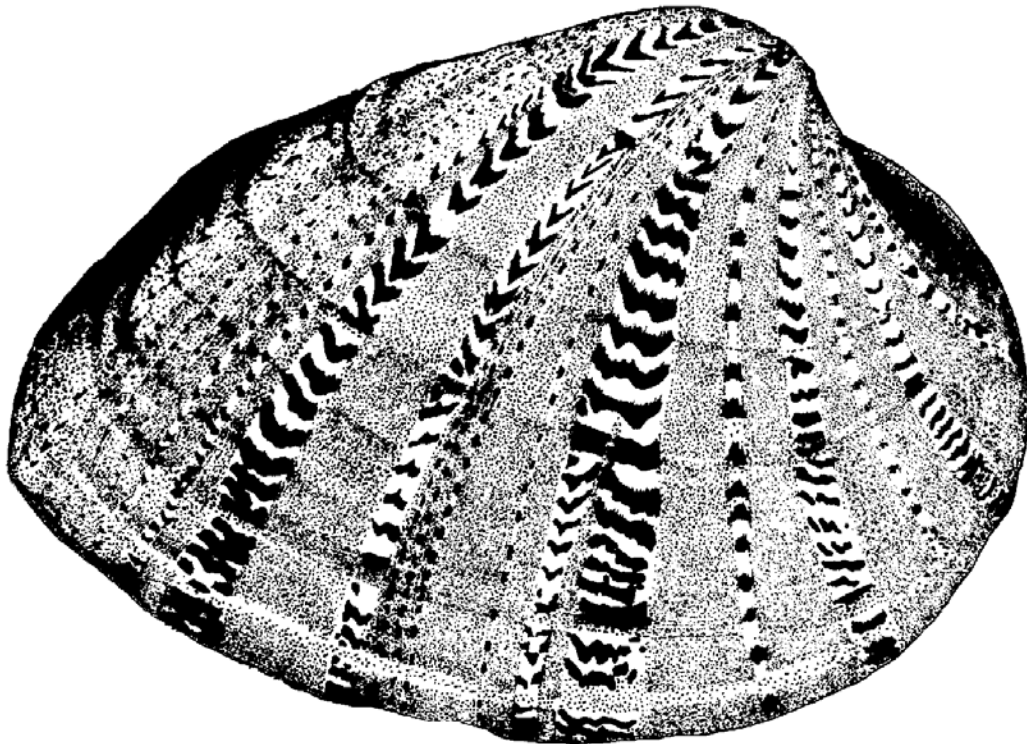
# *Ellipsaria*

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The Newsletter of the Freshwater Mollusk Conservation Society

Volume 8 - Number 1

April 2006



*In this issue:*

**March Board & Business meetings  
Nominations for Treasurer**

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Submissions for the August 2006 issue of *Ellipsaria* may be sent to the editor at any time but are due by **July 14, 2006**. Anyone may submit an article but you must be a member of FMCS to receive *Ellipsaria*. Please limit submissions to about one page. Categories for contributions include news, new publications, meeting announcements, current issues affecting mollusks, job postings, contributed articles (including ongoing research projects), abstracts, and society committee reports. Electronic submissions are preferred; contact the editor with any questions. Note that submissions are not peer reviewed, but are checked for content and general editing.

Thanks to Jeremy Tiemann for help assembling and mailing this newsletter.

Please send change of address information to the Secretary, Patty Morrison.

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# Ellipsaria

## NEWSLETTER OF THE FRESHWATER MOLLUSK CONSERVATION SOCIETY

Volume 8, No. 1

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

April 2006

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### President's Message

The Freshwater Mollusk Conservation Society is growing and, as expected, undergoing some changes. A number of local freshwater mollusk conservation groups have expressed interest in being recognized as Chapters of FMCS, much like chapters in the American Fisheries Society and the Society of Environmental Toxicology and Chemistry. The potential benefits of forming chapters are great for both FMCS and the chapters, but the relationship is complex. We are looking for members to exam this issue more fully, and draft an amendment to the by-laws that would describe how FMCS and local chapters would function.

A second change has arisen from ongoing and increasing interest in genetics as they relate to conservation of freshwater mussels and gastropods. The Propagation Committee has formed a subgroup to consider the conservation implications of such issues as moving populations of mollusks to new habitats, conducting re-introduction and population augmentation projects, and identifying genetic stocks that are critical for a species survival in particular river reaches. Establishing this subgroup as a full committee will be voted on by the membership at the next Symposium in Little Rock, Arkansas in March 2007.

FMCS has accomplished so much in the last eight years but as we all know, the challenges to the resource continue to grow. To help manage the growth of the Society and to evaluate the direction future conservation efforts, the Board has asked that the *National Strategy for the Conservation of Native Freshwater Mussels* be revised. The original 1999 publication has been a guiding document for the Society since its inception. It is clear that some of the objectives of the *National Strategy* have been met, some are obsolete, and new issues have arisen. An *ad hoc* committee has been formed to re-draft the *National Strategy* with Rachel Muir as chair. All of the standing Committees, and I hope most of the membership, will have a role to play in developing a new *National Strategy*. As part of this effort, the Board asked the Status and Distribution Committee to develop an updated conservation status review of Northern American freshwater mussels. The original status review paper, published in 1993, has been instrumental in focusing public attention on the critical conservation status of freshwater mussels as a group. Status trends since 1993 will provide a basis for evaluating overall conservation success and will be a powerful outreach tool and help develop the most effective conservation strategies.

It seems everybody from private industry to NGOs to government is being asked to do more without additional funds or personnel. Those professional obligations limit how much time members have to contribute to the Society. As you can see in the meeting minutes, several committee chairs have asked to step down so that they can address their personal obligations. When the Society's by-laws were drafted, it was emphasized that a turnover of board members is necessary, and that "new blood" will keep FMCS growing. The new committee chairs will soon be in place and, like all the committee leaders, they will need your help. I hope that you will step up and offer your assistance and expertise to help complete committee projects. I also ask that all of the chairs call upon the members of their committee for assistance. There are so many challenges to conservation of freshwater mollusks and, with limited resources and time, it is only through sharing the workload that we can continue to grow and continue the many successes the Society has made.

Bob Anderson, FMCS President

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## *FMCS Reports*

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### **2006 FMCS Workshop a Rousing Success!**

The 2006 FMCS Workshop on Propagation and Captive Care of Freshwater Mollusks was a success. Nearly 110 participants attended the 2.5 day workshop hosted by the Columbus Zoo & Aquarium. Speakers addressed topics such as diseases, parasites, food, assessing health, building a facility, and water quality, just to name a few. The infusion of non-mussel heads (such as veterinarians, aquaculturists, and parasitologists) greatly increased the scope of the meeting. The weather cooperated, aside from the rain, snow, and ice. We would like to thank all of the speakers for their time and talents, the Zoo and OSU staff for their organizational skills, and our FMCS committees and Board for their help.

*Submitted by Tom Watters*

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### **FMCS Board Meeting Minutes**

FMCS Board Meeting

March 5, 2006

Columbus Zoo Mussel Conservation and Research Center,  
Columbus, OH

A quorum is present for the official meeting of the Board of Directors of FMCS.

Secretary's Report – Minutes of the November 2005 Board meeting were published in *Ellipsaria*.

Treasurer's Report – Total society assets: \$51,963.82. It appears we lost approx. \$6500 on the 2005 Symposium. Receipts for 2006 memberships and 2006 workshop registrations are not yet in the system. We need to announce nominations for the Treasurer position, as Heidi's term expires this year. Heidi Dunn would consider continuing if we could hire a part time bookkeeper or student to help with data entry, filing tax forms, preparing annual state paperwork. Heidi will investigate the potential for local accounting services to assist her and get a cost estimate. She also suggested we standardize fees for FMCS workshops.

#### Committee Reports

Awards – Greg Cope will work with Al Christian on the awards for the next Symposium in 2007 in Little Rock, AR. We need more nominations from the FMCS membership for the Professional Awards—see the FMCS web site for descriptions and instructions.

Propagation, Restoration and Introductions – Status of the proposed Genetics Committee, which at the present time will

share a co-chairmanship with Jess Jones on this committee. Dave Berg is interested and would do a good job as interim co-chair. They may begin work on "best practices" guidelines, priorities and goals from a genetics perspective, recommendations to agencies interested in captive breeding. Plan to offer a by-law amendment for a membership vote at the 2007 Symposium to establish a Genetics Committee.

Symposium 2007 – To be held in Little Rock, AR at the Peabody Hotel, Sunday, March 11 through Thursday March 15, 2007. A one-day workshop on Habitat Restoration on Monday (with separate registration) will precede the symposium. The suggested theme is "*Directions in Mollusk Conservation: Molecules to Ecosystems.*" Motion by Greg, second by Heidi to approve the theme and expenditure of start up monies. All in favor. We may be able to publish the plenary talks in *Walkerana* by that time.

Information Exchange – *Walkerana*. Kevin Cummings will travel to Ann Arbor this spring to effect a smooth transfer of files and subscription information from Dr. Burch. Chris Mayer is the official co-chair of this committee. Once we take over the publication, the Society dues will increase to \$60.00 per year to help cover costs of member services.

Environmental Quality and Affairs – Al Buchanan has resigned as co-chair of this committee. We need a new co-chair for this committee with Dick Biggins. No other report.

Mussel Status and Distribution - Kevin Roe has resigned as chair of this committee. We need 2 co-chairs for this committee. No other report given.

Gastropod Status and Distribution – Paul Johnson indicated nothing to report.

Guidelines and Techniques – Motion by Heidi, second by Greg to appoint Janet Clayton as the co-chair of this committee with John Van Hassel. All in favor. No other report.

Outreach – Kurt Welke and Janet Butler have resigned as co-chairs of this committee. We need 2 co-chairs.

Nominations Committee – We will need nominations for Treasurer, and that will be announced at the upcoming Business Meeting and in *Ellipsaria*. The Board can approve interim committee chairs, but the full committees need to vote on their permanent chairs.

#### Old Business

FMCS chapters. We've received a letter from the Interior Highlands group asking to be recognized as a local chapter of FMCS. This is in addition to the request we got last fall from the Pacific Northwest group. This will be a recurring issue. Administratively, we would need to revise our by-laws and develop guidelines for the governance of chapters. We need an ad-hoc committee to study this and develop recommendations prior to the 2007 Symposium.

National Strategy – Rachel Muir gave a presentation and provided a handout on suggested steps needed to revise the National Strategy document. Perhaps our committee structure will reflect the organization of the strategy. We need to revisit the Williams et al., 1993 status publication. We could seek funding and use FMCS private funds as a match. Rachel Muir is appointed chair of an ad hoc committee to begin revision of the National Strategy, and is seeking others to help.

### New Business

Future Symposia and Workshops – 2008 Workshop, perhaps combine with SETAC. 2009 Symposium, possibly Baltimore (Philadelphia Academy hosting), St. Louis (Heidi Dunn and Al Buchanan will discuss), or Louisville (KY Fish and Wildlife Resources hosting). We need formal proposals from each potential host.

Scientific Diving group – Heidi brought forward a request from Nick Rowse of the USFWS in Bloomington, MN to establish a diving technical committee to share information on scientific diving techniques, safety issues, protocols, etc. This would be a good working group, possibly housed under the Techniques and Guidelines Committee.

Ecotoxicology book by SETAC – Two of our FMCS members (Jerry Farris and John Van Hassel) are co-editors of the new freshwater bivalve ecotoxicology book being published by SETAC, in which many FMCS members are contributing authors. We discussed contributing funding towards its publication, as we did for the Strayer and Smith book, and get a discount price for our membership. Motion by Greg, second by Kevin, to offer \$5000 to help offset publishing costs. All in favor.

Role of Past President – The by-laws identifies the Past President, who serves one year after his or her term as President, but doesn't make the position a voting member on the Board of Directors. Motion by Patty, second by Greg, to propose an amendment to the by-laws making the Past President a voting member on the Board of Directors. All in favor. It will be brought to the full membership to vote at the 2007 Symposium.

Cooperative Research Units – There are a number of Unit Leaders who will reach retirement soon, and many of these positions have been key focal points in promoting conservation of and research on freshwater mollusks. Some of these positions may not be replaced, as there may not be enough money to support all of them in the future. We need to maintain the malacological expertise in these institutions. Rachel Muir will draft a letter in support of the importance of maintaining this expertise, and Bob will sign it. It should go to the USFWS, USGS, and the State cooperators.

Motion to adjourn by Patty, second by Greg, all in favor.  
*Submitted by Patty Morrison, FMCS Secretary*

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## **FMCS Business Meeting Minutes**

FMCS Business Meeting

March 6, 2006

Columbus Zoo, Columbus, OH

The meeting was called to order by President Bob Anderson, and a quorum was declared present. Bob announced that nominations are needed for the position of Treasurer. Please send those nominations to Leroy Koch.

There are 2 proposed changes to the by-laws to be offered for consideration by the membership at the 2007 Symposium:

- (1) to establish a full committee on Genetics and;
- (2) to designate the Past President as a voting member of the Board of Directors.

A third item, to allow formation of local chapters of the FMCS was referred to study by an ad hoc committee to be appointed by President Anderson and will be reported on prior to the 2007 Symposium.

There are a number of possible ideas being floated for the 2009 symposium: St. Louis, Baltimore, Louisville.

We need chairs and co-chairs for several FMCS committees. Please get involved in the work of these committees:

- Environmental Quality and Affairs, one needed;
- Outreach, two needed;
- Mussel status and distribution, two needed;
- Genetics, one co-chair needed (after the 2007 Symposium, if committee formation is approved by the membership)

Bob appointed an ad hoc committee to study and propose revisions to the National Strategy document, chaired by Rachel Muir. Anyone interested should contact Rachel.

Bob thanked the local hosts and sponsors of the workshop, it is going great. Over 100 attended.

Greg Cope, co-chair of the Awards Committee, called for nominations for professional service awards and encouraged students to attend and present at the 2007 Symposium in Arkansas. The criteria for professional awards are on the Society website.

Meeting adjourned.

*Submitted by Patty Morrison, FMCS Secretary*

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## **Propagation and Restoration Committee: Stocking Database**

Discussion has arisen within the society regarding the need for a comprehensive and accurate record of freshwater mollusk stocking and stock monitoring. Members of the Propagation and Restoration Committee and the Society at large began responding to this need during the 2005 FMCS meeting in St. Paul. The group developed a plan to create an on-line relational database (FileMaker Pro) that Kevin Cummings has generously offered to host on an Illinois

Natural History Survey server. The database would be served in much the same way as the on-line Freshwater Mollusk Bibliography:

<http://ellipse.inhs.uiuc.edu:591/mollusk/default.html>

Below are fields we are considering including in the mollusk stocking and stocking monitoring data forms:

#### Mollusk stocking form fields

Record number	Permit number
Species stocked	Brood stock source
Number of animals stocked	Water body
Animal age	Watershed
Date	Continental drainage
Stocking location	State
Water body	County
Watershed	Nearest town
Continental drainage	Nearby landmark (e.g., bridge crossing)
State	UTM or lat./long.
County	Number of brooders contributing larvae
Nearest town	Propagation method (e.g., lab culture, cage culture, fish release)
Nearby landmark (e.g., bridge crossing)	For Unionidae →
UTM or lat./long.	Glochidia metamorphosis medium (e.g., fish, cell culture)
Number of brooders contributing larvae	Fish species
Coordinating organization	Number of fish
Contact person's name	Fish source
Email address	Link to reference document (e.g., report)
Phone number	Additional notes
Mailing address	

#### Stock monitoring form fields

Record number	Animal size (e.g., mean ± 1 s.d., range)
Species monitored	Number of animals
Number of animals monitored	Record number of original stocking record
Animal age	Record number(s) of monitoring record(s)
Date	Coordinating organization
Location	Contact person's name
Water body	Email address
Watershed	Phone number
Continental drainage	Reproduction evidence (e.g., brooding young)
State	Link to reference document (e.g., report)
County	Additional notes
Nearest town	
Nearby landmark (e.g., bridge crossing)	
UTM or lat./long.	

A record would be made for each species stocked or monitored, every location stocked, and on every day animals were stocked. We plan to grant public full access to the database except for the following site locality fields: Nearest town, Nearby landmark, UTM or Lat./Long., and Link to reference document. Access to these fields would be granted to those who receive a password from the Chair(s) of the Propagation and Restoration Committee or by calling the contact person.

We are still developing this idea and are requesting input. For example, we agreed with a recent suggestion for a central database coordinator to enter the data rather than the person sharing their records. We hope this will encourage people to share records. Please contact Mark Hove ([mark\\_hove@umn.edu](mailto:mark_hove@umn.edu)) or Julie Devers ([Julie\\_Devers@fws.gov](mailto:Julie_Devers@fws.gov)) if you have additional ideas or concerns regarding this effort.

Mark Hove and Julie Devers  
Mollusk Stocking Database Co-chairs

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## Jobs

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### EnviroScience, Inc. Positions for 2006

Send Resumes with a cover letter to:  
[gzimmerman@enviroscienceinc.com](mailto:gzimmerman@enviroscienceinc.com) (malacologist position)  
[humanresources@enviroscienceinc.com](mailto:humanresources@enviroscienceinc.com) (all other positions)  
 Human Resources, EnviroScience, Inc.,  
 3781 Darrow Rd., Stow, OH 44224  
 Phone: 330.688.0111 (Stow)  
 Phone: 614.855.8711 (Columbus)  
 Fax: 330.688.3858

#### EnviroScience, Inc. – About Us

Located in Stow, Ohio, and now Columbus, Ohio, EnviroScience is a group of environmental scientists specializing in providing ecological services throughout the United States. Learn more at: [www.enviroscienceinc.com](http://www.enviroscienceinc.com)

EnviroScience is in the process of opening a new office in Columbus, Ohio. The office will be the new base of EnviroScience freshwater mussel services and will conduct regional biological surveys including aquatic surveys, streams and wetlands, and terrestrial surveys. Projects will include natural resource inventories, freshwater mussel surveys and consulting, stream restoration, water quality assessments, wetland delineations, and environmental permitting. Resumes are currently being accepted for the following positions:

**Full Time Malacologist:** We are seeking a full time malacologist to assist EnviroScience's senior malacologist in management of freshwater mussel projects throughout the Midwest and Northeast. This position will involve a full

range of tasks including managing field teams, taxonomic expertise, assisting clients with natural resource consultations, report writing, and office management. Strong communication skills, boat handling experience, scuba or diving experience and experience working independently are preferred. This position will include periods of overnight and extended travel and some tasks will require strenuous field work. This position is full time with benefits including health and dental, 401K plan, profit sharing, attendance to professional meetings, and many other benefits. Salary will be negotiated based on experience and education level. **Qualifications:** A minimum of an undergraduate degree in biology or related field with 1 year of professional experience or a masters degree with 2 years of academic experience are required. The ideal candidate will have a master's degree and 2 years or more of professional experience. Position deadline is April 30<sup>th</sup>, 2006.

**Dive Supervisor:** We are seeking a full time Dive Supervisor to expand and enhance EnviroScience's biological survey diving program. Presently we only use scuba and do not employ any ADC divers; however, we do work extensively with a number of ADC subcontractors. The position will involve developing surface supplied air (hardhat, bandmask, XO, etc.) and scuba projects throughout the Midwest and Northeast. This position will involve a full range of tasks including diving system design and management, equipment maintenance, record keeping, development and implementation of diving SOPs, diving, and dive personnel management. Strong communication skills, boat handling experience, and a minimum of 2 years of professional experience are preferred. This position will include periods of overnight and extended travel during the summer months, and some tasks will require strenuous field work. This position is full time with benefits including interesting and safe work environments, health and dental, 401K plan, profit sharing, attendance to professional meetings, and many others. Salary will be negotiated based on experience and certifications, but starts at 30K. **Qualifications:** A minimum of 2 years or more of professional experience in the commercial dive industry, and ADC card. Experience with Army Corps diving guidelines strongly preferred. Position deadline is April 30<sup>th</sup>, 2006.

**Seasonal Employee Positions:** Seasonal employees will assist the EnviroScience biologists with data collection and interpretation and will be assigned tasks that best match their skills with learning opportunities. Interns must work well with others, enjoy working outdoors, and be willing to travel with overnight stays for up to five days at a time. Pay is based on experience and non-exempt employees do receive overtime for 40+ hours. **Qualifications:** Applicants must have, or currently be working on, a degree in biology, conservation, or related fields. These tasks will often require strenuous field work. Desirable experience includes the ability to handle boats, snorkel, have SCUBA certification, GPS/GIS experience, and/or taxonomic skills of plants, fish, mussels, and benthic macroinvertebrates. The positions are considered seasonal, usually starting in May and continuing through the duration of the field season or until prior

obligation is completed. Many of our seasonal employees have been rehired at full time status following the completion of their degrees. Position deadline is April 30<sup>th</sup>, 2006.

EnviroScience, Inc. is an equal opportunity employer and a drug free workplace.

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## Chicago Academy of Sciences – Malacologist

Position title: Malacologist/Assistant Collections Manager

Reports to: Collections Manager

Department: Biology

Date: March 27, 2006

The Chicago Academy of Sciences was founded in 1857 as Chicago's first museum, dedicated to the preservation and display of native specimens. Today the Academy's collection, due to its age and type, is among the most important in the world. In 1999, the Academy opened the Peggy Notebaert Nature Museum in Lincoln Park. It has welcomed more than 1,000,000 visitors and is a unique venue for the public, especially urban dwellers, to find new ways to reconnect with the natural world. The Museum provides award-winning exhibits and programs to 65,000 students annually and trains and provides resources for more than 2,000 Chicago teachers. The Nature Museum is one of the city's best examples of eco-friendly building technology. The Academy and its Museum are engaged in important conservation and research work, such as its Butterfly Restoration Project.

**Summary of Position:** The Chicago Academy of Sciences, Notebaert Nature Museum seeks an independently motivated person to work full-time in the historically important malacology collection, initiate a malacology-based biological conservation program, and assist with the care of other divisions in the Academy's collections.

The Academy's malacology collection was largely amassed from the mid 1800's to the mid 1900's by scientists including Robert Kennicott and Frank C. Baker. All aspects of collections care and use are overseen by the Collections Manager, within the Department of Biology. The majority of work takes place at an off-site collections storage facility and utilizes a corps of dedicated volunteers.

**Principle Duties and Responsibilities:**

- Creates and implements a curatorial plan for the care and curation of the malacology collection.
- Relocates malacology specimens to upgraded storage conditions.
- Oversees the accurate entry of specimen information into computer database.
- Updates and verifies nomenclature of malacology specimens.
- Develops and implements a field-oriented program for conservation of Illinois mollusks.
- Assists the Collections Manager in caring for the other scientific collections and contribute to a variety of other

projects such as exhibit development, collections tours, and pest management.

- Works closely with the Development department to prepare grant applications for support of malacology projects.
- Manages a corps of dedicated volunteer assistants.

#### Qualifications:

- Minimum of a Master of Science degree in a biological field with two years of practical malacology experience.
- Demonstrated ability to identify North American freshwater mollusca.
- Proven ability to conduct ecological research.
- Experience with databases and databasing software
- Demonstrated ability to communicate with a wide range of audiences through both oral and written communications.
- Willingness to manage volunteers.
- Ability to work independently in an offsite location with 32-inch aisles.
- Ability to lift 50 pounds.
- Valid driver's license.
- Preference will be given to individuals who also have museum experience.
- A demonstrated commitment to nature, conservation, and community involvement.

Salary Range: Competitive based on experience and qualifications.

Please forward resume, cover letter, and three letters of recommendation to:

Steve Sullivan, Collections Manager  
Chicago Academy of Sciences, Notebaert Nature Museum  
2430 North Cannon Drive  
Chicago, IL 60614

Or email: [ssullivan@naturemuseum.org](mailto:ssullivan@naturemuseum.org)

No phone calls, please.

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## *Publications*

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**Hanlon, S. D. and R. J. Neves.** 2006. Seasonal growth and mortality of juveniles of *Lampsilis fasciola* (Bivalvia: Unionidae) released to a hatchery raceway. *American Malacological Bulletin* 21:45-49.

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### **Photo Field Guide to the Freshwater Mussels of Ontario**

"The St. Thomas Field Naturalists are pleased to announce the release of the *Photo Field Guide to the Freshwater Mussels of Ontario* by Janice Metcalfe-Smith, Alistair MacKenzie, Ian Carmichael, and Daryl McGoldrick. This ID guide is packed with high quality colour images, live specimen photos, life history, conservation information, and much more. The guide retails for \$10.00 CAD + S&H.

A perfect addition to your library if you are a biologist, ecological consultant, naturalist, or teacher."

#### Ordering information:

St. Thomas Field Naturalists Incorporated  
P.O. Box 23009  
St. Thomas, Ontario N5R 6A3  
519-773-8768 or 519-633-4235

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## *Contributed Articles*

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### **A Survey of the Freshwater Snails of the Prairie Coteau Ecoregion of South Dakota**

Bruce J. Stephen  
Southeast Community College  
Lincoln, NE

The initial phase of a survey of the aquatic snails of South Dakota was conducted in the Prairie Pothole region of northeastern South Dakota in the spring and fall of 2005. This survey concentrated on the ecoregion designated Prairie Coteau by the Environmental Protection Agency (EPA, 2005). This region has no network of streams for drainage and a high concentration of lakes and wetlands. Generally the wetlands are alkaline and thus are categorized as fens. The freshwater gastropod fauna of South Dakota have not been well studied and little is known about the diversity and distribution of these snails. Thus the aim of this study is to provide baseline data of freshwater snail distribution within the state. A secondary goal is to establish whether any exotic freshwater snails are present in South Dakota.

Snails were collected from shallow water areas of 33 aquatic habitats by hand and dip net. Live specimens and shells were collected. Shells were housed in jars while live specimens were preserved in 95% ethanol before storage. Several physical and chemical analyses were performed for each water body sampled: Calcium, pH, water body size, bottom substrate and shallow water vegetation. Overall snail density was estimated using a single one-meter quadrate.

Calcium (as CaCO<sub>3</sub>) ranged from 65-200 mg/L. The range of pH values was 7.1-9.0. Common shallow water vegetation were cattails and grasses. Most of the wetlands (22 of 33) had organic matter as bottom substrate. Water bodies ranged in size from small roadside ditches less than 0.01 ha to large lakes. Six of the wetlands were determined to be temporary (completely dry when visited in the fall).

Live snails were found at 30 of the 33 sites with shells or subfossils providing evidence of snail habitation in the remaining three sites. Ten species of pulmonate snails in three families were discovered and collected for a total of



110 records. Table 1 lists the number of sites at which each species was found.

Table 1. A list of the ten species of snail found in the northeast South Dakota Prairie Coteau region and the number of sample sites where each species was found.

Species	Number of Sites found (33 total)
<i>Lymnaea stagnalis</i>	5
<i>Stagnicola elodes</i>	26
<i>Stagnicola caperata</i>	5
<i>Fossaria obrussa</i>	3
<i>Aplexa elongata</i>	9
<i>Physa gyrina</i>	25
<i>Physa acuta</i>	3
<i>Helisoma trivolvis</i>	16
<i>Gyraulus deflectus</i>	10
<i>Promenetus exacuus</i>	8

The most successful snails species found in this survey were *Stagnicola elodes* and *Physa gyrina*. These species were found at most sites visited (78% and 75% respectively) and both were present at permanent and temporary wetlands. These two species also were the primary contributors to high overall snail density. Snail density at four sites was over 100 per square meter. The two most diverse sites as far as species richness had 6 species each. Five other sites had 5 species each. In addition, there were five sites where only 1 species was found. Species richness was significantly greater when the substrate was organic compared to sand or small stone using ANOVA. Wetlands with organic substrate were also the most densely populated. The four sites with greater than 100 snails per square meter all had organic substrate. *Stagnicola caperata* and *Aplexa elongata* were more commonly found in temporary wetlands. The two least common species *P. acuta* and *F. obrussa* were only found in larger permanent lakes.

The exotic New Zealand Mud Snail *Potomopyrgus antipodarum* has recently spread into the adjacent states of Montana and Wyoming (MSU, 2005) and thus is expected to soon be an invader into South Dakota. These snails were not discovered in the present survey.

It is unlikely that this survey caught the extent of the diversity of aquatic snails within the region. The Prairie Coteau has thousands of distinct wetlands and thus this survey covered a tiny percentage of the available habitat. In an attempt to speculate on how many species will be found in the entire state of South Dakota, the available nationwide data (Burch & Tottenham, 1980) and some data from the adjacent states of North Dakota (Cvancara, 1983) and Minnesota (Laursen et al. 1992) were consulted. These resources collectively present at least twenty additional species that may be found throughout the state.

#### Literature Cited

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#### Acknowledgements

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## Preliminary Report on the Effects of the 2005 Pool 5, Mississippi River Drawdown on Shallow-water Native Mussels. WDNR, MNDNR, USACoE.

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During the summer of 2005, Navigation Pool 5 of the upper Mississippi River was draw down to encourage macrophyte growth. During this drawdown, we investigated the effects of lowered water on shallow-water freshwater mussels by comparing experimental sites in Pool 5 to reference sites in Pool 4, a pool that was not draw down. Pool 5 elevations were an average of 1.25ft and 1.33ft lower at the dam (secondary control point) and Alma gage (primary control point), respectively, than they were normally. Mean daily temperatures were 20.4°C higher on dewatered areas compared with watered areas in Pool 4. Estimated area exposed from the drawdown was 1251ac. The combined total survival rate of shallow-water mussels in Pool 4 was 100% while 71.9% of shallow-water mussels survived in Pool 5. Mussel survival in Pool 5 was related to depth; 30.1% of mussels initially placed in 1ft of water survived while 98% survived when initially placed in 3ft of water. Mussels at sloped sites had three times the survival than those at flat sites suggesting that escape routes to water are important. Members of the subfamily Ambleminae had over 1.6 times the survival rate as members of the subfamily Lampsilinae.

We also sampled ~randomly selected transects in dewatered locations. The mean density of freshly dead mussels from transects in lower half of the pool was 0.40/m<sup>2</sup> compared to 0.57/m<sup>2</sup> for living mussels. A minimum of somewhere between 1.84 and 6.93 million mussels died in Pool 5 as a result of the drawdown. We were not able to estimate the mortality of state listed species, although we know that at least 8 of these species occur in the pool and were killed by the drawdown.

A full in-house report is available electronically from David Heath: David.heath@dnr.state.wi.us

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## How long will it take the Quagga mussel *Dreissena bugensis* to reach Western Europe?

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The Quagga mussel *Dreissena bugensis* (Andrusov, 1897), Family Dreissenidae, is a native of the river Bug in Ukraine. Unlike its close relative the Zebra mussel, *Dreissena polymorpha* (Pallas, 1771), it has remained virtually unknown until it was discovered in Lake Erie in 1989 (May & Marsden, 1992). Since that moment numerous publications have appeared concerning its ecology and its spread in the Great Lakes. Although it seems less aggressive than the Zebra mussel, its impact on the autochthonous fauna is virtually the same.

Its expansion in the former U.S.S.R. has received far less attention. In the forties, the Quagga mussel started to spread in the Ponto-Azov basin and later on to the Caspian Sea (Orlova et al., 2004; Zhulidov et al., 2005).

Recently, the Quagga mussel has been reported twice from the Danube in Romania. Micu & Telembici (2004) mentioned a find of it near Cernavoda in 2004. Popa & Popa (2006) found it entangled in old fishnets near Drobeta Turnu Severin at the border with Serbia in August 2005. The latter locality is situated more than 450 km up streams from Cernavoda!

Since the Danube is now connected with the river Rhine by means of the Rhine-Main-Danube Canal, it is probably only a question of how long it will take the Quagga mussel to reach Western Europe. Biologists involved with fieldwork in the basins of the Danube and the Rhine should be on the look out for this new invader. Monitoring its progress up streams in the Danube is of utmost priority.

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## Additional Information Concerning the Conquest of Europe by the Invasive Chinese Pond Mussel *Sinanodonta woodiana*. 12. News from Austria, Slovakia and Greece

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Recently some new data have been published concerning the presence of the Chinese Pond mussel *Sinanodonta woodiana* (Lea, 1834) in Europe. Especially noteworthy is the first record of this invasive species from Greece.

### Austria

Taurer (2003) reported the Chinese Pond mussel from the province of Styria (=Steiermark), where he found *Sinanodonta woodiana* in a fishpond near Arnfels in the southern part of Styria on 16 August 2003. However, Mr. Frewein, publisher of the journal 'Fischen & Natur' ['Fishes & Nature'], had discovered the mussels in 2001 in another nearby pond. At that time he noticed some strange looking mussels when that pond was being emptied. He collected a large number of them and transferred them to the fishpond near Arnfels. In that fishpond *Sinanodonta* shares the water with at least seven species of fish: *Cyprinus carpio*, *Ctenopharyngodon idella*, *Hypophthalmichthys molitrix*, *Leuciscus cephalus*, *Rutilus rutilus*, *Scardinius erythrophthalmus* and *Silurus glanis* – most of them may serve as host for the glochidia of the exotic mussels. Dr. Taurer does not rule out the possibility that *Sinanodonta*

might be present in other, similar fishponds in that area or even in old branches of the river Raab.

The Chinese Pond mussel had already been recorded from two other independent administrative units: the province of Lower Austria (Reischütz & Reischütz, 2000 and Fischer et al., 2002) and the City of Vienna (Edlinger & Daubal, 2000).

### Slovakia

An extensive population of the Chinese pond mussel has been reported from the river Ipel near Tesmak in the Levice District of Slovakia (Šteffek et al., 2005). In their discussion of this find, they mention two other unpublished records from Slovakia: near Stretave in the river Laborec and near Závadke in the river Čierna voda.

### Greece

Albrecht et al. (2006) reported the Chinese pond mussel from a fishpond connected to the ancient Lake Pamvotis (= Ioannina). This lake, and several of the other ancient lakes in Greece and at the border of Albania, are well known for their many endemic aquatic mollusc species. Most lakes are suffering from a dramatic decline in biodiversity due to habitat changes and the arrival of the invasive mussel *Dreissena polymorpha* (Pallas, 1771) and the exotic snail *Planorbella anceps* (Menke, 1830) (Eröss et al., 2005). Without doubt this decline will continue if *Sinanodonta woodiana* manages to get a foothold in these lakes.

### Acknowledgement

I like to thank Dr. Taurer (Velden, Austria) for sending me a copy of his interesting paper, on very short notice.

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## The European Fingernail Clam *Sphaerium corneum* in Freshwater Sponges

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I spent another month in the Netherlands in autumn 2005. Over the years these visits have become more or less a tradition in order to maintain social contacts with family and friends in my country of origin, and to continue, finish, or even begin projects dealing with the land- and freshwater mollusc fauna of the Province of North-Holland and the Isle of Terschelling.

On the 13<sup>th</sup> and 17<sup>th</sup> of October I visited an old military fort, "Benoorden Purmerend" [north of Purmerend], which forms part of a circle of 42 forts around Amsterdam. These forts were built as a defense line for Amsterdam between 1897 and 1914, but have never functioned during wartime. Since 1996 this defense line, the "Stelling van Amsterdam", has been declared a Unesco World Heritage Centre. Most of the forts are no longer in military hands, but have been turned into wine cellars, restaurants, congress centers, nature reserves, etc. The fort "Benoorden Purmerend" in polder the Beemster, although still in its original state, now forms a wine cellar annex restaurant.

The fort is encircled by a so-called moat, which is better characterized as a wide ditch, especially as its northern part is rather broad. It forms an eldorado for water birds like grebes, herons, swans, ducks, and coots the whole year round. However, in autumn and winter very large flocks of Tufted ducks, *Aythya fuligula*, Wigeons, *Anas Penelope*, and Coots, *Fulica atra*, are usually present. This was also the case during my visits of the fort. During the first day most of my attention went to the terrestrial snails; on the second day the aquatic biotopes were sampled.

Most of the latter collecting took place along the northern banks of the moat. Here and there, dense stands of *Phragmites* and *Typha* were growing. Along the open patches the banks were enforced with bricks and kerbstones. A large part of these stones were covered with a dense growth of the freshwater sponge *Ephydatia fluviatilis*. As epibionts of these sponges I was able to register only large numbers of *Bithynia leachii* (Sheppard, 1823). Some of the sponges felt as if they contained a small firm object. These objects turned out to be specimens the European

Fingernail clam *Sphaerium corneum* (Linnaeus, 1758). Both adult and juvenile specimens were present in the sponges. Interestingly, not a single specimen of *Sphaerium* was encountered in bottom samples taken nearby in the moat.

Although the aquatic mollusc fauna of the Netherlands is well known, I searched in vain for any previous record of *Sphaerium corneum* as an endobiont of *Ephydatia fluviatilis* or any other freshwater sponge. A study carried out on *Ephydatia fluviatilis* growing on *Phragmites australis* in Lake Pieduluco, Northern Italy, revealed the presence of 6 gastropods species and one bivalve (*Pisidium* spec.) as epibionts and endobionts of *Ephydatia fluviatilis* (Gaino et al., 2004). *Sphaerium corneum* was not found in the sponges in spite of the fact that it was present in the bottom samples taken in the lake.

I would be very pleased with receiving any additional information about *Sphaerium* in sponges.

The full results of the malacological survey of the fort will be published in due time in "Spirula", one of the journals published by the Dutch Malacological Society.

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## New Records of Continental Mollusks (Bivalvia & Gastropoda) from Paraná and Santa Catarina States, Southern Brazil Region

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The malacological inventory conducted in the Santa Catarina (SC) and Paraná (PR) states continental territories recently included some new records of freshwater and terrestrial species, based in specific literature reports of recent production and/or that had escaped our documental attention:

#### I. PARANÁ'S FRESHWATER LIMNIC BIVALVES

Four new records of native mussels/naiads were included from the State, based on specific literature reports (Oliveira & Oliveira 1984, p. 41; MMA 2004), elevating the previous species inventory to 21 (16 Unionoida, 4 Veneroida & 1 Mytiloida) (Agudo 2005b).

#### Systematic Species List:

Class BIVALVIA = PELECYPODA

#### Order Unionoida

##### Family MYCETOPODIDAE (4)

- *Anodontites crispatus soleniformis* (d'Orbigny, 1835)
- *Fossula fossiculifera* d'Orbigny, 1835
- *Monocondylaea paraguayana* d'Orbigny, 1835
- *Mycetopoda siliquosa* Spix, 1827 \*

\*Species occurs in Santa Catarina State

Recent regional contributions involving the native limnic naiade *Anodontites trapesialis* (Lamarck, 1819) include two new zoogeographical registrations of localities: "Londrina" (Guardia 2006) and "Chopinzinho" (Carboni et al. 2006) Municipal Districts.

#### II. SANTA CATARINA'S PULMONATE GASTROPODS

Most four new records of freshwater (3) and terrestrial (1) pulmonate gastropods are included in this state inventory, based in literature reports (Morretes 1949, p. 155; Paraense 1975, pp. 123-124), elevating the number of known species to 128 (22 Bivalvia and 106 Gastropoda – 11 Prosobranchia & 95 Pulmonata) (Agudo 2004, 2005a; Agudo & Bleicker 2006).

#### Systematic Species List:

Class GASTROPODA

Subclass Pulmonata

##### Family ODONTOSTOMIDAE (1)

- *Odontostomus (Bahiensis) tudiculatus* (Martens, 1828)

##### Family PLANORBIDAE (3)

- *Acorbis petricola* Odhner, 1937
- *Antillorbis nordestensis* (Lucena, 1954)
- *Biomphalaria schrammi* (Crosse, 1864)

For a general overview of the zoogeographical records in this last Brazilian territory, see Agudo (2006).

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Students siphoning fish tank

### Suitable Host Fishes for Fatmucket (*Lampsilis siliquoidea*) and Pocketbook (*Lampsilis cardium*) Evaluated by High School and University Researchers



Searching tank siphonate for glochidia or juvenile mussels

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Pocketbook (*Lampsilis cardium*) and fatmucket (*L. siliquoidea*) are common species in the upper Midwest, yet knowledge of their glochidia host requirements is incomplete. *Lampsilis cardium* Rafinesque, 1820, more commonly referred to as the plain pocketbook or the Grandmaw, is found in moving bodies of water from small creeks to large rivers, living in sand, mud, or gravel (Cummings and Mayer 1992). Several fish species, including members of the perch and sunfish families and banded killifish, are glochidia hosts (Cummings and Watters 2006; O'Dee and Watters 2000).

*Lampsilis siliquoidea* (Barnes, 1823), often called the Lake Pepin mucket, grass mucket, or pugnose mucket, also occurs in the Midwest. It lives in similar substrate but is more common in lakes and small to medium-sized streams. Recorded host fishes include several sunfish and perch species (Watters 1996; Cummings and Watters 2006). The purpose of our study was to verify known hosts and identify additional suitable hosts of fatmucket and pocketbook glochidia.

We followed standard protocol for conducting host suitability tests (Neves *et al.* 1985). Potential host fish were collected from local lakes and rivers via electro-fishing. Test fishes were exposed to *Lampsilis cardium* or *Lampsilis siliquoidea* glochidia collected from the Rum River, Minnesota for 10-15 minutes on October 15, 2004 at the UMN, and on November 16, 2004 at the high schools. Fish were then separated into tanks according to species, each tank containing only one species. Each tank was checked a few times per week for a period of approximately fifty days to monitor the excystment of juveniles. This process included siphoning the bottom of the tank, and then filtering the removed material through increasingly fine sieves. Tanks at high schools were then refilled using aged water, university tanks were flow-through. Tank siphonate was placed in a grid-etched Petri dish and viewed using a dissecting microscope. Glochidia and juveniles sloughed from the gills were totaled and recorded. The appearance of juveniles, as determined by the presence of a foot, indicated the fish species was a suitable host.

**Table 1.** *Lampsilis cardium* glochidia host suitability trial results. The numbers in parenthesis describe juvenile excystment period.

Fish species (Scientific name)	(Common name)	Number of initial/sur- viving fish	Glochidia attachment period (days)	No. juveniles/recovery period (days)
<b>Amery High School (Instructor: Steve Schieffer)</b>				
<i>Ameiurus melas</i>	black bullhead	†	3-8	0
<i>Ambloplites rupestris</i>	rock bass	†	3-49	0
<i>Lepomis gibbosus</i>	pumpkinseed	†	3-49	25 (36-49)
<i>Lepomis macrochirus</i>	bluegill	†	3-20	0
<i>Necturus maculosus</i>	mudpuppy	†	3-6	0
<b>Grantsburg High School (Instructor: Matt Berg)</b>				
<i>Hypentelium nigricans</i>	northern hognose sucker	1/1	18-35	0
<i>Lota lota</i>	eelpout	3/3	2-17	0
<i>Ambloplites rupestris</i>	rock bass	6/4	28-31	0
<i>Lepomis cyanellus</i>	green sunfish	1/1	22-29	0
<i>Lepomis macrochirus</i>	bluegill	6/6	23-28	0
<i>Micropterus dolomieu</i> *	smallmouth bass	3/0	n/a	0
<i>Pomoxis nigromaculatus</i>	black crappie	2/1	48-51	123 (25-51)
<i>Perca flavescens</i>	yellow perch*	6/0	n/a	0
<i>Sander vitreus</i>	walleye	1/1	17-30	0
<i>Rana clamitans</i>	green frog (tadpole)	5/4	21	0
<b>University of Minnesota (Allen, Hove, Sietman)</b>				
<i>Ameiurus melas</i>	black bullhead	6/6	3-5	0
<i>Lepomis humilis</i>	orangespotted sunfish	4/4	6-8	0
<i>Micropterus salmoides</i>	largemouth bass	4/4	61-66	130 (29-61)
<i>Etheostoma caeruleum</i>	rainbow darter	17/17	5-8	0
<i>Etheostoma flabellare</i>	fantail darter	9/9	5-8	0
<b>Webster High School (Instructor: Greg Widiker)</b>				
<i>Lepomis macrochirus</i>	bluegill	†	2-52	0
<i>Pomoxis nigromaculatus</i>	black crappie	†	2-66	17 (58-66)

† These data were not recorded

\* Fish died prior to study completion

\*\* Fish died day 33 (gills checked)

**Table 2.** *Lampsilis siliquoidea* glochidia host suitability trial results. The numbers in parenthesis describe juvenile excystment period.

Fish species (Scientific name)	(Common name)	Number of initial/sur- viving fish	Glochidia attachment period (days)	No. juveniles/ recovery period (days)
<b>Grantsburg High School (Instructor: Matt Berg)</b>				
<i>Lota lota</i>	eelpout	3/3	24-29	0
<i>Ambloplites rupestris</i>	rock bass	4/4	3-16	0
<i>Lepomis macrochirus</i>	bluegill	5/4	17-25	1 (28-32)
<i>Micropterus dolomieu</i>	smallmouth bass*	1/0	n/a	0
<i>Pomoxis nigromaculatus</i>	black crappie*	2/0	n/a	0
<i>Perca flavescens</i>	yellow perch	1/5	15-23	219 (23-42)
<b>University of Minnesota (Allen, Hove, Sietman)</b>				
<i>Micropterus salmoides</i>	largemouth bass	4/4	22-29	35 (22-47)
<i>Etheostoma caeruleum</i>	rainbow darter	14/14	8-13	0
<i>Etheostoma flabellare</i>	fantail darter	9/9	1-5	0
<b>Webster High School (Instructor: Greg Widiker)</b>				
<i>Lepomis macrochirus</i>	bluegill	†	1-21	0

† These data were not recorded

\* Fish died prior to study completion

Our study identifies previously unknown suitable hosts and confirms suitable host species. Black crappie and pumpkinseed are previously unknown suitable hosts for *Lampsilis cardium* glochidia. We did not observe *L. cardium* metamorphosis on bluegill, green sunfish, or walleye as observed by others (Coker *et al.*, 1921), perhaps due to the small number of fish we tested. We also confirmed largemouth bass is a suitable host species for *L. cardium* glochidia (Coker *et al.*, 1921), and confirmed yellow perch, largemouth bass, and bluegill as suitable hosts for *L. siliquoidea* (Coker *et al.*, 1921, Waller *et al.*, 1985, Watters 1996).

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### ***FMCS Membership List Updates***

#### ***Address Changes:***

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#### ***Corrections:***

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Tatsuaki Nakato's street number:  
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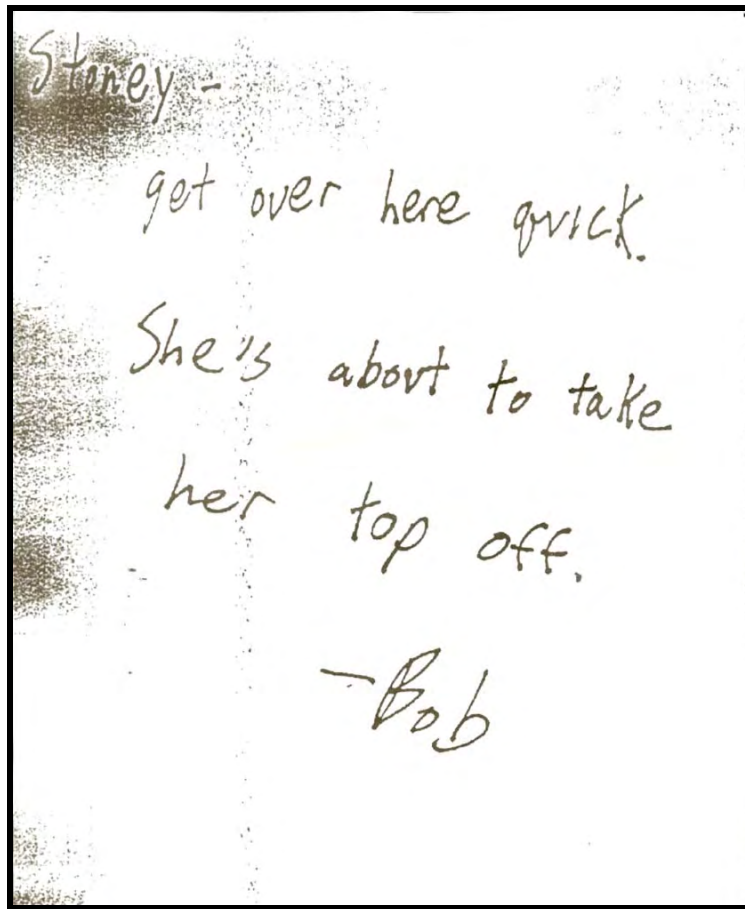
#### ***Additions to August 2005 List:***

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502-573-1462

### Museum Discovery from Tom Watters:

While accessioning a portion of a large collection donated to us by a university that will remain nameless, the following sheet was found in the bottom of a box:



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### Helpful Hints from Hoppy:



Hoppy Says — Don't spend valuable resource dollars on streams that are already destroyed...spend those dollars on streams that can be saved!

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*Submitted by Steve Ahlstedt*



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## Freshwater Mollusk Conservation Society Standing Committees and Chairs

If you are interested in joining a committee, please contact the appropriate chair.

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### **Awards**

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### **Guidelines and Techniques**

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### **Information Exchange**

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### **Mussel Status and Distribution**

Chair: Open

### **Outreach**

Chair: Open

### **Propagation, Restoration, and Introduction**

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vtaquaculture@hotmail.com

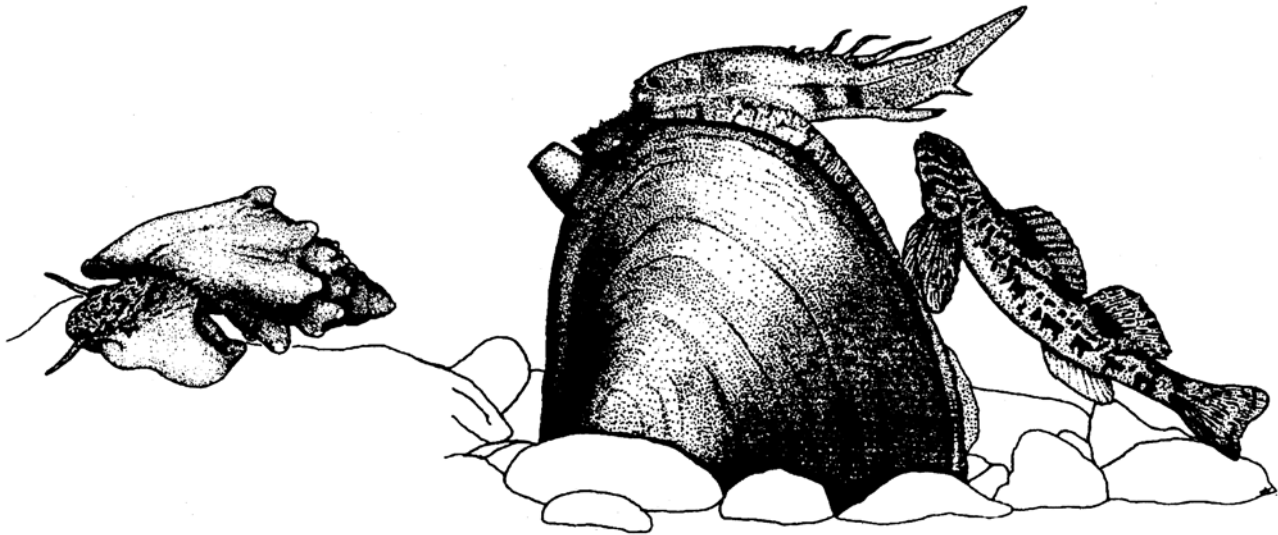
### **Symposium Committee – Arkansas 2007**

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*Join the UNIO Listserv*  
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# Freshwater Mollusk Conservation Society



*... dedicated to the advocacy and conservation science of freshwater molluscan resources*