



Newsletter of the Freshwater Mollusk Conservation Society
Volume 16 – Number 3
September 2014

Cover Story	1
Society News	2
Announcements	7
Regional Meetings	8
Upcoming Meetings	10
Contributed Articles	11
FMCS Officers	21
Committee Chairs and Co-chairs	22
Parting Shot	23



Uncle Leroy Wants You !

Leroy Koch, Chairman of the FMCS Nominations Committee, is looking for nominees for **President-Elect**, **Secretary**, and **Treasurer** for our Society. This election is more important than in recent years because both our present Secretary (Greg Zimmerman) and Treasurer (Heidi Dunn) have decided not to seek reelection. The Secretary and Treasurer positions are for

two-year terms; the President-Elect will serve in that position for two years, as President for the next two years, and as Past President for a final two years. The elected winners of these positions will take office in March 2015, during the FMCS symposium in St. Charles, Missouri.

Any member may nominate any member, including themselves. Nominees must be current FMCS members in good standing and must agree to be nominated. The Nominations Committee will select the two candidates willing to run for each office who receive the most nominations to participate in this election. We anticipate that position statements from the candidates will be placed on the FMCS website and posted in the December issue of *Ellipsaria*. Voting will be done on the FMCS website.

The deadline for nominations is Friday, October 17, 2014.

Send your nominations to: Leroy Koch, U.S. Fish and Wildlife Service, J.C. Watts Federal Building - Room 265, 330 West Broadway, Frankfort, Kentucky 40601. Office phone: 502-695-0468 extension 106. Email: Leroy_Koch@fws.gov

Please consider yourself or another worthy member for one of these positions. This is a great opportunity to serve in the FMCS.

[More] Society News

Call for 2015 FMCS Professional Award Nominations

Do you know someone who has made worthwhile contributions to mussel conservation or to the Society either through donating their professional time or expertise or through their scientific endeavors? Consider nominating them for one of the three FMCS Professional Awards.

- **The Meritorious Service Award** — given to an individual for singular accomplishments or long-term contributions to the Society. The recipient of this award must be a past or present FMCS member who has performed long-term, exceptionally high-quality service to the Society.
- **The William J. Clench Memorial Award** — given to an individual for singular accomplishments or long-term contributions that have advanced the natural history and understanding of freshwater mollusks at an academic or non-academic level. The recipient of this award must have had (1) activity in one or more aspects of freshwater mollusks for a substantial period of time (with a recommended minimum guideline of 20 years), and (2) made substantial contributions to the field of freshwater malacology.
- **The Lifetime Achievement Award** — given to an individual for singular accomplishments or long-term contributions that have advanced the conservation and science of freshwater mollusks at a national or international level. The recipient of this award must have had (1) activity in one or more aspects of freshwater mollusk research and/or conservation for a substantial period of time (with a recommended minimum guideline of 20 years), and (2) made substantial contributions to the scientific understanding of freshwater mollusks and/or their conservation.

For procedures associated with nominating someone for one of these awards, see the Awards Committee web site: http://molluskconservation.org/Mservices_awards.html To be considered this year, all nominations and the supporting documentation packages must be submitted by **January 16, 2015**. For more information, contact Greg Cope, greg_cope@ncsu.edu , 919-515-5296 or Teresa Newton, tnewton@usgs.gov , 608-781-6217.

**Joint Meeting of the
Freshwater Mollusk Conservation Society (FMCS) and the
Upper Mississippi River Conservation Committee (UMRCC)**

St. Charles, Missouri – March 22-26, 2015



The UMRCC will hold their 71st Annual Meeting and the FMCS will hold their 9th Biennial Symposium jointly on March 22-26, 2015, at the St. Charles Convention Center in St. Charles, Missouri (<http://www.stcharlesconventioncenter.com>). This meeting will feature contributed papers on a range of research and management topics in both oral and poster presentation format, FMCS Committee meetings, UMRCC Technical Sessions, and Business Meetings for both organizations. In 1992 and 1995, the UMRCC sponsored two symposia in St. Louis, Missouri, that examined the status, conservation, and management needs of freshwater mussels. These symposia ultimately resulted in the formation of the FMCS in 1999. Now, 20 years later, this joint meeting will recognize past conservation successes and future opportunities. In addition to the customary platform and poster sessions, there will be a one-day mussel propagation workshop, a joint plenary session focusing on the history and future of the organizations, and sessions on big river and landscape ecology. The mixers, breaks, auction, and banquets will also be jointly held, offering multiple opportunities to network among members. The meeting will be hosted by the Missouri Department of Conservation and Ecological Specialists, Inc.

Meeting Theme:

The theme for this joint meeting is ***Conserving Aquatic Ecosystems – At the Confluence of the Past and Future*** and the joint plenary session will highlight the history of the two organizations and provide outlooks on the future. We are also planning on having sessions focusing on Big Rivers and Landscape Ecology, and on Outreach in Natural Resources. If you have an abstract for the Big River or Landscape Ecology sessions, please contact the symposium committee chair Stephen.McMurray@mdc.mo.gov. If you have an abstract regarding the Outreach in Natural Resources session, please contact the FMCS Outreach Committee chair Megan.bradley@dgif.virginia.gov.

Location and Travel:

St. Charles, Missouri, is located on the banks of the Missouri River just a short distance upstream from the confluence with the Mississippi River. St. Charles, the 3rd oldest city west of

the Mississippi River, was the first Missouri state capital and was the last “civilized stop” on the Lewis and Clark *Corps of Discovery*. The St. Charles Convention Center is easily accessible by car via Interstate 70 from St. Louis. The Convention Center is approximately 8 miles from Lambert-St. Louis International Airport (STL) where multiple ground-transportation vendors and car rental facilities are available.

Lodging:

Discounted lodging will be available at the Embassy Suites St. Louis–St. Charles/Hotel & Spa, which is directly adjacent to the Convention Center. The hotel rooms, two-room suites with separate living and sleeping areas, will be \$118/night for 1-2 people and \$128/night for 3-4 people (plus tax). The room rate includes a complimentary full breakfast and evening reception, including beverages. This discounted room rate will be available from March 21 to March 27, 2015. Use the **Group Name FMSC/UMRCC** and **Group Code FMC** when making reservations either by telephone (636-946-5544) or online at http://embassysuites.hilton.com/en/es/groups/personalized/S/STLEMES-FMC-20150321/index.jhtml?WT.mc_id=POG.

Meeting Registration:

Formal advanced registration will be available on the FMCS website by November 15, 2014. Registration rates have not yet been finalized but will include some meals, breaks, and membership dues for FMCS if registering for the full joint meeting or just the FMCS portion. Registration is also available for just the UMRCC meeting, which includes one overlap day with the FMCS Meeting.

Calling All Students:

Student Travel Awards Available: To facilitate your participation in the 9th Biennial Symposium, travel awards are being offered by the FMCS. Support is provided via Society-paid lodging accommodations for the duration of the meeting at the Embassy Suites St. Louis–St. Charles/Hotel & Spa. It is anticipated that up to 9 awards will be made for the 2015 Symposium. A complete application package must be submitted by e-mail as a PDF file to Dr. Teresa Newton, FMCS Awards Committee on or before **January 15, 2015**. Please see the Awards Committee web site at http://molluskconservation.org/Mservices_awards.html for application forms and procedures, or contact Teresa (tnewton@usgs.gov, phone 608-781-6217) for more information.

Student Volunteers: The Program Committee is in need of Student Volunteers to help with lights, A/V, and registration during the meeting. In exchange for a few hours’ work at the meeting, Student Volunteers will receive a discount beyond the normally lower student registration rate. If you’re interested, please contact Daelyn Woolnough (wooln1d@cmich.edu) or Susan Oetker (susan_oetker@fws.gov) before registering for the meeting.

Area Attractions and Planned Trips:

Just minutes away from the Convention Center, historic downtown St. Charles includes ample shops, eateries, and bars (<http://www.historicstcharles.com>), and the hotel offers free shuttle service to historic Main Street. There are several parks and other attractions within an hour drive of St. Charles, so there will be plenty to do before or after the meeting. Downtown St. Louis is about 25 minutes away, with the Arch, riverfront, and historic Laclede’s Landing. At Forest Park, the site of the 1904 World’s Fair, discover the world-renowned St. Louis Zoo, Art Museum, Science Center, and Missouri History Museum. Stroll around the world-class Missouri Botanical Garden. Visit unique neighborhoods, such as Soulard’s historic farmer’s market, the Central West End’s boutiques/antiques, and the funky, fun Delmar Loop.

Possible organized trips through the joint meeting include a trip to the St. Louis Zoo for a behind-the-scenes tour of the hellbender propagation facility, a trip to the National Great Rivers Research & Education Center/Melvin Price Locks and Dam and Museum, and a possible trip to Cahokia Mounds State Historic Site.

Contact Steve McMurray (Stephen.McMurray@mdc.mo.gov) or Heidi Dunn (hdunn@ecologicalspecialists.com) with any questions. We look forward to seeing you in St. Charles next March.

FMCS-UMRCC JOINT MEETING - ST. CHARLES, MISSOURI - MARCH 22-26, 2015 PROPOSED SCHEDULE <i>Conserving Aquatic Ecosystems – At the Confluence of the Past and Future</i>					
SUNDAY MARCH 22	MONDAY MARCH 23	TUESDAY MARCH 24	WEDNESDAY MARCH 25	THURSDAY MARCH 26	
Registration 8:00 am-5:00 pm Poster Setup	Registration 8:00 am-5:00 pm Poster Setup	Registration 8:00 am-5:00 pm	UMRCC Executive Board Meeting 6:30-8:15 am Registration 8:00 am -5:00 pm	Registration 8:00 am-5:00 pm	
Mussel Propagation Workshop 8:00 am-5:00 pm (Box Lunch Provided to Attendees)	Concurrent Paper Sessions 8:00-10:00 am 10:20-12:00 pm	Concurrent Paper Sessions 8:00-10:00 am 10:20-12:00 pm	Joint Plenary Session 8:30-10:00 am	Optional Field Trips 8:00-5:00 pm	Mussel Technical Section 8:00-10:15 am
	Box Lunch (FMCS Comm. Meetings) 12:00-1:40 pm	Box Lunch (FMCS Comm. Meetings) 12:00-1:40 pm	Big River Ecology/ Landscape Ecology Sessions 10:20-12:00 pm		Wildlife, Fisheries, Law Enforcement, Water Quality, OREIT 10:30-12:00 pm
	Concurrent Paper Sessions 1:40-3:20 pm 3:40-5:00 pm	Concurrent Paper Sessions 1:40-3:20 pm 3:40-5:00 pm	Buffet Lunch 12:00-1:40 pm		Box Lunch 12:00-1:00 pm
			Concurrent Paper Sessions 1:40-3:20 pm 3:40-5:00 pm		UMRCC Tech Sections Cont'd. 1:00-3:30 pm UMRCC Business Meeting 3:45-5:30 pm
Dinner (On Your Own) 5:00-7:00 pm FMCS Board Meeting 5:00-7:00 pm	Dinner (On Your Own) 5:00-7:00 pm	FMCS Banquet, Business Meeting, & Awards 6:00-8:00 pm	Dinner (On Your Own) 5:00-7:00 pm	UMRCC Banquet, Awards Presentations 6:00-8:00 pm	
Welcome Reception 7:00-11:00 pm	Mixer/Poster Session 7:00-11:00 pm	Mixer 8:00-11:00 pm	Mixer/Joint Auction 7:00-11:00 pm	Mixer 8:00-11:00 pm	

FMCS AND UMRCC JOINT MEETING
SECOND CALL FOR ABSTRACTS

The abstract submission deadline for this joint meeting will be **December 15, 2014**. The symposium format will be both oral and poster. Oral presentations will be limited to 20 minutes, including the question and answer period. Poster size is limited to 4' by 4' feet. If you wish to bring a display unit, special arrangements can be made.

Abstracts for posters and oral presentations are limited to 300 words. The title should appear in all caps and be followed by the author(s) name(s), affiliation(s) and e-mail address(es). Abstracts should be written in Word utilizing Arial 11 point font. Abstracts should include clearly stated objectives, brief methods, general results, and the basic conclusion. At the bottom of your abstract please indicate your preference of oral or poster presentation and if you are willing to switch formats. Submit your abstract to: Stephen.McMurray@mdc.mo.gov.

Here is an example abstract from a previous symposium:

ASSESSING THE HAZARDS OF CURRENT USE PESTICIDES TO EARLY LIFE STAGES OF NATIVE FRESHWATER MUSSELS. Robert B. Bringolf¹, LeRoy F. Humphries², Peter R. Lazaro¹, Chris Eads², Chris Barnhart³, Damian Shea¹, Jay F. Levine², and W. Gregory Cope¹. ¹Department of Environmental and Molecular Toxicology, North Carolina State University, Raleigh, NC 27695; ²College of Veterinary Medicine, North Carolina State University, Raleigh, NC 27606; ³Department of Biology, Missouri State University, Springfield, MO 65804.

Native freshwater mussels (family Unionidae) are among the most imperiled faunal groups in North America. Approximately 67% of the nearly 300 freshwater mussel species are considered vulnerable to extinction or already extinct. North Carolina has historically supported 56 species of mussels; however, 82% of those species are currently listed as endangered, threatened, or of special concern by the U.S. Fish and Wildlife Service and the State of North Carolina. Although numerous stressors have been implicated in the decline of freshwater mussels, the effects of pesticides on native mussels is largely unknown. Timing of pesticide application combined with the unique life history and reproductive strategy of mussels makes them susceptible to pesticide exposure. The objective of this study was to determine the hazards of pesticides to early life stages of freshwater mussels. We performed acute toxicity tests with glochidia (7 species) and juveniles (6 species) exposed to a suite of current use pesticides (atrazine, fipronil, pendimethalin, and permethrin) and a reference toxicant (NaCl). Our results indicate that these pesticides, at concentrations approaching water solubility, were not acutely toxic to the species of glochidia and juveniles tested. However, in a 21-d chronic toxicity test performed with 4-month old juvenile *Lampsilis siliquoidea* exposed to atrazine, the 14-d atrazine LC50 was 15.8 mg/L (95% confidence interval 12.0-19.5) and the 21-d atrazine LC50 was 4.3 mg/L (95% confidence interval 2.8-5.8). Effects on growth and genotoxicity (single-strand DNA breaks) were also determined in the chronic test. Our results indicate that the relative risk associated with acute exposure of early life stages of mussels to the current use pesticides tested singly is likely low; however, survival and genotoxicity results indicate that chronic exposure of juvenile mussels to atrazine may be impacting mussel populations and warrants further investigation, as does the assessment of pesticide mixtures.

Preferred Presentation Format: Oral Platform
Willing to Switch Format: No

The Program Committee will assemble and publish the draft meeting agenda and abstracts on the FMCS website (<http://molluskconservation.org/>) by mid-January, 2015. We hope to post the meeting program 90-days prior to the symposium to accommodate state resource agency attendees.

Announcements

Ohio (River) Valley Unified Malacologists (OVUM) Meeting

The 8th annual meeting of the Ohio (River) Valley Unified Malacologists (OVUM) will be held at the Department of Geology of the University of Cincinnati on Saturday, September 27, 2014. This one-day meeting is free and open to professionals, amateurs, and students who are interested in any aspect of molluscan biology, Paleontology, Biogeochemistry and conservation. The location for the meeting is: 201-Braunstein Hall, Department of Geology, University of Cincinnati, Cincinnati, OH 45221. For additional information, visit the OVUM 2014 webpage: <https://sites.google.com/site/yurenayanes/ovum-2014> or contact Yurena Yanes, at yurena.yanes@uc.edu

Freshwater Mussel Workshop

A four day workshop on freshwater mussel identification and sampling techniques will be held October 6-9, 2014, at the Division of Molluscs, The Ohio State University, in Columbus, Ohio. This workshop will cover upper Ohio River and Great Lakes species. The Division's collection of nearly 500,000 specimens of freshwater mussels will be used for hands-on training on how to tell one living rock from another, including those pesky "*Fuscobemas*." Attendance is limited to 30 people.

For more information follow the link here: <http://www.biosci.ohio-state.edu/~molluscs/OSUM2> or contact G. Thomas Watters, 1315 Kinnear Rd., The Ohio State University, Columbus, OH 43212 Watters.1@osu.edu

Freshwater Mollusk Collection of the New Mexico Museum of Natural History and Science Transferred to North Carolina State Museum of Natural Sciences

Arthur E. Bogan¹, Jamie M. Smith¹, Patricia J. Gegick², and Ayesha S. Burdett²

¹ North Carolina State Museum of Natural Sciences, 11 West Jones Street, Raleigh, North Carolina 27601

² New Mexico Museum of Natural History and Science, 1801 Mountain Road NW, Albuquerque New Mexico 87104-1375

The New Mexico Museum of Natural History and Science (NMMNHS) has an institutional focus on the flora and fauna of New Mexico. It does not currently have the staff or the funding to prioritize and process for long-term preservation their freshwater mollusk collection, which has a focus on the southeastern United States. Staff at the NMMNHS contacted the North Carolina State Museum of Natural Sciences (NCSM) about the transfer of their freshwater mollusk collection. NCSM agreed to accept this collection and integrate it into the existing NCSM freshwater mollusk collection, where the NMMNHS specimens will be identified, latitude and longitude for each locality determined, databased, and the data made publicly available on the NCSM website.

The NMMNHS freshwater mollusk collection includes approximately 4,000 lots of dry shells (which were partially curated and catalogued by NMMNHS but lack quadrangle map data, latitude and longitude, mileage to nearest town, and many of the shells require cleaning), and approximately 607 lots of fluid specimens (only partially curated by NMMNHS). In addition, a sizable portion of the collection is uncataloged and unidentified.

This collection contains 539 lots identified as species listed as imperiled by the United States Fish and Wildlife Service (USFWS) and 8 lots of pleurocerid gastropods that are on the USFWS list of petitioned species. The imperiled list of freshwater bivalves includes two lots of Margaritiferidae and 529 lots of

Unionidae, for a total of 57 taxa of freshwater bivalves. The 531 lots of imperiled freshwater bivalve species represent 14.4 % of the 3,697 identified unionoid bivalve lots. These are divided among the USFWS categories of Endangered (238 lots), Threatened (67 lots), and Petitioned (226 lots). The lots of imperiled taxa are from 14 states, with the vast majority originating in the following southeastern United States: Tennessee 39, Virginia 16, Kentucky 13, Arkansas 12, Alabama 6, and North Carolina 3. A single extinct species, *Epioblasma curtisi*, is represented by a single lot with no locality data.



The collection was packaged by NMMNHS staff for transport to Raleigh, in 75 boxes of dry specimens and 25 buckets of alcohol preserved specimens. NCSM staff traveled to



Albuquerque and, with the NMMNHS staff, carefully moved the collection into a moving truck and transported it to NCSM in Raleigh in May 2014. William Bugg, a NC State Youth Advocacy Involvement Office Intern, has completely rehoused all of the alcohol preserved specimens into standard jars with fresh 70% ethyl alcohol. William has pulled all of the lots of USFWS petitioned species for verification and databasing to be used in evaluating the listing of those species. He also has pulled all of the lots of USFWS listed species for verification and databasing.

The expenses associated with packing the NMMNHS freshwater mollusk collection and transferring it to NCSM were funded by the USFWS office in Frankfort, Kentucky.

Regional Meetings

FMCS Regional Mollusk Meeting Assistance Award Program

As described in the December 2012 issue of *Ellipsaria*, the FMCS has established a Regional Mollusk Meeting Assistance Award Program to facilitate regional mollusk meetings that address local and regional concerns with freshwater mollusk conservation and management. Our interest in assisting with these meetings is to bring people together who work with freshwater mollusks to exchange information on how to conserve and protect this faunal group. These meetings are often attended by a variety of individuals, including agency personnel, academia, private citizens, scientists, and others, some of whom may not be FMCS members. Therefore, a secondary goal of this program is to increase the awareness of, and membership in, FMCS among individuals in these groups. Support is provided via a cash award of \$100 to the regional group to help defray the costs (e.g., meeting room rental, speaker travel, break refreshments, etc.) associated with holding their meeting. It is anticipated that about 15-20 awards will be made in a given calendar year.

The complete program description and application form may be obtained from the Awards Committee website at http://www.molluskconservation.org/Mservices_awards.html. One copy of the completed application must be received by the Chair of the Awards Committee at least two months prior to the Regional Mollusk Meeting to allow for application and payment processing.

Virginia Atlantic Slope Mollusk Recovery Group

On Friday, March 7, 2014, Brian Watson Virginia Department of Game and Inland Fisheries (DGIF) convened the 8th annual meeting of the Virginia Atlantic Slope Mollusk Recovery Group in Forest, Virginia (VA). This group was formed in 2006 to discuss and address conservation and recovery issues pertaining to freshwater mollusks in VA's Atlantic Slope waterways and is comprised of members from the DGIF, U.S. Fish and Wildlife Service (FWS), VA Department of Conservation and Recreation's Heritage Program (DCR), Virginia Tech (VT), The Nature Conservancy (TNC), U.S. Forest Service, and private consultants. Fifteen people attended the meeting, while 14 people participated over the phone and thru GoToMeeting.

The morning session primarily revolved around propagation at the VA Fisheries and Aquatic Wildlife Center (VFAWC) at Harrison Lake National Fish Hatchery, the Aquatic Resource Recovery Center (ARRC) at White Sulphur Springs National Fish Hatchery and the Freshwater Mollusk Conservation Center (FMCC) at VT. In 2013, the VFAWC propagated nearly 1.1 million juvenile mussels from 8 species and released over 32,000 tagged mussels to the lower Nottoway River. The ARRC primarily continued grow-out work with the rare green floater and released 1,602 1-2 year-old sub adults in the Tye River in central VA, all of which were either PIT tagged or Hallprint tagged for future monitoring. Likewise, AARC released 532 endangered James spinymussel (JSM) in Mill Creek, Bath County, VA, all of which were PIT or Hallprint tagged. This was the first time release of these rare species has occurred. The FMCC continued annual streamside infestations with JSM as part of a FWS Biological Opinion with the VA Department of Transportation, releasing nearly 350 infested cyprinids to Craig Creek and Johns Creek, Craig County. The morning session wrapped up with a review of the range-wide conservation plan for brook floater and state conservation plans for green floater and Atlantic pigtoe.

The afternoon session shifted to environmental-related issues. Tom Augspurger presented information pertaining to the new EPA ammonia criteria and DGIF Environmental Biologists discussed how the VA Department of Environmental Quality (DEQ) will incorporate the new ammonia limits into VPDES permit reviews. DEQ will include the more stringent ammonia levels in permits where mussels are present and are writing this change into their regulations. DGIF and FWS provided an update on the South River/DuPont Natural Resource Damage Assessment and Restoration case. Mussel restoration likely will be part of the settlement to compensate for sediment damage due to mercury contamination. The coal ash spill in the Dan River was discussed, and clean-up efforts and monitoring likely to occur going forward. No die offs were noted but there is concern about long-term impacts. The topic wrapped up with a review of continued raccoon trapping along Johns Creek, Craig County, due to JSM predation and available funds for restoration activities in the upper James River watershed. The meeting continued with a review of significant mussel surveys in 2013 and planned surveys for 2014, including Wetland Solutions and Studies, Inc. survey and relocation in the Potomac River for Loudoun County's water intake; Conservation management Institute at VT, surveys in the Nottoway River and Aquia Creek on the Fort Pickett and Marine Corps Base Quantico military facilities; DCR surveys in Dan River watershed for the JSM; and the long-term mark-recapture surveys at 7 sites across the Piedmont. The meeting wrapped up with Matthew Patterson providing a review of the mussel conservation and biology and mussel propagation training course now being offered at the National Conservation Training Center in WV, as well as an overview of the new VA terrestrial snail web atlas (available at: <http://www.carnegiemnh.org/science/mollusks/>).

For more information about this meeting, contact Brian Watson at brian.watson@dgif.virginia.gov or (434) 525-7522, extension 114.

Upcoming Meetings

March 22 -- 26, 2015 -- National Shellfisheries Association 107th Annual Meeting, Monterey, California, Theme: [yet to be announced] <http://www.shellfish.org/annual-meeting> .

March 22-27, 2015 – FMCS Symposium/Joint meeting with the Upper Mississippi River Conservation Committee, St. Charles, Missouri. Theme: “*Conserving Aquatic Ecosystems – At the Confluence of the Past and Future.*” <http://molluskconservation.org/Events.html>

May 17 – 21, 2015 -- Society for Freshwater Science Annual Meeting, Wisconsin Center, Milwaukee, Wisconsin. Theme: “*Our Freshwater Futures.*” <http://sfsannualmeeting.org>

August 2-6, 2015 -- International Congress for Conservation Biology, Montpellier, France
<http://www.conbio.org/conferences/about-scb-meetings/past-iccbs>

August 28 – 31, 2015 -- American Malacological Society 81st Annual Meeting, University of Michigan Biological Station, Pellston, Michigan
<http://www.malacological.org/meetings/2015/AMS%202015%20Michigan%20ad.pdf>

March, 2016 – FMCS Genetics Workshop, National Conservation Training Center Shephardstown, West Virginia.



Contributed Articles

The following articles have been contributed by FMCS members and others interested in freshwater mollusks. These contributions are incorporated into Ellipsaria without peer review and with minimal editing. The opinions expressed are those of the authors.

First Record of the Invasive Freshwater Mussel *Sinanodonta woodiana* (Lea, 1834) in Guatemala

G. Thomas Watters¹ and José Coltro²

¹ Department of Evolution, Ecology, and Organismal Biology, The Ohio State University, 1315 Kinnear Road, Columbus, Ohio 43212 USA. watters.1@osu.edu

² 1688 West Avenue #805, Miami Beach, Florida, 33139, USA. jose@femorale.com

Sinanodonta woodiana (Lea, 1834) is an invasive unionid originating from Asia. A review of the early introductions was given by Watters (1997). The first record (between 1963-1965) appears to be for a Hungarian hatchery that had imported species of carp from the Amur River, the native range of the mussel. The fishes were infested with *S. woodiana* glochidia that successfully colonized the hatchery. Since then, it has been recorded from numerous sites across the globe: Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Hungary, Indonesia, Italy, Malaysia, Moldova, Netherlands, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, and Ukraine. Most, if not all, of these records involve the movement of infested fishes between hatcheries, with occasional escapes into the wild. As predicted by Watters (1997), the mussel eventually made its way to the United States as well (Bogan et al, 2011). *Sinanodonta woodiana* has apparently been established in some hatcheries for years, which then act as sources of repeated release for this invasive species.

Records for Central America and the Caribbean region are rare. Keferl (1995) reported it from Laguna de Arenal in Costa Rica, the apparent result of tilapia imported from Taiwan. It appeared in 1982 in carp and tilapia ponds at Nigua in the Dominican Republic (Cicero & Grullón, 1982; Gomez et al., 1986). Although the import manifests for these fishes were destroyed by a fire, the fishes may have originated from Taiwan via Panamá. Subsequently, escapees into the wild were reported from Rio Yuna and Presa de Rincón (Watters & Kohl, 1995).

In June 2014, one of us (JC) received live *S. woodiana* collected by locals from the mouth of Rio Polochic at the western end of Lago de Izabal, Departamento de Izabal, Guatemala. Lago de Izabal drains via the Rio Dulce into the Caribbean Sea. Although the origin of the mussels is unknown, it is very likely the result of tilapia farming. Tilapia farming in Guatemala is a cottage industry conducted at the family and community level for food and to supplement income. As such, the farms are unregulated. Government hatcheries, such as El Remate and Sabana Grande, are rare. But El Remate, in collaboration with the Taiwanese government, is or will be exporting tilapia to Belize. The Taiwanese government also has budgeted \$456,000 to upgrade the Sabana Grande Aquaculture Center facilities to farm tilapia (Taiwan ICDF, 2014). Guatemala produces 260 metric tons of tilapia/year (Fitzsimmons, 2000).

The breadth of this species' tolerance to climate, ranging from Sweden to Indonesia, is remarkable. Although often imported on its normal hosts, carp species, it obviously is successfully using other fishes as well, including widely exported species such as tilapia. Tilapia alone is farmed in 85 countries (Fitzsimmons, 2000). Both tilapia and carp have escaped into the wild from hatcheries, presumably taking glochidia of this mussel with them. Once escaped, *S. woodiana* can use the native fishes of wherever it invades (Djajasmata, 1982; Dudgeon & Morton, 1983, 1984). *Sinanodonta woodiana* now represents the most widely distributed freshwater mussel on Earth.

Literature Cited:

Bogan, A.E., Bowers-Altman, J., & M.E. Raley. 2011. A new threat to conservation of North American freshwater mussels: Chinese pond mussel (*Sinanodonta woodiana*) in the United States. *Tentacle* 19:39-40.

- Cicero, J. & G. Grullón P. 1982. Almejas grandes de aguadulce en Republica Dominicana. *Naturalista Postal, Universidad Autónoma de Santo Domingo* (4/82): 1 pp.
- Djajasasmita, M. 1982. The occurrence of *Anodonta woodiana* Lea, 1837 in Indonesia (Pelecypod: Unionidae). *Veliger* 25:175.
- Dudgeon, D. & B. Morton. 1983. The population dynamics and sexual strategy of *Anodonta woodiana* (Bivalvia: Unionacea) in Plover Cove Reservoir, Hong Kong. *Journal of Zoology (London)* 201(2):161-183.
- Dudgeon, D. & B. Morton. 1984. Site selection and attachment duration of *Anodonta woodiana* (Bivalvia: Unionacea) glochidia on fish hosts. *Journal of Zoology (London)* 204(3):355-362.
- Fitzsimmons, K. 2000. Future trends of tilapia aquaculture in the Americas. In: *Tilapia Aquaculture in the Americas*, Vol. 2. pp. 252-264 (Costa-Pierce, B.A. & J.E. Rakocy, eds.). Baton Rouge, Louisiana: World Aquaculture Society.
- Gomez, J.D., Vargas, M., & E.A. Malek. 1986. Freshwater mollusks of the Dominican Republic. *Veliger* 28:130-134.
- Keferl, E.P. 1995. *Anodonta woodiana* (Lea, 1834) in Costa Rica. *Triannual Unionid Report* 7:5.
- Taiwan International Cooperation and Development Fund (Taiwan ICDF). 2014. <http://www.icdf.org.tw/ct.asp?xItem=5111&ctNode=30062&mp=2>, accessed 22 July 2014.
- Watters, G.T. 1997. A synthesis and review of the expanding range of the Asian freshwater mussel *Anodonta woodiana* (Lea, 1834) (Bivalvia: Unionidae). *Veliger* 40:152-156.
- Watters, G.T. & M. Kohl. 1995. The Asian *Anodonta woodiana* (Lea, 1834) in the Dominican Republic. *Triannual Unionid Report* 6 (unpaginated).

Additional Information Concerning the Conquest of Europe by the Invasive Chinese Pond Mussel *Sinanodonta woodiana*, 36. News from Austria, Belgium, France, Greece, Hungary and Italy

Henk K. Mienis, The Steinhardt Museum of Natural History and National Research Center, Department of Zoology, Tel Aviv University, IL-6997801 Tel Aviv, Israel, and National Natural History Collections, Berman Building, Hebrew University, IL-91904 Jerusalem, Israel mienis@netzer.org.il

Papers or website references dealing with the presence of the invasive Chinese Pond mussel *Sinanodonta woodiana* (Lea, 1834) in Europe continue to appear. Here is some new information from Austria, Belgium, France, Greece, Hungary, and Italy.

Austria

Patzner & Aitenbichler (2014) reported the find of a Chinese Pond mussel in an impounded area of the Hochmoos in Salzkammergut. This aquatic biotope is being used as a commercial fish pond. Now and then, this pond is being drained and, during such an event, the mussel was found. It represents the first record of *Sinanodonta woodiana* from Upper-Austria. In addition, the authors mentioned all previous records of this invasive exotic species from Austria.

Belgium

J. Packet confirmed the presence of the Chinese Pond mussel in the Schulenbroeks fish breeding ponds in Schallebroek, Limburg. One living and 15 empty shells were found on 6 May 2014 (Website: waarnemingen.be). R. Barendse already had reported it from that area on the same website on 22 September 2009 (Mienis, 2010).

France

Bastin *et al.* (2014) discovered specimens of the Chinese Pond mussel in the upper part of the Sèvre Nantaise River when the water level in that stream had been artificially lowered in June 2013. Empty shells and living specimens of all sizes were commonly encountered. It shows that this invasive species continues to enlarge its range in France.

Greece

Lake Pamvotis near Ioannina is suffering more and more from pollution and the number of living mollusc species is rapidly declining. Interestingly the exotic mussel *Sinanodonta woodiana* is at this moment the most numerous species in the lake.

Hungary

Once more, *Sinanodonta woodiana* is recorded as an invasive species in Europe's largest shallow lake (Kováts et al., 2013). According to the authors, the source of this invasion has to be sought in the fishponds south of the lake. Other invasive species recorded from Lake Balaton are the Gibel carp *Carassius gibelio*, the Amur sleeper *Perccottus gleni* and the Spiny-cheek crayfish *Orconectes limosus*.

Empty shells of bivalves form firm substrates for other benthic organisms. According to Bódis et al., 2014, the empty valves of the Chinese Pond mussel occurring in the Danube River may have greater effects on macro-invertebrate communities than those of native species due to their larger size and longer persistence.

Italy

The Chinese Pond mussel was recorded from the Volturno River and the Garigliano River, while its presence in the Tanagro River has to be confirmed (Carello et al., 2013). Its distribution there seems to be confined to slow running rivers and eutrophic ponds.

When Kamburska et al. (2013) reported the Chinese Pond mussel for the first time from Lake Maggiore, I raised serious doubt concerning the correct identification of the material because of the shape of the shells found in that lake. In a follow-up study, Guarneri et al. (2014) showed that the quite different mussels from Lake Maggiore and the nearby Po River indeed belong to a single species: *Sinanodonta woodiana*, according to DNA barcoding analyses.

References

- Bastin, K., Mandorlo, G., & Charles, L., 2014. Découverte de l'Anodonte chinoise *Sinanodonta woodiana* (Lea, 1834) (Mollusca, Bivalvia, Unionidae) dans la Sèvre Nantaise (Poitou-Charentes, France). *MalaCo*, 10:2-4.
- Bódis, E., Tóth, B., Szekeres, J., Borza, P., & Sousa, R. 2014. Empty native and invasive bivalve shells as benthic habitat modifiers in a large river. In P. Mauchart & Z. Csabai (Eds.): Book of Abstracts & Programme Joint Symposia 1st Central European Symposium for Aquatic Macroinvertebrate Research and 11th Hungarian Symposium for Aquatic Macroinvertebrate Research 10-13 April 2014, Szarvas, Hungary, 36-37.
- Carella, F., Maio, N., Aceto, S., & De Vico, G. 2013. New records of *Sinanodonta woodiana* (Lea, 1834) (Mollusca: Bivalvia: Unionidae) from Southern Italy with related pathologic condition. VIII Simposium Internacional de Fauna Salvaje, 21 Octubre – 3 Novembre 2013, Universidad de Leon, Abstracts: 96 (P.102).
- Guarneri, I., Popa, O.P., Gola, L., Kamburska, L., Lauceri, R., Lopes-Lima, M., Popa, L.P., & Riccardi, N. 2014. A morphometric and genetic comparison of *Sinanodonta woodiana* (Lea, 1834) populations: does shape really matter? *Aquatic Invasions*, 9 (2):183-194, Tables 1S-3S.
- Kamburska, L., Lauceri, R., & Riccardi, N. 2013. Establishment of a new alien species in Lake Maggiore (Northern Italy): *Anodonta* (*Sinanodonta*) *woodiana* (Lea, 1834) (Bivalvia: Unionidae). *Aquatic Invasions*, 8:111-116.
- Kováts, N., Ferincz, Á., Horváth, E., Benkő-Kiss, Á., & Paulovits, G. 2013. New invasive species in Lake Balaton. EuLakes, Torri del Benàco (Verona), Italy, 19th September 2013, Book of Abstracts, 23-24.
- Mienis, H.K. 2010. Additional information concerning the conquest of Europe by the invasive Chinese Pond mussel *Sinanodonta woodiana*. 21. News from Belgium, Poland, Spain and Ukraine. *Ellipsaria*, 12 (1):6-7.
- Patzner, R.A. & Aitenbichler, O. 2014. Die Chinesische Teichmuschel *Sinanodonta woodiana* in Oberösterreich. *Nachrichtenblatt der Ersten Vorarlberger Malakologischen Gesellschaft*, 21:36-37.
- Reischütz, A., Reischütz, N., & Reischütz, P.L. 2014. Helleniká pantoia, 36. Noch einmal zur Molluskenfauna des Pamvotis-Sees (Epirus, Griechenland). *Nachrichtenblatt der Ersten Vorarlberger Malakologischen Gesellschaft*, 21:83-86.

Additional Information Concerning the Presence of *Radix luteola* (Gastropoda, Lymnaeidae) in Israel

Henk K. Mienis^{1/2}, Svetlana Vaisman³ and Oz Rittner¹

¹ The Steinhardt Museum of Natural History and National Research Center, Tel Aviv University, IL-6997801 Tel Aviv, Israel.

² National Natural History Collections, Berman Building, Hebrew University of Jerusalem, IL-91904 Jerusalem, Israel.

³ Plant Protection and Inspection Services, Ministry of Agriculture, P.O. Box 78, IL-5025002 Bet Dagan, Israel.

HKM: mienis@netzer.org.il SV: svetak@moag.gov.il OR: israelbutterflies@gmail.com

Recently, we were able to record for the first time a find of a Lymnaeid species of S.E.-Asian origin: *Radix luteola* (Lamarck, 1822) from a nursery of aquatic plants in Israel (Mienis *et al.*, 2014). On 11 February 2014, the species was found in numbers in a single basin of about 1.5 x 3 m in the 'Linoy' nursery, Moshav Sede Yizhaq, Israel. The snails were found in company of three exotic species of North American origin: *Physella (Acutiana) acuta* (Draparnaud, 1805), *Planorbella duryi* (Wetherby, 1879), and *Pseudosuccinea columella* (Say, 1817). These American species are now considered well established invasive species in Israel.

Radix luteola has been reported so far from India, Sri Lanka, Myanmar, Thailand and South China (Brandt, 1974), and may occur elsewhere on the mainland in S.E.-Asia. Since it is an important host for several trematode species of humans and animals, the Ministry of Agriculture ordered the owner of the nursery to eradicate the restricted population of *Radix luteola*. This order was forwarded to the caretaker of the nursery on 10 April 2014 and the basin was chemically treated within a few days. An inspection carried out on 29 April 2014 showed that no living snails were present in that basin.

In the past, the 'Linoy' nursery had received aquatic plants for further propagation from the 'Hazorea Water Lily' nursery in Kibbutz Hazorea, Israel. Therefore, we visited that nursery on 24 February 2014. Although numerous exotic species were found in that nursery, including some from S.E.-Asia [like *Cyclotropis bedaliensis* (Rensch, 1934), *Gyraulus chinensis* (Dunker 1848), *Austropeplea ollula* (Gould, 1859) and *Radix rubiginosa* (Michelin 1831)], we failed to find any *Radix luteola*. However, during another visit to the nursery in Hazorea on 23 June 2014, we found a single small basin infected with *Radix luteola*.

Since the 'Hazorea Water Lily' nursery is a well-known exporter of numerous varieties of lotus and water lilies to Europe, they have started a program to get rid of the unwanted aquatic snails in their basins.

The find of the S.E.-Asian Lymnaeid *Radix luteola* in at least two nurseries for aquatic plants in Israel raises the question whether we also may expect this species in other nurseries and even in man-made aquatic biotopes like ponds and lakes where water lilies often form an important role as ornamental plants.

Acknowledgements

We would like to thank the owner and caretaker, respectively, of the nurseries in Hazorea and Sede Yizhaq for their cooperation during our surveys.



Radix luteola (Lamarck, 1822). The empty shell has a height of 18.3 mm. Photographs by Oz Rittner.

References

- Brandt, R.A.M. 1974. The non-marine aquatic Mollusca of Thailand. *Archiv für Molluskenkunde*, 105:I-IV+1-423.
- Mienis, H.K., Vaisman, S., & Rittner, O. 2014. Molluscs in nurseries and hothouses with a note on *Radix luteola*: another first record of an exotic species from Israel (Gastropoda, Lymnaeidae). *Triton*, 29:26-29.

Confirmed Occurrence of the Freshwater Snail *Pomella megastoma* (Sowerby, 1825) in the "Arapey Chico River", Oriental Republic of Uruguay, South America

A. Ignacio Agudo-Padrón, Project "Avulsos Malacológicos – AM," Caixa Postal (P. O. Box) 010, 88010-970 Centro, Florianópolis, Santa Catarina - SC, Brasil ignacioagudo@gmail.com
<http://noticias-malacologicas-am.webnode.pt>

Etymologically speaking, Uruguay means "Rio de los Caracoles" (River of Snails), in the Guaraní language. This meaning arises from an interpretation in the late eighteenth century by Engineer "José Maria Cabrer", who accompanied the Spanish Naturalist "Félix de Azara" on some of his travels in the South American regions of "Rio de la Plata," the "Misiones," and Paraguay. Research presented in 2010 by the renowned Uruguayan malacologist Cristhian Clavijo of the National Museum of Natural History based in Montevideo, supports this thesis (sic): "... the aboriginal people, the original inhabitants of the region, would be referring to a species of mollusk that is part of the fluvial endemic fauna, the snail *Asolene* (*Pomella*) *megastoma* (Sowerby, 1825), belonging to the Ampullariidae family. The fact is that aboriginal people made use of these aquatic snails as food, and also in some rituals. Large quantities found in burials demonstrate the importance they had these molluscs for these ancient inhabitants of the region." (El Pais 2010).

Thus, this species occurs exclusively in the Uruguay River Basin, including locations in the river margins on the Santa Catarina State/ SC < <http://noticias-malacologicas-am.webnode.pt/news/bacia-e-vale-do-alto-rio-uruguai%3a-uma-breve-introdu%C3%A7%C3%A3o-%C3%A0-suas-nuances-malacologicas-%21/> >.

Despite being a recognized endemic species with wide distributed in the Uruguay river basin, Southern Cone of South America (Clavijo *et al.* 2010), so far our modest incursions of malacological research in the neighboring country of the "Oriental Republic of Uruguay" (Agudo-Padrón 2006, 2008, 2012) had not detected their presence in the hydrographical system of the "Salto Department" region.

On October 02, 2013, during a period of severe drought, in the course of new visit for limnic shelling in the region of "Termas de Arapey", specifically on the "Arapey Chico River" (Agudo-Padrón 2008), finally our first spot specimen of *Pomella* (= *Asolene*) *megastoma* (Sowerby, 1825) was found in a secluded section of the river, shell in muddy substrate (Figure 1).



Figure 1.- Fresh shell of *Pomella* (= *Asolene*) *megastoma* (Sowerby, 1825) found in the "Arapey Chico" River basin.

The accompanying limnic mollusk fauna detected at the time of collection included three species: two native gastropods – *Pomacea canaliculata* (Lamarck, 1804) and *Drepanotrema pfeifferi* (Strobel, 1874), and one exotic bivalve – *Corbicula fluminea* (Müller, 1774). All four species are included in Figure 2.

Figure 2.- *Pomella* (= *Asolene*) *megastoma* (Sowerby, 1825) (upper left) and the accompanying limnic mollusk fauna.



References:

- Agudo-Padrón, A.I. 2006. Asiatic golden mussel, *Limnoperna fortunei* (Dunker, 1857), in the Uruguay River Basin: a report about the progress heading in direction to the Southwest Brazil region. *FMCS Newsletter Ellipsaria*, 8(2):10-11.
- Agudo-Padrón, A.I. 2008. New malacological observations in the Arapey River region, Salto Department, Oriental Republic of Uruguay, Southern Cone of South America. *FMCS Newsletter Ellipsaria*, 10(3):10-12.
- Agudo-Padrón, A.I. 2012. Shelling in the “Daymán River Basin”, Salto Department, Uruguay, Southern Cone of South America. *FMCS Newsletter Ellipsaria*, 14(1):22-24.
- Clavijo, C., Carranza, A., Scarabino, F., & Soutullo, A. 2010. Conservation priorities for Uruguayan land and freshwater molluscs. *IUCN/SSC Newsletter TENTACLE*, (18):14-16. Available online at: https://www.academia.edu/7840394/CONSERVATION_PRIORITIES_FOR_URUGUAYAN_LAND_AND_FRESHWATER_MOLLUSCS?auto=download
- El País. 2010. Presentan tesis del nombre Uruguay. El País Newspaper, Montevideo/ Uruguay, Viernes (Friday) 08/10/2010. Available online at: <http://historico.elpais.com.uy/101008/pciuda-520474/informe/presentan-tesis-del-nombre-uruguay/>

Additional Geographical Occurrence of Continental Mollusks from Santa Catarina's State, SC, Southern Brazil Region, Including a “Preliminary New Record” for the Regional Inventory

A. Ignacio Agudo-Padrón¹ and Luís Adriano Funez²

¹ Project “Avulsos Malacológicos – AM,” Caixa Postal (P. O. Box) 010, 88010-970 Centro, Florianópolis, Santa Catarina - SC, Brasil ¹ignacioagudo@gmail.com ; <http://noticias-malacologicas-am.webnode.pt>

² Fundação Universidade Regional de Blumenau – FURB, Rua Antônio da Veiga, 140 - Victor Konder Blumenau - SC, 89012-900, Brasil luís_adriano_f@yahoo.com.br

Based, once again, on extensive literature review and the examination of samples obtained in the course of works done in the field, the present contribution incorporates the geographical records of four continental gastropod forms (two limnic/ freshwater and two land/ terrestrial), beyond the “preliminary record” of more another gastropod mollusk for the recent systematic inventory of the State (Agudo-Padrón 2014), central portion of southern Brazil region, including a total of five Gastropoda (two limnic/ freshwater & three land/ terrestrial) distributed in five genera and four families.

The taxonomic arrangement follows basically the original proposal of Agudo-Padrón (2014), based on the monographic contributions of Simone (2006) and Thomé *et al.* (2006). Additional information about the material deposited in museum is included.

Abbreviations:

CEMAR – Centro de Estudos do Mar (Centre for Marine Studies), Museu e Aquário Marinho de Bombinhas (Bombinhas Museum and Marine Aquarium), SC, Brasil.

I. Freshwater Forms

Class GASTROPODA

Subclass PROSOBRANCHIA / CAENOGASTROPODA

Family HIDROBIIDAE

Potamolithus catharinae Pilsbry, 1911

New confirmed occurrence in “Cachoeira da Pombinha” (Little Dove Waterfall), Pouso Redondo Municipal District (CEMAR 2501) (Figure 1). Species previously cited for the State in Agudo-Padrón (2008:152; 2011:21).

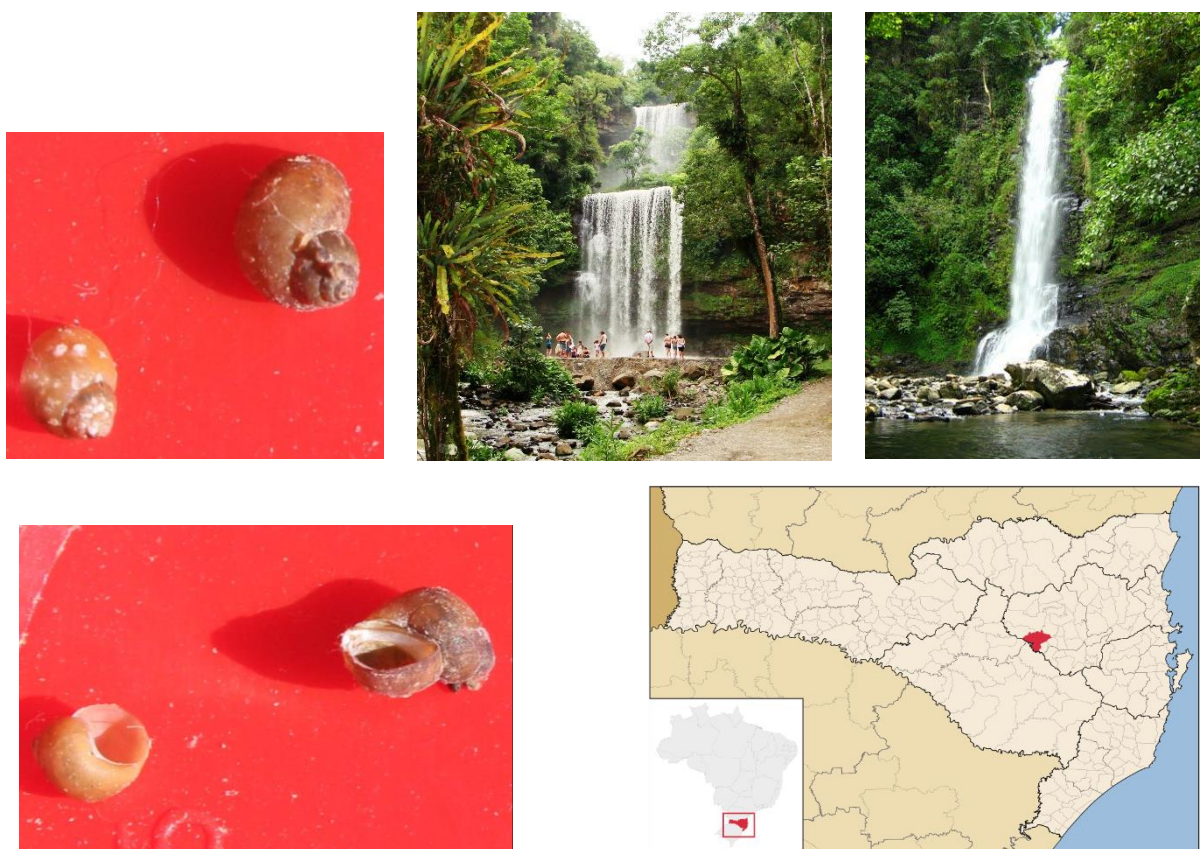


Figure 1.- *Potamolithus catharinae* Pilsbry, 1911 specimens and its newly identified distribution in the environment (waterfalls) of “Pouso Redondo” Municipal District (map-red color), Itajaí-Açu River Basin Valley region of Santa Catarina’s State. Photographs by Luis Eduardo M. Silva, CEMAR

Littoridina charruana d'Orbigny, 1843

New confirmed occurrence in the “Parque Municipal da Lagoa do Peri” (Peri Lagoon Municipal Park), Santa Catarina Island, Florianópolis Municipal District (Figure 2), whose environment has been described by us (Agudo 2007). Species previously cited for the State in Agudo-Padrón (2008:152).

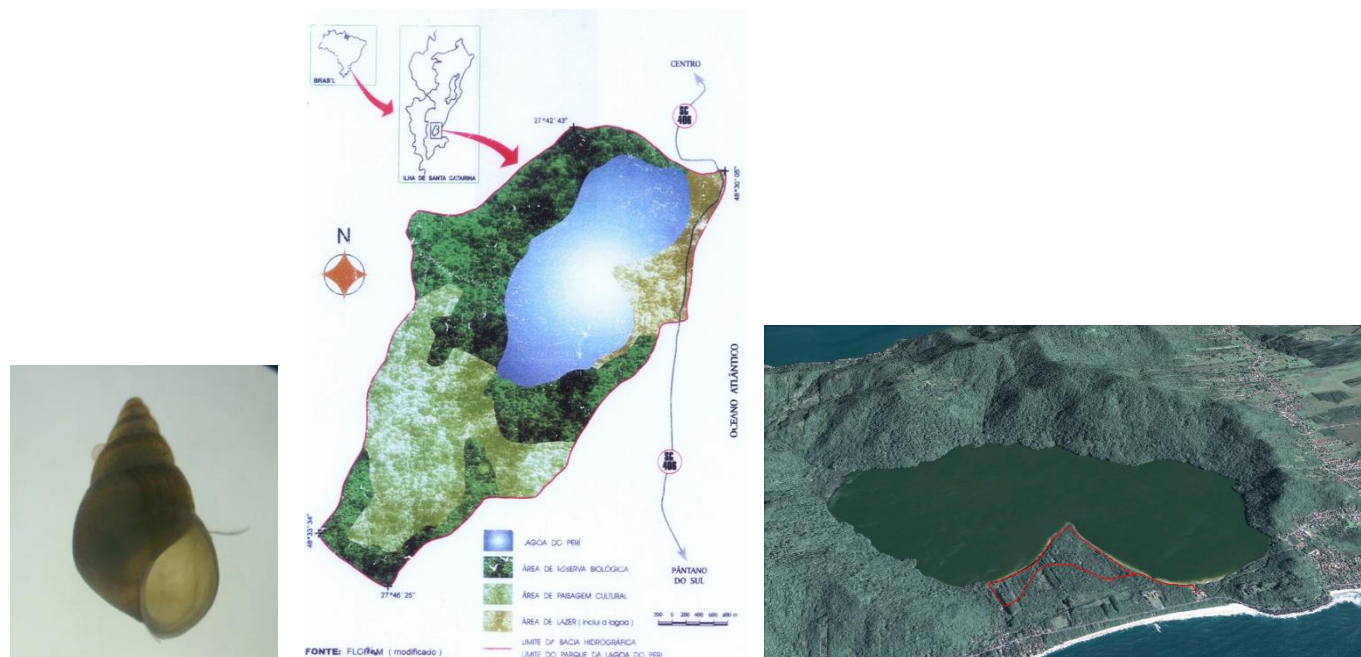


Figure 2. *Littoridina charruana* d'Orbigny, 1843 specimen (upper left) and its newly identified distribution on Santa Catarina Island (maps), Florianópolis Municipal District region of Santa Catarina's State. Photograph: LIMNOS UFSC < <https://www.facebook.com/limnos.ufsc>

II. Terrestrial forms

Class GASTROPODA

Subclass PULMONATA

Family EUCONULIDAE

Pseudoguppya semenlini (Moricand, 1846)

Confirmed new occurrence in remnant Atlantic forest of “Bombinhas” Municipal District (CEMAR 3176) (Figure 3), geographical domain of the “Itajaí-Açu River Basin Valley region.” Species previously cited for the State in Agudo-Padrón *et al.* (2013 b:32).

“...jumps when you tap it is very small, with a foot very long slender ... seems like bending the foot and, as a trigger, the lengthening make him jump, and it seems, to escape a possible predator ...” (Luis Eduardo M. Silva, CEMAR/ Bombinhas, SC, May 28, 2014, Pers. Comm.).



Figure 3. *Pseudoguppya semenlini* (Moricand, 1846) specimens (upper) and its distribution in “Bombinhas” Municipal District (maps), Itajaí-Açu River Basin Valley region of Santa Catarina's State. Photographs: Luis Eduardo M. Silva, CEMAR

Family AMPHIBULIMIDAE

Simpulopsis corrugata Guppy, 1866

Confirmed new occurrence in the geographical domain of the “Itajaí-Açu River Basin Valley region” (Figure 4). Genus previously cited for the State in Agudo-Padrón (2008:165). Species previously cited for the southern region of the State in Agudo-Padrón (2012:37).



Figure 4. *Simpulopsis corrugata* Guppy, 1866 specimen and its newly determined distribution in “Bombinhas” Municipal District, Itajaí-Açu River Basin Valley region of Santa Catarina’s State. Photograph: Luís Adriano Funez

Family SYSTROPIIDAE

Happia sp. (under taxonomic determination)

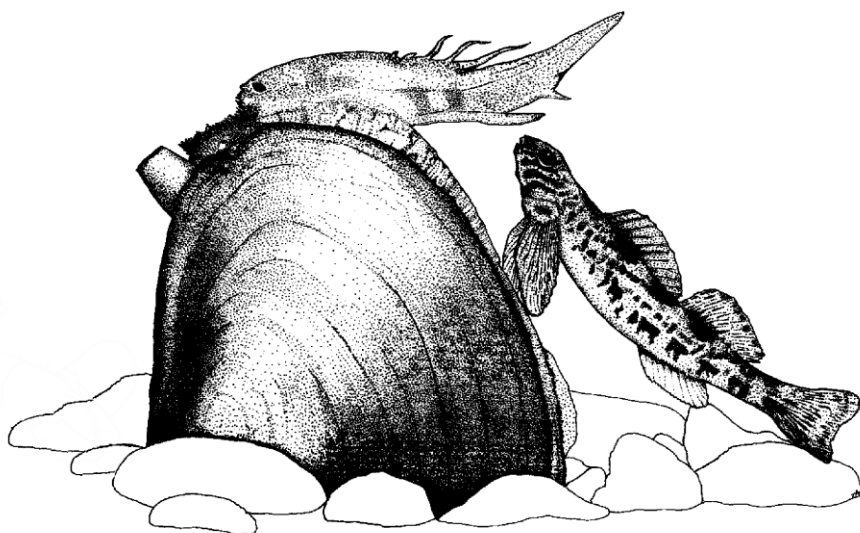
Confirmed new record of terrestrial gastropod species for the recent malacological regional inventory of Santa Catarina State/ SC (Agudo-Padrón *et al.* 2013a:40; Agudo-Padrón 2014), in the geographical domain of the “Itajaí-Açu River Basin Valley” and “Joinville” city and Municipal District regions (Figure. 5). Genus previously cited for the State in Agudo-Padrón (2008:165). Species “in determination process” previously cited for the neighbor State of Rio Grande do Sul/ RS (“São Francisco de Paula”) in Thomé *et al.* (2006:79).



Figure 5.- *Happia* sp specimen and its preliminary distribution in Santa Catarina’s State (regions of Itajaí-Açu River Basin Valley (left) and Joinville (right, red color). Photograph: Luís Adriano Funez.

References:

- Agudo(-Padrón), A.I. 2007. Exotic isolated occurrence of the mussel naiad *Leila blainvilleana* (Lea, 1834) in a freshwater coastal Lagoon of the Santa Catarina Island, Southern Brazil. *FMCS Newsletter Ellipsaria*, 9(3):10-12.
- Agudo-Padrón, A.I. 2008. Listagem sistemática dos moluscos continentais ocorrentes no Estado de Santa Catarina, Brasil (Systematic list of freshwater and land molluscs of Santa Catarina State, Brazil). *Comunicaciones de la Sociedad Malacológica del Uruguay*, 9(91):147-179. Available online at: <http://redalyc.uaemex.mx/redalyc/pdf/524/52412049003.pdf>
- Agudo-Padrón, A.I. 2011. Freshwater mollusc additions to inventory of Santa Catarina's State, SC, Southern Brazil region, with brief comments about some little-known continental forms. *FMCS Newsletter Ellipsaria*, 13(2):20-25.
- Agudo-Padrón, A.I. 2012. Nuevos aportes a la lista sistemática de moluscos continentales ocurrentes en el Estado de Santa Catarina, Brasil (New contributions to the systematic list of continental mollusks occurring in the State of Santa Catarina, Brazil). *Amici Molluscarum*, 20(1):35-42. Disponible en: <http://www.amicimolluscarum.com/números>
- Agudo-Padrón, A.I. 2014. Inventario sistemático de los moluscos continentales ocurrentes en el Estado de Santa Catarina, Brasil/ Inventário sistemático dos moluscos continentais ocorrentes no Estado de Santa Catarina, Brasil. *BIOMA*, 2(21):6-23. Disponible en: <http://smtpilimitado.com/kennel/InventarioSistematicodelosMoluscosContinentalesSantaCatarinaBr.pdf>
- Agudo-Padrón, A.I.; Luz, J.S. da & Lisboa, L.K. 2013a. New geographical records of some little continental molluscs from Santa Catarina's State, Southern Brazil region. *FMCS Newsletter Ellipsaria*, 15(2):37-40.
- Agudo-Padrón, A.I.; Funez, L.A.; Luz, J.S. da; Lisboa, L.K. & Zermiani, A.E. 2013b. New geographical records of continental mollusks in the Central and North Atlantic Slope sections of Santa Catarina State/ SC, Southern Brazil. *FMCS Newsletter Ellipsaria*, 15(3):28-34.
- Simone, L.R.L. *Land and freshwater molluscs of Brazil*. São Paulo, SP: FAPESP, 2006, 390 p.
- Thomé, J.W.; Gomes, S.R. & Picanço, J.B. 2006. *Guia ilustrado: Os caracóis e as lesmas dos nossos bosques e jardins*. Pelotas, RS: USEB, 2006, 123 p.



FMCS Officers

President

Patricia Morrison
U.S. Fish and Wildlife Service
Ohio River Islands NWR
3982 Waverly Road
Williamstown, WV 26187
304-375-2923 x 124
patricia_morrison@fws.gov

President Elect

Teresa Newton
U.S. Geological Survey
Upper Midwest Environ. Science Center
2630 Fanta Reed Road
LaCrosse, WI 54603
608-781-6217
tnewton@usgs.gov

Secretary

Greg Zimmerman
EnviroScience, Inc.
5070 Stow Road
Stow, Ohio 44224
330-688-0111
gzimmerman@enviroscienceinc.com

Treasurer

Heidi L. Dunn
Ecological Specialists Inc.
1417 Hoff Industrial Park
O'Fallon, Mo 63366
636-281-1982; Fax: -0973
Hdunn@ecologicalspecialists.com

Past President

Caryn Vaughn
Oklahoma Biological Survey
University of Oklahoma
111 E. Chesapeake Street
Norman, OK 73019
405-325-4034
cvaughn@ou.edu

Ellipsaria is posted on the FMCS web site quarterly: early in March, June, September, and December. This newsletter routinely includes Society news, abstracts, job postings, meeting notices, publication announcements, informal articles about ongoing research, and comments on current issues affecting freshwater mollusks. Anyone may submit material for inclusion in *Ellipsaria*; however, only current dues-paying members of FMCS can access the two most recent issues. Older issues are accessible to anyone. Information for possible inclusion in *Ellipsaria* should be submitted via e-mail to the editor, John Jenkinson, at jjjenkinson@hotmail.com.

Contributions may be submitted at any time but are due by the 15th of the month before each issue is posted. MSWord is optimal for text documents but the editor may be able to convert other formats. Graphics should be in a form that can be manipulated using PhotoShop. Please limit the length of informal articles to one page of text. Note that submissions are not peer reviewed but are checked for clarity and appropriateness for this freshwater mollusk newsletter. Feel free to contact the editor with questions about possible submissions or transmission concerns.

FMCS Standing Committees and Their Chairs/Co-chairs

If you are interested in participating in committee activities, please contact one of the appropriate chairs.

Awards

W. Gregory Cope
North Carolina State University
greg_cope@ncsu.edu

Teresa Newton
Upper Midwest Environ. Science Center
tnewton@usgs.gov

Emy Monroe
University of South Dakota
emy.monroe@usd.edu

Environmental Quality & Affairs

Steve McMurray
Missouri Dept. of Conservation
stephen.mcmurray@mdc.mo.gov

Braven Beaty
The Nature Conservancy
bbeaty@tnc.org

Gastropod Status and Distribution

Nathan Whelan
University of Alabama
nwhelan@crimson.ua.edu

Jeremy Tiemann
Illinois Natural History Survey
jtiemann@illinois.edu

Genetics

David J. Berg
Miami University
bergdj@miamioh.edu

Curt Elderkin
The College of New Jersey
elderkin@tcnj.edu

Guidelines and Techniques

Nevin Welte
Pennsylvania Fish & Boat Commission
c-nwelte@state.pa.us

Mary McCann
HDR, Inc.
mary.mccann@hdrinc.com

Information Exchange

Walkerana -- G. Thomas Watters
OSU Museum of Biological Diversity
Watters.1@osu.edu

Ellipsaria -- John Jenkinson
Clinton, Tennessee
jjjenkinson@hotmail.com

Mussel Status and Distribution

Arthur E. Bogan
N.C. State Museum of Natural Sciences
arthur.bogan@ncdenr.gov

John L. Harris
Arkansas State University
omibob1@gmail.com

Nominations

Leroy Koch
U.S. Fish and Wildlife Service
leroy_koch@fws.gov

Outreach

Megan Bradley
Virginia Game & Inland Fisheries
Megan.Bradley@dgif.virginia.gov

Tom Jones
Marshall University
jonest@marshall.edu

Propagation, Restoration, & Introduction

Christopher Owen
Kentucky Dept. of Fish & Wildlife Resources
Christopher.Owen@ky.gov

Dan Hua
Virginia Tech.
huad@vt.edu

Symposium

Teresa Newton
Upper Midwest Environ. Science Center
tnewton@usgs.gov

Parting Shot



William J. (Bill) Clench during the 1980 American Malacological Union [now Society] field trip to Floyds Fork, Salt River, in Kentucky. Dr. Clench was the tireless Curator of Mollusks at the Museum of Comparative Zoology, Harvard University, from 1926 to 1966. More than that, however, “Uncle Bill.” was extremely personable and helpful to anyone who shared his love for mollusks. Among his 400+ published papers, the 1925 “Vagabonding for Shells” [*Nautilus*, 38(4):127-143], and 1956 “Freshwater Mollusks of Alabama, Georgia, and Florida . . .” (*Bulletin of the Florida State Museum, Biological Series*, 13:97-239) stand out for many freshwater malacologists. Bill died in 1984, at age 86. Photograph by John Jenkinson.

If you would like to contribute a freshwater mollusk-related image for use as a **Parting Shot** in *Ellipsaria*, e-mail the picture, informative caption, and photo credit to jjjenkinson@hotmail.com.

