



**Newsletter of the  
SOUTHWEST ASSOCIATION OF FRESHWATER  
INVERTEBRATE TAXONOMISTS**

Greetings SAFIT members,

We have finally received some rain in northern CA. Still way behind but it would be interesting to see whether late winter/spring rains are more, less or as beneficial as fall/early winter rains. Some of the higher elevation spring creeks in Humboldt County had surprisingly good flows in January after receiving virtually no rain in December and January. Must be some good storage from the wet years? Any hydrologists out there?

Have a job opening that you want to announce, or are looking for a job? Let SAFIT know in the Newsletter! Looking for specimens of a certain species or a literature reference? Need material for research or comparative purposes? Let your colleagues know in the SAFIT Newsletter! Want a workshop on a particular group of organisms? Have references to sell trade or share? Looking for a collecting partner? Put it here in the SAFIT Newsletter! All appropriate requests, queries, non-commercial advertisements and announcements will be considered, and are free to the SAFIT membership.

Thanks!  
Jon Lee, Editor

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**VIDEO: Shipping Benthic Macroinvertebrate Biological Samples Under Special Provision A180** (featuring a couple of stars in the making!)

This video demonstrates how to properly use an alcohol hydrometer, preserve benthic macroinvertebrate samples with ethyl alcohol and how to then pack and (legally) ship these samples under Special Provision A180.

new weblink: <http://youtu.be/-GTZhLFUxrs>

Erick Burres  
Senior Environmental Scientist (Specialist)  
Clean Water Team - Citizen Monitoring Coordinator  
CWQMCN - Facilitator  
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**BEETLEMANIA WORKSHOP REVIEW** by Bill Isham

On 27 and 28 March 2014, SAFIT sponsored a workshop titled Beetlemania in the Valley, held on the Oregon State University campus in Corvallis. The workshop focused on the Hydradephaga and was led by Dr. Kelly Miller from the University of New Mexico. Overall response by participants was extremely positive, as Dr. Miller is a highly engaging speaker with a cosmopolitan knowledge of the subject presented. A number of new keys were provided and attendees were treated to additional talks on the evolution of dytiscid sexual selection strategies as well as Dr. Miller's anecdotes from his worldwide collecting adventures.

This was a great location for a workshop, as quite a few of our Canadian friends were able to attend and the Northwest and Southwest invertebrate taxonomy groups were both well represented. There were a total of 32 attendees, and we were able to cover all costs of the conference. We now look forward to planning our next workshop, the topic of which is yet to be determined. Acari? Dryopoidea? Odonata? Hydrophiloidea? The floor is open, feel free to make suggestions to SAFIT.



Dr. Kelly Miller, SAFIT Hydradephaga Workshop

## EMPLOYMENT OPPORTUNITIES

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## FIELD & LAB

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**Miscellaneous bug notes** (anecdotal notes, including distributional records in the SAFIT region, which may be interesting or helpful to SAFIT members). To make contributions or comments contact the editor: [jlee@humboldt1.com](mailto:jlee@humboldt1.com).

Last year it was brought to my attention that Boris Kondratieff and John Sandberg had collected a single specimen of a rare Trichoptera species (*Rhyacophila tamalpaisi* Denning, 1975 (Rhyacophilidae)) from a small Humboldt County creek. This species is reported from the single male holotype collected in Mount Tamalpais State Park (CA,

Marin Co.) in 1974. Subsequent collecting at this small Humboldt Co. creek yielded several *R. tamalpaisi* male and female specimens and a male and presumed female of *Farula geyseri* Denning, 1989 (Uenoidae), again only known from the holotype male collected in 1989 near Big Sulfur Creek (CA, Sonoma Co.). Another interesting caddis present at this small creek is *Lepania cascada* Ross, 1941 (Goeridae), apparently not reported from California in the literature. This creek is at about 2400 foot (730 meter) elevation and has two apparent sister creeks which all join together a little ways down slope. Obviously a very interesting small creek and a good reason to investigate small creeks in one's neighborhood!

Denning, D.G. 1975. New species of Trichoptera from Western North America. The Pan-Pacific Entomologist 51:318-326.

Denning, D.G. 1989. Eight new species of Trichoptera. The Pan-Pacific Entomologist 65:123-131.

Ross, H.H. 1941. Descriptions and records of North American Trichoptera. Transactions of the American Entomological Society 67:35-126.



27 March 2014, about half way to top.



27 March 2014, near the top.



27 March 2014, sister creek with less stable substrate. Can barely make out large trees down in a slide at top of photo.

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## LATEST LITERATURE

*If you know of any literature or if you yourself have published any papers of interest to the SAFIT membership, please send copies or the citations to Brady Richards ([arichards@csuchico.edu](mailto:arichards@csuchico.edu)) for inclusion in the next issue of the SAFIT Newsletter.*

*Thanks!!*

**Asterisk (\*) indicates author is a SAFIT member.**

### Crustacea

Alvarez, F., J. L. Villalobos, M. E. Hendrickx, E. Escobar-Briones, G. Rodriguez-Almaraz, and E. Campos. 2014. Biodiversity of decapod crustaceans (Crustacea: Decapoda) in Mexico. *Revista Mexicana De Biodiversidad* 85:S208-S219.

Graening, G. O. and \*D. C. Rogers. 2013. Checklist of inland aquatic Isopoda (Crustacea: Malacostraca) of California. *California Fish and Game* 99:176-192.

\*Rogers, D. C. 2014. Larger hatching fractions in avian dispersed anostracan eggs (Branchiopoda). *Journal of Crustacean Biology* 34:135-143.

### Odonata

Dijkstra, K. D. B., V. J. Kalkman, R. A. Dow, F. R. Stokvis, and J. Van Tol. 2013. Redefining the damselfly families: a comprehensive molecular phylogeny of Zygoptera (Odonata). *Systematic Entomology* 39:68-96.

Dumont, H. J. 2013. Phylogeny of the genus *Ischnura*, with emphasis on the Old World taxa (Zygoptera: Coenagrionidae). *Odonatologica* 42:301-308.

Gonzalez-Soriano, E. and R. Novelo-Gutierrez. 2014. Biodiversity of Odonata in Mexico. *Revista Mexicana De Biodiversidad* 85:S243-S251.

### Neuropterida

Contreras-Ramos, A. and M. V. Rosas. 2014. Biodiversity of Megaloptera and Raphidioptera in Mexico. *Revista Mexicana De Biodiversidad* 85:S257-S263.

### Trichoptera

Blahnik, R. J. and R. W. Holzenthal. 2014. Review and redescription of species in the *Oecetis avara* group, with the description of 15 new species (Trichoptera, Leptoceridae). *Zookeys* 376:1-83.

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**Coleoptera**

- Kamite, Y. 2013. Revision of the genus *Optioservus* SANDERSON, part 1: Generic redescription and revision of the Nearctic species (*O. fastiditus* and *O. quadrimaculatus* species groups) (Coleoptera: Elmidae). *Koleopterologische Rundschau* 83:133-164.
- Miller, K., A. Jean, Y. Alarie, N. Hardy, and R. Gibson. 2013. Phylogenetic placement of North American subterranean diving beetles (Insecta: Coleoptera: Dytiscidae). *Arthropod Systematics & Phylogeny* 71:75-90.
- Miller, K. B. 2013. Notes on flight and respiration at the water surface by *Hygrotus salinarius* (Wallis) (Coleoptera: Dytiscidae). *The Coleopterists Bulletin* 67:444-446.
- Miller, K. B. 2013. Review of the genus *Cybister* Curtis, 1827 (Coleoptera: Dytiscidae: Dytiscinae: Cybistrini) in North America. *The Coleopterists Bulletin* 67:401-410.
- Short, A. E. Z. and M. Fikáček. 2013. Molecular phylogeny, evolution and classification of the Hydrophilidae (Coleoptera). *Systematic Entomology* 38:723-752.

**Miscellaneous**

- Halaburka, B. J., J. E. Lawrence, H. N. Bischel, J. Hsiao, M. H. Plumlee, V. H. Resh, and R. G. Luthy. 2013. Economic and ecological costs and benefits of streamflow augmentation using recycled water in a California coastal stream. *Environmental Science & Technology* 47:10735-10743.
- Mock, K. E., J. C. Brim Box, J. P. Chong, \*J. Furnish, and J. K. Howard. 2013. Comparison of population genetic patterns in two widespread freshwater mussels with contrasting life histories in western North America. *Molecular Ecology* 22:6060-6073.
- Morrison, R. R., M. C. Stone, and D. W. Sada. 2013. Environmental response of a desert springbrook to incremental discharge reductions, Death Valley National Park, California, USA. *Journal of Arid Environments* 99:5-13.
- Orlofske, J. M. and D. J. Baird. 2013. The tiny mayfly in the room: implications of size-dependent invertebrate taxonomic identification for biomonitoring data properties. *Aquatic Ecology* 47:481-494.
- Shantibala, T., R. K. Lokeshwari, and H. Debaraj. 2014. Nutritional and antinutritional composition of the five species of aquatic edible insects consumed in Manipur, India. *Journal of Insect Science* 14.

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Greetings SAFIT members,

Hope the drought isn't messing up peoples work schedules too much. I'm still surprised that many of the spring creeks I've visited in Humboldt County, CA appear to have normal flow. Must be recharge from past wet years. A big problem up here, and probably throughout California, are the large-scale marijuana grows and water diversion. Probably a dangerous proposition but does anyone know of bioassessment projects on grow sites?

Have a job opening that you want to announce, or are looking for a job? Let SAFIT know in the Newsletter! Looking for specimens of a certain species or a literature reference? Need material for research or comparative purposes? Let your colleagues know in the SAFIT Newsletter! Want a workshop on a particular group of organisms? Have references to sell trade or share? Looking for a collecting partner? Put it here in the SAFIT Newsletter! All appropriate requests, queries, non-commercial advertisements and announcements will be considered, and are free to the SAFIT membership.

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While processing Klamath River benthic samples, collected by the Yurok Tribal Fisheries Program, I came across nice specimens of pre-emergent mayflies (Ephemeroptera) in the family Leptohyphidae. Three genera were collected, including: *Asioplax*, *Homoleptohyphes* and *Tricorythodes*. Excellent photos of these genera, taken by SAFIT member Dave Ruiter, are presented on the following pages.

I generally don't see all three of these genera in routine bioassessment samples from wadeable streams. Separation of late instars of the three genera is relatively easy but separation of early instars can be challenging. The dorsoventrally flattened body and wide forefemora can routinely distinguish *Asioplax*, although these characters become more difficult in very early instars. Late instar *Homoleptohyphes dimorphus* can be distinguished by the enlarged eyes of the male (see photo below) and by a character recognized by Wayne Fields and discussed in SAFIT Newsletter 2(3&4): each thoracic sternum has a subsurface pigmented area centrally between the coxae. The three pigmented areas are roughly circular and the third area may appear anterior to the metacoxae. This character seems to hold up even in relatively early instars. However, the pigmentation appears to be lacking in very early instars but the outline of the area that becomes pigmented is still evident.

Another observation from these riverine samples, and new to me, is that even very early *Isonychia* (Isonychiidae) instars possess a row of long setae on the forelegs. Perhaps helpful for separating very early *Isonychia* larvae from genera such as *Siphonurus* (Siphonuridae).





*Homoleptohyphes dimorphus*  
CA: Siskiyou County  
28 March 2013



5.5 mm

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### Crustacea

Andrews, J. M., A. J. Bohonak, and M. A. Simovich. 2014. Isolation and characterization of polymorphic microsatellite loci in the endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*). *Conservation Genetics Resources* 6:401-403.

### Ephemeroptera

Boldrini, R. and A. M. O. Pes. 2014. Five new species of *Camelobaetidius* Demoulin, 1966 (Ephemeroptera: Baetidae), and redescription of *Camelobaetidius mexicanus* (Traver & Edmunds, 1968). *Zootaxa* 3796:545-567.

### Plecoptera

Grubbs, S. A., R. W. Baumann, R. E. DeWalt, and T. Tweddale. 2014. A review of the Nearctic genus *Prostoia* (Ricker) (Plecoptera, Nemouridae), with the description of a new species and a surprising range extension for *P. hallasi* Kondratieff & Kirchner. *Zookeys* 401:11-30.

### Trichoptera

Ito, T., \*R. W. Wisseman, J. C. Morse, M. H. Colbo, and J. S. Weaver. 2014. The genus *Palaeagapetus* Ulmer (Trichoptera, Hydroptilidae, Ptilocolepinae) in North America. *Zootaxa* 3794:201-221.

\*Ruiter, D. E., R. W. Baumann, and O. S. Flint. 2014. Studies on the caddisfly (Trichoptera) fauna of Nevada. *Pan-Pacific Entomologist* 90:23-32.

### Diptera

Da Silva, F. L., A. A. Fonseca-Gessner, and T. Ekrem. 2014. A taxonomic revision of genus *Labrundinia* Fittkau, 1962 (Diptera: Chironomidae: Tanypodinae). *Zootaxa* 3769:1-185.

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Niitsuma, H. 2014. A new species of *Bilyjomyia* Niitsuma et Watson from Japan, with keys to species of the genus (Diptera: Chironomidae). *Zootaxa* 3755:470-476.

### Miscellaneous

Gill, B. A., R. A. Harrington, B. C. Kondratieff, K. R. Zamudio, N. L. Poff, and W. C. Funk. 2014. Morphological taxonomy, DNA barcoding, and species diversity in southern Rocky Mountain headwater streams. *Freshwater Science* 33:288-301.

Jackson, J. K., J. M. Battle, B. P. White, E. M. Pilgrim, E. D. Stein, P. E. Miller, and B. W. Sweeney. 2014. Cryptic biodiversity in streams: a comparison of macroinvertebrate communities based on morphological and DNA barcode identifications. *Freshwater Science* 33:312-324.

Scasta, J. D., J. R. Weir, D. M. Engle, and J. D. Carlson. 2014. Combustion of cattle fecal pats ignited by prescribed fire. *Rangeland Ecology & Management* 67:229-233.

Stein, E. D., B. P. White, \*R. D. Mazor, J. K. Jackson, J. M. Battle, P. E. Miller, E. M. Pilgrim, and B. W. Sweeney. 2014. Does DNA barcoding improve performance of traditional stream bioassessment metrics? *Freshwater Science* 33:302-311.

Stoaks, R. D. and B. C. Kondratieff. 2014. The aquatic macroinvertebrates of a first order Colorado, USA Front Range stream: what could the biodiversity have been before irrigated agriculture? *Journal of the Kansas Entomological Society* 87:47-65.

White, B. P., E. M. Pilgrim, L. M. Boykin, E. D. Stein, and \*R. D. Mazor. 2014. Comparison of four species-delimitation methods applied to a DNA barcode data set of insect larvae for use in routine bioassessment. *Freshwater Science* 33:338-348.



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Jon Lee has stepped down from his role as newsletter editor, a role he has served in since the Volume 2 (3+4) issue in 2009. Jon joins Christopher Rogers as an Editor Emeritus and will remain on the newsletter editorial board. Brady Richards will take over the editorial duties starting with this issue. We are grateful for Jon's active leadership with the Newsletter. He has contributed many articles and kept the editorial board on track and on time. We are also quite pleased that he will remain on the editorial board, and continue to make the SAFIT Newsletter a useful and informative tool for our constituents.

THANK YOU, JON!!!



18 January 2014. Jon Lee in his natural habitat.

### **Holarctic Midge Manual**

It's been a year since the revised "Wiederholm" was published (Andersen, et al., 2013). Numerous errors in the first printing have prompted a second and third printing. Apparently, many errors persist through each printing and others have cropped up. Errata lists can be found on John Epler's website and also in the discussion forum devoted to the Chironomidae.

Epler corrections page

<http://home.comcast.net/~johnnepler3/Holarctic%20A&C.html>

Chironomid Exchange Forum

<http://www.chironomidae.net/chiroforum/>

Andersen, T., P. S. Cranston, and J. H. Epler (eds.). 2013. The larvae of Chironomidae (Diptera) of the Holarctic region - keys and diagnoses. *Insect Systematics & Evolution* 66:1-571. Ordering information at: <http://www.scanentom.se/>

The **SAFIT Annual Meeting** will be held Thursday, 20 November 2014 from 9AM to 4PM, the day AFTER the CABW. The meeting will be held at the California Department of Fish and Game Yolo Bypass Wildlife Area Headquarters.

Two SAFIT board of directors (BOD) positions are up for election this year, Vice President and Treasurer. If you are interested in running, please submit a short statement about your experience and why you'd like to join the BOD to Wendy Willis by **October 17<sup>th</sup>**. Statements will be distributed via email to the membership and votes may be submitted to Wendy via email at [wendy@aquabio.org](mailto:wendy@aquabio.org) through **November 12<sup>th</sup>**. If you plan on attending the annual meeting you can vote in person on November 20<sup>th</sup>. Please contact Wendy if you have any questions or concerns.

**21<sup>th</sup> Annual Meeting**  
**California Aquatic Bioassessment**  
**Workgroup**  
**and California Chapter Society of Freshwater Science**

**November 18 and 19, 2014**  
**9 am – 4 pm**

**The Ballroom**  
**Activities and Recreation Center Conference Facility**  
**University of California**  
**Davis, CA**

**Registration:**

There is no fee to attend, but registration is required.

Pre-registration:

Register online at: <http://www.trainingforce.com/5/lp/gowater.aspx?ot=8&otid=48>

In-person registration:

8 am-9 am on November 18 and 19, 2014

**Location Information:**

**Directions:** Interstate 80 to Hwy 113 north toward Woodland. Take Russell Boulevard exit and turn right on Russell Boulevard. Turn right on La Rue Road. Turn left on Orchard Road and drive directly into Visitor Parking Lot 25.

**Parking:** Permits are required and cost \$8.00 per day. Parking permit dispensers accept quarters, one-dollar bills, five-dollar bills, or VISA and MasterCard.

**Online campus map:** <http://facts.ucdavis.edu/map.lasso>

The following new products are available from Erick Burres and the Clean Water Team.

### Watermarks Newsletter

“Emerging Technologies: Mobile Devices and Macro Lens Adapters” Winter/Spring issue, p12

[www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/cwt/newsletter/wm\\_ws\\_2014.pdf](http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/newsletter/wm_ws_2014.pdf)

Make your cell phone camera capable of taking 200x photos and video using a simple magnetically attached macro lens.

The soon to be published Watermarks Summer/Fall 2014 issue will feature the “CWT’s Double Puzzle-Hint: They are “BUGGY” Stream Residents”. Look for it at

[www.waterboards.ca.gov/water\\_issues/programs/swamp/cwt\\_newsletter.shtml](http://www.waterboards.ca.gov/water_issues/programs/swamp/cwt_newsletter.shtml)

### "California Digital Reference Collection of Freshwater Benthic Macroinvertebrate Families" to Go

[www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/cwt/guidance/351e\\_bugstogo0414.pdf](http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/351e_bugstogo0414.pdf)



The California Digital Reference Collection to Go is a new digital resource tool to assist citizen scientists identify and learn about California’s stream dwelling benthic macroinvertebrates and water quality. When using other field guides or taxonomy books, you can refer to this collection of images. The tool provides family level information such as key characteristics, geographic distribution, and tolerance values, and the images can be expanded to show anatomic details. It was made for portable devices (tablets, smartphones) and optimized for touch screens for easy streamside access to this information. To use this, you must have Adobe Reader installed on your device.

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**Video “Application of Imaging Particle Analysis in California Environmental Monitoring”  
by Peggy Lehman, DWR**

[www.youtube.com/watch?v=4EkJoOW4sBk&list=UU55pBe8pTmdRpKAv78O1oNw](http://www.youtube.com/watch?v=4EkJoOW4sBk&list=UU55pBe8pTmdRpKAv78O1oNw)

FlowCAM is an imaging particle analysis tool that detects and measures algae, zooplankton and particles in a continuous fluid flow. Scientists, researchers and technicians can obtain size, shape, fluorescence and concentration statistics in a fraction of the time required by traditional microscopy. A high speed imaging particle analyzer also provides some of the capabilities of a flow cytometer. A wealth of information is derived from the microscopic images. By acquiring and storing a digital image of each particle detected, different particle types in a heterogeneous sample can be automatically identified, differentiated and quantified. FlowCAM acquires high resolution microscopic images at a very rapid rate; typically up to 10,000 images/minute. The intuitive Visual Spreadsheet analysis software uses proprietary methods that allow the user to sort, filter and classify particle images interactively. The system provides an in-depth characterization of whole data populations, sub-populations, and even individual particles.

[www.fluidimaging.com/index.htm](http://www.fluidimaging.com/index.htm)

**Applications:**

- Aquatic Research - Count & measure salt and freshwater organisms (algae)
- Municipal Water - Monitor drinking water supplies for taste & odor algae
- Invasive Species - Detect & quantify harmful invasive species such as Zebra mussels, etc.

**Video “Wet/Dry Mapping -- Using Citizen Scientists To Monitor Perennial Surface Water” by Dale Turner, TNC**

[www.youtube.com/watch?v=EzN3nFK-Xwc&list=UUIrumrB\\_lrzOL8S-xv9FaPQ](http://www.youtube.com/watch?v=EzN3nFK-Xwc&list=UUIrumrB_lrzOL8S-xv9FaPQ)

Where does water persist during the driest times of the year?

Combining citizen science with GIS and GPS technology, wet/dry mapping provides a snapshot of flow conditions in rivers and streams with interrupted perennial surface flow. Trained volunteers map surface water during the driest time of year to track annual variation, in a project that has grown to include surveys of more than 300 stream miles each year. Data from 15 years of wet/dry mapping on the San Pedro River and tributaries in Arizona and Sonora show which reaches have surface flow in every year. They also show areas with high year-to-year variation in flow length, which indicates changes in local groundwater conditions and may provide early warning of ecological changes. This wet/dry data set provides a watershed-scale snapshot of river conditions, with enough resolution to detect trends in relatively short reaches. It has allowed us to identify groundwater recharge opportunities -- reaches of the San Pedro where supplemental groundwater input is likely to increase the length of permanent surface water -- along with providing a tool for monitoring the impact of new recharge projects. Wet/dry has also been used by governmental agencies on other streams in Arizona, including BLM, National Park Service, and Pima County.

This presentation will include discussion of the technique, including the process of analyzing and presenting the data. Background materials are available at:  
[www.azconservation.org/projects/water/wet\\_dry\\_mapping](http://www.azconservation.org/projects/water/wet_dry_mapping).

### **California Aquatic Bioassessment Workgroup (CABW) meetings & products (2003 onward)**

SWAMP has released the last three years of CABW including video.  
[www.waterboards.ca.gov/water\\_issues/programs/swamp/reports.shtml](http://www.waterboards.ca.gov/water_issues/programs/swamp/reports.shtml)

October 29-30, 2013	<a href="#">Meeting Agenda with Presentations only</a> <a href="#">Meeting Agenda including Videos of Speakers and their Presentations</a>
November 7-8, 2012	<a href="#">Meeting Agenda with Presentations only</a> <a href="#">Meeting Agenda including Videos of Speakers and their Presentations</a>
November 9-10, 2011	<a href="#">Meeting Agenda with Presentations only</a> <a href="#">Meeting Agenda including Videos of Speakers and their Presentations</a>
November 16-17, 2010	<a href="#">Agenda with Powerpoint Presentations Only</a>
October 28-29, 2009	<a href="#">Agenda with Powerpoint Presentations Only</a>
November 19-20, 2008	<a href="#">Agenda with Powerpoint Presentations Only</a>
November 29-30, 2007	<a href="#">Agenda with Powerpoint Presentations Only</a>
November 29-30, 2006	<a href="#">Agenda with Powerpoint Presentations Only</a>
November 1-2, 2005	<a href="#">Agenda with Powerpoint Presentations Only</a>
November 30 & December 1, 2004	<a href="#">Agenda with Powerpoint Presentations Only</a>
December 2-4, 2003	<a href="#">Agenda with Powerpoint Presentations Only</a>



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## EMPLOYMENT OPPORTUNITIES

Please contact the editor if you would like to post an employment opportunity.

**Miscellaneous bug notes** (anecdotal notes, including distributional records in the SAFIT region, which may be interesting or helpful to SAFIT members). To make contributions or comments contact the editor: [arichards@csuchico.edu](mailto:arichards@csuchico.edu).

## FIELD & LAB

*A feature in each Newsletter issue exploring an aspect of aquatic macroinvertebrates beyond sample processing that may be beneficial to members. Contact the editor to contribute or comment.*

### *Georissus*

by Brady Richards

Shore dwelling insects get short shrift in bioassessment work. Most taxa are simply excluded from benthic taxa lists. Realistically, you won't find many such taxa in benthic samples except as rare accidentals. During the ABL's Lake Davis project, I spent some time looking at the shore dwellers. Amongst numerous Ephydriidae and Saldidae, the occasional *Gelastocoris*, and the lightning fast tiger beetles, was the ubiquitous *Georissus*. If you're not familiar with this little beetle, it's one of the names in the beetle family key you probably skip past without a second thought. If you've missed them in the field, that's understandable, too. The adults are only about 1.5 mm in length (photos below). Living adults are even more cryptic, by virtue of the cap of sand grains and sediment they carry on their backs as camouflage (Fig. 20.60, White and Roughley, 2008). This sediment cap can be much wider than the beetle.

I had never seen a *Georissus* until Doug Post wound up with a specimen from Lake Davis. Doug had sampled for dytiscids along the lake shore, so the incidental capture of the *Georissus* was quite lucky. I revisited the site, spending several hours on my hands and knees crawling through the mud. Once I found my first *Georissus* moving around like a miniature tank, it was easy to spot more. In fact, the beetles were so numerous, I was able to collect hundreds during that first and during several return visits. Summer collecting has been best, but I've also collected adults as early as March, when the lake was still mostly iced over, until well into October.

At present, two species of *Georissus* are recognized for the United States: *G. pusillus* LeConte and the species found here in California, *G. californicus* LeConte. There are at least 76 species known worldwide (Hebauer, 2004). Adults can be found by carefully searching shore lines. Freshly emerged adults may fly to lights. *Georissus* larvae were first described from Germany. Shepard (2003) studied a population of *Georissus* along the North Fork of the American River as it enters Lake Clementine. Shepard collected over 100 larvae by sieving large quantities of shore line soil.

I sampled for larvae at my Lake Davis site, but was never successful. I did find my first *Limnebius* (Hydraenidae) in the process, so my time wasn't totally wasted. I brought back some shore line muck once to rear out some saldid nymphs. After a few days, there were *Georissus* adults with their sediment caps wandering around in the container. These beetles were probably pupating when I gathered the soil.

I've taken a good close up photo showing both the beetle and its sediment cap. All the *Georissus* I've collected have lost their sediment caps in short order. However, I've taken several videos of *Georissus* in action. I've posted one at: <http://youtu.be/V9QgWGYcqrA>. The video is fuzzy at first, because I tried to focus on one beetle. About midway through, I raised the camera to get a wider field of view. See how many *Georissus* you can spot. The next time you head into the field, think about all the cool things at your feet – and be sure to watch your step!

Hebauer, F. 2004. Systematic and zoogeographical notes on the genus *Georissus* Latreille, 1809 (Coleoptera: Hydrophiloidea). *Acta Coleopterologica* 20:3-6.

Shepard, W. D. 2003. The biology of *Georissus californicus* LeConte (Coleoptera, Hydrophilidae, Georissinae). *Special Bulletin of the Japanese Society of Coleopterology*, Tokyo 6:121-128.

White, D. S. and R. E. Roughley. 2008. Chapter 20: Aquatic Coleoptera, Pages 571-671 in R. W. Merritt, K. W. Cummins, and M. B. Berg, eds. *An introduction to the aquatic insects of North America*, fourth edition, xvi + 1158 pp. + 39 color plates. Dubuque, Iowa, Kendall/Hunt Publishing Company.



*Georissus californicus* LeConte  
(photos courtesy of Doug Post)



28 July 2006. Lake Davis, Plumas County, CA. *Georissus* habitat

### LATEST LITERATURE

*If you know of any literature or if you yourself have published any papers of interest to the SAFIT membership, please send copies or the citations to Brady Richards ([arichards@csuchico.edu](mailto:arichards@csuchico.edu)) for inclusion in the next issue of the SAFIT Newsletter.*

*Thanks!!*

**Asterisk (\*) indicates author is a SAFIT member.**

#### Mollusca

Haag, W. R. and J. D. Williams. 2014. Biodiversity on the brink: an assessment of conservation strategies for North American freshwater mussels. *Hydrobiologia* 735:45-60.

Hershler, R., J. J. Landye, H.-P. Liu, M. De la Maza-Benignos, P. Ornelas, and E. W. Carson. 2014. New species and records of Chihuahuan Desert Springsnails, with a new combination for *Tryonia brunei*. *Western North American Naturalist* 74:47-65.

Hershler, R., H.-P. Liu, and J. Howard. 2014. Springsnails: a new conservation focus in western North America. *Bioscience* 64:693-700.

Hershler, R., V. Ratcliffe, H.-P. Liu, B. K. Lang, and C. Hay. 2014. Taxonomic revision of the *Pyrgulopsis gilae* (Caenogastropoda, Hydrobiidae) species complex, with descriptions of two new species from the Gila River basin, New Mexico. *Zookeys* 429:69-85.

Morningstar, C. R., K. Inoue, M. Sei, B. K. Lang, and D. J. Berg. 2014. Quantifying morphological and genetic variation of sympatric populations to guide conservation of endangered, micro-endemic springsnails. *Aquatic Conservation-Marine and Freshwater Ecosystems* 24:536-545.

## Crustacea

Paulson, E. L. and A. P. Martin. 2014. Discerning invasion history in an ephemerally connected system: landscape genetics of *Procambarus clarkii* in Ash Meadows, Nevada. *Biological Invasions* 16:1719-1734.

\*Rogers, D. C. 2014. Anostracan (Crustacea: Branchiopoda) zoogeography II. Relating distribution to geochemical substrate properties in the USA. *Zootaxa* 3856:001-049.

\*Rogers, D. C. and S. Padhye. 2014. A new species of *Streptocephalus* (Crustacea: Anostraca: Streptocephalidae) from the Western Ghats, India, with a key to the Asian species. *Zootaxa* 3802:75-84.

## Ephemeroptera

Jacobus, L. M. and N. A. Wiersema. 2014. The genera *Anafroptilum* Kluge, 2011 and *Neocloeon* Traver, 1932, reinstated status, in North America, with remarks about the global composition of *Centroptilum* Eaton, 1869 (Ephemeroptera: Baetidae). *Zootaxa* 3814:385-391.

## Odonata

Ball-Damerow, J. E., L. K. M'Gonigle, and V. H. Resh. 2014. Changes in occurrence, richness, and biological traits of dragonflies and damselflies (Odonata) in California and Nevada over the past century. *Biodiversity and Conservation* 23:2107-2126.

Córdoba-Aguilar, A. and D. M. González-Tokman. 2014. The behavioral and physiological ecology of adult rubyspot damselflies (*Hetaerina*, Calopterygidae, Odonata). *Advances in the Study of Behavior* 46:311-341.

—  
McCauley, S. J., C. J. Davis, E. E. Werner, and M. S. Robeson, II. 2014. Dispersal, niche breadth and population extinction: colonization ratios predict range size in North American dragonflies. *Journal of Animal Ecology* 83:858-865.

### **Plecoptera**

Muranyi, D., M. Gamboa, and K. M. Orci. 2014. *Zwicknia* gen. n., a new genus for the *Capnia bifrons* species group, with descriptions of three new species based on morphology, drumming signals and molecular genetics, and a synopsis of the West Palaearctic and Nearctic genera of Capniidae (Plecoptera). *Zootaxa* 3812:1-82.

Stark, B. P. and R. W. Baumann. 2013. Kenneth W. Stewart, 1935-2012: obituary and list of publications. *Western North American Naturalist* 73:118-126.

### **Trichoptera**

Blinn, D. W. and \*D. E. Ruitter. 2013. Tolerance values and effects of selected environmental determinants on caddisfly (Trichoptera) distribution in northwest and north central Washington, USA. *Western North American Naturalist* 73:270-294.

Holomuzki, J. R., P. C. Furey, R. L. Lowe, and M. E. Power. 2013. Microdistributional variability of larval caddisflies in Mediterranean-climate streams in northern California. *Western North American Naturalist* 73:261-269.

\*Lee, J. J. and J. J. Giersch. 2014. A new species in the *Rhyacophila vagrita* group (Trichoptera: Rhyacophilidae) from Olympic National Park, Washington, USA. *Pan-Pacific Entomologist* 90:53-56.

### **Coleoptera**

Blaho, M., T. Herczeg, G. Kriska, A. Egri, D. Szaz, A. Farkas, N. Tarjanyi et al. 2014. Unexpected attraction of polarotactic water-leaving insects to matt black car surfaces: mattness of paintwork cannot eliminate the polarized light pollution of black cars. *Plos One* 9:e103339.

Chen, Y., M.-C. Shih, M.-H. Wu, E.-C. Yang, and K.-J. Chi. 2014. Underwater attachment using hairs: the functioning of spatula and sucker setae from male diving beetles. *Journal of the Royal Society Interface* 11:20140273.

Short, A. E. Z. and C. E. McIntosh, IV. 2014. Review of the giant water scavenger beetle genus *Hydrophilus* Geoffroy (Coleoptera: Hydrophilidae) of the United States and Canada. *Coleopterists Bulletin* 68:187-198.

### Miscellaneous

Bouchard, R. W., J. A. Genet, and J. W. Chirhart. 2014. Does supplementing dipnet samples with activity traps improve the ability to assess the biological integrity of macroinvertebrate communities in depressional wetlands? *Wetlands* 34:699-711.

Lawrence, J. E., M. R. Cover, C. L. May, and V. H. Resh. 2014. Replacement of culvert styles has minimal impact on benthic macroinvertebrates in forested, mountainous streams of Northern California. *Limnologica* 47:7-20.

Lawrence, J. E., C. P. W. Pavia, S. Kaing, H. N. Bischel, R. G. Luthy, and V. H. Resh. 2014. Recycled water for augmenting urban streams in mediterranean-climate regions: a potential approach for riparian ecosystem enhancement. *Hydrological Sciences Journal* 59:488-501.

Orlofske, J. M. and D. J. Baird. 2014. A geometric morphometric approach to establish body-shape trait criteria for aquatic insects. *Freshwater Science* 33:978-994.

Rost, A. L. and C. H. Fritsen. 2014. Influence of a tributary stream on benthic communities in a *Didymosphenia geminata* impacted stream in the Sierra Nevada, USA. *Diatom Research* 29:249-257.

## THANK YOU FOR YOUR MEMBERSHIP!

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### SAFIT Newsletter Publication Guidelines

Submissions and questions about submissions should be directed to the SAFIT Newsletter Editor, at: [arichards@csuchico.edu](mailto:arichards@csuchico.edu), 530.898.4792. Submissions should be Word files, 12 pt. Times New Roman font, and left justified. Please submit an announcement, as you would like it to appear in the newsletter, preferably in Word format. Images should be high quality.

Deadline for SAFIT newsletter announcements: Send to editor one week before publication date.

Issue	Submission Deadline	Publication Date
I	24 March	31 March
II	23 June	30 June
III	23 September	30 September
IV	24 December	31 December

#### Advertisements:

- Employment Opportunity ads should be one page maximum (8.5 x 11), should list the position(s) available, basic qualifications required, and provide contact information.
- Employment Wanted ads may include a brief statement describing the position sought, basic experience, and contact information. For example: "Looking for work as phytoplankton taxonomist. Experience includes M.S. thesis from the University of Malpractice, and working on several long-term bioassessment projects for the state of East Carolina. Resume and references upon request. Please contact Martin E. Serumgaard, [mserumgaard@fakeaddress.net](mailto:mserumgaard@fakeaddress.net), (555) 555-5555." Do not include *curriculum vitae* or resume, photos, or political statements.
- General Advertisements should be limited to one page (8.5 x 11) and may include a high quality logo image, and must not include political statements or other potentially offensive material.

The editor, editorial board and the SAFIT Board of Directors reserve the right to reject any or all submissions to the SAFIT Newsletter for any reason. The notices, announcements and advertisements, other than those submitted by the SAFIT Board of Directors, do not reflect SAFIT or SAFIT's views, opinions or policy, and do not constitute an endorsement of an advertiser's abilities, skills or products."



**Newsletter of the  
SOUTHWEST ASSOCIATION OF FRESHWATER  
INVERTEBRATE TAXONOMISTS**

Greetings SAFIT members,

Have a job opening that you want to announce, or are looking for a job? Let SAFIT know in the Newsletter! Looking for specimens of a certain species or a literature reference? Need material for research or comparative purposes? Let your colleagues know in the SAFIT Newsletter! Want a workshop on a particular group of organisms? Have books or reprints to share, trade or sell? Looking for a collecting partner? Put it here in the SAFIT Newsletter! All appropriate requests, queries, advertisements and announcements will be considered, and are free to the SAFIT membership.

Thanks!  
Brady Richards, Editor

**ANNOUNCEMENTS AND NOTICES**

The notices, announcements and advertisements in this section do not reflect SAFIT or SAFIT's views, opinions or policy, and do not constitute an endorsement of an advertiser's abilities, skills, or products.



**SAFIT Meeting Agenda**  
**20 November 2014**  
**California Department of Fish and Wildlife Yolo Bypass Wildlife Area Headquarters**  
**9 am to 3 pm**

**1) Welcome & Introductions**

**2) Presidents update**

- a) Good year for SAFIT workshop activity
- b) Active committees?
  - Workshop Committee
  - Newsletter Committee
  - STE Committee
- c) California chapter of SFS – What should our role be in this Chapter, or none at all
  - Ideas for our potential role include:
    - o Taxonomy Fair (collecting trip then identification workshop) potentially using “demo scopes”
      - Collecting Trip potential locations: Sagehen UC Reserve?
    - o Sponsor students to attend SFS using SAFIT funds and maybe host special student sessions for the 2016 SFS meetings.
- d) SFS 2016 will be in Sacramento – ties in with part d) what type of presence do we want to have at this meeting?

**3) Treasurers update**

- a) Revenues and expenditures for 2014
  - ~\$38,000 total funds
- b) Current membership dues
  - Dues will remain the same as previous year

**4) Secretaries update**

- a) Membership demographics
  - Have a total of 50 members for 2014
    - o Gained 6 new members

**Working Lunch**

- Announcement of BOD election results
  - o Dessie Underwood and Bill Isham ran unopposed and were re-elected to Vice President and Treasurer, respectively
- Guests address to the group

**5) Workshop Committee**

- a) Workshops this past year
  - Beetlemania in the Valley, Corvallis, OR
    - o 32 members attended the workshop

- b) Workshops this coming year
    - The members in attendance chose to ask Dr. Andrew Short from the University of Kansas (recommended by Dr. Kelly Miller), to be the instructor for the next workshop covering hydrophiloids/hydraenids/noterids.
      - o Since our annual meeting, Dr. Short has agreed to run a workshop covering both adults and larvae of hydrophiloids/hydraenids/noterids.
    - Bob Wisseman was chosen to check with the “Bug Lab” at Utah State University, Logan to see if they can host the 2015 workshop
      - o Since the meeting, Utah State has agreed to host the workshop during the late summer (August).
    - Must have at least 1 workshop to keep our SWAMP funding
  - c) Future workshops
    - Locations – Corvallis, Davis, and Long Beach have all worked well, do we want to expand the places we go, or just rotate through these?
      - o Attending members chose to rotate among these locations for now, but also include Utah State as a location
      - o Chico State University will likely not be available due to the cost of hosting the workshop
    - Topics: Plecoptera, Mites, Hemiptera
- 6) SAFIT STE & STE database**
- a) SAFIT STE database development.
    - The BOD chose to ask Teresa Richards to develop the STE database and pay her for those services
  - b) PNW STE was presented at SFS this past year, do we want to present at any upcoming meeting? SFS Milwaukee? ESA? Who will do it, do we pay for sending person?
    - SAFIT would like to have a presence at the 2015 SFS Meeting
    - Voted to pay to send Christopher Rogers to present at the 2015 SFS meetings about SAFIT and the STE
  - c) STE for Depressional wetlands in California.
- 7) Website changeover**
- a) John Sandberg has volunteered to be the “Gatekeeper”
  - b) How to we make transition?
    - Wendy Willis will contact Alex Smith to transfer website responsibilities to John Sandberg.
- 8) SAFIT Logo**
- a) SAFIT would like to develop a better logo than it currently has.
    - Joe Slusark and/or John Sandberg will contact Joe Giersch for logo ideas.

**Announcements from Erick Burrell and the Clean Water Team:**

**The 2015 California Citizen Monitoring Calendar is now available as a free download (pdf). It is full of hyperlinks featuring water related days and water quality/monitoring information.**

**Clean Water Team's 2015 California Citizen Monitoring Calendar**

[http://www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/cwt/volunteer/cal\\_2015.pdf](http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/volunteer/cal_2015.pdf)

**Press Release: State Water Board's Clean Water Team Offers Free Online Calendar**

[http://www.waterboards.ca.gov/press\\_room/press\\_releases/2015/pr010515\\_water\\_calendar.pdf](http://www.waterboards.ca.gov/press_room/press_releases/2015/pr010515_water_calendar.pdf)

**Clean Water Team Calendar - YouTube****EMPLOYMENT OPPORTUNITIES**

Please contact the editor if you would like to post an employment opportunity.

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**NEW BOOK ANNOUNCEMENT**

Thorp and Covich's **Freshwater Invertebrates: Ecology and General Biology** (4<sup>th</sup> edition), **Volume I**. Edited by James H. Thorp and D. Christopher Rogers

Readers familiar with the first three editions of *Ecology and Classification of North American Freshwater Invertebrates* (edited by J.H. Thorp and A.P. Covich) will welcome the comprehensive revision and expansion of the trusted professional reference manual and educational textbook, from a single North American tome into a developing multivolume series covering inland water invertebrates of the world. The series entitled *Thorp and Covich's Freshwater Invertebrates* (edited by J.H. Thorp) begins with the current *Volume I: Ecology and General Biology* (edited by J.H. Thorp and D.C. Rogers), which is designed as a companion volume for the remaining books in the series. Those following volumes provide taxonomic coverage for specific zoogeographic regions of the world, starting with *Keys to Nearctic Fauna* (Vol. II) and *Keys to Palaearctic Fauna* (Vol. III). Volume I maintains the ecological and general biological focus of the previous editions, but now expands coverage globally in all chapters; includes more taxonomic groups (e.g., chapters on individual insect orders); and covers additional functional topics such as invasive species, economic impacts, and functional ecology. As in previous

editions, the fourth edition of *Ecology and Classification of North American Freshwater Invertebrates* is designed for use by professionals in universities, government agencies, and private companies as well as by undergraduate and graduate students.

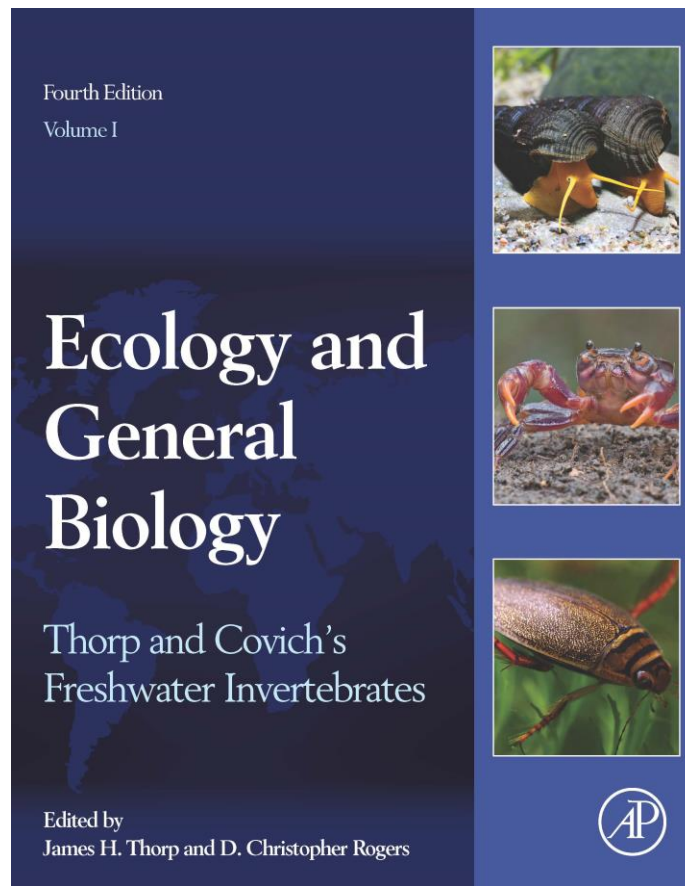
### Key Features of Volume I

- Global coverage of aquatic invertebrate ecology
- Discussions on invertebrate ecology, phylogeny, and general biology written by international experts for each group
- Separate chapters on invasive species and economic impacts and uses of invertebrates

### New to This Series Edition

- Eight additional chapters on insect orders and a chapter on freshwater millipedes
- Four new chapters on collecting and culturing techniques, ecology of invasive species, economic impacts, and ecological function of invertebrates
- Overall expansion of ecology and general biology and a shift of the even more detailed taxonomic keys to other volumes in the projected multivolume series
- Identification keys to lower taxonomic levels

Available from Elsevier (Academic Press): <http://www.elsevier.com/books/thorp-and-covichs-freshwater-invertebrates/thorp/978-0-12-385026-3>



## FIELD & LAB

*A feature in each Newsletter issue exploring an aspect of aquatic macroinvertebrates beyond sample processing that may be beneficial to members. Contact the editor to contribute or comment.*

### TOUGH CHARACTERS

This column is a new and hopefully recurring feature. My plan is to use photos or illustrations to explain the diagnostic characters for difficult to separate taxa. I also plan to tackle confusing couplets from existing keys. I already have a number of good grudge matches to include in future issues, but I encourage readers to suggest or submit items they deem to be tough characters.

#### *Caloparyphus* vs. *Euparyphus*

by Brady Richards

Our first cage match features the larvae of two supposedly easy to separate stratiomyid genera. I first ran across these names while working on benthic samples from the USGS NAWQA Upper Snake River study unit. The study unit covered the upper reaches of the Snake River in Idaho and Wyoming and served as my introduction to western aquatic invertebrates. The diagnostic character given to separate the two genera in the Diptera key of the then newly released third edition of Merritt and Cummins (Merritt et al., 1996) seemed straightforward enough – the prothoracic spiracles are on long stalks for *Euparyphus* but on short stalks or nearly sessile for *Caloparyphus*. I used both names frequently until the day one of my colleagues pointed out the stratiomyid key in the Manual of Nearctic Diptera (James, 1981). The character states were reversed for the two genera! Fortunately, we eventually discovered the correction listed in the second volume (McAlpine et al., 1987; p. 1305) so both keys matched. All seemed right with the stratiomyid keys again. Of course, that's when the real trouble began.

I blame Andy Rehn for introducing me to Sinclair (1989). By now, many readers are familiar with that paper. Sinclair discovered that the *Euparyphus* spiracular stalk does not develop until the final larval instar. This means that if the stalk is present, determinations to *Euparyphus* are easy. If the stalk isn't present, determinations to *Caloparyphus* are impossible, unless the larva is a final instar (more on that later). This is why we have *Caloparyphus/Euparyphus* available in the SAFIT STE for the immature and indeterminate specimens without long stalks.

Species of both *Caloparyphus* and *Euparyphus* are found in California and elsewhere in the SAFIT region. Since first reading Sinclair's paper, the ABL has mainly used the name

*Caloparyphus/Euparyphus* in our data. We've used the name *Euparyphus* fairly frequently, but we've used the name *Caloparyphus* only a couple times. I suspect other labs have had a similar experience. The species Sinclair studied were from eastern North America and I was curious if the character also worked for the western species. Whenever I get a large series of *Caloparyphus/Euparyphus* larvae in a sample, I look for mature larvae with sessile prothoracic spiracles. Then I start dissecting. Most specimens are undifferentiated internally, but occasionally, I get a specimen in which the developing instar is sufficiently formed to show the spiracular character. I've planned for many years to photograph one of these specimens. Bill Isham recently loaned me some *Caloparyphus/Euparyphus* specimens and one of them has proved quite photogenic. Notice the sessile spiracle on the outer exoskeleton (Figure 1). Both prothoracic spiracles are clearly on stalks in the developing larva underneath. This photo is why we have the slash ID in the STE. It's also why I don't necessarily trust determinations of *Caloparyphus* unless the specimen is obviously a final larval instar or pupa. Again, if the spiracular stalks are present, you have a final instar *Euparyphus*. How do you know if you have final instar *Caloparyphus*? It turns out you may not.

But all is not lost. One nice thing about Brachycera larvae is that pupation occurs within the larval exoskeleton. If you find a developing pupa or adult within the larval skin, then you may use the larval characters to make your determination. Aside from actually seeing the pupa within, there is also a series of sutures that develop during pupation (Fig. 2). These split when the adult is ready to emerge (Fig. 3).

Thus, a "tough character" is made easier in the SAFIT STE by using a defensible slash taxon, and if you have the right stages you can take it further.

*Have a "Tough Character" that you want discussed or explained? Please send your "Tough Character" to one of the editors (contact info at the end of the Newsletter) and we will see what we can do.*

#### Literature Cited

James, M. T. 1981. 36. Stratiomyidae. [pp. 497-511]. In: J. F. McAlpine, B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth and D. M. Wood (editors), *Manual of Nearctic Diptera, Volume 1, Volume 1*. Research Branch Agriculture Canada, Hull, Quebec, Canada. 497-511 pp.

McAlpine, J. F., B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth, and D. M. Wood. 1987. *Manual of Nearctic Diptera, Volume II*. Biosystematics Research Centre (formerly Institute), Ottawa, CAN. 1332 p.

Merritt, R. W., E. I. Schlinger, and D. W. Webb. 1996. Aquatic Diptera. Part two. Pupae and adults of aquatic Diptera. [pp. 515-548]. In: R. W. Merritt and K. W. Cummins (editors), An introduction to the aquatic insects of North America, 3rd edition, 862 pp. Kendall/Hunt Publishing Company, Dubuque, Iowa. 515-548 pp.

Sinclair, B. J. 1989. The biology of *Euparyphus* Gerstaecker and *Caloparyphus* James occurring in madicolous habitats of eastern North America, with descriptions of adult and immature stages (Diptera: Stratiomyidae). Canadian Journal of Zoology 67(1):33-41.



Fig. 1. *Euparyphus*, 3<sup>rd</sup> instar larva. Top arrow: sessile prothoracic spiracle. Bottom arrow: developing 4<sup>th</sup> instar prothoracic spiracle on stalk.



Fig. 2. *Euparyphus* pupa. Arrow indicating ecdysial sutures.



Fig. 3. *Euparyphus* pre-emergent adult. Head and thorax of larval exuviae removed.

**Errata: from issue 7(3). In the last paragraph of the Georissus article, the line should have read “I’ve never taken a good close up photo showing both the beetle and its sediment cap.” Otherwise, I would have included said photo in the article. Also, credit where credit is due: Erick Burres posted the *Georissus* video, not the author.**

### LATEST LITERATURE

*If you know of any literature or if you yourself have published any papers of interest to the SAFIT membership, please send copies or the citations to Brady Richards ([arichards@csuchico.edu](mailto:arichards@csuchico.edu)) for inclusion in the next issue of the SAFIT Newsletter. Thanks!!*

**Asterisk (\*) indicates author is a SAFIT member.**

#### Mollusca

Haag, W. R. 2012. North American freshwater mussels: natural history, ecology, and conservation. Cambridge, United Kingdom, Cambridge University Press.

Johnson, P. D., A. E. Bogan, K. M. Brown, N. M. Burkhead, J. R. Cordeiro, J. T. Garner, P. D. Hartfield et al. 2013. Conservation status of freshwater gastropods of Canada and the United States. *Fisheries* 38:247-282.

Lawfield, A. M. W., M. K. Gingras, S. G. Pemberton, and J. M. Erickson. 2014. Freshwater Unionid Bivalve Shells as Substrata for Trichoptera Attachment. *Palaios* 29:525-532.

#### Crustacea

\*Rogers, D. C. 2014. Two new cryptic anostracan (Branchiopoda: Streptocephalidae, Chirocephalidae) species. *Journal of Crustacean Biology* 34:862-874.

\*Rogers, D. C. and B. V. Timms. 2014. Anostracan (Crustacea: Branchiopoda) zoogeography III. Australian bioregions. *Zootaxa* 3881:453-487.

#### Ephemeroptera

Savolainen, E., M. K. Drotz, A. Saura, and G. Stahls. 2014. *Baetis bundyae* (Ephemeroptera: Baetidae), described from Arctic Canada is found in northernmost Europe. *Canadian Entomologist* 146:621-629.

#### Odonata

Ball-Damerow, J. E., L. K. M'Gonigle, and V. H. Resh. 2014. Local and regional factors influencing assemblages of dragonflies and damselflies (Odonata) in California and Nevada. *Journal of Insect Conservation* 18:1027-1036.



**Plecoptera**

- Baumann, R. W. and \*J. J. Lee. 2014. *Neaviperla* is a valid stonefly genus in North America (Plecoptera: Chloroperlidae). *Illiesia* 10:80-87.
- Heinold, B. D., B. A. Gill, T. P. Belcher, and C. J. Verdone. 2014. Discovery of new populations and DNA barcoding of the Arapahoe snowfly *Arsapnia arapahoe* (Plecoptera: Capniidae). *Zootaxa* 3866:131-137.
- Kendrick, M. R. and A. D. Huryn. 2014. The Plecoptera and Trichoptera of the Arctic North Slope of Alaska. *Western North American Naturalist* 74:275-285.
- \*Sandberg, J. 2014. Description and provisional taxonomic designation of an unassociated larval stonefly from Linn County, Oregon (Plecoptera: Perlodidae: *Isoperla* sp. A). *Illiesia* 10:60-65.

**Diptera**

- Borkent, A. 2014. The pupae of the biting midges of the world (Diptera: Ceratopogonidae), with a generic key and analysis of the phylogenetic relationships between genera. *Zootaxa* 3879:1-327.

**Miscellaneous**

- Sproul, J. S., D. D. Houston, N. Davis, E. Barrington, S. Y. Oh, R. P. Evans, and D. K. Shiozawa. 2014. Comparative phylogeography of codistributed aquatic insects in western North America: insights into dispersal and regional patterns of genetic structure. *Freshwater Biology* 59:2051-2063.

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