



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

Greetings SAFIT members,

Summer has finally arrived in northern California. We hope everyone had a good spring collecting season. The [SAFIT](#) website is progressing nicely as is an updated version of the STE. Member input to the STE is always welcome and encouraged. We also continue to solicit material that may be useful to membership to include in the newsletter.

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

**ANNOUNCEMENTS**

**Free Entomological Literature**

The Entomological Society of Canada (ESC) has posted a number of monographs on insects and other invertebrates as free downloadable PDFs at their website (<http://www.esc-sec.ca/aafcmono.html>). Many of these works are out of print and some are very difficult or expensive to obtain. Of particular interest is the 3-volume Manual of Nearctic Diptera. A recent copy of this set had an asking price of \$1500 for all three volumes so this *free* PDF is quite the

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bargain! Below is a selected list which might be of interest to SAFIT members, but check the website for the complete list.

Various authors, 1983, Manual of Nearctic Diptera. Volume 1, 674 pp

Various authors, 1987, Manual of Nearctic Diptera. Volume 2, 658 pp

Various authors, 1990, Manual of Nearctic Diptera. Volume 3, 249 pp

Bousquet, Y., 1991, Checklist of beetles of Canada and Alaska, 430 pp

Martin, J.E.H., 1977, Collecting, preparing, and preserving insects, mites, and spiders, Insects and Arachnids of Canada Handbook Series, 1 (English), 182 pp

Oliver, D.R. & Roussel, 1983, The genera of larval midges of Canada: Diptera, Chironomidae, Insects and Arachnids of Canada Handbook Series, 11, 263 pp

Schmid, F., 1980, Genera des Trichoptères du Canada et des États adjacents, Insects and Arachnids of Canada Handbook Series, 7 (French), 296 pp

Wood, D.M., Dang, P.T. & Ellis, R.A., 1979, The mosquitoes of Canada: Diptera: Culicidae, Insects and Arachnids of Canada Handbook Series, 6 (English), 390 pp

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### **Revised Water Beetles of Florida Identification Manual now available**

John Epler has just revised his Water Beetles of Florida identification manual and made it available for free download at URL: <http://www.floridadep.org/labs/cgi-bin/sbio/keys.asp#keys>. Download "Beetles10.pdf". Warning: this file is 152 MB, but worth the wait. There are many other interesting PDFs on this page, although they are all geared toward the Florida fauna.

As in all of Epler's identification manuals, the keys are straightforward and illustrations are located next to the corresponding couplet so no flipping pages looking for hidden illustrations. This revised manual includes color photos of nearly all the Florida beetles along with many key characters. All the chapters have been extensively revised from the first addition. New to this edition are chapters on the Chrysomelidae and Curculionidae. Although species and their distribution information is restricted to Florida and the surrounding states, this is a useful resource when identifying Nearctic water beetles. For those interested, Epler's webpage can be found at URL: <http://home.comcast.net/~johnepler3/index.html>. Epler has provided lists of his publications, and links to PDFs of many, as well as the distribution lists he maintains for Floridian bugs, beetles and midges.

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**Call for specimens**

I am finally getting to work on several description projects I've had on my desk for too many years now. Although I collect my own material for these projects, it would be beneficial to me to look at specimens from other collections. If you have specimens (with good locality data) that match my list below, please contact me at [arichards@csuchico.edu](mailto:arichards@csuchico.edu). In return for seeing specimens and hopefully, keeping some, I will return determined material for your reference collections.

Trichoptera: Hydroptilidae: Specifically, I'm looking for larval and adult specimens of *Nothotrichia shasta* Harris and Armitage. I'm also interested in obtaining a series of *Agraylea* larvae for comparison. If you think you have *Nothotrichia* larvae, or if you have specimens that seem similar to *Agraylea* in shape and case construction, but are lacking the sclerite between the forecoxae, I'd love to take a look at them. My plan is to describe the larva of *Nothotrichia shasta* and provide characters to revise existing keys. For that matter, if you have weird hydroptilids and can use some help identifying them, contact me.

Coleoptera: Eulichadidae: *Stenocolus scutellaris* LeConte. I have reared larvae to adults and plan to describe the pupa of this California endemic. I'll look at larvae but I'm particularly interested in seeing adults so that I may flesh out the distribution and temporal emergence for the species. Incidentally, the adult emergence usually starts the last week of June/first week of July but may be delayed this year due to unseasonably cool and wet weather here in California.

Coleoptera: Ptilodactylidae: *Anchycteis*. I have morphological and DNA data that shows there is a second species here in California in addition to the one described species, *A. velutina* (Horn). I'm interested in seeing adults and larvae, especially from northern California and other states. Preliminary data shows that the larvae are separable for the two forms, but it would be helpful to see if there are intergrade forms. I plan to describe the new species, redescribe *A. velutina* and describe the larvae for both species.

Coleoptera: Ptilodactylidae: *Araeopidius monachus* LeConte. Okay, there isn't anything new here, but I figured as long as I'm working on *Stenocolus* and *Anchycteis*, I might as well do a modern redescription of *Araeopidius* as well.

Thanks in advance,

Brady Richards  
CDFG ABL-Chico  
[arichards@csuchico.edu](mailto:arichards@csuchico.edu)

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**California Stormwater Quality Association:** The CASQA annual conference will be held November 1-3, 2010 at the Westin Mission Hills in Rancho Mirage. Further information can be found at: <http://www.StormwaterConference.com/>

**California Aquatic Bioassessment Workshop:** The 2010 CABW will take place November 16-17 at UC Davis.

## SAFIT MEETINGS

The board of directors now meet via conference call on the 3<sup>rd</sup> Friday of the month.

The SAFIT Annual Meeting will take place the week of November 15-19, 2010, the same week as the CABW. Elections for the SAFIT positions of Vice President and Treasurer will be part of the agenda. Exact meeting date and location have not been finalized.

## EMPLOYMENT OPPORTUNITIES

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

## 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.*

### Collecting Water Mites

by Jon Lee

This June I had the opportunity to accompany water mite specialist Dr. Ian M. Smith, of the Canadian National Collection of Insects and Arachnids, Ottawa, Ontario, on a collecting trip to the Willow Creek drainage in Humboldt Co., CA. Dr. Smith, who is collecting fresh material for DNA barcoding, indicated that northern California and southern Oregon possess an interesting water mite (Hydrachnidiae) fauna including “Tertiary relics” (see Smith et al. 2009). It was very informative discussing aspects of water mite distribution, evolution and ecology, and instructive observing the water mite collecting technique.

Water mites regularly show up in bioassessment samples collected with D-framed kick-nets. However, there is a mite-specific collecting technique. The technique is described in Smith et al. (2009) and briefly outlined here for running water habitats. Materials required include a wide mouthed net with 250 µm mesh size, standard sieves of 250 µm and 2 mm mesh sizes, a small

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spade, large and strong clear plastic bags, and one liter sample containers. The substrate is thoroughly disturbed upstream of the net with the aid of the spade (to dig into the substrate), dislodged organisms and substrate particles are swept into the net. Contents of the net are placed into a plastic bag containing a small amount of water and allowed to settle. This process is repeated until the plastic bag is approximately half full of material. Fresh water is added and the contents of the plastic bag are then thoroughly stirred and poured into the series of sieves (larger mesh size on top). Running water mites are tenacious clingers so if aquatic moss was collected the moss is thoroughly agitated before pouring into the sieves. After thorough rinsing with water, the contents of the top sieve are returned to the creek. The contents of the bottom sieve are transferred to a container that is filled with water, stirred and poured through the small mesh sieve to remove as much sediment as possible. Once elutriation is complete, the contents remaining in the sieve are placed into a container filled with source water and put on ice for live sorting in the laboratory.

The sorted mites should be preserved in Koenike's solution, consisting of 5 parts glycerin, 4 parts water, and 1 part glacial acetic acid, by volume. Alcohol dehydrates the mites and makes them more difficult to identify. However, mites preserved in alcohol can still be used. The taxonomic keys for water mites are for slide-mounted specimens. Dr. Smith compared keying mites to keying chironomids: if a slide is well prepared so that key characters can be seen, mites are not difficult to key.

Water mites are an old and species-rich group. As with many macroinvertebrate groups, younger researchers need to be enlisted to carry the taxonomic torch. Larval mite taxonomy has advanced and research in larvae-host relationships should prove valuable to the bioassessment community. Dr. Smith is very enthusiastic, approachable, and is a nice guy. He is interested in leading a water mite taxonomic workshop covering the SAFIT region, and mentioned recruiting a colleague to discuss water mite ecology. He is also open to looking at specimens SAFIT members are having trouble keying. Dr. Smith can be reached at: [smithi@agr.gc.ca](mailto:smithi@agr.gc.ca)

Smith, I.M., D.R. Cook, and B.P. Smith. 2009. Water mites (Hydrachnidia) and other Arachnids. pp. 485-586 in Thorp, J.H. and A.P. Covich (eds.) Ecology and Classification of North American Invertebrates (Third edition). Academic Press, San Diego, CA, USA.

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

*Zapada cinctipes* – while collecting stonefly adults this winter some interesting looking *Zapada* were caught – they had simple, unbranched cervical gills but the male terminalia looked like *Z. cinctipes*. These specimens were collected from riparian vegetation at Sulfur Creek – aptly named judging by the strong odor of sulfur compound(s). The specimens were sent off to Dr. Richard Baumann and he confirmed that they were *Z. cinctipes* but with simple cervical gills and sent the following note:

### **Odd gill numbers and shapes in the stonefly *Zapada cinctipes***

The genus *Zapada* in the stonefly family Nemouridae bears distinct cervical gills in the neck region as the name implies. These gills are easily seen in nymphal specimens and are often used for separating the several species in the genus during the immature stages. Most *Zapada* species have four sausage-like gills in the neck region two on each side of the midline. However, the most common species in western North America, *Zapada cinctipes* exhibits a branching of each of the main gills. The number of gill branches is usually 4 on each gill but can be variable depending on developmental problems that occur because of physical or environmental factors. The exact mechanism has not been studied but often when *Z. cinctipes* nymphs are placed in an environment that is stressful the cervical gills are adversely affected. Sometimes whole gills are lost but most often the shape and number of branches is altered so that the insect is malformed and thus is difficult to determine using existing taxonomic keys.

Richard W. Baumann  
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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!!*

#### **Mollusca**

Allen, D. C. and C. C. Vaughn. 2010. Complex hydraulic and substrate variables limit freshwater mussel species richness and abundance. *Journal of the North American Benthological Society* 29:383-394.

Clarke, L. R. 2010. Population density and growth of the freshwater mussel *Anodonta californiensis* in a flow-fragmented stream. *Journal of Freshwater Ecology* 25:179-192.

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Hershler, R., H.-P. Liu, and W. H. Clark. 2010. Microsatellite evidence of invasion and rapid spread of divergent New Zealand mudsnail (*Potamopyrgus antipodarum*) clones in the Snake River basin, Idaho, USA. *Biological Invasions* 12:1521-1532.

### **Crustacea**

Asem, A., B. Atashbar, N. Rastegar-Pouyani, and N. Agh. 2010. Morphological and biometric characterisation of rare males and sexual dimorphism in parthenogenetic *Artemia* (Crustacea: Anostraca). *Zoology in the Middle East* 49:115-117.

Ba, J., Z. Hou, D. Platvoet, L. Zhu, and S. Li. 2010. Is *Gammarus tigrinus* (Crustacea, Amphipoda) becoming cosmopolitan through shipping? Predicting its potential invasive range using ecological niche modeling. *Hydrobiologia* 649:183-194.

Bobeldyk, A. M. and G. A. Lamberti. 2010. Stream food web responses to a large omnivorous invader, *Orconectes rusticus* (Decapoda, Cambaridae). *Crustaceana* 83:641-657.

Jocque, M., B. Vanschoenwinkel, and L. Brendonck. 2010. Anostracan monopolisation of early successional phases in temporary waters? *Fundamental and Applied Limnology* 176:127-132.

Rogers, D. C., S. C. Weeks, and W. R. Hoeh. 2010. A new species of *Eulimnadia* (Crustacea; Branchiopoda; Diplostraca; Spinicaudata) from North America. *Zootaxa* 2413:61-68.

### **Ephemeroptera**

Ditsche-Kuru, P., J. H. E. Koop, and S. N. Gorb. 2010. Underwater attachment in current: the role of setose attachment structures on the gills of the mayfly larvae *Epeorus assimilis* (Ephemeroptera, Heptageniidae). *Journal of Experimental Biology* 213:1950-1959.

Gibbins, C., R. J. Batalla, and D. Vericat. 2010. Invertebrate drift and benthic exhaustion during disturbance: response of mayflies (Ephemeroptera) to increasing shear stress and riverbed instability. *River Research and Application* 26:499-511.

Hill, M. A., J. Pfeiffer, and L. M. Jacobus. 2010. A new genus and new species of Baetidae (Ephemeroptera) from lakes and reservoirs in eastern North America. *Zootaxa* 2481:61-68.

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Molineri, C. 2010. A cladistic revision of *Tortopus* Needham & Murphy with description of the new genus *Tortopsis* (Ephemeroptera: Polymitarcyidae). *Zootaxa* 2481:1-36.

Nieto, C. 2010. Cladistic analysis of the family Baetidae (Insecta: Ephemeroptera) in South America. *Systematic Entomology* 35:512-525.

### **Odonata**

Bried, J. T. and C. A. Mazzacano. 2010. National review of state wildlife action plans for Odonata species of greatest conservation need. *Insect Conservation and Diversity* 3:61-71.

Cordoba-Aguilar, A. and A. Cordero-Rivera. 2010. Evolution and ecology of Calopterygidae (Zygoptera: Odonata): status of knowledge and research perspectives. *Neotropical Entomology* 39:314-314.

### **Plecoptera**

Baumann, R. W. and B. C. Kondratieff. 2010. *Malenka murvoshi*, a new species of stonefly from the Spring Mountains of Southern Nevada (Plecoptera: Nemouridae). *Illiesia* 6:113-117.

Froehlich, C. G. 2010. Catalogue of Neotropical Plecoptera. *Illiesia* 6:118-205.

Kondratieff, B. C. and J. J. Lee. 2010. A new species of *Paracapnia* from California (Plecoptera: Capniidae). *Illiesia* 6:206-209.

Stewart, K. W. and N. H. Anderson. 2010. The life history of *Soyedina producta* (Claassen) (Plecoptera: Nemouridae) in an Oregon summer-dry stream, with notes on its larval generic character development. *Illiesia* 6:227-233.

### **Trichoptera**

Angrisano, E. B. and J. V. Sganga. 2010. Preimaginal stages of *Acostatrichia simulans* Mosely 1939, a Neotropical microcaddisfly (Trichoptera: Hydroptilidae: Leucotrichiinae). *Zootaxa* 2480:54-60.

Chuluunbat, S., J. C. Morse, J. L. Lessard, M. E. Benbow, M. D. Wesener, and J. Hudson. 2010. Evolution of terrestrial habitat in *Manophylax* species (Trichoptera: Apataniidae), with a

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new species from Alaska. *Journal of the North American Benthological Society* 29:413-430.

## **Coleoptera**

Cobbaert, D., S. E. Bayley, and J.-L. Greter. 2010. Effects of a top invertebrate predator (*Dytiscus alaskanus*; Coleoptera: Dytiscidae) on fishless pond ecosystems. *Hydrobiologia* 644:103-114.

Epler, J. H. 2010. The Water Beetles of Florida an identification manual for the families Chrysomelidae, Curculionidae, Dryopidae, Dytiscidae, Elmidae, Gyrinidae, Haliplidae, Helophoridae, Hydraenidae, Hydrochidae, Hydrophilidae, Noteridae, Psephenidae, Ptilodactylidae and Scirtidae. Tallahassee, FL, State of Florida, Department of Environmental Protection, Division of Environmental Assessment and Restoration.

Fikacek, M., S. Wedmann, and H. Schmied. 2010. Diversification of the greater hydrophilines clade of giant water scavenger beetles dated back to the Middle Eocene (Coleoptera : Hydrophilidae : Hydrophilina). *Invertebrate Systematics* 24:9-22.

Short, A. E. Z. 2010. Phylogeny, evolution and classification of the giant water scavenger beetles (Coleoptera: Hydrophilidae: Hydrophilini: Hydrophilina). *Systematics and Biodiversity* 8:17-37.

## **Diptera**

Andersen, T., O. A. Saether, and H. F. Mendes. 2010. Neotropical *Allocladius* Kieffer, 1913 and *Pseudosmittia* Edwards, 1932 (Diptera: Chironomidae). *Zootaxa* 2472:1-77.

Dantas, G. P. S., N. Hamada, and H. F. Mendes. 2010. A new Neotropical species of the genus *Stenochironomus* Kieffer (Diptera: Chironomidae) with wood-mining larvae. *Zootaxa* 2490:47-54.

Donato, M. and A. Siri. 2010. A new species of *Metriocnemus* van der Wulp (Diptera: Chironomidae) with a tentative phylogeny of the genus. *Neotropical Entomology* 39:50-60.

Krestian, B. J., E. Kosnicki, P. H. Spindler, S. Stringer, and J. H. Epler. 2010. First Nearctic records of *Oliveiriella* Wiedenbrug and Fittkau, with new distributional records for two

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other New World species of Orthoclaadiinae (Diptera: Chironomidae). *Entomological News* 120:349-362.

Neubern De Oliveira, C. S., H. F. Mendes, and M. A. Navarro Da Silva. 2010. A new species of the genus *Monopelopia* from South Brazil, with keys to the Neotropical-Nearctic species (Diptera: Chironomidae: Tanypodinae). *Zootaxa* 2420:53-62.

Saether, O. A. 2010. *Cryptotendipes* Lenz from Manitoba, Canada, with keys to known immatures of the genus (Diptera: Chironomidae). *Zootaxa* 2412:1-20.

Saether, O. A., T. Andersen, L. C. Pinho, and H. F. Mendes. 2010. The problems with *Polypedilum* Kieffer (Diptera: Chironomidae), with the description of *Probolum* subgen. n. *Zootaxa* 2497:1-36.

### **Miscellaneous**

Hamilton, B. T., S. E. Moore, T. B. Williams, N. Darby, and M. R. Vinson. 2010. Comparative effects of rotenone and antimycin on macroinvertebrate diversity in two streams in Great Basin National Park, Nevada. *North American Journal of Fisheries Management* 29:1620-1635.

Klemetsen, A. and J. M. Elliott. 2010. Spatial distribution and diversity of macroinvertebrates on the stony shore of a subarctic lake. *International Review of Hydrobiology* 95:190-206.

Kohler, A. E. and D. Taki. 2010. Macroinvertebrate response to salmon carcass analogue treatments: exploring the relative influence of nutrient enrichment, stream foodweb, and environmental variables. *Journal of the North American Benthological Society* 29:690-710.

Malison, R. L., J. R. Benjamin, and C. V. Baxter. 2010. Measuring adult insect emergence from streams: the influence of trap placement and a comparison with benthic sampling. *Journal of the North American Benthological Society* 29:647-656.

Martin, P., E. Stur, and S. Wiedenbrug. 2010. Larval parasitism of spring-dwelling alpine water mites (Hydrachnidia, Acari): a study with particular reference to chironomid hosts. *Aquatic Ecology* 44:431-448.

Sanchez-Montoya, M. M., M. R. Vidal-Abarca, and M. L. Suarez. 2010. Comparing the sensitivity of diverse macroinvertebrate metrics to a multiple stressor gradient in Mediterranean streams and its influence on the assessment of ecological status. *Ecologica Indicators* 10:896-904.

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