



**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.

Summer has arrived here in northern California. Along with the triple-digit temperatures, adults of many interesting aquatic invertebrates show up this time of year. One of my favorites is *Stenocolus scutellaris* (LeConte). The large larvae with their abdominal gills are probably familiar to many. Not as familiar, are the adults. There is a large population of these beetles living in Big Chico Creek just outside Holt Hall, where the ABL-Chico is housed. The photo above shows a male exhibiting cryptic coloration and secretive behavior, two reasons why adults of the species remain unfamiliar to casual collectors.

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.

New Tool for Conducting Visual Physical Habitat Assessments

The Clean Water Team has produced an enhanced Excel file for assisting training and conducting Visual Habitat Assessments. This Excel spreadsheet contains embedded instructions and reference material (pdf), video tips (suitable for small tablets and smartphones) and web-links to YouTube video tips. It was designed for easy use with touchscreens.

Clean Water Team's enhanced Excel file for conducting Visual Habitat Assessments

www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/vph2015.xlsx

Playlist - Visual Physical Habitat Assessments Video Tips

www.youtube.com/playlist?list=PLMSa5d-iIl6OIUvw2l55DUL5Ql3R8u7M9

Visual Physical Habitat Assessments are great exercises for citizen science, volunteer monitoring, STEM and other stream monitoring programs. The assessments require little or no equipment purchases. Training and facilitation can be provided by an expert knowledgeable about stream and riparian science. As presented here, these assessments rely on an EPA methodology, Bioassessment Protocols for Use in Wadeable Streams and Rivers EPA 841-B-99-002. At the conclusion of each assessment a condition score is produced.

Evaluations of water quality and aquatic habitat using sensory observations are usually referred to as Visual Assessments. Odor and taste, also sensory observations, are sometimes included in visual assessment as well. Visual assessments provide the first level of information about an environment and can serve as useful screening tools to help focus more detailed investigations. They are important because they permit us to gather useful information over a large area, or within a short amount of time, relative to other approaches requiring more detailed analysis of environmental conditions.

Learn more about Stream Measurements and Visual Assessments by visiting:

www.waterboards.ca.gov/water_issues/programs/swamp/cwt_guidance.shtml#40

Are you interested in converting this into an app? If so, please contact Erick Burres, Citizen Monitoring Coordinator eburres@waterboards.ca.gov.

About the Clean Water Team

The Clean Water Team (CWT) is the citizen monitoring program of the State Water Resources Control Board. The CWT is a part of the Surface Water Ambient Monitoring Program (SWAMP). The CWT Citizen Monitoring Coordinator works statewide in order to provide technical assistance and guidance documents, training, QA/QC support, temporary loans of equipment and communication to citizen monitoring programs and watershed stewardship organizations. www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.shtml

Note from SAFIT President, Dan Pickard

Hi all!

I wanted to drop you a line from the President's Desk to remind anyone interested in learning about some cool beetles to sign up for the workshop. I am attaching a link to our SAFIT site which has all the details, including sign up via PayPal for those so inclined. Please remember also that we hold out 5 spots specifically for students, whose registration may get paid for in full (see details on website). Hope to see lots of people there!! Have a great summer...

Dan

<http://safit.org/event.php>

EMPLOYMENT OPPORTUNITIES

Please contact the editor if you would like to post 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.***

TOUGH CHARACTERS

Got a TOUGH CHARACTER? The more difficult diagnostic characters and key couplets for those taxa that are tricky to separate are elucidated in this column. Plenty of good grudge matches will be presented in photos, figures and descriptions. Think there are tough characters that are being missed? Contact the editor to submit your tough characters and get them compared with other character states right here.

Heterelmis vs. Microcylloepus

by Brady Richards

with photos by Doug Post

A pair of taxa that seem to give people problems is the larvae of *Heterelmis* and *Microcylloepus*. While I've never seen *Heterelmis* larvae misidentified as *Microcylloepus*, I've been seeing *Microcylloepus* larvae misidentified as *Heterelmis* since I started working on aquatic invertebrates. *Heterelmis* is a little more widespread in the Midwestern and other states than what is recorded in the literature (spoilers!), but the taxon is still more commonly associated with the southwestern states (Bosse et al., 1988; Brown, 1972a). In the SAFIT region, *Heterelmis* is recorded from southern CA, AZ, and NM. *Microcylloepus* is recorded from CA, NM, AZ, NM and UT.

Most of the keys for elmid larvae (notably, Brown, 1972b; White and Roughley, 2008) separate *Heterelmis* with the characters, “Dorsum of all but last segment bearing spatulate tubercles or short spines arranged in about 10 conspicuous longitudinal or diagonal rows; last segment with a mid-dorsal longitudinal ridge and lateral margins bearing spatulate tubercles.” I think many times, someone running an elmid larva through the key will get to this couplet, see longitudinal rows on their specimen and think they’re done. However, a little farther down in both keys, is the couplet where *Microcyloepus* falls out with a couple characters, including, “dorsal tubercles partially arranged in parallel longitudinal rows.” The abdominal tubercles in *Microcyloepus* larvae can be just as conspicuous as in *Heterelmis*, and can be organized into longitudinal rows, but these tubercles are flattened instead of spatulate.

Heterelmis is one of those taxa that I like to describe as “once you’ve seen it, you’ll never mistake it.” Take a look at Figure 1, which shows the two taxa side by side, and you’ll see what I mean. The tubercles are spatulate and erect and quite obvious. I think a lot of taxonomists back East have *Microcyloepus* larvae with the organized row of tubercles, then see the couplet about rows of tubercles and assume that’s what they have.

When I pulled specimens for the photos, I noticed that I had trouble finding *Microcyloepus* specimens from California in which the tubercles were arranged into longitudinal rows. The specimen I used to show this (Figure 2) is actually from a large series I collected in Arkansas. Nearly every specimen had the organized rows. I don’t think this is a specific character, but rather, I think the eastern species, *M. pusillus* (LeConte), is a bit more likely to have the tubercles so arranged than will the common western species, *M. similis* (Horn).

For a quick and dirty character, refer back to the couplet starting “Dorsum of all but last segment bearing spatulate tubercles...” This means the pronotum of *Heterelmis* also has the rows of spatulate tubercles (Figure 3), while the pronotum of *Microcyloepus* (Figure 4) does not. The latter part of that couplet is also good, but Doug and I were unable to get a satisfactory photo to illustrate the character.

Literature Cited

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- Brown, H. P. 1972a. Synopsis of the genus *Heterelmis* Sharp in the United States, with description of a new species from Arizona (Coleoptera, Dryopoidea, Elmidae). *Entomological News* 83:229-238.
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- White, D. S., and R. E. Roughley. 2008. Chapter 20: Aquatic Coleoptera. [pp. 571-671]. In: R. W. Merritt, K. W. Cummins and M. B. Berg (editors), *An introduction to the aquatic insects of North America*, fourth edition, xvi + 1158 pp. + 39 color plates. Kendall/Hunt Publishing Company, Dubuque, Iowa. 571-671 pp.



Figure 1: *Heterelmis* (left) and *Microcylloepus* (right)



Figure 2: *Microcylloepus* larvae showing tubercles not organized (left) and organized into longitudinal rows (right)



Figure 3. *Heterelmis* pronotum

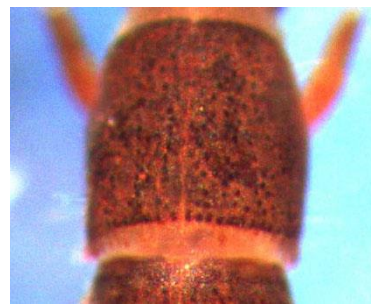


Figure 4: *Microcylloepus* pronotum

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.

LATEST LITERATURE

If you know of any recent 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) for inclusion in the next issue of the SAFIT Newsletter. Thanks!!

Asterisk (*) indicates author is a SAFIT member.

Mollusca

Hershler, R., H.-P. Liu, J. T. Carlton, A. N. Cohen, C. B. Davis, J. Sorensen, and D. Weedman. 2015. New discoveries of introduced and cryptogenic fresh and brackish water gastropods (Caenogastropoda: Cochliopidae) in the western United States. *Aquatic Invasions* 10:147-156.

Hershler, R., H.-P. Liu, and J. S. Simpson. 2015. Assembly of a micro-hotspot of caenogastropod endemism in the southern Nevada desert, with a description of a new species of *Tryonia* (Truncatelloidea, Cochliopidae). *Zookeys* 492:107-122.

Mehler, K., K. Acharya, and D. W. Sada. 2015. Spatial and temporal pattern in length-mass regressions of freshwater gastropods in Nevada spring ecosystems. *Malacologia* 58:167-177.

Crustacea

De Grave, S., K. G. Smith, N. A. Adeler, D. J. Allen, F. Alvarez, A. Anker, Y. Cai et al. 2015. Dead Shrimp Blues: a global assessment of extinction risk in freshwater shrimps (Crustacea: Decapoda: Caridea). *Plos One* 10:e0120198.

Obregon-Barboza, H., G. Murugan, H. Garcia-Velazco, and A. M. Maeda-Martinez. 2015. A review of the *Branchinecta* (Branchiopoda: Anostraca) from the Baja California Peninsula: first record of the giant fairy shrimp *B. gigas* Lynch, 1937 from Mexico. *Journal of Crustacean Biology* 35:433-440.

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- *Rogers, D. C. and S. Padhye. 2015. Review of the large branchiopod crustacean fauna of the Indian Subcontinent (Anostraca, Notostraca, Laevicaudata, Spinicaudata, Cyclestherida). *Journal of Crustacean Biology* 35:392-406.
- *Rogers, D. C., M. Schwentner, J. Olesen, and S. Richter. 2015. Evolution, classification, and global diversity of large Branchiopoda. *Journal of Crustacean Biology* 35:297-300.
- Shu, S., *D. C. Rogers, X. Chen, and J. Yang. 2015. Two new species of clam shrimp (Branchiopoda: Spinicaudata) from Yunnan Province, China. *Journal of Crustacean Biology* 35:454-460.

Plecoptera

- Bethoux, O., B. Kondratieff, F. Grimsson, E. Olafsson, and T. Wappler. 2015. Character state-based taxa erected to accommodate fossil and extant needle stoneflies (Leuctridae - Leuctrida tax.n.) and close relatives. *Systematic Entomology* 40:322-341.
- Boumans, L. and A. Johnsen. 2015. Stonefly duets: vibrational sexual mimicry can explain complex patterns. *Journal of Ethology* 33:87-107.

Trichoptera

- Thomson, R. E. and R. W. Holzenthal. 2015. A revision of the Neotropical caddisfly genus *Leucotrichia* Mosely, 1934 (Hydroptilidae, Leucotrichiinae). *ZooKeys* 499:1-100.

Coleoptera

- Angus, R. B., E. M. Angus, F. Jia, Z.-n. Chen, and Y. Zhang. 2015. Further karyosystematic studies of the *Boreonectes griseostriatus* (De Geer) group of sibling species (Coleoptera, Dytiscidae)-characterisation of *B. emmerichi* (Falkenstrom, 1936) and additional European data. *Comparative Cytogenetics* 9:133-144.

Diptera

- Conflitti, I. M., G. F. Shields, R. W. Murphy, and D. C. Currie. 2015. The speciation continuum: ecological and chromosomal divergence in the *Simulium arcticum* complex (Diptera: Simuliidae). *Biological Journal of the Linnean Society* 115:13-27.

Miscellaneous

De Jong, G. D. and S. P. Canton. 2014. Input of terrestrial invertebrates to streams during monsoon-related flash floods in the southwestern United States. *Southwestern Naturalist* 59:228-234.

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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, 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 taxonomic. 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, (555) 555-555.” 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.

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