

in the drift

The NABS Newsletter



Happy New Year!

The beginning of a new year typically means it's a busy time for all of us, particularly as we prepare for meeting-related deadlines. Please see below ("Mark your calendars") for several of these important dates, and check the website AND latest bulletin for more info about each one. Students in particular: *there is a lot of cash out there for you*—check out the Endowment and Conservation awards, and do not let a good funding opportunity go by the wayside (or streamside?)...

The 2010 meeting, to be held jointly with ASLO, promises to be excellent. Among many other unique features (check the Bulletin!), there is a huge array of interesting special sessions, many planned jointly with ASLO members.

Congrats to Dr. Patina Mendez, who has taken over the reins as NABS web editor. She aims to make the new website more user-friendly, both for readers and for NABS committee members who eventually will be able to update their respective sections. Contact Patina at webeditor@benthos.org, and look for a full update about her plans in the next newsletter!



Our own Greta Burkart took 2nd prize in the amateur division of the 2009 Roaring Fork Watershed photo contest for her photo 'Power of the Roaring Fork' taken in the Grottos near Basalt, CO. The annual contest is sponsored by the Roaring Fork Conservancy: <http://www.roaringfork.org/>

As always, we (Julie, Teresa, Deb) welcome any interesting [or even funny] benthic news. We rely on input (*the drift*) from NABS members to keep in *the drift* up and collecting! Write us: debra.finn@eawag.ch

issue 6:

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Mark your calendars!

It's that time of year: there are so many deadlines to remember that we dedicate an entire section to aid your memories. Check the website for detailed info on each of these...

now: Renew your membership for 2010 ASAP. benthos.org: it's easy!

1 Feb: NABS [student!] Endowment Award 2010 application deadline

12 Feb: abstract submission deadline for NABS/ASLO 2010 in Santa Fe.

12 Feb: same date as abstracts: this is the early registration deadline; *earlier than usual!*

15 Feb: Student Conservation Research Award appl. deadline

15 March: Hynes Award deadline: have all nominations and support letters in!

15 April: deadline for nominations/support letters for Award of Excellence and Distinguished Service Awards

6 May: latest you can request a refund on the registration fee

9 May: deadline for online submission to the joint NABS/ASLO photo contest. Your chance to be published in the calendar (see photo at right)! For contest rules: photos@freshwatersillustrated.org

6-11 June: NABS/ASLO 2010 meeting, Santa Fe, New Mexico!



Speaking of calendars: There are still 2010 NABS calendars for the taking, only 12 bucks each plus \$3 shipping. Send the \$15 total by check or money order to: Freshwaters Illustrated, PO Box 921, Corvallis, OR 97339. (info@freshwatersillustrated.org) Proceeds go to the NABS Conservation & Environmental Issues Committee.

JNABS article spotlight: Consumers and nutrient spiraling

Small, Helton & Kazanci *JNABS* 28(4): 747-765

The most recent Rosemary Mackay Fund article is a perfect example of how a fresh perspective and cross-discipline collaboration can create new models for the way we think about stream ecology. “It is easier to think outside of the box when you don’t really know what’s inside the box,” says Gaston “Chip” Small, the lead author and a Ph.D. student in the Odum School of Ecology at the University of Georgia. Small’s ideas spawned during his first semester in grad school when his Limnology professor was describing a classic figure demonstrating nutrient spiraling. “I remember being confused as to whether time or distance was on the x-axis, and thinking it would be interesting to draw a spiraling diagram with both time and distance dimensions,” states Small.

The next year, Small was making progress on his dissertation research investigating the interactions between stream nutrient levels and organism stoichiometry (i.e. C:N:P elemental ratios) for streams at La Selva Biological Station in Costa Rica. “I read with great interest a paper by Dr. Wyatt Cross and colleagues that predicted how elemental ratios of stream biota should affect ratios of uptake length of different nutrients,” Small adds, “it seemed to me that this was only half of the story”.

The rest of the story, what Small calls “a fairly simple idea” (yeah...) is a model for stream nutrient dynamics that integrates the influence of consumers with his early ideas about nutrient spiraling. “How organisms retain limiting nutrients and dump excess nutrients in order to maintain homeostasis should have im-

portant implications in the differences between spirals of limiting and non-limiting nutrients—but this would be most evident if spirals were considered over both time and distance.”

Small enlisted the assistance of two colleagues to help with the development of the new model. Ashley Helton, a Ph.D. student at UGA, is familiar to NABSters for her work modeling the results of the LINX II project. “I have played with ecosystem models for a few years, but producing models fit for publication is another matter, and Ashley provided invaluable help in this regard,” says Small. The second collaborator, Dr. Caner Kazanci, is an Assistant Professor in the Department of Mathematics and Faculty of Engineering at UGA and studies ecological networks. Small explains, “I knew just enough about the particle tracking work he had done to realize that this would be interesting to use in a stream model.”

The authors combined their modeling skills to test the hypothesis that limiting nutrients would be held up in biotic compartments, and therefore would have a slower average down-



photo: Julie Small

Chip Small ponders how consumers influence the fate of nutrients at a study stream in Costa Rica. Small and his co-authors tracked the fate of nearly 20 million N and P atoms in their stream nutrient spiraling model.

stream velocity compared to non-limiting nutrients. “We made an heuristic stream model that was both stoichiometrically- and spatially-explicit, and then used Caner’s particle tracking methodology to simulate tracer experiments”, explains Small. Even though the authors created a relatively simplistic model representing dissolved, microbe/detritus, and consumer compartments, things quickly became complicated following the movement of both N and P atoms. “When two elements were considered at 100 “nodes” (each representing a 5-m reach), we were dealing with a 600 compartment model. We followed the fate of nearly 20 million N and P “atoms” in this stream ecosystem, so some of the simulations took several weeks to run.”

So do consumers matter when considering nutrient spiraling? “Our results suggest that nutrient retention within consumers could greatly affect stream nutrient dynamics when consumers are present at high biomass levels, as is the case for some invasive species” says Small. No doubt we will hear more great things from Chip Small about the role of benthic consumers in stream food webs in the future.



photo: Marcia Snyder

Chip Small and Pedro Torres hard at work. See the latest *JNABS* issue for more details on Small and his coauthors’ stream nutrient spiraling models.

Pam's JNABS corner



Happy 25th anniversary to JNABS!
To celebrate, a special anniversary issue will be available with papers that address the progress of 18 subdisciplines in benthic science. We expect the issue to become a reference book for the discipline—see below for details on ordering your very own copy!

How to order

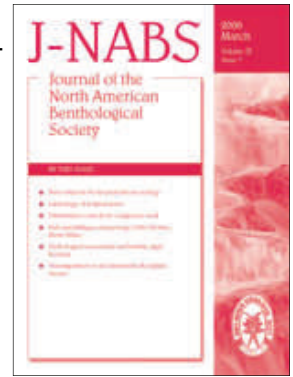
- 100% open access online, available January 2010
- Hard copies will be available with a print subscription in March 2010
- individual copies can be ordered by contacting Irwin Polls (ipolls@comcast.net; \$29.95 including shipping) and will be available for purchase in Santa Fe

25th-year Anniversary Issue:

The Role of J-NABS in Freshwater Benthic Science

Pamela Silver and Alan D. Steinman [editors]

- The special anniversary issue contains 18 review papers that address the progress of 18 subdisciplines within benthology and the role of the Journal in the development of each subdiscipline - and it weighs in at around 400 pages!
- Authors provide a broad review of the literature, place the papers published in J-NABS within an historical context (each author provided a timeline of key papers in their field), analyze the contribution of papers published in J-NABS to the subdiscipline, and describe challenges and opportunities for future development of the field.
- The issue has an introduction that discusses the role of discipline-specific journals in scientific discovery and a synthesis chapter that pulls together common themes among the review articles.
- Topics include hydrology, the hyporheos, landscape ecology, disturbance, patch dynamics, taxonomy/systematics, microbial ecology, periphyton, biotic interactions, life histories, ecosystem linkages, secondary production, bioassessment (2 chapters), conservation, and basic/applied science (Bridges).
- We expect this issue to be important reading for students and professionals alike!



Massive *Rivers of North America* book condensed into a user-friendly field guide

We thank Art Benke for contributing the content for this article.

Based on the quintessential, multiple-award-winning *Rivers of North America* (edited by Art Benke and Bert Cushing, published 2005 by Academic Press), the new *Field Guide to Rivers of North America* by the same editors and chapter authors describes 200 of North America's most significant rivers in a user-friendly, compact format.

The purpose of the *Field Guide* is much the same as the original *Rivers of North America* - to provide a better understanding of an essential natural resource, at a continental scale. The editors envision the book leading to wiser management, sustainability, and restoration. The new paperback version, with its significantly condensed format, is intended to reach a wider audience (including non-scientists) than the original reference volume.

Following an abbreviated introductory chapter, the book is organized into 22

~\$100

1144 pp; 21.5x30 cm

➔

~\$30

459 pp; 15x23 cm

regional chapters - each containing a short introduction and regional map, followed by 2-page summaries of up to 12 individual rivers. The summaries are based on the 1-page summaries of the original volume and, as before, include a color topographic basin map and physical/biological data compiled by regional river experts (*most of these are NABS members*). Basin maps include locations of major dams, cities, and lakes and show boundaries of physiographic provinces. Data include mean basin area, annual discharge, major fish

southern Mexico to the Arctic. Although not nearly as comprehensive as *Rivers of North America*, this compact version still retains the same maps and graphs and much of the summary data that can be a ready and reliable source of information for students, researchers, or the general public. The guide also should be a handy companion on cross-continent trips for nature enthusiasts and anyone interested in what is likely our most valuable natural resource: fresh water.

Perhaps *Rivers of Europe* will be next!

and invertebrate species, and a plot of monthly precipitation, air temperature, and runoff.

As a bonus: beautiful color photographs have been added to each summary, including 38 new photos that did not appear in the original volume!

Rivers from all regions of North America are represented, from

Drumming up stonefly news at Sagehen Creek

Several NABS members attended the ninth North American Plecoptera Symposium (NAPS-9), held 22-25 June, 2009, at the Sagehen Creek Field Station near Truckee, California. The Essig Museum of Entomology (University of California) hosted the meeting, and the co-moderators were William D. Shepard and Andrew L. Sheldon. NAPS-9 was attended by 23 researchers from throughout North America and a few “tolerant” spouses. The agenda included 4 sessions with 19 oral presentations and 2 posters, covering topics such as stonefly ecology, drumming, taxonomy and genetics.



Pteronarcys princeps - a local hero- was there too.

Besides the presentations, highlights included the wonderful Sagehen Creek field station (and the historical perspectives given by manager Jeff Brown), ample opportunities to collect both specimens and photos (see above) in the immediate area and the wonderful food provided by Christine’s Catering.

NAPS-10 is planned for somewhere in the northern Midwest in 2012, with Ed DeWalt and Jane Earle (both NABSsters) serving as hosts.

Thanks to Bill Shepard for the contributions!



NABster Dick Baumann describes two new stonefly genera. Although difficult to see in the photo, the presentations occurred outside, among the pines and alongside babbling Sagehen Creek. It seems there were many distractions in the form of stoneflies and other insects flying over from the stream!



Attendees of the ninth North American Plecoptera Symposium

Did you know... ? (if you didn't, check the Fall Bulletin on the website!)

- Deadlines for submitting info to be posted in the Bulletin is typically at least one month prior to the posting date (e.g.: it is 1Feb. for the Spring Bulletin. Be kind to editor Ron French and be on time with submissions!
- Professor Janine Gilbert—an accomplished groundwater ecologist who excelled both in basic and applied science—has passed away. Her colleagues have left a heartfelt memorial to Prof. Gilbert in the Fall Bulletin (pp. 3-4).
- There is renewed discussion among



Margaret Palmer stood her ground vs. Stephen Colbert; the show aired 18 Jan. 2010. <http://bit.ly/7LQpTW>

- the NABS leadership and *JNABS* editorial board about “the feasibility of a discussion of a possible name change” for our society.
- Margaret Palmer and others have created quite a stir with their re-

cent *Science* article about the consequences of mountaintop coal mining; Dr. Palmer hence has become the first NABS member to appear as a guest on the Colbert Report. She did us all proud!

- “Global Changes from the Center to the Edge” is the theme for the joint NABS/ALSO meeting in Santa Fe. See the Bulletin and website for myriad lodging and event info!

benthos.org