



Granite State Geologist

The Newsletter of the Geological Society of New Hampshire, Fall-Winter (December) 2010 Issue No. 71

2010-2011 GSNH Officers:

President –Julie Spencer
AECOM, Westford, MA
jspencer@ensr.aecom.com

Vice President-Council - Bill
Abrahams-Dematte
AECOM, Wakefield, MA
Bill.Abrahams-Dematte@aecom.com

Vice President –Society - Doug Allen
Haley & Aldrich, Manchester, NH
dallen@HaleyAldrich.com

Secretary – Muriel Robinette
New England EnviroStrategies, Inc.
murielrobinette@neenvirostrategies.com

Treasurer – Jim Degnan
USGS, Pembroke, NH
jrdegan@usgs.gov

Past-President – Jutta Hager
Hager GeoScience, Woburn, MA
jhager@hagergeoscience.com

Members-at-Large:
Lea Anne Atwell
Sanborn, Head & Associates, Concord, NH
latwell@sanbornhead.com

Wayne Ives
NHDES, Concord, NH
wives@nh.des.gov

Membership:
Doug Allen
Haley & Aldrich, Inc.
Manchester, New Hampshire
dallen@HaleyAldrich.com

Education and Outreach:
Tina Cotton
jt_cotton@comcast.net
Lee Wilder
geology@des.nh.gov

Website:
Rich Mechaber
webmaster@gsnonline.org

Newsletter Editor:
Bettina Eames
Loureiro Engineering Associates
Merrimack, New Hampshire
beeames@loureiro.com

HAPPY HOLIDAYS AND NEW YEAR! In this issue:

- Message from New GSNH President – Julie Spencer
- 2011 GSNH BOD Election Results
- NEIGC Guidebooks
- NH-VT USGS New Publications 2009 and 2010
- Fall 2010 Groundwater Levels
- 2011 GSNH Winter Dinner Meeting Announcement

TO CONTACT US BY MAIL:



Geological Society of New Hampshire
PMB 133, 75 South Main St, Unit 7
Concord, NH 03301

TO CONTACT US VIA WEB: <http://gsnh.org>

MESSAGE FROM THE PRESIDENT Julie Spencer, AECOM, GSNH 2010-2011 President

It's a pleasure to be writing to you as your president again. This issue marks our first electronic newsletter. We hope you enjoy the ability to access your newsletter quickly and see color photos for the first time! We had a great crowd on October 14, 2010 for the Fall Dinner Meeting and election. The election results are included in another article in this newsletter. We were treated to a very interesting program on the International Appalachian Trail (IAT) presented by Walt Anderson, Geological Society of Maine and IAT. Dick Anderson, another IAT member, joined Walt in providing the background of how such an ambitious project was started. Walt's enthusiasm for the international extensions of the Appalachian Trail was quite contagious and by the end of the evening we were all ready to pull on our hiking boots! Our mineral raffle prizes for the evening were won by Don Cederquist (fluorite crystal cluster) and Walt Anderson (concretions glacial Lake Hitchcock).

MESSAGE FROM THE PRESIDENT (CONTINUED)

Thank you to everyone who purchased raffle tickets. Remember, the proceeds from the ticket sales are earmarked for our educational outreach funds and grants.

This is membership renewal time. Please remember to renew and send in your dues. You can also renew at the January dinner meeting. The notice for the meeting is posted at the end of this newsletter. We have a great year of programs and activities planned for 2011, so I encourage you to renew and spread the word about our organization!

On behalf of the Board of Directors, I'd like to wish all the members and their families very Happy Holidays!

2011 BOARD OF DIRECTORS ELECTION RESULTS

The election of the 2011 GSNH Board of Directors (BOD) was recently held at the Annual Dinner Meeting on October 14, 2010, at the Red Blazer Restaurant in Concord. Forty-five (45) GSNH members voted. The winners are indicated below, along with the term they will be entering noted:

President

Julie Spencer (1st term)

Society Vice-President

Doug Allen (2nd term)

Council Vice-President

Bill Abrahams-Dematte (2nd term)

Secretary

Muriel Robinette (2nd term)

Treasurer

Jim Degnan (2nd term)

Member-at-Large

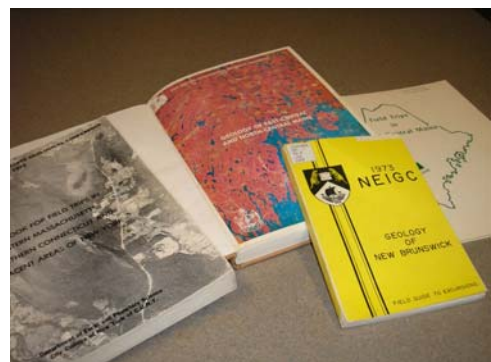
Lea Anne Atwell (1st term)

The second Member-at-Large is Wayne Ives, who is entering the second year of his current two-year term for 2011. Congratulations to the 2011 Board of Directors! Contact information for each of the BOD members is shown on page 1 and is also be posted on the GSNH website. In addition, biographical sketches of the Board Members may be found in the September GSNH newsletter.

NEW ENGLAND INTERCOLLEGIATE GEOLOGICAL CONFERENCE GUIDEBOOKS,

PART ONE: EVOLUTION Submitted By Thelma B. Thompson, Government Documents and Map Librarian, University of New Hampshire, thelma.thompson@unh.edu

NEIGC probably needs little introduction for most NHGS members. Its purpose as stated on the NEIGC website (<http://www.salemstate.edu/~lhanson/NEIGC/>) "is, and always has been, to present field trips to students and professionals in interesting geologic areas." NEIGC has met annually since 1901, with very few exceptions, such as three years during World War II. Typically a field trip description contains a road (or hiking) log and individual stop descriptions with variable amounts of other information, such as an overview article, maps, diagrams and references.



NEW ENGLAND INTERCOLLEGIATE GEOLOGICAL CONFERENCE GUIDEBOOKS, PART ONE: EVOLUTION (CONTINUED)

As a librarian interested in the development of scholarly communication, I am curious how discoveries are initially communicated and then preserved and made available to future researchers. I have examined most of the individual trips from the last sixty years and differences that I note between older and newer trip descriptions do not imply lower quality of earlier meetings or lesser competence of authors. Rather, the differences reflect new ways of presenting information and a maturing of guidebooks as valuable information sources for use after the trips are over.

Changes in both format and content reflect this transition to a more formal kind of literature. For selected decades of NEIGC trips I recorded features such as unbound vs. bound format, degree of standardization of format, number of trips per meeting, number of pages per volume and per trip, and number of references per trip. Other researchers have studied geologic guidebooks more broadly, noting how they are cited in other publications and how well they are reflected in key indexes, such as GeoRef.

At the end of the 1960s there is a jump in number of NEIGC trips per year. Numbers of trips remained high through the 1980s and much of the 1990s, with somewhat fewer trips for most meetings at end of the last decade. Do more trips reflect times of more active field research in the region and the more recent trend for fewer trips reflect less new research? That is a question for another study. Meanwhile, the jump in numbers of pages per volume is due to more than an increase in numbers of trips. The length and format of trip descriptions changed significantly:

1950-1959, 5.2 pages, length of average trip, excluding references
1960-1969, 12.7 pages of which about 3 were devoted to graphics (maps, diagrams, photos, etc.)
1980-1989, 19.2 pages with about 7 pages of graphics
2000-2009, 17.3 pages including almost 10 pages of graphics

It is now less cumbersome to write, make map and diagrams, and revise and reuse material. To what degree did changes in technology influence these changes or have authors responded to outside incentives to write more “meaty” trip descriptions? I counted numbers of references rather than pages of references because reference formats varied so much over the years. The number of references may reflect whether the author regards the trip description as an ephemeral publication or a more permanent contribution to the literature. Certainly, the increase over the decades is dramatic:

1950-1959, 4.2 average number of references per trip
1960-1969, 11.0
1980-1989, 23.4
2000-2009, 36.5

I have not yet analyzed the types of references, for instance, how many cite previous work by the trip leaders themselves versus work of other colleagues. Two trends are likely to result in more references. The longer introductory portions of trip descriptions provide more context for the trip stops, including contributions of other researchers. Field work is increasingly supported by various types of laboratory analysis in which field researchers work in collaboration with other geologists. Finally, what about the authors of field trip guidebooks? There has been a steady increase in the numbers of authors per trip, perhaps again reflecting greater collaboration among researchers:

NEW ENGLAND INTERCOLLEGIATE GEOLOGICAL CONFERENCE GUIDEBOOKS, PART ONE: EVOLUTION (CONTINUED)

1950-1959, 1.3 average number of authors per trip
1960-1969, 1.4
1980-1989, 1.9
2000-2009, 2.6

So far, I have only tallied the affiliations of the first authors of guidebook articles. Affiliation is based on their positions at the time of writing, and if multiple affiliations are listed for one author, only the first is recorded. As expected given the “intercollegiate” origins of the organization, academic authors dominate in all decades. It is not possible to distinguish the numbers of undergraduate or graduate students from professors, except in a few cases through personal knowledge. Although the numbers of USGS authors have dropped slightly in recent years, the number of authors from state surveys has risen. Overall there is more variety in more recent years (for instance, museum staff, consultants, and employees of other government agencies).

I hope that there are some authors of NEIGC guidebooks reading this article. Newer guidebooks are covered by copyright whether or not the volume actually contains a copyright statement. **If you have been an NEIGC trip leader any time since 1975, I would like you to sign a copyright release form so that we can digitize your work.** You can expect to hear more about the progress of UNH Library’s digitization of NEIGC guidebooks in a later newsletter.

NH-VT USGS E-MAIL NOTIFICATION LIST

The New Hampshire-Vermont Water Science Center of the US Geological Survey (USGS) is announcing that they are initiating an email notification system of new reports, information and other products. The purpose of occasional emails will be used to keep interested persons up-to date on the results of the diverse water resource investigations and data collection efforts going on by the USGS NH-VT office. The NH-VT USGS has compiled an email distribution list based on persons who have routinely contacted the Water Science Center, past mailing lists, and the email distribution lists of some of our partners.

If you think you are on the list and would like to be removed from this notification list, or would like to add others, please contact the NH-VT USGS office. Additional information on our on-going and recently completed projects, real-time streamflow data and conditions, and groundwater levels, can be found on our web page located at: <http://nh.water.usgs.gov>. Feel free to contact Keith Robinson, Director, USGS, NH/VT Water Science Center, 361 Commerce Way, Pembroke, NH 03275603-226-7807 or by email to Keith at kwrobins@usgs.gov <http://nh.water.usgs.gov>. Printed copies can be obtained by contacting Sky Merritz at smerritz@usgs.gov or 603-226-7851. Some recently completed NH-VT USGS reports are:

2009 PUBLICATIONS

Coles, J.F., Bell, A.H., Scudder, B.C., and Carpenter, K.D., 2009, The effects of urbanization and other environmental gradients on algal assemblages in nine metropolitan areas across the United States: U.S. Geological Survey Scientific Investigations Report 2009-5022, 18 p. [Available only online at <http://pubs.water.usgs.gov/sir2009-5022>].

Dittman, J.A., Shanley, J.B., Driscoll, C.T., Aiken, G.R., Chalmers, A.T., and Towse, J.E., 2009, Ultraviolet absorbance as a proxy for total dissolved mercury in streams: *Environ. Pollut.* 157, p. 1953-1956. [AVAILABLE ONLINE at doi:[10.1016/j.envpol.2009.01.031](https://doi.org/10.1016/j.envpol.2009.01.031) or http://vt.water.usgs.gov/Publications/2009/Dittman_etal2009EP.pdf].

Hayes, Laura, and Horn, M.A., 2009, Methods for estimating withdrawal and return flow by census block for 2005 and 2020 for New Hampshire: U.S. Geological Survey Open-File Report 2009–1168, 32 p., available at <http://pubs.usgs.gov/of/2009/1168/>.

Johnston, C.M., Dewald, T.G., Bondelid, T.R., Worstell, B.B., McKay, L.D., Rea, Alan, Moore, R.B., and Goodall, J.L., 2009, Evaluation of catchment delineation methods for the medium-resolution National Hydrography Dataset: U.S. Geological Survey Scientific Investigations Report 2009–5233, 88 p., available at <http://pubs.usgs.gov/sir/2009/5233/>.

Mack, T.J., 2009, Assessment of ground-water resources in the Seacoast region of New Hampshire: U.S. Geological Survey Scientific Investigations Report 2008–5222, 188 p., available at <http://pubs.usgs.gov/sir/2008/5222>.

Phillips, P.J., and Chalmers, A.T., 2009, Wastewater effluent, combined sewer overflows, and other sources of organic compounds to Lake Champlain: *Journal of the American Water Resources Association*, vol 45, issue 1, p. 45-57, DOI: [10.1111/j.1752-1688.2008.00288.x](https://doi.org/10.1111/j.1752-1688.2008.00288.x).

Olson, S.A., 2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire, U.S. Geological Survey Scientific Investigations Report 2008-5206, 57 p. [REPORT AVAILABLE ONLINE at <http://pubs.usgs.gov/sir/2008/5206/>].

2010 PUBLICATIONS

Ayotte, J.D., Kernen, B.M., Wunsch, D.R., Argue, D.M., Bennett, D.S., Mack, T.J., 2010, Preliminary assessment of water levels in bedrock wells in New Hampshire, 1984 to 2007: U.S. Geological Survey Open-File Report 2010–1189, 30 p., at <http://pubs.usgs.gov/of/2010/1189>.

Chalmers, A.T., Argue, D.M., Gay, D.A., Brigham, M.E., Schmitt, C.J., and Lorenz, D.L., 2010, Mercury trends in fish from rivers and lakes in the United States, 1969-2005: *Journal of Environmental Monitoring and Assessment*, published online 10 June 2010, [AVAILABLE ONLINE at DOI: [10.1007/s10661-010-1504-6](https://doi.org/10.1007/s10661-010-1504-6)].

Coles, J.F., Cuffney, T.F., McMahon, Gerard, and Rosiu, C.J., 2010, Judging a brook by its cover: The relation between ecological condition of a stream and urban land cover in New England: *Northeastern Naturalist*, 17(1):29-48, DOI: [10.1656/045.017.0103](https://doi.org/10.1656/045.017.0103), Published March 2010. [AVAILABLE at [http://nh.water.usgs.gov/Publications/2010/Coles_et_al_2010_NE_Nat_17\(1\).pdf](http://nh.water.usgs.gov/Publications/2010/Coles_et_al_2010_NE_Nat_17(1).pdf)].

Degnan, J.R., and Brayton, M.J., 2010, Preliminary investigation of paleochannels and groundwater specific conductance using direct-current resistivity and surface-wave seismic geophysical surveys at the Standard Chlorine of Delaware, Inc., Superfund Site, Delaware City, Delaware, 2008: U.S. Geological Survey Open-File Report 2010–1058, 27 p., at <http://pubs.usgs.gov/of/2010/1058/>.

Denner, J.C., Clark, S.F., Jr., Smith, T.E., and Medalie, Laura, 2010, Effects of highway road salting on the water quality of selected streams in Chittenden County, Vermont, November 2005–2007: U.S. Geological Survey Scientific Investigations Report 2009–5236, 43 p. (Available at <http://pubs.usgs.gov/sir/2009/5236/>.)

Flynn, R.H., 2010, Flood study of the Suncook River in Epsom, Pembroke, and Allenstown, New Hampshire, 2009: U.S. Geological Survey Scientific Investigations Report 2010–5127, 64 p., [Also available at <http://pubs.usgs.gov/sir/2010/5127/>].

Harte, P.T., 2010, Hydrostratigraphic mapping of the Milford-Souhegan glacial drift aquifer, and effects of hydrostratigraphy on transport of PCE, Operable Unit 1, Savage Superfund site, Milford, New Hampshire: U.S. Geological Survey Open-File Report 2010–1047, 34 p., 3 pls. [REPORT AVAILABLE ONLINE at <http://pubs.usgs.gov/of/2010/1047/>].

Harte, P.T., and Trowbridge, P.R., 2010, Mapping of road-salt-contaminated groundwater discharge and estimation of chloride load to a small stream in southern New Hampshire, USA: *Hydrologic Processes*, published online 9 April 2010, DOI: [10.1002/hyp.7645](https://doi.org/10.1002/hyp.7645).

Mack, T.J., Akbari, M.A., Ashoor, M.H., Chornack, M.P., Coplen, T.B., Emerson, D.G., Hubbard, B.E., Litke, D.W., Michel, R.L., Plummer, L.N., Rezaei, M.T., Senay, G.B., Verdin, J.P., and Verstraeten, I.M., 2010, Conceptual model of water resources in the Kabul Basin, Afghanistan: U.S. Geological Survey

Scientific Investigations Report 2009–5262, 240 p. [Report available at <http://pubs.usgs.gov/sir/2009/5262/>].

Medalie, Laura, and Horn, M.A., 2010, Estimated water withdrawals and return flows in Vermont in 2005 and 2020: U.S. Geological Survey Scientific Investigations Report 2010–5053, 53 p. [Also available at <http://pubs.usgs.gov/sir/2010/5053/>].

Olson, S.A., and Williams-Sether, T., 2010, Streamflow characteristics at streamgages in northern Afghanistan and selected locations: U.S. Geological Survey Data Series 529, 512 p., at <http://pubs.usgs.gov/ds/529/>.

Seal, R.R., II, Kiah, R.G., Piatak, N.M., Besser, J.M., Coles, J.F., Hammarstrom, J.M., Argue, D.M., Levitan, D.M., Deacon, J.R., and Ingersoll, C.G., 2010, Aquatic assessment of the Ely Copper Mine Superfund site, Vershire, Vermont: U.S. Geological Survey Scientific Investigations Report 2010–5084, 131 p. [REPORT AVAILABLE ONLY ONLINE AT <http://pubs.usgs.gov/sir/2010/5084/>].

TRANSLOCATION AND MONITORING OF THE BROOK FLOATER, *ALASMIDONTA VARICOSA*, AFTER THE 2006 AVULSION IN THE SUNCOOK RIVER, NEW HAMPSHIRE By: B. J. Wicklow ¹, D. R. Smith ², K Flanery ³, S. von Oettingen ⁴ (*Printed with permission from author: B. J. Wicklow*)

¹ Department of Biology, Saint Anselm College, 100 Saint Anselm Drive, Manchester, NH 03102. ² USGS Leetown Science Center, Aquatic Ecology Lab, 11649 Leetown Road, Kearneysville, West Virginia 25430. ³ Nashua National Fish Hatchery, 151 Broad Street, Nashua, NH 03063. ⁴ US Fish and Wildlife Service, 70 Commercial Street, Concord, NH 03301

During extensive flooding in May of 2006, the Suncook River in Epsom, NH breached a glacial ridge, cut a new channel, and dewatered 3.2 km stretch inhabited by brook floater mussels. Approximately 1100 brook floaters were rescued and held at the National Fish Hatchery, Nashua NH. The mussels were tagged measured and translocated to an upstream section of the Suncook River in North Chichester, NH after up to 60 days in the hatchery.

At the translocation site we discovered one of the largest known brook floater populations range-wide. Resident brook floaters were marked and measured, and both resident and translocated mussels were mapped in 2 experimental plots (Sites 1 and 2). In a control site (Site 3), only resident mussels were marked and measured. Translocated mussels were less likely to be recaptured than resident mussels at site 1 while recapture rates for resident mussels at site 1 and site 3, were comparable. Translocated and resident mussels had similar but low recapture rates at site 2. Assuming that capture probability of resident and translocated mussels was equal then the difference in recapture rates would be due to lower survival or higher emigration for translocated mussels. Between site differences in recapture rate could be due to variation in capture probability rather than survival. However, a 100-year flood in April 2007, washed out many mussels, increasing mortality, and affecting each site differently. Moreover, low water following a prolonged summer drought exposed mussels to intense opportunistic predation at site 3.



Any Questions : Contact Barry J. Wicklow, Department of Biology, Saint Anselm College, 100 Saint Anselm Drive, Manchester, NH, Telephone: 603-641-7155, FAX: 603-222-, bwicklow@anselm.edu

NHGS FALL GROUNDWATER LEVELS Submitted by NHGS

Ground-water level measurements for September, October and November 2010 were collected by NHGS staff member Genevieve Al-Egaily.

September 27-30, 2010. The statewide average ground-water level showed a 0.54-foot decrease from August. Decreases were seen in all of the wells except for the Nashua well which showed an increase of 0.03. When compared with September 2009, the statewide average ground-water level decreased 1.43 feet. Decreases were seen in all wells except for the Colebrook, Lee, and Lisbon wells which showed increases of 0.10, 0.59, and 0.10 feet respectively. The average ground-water level in the new bedrock wells showed a decrease of 0.34 feet when compared with August. When compared with September 2009, the average ground-water in the Concord, East Kingston, and Rindge bedrock wells decreased 2.55 feet. Measurements for the other bedrock wells were not included in the network in September 2009.

October 25 -29, 2010. The statewide average ground-water level showed a 0.65-foot increase from September. When compared with October 2009, the statewide average ground-water level decreased 1.08 feet. Decreases were seen in all wells except for the Lisbon and Colebrook wells, which showed increases of 0.39 feet and 0.31 feet respectively. The average ground-water level in the new bedrock wells showed an increase of 1.83 feet when compared with September.

November 19 – 24, 2010. The statewide average ground-water level showed a 0.47-foot increase from October. When compared with November 2009, the statewide average ground-water level decreased 0.50 feet. The average ground-water level in the new bedrock wells showed an increase of 1.64 feet when compared with October.

The data are available from NHGS, and are shared and posted on the USGS website. For historical groundwater data, please go to <http://nh.water.usgs.gov/WaterData>.

AGI GLOSSARY OF GEOLOGY NOW AVAILABLE (AGI Press Release)

The American Geological Institute's (AGI) Glossary of Geology, 5th Edition is now available for the iPhone, iPod Touch, and iPad in Apple's App Store. The Glossary of Geology app brings all 40,000 authoritative definitions of the vocabulary of the geosciences to an easy-to use, searchable, fast, and portable format. To learn more or purchase the Glossary of Geology app, search for "Glossary of Geology" in the App Store, or visit iTunes at: <http://itunes.apple.com/us/app/glossary-of-geology/id398194234> .

EARTH MAGAZINE NOW AVAILABLE ON-LINE

A Digital Edition of EARTH Magazine is now available digitally. You can either subscribe to EARTH's digital edition, or you may purchase individual copies as a downloadable PDF. See: <http://www.earthmagazine.org/digital/>

The logo for EARTH Magazine, featuring the word "EARTH" in a large, bold, red serif font.

NEWS FROM THE NEW HAMPSHIRE GEOLOGICAL SURVEY (Previously printed in the NOVEMBER-DECEMBER 2010 ENVIRONMENTAL NEWS)

Rick Chormann is serving as Interim State Geologist -State geologist David Wunsch has moved on to a new venture. After ten years as the NH state geologist, Dr. David Wunsch has

tendered his resignation to accept the position of Director of Science and Technology for the National Ground Water Association. During his tenure as state geologist, Dr. Wunsch was instrumental in defining the mission of the state geological survey, which has grown significantly as an important and valued unit of DES, through its data collection, dissemination, research and scientific support. The survey's work continues under the lead of Rick Chormann, senior hydrogeologist.

Kristen Svendsen Returns - The NHGS welcomes the return of Kristen Svendsen from maternity leave. She gave birth to baby Amelia Anne Parsons, who arrived on August 19, 2010 at 7:06 PM. After working right up until the day before, Kristen fortunately stayed home on Amelia's birth day and thus avoided having to rush to the hospital from work. Amelia weighed 9 pounds 12 ounces and was 21 and 1/4 inches long at birth - a big, healthy girl. Kristen is a hydrogeologist working on the NHGS Geologic Mapping Program – STATEMAP. Tara Johnson and Kristen are co-managers of the Geologic Data Preservation Program.

Neil Olson Recently joined the NHGS as a Hydrogeologist 1 - Neil is responsible for editing and enhancing the implementation of the NH version of the National Hydrography Data Set (NHHD) under a formal stewardship agreement with the US Geological Survey and with funding support from the US Environmental Protection Agency. Most recently Neil worked with the WY Department of Environmental Quality (a state department much like NH's DES). There he was an intern in their Watershed Division, doing field survey work. Neil earned his BA from Brown University and a Masters from Idaho State University, both degrees in Geology. His Masters thesis, "Hydrology of Big Creek, Idaho: Spatial and temporal heterogeneity of runoff in a snow-dominated wilderness mountain watershed", emphasizes his graduate focus on Environmental Geo-science and GIS. As a native of VT, Neil was anxious to return to New England and the NHGS welcomes him to our staff.

Fluvio-Geomorphology Program - Shane J. Csiki, Fluvial Geomorphology Specialist, and Michael P. Humphrey, Hydrogeologist, continue to work on geomorphic assessments and Fluvial Erosion Hazard (FEH) analyses in the seacoast and southern New Hampshire. Geographic analysis and field work have been completed for the 2 ½ mile long Axe Handle Brook, a tributary of the Cocheco River. Data collection forms for stream crossing assessments and associated training materials have been developed as essential steps in implementing a standard protocol for geomorphic data collection. The FEH program is increasingly recognized for its application in addressing critical issues of geomorphic compatibility and the dynamics of New Hampshire's complex fluvial landscape. This work will expand to other regions of the state in the coming years, with future study areas to include river reaches in the Cocheco, Lamprey, Sugar, and Merrimack River watersheds.

Ground Water Level Network - As the demands on our limited water supplies increase, data on how much water is available and the location of those supplies become increasingly important. Gen Al-Egaily oversees an ongoing program of groundwater level monitoring for the NHGS in order to support such assessments of water availability. Currently she measures the static level of some 32 overburden and bedrock wells in the state. These wells are located in various stratified drift aquifers and bedrock formations from Colebrook to Nashua. Efforts are underway to install data loggers in some of the wells to provide a higher temporal resolution of groundwater fluctuations. Details about this program and its data can be accessed from:

<http://des.nh.gov/organization/commissioner/gsu/gwImp/index.htm>

NEWS FROM THE NEW HAMPSHIRE GEOLOGICAL SURVEY (CONTINUED)

Water Use Registration and Reporting Program - The water use registration and reporting program gathers water use data from facilities that use in excess of 20,000 gallons of water per day averaged over any 7-day period, or more than 600,000 gallons of water over any 30-day

period. Since the program's inception in 1987, we have collected monthly totals for sources and destinations of water used by a diverse range of different types of facilities. The goal of the program is to maintain accurate data on water withdrawals, returns, and transfers to support quantitative assessment of how water resources are being used in New Hampshire. The data assist researchers and scientists with water budget estimates that help identify potential impacts to individual aquifers and watersheds. Program data are integral to understanding current stresses on our water resources and provide a basis for evaluating future water needs in New Hampshire. NHGS has recently completed a statewide Stressed Basins Analysis

http://des.nh.gov/organization/commissioner/gsu/nhhdps/stressed_basins.htm which will be described in more detail in a future article.

NHDES adopted revised administrative rules for water use registration and reporting on September 23, 2008 (Env-Wq 2102).

NHGS Water Well Inventory Program - Well Water Data continue to be submitted to the ever growing NHGS Water Well Inventory Data Base. Currently the data base contains records for more than 117,000 drilled well. Access to this *water well* data is available through the DES One Stop System at: <http://www2.des.state.nh.us/DESOnestop/BasicSearch.aspx>

NHGS Geologic Data Preservation Program - The NHGS Geologic Data Preservation Program is pleased to introduce an important initiative with the revised OneStop site. NHGS is now making scanned well completion reports available online through the OneStop search engine. Available at <http://www2.des.state.nh.us/DESOnestop/BasicSearch.aspx>

The first town to debut is Stratham. Therefore, a OneStop water well search for the Town of Stratham will return well records that link to a PDF scan of the original well report. This on-going initiative (supported by the USGS National Geologic and Geophysical Data Preservation Program) will facilitate public access to well data. For questions contact [program manager](#), Tara Johnson at 271-0587.

Reminder Geothermal Drilling Projects - Reporting Requirements for Geothermal Well Data

Recent legislation established reporting requirements for geologic information related to deep boreholes (> 1,000 feet) drilled for the purpose of geothermal systems. Below is the language taken from Chapter 19, New Hampshire HB 415-FN:

III. Any person exploring hydrothermal or geothermal resources, or any person installing a geothermal energy system who drills at least 3 boreholes 1,000 or more feet deep on one site, shall report to the state geologist a description or log of the geological formations and materials encountered in the borehole that achieved the greatest depth. The report shall include any temperature measurements from fluids or temperatures measured at the bottom of one of the boreholes. Each report shall be prepared by a geologist licensed in this state within 30 days of the completion of drilling.

At this time there are no specific formats for reporting the geologic information to the NHGS (geology@des.nh.gov).

The Survey will accept paper (hardcopy) or digital copies of well logs, reports, notes, etc. that include as much of the requested information as possible from qualifying boreholes, as our collection of this specific information is not for a regulatory requirement. However, please note that the request for geologic information above is in addition to prior requirements for registering geothermal systems with the state. All geothermal systems installed in New Hampshire (closed and open loop) are required to register with the Department's Underground Injection Control (UIC) Program. This is largely a registration and inventory process and there is **no** filing fee for

residential, commercial, or institutional applications. Electronic forms can be downloaded from the Department's website at

http://des.nh.gov/organization/divisions/water/dwgb/dwsp/gw_discharge/categories/forms.htm

Additionally, the fact sheet for geothermal systems can be viewed at the following link:

<http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-22-23.pdf>

STATEMAP Program - September marked the successful conclusion of another year of geologic mapping in NH under the cooperative STATEMAP program. Surficial maps at 1:24,000-scale were completed by contract mappers Carol Hildreth for the Hartland and North Hartland quadrangles, Carl Koteff for the Deering quadrangle, and Emery and Garrett Groundwater, Inc. for the Holderness quadrangle. Charlie Kerwin completed a bedrock geologic map for the Greenville quadrangle. Brian Fowler volunteered his time and expertise to produce a surficial geologic map of the Mount Washington East Quadrangle and John Cotton likewise contributed to the program by edge matching quadrangles within the I-93 corridor.

Plans for STATEMAP 2010, include surficial geologic mapping of the Henniker, Ashland, and Claremont North quadrangles and both bedrock and surficial mapping of the NH portion of the Windsor 24K quadrangle. This mapping will be conducted during the summer field season 2011. Mappers are scheduled to deliver their field products to the NHGS by September 15, 2011.

STATEMAP 2011 proposal has been submitted to the USGS, with award notifications due back in February 2011. Program priorities determined by the NH Geologic Resource Advisory Council for the 2012 field season include surficial mapping of the North Grantham, Center Harbor and Carter Dome 24K quadrangles. Both surficial and bedrock geologic mapping have been proposed for the Marlow 24K quadrangle. Final plans will be announced in spring 2011 based on the actual grant award.

NHGS Public Outreach - Inquiries for NHGS geologic information continue to increase -- from citizens looking for data on their drilled well, wanting to know about the soil and rock on their property, trying to identify an unusual topographic feature, or a mineral or rock they have found, to other state and municipal agencies wanting accurate maps of their soil or bedrock for construction and planning purposes. We anticipate that this trend will continue with greater recognition of the value of accurate geologic data to inform land use decisions, particularly with the prospect of climate change and increased intensity of rain events, leading to geologic hazards associated with flooding and failure of saturated soils. NHGS' growing data bases, maps and geologic "tools" will continue to supply needed sound scientific information.

EARTH SCIENCE WEEK 2010 HAPPENINGS IN NH Submitted by GSNH Education and Outreach Committee

- The NH Geological Survey distributed some 50 AGI ESW 2010 Teacher Packets on EXPLORING ENERGY to local NH science teachers.
- The NH Geological Survey and the GSNH helped the Alton Central School organize and run a geology field trip for some 73 fifth graders in Franconia Notch on Tuesday of Earth science Week.
- Fourth graders at the Southwick School in Northfield invited the NHGS to help with their rocks and minerals unit on Friday of Earth Science Week.

- The GSNH held its annual Fall Dinner Meeting on Thursday of Earth Science Week. Some 60 members and guest attended.
- The Governor of NH signed an Earth Science Week Proclamation.
- The NHGS reset part of the joint GSNH/NHGS display case in the public atrium of the DES with information on ES Week 2010 and the Teacher Packets.

REMINDER GSNH “GRANITE STATE GEOLOGIST” NEWSLETTER GOING PAPERLESS

Beginning with this edition, the GSNH’s “Granite State Geologist” quarterly newsletter will begin distribution in electronic format via email. This will provide readers with more interactive content, conserve resources, and save GSNH the expense of copying and distributing paper copies. Be sure GSNH has your active email address - which you can check by contacting Doug Allen.

“New Dimension to Wall’s Little Flaws” (Article By Michael E. Ruane, Washington Post Staff Writer , Friday, October 8, 2010)



A team of geophysicists has discovered a new series of cracks in the black granite [Vietnam Veterans Memorial](#), officials said Thursday. The experts from Hager-Richter Geoscience were called in this week by the Vietnam Veterans Memorial Fund, which built the wall, after an unusual vertical crack was discovered late last year. The consultants began inspecting the Wall on Monday and discovered more vertical cracks, said the fund’s president and founder, Jan C. Scruggs.

Most of the cracks are small - a few inches long - and are scarcely visible to the casual viewer. But the Wall has a history of cracks going back to 1984, two years after its dedication. In 1986, two of the 144 slabs, or panels, that make up the Wall were removed for study. Scruggs said the cause of the cracking has never been clear. One theory is that the polished stone might bend outward when heated by the sun. Scruggs said the surface of the stone can be 20 degrees warmer than the air temperature. "These panels get hot, and they bow out like a bow and arrow," he said. Asked about the cause of the cracks, Dorothy Richter (pictured above), president of New Hampshire-based Hager-Richter, said: "There have been a lot of theories offered over the many years. We’re constantly thinking about what might have caused the fractures. .We do not know with certainty." Gene Simmons, Richter’s husband and the company’s vice president, said the stone is no more prone to cracking than any other type of granite.

“NEW DIMENSION TO WALL’S LITTLE FLAWS”(CONTINUED)

Scruggs said Thursday that a volunteer at the Wall found the first vertical crack about a year ago. "We looked at it as sort of an odd thing, because there have been a number of [earlier] cracks . . . but they’re horizontal," he said.

"It actually looks worse than it did," he said of the crack found last year. "But we've been monitoring it." The Wall, on the Mall near the Lincoln Memorial, bears the names of 58,267 people who perished or are missing in action as a result of the Vietnam War. It was designed by architect Maya Lin and dedicated Nov. 13, 1982. The Wall is among the most visited tourist sites in Washington, with about 3 million or 4 million visitors a year, Scruggs said. Its stone was quarried in Bangalore, India, Scruggs said, and the fund has several blank panels in storage in case one is severely damaged. He also said the fund wants to buy more spare panels to have enough for the Wall's replacement in the future. Richter and Simmons said that their investigation would run through Friday and that they would probably have a report ready in a few weeks. "Maybe we worry too much about it," Scruggs said. "But that's the way we do things."

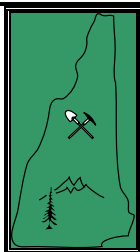
UPCOMING EVENTS

JANUARY 13, 2011 – GSNH 2011 Winter Dinner Meeting at Red Blazer Restaurant

GEO PHOTOS



Walter A. Anderson, GSA-Fellow, Geological Society of Maine, and Board Member and Staff Geologist of the International Appalachian Trail (IAT) being given an "In Appreciation Award" at the October 2010 GSNH Dinner Meeting.



Geological Society of New Hampshire

GSNH 2011 Winter Dinner Meeting

Topic:

“Arsenic in Groundwater: Studies in the US and Abroad”

Speaker:

***Dr. Karen H. Johannesson, PhD
Tulane University, New Orleans, Louisiana
Professor of Geochemistry and Chemical Hydrogeology
Department of Earth and Environmental Sciences***

Thursday, January 13th, 2011

**Red Blazer Restaurant
72 Manchester Street, Concord, NH**

6:00 pm Social Hour, 7:00 pm Buffet Dinner, 7:45 pm Speaker

GSNH 2011 Winter Dinner Meeting, Thursday, January 13, 2011 (RSVP By Jan 10th)

Advance Reservations: _____ Member (Dues Paid) @ \$22.00.

- Member at the Door or Non-Member with Reservation (\$24.00).
- Non-Member without Reservation (\$26.00).
- Students \$10.00 with valid student ID card (Reservation Requested).

GSNH will also accept dinner reservations by e-mail, which will then allow you to pay at the door. Please note that e-mail reservations constitute an agreement with the Society for which you will be responsible to pay, whether you are able to attend or not, unless you cancel your reservation by noon the day before the Dinner. **Reply via e-mail to: Wayne.Ives@des.nh.gov.**
Mail to: Wayne Ives, GSNH 2011 Winter Dinner Meeting, 78 Clark Street, Franklin, NH 03235

Name(s) _____

Address: _____

Your phone or e-mail: _____ Checks payable to: GSNH.

Half the cost of the dinner may be tax-deductible as a business expense. **The lecture part of the program counts as 1.5 hours of CEU contact hour credit.**