



Granite State Geologist

The Newsletter of the Geological Society of New Hampshire, Summer-Fall (September) 2007 Issue No.58
www.gsnhonline.org

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Message from the President Julie Spencer, ENSR, GSNH President 2006-2007

Greetings! I hope that everyone has had a good summer. I got a chance to see many of you on the summer field trip which was a great success! On July 14, 2007 approximately 60 people were in attendance at the summer field trip led by Carl Koteff. The weather was wonderful and we were treated to many interesting stops as we explored the surficial geology of the Hopkinton quadrangle. The map has not been published yet, so we got a nice preview of the findings. Many thanks to Carl for his excellent leadership and to all the volunteers who made the trip run so smoothly, including Lee Wilder, Ralph Wickson and Rich Moore. I would also like to thank the many members who offered to drive the carpools we set up to reduce the number of cars on the trip. Check this issue of the newsletter for an article and photos from the field trip.

Our annual dinner meeting is coming up on October 18, 2007. In celebration of Earth Science Week we will have two speakers. Woody Thompson of the Maine Geological Survey

will be speaking about the Eastern Laurentide Ice Sheet and Laura Preston, a high school teacher from Salem, New Hampshire, will share her experiences aboard the Atlantis II research vessel where she accompanied UNH professors on their expedition. We will also be holding our annual elections for the board of directors on October 18, 2007. The nominees are included in this newsletter. I encourage everyone to attend the meeting and vote. Only current members are eligible to vote, so if your membership has lapsed, please renew it. You can renew at the door and still be able to vote that evening.

I am sorry to announce that due to illness I will not be running for re-election. I have thoroughly enjoyed my term as President. As I transition into my new role as "Past President" I look back on my term with a smile. We have had a very good year in the society even though we started off on a sad note as we paused to remember our friend Dave Wyman. I cannot help but think that he would be pleased with our success as we brought in distinguished lecturers for the first time to our dinner meetings and were able to coordinate other venues for their lectures to share their knowledge with a wider audience. We held another successful summer field trip and attendance at all our events is strong.

I encourage everyone to consider running for a seat on the board of directors at some point. We have a lot of fun at the board meetings and it is a great way to be more involved in the society. This is my last Message from the President article so I will end with another plug to ask for volunteers for all our events and activities. Just speak to any of the board members and they will be happy to have your assistance! Stay involved, attend the meetings, renew your membership and the society will continue to be an integral part of New Hampshire geology. I hope to see everyone at the annual meeting!

MEMBERSHIP REPORT Submitted by Doug Allen, Haley & Aldrich

At the time of this writing, the GSNH membership database currently contains approximately 211 active members, which includes those that have renewed through 2006 and 2007. Of the 211 Active members, approximately 140 have renewed through the end of 2007 or beyond. Now would be a great time to renew your membership if you haven't done so already! Renewal/new member forms can be printed from the GSNH website. While most GSNH members are from New Hampshire or other New England states (predominantly Vermont, Maine, and Massachusetts), we do have several members elsewhere. Our geographical diversity includes members from Texas, Florida, and Arizona. Even more broad is the range of occupations and educational backgrounds of our members, creating the diverse and interdisciplinary environment that makes GSNH unique.

WEBMASTER WANTED FOR GSNH WEBSITE

The current GSNH webmaster will be stepping down from her duties due to illness. Have you been looking for a way to become more involved in the society? This is a perfect opportunity to play an integral role in the GSNH without a large time commitment. You do not need to know HTML language to fill this position. The GSNH website has been converted to a WYSIWYG format using WebEdit software provided by our web host. The software is entirely on line, so you do not need to download anything to your computer. Updating web pages, entering new text and uploading documents are all included in this position. Help to keep the society's online content current. Contact Julie Spencer (jspencer@ensr.aecom.com) or Lee Wilder (boslwne@tds.net) for more information or to volunteer.

TREASURER'S REPORT Submitted by Rich Moore, USGS

The GSNH board of directors has implemented a policy of submitting a treasurer's report annually in our newsletter. Our reporting year ends July 1st of each year. For real bean-counting enthusiasts, contact me and I can provide you with reports given at the meeting of the board of directors. The accompanying table summarizes the finances of GSNH from July 1, 2006 to July 1 2007 including the balances of our three accounts and two special funds. Major expenses are also listed. For this reporting year we operated at a loss of \$1,517. This does not take into account the fact that we have subsequently been reimbursed for speaker expenses of 532 by the Association of Women Geologists after the close of the reporting year. Still a net loss occurred mainly because a few events lost money and because of the publication of our GSNH directory (once every two years). Events that lost money include the 2006 summer field trip (well worth every penny from what I've heard) and the April meeting that had a lower than normal attendance because of a snowstorm. Our selection of the Cat 'n Fiddle buffet for dinner meetings was made in order to help keep meal charges affordable. In general our charges for meals do cover the actual costs.

Geological Society of New Hampshire				
Treasurer's Report	Reporting Year	07/01/2006 - 07/01/2007		
		Current Report	Report date	Change from previous year
Balance		\$14,614.76		(1,517.38)
Checking Account		\$1,875.78	7/1/2007	(2,156.26)
Savings Account		\$1,414.04	7/1/2007	3.65
Oppenheimer Money Market		\$11,208.00	6/15/2007	518.23
Cash On Hand		\$117.00	7/1/2007	117.00
Raffle Fund (not a separate bank account)		Speaker's Fund (not a separate bank account)		
Raffle income this year	\$150.00	Charles Spaulding donated in 2001		\$1,500.00
Total	\$944.50	remaining		\$1,275.70
GSNH income this reporting year	\$8,112*	Dues, meal payments, raffle, interest...		
Expenses this reporting year	\$9,630 Major expenses: newsletter & directory (\$2,025), meals (\$4,131), 2006 field trip (\$916), speakers (\$756), website (\$265), grants (\$700), etc. NOTE: A speaker's expense of \$532, reimbursed after the close of the reporting year by the Association of Women Geologists, is not included.			

UPCOMING 2007-2008 GSNH BOARD ELECTIONS

The next election of the board of directors will take place at the Fall 2007 dinner meeting on Thursday, October 18th, 2007 at the Cat-n-Fiddle restaurant. Names and biographical information of the slate of candidates are included in this newsletter. Thanks to Paul Rydel at Sanborn, Head & Associates for pulling all that together. Write in candidates are always welcome.

NHGS SUMMER GROUNDWATER LEVELS Submitted by Genevieve Al-Egaily, NHGS

Ground-water level measurements for June, July and August 2007 were collected by NHGS staff members Genevieve Al-Egaily and Kristen Svendsen.

June 25 - 27th - The statewide average ground-water level showed a 1.12 foot decrease from May. Decreases were seen in all wells except the Greenfield well and the well at the Concord airport, which had increases of 0.10 and 0.20 feet respectively. When compared with June 2006, the statewide average ground-water level decreased 1.43 feet.

July 25 - 30th - The statewide average ground-water level showed a 0.48 foot decrease from June. Decreases were seen in all wells except the Barnstead well, which had a slight increase of 0.05 feet. When compared with July 2006, the statewide average ground-water level decreased 1.62 feet.

August 22 - 27th - The statewide average ground-water level showed a 0.55-foot decrease from July. When compared with August 2006, the statewide average ground-water level decreased 1.00 feet. Decreases were seen in all wells when compared with July 2007 and August 2006.

NHGS EDUCATION AND OUTREACH/PROGRAMMATIC UPDATES

The New Hampshire Geologic Survey or NHGS (not to be confused with the GSNH!) held its 7th Annual Mappers Workshop on June 29 2007. This workshop is held to update DES employees, consultants, and the public, on the progress of the NHGS Geological Mapping Program. In addition, the workshop is also a forum to showcase the related work being performed by sister agencies in New Hampshire, as well as highlights from state surveys in our neighboring sites. This year's highlights included Professor Jack Ridge's presentation on preliminary results of his efforts to enhance our understanding of the deglaciation of New Hampshire by rectifying the varve chronology of the Connecticut River Valley, and a presentation by the National Forest Service with an update on their efforts to conduct soil mapping in the White Mountains. The workshop was attended by 53 people.

NHGS has coordinated with the Capital Mineral Club and an anonymous donor to host a mineral exhibit in the atrium of the NHDES/HHS Building. The mineral display hosts a spectacular collection of New Hampshire mineral specimens, and will be available for viewing until the early Fall. NHGS has also recently acquired, on loan, part of the Harvard University collection of New Hampshire mineral specimens, which we hope to display at a later time.

NHGS staff participated in the Geological Society of New Hampshire's Summer 2007 Geology Field Trip. David Wunsch, NH State Geologist, introduced NHGS Surficial Geology Mapper, Carl Koteff, at the start of the Saturday July 14, 2007 field trip. Approximately 60 geologists spent the rest of the day with Carl, exploring the Pleistocene Geology of the Hopkinton (NH) 1:24,000 scale quadrangle map. This area of NH has a great variety of ice-age features, including a huge braided stream deposit to wind blown sand dunes. Many of these features are

important economically for supplying ground water in stratified drift aquifers, and sand and gravel for construction projects.

Lee Wilder, Public Outreach Coordinator for the NH Geological Survey, recently attended the National Park Service (NPS) Northeast Geologic Resource Evaluation meeting at the University of Massachusetts, Amherst (MA). The NPS has a programmatic mapping effort to map the surficial and bedrock geology of its National Historic Sites. NH has one NPS Historic Site: Saint-Gaudens National Historic Site in Cornish, NH (see: <http://www.nps.gov/saga>). The status of current geologic mapping encompassing the Saint-Gaudens site was evaluated. Additional geologic information that will be needed was discussed in light of how the NHGS could help with this project, and possibilities of cooperating and integrating NPS's needs into our 2008 STATEMAP program.

Kristen Svendsen was recently hired to fill the Hydrogeologist I position at NHGS. Kristen graduated from Dartmouth College in June 2007 with a MS in Earth Sciences. At Dartmouth, Kristen studied the effects of flow regulation on the geomorphology, ecology and hydrology of impounded river systems with Dr. Carl Renshaw. This research was funded in part through grants from the National Science Foundation and Vermont Geological Society. Kristen is looking forward to being a valuable member of the NHGS team.

State Geologist David Wunsch attended the Annual Meeting of the Association of American State Geologists (AASG), which was held in Key Largo, Florida from June 10-14th, 2007. Representatives from several federal agencies were present to brief the state geologists on programs and legislation related to energy, water, environmental issues. Recently confirmed USGS Director Mark Myers participated in the meeting, and updated the attendees on USGS directives, budgets, and initiatives for the upcoming year. David Wunsch, AASG Vice-President, was a keynote speaker at the meeting and gave a presentation and update on national ground-water issues, including an update on the progress of the recently formed ACWI Subcommittee on Ground Water. Wunsch is co-chairman of the AASG Water Committee and AASG representative to the ACWI Subcommittee.

GENERAL EARTH SCIENCE NEWS

Earth Science Week - October 14 - 20, 2007 - This year marks the 10th annual Earth Science Week. This year's theme is "The Pulse of Earth Science". Earth Science Week activities will promote public and professional awareness of the status of earth science in education and society. The theme will also focus attention on geoscience research, such as that associated with the International Polar Year (IPY) and the International Year of Planet Earth (IYPE), of which AGI is a Founding Partner. Through these major initiatives Earth Science Week will help spread understanding of the impact the earth sciences have on society. Find more ideas about how you and others can become involved in Earth Science Week 2007 by visiting the <http://www.earthsciweek.org/>.

2007 – 2008 International Polar Year - The International Polar Year (IPY) is a large scientific programme focused on the Arctic and the Antarctic from March 2007 to March 2009. For more on the IPY go to <http://www.ipy.org>.

The International Year of Planet Earth - 2008 was proclaimed the "International Year of Planet Earth" by the General Assembly of the United Nations in its Plenary Session on December 22, 2005. The Resolution was tabled by the United Republic of Tanzania and co-signed by 82 nations. In October 2005, UNESCO's General Conference adopted a similar Resolution, also proposed by the United Republic of Tanzania. The purpose of the "International Year of Planet Earth" is to demonstrate new and exciting ways in which the earth sciences can help future generations meet the challenges involved in ensuring a safer and more prosperous world. The achievement of this aim will be supported by an outreach program including educational

ventures at all levels and a science program concentrating on “big issues” of complex interaction within the earth system, and its long-term sustainability. For more information on the International Year of Planet Earth go to <http://www.esfs.org/>.

AGI ANNOUNCES CONTEST THEMES FOR EARTH SCIENCE WEEK 2007

The American Geological Institute (AGI) is sponsoring three (3) national contests in conjunction with Earth Science Week 2007 - “The Pulse of Earth Science.”

1) All U.S. residents are encouraged to enter “*People Discovering Earth’s Treasures*” – this year’s Earth Science Week photography contest. Submissions should depict an aspect of earth science as it appears in your community. Learn to look at your surroundings through a geoscientist’s eyes and photograph what you discover.

2) Students in grades K – 5 are eligible to enter the visual arts contest, “*Changing Earth.*” Submissions should illustrate how geologic processes are constantly changing Earth’s landscape. Draw a picture, make a collage, or create another piece of two-dimensional artwork that highlights the continuous change on our planet.

3) The essay contest “*Earth Science in My Community*” is open to students in grades 6-9. Entries should be short essays of no more than 300 words explaining a unique geologic aspect of their community, discuss current earth science research in their geographic area, or indicate why it is important to study the geology of your town.

Earth Science week is organized annually by AGI with support from a number of other geosciences organizations, including the U.S. Geological Survey and the American Association of Petroleum Geologists Foundation (AAPGF). To learn more about how to celebrate our understanding of the planet and for more information on these contests please go to <http://www.earthsciweek.org/>.

The American Geological Institute is a nonprofit federation of 44 geoscientific and professional associations that represents more than 120,000 geologists, geophysicists and other earth scientists. Founded in 1948, AGI provides information services to geoscientists, serves as a voice of shared interests in the profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society’s use of resources and interaction with the environment.

FALL ITRC INTERNET-BASED TRAINING CLASSES

The Interstate Technology & Regulatory Council (ITRC) offers a wide variety of Internet-based training courses on innovative environmental technologies and approaches specific to the areas of site characterization, monitoring and remediation as well as other environmental topics. ITRC is a state-led coalition working together with industry and stakeholders to achieve regulatory acceptance of environmental technologies. ITRC is a program of the Environmental Research Institute of the States (ERIS), a nonprofit corporation operating in support of the Environmental Council of the States (ECOS).

To register go to <http://clu-in.org/studio/seminar.cfm> or at www.itrcweb.org click on “Internet-based Training”. Class registration opens 4 to 6 weeks prior to each course offering. The cost is sponsored by ITRC and EPA with no cost for the participant. These ITRC classes are delivered via our partnership with USEPA OSRTI on their website at www.clu-in.org/studio/. To download associated guidance documents go to <http://www.itrcweb.org> and click on “Guidance Documents”. If you have questions after completing the on-line registration, call us at (402) 201-

2419 or send an e-mail to training@itrcweb.org. The remaining September 2007 and October 2007 offerings area as follows (All Times are Eastern Standard Time):

Date	Topic	Time
September 18, 2007	Vapor Intrusion Pathway: A Practical Guideline <i>[Registration full - Wait list registration available only]</i>	2:00 PM – 4:15 PM
September 20, 2007	Real-Time Measurement of Radionuclides in Soil	11:00 AM - 1:15 PM
October 11, 2007	Characterization, Design, Construction and Monitoring of Bioreactor Landfills	11:00 AM - 1:15 PM
October 16, 2007	Evaluating, Optimizing, or Ending Post-Closure Care at Municipal Solid Waste Landfills	2:00 PM - 4:15 PM
October 18, 2007	Risk Assessment and Risk Management: Determination and Application of Risk-Based Values	11:00 AM - 1:15 PM
October 30, 2007	Remediation Process Optimization Advanced Training	2:00 PM - 4:15 PM

All dates/times are subject to change – check www.itrcweb.org for the most up-to-date information. Please check www.itrcweb.org for a complete 2007 ITRC Internet-based training class schedule. Register for an ITRC training class today - details at www.itrcweb.org or go directly to <http://clu-in.org/studio/seminar.cfm#upcoming> (you may need to scroll down to find the class of interest).

NH AUDUBON ENVIRONMENTAL LECTURE SERIES

The NH Audubon Society has monthly lectures featuring renowned scientists who are doing groundbreaking research in a variety of fascinating environmental arenas. Lectures are geared toward a general audience, and there is a question and answer session. Please join us at the McLane Center on Wednesday, October 17 at 7 PM when the topic will be “*North American Glaciation: Causes and Implications for Climate Change*” presented by Peter Huybers, Ph.D. Dr. Huybers was trained in climate physics at MIT and has published important work on the causes of ice ages. He is an assistant professor in Harvard University’s Department of Earth and Planetary Sciences. Cost is \$10 suggested donation; N.H. Audubon members are free. For more information contact: The New Hampshire Audubon, Silk Farm Road Concord, New Hampshire 03301 Tel: (603) 224-9909 Fax: (603) 226-0902 or via email to asnh@nhaudubon.org. There is no pre-registration.

GSNH SUMMER FIELD TRIP – SURFICIAL GEOLOGY OF THE HOPKINTON, NH QUADRANGLE WITH CARL KOTEFF Submitted by: Rich Moore, USGS and Lee Wilder, GSNH-VP



The weather cooperated beautifully on July 14, 2007, when approximately 55 of us met with Carl Koteff in Hopkinton, N.H. to learn about the Quaternary geology of the Hopkinton quadrangle. The group gathered at Saint Andrew’s Church Parish House, which served us well, both as the initial gathering location and later as the lunch stop. [Carl works emeritus for the USGS as a surficial geology mapper and advisor for the NH Geological Survey’s Mapping Program. Carl shared his wealth of experience with the group by accompanying the group to a number of field trip stops within the quadrangle.

The setting for the Hopkinton quadrangle is within the Contoocook River Basin, the largest river basin that drains north in New Hampshire. During the retreat of the last continental glacier, the glacial ice sheet blocked the northward flow of water. Likewise, the topographic drainage divide between the Contoocook basin and adjacent drainage basins also acted as a dam, and lakes formed between the glacial ice sheet and the divide. As the glacial ice margin retreated northward, drainage outlets were uncovered at progressively lower and lower altitudes along the drainage divide forming successively lower lake levels.



Early on in the field trip, Carl showed us a till exposure and then a sand and gravel ice-channel filling. The ice-channel filling, formed in an environment within the ice that was open to the atmosphere, was graded to the level of one of the former lakes within the Contoocook Basin. This glacial lake drained southward into the Piscataquog River Basin, controlled by a low point in the divide. The next stop was the dam for the Hopkinton Evert Reservoir, which approximates a former location of the retreating glacial-ice margin.

Today, by holding water back behind the dam, water from the Contoocook River can be diverted southward following the same path that once served as the outlet for the glacial lake that was dammed by the glacial-ice sheet. Next, we visited a site with mostly windblown sand that was deposited at a former glacial lake. Winds sweeping over what was a newly exposed landscape would have been the source of the sand. This kind of deposit is common throughout much of New England. The lack of pebbles is key to its identification.

After lunch we visited Gould Hill, a large drumlin-shaped feature that turned out to be really rock cored. There the exposed bedrock was shaped by the glacial erosion and locally covered by streamline deposits of till.



Next we visited an exposure of perhaps the largest delta in New Hampshire. This delta was not formed directly by glacial meltwater, but rather is composed of redeposited "canabilized" sediment that was washed northward by stormwaters into a late lower glacial lake within the Contoocook Basin.



After this, we visited the sand and gravel deposit of a true esker that was formed confined beneath the ice under a hydraulic gradient. In this manner the former path of the meltwater beneath the glacier was flowing southward, uphill, towards the center of Hopkinton. The flat-surface landform, of Hopkinton Village, is the delta fed by this esker system as the meltwater emerged from the glacier into one of the late glacial lakes confined between the ice and the topographic divide.

Our last stop was a fun stop at the large erratic boulder of “Boulder Farm”. There the half dozen youngsters got to climb up on the boulder while the adults contemplated how far the boulder may have traveled. Once again, a good time was had by all!

The Massive Erratic at Boulder Farm.



More Photos from the 2007 Summer Field Trip!



Lee Wilder, GSNH-VP (on left) and Julie Spencer GSNH-President (on right) talking with field trip leader Carl Koteff (center)



Nature's Fury - Lightning Bolt Strike (Above).



Classic Cut and Fill Channel Deposits! (above)

Dam at Hopkinton Everett Reservoir (right)





Geological Society of New Hampshire

2007 FALL DINNER MEETING

Speakers:

“Aboard the R/V Atlantis - Adventure to the East Pacific Rise!”

Laura Preston, Teacher of Earth Sciences, Salem High School, Salem, New Hampshire

Followed by

“Recession of the Laurentide Ice Sheet from the White Mountains”

Woody Thompson, Maine Geological Survey

Thursday, October 18, 2007

Cat-n-Fiddle Restaurant

Exit 13, I-93, Manchester Street, Concord, NH

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

GSNH 2007 Fall Dinner Meeting, Thursday, October 18, 2007

Advance Reservations: _____ Member (Dues Paid) @ \$20.00.

- Member at the Door or Non-Member with Reservation (\$22.00).
- Non-Member without Reservation (\$24.00).
- Students \$10.00 with valid student ID card (Reservation Requested).

Note: 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.

Reservations will be taken until Monday, October 15, 2007! Checks payable to GSNH.

Mail to: Lee Wilder, 477 Putney Hill Road, Hopkinton, NH 03229. Reply via e-mail to:
boslwne@tds.net

Name(s): _____

Address: _____

Phone and/or Email: _____

Half the cost of the dinner may be tax-deductible as a business expense.

The lecture part of the program counts as 2 hours of CEU contact hour credit.

Upcoming Events/Dates to Remember!

- **OCTOBER 14 - 20, 2007** – AGI EARTH SCIENCE WEEK.
- **OCTOBER 18, 2007** – GSNH FALL DINNER MEETING, CAT-N-FIDDLE RESTAURANT, CONCORD, NH. 2007-2008 GSNH BOARD ELECTIONS! COME VOTE!



Geological Society of New Hampshire
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