



# Granite State Geologist

The Newsletter of the Geological Society of New Hampshire, Summer-Fall (September) 2010 Issue No. 70

[www.gsnhonline.org](http://www.gsnhonline.org)

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## **GOODBYE SUMMER- HELLO FALL! IN THIS ISSUE:**

- **Message from the President**
- **GSNH Summer Field Trip**
- **Summer Groundwater Levels**
- **GSNH Annual Fall Meeting Announcement**
- **Call For GSNH Nominations ....and all Sorts of Good Stuff!**

## **MESSAGE FROM THE PRESIDENT** Jutta Hager, GSNH 2009-2010 President



Thanks to Wayne Ives and Lee Wilder, along with Brian Fowler and Steve Swenson, for putting together another very ambitious and successful summer fieldtrip, this time to the Madison Boulder and the Redstone Quarry, source of our Conway Granite speaker awards. I was honored to represent the GSNH at the Madison Boulder cooperative agreement ceremony, where we confirmed the GSNH's agreement to assist the Madison Boulder Advisory Commission in maintaining the Madison Boulder Natural Area. Although the temperatures at this writing do not reflect it, we are moving into fall and toward our October 14<sup>th</sup> GSNH meeting during Earth Science Week. As you'll read in the body of the newsletter, we've been lucky enough to get Walter Anderson, former Maine State Geologist, to talk about the extension of the Appalachian Trail (from Canada to the British Isles and into Spain, no less!). As usual at our October meeting, we will have our annual election of officers. Since only current GSNH members are allowed to vote, this is a good time to make sure your membership is current so that you'll be eligible to vote. Finally, as my term as GSNH President ends at the October meeting, I want to thank you all for your help and support during these past three years, and I look forward to continuing to work on behalf of the Society in the future.

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## GSNH SUMMER 2010 GEOLOGY FIELD TRIP



Some 50 GSNH members and guests met at the Madison Boulder on August 7, 2010. With near perfect weather, they toured the Boulder Site. A short ceremony followed where Madison Boulder Advisory Committee chair, Brian Fowler welcomed all. Brian, Ted Austin (director of the Division of Parks and Recreation), David Wunsch (NH State Geologist) and Jutta Hager (President of the Geological Society of New Hampshire) explained the Madison Boulder agreement. Under a new memorandum, the Town of Madison, the GSNH and the NHGS, will jointly manage this important NH Geological Site. Following a delicious barbeque at the Tin Mountain Conservation Center, [Tin Mountain Conservation Center](#), 1245 Bald Hill Road, Albany, NH a carpool left for the Redstone Quarry in Conway. Here Steve Swenson, local historian and Redstone Quarry enthusiast, led us on a walk through the remnants of the quarries building and workings. His explanations helps us picture what the quarry operation must have been like it its "hay days." Many thanks to Brian Fowler for making local arrangements and helping with trip details. Steve's enthusiasm for the quarry and its history made for a very interesting trip. Thanks Steve. Thanks to Wayne Ives, of the GSNH Board, for handling reservations and putting together a field trip guidebook.

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## WESTON OBSERVATORY 2010 – 2011 COLLOQUIUM SERIES

Again this school year, Boston College's Department of Geology and Geophysics offers it evening lectures at 381 Concord Road, Weston, MA. A complete list of the lectures in this series is available at: [http://www.bc.edu/research/westonobservatory/meta-elements/pdf/WOcolloquium\\_2010-2011.pdf](http://www.bc.edu/research/westonobservatory/meta-elements/pdf/WOcolloquium_2010-2011.pdf)

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## SUMMER GROUNDWATER LEVELS Submitted by NHGS

Ground-water level measurements for June 2010, July 2010 and August 2010 were collected by NHGS staff member Genevieve Al-Egaily.

June 22 - 25, 2010. The statewide average ground-water level showed a 0.82-foot decrease from May. Decreases were seen in all of the wells. When compared with June 2009, the statewide average ground-water level decreased 0.72 feet. Decreases were seen in all wells except for the Greenfield and Epping wells, which showed increases of 0.89 and 0.12 feet

respectively. The average ground-water level in the new bedrock wells showed a decrease of 1.46 feet when compared with May. Decreases were seen in all of the bedrock well.

July 26 – 29, 2010. The statewide average ground-water level showed a 0.64-foot decrease from June. Decreases were seen in all of the wells except for the Lisbon well, which showed an increase of 0.04 feet. When compared with July 2009, the statewide average ground-water level decreased 1.61 feet. Decreases were seen in all wells. The average ground-water level in the new bedrock wells showed a decrease of 2.20 feet when compared with June. Decreases were seen in all of the bedrock well.

August 23 – 26, 2010. The statewide average ground-water level showed a 0.29-foot decrease from July. Decreases were seen in all of the wells except for the Barnstead, Colebrook and Lee wells which showed increases of 0.34, 0.70, and 2.56 feet respectively. All of these wells were measured during or after the week's heavy rainstorms. When compared with July 2009, the statewide average ground-water level decreased 1.63 feet. Decreases were seen in all wells except for the Lee well. The average ground-water level in the new bedrock wells showed a decrease of 0.29 feet when compared with July. Decreases were seen in all of the bedrock well except the wells in Concord.

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>.

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### **CONWAY GEOTHERMAL BOREHOLE REPORT** Submitted by NHGS



The New Hampshire Geological Survey has scanned a copy of Glenn Stewart's and Roland B. Hoag's 1977 report. You may read and/or download a copy at: [Hoag and Stewart 1977 Preliminary Report on the Conway Geothermal Borehole](#). A summary of the Geothermal Project was in the Summer 2003 Geological Society Newsletter. If you can't readily find your copy, remember many of them are online, thanks to Rich Mechaber, the GSNH Webmaster. Check out a copy at: <http://www.gsnh.org/publications/Documents/newsltr06-03B.doc>.

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### **INTERNATIONAL APPALACHIAN TRAIL (IAT)**

The International Appalachian Trail (IAT) organization was originally founded to promote the establishment of a hiking trail from the eastern boundary of Maine's Baxter State Park, whose summit of Mt. Katahdin is the northern terminus of the long established Appalachian Trail (AT), to the northern end of the Appalachians in North America.

Stretching from Alabama to Newfoundland in North America, the Appalachians have a long geological history. Beginning about 400 million years ago, several phases of continental tectonic collisions formed the ancestral Appalachians on the Super Continent of "Pangea". About 200 million years ago, this ancient continent broke apart along the Appalachians followed by the opening of the ancestral Atlantic Ocean and scattering parts of Appalachian terranes that currently rim the modern Atlantic.

The IAT was an idea conceived by Dick Anderson, a fisheries biologist and former commissioner of Maine's Department of Conservation. "The Appalachian Mountains don't end abruptly in Maine—they go on into Canada. Shouldn't there be a trail that does the same? "Thinking beyond borders is our theme and we are using the Appalachians as a way to join people with a common interest."



From Mt. Katahdin, Maine, the trail currently heads north to eventually follow the U.S.-Canadian border until it heads across into Canada and crossing over the highest elevations in the Canadian Maritimes. Organized IAT chapters in Maine, New Brunswick, Quebec, Prince Edward Island, Nova Scotia, Newfoundland/Labrador have joined to form a "Council" to strengthen and coordinate the IAT organization and activities. Interest in extending the trail has recently come from overseas, where the opening of the Atlantic Ocean carried remnants of Appalachian terranes in Greenland, Ireland, Great Britain, Norway, Sweden, Netherlands, France, Portugal, Spain, and Morocco. For more information go to [www.internationalat.org](http://www.internationalat.org).

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## **NEW HAMPSHIRE JOINT BOARD RULES ON NHDES CONSULTANT REPORT SUBMITTALS**

Earlier this year, consultants contacted the NHDES regarding the requirement of a PG/PE stamp for unsolicited Phase II Environmental Site Assessment (ESA) report submitted to the department's that were conducted in accordance with ASTM practices. While the NHDES requested that unsolicited Phase II Environmental Site Assessment (ESA) be stamped by a NH PG/PE, several consultants refused to affix their seal. In turn on May 21, 2010 the NHDES asked the New Hampshire Joint Board of Licensure and Certification to provide an opinion on this matter. The Joint Board's position, which concurred with NHDES's position. was sent to the NHDES in a letter dated June 3, 2010 that stated pursuant to RSA 310-A:130;

*"All papers or documents involving the practice of geology affecting public health, safety, and welfare, under this subdivision, when issued or filed for public record, shall be dated and bear the signature and seal of the licensed professional geologist who prepared or had responsibility for and approved them."*

On July 2, 2010, the NHDES in letter sent out to all Remediation Consultants stated that the based on the concurrence of the NH PG/PE Joint Board with the NHDES, that all unsolicited Phase II Environmental Site Assessment (ESA) are to be stamped and bear the seal and signature of a New Hampshire licensed PG/PE who prepared the document or had the responsibility for and approved it.

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## **MADISON BOULDER BROCHURE** Submitted by NHGS Public Outreach Coordinator

In addition to being able to download the GSNH Summer 2010 Geology Field Guide (see: [Download the trip field guide!!](#)), the New Hampshire Geological Survey has a copy of its Madison Boulder Brochure on line at: <http://des.nh.gov/organization/commissioner/pip/publications/geologic/documents/madison-boulder-brochure.pdf>. Having the brochure posted on line, allows the NHGS to keep it up-dated and current. In addition, the website with the PDF will be available at the Madison Boulder Information Kiosk. People are now getting phones that are web enabled and can thus access a copy of the brochure on-site...saving the expense, refilling and litter associated with a brochure dispensed on site.

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## **UNH RESTORES RELIEF MAP OF NORTHERN NEW ENGLAND**

Source: *Fosters Newspapers, Monday, August 16, 2010, DURHAM, N.H. (AP)* — The Old Man of the Mountain is gone for good, but 30 other fallen New Hampshire mountaintops have been restored — on a massive, historic relief map that captures northern New England's geology and geography in vibrant colors that literally pop off the wall. Geology professor Wally Bothner and

a team of University of New Hampshire students spent the last year repairing and repainting the 12-by-16-foot wood and plaster map created in the late 1800s by Charles Hitchcock, one of New Hampshire's first state geologists. The results of their painstaking work — which included replacing the top of Mount Washington and other peaks that had broken off over the years — are now on display at UNH's James Hall, where the map soars over a staircase beneath a skylight specially designed to highlight its colors while protecting it from sun damage. Bothner hadn't done any restoration work beyond refinishing some antiques and fixing up an old house when he took on the project. But the timing was right: he had just retired, and the map was going to be taken down while James Hall underwent extensive renovations. "It was going to be moved out, and there was some question as to what its future was going to be. So we just sat around the table and said, 'Let's get it fixed,'" Bothner said. "You just bite the bullet and say, I don't know how to restore anything but I'm willing to learn."

The map was removed in three sections and taken to a former food storage warehouse for the restoration. Bothner and his team cleaned it, scraped off loose paint, rebuilt the peaks and valleys with pine and putty, smoothed the rough edges and covered the surface with artists' gesso so the new paint would bind properly. They then carefully masked each town boundary line and painted the map using a color scheme Bothner said both represents Hitchcock's original and is compatible with modern maps.

Weighing nearly 1.5 tons, the restored map covers Vermont, New Hampshire and the western edge of Maine. It features bright swaths of nearly 40 different colors representing different types of rocks. Red and pink hues denoting granite are spread across New Hampshire, while much of Vermont is covered in blues and greens representing softer varieties. Geographic features include the boundaries and names of nearly 570 towns, the major roadways of the 1870s and New Hampshire's largest lake, which was then spelled "Winnipiseogee" instead of the current "Winnepesaukee."

Hitchcock, who had served as state geologist in Maine and Vermont before coming to New Hampshire, was paid \$200 to produce the map, according to UNH. After a decade spent traveling the region, he worked on it between 1871 and 1890 at Dartmouth College, where he was a professor. "What impresses me most is the accuracy. Mount Washington is where Mount Washington is. Tuckerman Ravine is cut in. .. Monadnock and Kearsarge stand out in just the right place, in the shapes that you would expect," Bothner said. "There's some detail, certainly, and there are some tributaries that are missing, of course, but it was an absolutely phenomenal accomplishment to characterize the topography and the geology so well."

The map was moved from Dartmouth to UNH in 1894 and was repainted in 1933. In 1966 it was moved to the basement of James Hall, where it fell into disrepair and was even marred by graffiti as students marked their hometowns. In completing the restoration, Bothner's team resisted the urge to go beyond the original and mark landmarks such as the Old Man of the Mountain, the profile-shaped rock formation that tumbled from Franconia Notch in 2003, or the Statehouse, or UNH.

"After a while it would be just a pincushion," he said. "And a lot of those things aren't Hitchcock. We really want to represent what he saw." David Wunsch, the current state geologist, said Bothner and his team did an outstanding job preserving an amazing piece of work. "When you consider that Hitchcock toured the state and did the entire map of the state of New Hampshire ... back in the horse and wagon day, to have that detail and to find out now when we've got much better technology that he was pretty close in his determinations is really an amazing feat," he said. In addition to being useful to UNH students, Wunsch said he hopes the public will view the map and think about how different types of rocks affect the shape of the land. "It gives people a feel for how the landscape looks and how it relates to geology," he said. "When you drive your same route to work or whatever, you might never look at it quite the same because you realize, wow, that hill right there is a giant intrusion of granite."

## **GEOLOGIC IPHONE APPLICATIONS** Submitted by Lee Wilder

According to an article in the June 2010 issue of *Earth Magazine*, there are a number of geo-related apps available for your iPhone. Visit iTunes at: <http://itunes.apple.com>. A handy quick reference guide to the GEOLOGIC TIMESCALES is available FREE, as is EPICENTRAL, a way to conveniently access the latest U.S. Geological Survey earthquake data. Other apps like GEOLOGIC MAPS, FIELD NOTES, etc. are downloadable for a small fee.

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## **NEW MANAGEMENT PLAN FOR NEW HAMPSHIRE'S HUGE GLACIER BOULDER**

Source: Fosters and the Laconia Citizen, Sunday, August 8, 2010 MADISON, N.H. (AP) — The state of New Hampshire and the town of Madison have reached an agreement for the management of a huge granite rock that was carried by a glacier during the last Ice Age. The Madison Boulder is the largest known glacial erratic in New England and one of the largest in the world. It measures 83 feet in length, 37 feet in width and 23 feet in height and weighs more than 5,000 tons. The 17-acre Madison Boulder Natural Area was acquired by the state in 1946 and designated a National Natural Landmark in 1970. On Saturday, state and town officials held a ceremony to sign an agreement under which the town and the Department of Resources and Economic Development will manage the property together.

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## **82ND ANNUAL MEETING OF THE NEW YORK STATE GEOLOGICAL ASSOCIATION (NYSGA) SEPTEMBER 24-26, 2010**

Scott Stanford will be leading a Glacial Geology trip on Saturday, September 25, 2010. Hosted by the College of Staten Island (CUNY) The trip is entitled "*Glacial Geology of the Passaic, Hackensack, and Lower Hudson Valleys, New Jersey and New York*" This trip will present several aspects of the glacial geology of northeastern New Jersey and adjacent New York. Topics to be covered include: 1) the history of late Wisconsinan glacial lakes and lake-drainage events in the Passaic, Hackensack, and Hudson valleys; 2) evidence for Illinoian (?) and pre-Illinoian glaciation; 3) valley-fill aquifers in the Passaic basin that are composed of stacked glaciolacustrine sediments and till of late Wisconsinan and Illinoian age; and 4) glacial derangement of preglacial fluvial drainage. Registration at: [http://www.library.csi.cuny.edu/dept/as/geo/NYSGA\\_2010/reg.pdf](http://www.library.csi.cuny.edu/dept/as/geo/NYSGA_2010/reg.pdf)

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## **NH BOARD OF GEOLOGISTS POSITION AVAILABLE**

The NH Board of Professional Geologists will have one open position later this year when Dorothy Richter completes her current term. Resident NH PGs who wish to be considered for appointment to the Board may contact the NH Joint Board of Licensure and Certification at (603) 271-2219 for further information.

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## **NOMINATIONS FOR GSNH BOARD 2010-2011**

A call for the next election of the GSNH Board of Directors was sent out to members via email in September, 2010. Voting of the 2010-2011 GSNH board will take place during the Fall Annual Dinner Meeting On October 16, 2010 at the Red Blazer Restaurant. Polls will be open from 6:00 to 7:30 the night of the dinner. Only votes placed the night of the meeting will be counted. A slate of candidates is included in this newsletter. Write in candidates are always welcome!

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## UPCOMING EVENTS

OCTOBER 8 - 10, 2010 - 102<sup>nd</sup> New England Intercollegiate Geologic Conference

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### GEO PHOTOS



Photo Left - Group Photo from the GSNH 2010 Summer Field Trip.

Photo Right - Familiar Faces; Walter Anderson, Simon Winchester and Dick Anderson





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# Geological Society of New Hampshire

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## GSNH Annual Fall Meeting 2010

### Voting for 2010-2011 GSNH Board (Polls Open 6:00 to 7:30 PM)

#### ***Topic:***

**“Appalachian Geology Along the International Appalachian Trail (IAT) from Maine to Morocco”**

#### ***Speaker:***

**Walter A. Anderson GSA-Fellow, Geological Society of Maine  
Board Member and Staff Geologist of the International Appalachian Trail (IAT)**

**Thursday, October 14th, 2010**

**Red Blazer Restaurant**

**72 Manchester Street, Concord, NH**

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

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### **GSNH 2010 Annual Fall Dinner Meeting, Thursday, October 14, 2010 (RSVP By Oct 11<sup>th</sup>)**

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](mailto:Wayne.Ives@des.nh.gov).**  
**Mail to: Wayne Ives, GSNH Annual Fall 2010 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.**





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