

# **Granite State Geologist**

 
 The Newsletter of the Geological Society of New Hampshire, Spring Edition –March 2015 – Issue No. 88

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#### In this issue:

- Directions to the Puritan GSNH April meeting
- California's drought
- 2015 NHGS Mappers Workshop
- Legislative updates
- NE FOP announcement
- What your Board is doing
- Troostite
- Upcoming Events and Much More!

#### **MESSAGE FROM THE PRESIDENT**

Wayne Ives, GSNH President, 2014-2016

Many changes and events are coming this spring. First, the society is at a different venue for the April meeting—so don't go to the Blazer or Makris—you'll be dining alone. We'll gather at the Puritan Backroom in Manchester–a map and directions are posted on the following pages.

Next there are a lot of events coming this year including opportunities to fill up on Continuing Education Hours posted in this edition's Dates to Remember section. The NE GSA meeting coincides with this edition, so I don't have anything to say about that yet except that the society is a major sponsor again, so look for our table. (Some of you may be reading your newsletter at the meeting and we'll also have the latest two editions for others to peruse.) The NH Geological Survey's annual mappers workshop is during the day on April 16<sup>th</sup> and our dinner meeting is that night. You may want to dig through the offerings at one of the upcoming mineral shows. I went to the Maine show in Standish last April and ran into Woody and Louise Thompson coming out with a nice armload. And while I'm thinking of minerals, I want to thank those members who donate minerals to our raffle. Not only is it fun, but the society uses the raffle money to fund requests for geologic education books and tools through our grant program.

Our summer field trip is going to look at sediment transport resulting from the removal of the Merrimack Village dam and the Suncook River avulsion. We expect to have an example of underwater LiDAR as part of the event. So mark your calendars to save July 11<sup>th</sup>.

There is so much to do this spring—just don't forget to stop and smell the rose quartz.

#### DIRECTIONS TO THE PURITAN BACKROOM IN MANCHESTER



Remember the April 2015 GSNH meeting will be held at the Puritan Backroom. So go to **245 Hooksett Rd**, **Manchester, NH 03104.** 

#### FROM THE SOUTH:

Take I-93 North to exit 9S in Manchester, NH. Merge onto the Daniel Webster Highway, the Puritan Backroom will be located 1 mile on the left.

#### FROM THE NORTH:

Take I-93 South to exit 9S in Manchester, NH. Merge onto the Daniel Webster Highway, the Puritan Backroom will be located 1 mile on the left.

Don't go to Makris or the Red Blazer for this meeting http://www.puritanbackroom.com/contactus/location-directions.php



#### WEATHER.COM'S TOP 100 PHOTOS OF 2014



Oct. 25, 2014, a photographer runs as Mount Sinabung volcano erupts with ash clouds, as seen from Karo District on Sumatra island. (Stunt Aditya/AFP/Getty Images). <u>http://www.weather.com/news/news/weathers-top-100-photos-2014</u>

Fri, 20 Feb, 2015 16:02 - Pyroclastic flows continue to occur, as a new lobe of viscous lava is growing in the summit crater. The collapses during the past 2 weeks and their associated flows have strongly changed the morphology of the crater, removing most of the existing dome, while this is now being replaced by fresh material.

A larger flow on Wednesday night reached 4 km distance, further than all of the previous ones in recent months. It reached the evacuated villages of Suka Meriah where it burnt houses. Fortunately, no victims were reported as people from the place had been relocated permanently. Ash fall occurred in Berastagi town 30 km away.

http://www.volcanodiscovery.com/sinabung/news.html

#### THE GSNH DINNER MEETING MAKE YOUR RESERVATION NOW! <u>APRIL 16, 2015</u> AT <u>PURITAN BACKROOM</u> 245 HOOKSETT RD, MANCHESTER SOCIAL HOUR START AT 5:30, DINNER AT 6:30 Email reservations to Erin Kirby at <u>EKirby@Geosyntec.com</u> or

Mail to: Erin Kirby, GSNH Dinner Meeting, PO Box 401, Concord, NH 03302. Checks payable to: GSNH.

Q: What do you call a can of pop found in a conglomerate? A: Coca-Cola Clastic



Everett Arena

Exit 14

London Rd.

# Presents the 52nd Annual Gem, Mineral & Jewelry Show

Saturday, August 29, 2015 9:00AM to 5:00PM Sunday, August 30, 2015 10:00AM to 4:00PM

#### Everett Arena, 15 Loudon Rd

Concord, NH

Admission: adults \$5.00 children under 12 free with adult



## Gems-Jewelry-Minerals-Fossils-Carvings-Displays-Demonstrations and much more!

The Capital Mineral Club is a 501 (c) (3) organization that supports education in geology, mineralogy and related subjects.

#### DECEMBER RAFFLE RESULTS

Congratulations to the winners of the last meeting's raffle prizes – three splendid mineral specimens thanks to the UNH Earth Science Dept and Robert Whitmore's donations. **Bob Francis** - 3rd prize – Blue Fluorite crystals (CaF2) w/ Barite (BaSO4), Harding, NM Donated by the UNH Earth Science Dept. **Shane Csiki** - 2nd prize – Troostite (Zn,Mn)<sub>2</sub>(SiO4), Franklin, NJ Donated by the UNH Earth Science Dept. **Russ Wilder** - 1st prize – Quartz crystal (SiO<sub>2</sub>), Diamantina Brazil Donated by Robert Whitmore

#### WHAT IS TROOSTITE?

Troostite was named in 1832 by Charles Upham Shepard in honor of Dr. Gerard Troost (1776-1850), mineralogist and botanist and State Geologist of Tennessee. Troostite is a hard, white to



reddish, rhombohedral mineral, with large crystals, similar to willemite but containing varying amounts of manganese.



This rare troostite gem is from the Sterling Min, Sterling, Hill, Ogdensburg, Franklin Mining District, Sussex County, New Jersey. http://www.classicgems.net/gem\_troostite.htm#

Well, now one might ask about willemite. Willemite [Zn<sub>2</sub>(SiO<sub>4</sub>)] is the main ore mineral from a metamorphosed zinc ore body at Franklin in Sussex Co., New Jersey. http://www.webmineral.com/data/Willemite.shtml#.VQG8T9TD\_RY

Willemite is a somewhat rare zinc mineral, but it was found in such great abundance at Franklin that it instantly became an important ore of zinc. The deposit at Franklin, New Jersey is truly unique. Not only is **willemite** found there but other rare minerals are also found there, and some in amazingly large quantities. Minerals such as **zincite**, **franklinite** (named after the locality), **rhodonite**, **greenockite**, **fluorescent calcite**, various **zeolites** and many other rare and interesting minerals are found at this amazing locality. The unique mineral assemblage is believed to have come into existence from the metamorphism of formerly oceanic floor, metallic mineral deposits that were oxidized into secondary minerals before metamorphism. In the case of willemite the secondary minerals were probably smithsonite and **hemimorphite**. At other localities for willemite it is more scarce and forms as a secondary mineral from primary zinc deposits.

Despite being discovered at Franklin first, it was a site in Belgium, that gave willemite its name. It seems that the mineralogists at Franklin described the mineral but never named it. In the meantime the mineralogists at Belgium named the mineral after named after Willem I, King of the Netherlands (1772-1843).

Willemite is one of the few silicate minerals that have a trigonal symmetry. This symmetry is far more common among carbonates than among silicates. Willemite shares the same symmetry with the emerald green silicate **dioptase** and the closely related silicate **phenakite**. Although massive willemite is much more common, some crystals do show the rhombohedral terminations atop hexagonal prisms that is characteristic of its symmetry. <u>http://www.galleries.com/willemite</u> See more pictures of willemite and troostite at <u>http://www.mindat.org/min-4292.html</u> and

http://www.mindat.org/min-6726.html.

What did one mountain say to the other mountain after an earthquake? Don't look at me, it wasn't my fault.

#### **BLOCK ISLAND WIND FARM TO BE INSTALLED THIS SUMMER from**

#### http://dwwind.com/block-island/block-island-project-overview

The Block Island Wind Farm is a 30-megawatt offshore wind farm to be located approximately three miles southeast of Block Island consisting of 5 turbines. The wind farm will be located entirely in Rhode Island state waters. The wind farm will generate over 125,000 megawatt hours annually, enough to power over 17,000 homes. Power will be exported to the mainland electric grid via the 21-mile, bi-directional Block Island Transmission System, a submarine cable proposed to make landfall in Narragansett, Rhode Island.

Block Island Transmission System - A first-ever electric link between Block Island and the mainland - Block Island is the only Rhode Island community that is not connected to the electric grid that powers the rest of the state. A plan for a new electric cable (the Block Island Transmission System) will change that, delivering clean, renewable energy to the mainland electric grid from the Block Island Wind Farm, which remains on track to be the first offshore wind farm in the United States.

The cable will be buried about 6 feet under the ocean floor throughout its 18-mile underwater route from the waters off Block Island to its landfall at Scarborough State Beach [near 5 on the map.] From the beach area, the cable will remain buried, beneath state roads, and eventually connect with National Grid's existing electric substation in Wakefield.

Deepwater Wind plans to begin offshore installation in the summer of 2015, with the project operational by the end of 2016.



#### • - Proposed Wind Turbine

See also Granite Geek at <u>http://www.nashuatelegraph.com/granitegeek/1058550-468/u.s.-will-finally-get-an-offshore-wind.html</u> posted by David Brooks March 4, 2015. It looks like the U.S. is finally going to get an offshore wind farm, although not a particularly big one (30 MW). Deepwater Wind says it has gotten all the necessary financing, as well as permits, for its Block Island project, and has started construction. Find National Renewable Energy Laboratory's wind maps at <u>http://www.nrel.gov/gis/wind.html</u>.

#### 2015 NORTHEASTERN FRIENDS OF THE PLEISTOCENE MEETING

The 2015 meeting will be June 5 - 7, 2015. The 78th Annual Reunion of the Friends of the Pleistocene will be head-quartered in Rocky Hill, Connecticut at Dinosaur State Park. The meeting is co-sponsored by the Geological Society of Connecticut and the Connecticut Geological and Natural History Survey. The fieldtrip "Glacial Lake Hitchcock and the Sea" will be led by Janet Stone, Jack Ridge, Ralph Lewis, and Mary DiGiacomo-Cohen. Details on Lodging and other Registration information coming soon!

The fieldtrip will demonstrate the evidence for the close connection of Lake Hitchcock levels with the position of sea level in Long Island Sound via the lower Connecticut River valley, and explain important offshore features like a -40-m marine delta, and the altitudes of the Race spillway cut through the Harbor Hill moraine and Block Channel spillway cut through the terminal moraine. The history of lake levels and knowledge of eustatic sea levels provided by the Barbados sea level curve has implications for the magnitude of glacio-isostatic depression and the timing of rebound. We will also review recent refinements to the timing of ice retreat through the region as a result of recent coring of varves and the newly calibrated North American Varve Chronology.

http://www2.newpaltz.edu/fop/pdf/FOP%202015%20prelim%20announcement.pdf



Figure 1. Glacial Lake Hitchcock in the Harford-Springfield Basin and the -40-m lowstand marine delta in Long Island Sound. NBS-New Britain spillway, RHD-Rocky Hill dam, TRS-The Race spillway, BCS-Block Channel spillway. Green lines are isobases of glacio-isostatic depression, numbers are total depression in meters. White lines are selected retreatal ice-margin positions, numbers are calibrated dates in thousands of years based on varve records from the North American Varve Chronology (Ridge, 2014). Black dots are locations of varve cores that penetrate to the base of the lake section and identify the oldest varve present at each site.

#### THE NH GEOLOGICAL SURVEY GROUND WATER LEVEL NETWORK SUMMARY

Submitted by Lee Wilder of the NHGS

**December 2014** NH Groundwater level measurements were collected by the NH Geological Survey staff and volunteers from December 22 – ~ December 29, 2014. The statewide December 2014 average groundwater level for **wells in the overburden** (in soils on top of the bedrock) showed an increase of +.75 feet from November 2014. When compared with December 2013, the statewide average groundwater level for December 2014, in these wells, increased +1.16 feet. The December 2014 average groundwater level in the new **bedrock wells** showed an increase of +1.57 feet when compared with November 2014. When compared with December 2013, the bedrock wells showed an increase of +1.43 feet for December 2014.

<u>January 2015</u> NH Groundwater level measurements were collected by the NH Geological Survey staff and volunteers from January 26 – January 30, 2015. The statewide January 2015 average groundwater level for **wells in the overburden** (in soils on top of the bedrock) showed a decrease of -0.23 feet from December 2014. When compared with January 2014, the statewide average groundwater level for January 2015, in these wells, increased +0.33 feet. The January 2015 average groundwater level in the new **bedrock wells** showed a decrease of -0.04 feet when compared with December 2014. When compared with January 2014, the bedrock wells showed a decrease of -0.34 feet for January 2015.

The groundwater level measurements for the deeper of the two Concord bedrock wells (CVWB-1) are **not** presently available in real-time. Past data are on the USGS website at:

http://waterdata.usgs.gov/nh/nwis/uv/?site\_no=431034071340501&PARAmeter\_cd=72019.

The data for all of the wells in the NH Groundwater Level Network are shared with and posted on the USGS website at: <u>http://groundwaterwatch.usgs.gov/StateMaps/NH.html</u>.



### GILSUM ROCK SWAP & MINERAL SHOW Submitted by Robert Mitchell, President, Gilsum Recreation Committee

Our show, sponsored by the Gilsum Recreation Committee, attracts thousands of rock and mineral enthusiasts from across the country each year. The event, known for its scenic location and small-town hospitality, will take place on the weekend of June 27-28, 2015 at the Gilsum Elementary School & Community Center, 640 Route 10 in Gilsum, NH. All monies raised by this event go to community recreation programs. Admission is free, although we do accept donations.

This year's event includes two special presentations. Saturday, June 27th at 1:00 PM, geologist and collector Nancy Swing will discuss "Rock Hounding in New England." Swing is a former professor of Geology and Oceanography at the Community College of Rhode Island, has been the featured speaker at the East Coast Gem and Mineral show for the last 14 years, and is a regular at the Gilsum Rock Swap & Mineral Show. Then at 2:00 PM noted rock hound Steve Garza will demonstrate the correct way to break a rock - and let visitors give it their best shot.

Other events include our annual ham and bean dinner with home-made pies, a chicken barbeque, and panning for minerals for the kids. If you would like additional information in order to write a story on this event, please feel free to call me at 603-357-9636 or send e-mail to <u>gilsumrocks@gmail.com</u>. Photos from last year's event can be found here: <u>http://bit.ly/1l8eqop</u>

#### **Gilsum Rock Swap & Mineral Show Events and Attractions**

#### Saturday

8 AM Exhibits open

8 AM - Noon: Pancake Breakfast

10 AM - 4 PM: Library book sale at the Library

- 1 PM SPECIAL PRESENTATION "Rock Hounding in New England" by Nancy Swing
- 2 PM: SPECIAL PRESENTATION by Steve Garza on "The basics of mineral prospecting." Learn how to wield a hammer and break rocks!
- 4:45 PM: Annual Ham & Bean Dinner with homemade beans and pies! Three seatings beginning at 4:45, 5:45 and 6:45 PM. Tickets on sale at the Rock Swap Central information booth all day and at the church at meal time.
  - 6 PM: Dealer exhibits close

#### Sunday

8 AM: Exhibits open

8 AM - Noon: Pancake Breakfast

Noon - 2 PM: Chicken Barbecue

10 AM - 2 PM: Library book sale 10:00 - 2:00 at the Library

4:00 PM: Show closes - See you next year!



#### INTRICATE TRILOBITE PREPARATION

This is one of the more unusual of the spiny trilobites from Foum Zguid, Morocco, Ceratonurus. It has been prepared so that it "flies" above the matrix on a pedestal of rock. This style of preparation adds dozens of hours to the process, and requires a preparator with a huge amount of skill and a very steady hand. Notice how not only the long genal and pleural spines are prepared free of matrix, but also the tiny fringes on the front of its head which are very distinctive of Ceratonurus. This species is similar to the <u>Ceratonurus found in Oklahoma but</u> grows substantially larger.

http://fossilera.tumblr.com/post/111875379568/this-isone-of-the-more-unusual-of-thespiny?soc\_src=mail&soc\_trk=ma

#### **GSNH LEGISLATIVE TRACKING 2015 BILLS** – From Russ Wilder

These are the 2015 Bills as of March 9, 2015 that may be of interest to members. Send suggestions/interests for tracking to Russ Wilder at <u>russwilder@msn.com</u>.

<u>HB626</u>	title:	relative to energy infrastructure corridors. <u>Introduced</u> and Referred to Science, Technology and Energy. 3/3/2015 Retained in Committee			
	Sponsors:	(Prime)Suzanne Smith			
<u>HB227</u>	title:	relative to eminent domain on public lands. This bill requires the approval of the appropriate legislative body before acquisition of land acquired with public funds or land donated to a public entity; PASSED / ADOPTED WITH AMENDMENT; Floor Date 3/4/15.			
	Sponsors:	(Prime) <u>James Belanger</u>			
<u>HB572</u>	title:	relative to taking land by eminent domain for high pressure gas pipelines and requiring payment of the land use change tax when land is taken by eminent domain to build energy infrastructure; House Ways and Means.			
	Sponsors:	(Prime)James Belanger			
<u>HB 233</u>	title:	relative to local approval of mining activity. Introduced and Referred to Municipal and County Government. Committee Report: Ought to Pass for Mar 4 (Vote 18-0; CC);			
	Sponsors:	(Prime)John Hunt			
<u>HB 113</u>	title:	designating the mastodon as the official state fossil.			
	Sponsors:	(Prime)David Borden			
<u>HB 216</u>	title:	allowing regulatory boards and commissions to recover certain investigative costs.			
	Sponsors:	(Prime)Carol McGuire			
<u>HB 431</u>	title:	relative to the placement of all new elective electric transmission lines in New Hampshire.			
	Sponsors:	(Prime)Laurence Rappaport			
<u>HB 244</u>	title:	relative to the permissible level of methyl tertiary butyl ether (MTBE) in drinking water. Introduced and Referred to Environment and Agriculture.			
	Sponsors:	(Prime)Jim McConnell			
<u>HB 248</u>	title:	directing the university system of New Hampshire to conduct a study of prolonged human consumption of and exposure to methyl tertiary butyl ether (MTBE).			
	Sponsors:	(Prime)Jim McConnell			
<u>HB 208</u>	title:	repealing the New Hampshire regional greenhouse gas initiative program.			
	Sponsors:	(Prime)Richard Barry			
<u>HB 451</u>	title:	relative to local approval of mining permits.			
	Sponsors:	(Prime)Franklin Sterling			
HB 462	title:	repealing an increase in the fuel oil discharge cleanup fund fee.			

	Sponsors:	(Prime)James Spillane				
<u>HB 272</u>	title:	designating the Ham Branch watershed in Easton as a protected river and exempting the Ham Branch watershed from the comprehensive shoreland protection act. Introduced and Referred to Resources, Recreation and Development.				
	Sponsors:	(Prime)Susan Ford				
<u>HB 368</u>	title:	relative to the selection of engineers used as part of the planning board review process.				
Sponsor		(Prime) Edward Butler				
<u>SB196</u>	title: appropriating funds to the department of environmental services for the put of funding eligible water supply land protection costs under the state aid grogram.					
	Sponsors:	(Prime)Martha Fuller Clark , Judith Spang, Thomas Buco, Suzanne Smith				
<u>SB38</u>	title:	establishing a commission to develop a land conservation plan.				
	Sponsors:	(Prime)Martha Fuller Clark, Jeanie Forrester, Gerald Little, Dan Feltes, Judith Spang, Suzanne Smith				
<u>HB 376</u>	title:	appropriating funds to the department of environmental services for the purpose of funding eligible and completed drinking water, wastewater, and landfill closure projects under the state aid grant program.				
	Sponsors:	(Prime)Thomas Buco, Suzanne Gottling, Peter Leishman, Laura Pantelakos, Jeb Bradley, Martha Fuller Clark, Karen Umberger, Richard Ames, Karen Ebel, David Danielson				
<u>HB278</u>	title:	relative to town clerk fees for fill and dredge permit applications.				
	Sponsors:	(Prime)David Danielson				
<u>SB168</u> title:		relative to the duties of the commissioner of the department of environmental services. Introduced and Referred to Senate Executive Departments and Administration. Introduced and Referred to Executive Departments and Administration. Committee Report: Ought to Pass with Amendment #2015-0454s, 3/3/15; Vote 5-0; CC; SC11				
	Sponsors:	(Prime)David Watters, Martha Fuller Clark, Russell Prescott, Judith Spang, Adam Schroadter, Peter Bixby, Carol Bush				
<u>HB377</u>	title:	establishing a commission to study the establishment of a state geographic information system office and the position of state geographic information officer.				
	Sponsors:	(Prime)Alfred Baldasaro, Edith Hogan, Robert Theberge, Daniel Itse, Daniel Tamburello, Timothy Twombly, Jeanine Notter, Leon Rideout				
<u>HB281</u>	title:	defining "exotic aquatic species of wildlife" and relative to the duties of the exotic aquatic weeds and species committee.				
	Sponsors:	(Prime)Suzanne Gottling, Judith Spang, Chris Christensen, Martha Fuller Clark, Jeb Bradley, Gerald Little, James Grenier, Suzanne Smith				
<u>HB 498</u>	title:	relative to notification of radon and arsenic testing.				
	Sponsors:	(Prime)John Hunt , Sam Cataldo				
<u>HB349</u>	title:	relative to state buffers for projects requiring wetland permits.				

	Sponsors:	(Prime)Judith Spang , Suzanne Gottling, Jane Beaulieu, Martha Fuller Clark, David Watters, Lee Oxenham		
<u>HB 609</u>	title:	relative to hydraulic fracturing.		
	Sponsors:	(Prime)Timothy Horrigan , Gladys Johnsen		
HB 664 title: consolidating		consolidating existing oil pollution funds.		
	Sponsors:	(Prime)Chris Christensen , Adam Schroadter, Karen Ebel		
<u>HB306</u>	title:	relative to membership of the wetlands council and the water council.		
	Sponsors:	(Prime)Suzanne Gottling , Judith Spang		
<u>SB 97</u>	title:	Authorizing municipalities to adopt ordinances to regulate stormwater to comply with federal permit requirements.		
	Sponsors:	Prime sponsor: Regina Birdsell.		

#### THE FIRST MAJOR GEOLOGIC MAP TURNS 200 William "Strata



William "Strata" Smith completed the first major geologic map ever made. His map shows the rocks at the surface in England, Wales, and part of Scotland. Smith wasn't a wealthy aristocrat, free to pursue his interests. He wasn't even a trained geologist. He oversaw the digging of canals and drainage ditches. But those who dig discover what is buried.

He saw that the English bedrock was not just a random jumble, but that there was an order to the layers, an order that stretched across the country. And so he gradually put together a map, revealing the record of deep history that lies beneath the soil. <u>Part of his insight</u> was the recognition that fossils could be used to correlate layers of the same age, even if many miles separated the places where they could be inspected.

Given its importance to the history of geology, Smith's story can be found in many books about the history of science, as well as Simon Winchester's popular <u>The Map That Changed the World</u>. In honor of the 200<sup>th</sup> anniversary of his historic map, Tom Sharpe of Cardiff University's Lyme Regis Museum penned an article about William Smith for the journal *Science*, which you can read <u>here</u> (if you want to pay for it.) From

http://arstechnica.com/science/2015/01/the -first-major-geologic-map-turns-200/

#### DATES TO REMEMBER

April 9, 2015 - Geosynthetic Reinforced Soil: from the Experimental to the Familiar The <u>Annual Pedro de Alba Lecture in Geotechnical Engineering</u>.

Speaker: Professor Robert D. Holtz, PhD, PE, D.GE, Professor Emeritus, Univ. of Washington



Venue: University of New Hampshire, Huddleston Hall, 6:30-8 PM Networking hour (Cash Bar and Appetizer) at 5:30 **Abstract:** The lecture begins with a historical review of reinforced soil technology from the ancients, the developments by H. Vidal and K. Lee on Terre Armée and Reinforced Earth, the early uses of geosynthetics for soil reinforcement in France, Sweden, and the USA. The advantages and basic behavior of geosynthetic reinforced soil (GRS) are presented along with an overview of current design procedures, and with reference to UW analytical research results. Practical suggestions are given for dealing with creep, pullout, and backfill drainage. Geosynthetic properties are then discussed, again with reference to UW

research results. Although GRS is quite a mature development, a few technical and professional issues remain; primarily, too many failures of these structures occur. Reasons for these failures and some suggestions as to what the profession can do about them are presented. The lecture ends with several examples of successful applications of GRS and reinforced soil technology. For more information and to register please contact Jean Benoît at jean.benoit@unh.edu or Majid Ghayoomi at majid.ghayoomi@unh.edu. Sponsorship opportunities are available in support of this annual event.

**April 16, 2015** –<u>New Hampshire Geological Survey's 2015 Annual Geologic Mapping</u> <u>Workshop</u> - Thursday, April 16, 2015 8:30 AM – 9:00 Map Poster Session and 9:00 - 12:30 PM\* Workshop at the NH DES Auditorium, 29 Hazen Drive, Concord, New Hampshire 03302-0095 - The New Hampshire Geological Survey is pleased to announce that its annual Mapper's Workshop will take place on April 16, 2015 in the auditorium at the NH Department of Environmental Services. Please <u>RSVP</u> to the NH Geological Survey at <u>geology@des.nh.gov</u> if you plan to attend.

April 16, 2015 – <u>GSNH Spring Dinner Meeting</u> – The Puritan Backroom, Manchester

**April 18 and 19, 2015** - <u>32nd Annual Maine Mineralogical and Geological Society Gem,</u> <u>Mineral and Jewelry Show</u> - Saint Joseph's College of Maine, Alfond Center 278 Whites Bridge Rd., Standish, ME Saturday, April 18<sup>th,</sup> 2015 10 a.m. to 5 p.m. Sunday, April 19<sup>th,</sup> 2015 10 a.m. to 4 p.m. <u>http://mainemineralclub.org/portal/show</u>

June 5-7, 2015 - Northeastern Friends of the Pleistocene - 2015 meeting - Glacial Lake Hitchcock and the Sea - at Rocky Hill, CT - Dinosaur State Park http://www2.newpaltz.edu/fop/pdf/FOP%202015%20prelim%20announcement.pdf See article in this issue.

**June 27, 2015** – <u>Gilsum Rock Swap</u> – <u>http://www.gilsum.org/rockswap</u>. See article in this issue.

**June 28–July, 01 2015** - <u>49th US Rock Mechanics/Geomechanics Symposium</u> - San Francisco, CA The American Rock Mechanics Association's annual conference on rock mechanics and geomechanics will be held at the Westin St. Francis, Union Square, San

Francisco. For information on the symposium, accommodations and sponsorship, visit <u>www.armasymposium.org</u>.

July 11, 2015 – <u>GSNH Summer Field Trip</u> – details to be announced in the next newsletter, but the topic will be sediment transport related to the Merrimack Village Dam removal and the Suncook River avulsion with underwater LiDar showing river bathymetry planned. Rain date is July 18<sup>th</sup>, but only if it's a hurricane.

**August 29-30, 2015** – Capital Mineral Club – <u>52<sup>nd</sup> Annual Gem, Mineral & Jewelry Show,</u> Everett Arena, 15 Loudon Road, Concord, NH. See poster in this issue.

**September 19-26, 2015** - <u>Association of Environmental & Engineering Geologists</u> will be holding their 2015 Annual Meeting September 19-26, 2015 at the Wyndham Grand, in downtown Pittsburgh, PA. Abstracts deadline is May 1, 2015. For complete details visit, <u>http://www.aegannualmeeting.org</u>.

**September 28-29, 2015** - <u>NGWA Conference on Groundwater in Fractured Rock and</u> <u>Sediments</u> (#5017) Burlington, Vermont. The use of innovative techniques, cutting-edge research, and lessons learned from practical experience regarding characterizing and remediating groundwater in fractured rock environments <u>http://www.ngwa.org/Events-</u> <u>Education/conferences/Pages/5017sep15.aspx.</u>

**September 30, 2015**, *9 a.m.-4 p.m.* Optional field trip - Integrating Ductile and Brittle Surface Structures and Borehole Geophysics to Understand the Hydrogeology of Bedrock Wells. The Champlain Valley geologic province consists of slices of weakly metamorphosed carbonate and clastic sedimentary rocks that are bounded by major thrust faults, including the Champlain Thrust to the west and the Hinesburg Thrust to the east. Following thrusting in the Ordovician and folding in the Devonian, these slices were fractured pervasively during the Cretaceous. The purpose of this trip is to zoom in from the large scale to a detailed field area to demonstrate the synergy between surface and logging studies.

#### WHAT IS YOUR BOARD DOING? By Lea Anne Atwell

On March 12<sup>th</sup>, Wayne Ives hosted the quarterly Board meeting at the NHDES offices in Concord, NH. Key items discussed at our meeting, included:

• In the past, the Society has produced a paper copy membership directory every two years. We've not created a directory for several years, and are wondering if members would like to have a directory? We are considering electronic options. Please let us know your thoughts!

• Planning for the Summer Field Trip is well underway, with leaders from USGS, NOAA, and Boston College participating. We will be making several stops related to fluvial geomorphology in southern New Hampshire, including the Suncook River avulsion in Epsom and the Souhegan Dam removal in Merrimack. The date is planned for July 11<sup>th</sup>, with a rain date of July 18<sup>th</sup>. If you would like to help plan the field trip, we would love your help; please contact Wayne lves or Russ Wilder.

• GSNH will be using funds raised from our dinner meeting mineral raffles to support teachers who would like to attend the upcoming Northeast Geological Society of America meeting in Bretton Woods, New Hampshire and support education efforts of GSNH. Stop by and visit our table at the meeting.

• We will be exploring options for storing all of the Society's important files (meeting minutes, treasurer's reports, etc) in a central location so that they don't get lost when members transition off the Board.

• We are looking into making GSNH t-shirts. Stay tuned for details.

Our next meeting will be on Thursday, June 11, 2015 at Toad Hall in Hopkinton, NH. All members are welcome to attend our meetings. Please let a Board member know if there is something you would like added to our agenda!

### ONGOING CALIFORNIA DROUGHT

#### CLIMATOLOGIST WHO PREDICTED CALIFORNIA DROUGHT 10 YEARS AGO SAYS IT MAY SOON BE 'EVEN MORE DIRE'

Scientists a decade ago not only predicted the loss of Arctic ice would dry out California, they also predicted the change in the jet stream that caused the unprecedented nature of the California drought. Study co-author, Prof. Lisa Sloan, said last week that "I think the actual situation in the next few decades could be even more dire than our study suggested." http://thinkprogress.org/climate/2014/03/07/3370481/california-drought/



http://calclimateag .org/wpcontent/uploads/2 014/01/Droughtimage-2.png



http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA

#### What...

#### **CALIFORNIA EXPERIENCES WORST DROUGHT IN 1,200 YEARS**

Anastasia Pantsios | December 5, 2014 1:27 pm

How unusual is this drought event? Extremely unusual based on a study of blue oak tree growth rings in central and southern California. Two scientists found 66 dry periods, with only three close to the current one—and none quite as severe. And they learned that 2014 was the worst drought year in the region in 1,200 years.

"It's going to take a couple years of average or above-average rainfall so that we can not only fill our reservoirs, build our snowpack, but also recharge our groundwater basins," Bill Croyle of California Department of Water Resources <u>told</u> USA Today. "The ground is so dry, and the groundwater basins in those higher elevations have no water in them." <u>http://ecowatch.com/2014/12/05/california-drought-worst-since-middle-ages/</u>

#### CALIFORNIA STATE GOVERNMENT'S DROUGHT PAGE

**March 3, 2015** - As California enters a fourth year of drought, the State Water Resources Control Board (State Water Board) announced a steep decline in water conservation during the month of January, considered the driest January since meteorological records have been kept. Additionally, per capita water use inched up in January as compared to December 2014.

With California facing one of the most severe droughts on record, Governor Brown declared a drought State of Emergency in January and directed state officials to take all necessary actions to prepare for water shortages. The state has continued to lead the way to make sure California is able to cope with an unprecedented drought. <u>http://ca.gov/drought/</u>

#### **Response...**

## EPIC DROUGHT SPURS CALIFORNIA TO BUILD LARGEST DESALINATION PLANT IN WESTERN HEMISPHERE <u>Cole Mellino</u> | March 10, 2015

"The U.S. Drought Monitor shows nearly 40 percent of the <u>state of California remains in</u> <u>exceptional drought</u>, the highest level of drought and many <u>communities are working to come up</u> <u>with long-term solutions</u> as reservoirs and rivers continue to diminish," says Jeremy Hobson of NPR's *Here and Now*.

David Jassby, assistant professor of chemical and environmental engineering at the University of California, Riverside, gives <u>Here & Now</u>'s Jeremy Hobson an overview of desalination. There are currently 13 desalination projects under consideration along the California coast. Jassby explains how desalination works, why in the U.S. we rely on reverse osmosis rather than thermal-based plants and the environmental impacts of the process. Desalination has been proposed for years in the U.S., but has always been shot down for being too expensive and requiring too much energy. Now, "the first desalination plant in Carlsbad is coming online in 2016 or maybe even sooner," says Jassby.

The cost of desalinized water has come down significantly in recent years, making it "pretty comparable" to conventional water sources, according to Jassby. He expects that places that have "ready access to the ocean" and are water-stressed will employ desalination in the coming years. It's already widely used in other parts of the world such as the Middle East, Australia and parts of Southern Europe.

When the <u>Carlsbad Desalination Project</u> is completed this fall, it will be the largest desalination plant in the Western Hemisphere. Kerl of the San Diego County Water Authority, which is partnering with Poseidon Water on the project, explains why she believes the desalination plant is environmentally sound and also necessary for the state of California. The state's recent snowpack survey reveals that the snowpack, a major source of drinking water for residents, is currently five percent of average, according to Kerl.

http://hereandnow.wbur.org/2015/03/09/drought-california-desalination

#### Why...

#### 'RIDICULOUS RIDGE' MAY BE BACK TO PROLONG CALIFORNIA DROUGHT by Craig Miller, KQED Science | January 23, 2015

A big, bloated bubble of high pressure had parked itself over the West Coast and did not move. It caught the eye of Daniel Swain, then a 23-year-old doctoral student in climate science at Stanford University. "It was going on and on, well beyond that maximum that we normally see and persisting over months," Swain recalls. "And not only over months but then recurring essentially over the course of two consecutive winter seasons."

He started writing about it on his <u>California Weather blog</u> and decided to give it a name: the <u>Ridiculously Resilient Ridge</u>. It stuck. In fact, the "Triple-R" as it's now known in weather geek shorthand, has become enough of "a thing" that it has <u>its own Wikipedia page</u>.



http://blogs.kqed.org/science/audio/ridiculous-ridge-may-be-back-to-prolong-california-drought/

#### But there's a little good news...

**DROUGHT RELIEF: SHASTA LAKE RISES 10 FT IN ONE DAY** by Roy W. Spencer, Ph. D. December 12th, 2014

The latest in a series of Pacific storms hit California yesterday with high winds and over 6 inches of rain at Shasta Dam. A number of mountain stations that feed the reservoirs in N. California, which are at very low levels from the continuing drought, have registered over 10 inches of rain in the last week.

With yesterday's heavy rains, Lake Shasta rose a spectacular 10.6 feet in one day, which added over 130,000 acre feet of water volume to California's largest reservoir. That's enough water to fill 65,000 Olympic size swimming pools.

The following graph shows that there is still a long way to go to reach even normal water levels on Lake Shasta:







### **Geological Society of New Hampshire**

**GSNH 2015 Spring Dinner Meeting** 

### "History of Pleistocene Glaciations in Yellowstone and Grand Teton National Parks"

Speaker : Joe Licciardi, Associate Professor, UNH Earth Sciences

Thursday, April 16, 2015

The Puritan Backroom

245 Hooksett Rd, Manchester, NH 03104

5:30 pm Social Hour; 6:30 pm Buffet Dinner; 7:15 pm Speaker

New time - RSVP by <mark>4 pm Friday, April 10, 2015</mark> to get the reservation price

Advance Reservations: \_\_\_\_\_Member (Dues Paid) \$22.00 \_\_\_\_\_Non-member \$25.00

Please indicate the number of vegetarian meals – leave blank for none.

- Member at the Door (\$25.00)
- Non-Member at the Door (\$28.00)
- 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 Tuesday before the Dinner. Reply via e-mail to: <u>EKirby@Geosyntec.com</u>. Mail to: **Erin Kirby**, **GSNH Dinner Meeting**, **PO Box 401**, **Concord**, **NH 03302**. **Checks payable to: GSNH**.

Name(s)

Address:

Your phone or e-mail:

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.

E .	MEMBERSHIP & RENEWAL APPLICATION								
Geological Society of New Hampshire PO Box 401, Concord, NH 03302									
Name:			(Please print o	clearly)					
E-mail:									
Renewing Member information ( New applicants: ple	<b>s</b> : Only update this se <u>including email</u> ) or ed ease complete this se	ection if you hav lucational histor ction.	ve changes to you ry.	r contact					
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I volunteer to help w	vith one of the followin	ng committees o	or tasks:						
Membership Committee	Regulation	Regulations Committee		Communications Committee (Newslette					
Legislative Committee	Education Events Co	Education Committee Events Committee	or Website, cir	cle preference)					
	' <sup>y</sup>		Other:						
Membership Category:									
—— Regular Member (A	nnual Dues \$20.00)								

Make checks payable to "Geological Society of New Hampshire." Note that GSNH dues are not deductible as a charitable contribution, but may be deductible as a business expense. Please return this completed application form with any necessary corrections and a check for the appropriate dues to the GSNH at the address above. The Society's membership year runs from January 1 to December 31.

Signature: \_\_\_\_\_

Date: \_\_\_

CONT.