

October, 2011

Volume 37

Number 3

THE PRESIDENT'S MESSAGE

The leaves are turning, but the memory of a great field trip in Northern Maine lingers. David Putnam and Chunzeng Wang, of UMPI, led a great field trip to the Deboullie area, giving participants an opportunity to see this little-visited part of the State. Our hosts provided great camping and a veritable flotilla of watercraft that we used to paddle across Deboullie and Gardner Ponds to ice caves and lakeside outcrops of the Deboullie Pluton. As always, a trip north requires some travel time, but we were rewarded with spectacular scenery, interesting geology, and the opportunity to enjoy the out-of-doors with fellow geologists.

This year's annual fall meeting will be hosted by Unity College on November 4th (see details below in the newsletter, and on the website). The theme of the meeting will be "Geology in Maine" and will feature a program devoted to geological projects conducted by representatives of academia, the industry, and government agencies. Our society business meeting will follow. The day's keynote presentation will be an update on the Penobscot Restoration Project, that is designed to create a free-flowing river from Penobscot Bay to central Maine, without losing energy generation capacity. This will be a win-win for the state and the environment! A social hour concludes the meeting, with the option of dinner on the Unity campus. If you are interested in a dinner reservations, please contact Lois Ongley no later than a week before the meeting (Longley@unity.edu)

So ... enjoy the changing seasons and come to Unity College on November 4th to hear about active geology in Maine and reconnect with friends and colleagues!

Alice R. Kelley, President (2011-2012)
akelley@maine.edu

THE EDITOR'S MESSAGE

Please send items of interest for the News from the Campuses and Member News columns, or other things you'd like to share.

Please check the date on your address label – members more than two years in arrears will be dropped from the mailing list. Send dues to Lois Ongley (see address on the last page).

Dan Belknap, Newsletter Editor (1998 – present)
<belknap@maine.edu> (207) 581-2159, FAX: -2202

PLEASE CHECK THE DATE ON YOUR ADDRESS LABEL – THIS IS THE DATE TO WHICH YOUR DUES ARE PAID UP. MEMBERS MORE THAN TWO YEARS IN ARREARS WILL BE DROPPED FROM THE MAILING LIST.

GSM WEBSITE: www.gsmmaine.org

The GSM website has been changed to a new provider, which we expect will result in better service. The web address (above) is unchanged.



GSM FALL MEETING

November 4, 2011

**Center for the Performing Arts
Unity College, Unity, ME**

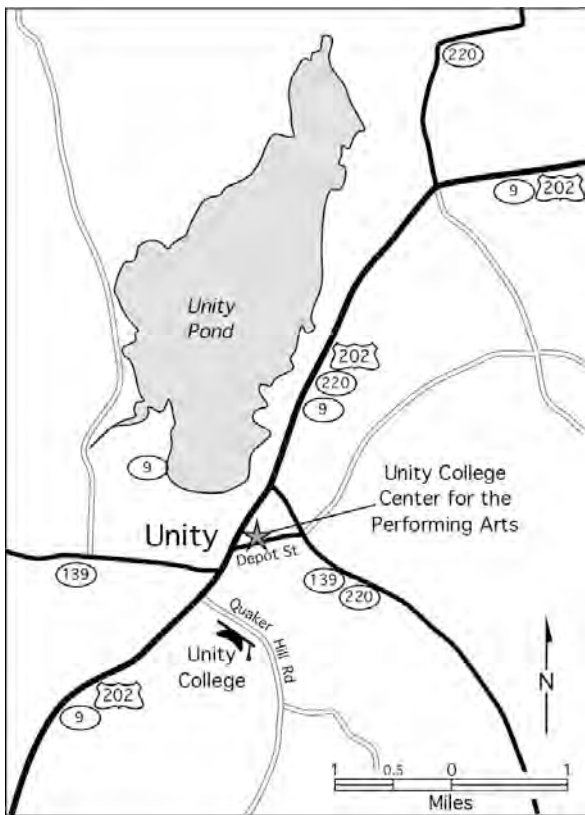
The Geological Society of Maine will meet in Unity, ME on Friday November 4, in a new venue: The Unity College Centre for the Performing Arts located at 42 Depot St., Unity Me 04988.

The executive committee will meet from noon to 1:00 PM. General Talks relating to geo-environmental issues ranging from the paleoenvironment of Acadia National Park to current environmental case studies and anything in between will be presented in the afternoon. There will be a brief break at about 2:30PM. A brief business meeting and a keynote speaker will wrap up the afternoon. Social hour at 5:00 PM (cash bar) will be followed by dinner at 6:00 PM for those who wish to socialize further.

Dinner will be held in the Banquet Hall. The cost for dinner will be in the \$10-15 range. If you plan to stay for dinner, please contact Lois Ongley

(longley@unity.edu, (207) 948-3131 x310) by Oct 31 for reservations.

Directions to the Unity College Center for the Performing Arts *(Delorme Atlas Sheets 21 and 22)*



From Points South: From I-95, take exit 132 (Fairfield/Benton). Follow Route 139 east to Unity (about a 20-min drive). At the blinking caution light in Unity, go left onto Main Street (Route 202/9). About a block later, take a right at the Moose onto Depot Street. Look for the sign on the left just past the church.

From Belfast: Take Route 137 toward Freedom. You'll wind through some pretty countryside for about 15 minutes. At the caution light atop Knox Ridge, take a right onto Route 220. Follow the signs into Unity. Take a left onto Depot Street (Route 139). You'll see the sign on the right as you approach the church.

From Points North: Take I-95 South. Just south of Bangor, take exit 174 (Carmel/Winterport) and go left toward Newburgh. After a 5-minute ride, turn right onto Route 202/9. From here it's a 20-minute drive to Unity. In Unity take a left at the Moose in front of the Unity Historical Society onto Depot Street. You'll see the sign on the left.

Respectfully submitted, Lois K. Ongley

GSM MEMBER NEWS

Please send member news to:
Carolyn Lepage, Member News Correspondent
(1996-present) calepage@roadrunner.com or
PO Box 1195, Auburn, ME 04211-1195 or
Phone: (207)-777-1049

THE STATE GEOLOGIST'S MESSAGE

**Working to Reduce the Risks from
Maine's Geologic Hazards**

A series of small earthquakes occurred in the Bucksport area in early May, drawing disproportionate media attention to this hazard that is rarely damaging in Maine, due in part to heightened concern following the Sendai, Japan disaster. Maine experiences several felt events, and on average one magnitude 3 event, each year. Truly damaging earthquakes have been rare in Maine, but the potential for them should not be ignored. Assessing risk is an important part of emergency preparedness for any type of disaster. The Maine Geological Survey, in cooperation with the other New England states and the Northeast States Emergency Consortium (NESEC) has been investigating the value of geologic maps in assessing seismic risk. HAZUS, a computer program developed by FEMA, can assess risk using available information on population density, infrastructure age, geologic substrate, local seismicity, and other factors. In the absence of other information, the program assigns all the surficial materials to a class that is moderately susceptible to seismic amplification. Our work with digital surficial geologic maps shows that the program greatly overestimates risk in the more mountainous areas of New England, and underestimates it in low relief coastal areas underlain with glacial-marine mud. Geologic maps, then, are an important resource for assessing risk and focusing remedial efforts.

Following the 2004 Sumatran tsunami, the federal government initiated a comprehensive assessment of this hazard along all U.S. coastlines. Through funding from the Maine Emergency Management Agency, MGS is assessing potential tsunami inundation for the entire Maine coast. The most threatening source for a tsunami on the Maine coast would be from a large earthquake at the Puerto Rican trench. Such an event would allow many hours of lead time, and fortunately



the Georges Bank would dissipate much of the wave energy. Still, damaging waves are possible in Maine and we are using Lidar and other elevation data, together with modeling by NOAA, to develop inundation maps. County emergency managers, in particular, are pleased to have this information as it will be readily useful for hurricane inundation as well.

Maine faces a more insidious coastal hazard in the form of incremental sea-level rise. While a few millimeters per year doesn't sound like much, over time it accumulates – to more than 7 inches in the past century – with no indication that the rate of rise will decrease anytime soon. Most scenarios predict a rapid increase in the rate of rise. An additional foot of sea-level rise gives the waters of a 10-year storm the landward reach previously achieved only by a 100-year storm. While it may be difficult to address the causes, we must not ignore the impacts. To this end, MGS is engaged with southern Maine communities and the Southern Maine Regional Planning Commission in the Sea-Level Adaptation Working Group (SLAWG). The SLAWG has been working for over a year on reviewing the science and helping communities understand the risks, how to assess risks to critical infrastructure, and options to mitigate these risks. This work continues.

In the past few years, we have developed a series of landslide susceptibility maps that inventory past events and identify areas that are highly susceptible to mass movement. Maps are completed for some southern Maine communities and we will work on others as resources permit.

Life is fraught with risks, but with careful assessment and planning, many can be avoided or their consequences reduced. Geology has an important role to play in reducing risks.

Robert G. Marvinney, Maine State Geologist:
Robert.G.Marvinney@maine.gov

GSM SECRETARY'S REPORT

Summer Field Trip, July 15-17, 2011

Members of GSM met for a summer field trip in the Deboullie Public Reserve Land in northern Aroostook County on Friday July 15th. The Perch Pond group camp site provided a home base for most of the twenty GSM members and their friends and family who participated, while a few took advantage

of the more civilized lodging offered by the Red River Camps a short distance away. The field trip was led jointly by Chunzeng Wang and David Putnam of the University of Maine at Presque Isle. Chunzeng guided us through the bedrock geology, showing us two phases of the Deboullie Pluton, previously mapped by Gary Boone (1962), and Patricia Loferski and Robert Ayuso (1995). David Putnam guided us to the rock glaciers, which are interpreted as relict permafrost features of the Younger Dryas described by David and his son Aaron Putnam (Putnam and Putnam, 2009) (full references are in the field-trip guide available through (www.gsmmaine.org)). Field-trip stops were accessed Saturday July 16th by kayak and canoe along the shores of Deboullie and Gardiner Ponds. We proved to be able paddlers, and pooled our resources to manage the portage between the ponds. GSM hosted a group cookout on Saturday night.

No GSM business was conducted.

Submitted by Martha Mixon, Secretary
Martha.mixon@gmail.com

Martha N. Mixon
11 Merriam Street, Portland, Maine 04103
cell ([207](tel:2074000055)) 400-0055 home ([207](tel:2078718012)) 871-8012



Chunzeng Wang, UMPI, and participants



Dave Putnam, UMPI

GSM TREASURER'S REPORT

Fiscal Year August 1, 2011 to July 31, 2012

Report as of September 29, 2011

Assets: August 1, 2011

Anderson Fund Prime Share	\$ 5,802.39
Anderson Fund CD	\$ 6,024.21
Subtotal	\$ 11,826.60
General Fund Prime Share	\$ 2,026.57
General Fund CD	\$ 3,769.00
General Fund Money Market	\$ 2,505.88
General Fund Share Draft	\$ 1,690.18
Subtotal	\$ 9,991.63
Total	\$ 21,818.23

Income

Dues	\$ 280.00
Dividends	\$ 6.66
Donations to Anderson Fund	\$ -
Subtotal	\$ 286.66

Expenses

Newsletters	\$ -
Meeting Expenses	\$ 171.96
Anderson Fund Awards	\$ -

Web Site	\$ -
Miscellaneous	\$ -
Subtotal	\$ 171.96

Assets: September 29, 2011

Anderson Fund Prime Share	\$ 5,803.62
Anderson Fund CD	\$ 6,026.76
Subtotal	\$ 11,830.38
General Fund Prime Share	\$ 2,027.00
General Fund CD	\$ 3,770.60
General Fund Money Market	\$ 2,506.73
General Fund Share Draft	\$ 1,798.22
Subtotal	\$ 10,102.55

Total \$ 21,932.93

Net gain [or loss] \$ 114.70

Respectfully submitted,
Lois K. Ongley, Treasurer (2010 -present)
longley@unity.edu

NEWS FROM THE CAMPUSES

The University Of Maine, Orono

The Department of Earth Sciences welcomed new Assistant Professor Sean W.C. Smith to campus this fall. Sean is a surface-water hydrologist and watershed modeler. He is a 2010 Ph.D. from the Department of Geography and Environmental Engineering, The Johns Hopkins University. Sean was hired through the Sustainability Solutions Initiative in the Senator George J. Mitchell Center of the UMaine campus.

We have three undergraduates going to Antarctica this coming field season, part of Professor Brenda Hall's research team.

35 YEARS AGO WITH GSM

(V. 3, No. 2, December, 1976)

Maine Survey Notes

At the Fall meeting, **Barry Timson**, **Brad Caswell** and **Walter Anderson** kept us up to date with short notes on their various projects.

Barry offered some conclusions from his continuing work on barrier beaches and beach dune restoration. He reported that post-glacial sea level rise in Maine started to slow down about 3000 years ago. Barrier beaches have subsequently migrated little, and have

existed as vegetated barriers for about 3000 years. With the present sea level rise, which has been going on for several decades, the barrier beaches are now being narrowed by frontal erosion. If sea level continues to rise, the beach environment, including beaches, which have been planted with houses, will enter a "washover sequence". If the beach has been "protected" with seawalls, the effect of sea level rise will be to lower the beach in front of the seawalls. Scouring of the seawall foundation materials can ultimately lead to the collapse and destruction of the wall.



*Barry Timson[†], Drakes Island beach, April, 1973,
photo by Dan Belknap*

Brad Caswell gave us a little more to ponder from his work with inland bedrock water wells, which contain high salt contents (5000-8000 ppm NaCl). Some studies on ionic balance in these waters are interpreted to mean that they cannot merely be diluted sea water, but have to have been derived from evaporites. All of the anomalous wells apparently are located in Siluro-Devonian rocks. (But your Editor would like to ask again whether anyone REALLY knows much about the distribution of post-orogenic continental deposits of Upper Devonian to Pennsylvanian age in central Maine to the north of the Norumbega fault system?) Brad also described a "high-yield" bedrock area on the coast by Harpswell Sound, where 2 wells yield 60-75 GPM from a pool below sea level. One well is 99' deep, the other 124', with collar elevations probably at 20' or less above the adjacent bay. Water levels in the wells respond very rapidly to precipitation, but do not rise and fall with the nearby ocean tides.

Although the wells are 350' apart, pumping of

one immediately draws the other down, indicating an essentially unimpeded hydraulic connection between the wells. The wells were drilled to supply a coastal housing development, not yet constructed. The potential here for contamination of the subsurface reservoir by road salt, human wastes and/or ocean water is interesting to contemplate, should the area become closely settled and the wells pumped at high volume.

Walter Anderson gave us his usual packet of goodies, including a series of geologic index maps now available, plus maps printed on mylar bases describing surficial and coastal marine geology subjects. You'd better check personally with Walter on these, since a lot of good information seems to pour off his presses regularly, and it was a whole two months ago that he told us about his latest batch. He also noted that the Maine Survey, through the auspices of the State Planning office, has mylar separates of USGS topo quadrangles for Maine. For a few bucks you can get mylars made of the mylars, if you want just topography, just culture, just streams, etc., for your areas of interest. That looks like a really good deal. on earthquakes, the Maine network of seismometers is continuing to build rapidly. A new station is in at Turner, and 4 additional units, operating on solar panels, are now transmitting data to Allagash. The Survey has also printed an earthquake questionnaire on 4"x 8" cards. In the event of an earthquake people might feel, these cards will be distributed locally by civil defense organizations, to acquire "felt reports" for the event throughout the State. From these reports, isoseismal plots can be made to assist in establishing the apparent epicenter of the event.

Weston observatory sends us their data from the Northeastern Seismic Network on a quarterly basis, and we'll keep up-dating this map as new information comes in. All of the events reported above for Maine were very small, and don't feel badly if you missed them.

Maybe for the next issue of the Newsletter, when we should have a full year's reporting for the Network, we'll put together a discussion of the contemporary seismicity in the region, and make a few speculations as to geologic structures which seem to localize the activity.

MEMBERSHIP DUES STATEMENT

The GEOLOGICAL SOCIETY OF MAINE, INC. (often referred to as **GSM**) is a non-profit corporation established as an educational Society to advance the professional improvement of its members; to inform its members and others of current and planned geological programs in Maine; to encourage continuing social contact and dialog among geologists working in Maine; and to further public awareness and understanding of the geology of the State of Maine; and of the modern geological processes which affect the Maine landscape and the human environment.

The Society holds three meetings each year, in the late fall (Annual Meeting), early spring, and mid-summer (usually a field trip). A newsletter, *The Maine Geologist*, is published for all members three times a year. The Society year runs from Sept. 1 to Aug. 31. Annual dues and gift or fund contributions to the Society are tax deductible. There are four classes of memberships:

\$20.00	REGULAR MEMBER	Graduate geologists, or equivalent, with one year of practice in geology, or with an advanced degree.	FEE SCHEDULE AS OF February, 2008
\$20.00	INSTITUTIONAL MEMBER	Libraries, societies, agencies, businesses with interests in or practicing geology and related disciplines.	
\$10.00	ASSOCIATE MEMBER	Any person or organization desirous of association with the Society.	
\$ 5.00	STUDENT MEMBER	Persons currently enrolled as college or university students.	

THE GEOLOGICAL SOCIETY OF MAINE ANNUAL RENEWAL / APPLICATION FOR MEMBERSHIP

Regular Member	\$20.00	\$ _____	Name _____	Make checks payable to: Geological Society of Maine Lois K. Ongley, Treasurer Unity College 90 Quaker Hill Road Unity, ME 04988
Institutional Members	\$20.00	\$ _____		
Associate Member	\$10.00	\$ _____	Address _____	
Student Member	\$ 5.00	\$ _____		
Contributions to GSM (please write gift or fund on check)		\$ _____		
TOTAL ENCLOSED		\$ _____		

Email Address _____
(GSM funds include the Walter Anderson Fund____, and discretionary gifts as noted by contributor)

2011/2012 SOCIETY YEAR BEGAN SEPTEMBER 1 - PLEASE SEND DUES TO TREASURER.
The DATE on your mailing address refers to PAID UP DUES DATE

THE GEOLOGICAL SOCIETY OF MAINE
c/o Daniel F. Belknap, Newsletter Editor
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Return Service Requested

THE MAINE GEOLOGIST is the Newsletter of the Geological Society of Maine, published three times a year, in mid-winter, summer, and early fall, for members and associates.

Correspondence about **membership** in the Society, **publications** and **dues** should be mailed to:
Lois K. Ongley, Professor of Geochemistry, Unity College,
90 Quaker Hill Rd., Unity, ME 04988 <longley@unity.edu>

Items for inclusion in the **Newsletter** may be directed to:
Daniel F. Belknap, Dept. Earth Sciences, University of Maine,
Orono, ME 04469-5790 <belknap@maine.edu>

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|-------------------|------------------------|--------------------------------|
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| | Rudy Rawcliffe (10-13) | Northeast Geophysical Services |