



The Maine Geologist

NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MAINE

October 2017

Volume 43

Number 3

PRESIDENT'S MESSAGE

What a great state for geology! Thinking back over the past few years of GSM and NEIGC field trips, I am impressed by the variety of interesting features you can reach in a few hours with a tank of gas. Sure, the calendar-worthy localities such as Katahdin, Mount Desert Island, and Portland Head spring to mind, but also places lesser known to the public such as Deboullie, Isle au Haut, and the town of Monroe. While non-geologists can appreciate the beauty of beaches, rivers, and mountaintop views, it takes the imagination of a Maine geologist to get excited by a gravel pit, salt marsh, sediment core, or sillimanite crystal.

And new discoveries are still being made. Last year, Woody Thompson and Roger Hooke showed us a new kind of thin, braided meltwater deposit they call esker nets, discovered by lidar imagery. This summer, Lindsay Spigel walked us down into a large, prehistoric landslide deposit in Saco that was right under our noses but unrecognized until lidar. New techniques in geochronology, computer image analysis, ocean floor mapping, and drone technology are providing types of information that we have never had before.

Our fall meeting on November 17 makes the link between accumulated knowledge and the evolving needs of technology. The connection is natural resources. As most geologists know, handheld devices, wind turbines, and electric car batteries require unprecedented amounts of elements such as nickel, zinc, and lithium. This year, Gary Freeman discovered a huge, multi-ton spodumene crystal (lithium silicate) in the western Maine pegmatite district. A mineral exploration company, Wolfden Resources, recently characterized the northern Maine mineral belt as "vastly under-explored" by modern standards. Will

increasing demands for mineral resources, Maine's mineral potential, and new mining rules affect mineral exploration in the state? Please join us at the fall meeting for expert presentations and lively discussion.

Henry Berry, GSM President
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THE EDITOR'S MESSAGE

The newsletter is distributed through e-mail in pdf format. Anyone with special needs please contact the Editor. Please send items of interest to:

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GSM WEBSITE: www.gsmmaine.org
FACEBOOK: facebook.com/GSMMaine

NEWS FROM THE STATE GEOLOGIST

National Geologic Mapping Act Reauthorization

Geologic maps have tremendous application to critical aspects of modern society. Given their capacity to identify mineral and fuel resources for creating and energizing modern conveniences, their use to characterize aquifers that provide 43% of the nation's irrigation water and 37% of public supply water, and their application to landslide and earthquake risk assessment, it is difficult to overstate the contributions of geologic maps to society. In fact, a rigorous economic analysis of the benefit to cost ratio of geologic mapping indicates, conservatively, a 5:1 benefit. With such clear

benefits, why has the United States been among the most poorly geologically mapped modern nations?

In the late 1980s and early 1990s, the directors of the state geological surveys, acting through the Association of American State Geologists (AASG), recognized that a nation with only 20% coverage by geologic maps was unacceptable and decided to do something about it. Working together with (and sometimes at odds with) our colleagues at the U.S. Geological Survey, the State Geologists worked to advance through the Congress the National Geologic Mapping Act. Among the findings in the Act was that, “A comprehensive, nationwide program of geologic mapping based on Federal, State, and private efforts is essential to systematically build the Nation’s geologic-map data base at a pace that responds to increasing demand for data necessary for the long-term needs of the Nation.” After two years of debate (short by current standards!), the Act was first passed in 1992. It was subsequently reauthorized in 1997, 1999, and 2009, and is currently up for reauthorization.

In Maine, the State Geologic Mapping Component (STATEMAP) of the Act has nearly doubled the pace of geologic mapping. After a surge in the late 1970s and early 1980s in advance of the 1985 state geologic maps, geologic mapping went into somewhat of a slump in the late 80s due to budget cuts. Since 1993 through STATEMAP, the Maine Geological Survey has completed about 150 geologic maps, mostly in southern and central Maine but also in eastern and northern Maine. We have received more than \$1.9 million through the program for mapping in critical areas, each federal dollar matched by a state dollar. Our Geologic Mapping Advisory Committee, with representation from industry, consulting, academia, and government agencies, has guided our geologic mapping program to priority areas with great success. Maps produced through STATEMAP have been used by a broad range of users to address an equally broad range of issues.

On September 14, Senators Angus King (I-Maine) and Lisa Murkowski (R-Alaska) introduced the National Geologic Mapping Act Reauthorization Act to the Senate which would reauthorize the programs through 2023. In a [press release](#) about the bill, Senator King stated, “By

reauthorizing the National Cooperative Geologic Mapping Program, we can help ensure responsible environmental stewardship, mitigate natural hazards, and foster economic growth.” I and the membership of the AASG will be working in the coming months to ensure the passage of this bill.

Robert G. Marvinney, State Geologist
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2017 FALL MEETING

November 17, 2017
Augusta Civic Center

Following a lengthy bureaucratic process that began in 2012, legislation has been enacted and a new set of state metallic mining rules is expected to take effect in November. This raises renewed interest in Maine's mineral resources as well as questions about the potential for development. Our



Fall Meeting this year will feature a variety of presentations from people who have been working with Maine's mineral resources from various perspectives. The program will include an overview of what we know about Maine's bedrock geology and mineral resources, and how to access existing geologic information. We will hear from geologists with experience working in metallic mineral exploration, aggregate production, and pegmatite mining. (See accompanying photo of a huge spodumene crystal discovered this year in western Maine pegmatite by Gary Freeman!) A representative from the Maine DEP will walk us through highlights of the new legislation and rules, and what they might mean for exploration and mining companies. Finally, we will look at the non-geologic aspects of the issue, including a University of Maine study of public perceptions of mining, and the legislative process itself. A distinguished panel including Maine legislators who participated in the process will be on hand for questions and discussion.

The meeting will be Friday, November 17 at 1:00 pm at the Augusta Civic Center in the Washington and York Rooms on the second floor. The final program will be posted on the gsmmaine.org website before the meeting. For questions, contact Bob Marvinney or Henry Berry.

2018 SPRING MEETING ANNOUNCEMENT

**April 6, 2018
Unity College**

The spring GSM Meeting will take place at Unity College's Center for the Performing Arts on Friday, April 6, 2018, in Unity. The conference agenda, logistics, poster session details, and speaker will be announced at a later date in the February Newsletter.

Kevin Spigel
kspigel@unity.edu

2018 SUMMER FIELD TRIP ANNOUNCEMENT

**July 28-29, 2018
North Maine Woods**

Bedrock investigations in the North Maine Woods have been absent for several decades. Brad Hall's bedrock geologic mapping in the southern end of the Munsungun Anticlinorium and Gary Boone's bedrock geologic mapping in the Deboullie Lake and Fish River Lake areas in the 1950s and '60s provided the most authoritative maps and are still the primary source of our knowledge. With the exception of intensive mineral exploration activities (soil and stream sediment geochemical survey and borehole drilling) in the middle Munsungun Anticlinorium region, in particular in the area around Bald Mountain polymetallic deposit, around 1980, there has not been any bedrock mapping since Hall's and Boone's work, except the bedrock mapping in a small area around the Bald Mountain deposit by USGS geologists in the middle 1990s.

A fortuitous archaeological discovery of a probable paleoindian lithic reduction workshop at Round Mountain in 2014 caused renewed interest in the bedrock. Round Mountain was recognized as an area of potential archaeological significance by the late Robson Bonnicksen in the early 1980s. In the past, limited reconnaissance was conducted by several archaeologists but no detailed work at Round Mountain was performed. The Munsungun Lake area (including Munsungun Ridge, Norway Bluff and Willard Ridge) is the best-known source of the cherty materials for stone tool artifacts in northern Maine, which have been found at sites throughout northeastern North America. During the survey of the newly-discovered Round Mountain archaeological site, it became obvious that the archaeologists needed to know where the artifacts were sourced and if multiple sources existed. A collaborative effort was made between MGS and the Maine Historic Preservation Commission (MHPC) to re-map the bedrock in the Mooseleuk Lake and Round Mountain quadrangles. Supported by MGS, USGS, and MHPC, geo-archaeologists and geologists Dave Putnam, Steve Pollock and Chunzeng Wang, under supervision of State

Geologist Dr. Robert Marvinney and State Senior Archaeologist Dr. Arthur Spiess, began to survey archaeological sites and map bedrock in the middle Munsungun Anticlinorium region in 2015. As exciting geological discoveries have been made the North Maine Woods geology has become a hot topic again.

The GSM 2018 summer field trip will highlight the new discoveries in the middle Munsungun Anticlinorium region. To name a few, in geo-archaeology: (1) the Munsungun Lake area is not the single source of the cherty rocks utilized for prehistoric stone tool manufacture and (2) the lithic material used for stone tools is not strictly chert, but also felsic fine tuff, at least in the Round-Middle-Peaked Mountain ridge area. With regards to the bedrock geology, here is a short list: (1) the completely-redrawn bedrock map in the region; (2) several newly identified and proposed formations, including the Rowe Lake and Horseshoe Pond Formations; (3) an improved understanding of the Ordovician volcanic rocks and their spatial relation to other units as well as their absolute ages obtained from radiometric dating; (4) discovery of the basal conglomerate member of the Seboomook Formation as well as excellent outcrops of the Taconic and Penobscottian unconformities; (5) intrusive-magmatic-hydrothermal Cu-Au mineralization at Chandler Mountain; and (6) rare and excellent exposure of geological features and unique rocks, including gem-quality-jasper-block volcanic breccia, pillow basalts, and volcanic tuff.

The trip will be run on the last weekend of July when mosquitoes and black flies disappear (July 28-29; but trip attendants should arrive on July 27 afternoon-evening). Lodging will be at a lake-front camp which is located on a very quiet lake in the woods with facilities (e.g. log cabin, kitchen, outhouse, canoes, boats, kayaks, fishing poles, and a huge swimming pool – the lake); you will bring tents and sleeping bags; lodging is FREE. More logistics will be detailed in the 2018 Spring GSM Newsletter. Mark your calendar and think of it as your summer 2018 vacation trip in our beautiful and wild North Maine Woods.

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David Putnam
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Steve Pollock
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2017 SUMMER FIELD TRIP RECAP

In Arthur's Footsteps

The skeptics have been soundly repudiated! Admittedly, a foray into the congested Route 1 corridor of southern Maine during the height of tourist season was a bold and risky plan for such a large group. But our stalwart band of geologists did better than merely survive the 2017 summer field trip, we had a wonderful time. We followed parts of Arthur Hussey's 2015 guidebook from Cape Neddick to Spring Point, feasting on a geologic smorgasbord of structural geology, bedrock stratigraphy, igneous petrology, coastal marine environments, sea level rise, beach-dune systems, coastal resiliency, and landslides in the Presumpscot Formation. The 37 participants were shuttled by vans provided by GSM members, which made it possible. A dense fog Saturday morning persuaded the tourists to have a late breakfast and visit the shops, which allowed us unexpectedly clear access to the geology of the Marginal Way footpath in Ogunquit. We successfully visited all the stops on our itinerary, including an optional after-dinner stop Saturday on the Biddeford Pool shore as the sun was setting beneath a red sky. Stop highlights and handouts from the field trip are posted on the GSM web site. A scrapbook of photos by Sarah Hall (and one by Chunzeng Wang) is included at the end of the newsletter.

Henry Berry, GSM President
henry.n.berry@maine.gov

2017 NEIGC

A great success!

This Fall (September 29 – October 1, 2017) Bates Geology and the Maine Mineral and Gem Museum hosted the NEIGC Conference. A great turnout of professionals and students traipsed around western Maine and northern New Hampshire looking at a number of diverse geologic settings. With 320 registered, including 177 students (!), this was one of the larger NEIGC meetings in some time. The Maine Mineral and Gem Museum put on a first-rate Friday night reception with well over 200 in attendance, and the Gould Academy dining services equaled that with the Saturday banquet at beautiful Ordway Hall. Thanks to all the trip leaders, especially the Maine contingent, for making the meeting a success.

Dyk Eusden
deusden@bates.edu

2018 GRAND CANYON RAFTING TRIP

August 6-13, 2018

Again as in the past 10 years, Alison Jones and Fred Beck will be leading an 8-day rafting trip of about 188 miles through the Grand Canyon. Many GSM members have made this trip in the past, some going twice. The trip begins at Lee's Ferry, Arizona, and ends at Whitmore Wash followed by a short helicopter ride to an airstrip at the Bar 10 Ranch on the North Rim. The dates are August 6-13, 2018. From there you will be flown to Las Vegas or Lee's Ferry.

The emphasis of these trips is of course about the geology, from Precambrian through the Permian as well as an abundance of more recent events including volcanism, breccia pipe formation, spring deposited travertine, debris flows and much more. At least two modest hiking trips are made each day into slot canyons or other side canyons and tributaries to visit waterfalls, fossils, archaeological sites and just to get out and stretch our limbs or

swim in clear warm water. Some choose not to do some of the side trips and just relax or read near the rafts while others go adventuring.

There are usually as many non-geologists on these trips as geologists and they get as much out of the trip as the geologists; a perfect geologic classroom. We have often had teenagers on these trips and that has added to the fun.

The outfitter we use is Hatch River Expeditions, one of the most experienced companies licensed to operate in the Grand Canyon. There will be two 34-foot inflatable boats powered by 30 HP outboards. No paddling or rowing on this trip. Each raft accommodates 16 people as well as all our gear, food, etc. All meals are prepared by the Hatch guides and Hatch also provides all tents, cots, bedding, etc.

If you are interested in more details, contact Fred Beck at fmbeck@fmbeck.net or Alison Jones at ajones@clearcreekassociates.com. We anticipate that we will have a full complement of travelers so an early commitment is advised.



NEWS FROM THE CAMPUSES

Bates College

Our department is in full teaching mode now. Some of the things we are working on, besides our courses and student research projects, are: 1) making our STEM classes, and Bates in general, more welcoming and inclusive to under-represented students; 2) working with the Boston-based firm

Payette on some long term and very overdue renovations to our Carnegie Science building; and 3) evaluating via a formal departmental review where we want to be in 5, 10, etc. years as the field of geology changes.

Dyk Eusden, Chair

Bowdoin College

On November 29, 2017, Bowdoin will host Dr. Heather Savage as a Distinguished Lecturer through GeoPRISMS – an NSF sponsored organization (<http://geoprisms.org/>). She will deliver a public lecture entitled “The Science and Pseudoscience of Earthquake Prediction” at 7pm in the Beam Classroom of the Visual Arts Center at Bowdoin (adjacent to the Art Museum). Parking and attendance are free. Please join us!

Rachel Beane has been elected as a Fellow of the Geological Society of America and will be recognized at the annual meeting in October. As her nominator Reinhard Wobus states, “Rachel is one of the most effective and progressive national leaders in Geoscience Education, notably as co-PI of “On the Cutting Edge” and convener of many of its workshops and webinars. She and her undergraduate students have also made significant contributions to the study of silicic magma systems.”

https://www.geosociety.org/GSA/About/awards/GSA_Fellows/GSA/Awards/Fellows.aspx

Collin Roesler was recently awarded a grant to investigate the role of diatoms as mediators of carbon flux to the twilight zone in the Northeast Pacific and Atlantic Oceans. This \$1.1 million grant will support her research for the next three years and support summer research fellowships for Bowdoin undergraduates. It will also bring infrastructure for observing phytoplankton community structure in real time. More information about this exciting project can be found here: <http://oceanexports.org/>

Phil Camill recently published a paper in the *Journal of Geophysical Research-Biogeosciences* on his work on determining how much carbon is

contained in peat bogs. This is part of a series of papers focused on work that Camill has conducted in the Canadian low Arctic with colleagues from St. Olaf College, Trinity College, the Science Museum of Minnesota, and several Bowdoin undergraduates. A short article about this project can be found here: <http://community.bowdoin.edu/news/2017/09/peat-bogs-that-may-contain-important-climate-change-indicators/>

Members of the EOS department led a trip for 20 students to Iceland in June 2017. Highlights of the trip were posted to Instagram (follow us @bowdoineos). An article and series of videos about the trip can be found here: <http://community.bowdoin.edu/news/2017/09/solving-an-earth-sized-puzzle-bowdoin-goes-to-iceland/>

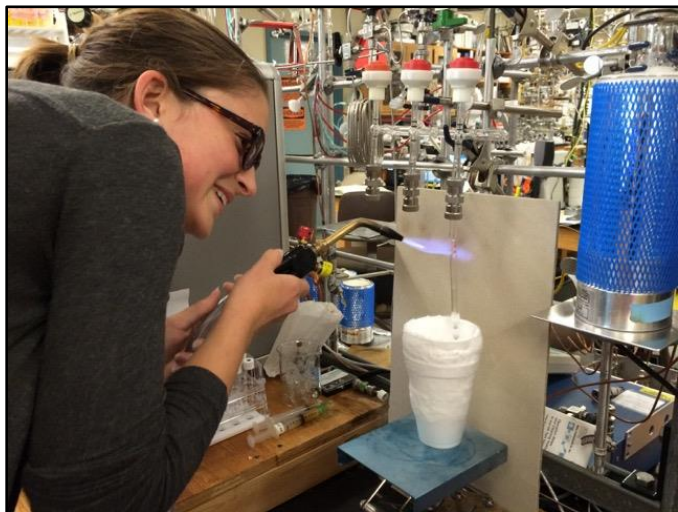


Emily Peterman spent part of the summer in Greece with two Bowdoin students conducting research on ultrahigh-pressure rocks in the Rhodope Mountains in collaboration with Michael Williams (UMass-Amherst). This research is supported by a recent grant awarded to Peterman and Williams from the National Science Foundation.

Peter Lea has been working with Satya Kent '19 to investigate the Scarborough Marsh and its response to rising sea levels. They have set up a research station in the Scarborough Marsh to monitor and characterize sediment flux. <http://community.bowdoin.edu/news/2017/08/a->

[bowdoin-investigation-can-a-maine-marsh-survive-rising-seas/](http://community.bowdoin.edu/news/2017/06/recent-grads-paper-on-deep-sea-coral-published-in-academic-journal/)

Recent graduates, Megan Frenkel '16 and Gabriela Serrato Marks '15 are each lead authors on papers recently published in *Deep Sea Research I* and *Paleoceanography* with their advisor Michèle LaVigne. The work included in these papers was supported by an NSF grant to LaVigne and included collaborations with UC Davis and Woods Hole Oceanographic Institution. A short article about this contribution can be found here: <http://community.bowdoin.edu/news/2017/06/recent-grads-paper-on-deep-sea-coral-published-in-academic-journal/>

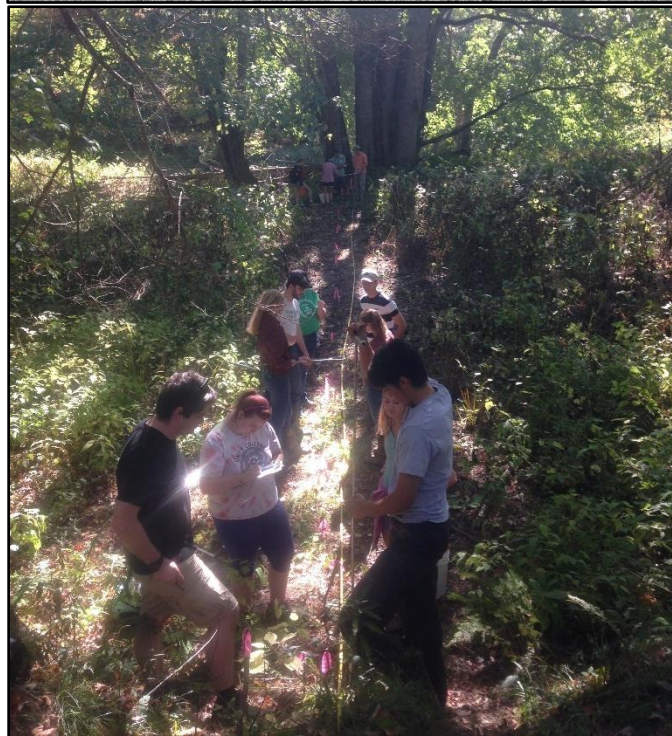


Emily Peterman

Unity College

Students are busy traveling around central Maine studying glacial landforms, river systems, soils and a number of rock outcrops in the fall courses at Unity College. The Geomorphology class has been extra busy traveling up north on an overnight camping trip to visit the Debsconeag Ice Caves and discuss the theories surrounding glaciation on Mt. Katahdin on their hike to Chimney Pond. More recently, the students traveled to Bethel to participate in the 109th NEIGC Meeting to learn more about a variety of other geology-themed topics from professionals in the field. Many more field trips are ahead! Thanks to an

internal grant received by Dr. Kevin Spigel, the students in Geomorphology are in the midst of a class research project studying oxbows along Sandy Stream. We have been busy coring and conducting topographic surveys of these relict channels with the intention of reconstructing bankfull channel dimensions and discharge and comparing the results to modern-day conditions. Slowly the radiocarbon dates are coming back in! Look for this work to be presented at the Spring GSM Meeting.



Kevin Spigel

University of Maine at Presque Isle

Kevin McCartney has returned from nearly nine months in Szczecin Poland as the first Fulbright Scholar from northern Maine. He spent his time in Poland working on a range of silicoflagellate studies from Cretaceous to Recent. His two primary projects while in Poland were a study of Paleocene to Eocene silicoflagellate biostratigraphy in southern latitudes, and the first of several pending studies on silicoflagellate evolution in the Cenozoic. Associated with his Polish work were invited talks at the 14th International Diatom Symposium and 11th International Phycological Congress.

Kevin will be returning to Poland for the weekend of February 17th 2018 to help launch the inaugural "Planet Head Day" event in Poland. This is an extension of a science-education and cancer-awareness event he has helped run for 11 years in northern Maine. The Maine event will this year be on March 10th, but in subsequent years there are plans for an International Planet Head Day.

Kevin McCartney

TREASURER'S REPORT

Fiscal Year August 1, 2016 to July 31, 2017

	Actual
Income	
Dues Paid	\$3,995.00
Donations for Anderson Fund	\$255.00
Subtotal	\$4,250.00

Expenses	
Postal Stamps	\$9.40
Annual Corporate Report	\$35.00
Dues Reminder Mailing to all Members	\$170.69
<i>Meeting Expenses</i>	
Fall Meeting 2016	\$1,468.45
Spring Meeting 2017 – Student	\$250.00
<i>Awards</i>	
<i>Anderson Fund Awards</i>	
UMF Geology Club Field Trip	\$750.00
Web site expenses	\$72.20
Subtotal	\$2,505.74

Net Increase	\$1,744.26
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End of Year Asset Summary July 31, 2017

Account	Sub-Account	July 31, 2017
General Fund		
	Business Savings	\$1,067.68
	Checking	\$2,394.51
	Total	3,462.19
Anderson Fund		
	Business Savings	\$260.00
	4 Certificates of Deposit	\$21,100.00
	Total	\$21,360.00
Total Assets	All Funds	\$24,822.19
Liabilities¹		\$0.00

¹As-yet-uncleared checks

Respectfully submitted,

Bruce E. Hunter, Treasurer 2017
Duties shared with Steve Kelley

UPCOMING EVENTS

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Organizer</u>
November 5-7	2017 Exploration, Mining and Petroleum Conference	Fredericton, New Brunswick, Canada	New Brunswick Department of Energy and Resource Development
November 17	2017 GSM Fall Meeting	Augusta Civic Center	GSM Executive Council
March 18-20	2018 Geological Society of America Northeastern Section 52 nd Annual Meeting	Burlington, Vermont	University of Vermont
April 6	2018 GSM Spring Meeting	Unity College	Kevin Spiegel
July 28-29	2018 GSM Summer Field Trip	Northern Maine, west of Ashland	Chunzeng Wang
August 6-13	2018 Grand Canyon Rafting Trip	Lee's Ferry, Arizona	Fred Beck and Alison Jones

2017 GSM SUMMER FIELD TRIP IMAGES



1. Early morning group photo around Bench 2 on the Marginal Way, Ogunquit. The plaque inscription reads: "In honor of Bowdoin College Professor Arthur M. Hussey II, Ph.D. Marginal Way geologist."



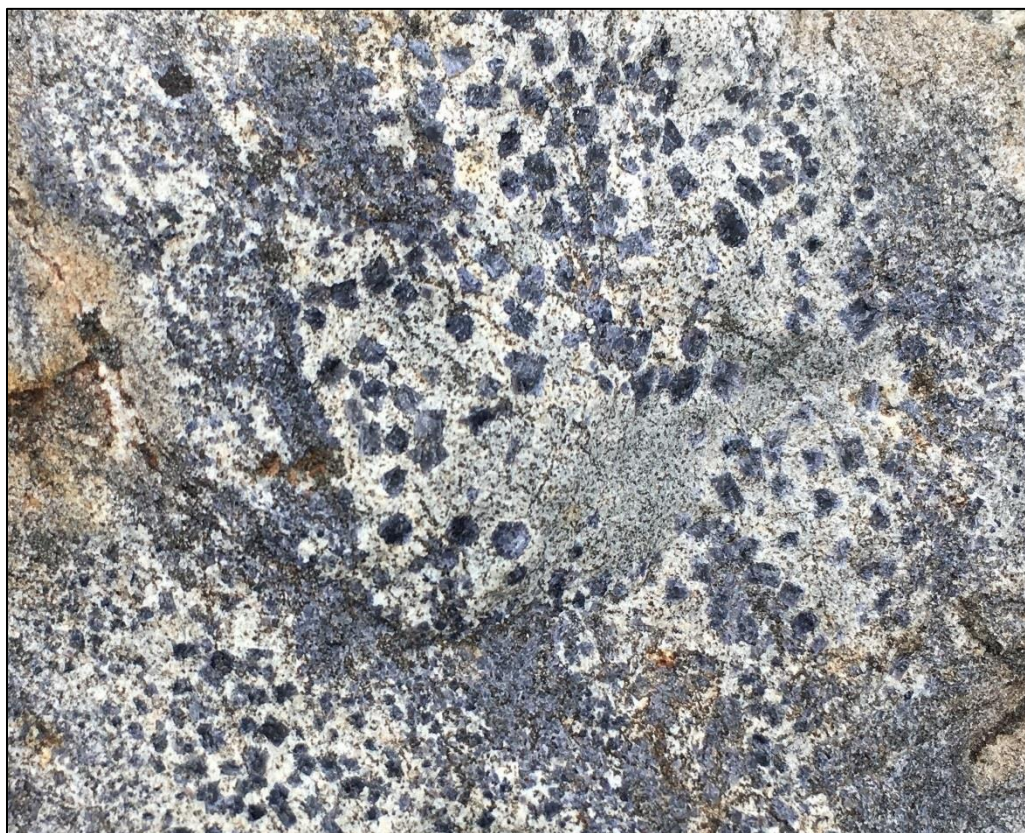
2. Leader Wally Bothner handing out maps at Stop 1.



3. Inverted graded beds in the Kittery Formation. Ian's finger is parallel to the second cleavage, pointing in the direction of younging. Devil's Kitchen, Marginal Way.



4. Densely packed summer "cottages" perched atop the Cape Neddick gabbro at Stop 2B.



5. Bluish-gray cordierite produced by high-temperature contact metamorphism, Cape Neddick.



6. Minor faults offset thin bedding in the Kittery Formation, Cape Neddick.



7. Dunne's ice cream - a plentiful and scrumptious treat!



8. Leader Dan Belknap points out a raised shoreline feature. Laudholm Farm, Stop 3.



9. The new award-winning bedrock map of the Kittery 1:100,000-scale quadrangle, displayed against the Biddeford granite. Home Depot, Biddeford, Stop 4.



10. The new GSM logo points the way to the cookout at UNE. Thanks, Denise!



11. Stop leaders Steve Dickson and Pete Slovinsky discuss the Saco Bay beach system on a gorgeous day. Ferry Beach State Park, Stop 5.



12. Geotube, rip-rap, and infrastructure at risk at Camp Ellis, Stop 5.



13. Stop leader Lindsay Spigel gives an overview of historic and pre-historic Maine landslides before walking us through a large landslide deposit at Stop 6.



14. Lindsay demonstrates the landslide geomorphology while standing at the base of the scarp.



15. Stop leader Henry Berry points out the contact between the Spring Point and Diamond Island formations in the shoreline outcrops at Southern Maine Community College, South Portland. Stop 8.



16. The shore of Casco Bay is a perfect setting for reading A Philosophical Preamble from Arthur Hussey's book, A Guide to the Geology of Southwestern Maine. Sublime! Thank you, Arthur. (C. Wang photo)

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 Aug. 1 to Jul. 31. Annual dues and gift or fund contributions to the Society are tax deductible. There are four classes of membership:

2017 FEE SCHEDULE

\$ 20.00	REGULAR MEMBER	Graduate geologists, or equivalent, with one year of practice in geology, or with an advanced degree.
\$ 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 Steve Kelley, GSM Treasurer 102 Staples Rd Limington, ME 04049
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)

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. Items for inclusion in the **Newsletter** may be directed to:

THE GEOLOGICAL SOCIETY OF MAINE

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2017/2018 SOCIETY YEAR BEGAN August 1
PLEASE SEND DUES TO TREASURER.

THE GEOLOGICAL SOCIETY OF MAINE

c/o Steve Kelley, GSM Treasurer
102 Staples Rd
Limington, ME 04049

PLEASE PAY YOUR DUES!

THE GEOLOGICAL SOCIETY OF MAINE EXECUTIVE COUNCIL

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