



# THE GREEN MOUNTAIN GEOLOGIST

QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

Fall 2000

VOLUME 27

No. 4

## FALL FIELD TRIP AND ANNUAL MEETING Jeffersonville, VT

Sat., Sept. 23, 2000  
(see Page 3 for details)

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**THE GREEN MOUNTAIN GEOLOGIST**  
 VERMONT GEOLOGICAL SOCIETY  
 DEPARTMENT OF GEOLOGY  
 UNIVERSITY OF VERMONT  
 BURLINGTON, VERMONT 05405-0122

The GREEN MOUNTAIN GEOLOGIST is published quarterly by the Vermont Geological Society, a non-profit educational corporation.

**Executive Committee**

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**ADDRESS CHANGE?**

Please send it to the Treasurer at the above address.

-Printed on Recycled Paper-



## PRESIDENT'S LETTER

Dear Members,

We should be well on our way to setting up the new slate of officers. If you do not plan on going to the business meeting, please mail in your absentee ballot.

The summer field to the Cold Regions Research and Engineering Laboratories in Hanover, New Hampshire and the Elizabeth Mine in Vermont were very exciting. Thank you again Larry Gatto for setting this field trip for us.

I would like to encourage all members to take an active role in promoting the study of geology. This can be done in a number of ways- participation in Earth Science Week by encouraging an individual or class of students in this week long celebration of earth science studies, invitation of a class of students or individuals to a field site while taking data, or talking to students in the classroom setting.

The fall field trip will be lead by Stephen Wright. It should be an exciting trip and will be followed by our Annual Meeting at Café Banditos in Jeffersonville.

Yours,

Shelley F. Snyder  
Mt. Abraham Union High School  
Bristol, VT 05443  
802-453-2333

### NOMINEES FOR OFFICERS, 2000-2001

The following members have graciously agreed to accept the nominations for officers for 2000-2001:

President: Shelley Snyder  
Vice-President: Ray Coish  
Secretary: Jeff Hoffer  
Treasurer: Kristen Underwood

## Vermont Geological Society Fall Meeting

### Glacial Geology of the Jeffersonville Quadrangle and Adjacent Areas

9:30 am, Jana's Bakery

And

Annual Meeting and Election of Officers

4:30 pm @Café Banditos, Jeffersonville

Saturday, September 23, 2000, at 9:30 am

**Pre-registration is requested for the trip and meeting\***

**\* Call Shelley Snyder (802-453-2333; 802-658-0575) or e-mail**

**Marjie Gale (marjieg@dec.anr.state.vt.us) by September 19**

Meeting place: Jana's Bakery in Jeffersonville @ intersection of Route 15 and Route 108 South. Sandwiches can be purchased here.

Meeting time: 9:30 am

Field trip will start in Smugglers Notch, progress North down Route 108 through Jeffersonville and continue north into Bakersfield. Be prepared to go on several short hikes. Shovels will be an asset. Field trip leader: Stephen Wright.

Please join us for the Annual Meeting and Elections immediately following the field trip. The meeting will be held at Café Banditos on Route 108 in Jeffersonville. The restaurant has a full service bar and serves a varied menu including Mexican food, burgers, chicken and seafood. Plan to meet there around 4:30pm. If it's warm they'll seat us on the deck.

## STATE GEOLOGIST'S REPORT

### STATEMAP grant award for summer 2000

The Division's Statemap grant that supports geologic mapping in the summer of 2000 is fully funded and mapping is underway. The competitive grant which is peer reviewed was "well written with good graphics" according to the letter from the review committee. The three projects are: Surficial geologic map and database for the Jeffersonville 7.5 minute quadrangle (Dr. Stephen Wright of UVM); Surficial geologic map and database for the Great Brook Watershed on portions of the Plainfield, Barre East, and Knox Mountain 7.5 minute quadrangles (George Springston and Lori Barg, independent consultants); and Surficial geologic map and database for the Arlington 7.5 minute quadrangle (Dr. David DeSimone of Williams College). For the Jeffersonville quadrangle and the Great Brook watershed a hazard map of slope instability and erosion is a planned derivative product. An aquifer and aquifer recharge area map will accompany the Arlington quadrangle. Monies for the Division are included in cooperation with the University of Vermont to drill logged borings and place piezometers (to understand ground water conditions and landslide risk) in the existing Jeffersonville landslide area and above the school playing fields. The Selectboard of Cambridge met on November 8, 1999 and supported the proposed geotechnical work. This year's grant is the highest award to date that the Division has received through Statemap at \$70,210

### Slope Instability - Jeffersonville, Smuggler's Notch, Springfield, Westmore

On July 13, the Vermont Survey assisted in the acquisition of seismic refraction data in the vicinity of the Jeffersonville landslide. The depth to bedrock coupled with ongoing cooperative mapping by the University of Vermont Geology faculty and students will help direct a drilling program. Drill holes will be used to set ground water monitoring to better understand the mechanism of landslide failure and have a basis for future predictions. Some way to monitor tilt in the boreholes over time is under consideration.

On April 25th, in cooperation with the Facilities Engineering Division, the State Geologist and Jon Kim visited the site for the proposed Smugglers Notch Resort snowmaking pond on Edwards Road in Jeffersonville with Morris Root of Root Engineering. The purpose of the visit was to examine the geologic context of the proposed site in order to determine the potential for slope failure below the proposed pond.

On May 24 the Vermont Survey, at the request of the State Emergency Management Division, traveled to Springfield, Vermont to examine the geologic context of a house close to an unstable slope above a stream. The Survey projects a one to three year risk

to the foundation of the house at the top of a till slope eroding primarily through colluvial action.

On May 17 the Vermont Survey traveled to Westmore, Vermont, on the east shore of Lake Willoughby, to examine the site of a large rockslide (18' X 14' X 4' slab) that damaged Route 5A and took out a guardrail. Fracture mapping by Jon Kim and Marjorie Gale was very helpful in understanding the geologic context of the slide.

### Isle La Motte Fossil Reef

A group of land protection interests met with the U.S. Bureau of Land Management (BLM) in a meeting sponsored by Forest, Parks and Recreation. BLM is beginning to explore potential projects in the eastern United States and land acquisition or cooperation in some way at the Isle LaMotte Ordovician Reef piqued their interest. They explained their process and their need for the State to take the lead in any effort to involve BLM. There is a deadline to enter the BLM proposal process in late May, but there was much discussion of whether this would be too early to go forward with a proposal before all the interests are balanced. The group then visited the fossil reef. The State Geologist presented the geological context at three locations and the importance of protecting this world class example of an Ordovician reef.

### State Lands Management Plans and Geology

The State Geologist and Marjorie Gale met at the U.S. Natural Resources Conservation Service(NRCS) White River Office with Roy Burton, Springfield District State Lands Forester and Tom Villars of NRCS. Roy requested a meeting with Geology to better understand how the Division can provide geologic information for state lands management plans in his district. Distilled information for plans would flow from geologic maps and be displayed in useful formats for non-geologists. Areas of interest on State lands are: geologic sources of calcium for tree growth, the physical system that supports biodiversity, general geology for educational purposes, unique geologic sites, depth to bedrock, potential geologic hazards, sand and gravel, and other mineral resources including ground water. Two plans that would benefit from geologic information that are at various stages in the review process are Townshend and Roaring Brook.

### Information and Education

Recent requests highlight the uses of newly packaged information. The well and boring data Excel spreadsheet created for our surficial map projects are available and easily distributed via e-mail. Soil scientists with the USDA in Williston recently requested the data for the Burlington, Colchester, Barre West and Montpelier quadrangles. The Mineral Resource Data System(MRDS), updated in 1998, is

available as paper copy and in GIS. The MRDS provides locations and information on all known active and inactive quarries in Vermont. The data have been queried by consulting companies looking for reclamation projects in Vermont, architects seeking replacement stone for historic buildings, and a citizen seeking information on a proposed marble quarry site. The 1961 Centennial Geologic Map of Vermont has been recently converted from targa to jpg files and we are now able to distribute that map on CD-ROM in a format which most individuals and universities will be able to access. Lastly, the stream geomorphology studies produced in 1998 and 1999 are available through our office. The executive summaries of these studies are posted on our public web site at <http://www.anr.state.vt.us/geology/vgshmpg.htm>.

On June 8, Jon Kim of the Geologic Division led a full-day field trip for a Watersheds class from Sterling College. The trip focused on the relationship that the underlying geology has to drainage patterns, drainage divides, water chemistry, and botany.

#### State Geologist's Liaison Meeting - D.C.

In March a group of State Geologists visited with federal partners to discuss areas of mutual interest. Significant visits for Vermont were FEMA, USGS, EPA, NRCS, the National Research Council, and the National Science Foundation. FEMA presented information on its map modernization program that includes a component called Ariverine erosion. FEMA is considering adding this component to their flood plain hazard maps. At USGS a new National Landslide Initiative is in its early stages of development. Vermont suggested that USGS coordinate with FEMA to combine the landslide and the riverine erosion hazard into a slope instability initiative much as we plan to do here in Vermont. When Congress is approached, the states that do not have landslide potential will be interested in supporting a hazard mapping program because of the flood erosion component.

At both the EPA Office of Water and at EPA Research, the State Geologist discussed Vermont's experience with radionuclides in ground water and the need to better understand geology to find new water sources that are devoid of radium and gross alpha emitters. Much research is ahead of us. At NRCS there are ways to coordinate in regards to Adeep, soil investigations, agricultural waste pond liner design, stream geomorphology, and the geologic component of NRCS dam safety rehabilitations.

The National Research Council just released a report "A Watershed Management for Potable Water Supply" which assesses the science of New York City's strategy for managing watersheds in the Catskills to avoid costly filtration. The National Science Foundation is providing funds for State Geologists to mentor undergraduate students in geologic field mapping. Vermont received funds in 1999. Other avenues of educational cooperation were discussed.

An interesting note is that two of the five or so geological associations that are sponsoring fellows in Congress are in Vermont congressional offices. Melody Brown

Burkins from the Geological Society of America is in Senator Leahy's Office and Dave Hunter from the American Geophysical Union is with Senator Jeffords. We discussed the Statemap program and the coming landslide initiative. Apparently, fellows are helping to organize a Congressional Natural Hazards Caucus. An invitation has gone out from Senators Ted Stevens and John Edwards for colleagues to become charter members.

#### State Geologists Annual Meeting, St. Louis, MO- June 2000

Federal cooperators presented status reports and opportunities for cooperation and collaboration. The USGS continues to pursue a new landslide initiative in cooperation with the State Geologists. Vermont is on the State Geologist's hazard committee which is helping to develop the landslide proposal that will go to Congress. FEMA will have a national release in September of earthquake loss predictions in terms of dollars. Average annual loss ratio and average annual loss per capita brings the Eastern United States into focus. It is hoped that the national release will be coordinated with Emergency Management Agencies and the State Geologists. USEPA updated the State Geologists on the radon, radionuclide, and arsenic rules that are out to public review. The Kansas State Geologist, in the thick of the debate over the teaching of evolution, presented resolutions from the American Geological Institute and other science organizations on the subject.

#### Radionuclides in Groundwater

Jonathan Kim attended the New England Interstate Water Pollution Control Commission annual meeting in Lowell, MA. He presented the "Geological Context for Elevated Radionuclide Levels in Groundwater: St. George, Vermont" which resulted from the cooperation between the Vermont Survey and the State's Water Supply Division.

Per the request of the Vermont Dept. of Health, the Vermont Survey put together a GIS-based geologic report to provide a geologic context for the high gross alpha levels that have been measured from private bedrock water wells in the Town of Milton.

The State Geologist and Jon Kim met with the town health officers of Milton and Colchester while searching for variation in the mineralogy of the dolomite in the Clarendon Springs Formation. The trip was to better understand correlations between the source of the radioactivity in the rocks and high readings in drinking water from wells. The health officers and the Division toured the areas where houses have registered higher readings. Samples of mineral anomalies in the formation were also taken. The hope is to later use a gamma ray spectrometer in the area of concern to search for higher readings.

On August 3, the Division met with Melody Brown Burkins, D.C. environmental staff for Senator Leahy and Bob Paquin in the Montpelier office. The status of State efforts

to respond to the radionuclide problem were discussed. We focused on the need for a map to identify areas where radionuclides are more likely to be found. Also, maps will help if community ground water systems make more sense in certain situations when nearby aquifers are devoid of radionuclides.

#### Vermont/Quebec Regional Correlations

From August 14-17 the Vermont Geological Survey and the Geological Survey of Canada co-sponsored a four day field trip to Quebec and northern Vermont to examine correlative bedrock zones. This trip gave Quebec geologists a chance to scientifically evaluate recent work done on the new Vermont State Bedrock Map and to exchange ideas with the Vermont geologists. Attending the trip were Jon Kim and Marjorie Gale of the Vermont Geological Survey, Barry Doolan of the University of Vermont, and Jo Laird, Wally Bothner, and Peter Thompson of the University of New Hampshire. The Quebec contingent consisted of Alain Tremblay, Sebastien Castonguay, and Jean Bedard of the Geological Survey of Canada. The State Geologist joined the group in Vermont.

Laurence R. Becker, State Geologist  
Vermont Geological Survey

### VGS Calendar

Sept. 23:	Fall Field Trip led by Stephen Wright Business meeting, election of officers and dinner at Café Banditos in Jeffersonville to follow field trip
Oct. 6 – 8	NEIGC, Orono, ME
Oct. 8-14:	Earth Science Week
Oct. 9&10:	Perkins Museum Open House
Oct. 12:	Geologists-in-the-Park
Dec. 28:	Deadline for articles and news items for Winter GMG
Jan. 15:	Publish winter Green Mountain Geologist (GMG)
Mar. 12-14:	NE Geological Society of America, Burlington, Vermont
March 28:	Deadline for student abstracts, Deadline for submission of articles for Spring 2001 GMG

### ANNOUNCEMENTS

The cost of the 1997 NEIGC guidebook has risen to \$22.00 plus \$3.00 shipping. Please make checks payable to "Castleton State College – 1997 NEIGC"

The 1961 Centennial Geologic Map of Vermont is now available on CD-ROM as jpg files. Plot files are included. The CD is available for \$10.00 through the Vermont Geological Survey, 103 South Main St., Laundry Building, Waterbury, VT 05671 or call 802-241-3608.

**New Web Site:** The Burlington Gem and Mineral Club is now on the web! The address is: <http://www.burlingtongemandmineralclub.org/>

### THANK YOU!

The Society gratefully acknowledges the generous contributions to the Student Research Grant funds received from the following members:

Peter and Thelma Thompson  
Jeff Hoffer  
Jeanne C. Detenbeck  
Sharon Strassner  
G. Scot Applegate  
Arthur W. Gilbert, Jr.  
A. P. Nason  
Barbara L. Hennig  
Lawrence W. Gatto  
J. Gregory & Nancy W. McHone  
Shannon Foster  
Roger & Terry Thompson  
Craig Heindel  
Jack Jemsek

Also, thanks to all those people who volunteered for the society this year as officers, field trip leaders, judges, Earth Science Week volunteers, and activity organizers.

## EARTH SCIENCE WEEK-OCT. 8-14, 2000

## POSTER CONTEST

In celebration of Earth Science Week, the VERMONT GEOLOGICAL SOCIETY and PERKINS GEOLOGY MUSEUM are sponsoring a poster contest for Vermont students in grades K-2, 3-5, 6-8, & 9-12. There will be a \$30 cash prize for each grade group.

Due Date: Posters should be RECEIVED by 5:00 pm Friday, October 13, 2000. An Awards Ceremony will be held on Tuesday, October 24, 2000 at 5:00 pm at the Perkins Museum (Colchester Ave. in Burlington). For more information contact the Perkins Museum at 656-8694 or Christine Massey at 656-1344.

## OPEN HOUSE FOR TEACHERS at the PERKINS MUSEUM

Monday and Tuesday, October 9 & 10, 2000, 2-5pm

UVM Burlington Campus

Teachers are invited to visit with Museum staff about the Earth Science exhibits in the Perkins Museum between 2:00-5:00pm.

Call the Perkins Museum at (802) 656-8694 for details and parking information. The Perkins Museum is housed in the Geology Department of the University of Vermont and is free and open to the public.

## GEOLOGIST-IN-THE-PARKS

The Vermont Geological Survey, Vermont Geological Society and the Department of Forest and Parks are working together to schedule school group visits to several parks throughout Vermont on October 10 & 12. We have 450 children scheduled to visit and hike with our volunteers.

Volunteers and parks are listed below: Larry Becker, Hubbard Park in Montpelier; Helen Mango, Emerald Lake State Park; Winslow Ladue, Larry Becker and Marjorie Gale, Mt Philo State Park; Laura Mallard and Craig Heindel, Button Bay State Park; John Warren, Roger Haydock, Greg Walsh, Bob Anderson and students, and Jon Kim, Mt. Ascutney State Park; Jon Kim, Rob Farley and Kent Koptiuch, Little River State Park, and Peter Gale, Groton State Forest. Demand is high for this activity and we will host it for two days to accommodate all requests.

For more information on Earth Science Week events in Vermont go to:  
<http://www.anr.state.vt.us/geology/vgshmpg.htm>

## VGS TREASURER'S REPORT

September 4, 2000

Dear President and Board:

The financial condition of the Society remains strong. Please see the attached Income Statement for the period January 1, 2000 through August 31, 2000.

The checking account balance is \$3,048.20 as of August 31, 2000.

All bills received by me have been paid and are reflected in the above balance.

I welcome feedback and suggestions from the Board and membership.

Sincerely,

Kristen L. Underwood

Income and Expenses  
1/1/00 through 8/31/00

## INCOME

Total Dues	\$1,489.00
Dues-Family	\$140.00
Dues-Institution	\$15.00
Dues-Member	\$1,310.00
Dues-Student	\$24.00
Interest	\$16.86
Student Research Grant Contributions	<u>\$514.00</u>
<b>TOTAL INCOME</b>	<b>\$2,019.86</b>

## EXPENSES

US Post Office (stamps, GMG Distribution)	\$159.72
Minuteman Press (GMG Publishing)	\$374.95
Student Research Grant Awards (VGS Spring Mtng)	<u>\$155.00</u>
<b>TOTAL EXPENSES</b>	<b>\$689.67</b>

<b>TOTAL INCOME - EXPENSES</b>	<b><u>\$1,330.19</u></b>
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ABSENTEE BALLOT 2000

Vermont Geological Society

Please enter your name and address here:

Officers:

President Shelley Snyder \_\_\_\_\_

\_\_\_\_\_

Vice-President Ray Coish \_\_\_\_\_

\_\_\_\_\_

Secretary Jeff Hoffer \_\_\_\_\_

\_\_\_\_\_

Treasurer Kristen Underwood \_\_\_\_\_

\_\_\_\_\_

Board of Directors (Select 2)

Kent Koptiuch \_\_\_\_\_

Kristen Underwood \_\_\_\_\_

\_\_\_\_\_

If you will not be attending the VGS 2000 Annual Meeting, please complete this ballot and return it no later than Sept. 21, 2000 to:

Jeff Hoffer, Secretary, Vermont Geological Society  
Dept. of Geology, Perkins Building  
University of Vermont  
Burlington, VT 05405