Divers solve old mysteries, find new ones in Cove

On June 5, volunteer scuba divers with the Great Lakes Shipwreck Preservation Society spent the day diving in Sugarloaf Cove, providing the first-ever survey of the cove and its potential underwater history. This was a great opportunity for SICA to learn more about its own history and the resources just past our shoreline. The survey was supported in part by a grant from Project AWARE.

For years there had been rumors of underwater treasures at the Cove. Early divers reported copper pots, the stern of a tugboat, a wealth of old hand-forged chains, even an old anchor. Given its long history of industrial use, the Cove could also have been hiding hazardous waste or dangerous metal pieces. This survey was an important first step to understanding what was down there and how SICA could help manage it.

Sugarloaf Cove is a dynamic aquatic environment, with large waves constantly remodeling the lake bottom and burying or moving artifacts under fields of boulders and plains of black sand. Despite the fact that the artifacts underwater belong to the State of Minnesota, treasure hunters could have illegally removed historically significant items. So there was no guarantee that if a tugboat stern or anchor had been there once before, it would still be on the surface today.

In spite of these obstacles, the GLSPS divers were able to explain—perhaps—some of the rumors. The “tugboat stern” was found, and identified tentatively as the tailgate of a pickup truck. “Copper pots” might have been in fact weather-beaten sheet metal. And an “anchor” could have been one of the rings on the shore that anchored the boom chain, not a boat’s anchor.

But for each of the potential answers the divers found, another mystery emerged. How did a logging chain bury itself into its own circular pothole? Was that long beam part of tugboat or, as it appears, a highway guardrail dumped by vandals. And speaking of vandals, who dumped a Minnesota DNR sign into the Cove, and why?

This fascinating day, from the pre-dive briefing to the underwater discoveries themselves, was recorded on digital video by local freelance videographer Jay Cole. All three local Duluth television news programs ran follow-up stories using Jay’s video, which also included historical footage of Consolidated Paper in action at the site.

SICA sends hearty thanks out to Randy Beebe and the divers of the Great Lake Shipwreck Preservation Society, and to Project AWARE for their generous funding of the survey.

Want to explore Sugarloaf Cove underwater yourself?

Divers and snorkelers are welcome anytime at the Cove. With prior arrangement, we’ll open the gate to get your vehicle and equipment closer to the water.

All artifacts should remain underwater.
GOOGLING THE SHORE


Most of you know what I mean. I use the simple and elegant internet search engine Google.com to dig up information from the vast resources of the World Wide Web. Generally, whether it's building instructions for old Lego sets or distant relatives overseas, I get great results right away.

But how does Google work for the North Shore? Surprisingly poorly. And what we get, instead of great results right away, is a lesson in geography and humility.

As it turns out, there are lots of other "North Shores" in the United States, not to mention the world. Here is just a sampling from plugging those two magic words into Google:

The North Shore of Massachusetts, so called because it runs north from Boston out towards the New Hampshire border. This is home to the North Shore Spirit, a minor league baseball team and, to the shock of sea kayakers on the Lake Superior Water Trail, home to the group North Shore Paddlers.

The North Shore of Long Island. I can actually trace some of my ancestry to this other North Shore, which is on the north side of the island.

The North Shore of both Milwaukee and Chicago, prime real estate running north from both towns along the Lake Michigan shoreline.

And, premiering this year on Fox, the new television series "North Shore," focused not on the mom and pop pie shops of Minnesota but the highrolling hijinks of Oahu's northern coast.

All this tells us something about geography and our own human values. In each case, the "North" part of North Shore is a reference back to some main center, like Boston, Long Island, Milwaukee or Chicago. For our North Shore, the main attraction, the thing around which our compass is set, is Lake Superior. Of course, visitors and locals alike have long argued about which way is north or east along Highway 61, but that's a topic for another essay.

But the online dominance of other North Shores also points the way to work that needs to be done. I'm not the only one who relies on Google or other search engines to find vital information. Right now you can find a pretty good assortment of North Shore lodging information online, thanks to proactive merchants and local web entrepreneurs. In the winter, there is decent information on cross-country ski trail conditions. But how do we get the latest wildflower blooming dates available? Or in-depth, peer-reviewed information about local history or geology?

With new technology comes new means for sating our curiosity. Interpreting the Lake Superior North Shore in the age of Google has some important work ahead.
North Shore Rocks:
Lessons from a North Shore Naturalist Workshop

Written with help from workshop instructor Jim Miller

Seven fortunate students of a Sugarloaf North Shore Naturalist program spent the weekend of July 10-11 at Sugarloaf Cove with Jim Miller of the Minnesota Geological Survey asking—and learning—“What’s This Rock?” Chances are, if you’re on the North Shore, the answer will fit into one of four basic igneous rock types. Jim used the following diagram to explain:

<table>
<thead>
<tr>
<th>INTRUSIVE ENVIRONMENT</th>
<th>MAFIC COMPOSITION</th>
<th>FELSCIC COMPOSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gabbro</td>
<td>Granite</td>
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<table>
<thead>
<tr>
<th>EXTRUSIVE ENVIRONMENT</th>
<th>MAFIC COMPOSITION</th>
<th>FELSCIC COMPOSITION</th>
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<tbody>
<tr>
<td></td>
<td>Basalt</td>
<td>Rhyolite</td>
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</table>

This is a lot of technical information, but taken together it really does explain a huge amount of North Shore geology. More than 90% of the rocks on a typical North Shore beach fit into this grid. Follow along as we piece it together.

You may remember from eighth grade geology that there are three basic types of rocks:

**IGNEOUS** (formed from the cooling of molten magma)

**SEDIMENTARY** (formed from the deposition and cementation of particles such as sand)

**METAMORPHIC** (formed when an existing rock experiences severe heat and/or pressure)

Most of the rocks on a North Shore beach are igneous. The dominant geologic event on the North Shore was the Midcontinent Rift, in which the ancient continent began to split apart and massive amounts of magma invaded the ruptured crust 1.1 billion years ago.

But not all igneous rocks are alike. Two of the main factors that establish an igneous rock are the composition of the magma and the environment in which the magma cooled.

First, the composition. Magma, in general, ranges along a scale from mafic to felsic, with higher temperature mafic magma yielding darker and denser rocks and lower temperature felsic magma yielding rocks lighter in both color and density. Mafic magma is generated by partially melting the earth’s mantle and felsic magma is created by partially melting rocks in the earth’s crust.

Second, the environment. Magma can sometimes be intruded below the surface, where it cools slowly and forms large crystals. Or it can erupt at the surface, it will cool right at the surface, where it cools quickly and forms only small crystals. Magma that reaches the surface is known as lava.

The most common rock type on the North Shore is basalt—an extrusive mafic rock. Basalt is formed from mafic magma erupting to the surface. If that same magma were to cool under the earth, it would be gabbro, also known as bluestone. Approximately two-thirds of the bedrock along the North Shore is made up of basalt or very close relatives.

These extrusive mafic rocks occur in hundreds of individual lava flows that are each, on average, about 25 meters thick and were stacked to a total thickness of about 10 kilometers. Tilting and erosion over the past 1 billion years has now exposed this volcanic pile along the North Shore. The basalt flows at Sugarloaf Cove are near the top of the pile.

Some of the same mafic magma that erupted to make these basalt flows never made it to the surface, but instead intruded deeper in the volcanic pile. There it cooled slowly to crystallize coarse-grained gabbro. Tilting and erosion of the volcanic pile has now exposed those deeper gabbro intrusions. Today, we find gabbro concentrated in an arc running from Duluth northward to near the Canadian border and then eastward back to the shore near Grand Portage.

We call this concentration the Duluth Complex. Gabbro is more resistant to erosion than basalt so it commonly holds up higher ground, like Silver Cliff with its highway tunnel.

The other type of volcanic rock, the second most common rock type on the North Shore, is rhyolite...an extrusive felsic rock. Because felsic magmas are much gooier than mafic magmas, rhyolite lava flows tend to be much thicker (50-200 m thick) than basaltic lavas. Some famous rhyolite lava flows exposed along the North Shore include Palisade Head, Shovel Point, and the red rock cliffs exposed northeast of Grand Marais.

Like gabbro is to basalt, granite is to rhyolite. Felsic magma that was intruded deep into the lava pile and cooled slowly formed coarse-grained granite. Granite, like gabbro, holds up high ground. In fact, the highest point in Minnesota, Eagle Mountain, is held up by Midcontinent Rift-made granite. The radar station at Finland is also built on a hill made of granite. Rather than cooling slowly and forming the well-known white-black-pink speckles of granite, felsic magma cools quickly and formed beautiful red rhyolite.

For granite, that intrusive felsic rock, you have to go inland, to the Boundary Waters and the Canadian Shield. Granite shows up on the North Shore, but really only in the cobblestones of the beaches, brought down from the north by the glaciers.

This simple chart is really too simple. There are all sorts of exceptions to the rule, like diabase and anorthosite. But it's a great way to start your exploration of North Shore volcanic igneous geology. Come to Sugarloaf next summer for another weekend with Jim Miller and find out “What’s This Rock?”

September 2004
Sugarloaf Cove Restoration continues through summer, thanks to help from all corners

Thanks to a terrific range of school kids, volunteers, interns and benefactors, it has been a great summer for habitat restoration at Sugarloaf Cove. Over one hundred native conifers were planted and protected, many native wildflowers were returned to the site, and systems are in place for more good work in the future.

A partnership with University of Minnesota Extension brought students from eight local schools to the Cove this spring to plant cedar, spruce and pine, as well as to thin out our crowded red pine plantations. Here, a student from Cloquet High School prepares to plant a white spruce along the old access road.

Christina Bellert (back right), a biology student at the University of Minnesota Duluth, spent the summer at the Cove working on native plant restoration. Here, in her own adopted red pine plantation, she shows off a white pine she planted after thinning out the re pines.

Help Wanted?

Are you a North Shore landowner? Do you have a forest in need of help? Maybe your birch are all dying off. Maybe you’re surrounded by mowed lawn. Maybe the woods around your cabin just don’t feel “right.” Sugarloaf Interpretive Center Association has just received a very generous grant to help North Shore landowners restore native forests on their property. Let Andrew Slade in the SICA office know if you’re interested, sugarloaf@lakenet.com or 218-740-2755.

Thanks to the following generous benefactors for supporting our spring planting work with nearly $3000 in donations.

Elmer Andersen
Jan and Art Anderson
Nancy and Evan Anderson
Anonymous
Arrowhead Electric
Allan Apter and Brenda Ion
Greg and Anne Bartel
Jim and Linda Belote
Tom and Christina Blum
Edward and Kathryn Bolstad
Shirley Bosch
Mary Burns
Sondra Butler
Mollie Dean
Jenny Delfs
Elizabeth and Paul Diethelm
Mary Dragich
Adrienne Falcon
Heidi Fischer
Carl and Carol Frisch
Dick and Nancy Gongoll
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Maurice and Barbara Heyer
Wayne and Nora Hornicek
Amanda Hudson
Terry and Julie Hukriede
Don and Tina Ingram
Eldon Kaul
Loni Kenze
B.J. and John Kohlstedt
Sandra Kula
Jean Ljungkull
Frani Lowe
Jeff and Jill Mikkelsen
Jim and Franchelle Mullin
Bob Nesheim
Dick Ojakangas
Howard and Bettye Olson
Warren Olson
David and Andrea Peterson
Andrew Slade
Richard Slade
Mary Stephens
Glen Swanson
Loren Swanson
Dode Wonson
Terri and Alan Wright

A great group of kids from around Minnesota spent a week in July at Sugarloaf Cove. They thinned out alder stands, planted native trees, and significantly improved our volunteer campsite, with two comfy tent pads and an oversized picnic table.

Crew members: Francois, St. Paul; Eric, Long Prairie; Sarah, Grand Rapids; Marquita, Brooklyn Park; Abraham, St. Paul; Michael, Aitkin.

Crew leaders: Mike Kraft, Fargo, ND; Sarah Middaugh-Mote, Holdingford.
Annual meeting brings together new energy and old friends

Nearly one hundred people attended SICA's annual fish boil, enjoying a terrific feast of Lake Superior lake trout, wild rice brats from Beaver Bay, and cake made with Sugarloaf's old rhubarb patch, plus great company from around the region.

At the annual meeting, Association members got an update on new programs and current restoration work. Members elected two new board members, Cathy Johnson of Schroeder and Jane Busch of Champlin. Also, all current board members finishing their terms ran for re-election, some for another three-year term and some for two years.

Local musicians Diane Brostrom (vocals) and Bruce Neraze (piano) charmed the crowd with standards from the 40's, 50's and 60's, the same era that Sugarloaf Cove operated for log rafting. One could just imagine the same tunes on the radio in the cook shack or the crane cabin. Board members Ethan Perry and John Green led nature hikes.

The SICA board for 2004-2005:
Margit Berg, Schroeder & Minneapolis
Jane Busch, Champlin
Dave Carlson, Little Marais
Christina Gallup, Duluth
John Green, Duluth
Marcy Harris, Eden Prairie
Cathy Johnson, Schroeder
Mike Kennedy, Larshmont
Barb Ljukkonen, Moundsville
Pat Maus, Duluth
Jim Mullin, Minneapolis
Ethan Perry, Duluth
Andrea Peterson, Grand Marais
Steve Pihlaja, Minneapolis
Dick Slade, Minneapolis

Wish list

TV & VCR: To show historical films of site to visitors
Shovels, other garden tools: For restoration work
Gas-powered line trimmer: For restoration work

WELCOME, NEW MEMBERS!

Thanks to site manager Pam McDougall's friendly invitations to join, SICA has a lot of new members this summer.

Tamera & Jay Andersen, Grand Marais
Gary Colvard, Minneapolis
Al & Susan Faucci, Andover
Terry & Julie Hukriede, Champlin
Lee Menns, White Bear Lake
Lawrence W. Jones, Knife River
Anne Nephew, Duluth
Jerry and Mary Ann Jogodzinski, Minneapolis
Eleanor Annis, Lutsen
Stephen & Janice Enockson, Willmar
J.S. & Priscilla Braun, Deephaven
Tom and Dory Spence, Schroeder
Paul & M Elizabeth Diethelm, Mahtomedi
Tom & Sheila Jorgenson, Minneapolis
Judy Hong, Red Wing
Susan Fleming, Minnetonka
Jane Wettemann, White Bear Lake
Jane Ljungkull, Lutsen
Paul & Joanne Stoh, Dundas
Russ & Pat Hanson, Rochester
Lyle & Joan Gerard, Lutsen
Diana Carey & Charles Huskins, Rochester
Ariel Smythe, St Paul
John & Yvette Oldendorf, Lake Elmo
Jeanne Forbes, Bloomington
Nancy Potter, Edina
Nancy & Gerald Johnson, Wayzata
H. Thomas Blum, Minneapolis
Randy Strobel, St Paul
John Pondzinski, Maple Grove
Lester & Diane Dunn, Lanesboro
Anne & Jim Galazen, Rochester
Mary Keating, St Louis Park
Marlyn & Marilyn Johnson, Roseville
Mark Hempel, Edina
Cary & Vanessa Johnson, Minneapolis
Jeff & Kris Peterson, Spirit Lake
Theresa & Daryl Blakeborough, Shorewood
Tom Barron, Minneapolis
Steve Colman, Duluth
Carol Sandgren, Chisago City
Barbara Livdahl, Spring Lake Park
Lynn Anderson & Jackson Buxton, St Paul
Pat Michelelli, Minneapolis
Paul & Carolyn Hesterberg, St Paul
Karen Evens, Grand Marais
Karl Smit & Pam McDougall, Lutsen
Beverly & Ward Montgomery, Minnetonka
Barbara A Hope, Minnetonka
Jeanne King, Minneapolis
Pat Craapo, Jordan
Gregory & Phyllis Miron, Apple Valley
Gary Olson & Kate O'Connell, St Paul
Mary Jo Synnott, Cottage Grove
Deborah & Robert McGregor, Chatham
Kar & Gerri Kropp, St Paul
James Edberg, Minneapolis
Mark & Janet Gray, Waseca
Robert Dronen, Bloomington
Kathy & Bill Vanderwall, St Paul
Christina & David Bellert, Duluth
Marvin Fabianske, White Bear Lake
Butch & Rae Piekphi, Lutsen
SICA ACTIVITIES

OCTOBER 9

Second Saturday at Sugarloaf
Snow Studies

OCTOBER 13, 7:00 PM

The North Shore: New views on an old land
A talk by SICA executive director Andrew Slade at Hartley Nature Center, Duluth

OCTOBER 29, 6:30 PM

Creatures of the Night Halloween Program
Night Hike and Storytelling

NOVEMBER 13

Second Saturday at Sugarloaf
Deer Opener Safe Hike

NOVEMBER 20

Sugarloaf Board meeting, all welcome
Duluth

DECEMBER 11

Second Saturday at Sugarloaf
Holiday Open House

All Second Saturday programs start at 10 am at the Sugarloaf Cove Interpretive Center.

The Sugarloaf Interpreter is published quarterly by Sugarloaf Interpretive Center Association. Subscription is a benefit of membership. Single copies available on request. Submissions welcome. Send to sugarloaf@lakenet.com. Designer: Wendy Strombeck.

Annual memberships are tax deductible. Please make checks payable to Sugarloaf Interpretive Center Association, and mail to the SICA office at 1040 Minnesota Avenue, Duluth, MN 55802. SICA is an educational, non-profit 501(c)(3) Minnesota Corporation.

Please enroll me as a member of the Sugarloaf Interpretive Center Association in the category I have indicated.

NAME

ADDRESS

CITY

STATE ZIP

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E-MAIL

MEMBERSHIP CATEGORIES

☐ $  25 Contributing
☐ $  50 Supporting
☐ $ 100 Sustaining
☐ $ 500 Patron
☐ $ 1000 Benefactor
☐ $ Other

☐ New ☐ Renew

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Duluth, MN 55802
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THANK YOU!