

# Interpreter

A Publication of The Sugarloaf Interpretive Center Association  
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## Divers solve old mysteries, find new ones in Cove

Photos courtesy Randy Beebe.



Steve Daniels, president of the Great Lakes Shipwreck Preservation Society, on survey day at the 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.



Volunteer diver examines metal object in Sugarloaf Cove. Was this the “copper pot” rumored to be in the Cove?



A 10-foot chain in the Cove ends with this metal piece...what was it used for?

SICA’s VISION is a healthy Minnesota North Shore of Lake Superior where an informed citizenry takes personal and group responsibility to ensure that natural and ecological systems and human economic and social systems coexist in a fashion sustainable into the future.

### 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.

# Cove

## **GOOGLING THE SHORE**

*Okay, I admit it. I Google. Often. Sometimes, just for fun, I even Google myself.*

*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:

	MAFIC COMPOSITION	FELSIC COMPOSITION
INTRUSIVE ENVIRONMENT	Gabbro	Granite
EXTRUSIVE ENVIRONMENT	Basalt	Rhyolite

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	<i>(formed from the cooling of molten magma)</i>
SEDIMENTARY	<i>(formed from the deposition and cementation of particles such as sand)</i>
METAMORPHIC	<i>(formed when an existing rock experiences severe heat and/or pressure)</i>

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 if erupted 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?”

nature notes

# 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](mailto:sugarloaf@lakenet.com) or 218-740-2755.*

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

<i>Elmer Andersen</i>	<i>Wayne and Nora Hornicek</i>
<i>Jan and Art Anderson</i>	<i>Amanda Hudson</i>
<i>Nancy and Evan Anderson</i>	<i>Terry and Julie Hukriede</i>
<i>Anonymous</i>	<i>Don and Tina Ingram</i>
<i>Arrowhead Electric</i>	<i>Eldon Kaul</i>
<i>Allan Apter and Brenda Ion</i>	<i>Loni Kerze</i>
<i>Greg and Anne Bartel</i>	<i>B.J. and John Kohlstedt</i>
<i>Jim and Linda Belote</i>	<i>Sandra Kula</i>
<i>Tom and Christina Blum</i>	<i>Jean Ljungkull</i>
<i>Edward and Kathryn Bolstad</i>	<i>Frani Lowe</i>
<i>Shirley Bosch</i>	<i>Jeff and Jill Mikkelson</i>
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<i>Carl and Carol Fritsch</i>	<i>Mary Stephens</i>
<i>Dick and Nancy Gongoll</i>	<i>Glen Swanson</i>
<i>Ellen Harris</i>	<i>Loren Swanson</i>
<i>Lisa Hemp</i>	<i>Dode Wonson</i>
<i>Maurice and Barbara Heyer</i>	<i>Terri and Alan Wright</i>



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 fishboil, 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.



*Pam McDougall keeps the lemonade flowing.*

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 Nerase (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.



*Mike Kennedy, fish boil grillmeister.*

## 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, Larsmont  
 Barb Liukkonen, Moundsview  
 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 Fanucci, Andover  
 Terry & Julie Hukriede, Champlin  
 Lee Menssen, 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  
 Jiane Wetternach, Wharton Silver Bay  
 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 Micheletti, 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 Cragoe, Jordan  
 Gregory & Phyllis Miron, Apple Valley  
 Gary Olson & Kate O'Connell, St Paul  
 Mary Jo Synnot, Cottage Grove  
 Deborah & Robert McGregor, Chatham  
 Karl & Gerri Kropp, St Paul  
 James Edberg, Minneapolis  
 Mark & Janet Gray, Waseca  
 Robert Dronen, Bloomington  
 Kathy & Bill Vanderwall, St Paul  
 Christina & David Bellert, Duluth  
 Marvin Fabyanske, White Bear Lake  
 Butch & Rae Piepho, Lutsen

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## SICA ACTIVITIES

OCTOBER 9

**Second Saturday at Sugarloaf**  
Snow Studies

OCTOBER 13, 7:00 P M

**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 P M

**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.*

Address Correction Requested

*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.*

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**membership**  
APPLICATION

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

NAME

ADDRESS

CITY

STATE

ZIP

PHONE

E-MAIL

MEMBERSHIP  
CATEGORIES

- \$ 25 Contributing  
 \$ 50 Supporting  
 \$ 100 Sustaining  
 \$ 500 Patron  
 \$ 1000 Benefactor  
 \$ \_\_\_\_\_ Other

New  Renew

Sugarloaf Interpretive Center Assoc  
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THANK YOU!