Bulletin

of the Eastern Section of the National Association of Geoscience Teachers

Volume 75, Issue 3: Fall 2025

Geology of the Michipicoten Greenstone Belt – by kayak!

Foliated boulder conglomerates at Doré Bay

by Joanna Hodge
Fleming College

The sky in front of me darkened ominously as I drove towards Sault Ste. Marie and lightning split the clouds. The temperature dropped precipitously and the first giant rain drops hit the windscreen, hard, with a sound like gravel on a tin roof. Wind bent the trees and whipped up white caps on the North Channel and the islands disappeared in the darkness. I hadn't seen rain in what felt like months, southern Ontario having been gripped by drought, but this was an unwelcome sight. I was on my way to Naturally Superior Adventures near Wawa, Ontario for a week of geology interpretation while kayaking and camping on Lake Superior's north shore.

Lake Superior's storms are legendary – November storms are not called "witches" for nothing – but this was August, and on my previous trip at the same time of year in 2024 we had been blessed with warm, calm weather. Superior though is unpredictable, and unlike southern Ontario this part of the province had been wet and stormy for much of the summer. Any plans for paddling and camping come with the caveat that the lake ultimately makes all the decisions. Sunday morning dawned grey and humid, with short sharp thunderstorms punctuating the quiet. As I made my way north, I caught my

Sunrise at Minnekona

first glimpse of the lake looking equally grey and ominous. A portent of things to come? I hoped not!

Lake Superior occupies a basin in some of the oldest rocks on Earth, in the Canadian Shield. The lake itself though is geologically very young, having formed at the end of the Pleistocene ice age around 10,000 years ago as glaciers were melting and retreating from the North American continent. The story of its formation, however, starts some 2.7 billion years ago as the Canadian Shield was forming, and it's a story that is best told by reading the rocks from the water, by kayak.

Lower Falls at Dog River, Nimoosh Provincial Park

I arrived at Rock Island Lodge at the mouth of the Michipicoten River early on the afternoon of August 10th to meet the guides and participants on the 5-day Denison Falls kayaking excursion. I had done the same trip last year – a spur-of-the-moment decision with about two days' notice, so I was venturing into the unknown. This year I was more organized with some background information under my belt and some knowledge of the rocks we would see on the trip. This year's event was promoted as a geology venture and I was officially attending as the host geologist. We would spend five days paddling to the Dog River and back, a distance of 54 kilometres, telling the story of Superior's protracted past.

Monday morning was again dismal, having rained all night with little sign of letting up in the morning. The wind was up, it was pouring with rain, and the current at the mouth of the Michipicoten River clashed fiercely with the waves coming in off the lake. The prospect of capsizing as we paddled out into the lake and washing up on the pillow basalts at the river mouth was both unappealing and a very real possibility. Rock Island is a tombolo – a chunk of rock connected to the mainland by a sandspit. Like the surrounding area Rock Island is composed of pillow basalt that is compositionally similar to modern ocean island arc tholeiites (Sylvester, Attoh, & Schulz, 1987) and which has been strongly deformed and metamorphosed to greenschist facies. In places along the shoreline you can see relict pillows, with differentially weathered and altered chill margins. We had planned to view them on Monday morning to introduce the geology of the area but the driving rain, almost zero visibility, and the weather-induced slowness with which we packed our kayaks in preparation for departure precluded such a visit. We certainly didn't want to get up close and personal with the rocks on the way out of the harbour!

The Michipicoten greenstone belt, in which we were situated, and through which we would be travelling for the next five days, is a 2.7-billion-year-old volcanic arc with both continental and ocean island arc characteristics. Sylvester et al, (1987) consider it to be analogous to the modern Taupo-Tonga-Kermadec arc, which ranges from the mature Taupo Volcanic Zone continental arc in New Zealand to the more juvenile Tonga-Kermadec ocean island arc to the north. Geologically the belt is characterised by bimodal volcanism and arc-related sedimentary rocks punctuated by younger (1.1 by) rift rocks, all modified by recent glaciation.

Minnekona Beach

Over the next five days we would see evidence of all the geological processes that that eventually led to the formation and modification of the Canadian Shield – convergence, subduction, volcanism, metamorphism, rifting, and glacial modification – and I would get to tell the story of over half of Earth's history in 54 water kilometres.

We left the Michipicoten River mouth late Monday morning. First task of the day – navigate the maelstrom of surging currents and round the headland before setting off across the harbour, a 4 km paddle to Perkwakwia Point. Nothing went to plan. It quickly became evident that the wind and waves were too high to navigate the crossing so we abandoned our attempt and instead headed to Government Dock Beach to reconvene and come up with a new plan. It was decided that we would shuttle from Rock Island to Whitesand Beach, avoiding the bay altogether, and head west from there. We would miss the basalts at Perk Point but would almost immediately be paddling amongst the islands of Doré Bay, which are composed of highly deformed and glacially modified boulder conglomerates.

Volcanic arcs shed voluminous quantities of sediment into their forearc and back arc basins, which then become entrained in the belt through ongoing convergence. The Doré Bay rocks are polymictic boulder conglomerates with felsic granitic and volcaniclastic clasts in a greywacke matrix (Sage, 1994) deposited either in submarine

Mafic dike cross-cutting granitoid near McCoy's Harbour

fans or on the flanks of the active arc volcanoes (Ojakangas, 1983). The conglomerates are moderately to strongly deformed and exhibit a steeply dipping foliation with stretched and elongated clasts. The islands are dramatically sculpted by recent glacial processes with deep grooves and glacial striations on the surface showing the generally southwest direction of glacial advance during the Wisconsin glacial maxima. We paddled slowly around the islands admiring the conglomerate, and up to the mouth of the Doré River, which was thundering into the bay after the previous evening's heavy ran, then rounded the point and continued west to out campsite for the evening at Minnekona Beach.

Immediately west of Doré Bay the bedrock changes to tonalite and granodiorite, evidenced by a dramatic change in colour from grey to pink. Like the conglomerates they are moderately to strongly foliated and have been grooved and striated by glaciation. Here too we begin to see evidence of the geologic event that ultimately led to the formation of Lake Superior over a billion years later. The Superior Province of the Canadian Shield is a complex aggregation of 5 microcontinents that evolved independently before accreting to form a single cohesive province (Percival & Easton, 2007). The Wawa terrane, of which the Michipicoten greenstone belt is a part, accreted on to the southern margin of the composite Superior superterrane at 2.695 billion years during the Shebandowanian orogeny (Percival & Easton, 2007) and by the conclusion of the Minnesotan Orogeny at 2.68 billion years, which added the Minnesota Valley River Terrane, construction of the Superior Province was complete, and it remained essentially unchanged for about 1.5 billion years.

About 1.1 billion years ago the Superior Province began to split apart as mantle magma rose from a hot spot or a mantle plume (Stein, et al., 2016). The rift failed, possibly in part because of convergence of the Grenville Province onto the eastern margin of the Canadian Shield, or because seafloor spreading between Laurentia and Amazonia became fully established (Stein C. , et al., 2014), but it left behind a deep basin filled with igneous and sedimentary rocks. Glaciers eroded the softer rift rocks, scouring out the basin that filled as the Laurentide ice sheet melted and retreated to become Lake Superior.

West of Doré Bay Midcontinent Rift (MCR) rocks appear as narrow dark green to black diabase dikes crosscutting the felsic plutonic rocks. On a clear, calm day paddlers can observe the dikes beneath the water emphasizing their three dimensionality. Monday was not that day. As we made our way to the first campsite of the trip at Minnekona Beach we were mired in fog and could barely see the shoreline, although we were almost close enough to touch it. We would be travelling back this way on Thursday – the weather forecast was currently favourable – so I hoped to be able to talk more about the rifting in a more leisurely environment and not while we were paddling hard to set up camp before it got too late. We made it to Minnekona around 6 pm and set up camp in the fog. The Tuesday forecast was not conducive to paddling – gusts up to 40 km an hour – so the decision was made to stay at the beach on Tuesday (such hardship) and push on to Dog River on Wednesday morning.

Minnekona is a narrow beach situated in the middle of the granite part of the granite-greenstone belt and so we were surrounded by glacially carved outcrops and islands with a very "Group of Seven" vibe. The coastal granitoids range in composition from tonalite to granite, typical of calc-alkaline batholiths that form above subduction zones and

Studying the pebbles

vary texturally from massive to gneissose. At the eastern end of the beach the rocks exhibit a strong, almost vertical foliation due to the pressures exerted upon them during plate convergence. Spending a full day at Minnekona provided an excellent opportunity for a geo-hike along the beach to talk about plate tectonics, convergence, metamorphism, glaciation, weathering and succession.

The southern lake-facing sides of the outcrops are bare – vegetation stands no chance against the ferocity of Superior's weather systems – but the northern sides are covered in several species of lichen. Lichens are pioneer species and are crucial to the establishment of vegetation after environmental denudation such as glaciation. They can establish on bare rock surfaces and as they grow they release acids, which break down the rocks. When they die, they contribute organic matter to the broken-down minerals generating soil that can then be utilized as a growing medium by more complex plants. Eventually enough soil forms that trees can begin to establish and climax communities form, which out-compete the pioneer plants. Minnekona shows the whole range of primary succession, from lichen-crusted bare rock to shrubs and trees establishing in soil-filled joints on outcrops to climax communities established on the dunes, which are composed of coarse-grained sand derived from the breakdown of the granites.

The forecast for Wednesday was more favourable for paddling so we were on the water early heading for Dog River and Nimoosh Provincial Park for a hike to Denison Falls – the goal of the trip. As we paddled west the landscape again changed as the bedrock transitioned out of the plutonic suite and into metasedimentary and metavolcanic rocks. The Michipicoten greenstone belt is distinctive in the Superior province for having volumetrically significant felsic volcaniclastic rocks that include rhyolite lava flows, hyalotuffs, and pyroclastic flows. On our way to the beach at Dog River we paddled past bedded felsic tuffs crosscut by mafic dikes. The dikes here are foliated, which means they were intruded during the assembly of the terrane and are not the younger, 1.1 by Mid-Continent Rift rocks that formed the basin now occupied by Lake Superior.

On last year's trip we paddled up the Dog River (named the University River on geology maps – more about that later) and came to a gentle landing on the sandy beach just inside the river mouth. This year water levels were much higher, and tricky currents at the river mouth meant we had to land on the steeper, rocky beach on the lake side. We dragged our kayaks up the beach, unpacked our gear, and ate a quick lunch before commencing our hike to Denison Falls.

The team, safe and sound, back at Rock Island Lodge

The hike is short – just over two kilometres, but it's rugged and steep, so it took us over an hour to get to the falls. The trail winds through scrub and bush and offers only glimpses of the Dog River, which appeared to be significantly higher than in August of 2024. Older geology and topographic maps show the name of the river as University River. Local lore holds that it was named by a group of students and faculty from Denison University in Ohio who were surveying the river – perhaps studying the geology – ignoring the fact that the river was already named the Dog River by First Nations who had travelled through the area for centuries. The official name for the river was reinstated in the 1990's and when the provincial park was established it received the name "Nimoosh", which is the Ojibway word for "dog".

We popped out of the forest and onto a glacially smoothed outcrop of felsic tuff near the base of the lower falls. The plan had been to walk along the edge of the river to the rope bridge up the rock face to the upper falls but it quickly became obvious that we had to amend our plans. Rainfall had swollen the river to well beyond its normal summer level and the water level was extraordinarily high, blocking off the usual route to the base of the falls. Those of us who decided to attempt the climb to the upper falls waded around the edge of the cliff but were stopped short by the tributary between us and the rope bridge. The creek, which was ankle-deep in 2024 was at least chest-high and turbulent and sediment-laden. A misstep or a slip from the rope ladder would dump the unfortunate soul into the surging river and down the Dog, with little opportunity for rescue and the potential for some nasty collisions with rocks on the way downstream to the lake. We sensibly decided to forgo the climb for this year and ventured our way back to the trail, but not before admiring the contact between boulder conglomerate and mafic volcanics nicely demarcated by the rope ladder.

The hot and sweaty hike prompted a chilly dip in Lake Superior before dinner although August water temperatures were an appealing 18 ° C (64 ° F), a vast improvement over winter temperatures, which are just above freezing. We ended the day with smores toasted over an open fire – well-deserved after our vigorous hike – and discussed plans for the return trip. Thursday's weather was to be the best of the week, and Friday was going to be terrible, so we were planning a long push from Dog River to Doré Bay and a short but feisty paddle back to Whitesand Beach, skipping (once again) Michipicoten Harbour.

We pushed off the gravel bar around 9.30 am on Thursday morning for a 14 km paddle east. We had a gentle head wind in the morning, and crystal-clear waters through which to see wide quartz-sulfide veins and mafic dikes cutting across the lake bottom, the perfect opportunity to discuss the 3D nature of veins and intrusions. Our lunch break entailed another swim, this time at a small unnamed cobble beach littered with tumbled agates. "Hey Professor" was a common refrain as the trip participants, recognizing just how amazing the geological heritage of Lake Superior is, peppered me with questions and brought samples for identification. Ah, sweet success! Geological outreach at its most fun!

We made it to Doré Bay by mid afternoon and in much better weather to admire the conglomerates and talk more about plate convergence and metamorphic processes. We established camp and settled in for some deep philosophical conversations about life goals, happiness, and finding your passion – boxes that were all checked for me by the five days spent on this trip sharing my knowledge and enthusiasm for geoscience with folks who were willing to engage and learn while experiencing the best that Lake Superior could offer.

Friday dawned savage, with strong winds and fierce waves crashing up on the beach. Yesterday's beautiful rocky islands were today's dangerous hazards to be avoided at all costs and so we geared up and set off trepidatiously for the short but nerve-wracking paddle back to the beach. Unfortunately paddling across the bay was not on the cards so we again missed the pillow basalts of Perkwakwia point but there was much celebration when we all surfed up onto the beach safely, ready to be shuttled back to Rock Island Lodge.

The trip ended with an exchange of email addresses and the promise of shared photographs, and a new appreciation of the geology for the trip participants. For me it was an amazing opportunity to share my passion and enthusiasm for geoscience while engaging in one of my favourite activities in one of my favourite places in Canada. Lake Superior keeps calling me back and I'll be hosting the trip again next year. I can't wait!

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News And Notes From The President

by Steve Lindberg
University of Pittsburgh at Johnstown

Just for fun I asked ChatGPT, **"Please tell me about the eastern section of NAGT."**

What is the Eastern Section of NAGT ?

It's one of the regional sections of NAGT. NAGT is organized into sections covering geographical regions so that educators can more easily connect, collaborate, and share resources locally. The Eastern Section includes Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania, New York, Virginia, West Virginia, and eastern Ontario (Canada).

Who's Involved / Leadership

Membership is made up of educators at all levels — K-12 teachers, community college and university faculty, informal educators (like museums), and students.

The section has a set of elected officers each term. For 2025-2026, these include:

President & Archivist: Steve Lindberg

Vice President: Mike Baer

Secretary: Mike O'Donnell

Treasurer: Renee Aubry

Editor: Callan Bentley

Awards Chair: Amy Baer

What the Eastern Section Does

Annual Spring Conference — A major gathering each spring where members present, share materials, network, do field trips, workshop, etc.

Newsletters / Bulletins — Regular newsletter / bulletin updates keeping members informed about section events, updates, opportunities.

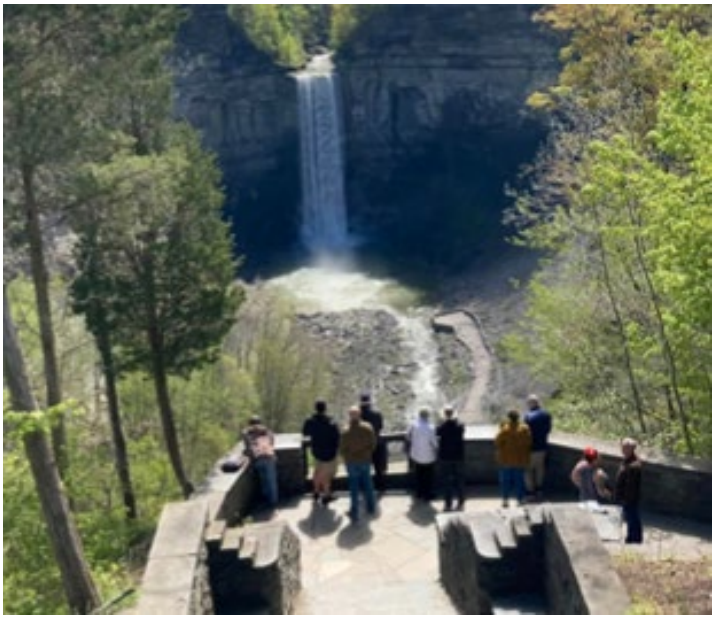
Awards & Recognition — The section participates in the NAGT Outstanding Earth Science Teacher (OEST) award process.

It also has its own internal awards (e.g. "Digman," "Moss," "Distinguished Service Award") recognizing contributions to geoscience education in the section.

Field Trips — These are a big component of meetings, giving hands-on geology experience in the region.

Scholarships/Public Support — For example, field camp scholarships for students planning to attend summer geological field camps.

Recent Highlights / StatusIn spring 2024, the Eastern Section held its meeting in Berkeley Springs, WV (~May 2-4) with ~40 attendees.



Activities included share-a-thon of teaching materials, student research presentations, field trips.

The section has seen strong response to its award programs.

According to the Annual Report for 2024, Eastern Section is now one of the two largest sections (Eastern and North Central) in terms of membership.

How can I get eastern section members more involved?

Great question — getting members more involved in the Eastern Section of NAGT (or any professional organization) is all about relevance, relationships, and recognition. Here are concrete strategies that have worked for other NAGT sections and similar organizations:

1. Make Involvement Easy & Clear; Many potential contributors want to help but don't know what's needed or how to start.

Actions: Create a "Get Involved" menu (online or in email blasts) listing 2–3 low-barrier ways to engage (e.g., "Submit a teaching idea," "Host a mini field trip," "Mentor a new member").

Personal invitations — Contacting individuals directly is way more effective than open calls. Especially if you suggest a specific role.

Offer micro-volunteering roles (e.g., 10-minute Share-a-thon talks, reviewing a few student posters).

2. Build Relationships

People stay active where they feel seen, connected, and appreciated.

Actions: Mentorship matchups — Pair newer or early-career members with veteran educators, even informally.

Host informal virtual meetups between spring conferences (e.g., "Coffee and Geotalk," 30-minute Zooms).

Create a member spotlight series in newsletters or social media to highlight active educators, students, etc.3. 3.Promote Regional Identity

Let members feel like they're part of a special, active regional community — not just a national group. Actions: Share local teaching stories and geology news (e.g., "Teaching the Marcellus Shale in PA," "Field trip to Adirondacks").

Use the section newsletter to include member-submitted classroom hacks, lesson plans, or field experiences.

Encourage a state or sub-region rep system (e.g., someone from NY, PA, NJ, etc., representing their area's concerns or ideas).

4. Offer Recognition

Many educators are overworked and under-recognized. Recognition drives engagement. Actions: Promote nomination opportunities for awards like the Outstanding Earth Science Teacher (OEST).

Publicly thank volunteers at meetings, in newsletters, and online.

Give small awards or digital badges for things like "Field Trip Host," "First-Time Presenter," etc.

5. Ask for Input — Then Use It

People engage when they feel their voice matters. Actions: Send out a 1-question poll (e.g., "What would make you more likely to attend our meeting?").

Run a survey after conferences with open-ended questions like: "What could we do to better support you?"

Actually act on the input — and tell members how their feedback shaped decisions. Bonus: Look at Your Member Base. Ask: Who's already active, and who isn't?Are K–12 teachers underrepresented?

Are early-career faculty involved?

Are rural vs. urban districts balanced?

You can target outreach or build special programming (e.g., "K–12-focused breakout sessions") based on that.

This year, members should make an effort to attend the spring 2026 in-person meeting scheduled to be held in Charlottesville, Virginia. Don't be virtual; hope to see the <u>real you</u> there!

From the (ROCK) Archives

by Steve Lindberg
University of Pittsburgh at Johnstown

For this issue of "From The Archives" I thought a bit of a change-up would be a welcomed addition to the fall issue. So from my rock archives comes this pretty nice example of an Orbicular Granite from Boogardie Station, Mount Magnet Shire, Western Australia. And since I'm late in sending in my contribution to the fall issue I'll cheat a bit & take the description directly from the online Mindat page:

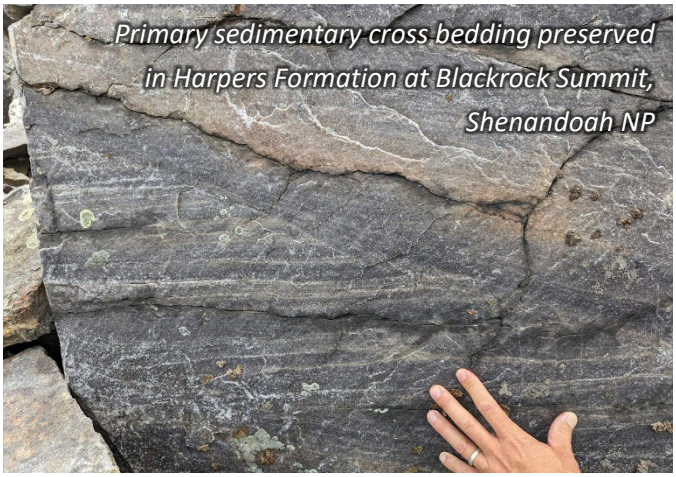
"Located 19 kilometres west of Mount Magnet. A quarry here produces orbicular granite (actually granodiorite or tonalite) for ornamental stone. The orbicules occur in a granodiorite-tonalite matrix, and consist of andesine (sodic plagioclase), hornblende, and biotite, arranged radially around a core of plagioclase and/or hornblende, or less commonly mafic schist. The orbicules are formed by crystallization from a fluid-rich supercooled dioritic magma nucleated on seed crystals. The orbicules appear to have settled under gravity while each was still a skeletal mesh of crystals, since the orbicules are frequently deformed or moulded against one another. The accumulation of orbicules depletes the magma in mafic elements, and increases the silica and fluid content, and the granite nature of the matrix. Biotite flakes cut primary crystals and are thought to be secondary. The Boogardie orbicular granitoids are amongst the oldest known at 2700 million years. It is quarried into large pocker-dot [sic] slabs for feature walls, or collectors with access to a large crane and unlimited funds. For the rest of us mere mortals, we have to do with a specimen containing one orbicule. Orbicular granite is considered a very rare type of rock." (https://www.mindat.org/loc-245214.html 09/29/25)

NAGT – Eastern Section meeting: May 2026

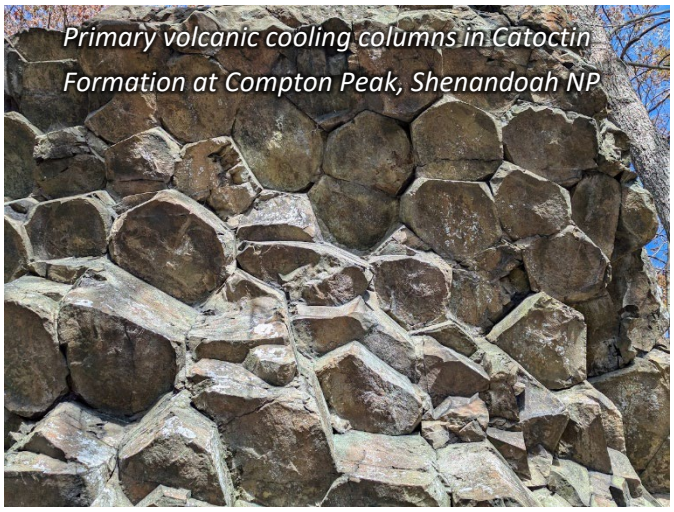
PVCC's brand new Bolick Center is the first LEEDS-certified Net Zero building in the Virginia Community College System.

by Callan Bentley
Piedmont Virginia Community College

Our annual in-person gathering will take place in & around Charlottesville, Virginia **May 14-16, 2026**. I look forward to hosting for the first time, and I'm pleased that many of our large group events will take place in a gorgeous new space: PVCC's new Bolick Center, which features renewable energy and a LEEDS Silver certification. From our campus, you'll be able to look out on Carter's Mountain, the eastern limb of the great Blue Ridge Anticlinorium. Carter's Mountain is held up by Catoctin Formation – originally erupted as basalt lava flows during the Neoproterozoic, and then metamorphosed to greenschist facies during the recently-recognized Neoacadian Orogeny during the Mississippian Period.



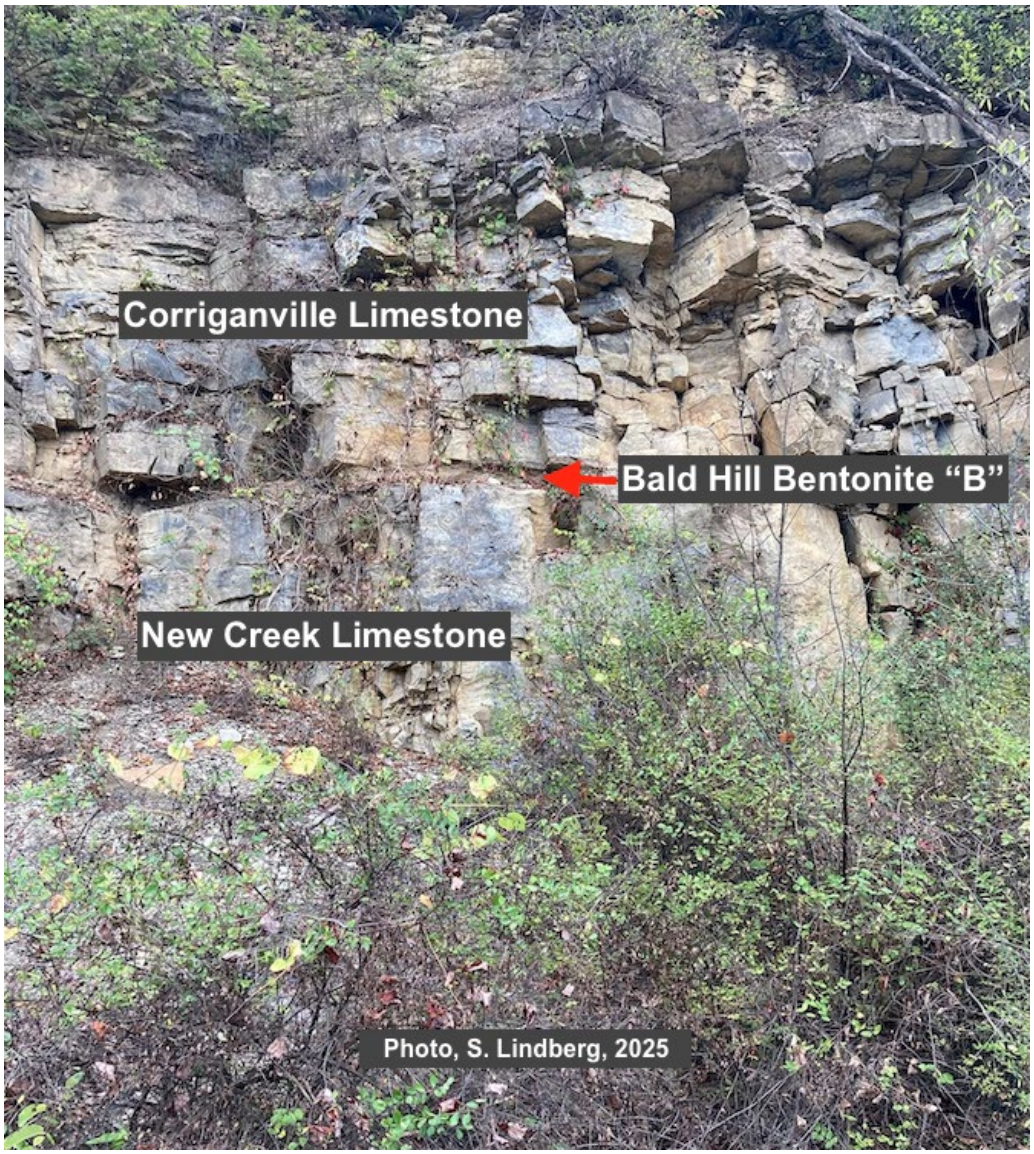
Primary sedimentary cross bedding preserved in Harpers Formation at Blackrock Summit, Shenandoah NP



Primary volcanic cooling columns in Catoctin Formation at Compton Peak, Shenandoah NP

I'm planning a robust suite of workshops and presentations, as well as stimulating field trips exploring some of our local natural wonders. Of course, it will also be a time when we celebrate our section award winners. Please see the last page of the newsletter for details about how to nominate deserving individuals for NAGT recognition. I hope you will join us!

Outcrops – Fall 2025



by Steve Lindberg
University of Pittsburgh at Johnstown

The New Paris Limestone Quarry in Bedford County, Pennsylvania provides a unique window to carbonate deposition within the Appalachian Basin. Now privately owned, the quarry has been made accessible as a geoscience educational site to colleges, universities, organized rock and mineral clubs, and other groups interested in studying the limestone formations exposed here. The New Paris quarry contains excellent exposures of the Upper Silurian to Lower Devonian Helderberg Group - Keyser and Old Port Formations. Within the lower Old Port Formation are the New Creek and Corriganville Limestone members. Each of these highly fossiliferous limestones contain numerous brachiopods, corals, crinoids, and trilobites. The New Creek and Corriganville limestones are exposed along the highwall in the upper bench of the quarry, and also contain a sequence of chemically weathered volcanic ash fall deposits termed bentonites. The bentonites at New Paris have been observed in other eastern state regions and are most likely part of the "Bald Hill Bentonites". These bentonite layers have been dated to approximately 417 million years (Smith, et al., 2003); and originated from volcanic eruptions to the east as Laurentia collided with the Avalon terrane during the early phase of the Acadian Orogeny. The contact between the New Creek and Corriganville limestones is formed by the Bald Hill Bentonite "B" layer, and is easily traced along the upper highwall of the quarry. The photograph shown here was taken during a recent field trip to the quarry with geology students. Interested groups who wish to visit the New Paris quarry can contact Steve Lindberg at slindber@pitt.edu.

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Nominate your peers!

(Nominate yourself!)

Information about all our Eastern Section awards can be found on our section website. Please note the deadline is being/has been changed to **February 1!** So start thinking and get those forms filled out now! Completed nomination forms should be sent to Amy Baer at sciencebaer@gmail.com. However, you must place your nomination via the online forms found on the National NAGT web site at http://nagt.org/nagt/programs/oest.html

Here is a list of our awards. Perhaps there is one with your (or a colleague's) name on it!

OUTSTANDING EARTH SCIENCE TEACHER

The OEST Awards program was adopted by NAGT in 1971. Its purpose to honor pre-college teachers of earth science, their excellence and commitment to teaching and teaching earth science

DIGMAN AWARD FOR EXCELLENCE IN GEOSCIENCE EDUCATION

The Digman Award is designed to recognize an individual who works to bring geoscience to the general public. We look for individuals who are not teachers, but work in a capacity that educates the general public in areas of the geosciences. Museum directors, curators and assistants, state survey employees, mine and quarry public relations people would all qualify for this award. The nomination information for this award is also on our section website.

JAMES O'CONNOR MEMORIAL FIELD CAMP SCHOLARSHIP

The James O'Connor scholarship is given to a college geology or earth science major who is attending a geologic field camp course (typically over the summer) as part of their college degree program. The $500 scholarship assists the student in covering the expenses of their field camp. Nominate a student currently enrolled in your geology program. Nomination information appears on the section website.

DISTINGUISHED SERVICE AWARD FOR THE EASTERN SECTION

The Distinguished Service Award is given to a member of the Eastern Section (still actively teaching or retired) who has, over the years, contributed to the growth and activities of the Eastern Section. This person should have a history of continued service to the Eastern Section. Nomination information appears on our website.

JOHN MOSS AWARD FOR OUTSTANDING COLLEGE TEACHING

The John Moss award is reserved for instructors and professors who, at the college level, model and promote outstanding teaching in the geosciences. Nomination information appears on section website.