



PETROGLYPHS

Environmental Earth Science

2021-22 Newsletter

11th Edition

Message from the Chair Stephen Nathan

Hello Everyone,

Optimism for a brighter school year buoyed us through 2021-2022! As the murky waters of COVID-19 receded, fall 2021 started with classrooms at full seating capacity and virtual instruction had all but disappeared; Eastern was fully “on-ground” again. Seeing hallways bustling with students brought a refreshing feeling of “normalcy”. Mandatory indoor protocols for masking, distancing and hygiene became an inconvenience that lingered until early April. Through it all, the Environmental Earth Science Department pushed forward to serve its students and has now come out of the tunnel stronger than before.

For a quick recap of the past year, the EES faculty attended professional conferences (live and virtual), secured research funding, mentored a half dozen student research projects, and published/contributed to a half dozen manuscripts. Equally impressive was having several EES students engaged in research projects, five of whom contributed to the 2022 CREATE conference and seven were inducted into Sigma Gamma Epsilon (i.e., the National Honor Society for the Earth Sciences). Another big highlight was holding our first *live* End-of-the-Year Celebration in two years. During the celebration eight EES students were recognized for their academic accomplishments (including two students who each received the first ever \$500 scholarship awards sponsored by Solar Energy Association of Connecticut). Our guest speaker for the celebration, Mr. Brian McCann (Senior Project Manager, BGT Environmental and EES class of 2003), did a great job sharing with everyone his amazing career story and very helpful career advice. Also noteworthy for this year was Drs. Cunningham and Drzewiecki successfully guiding 15 EES majors on a 12-day Global Field Course trip to Idaho/Wyoming, the first such trip in three years!

This past spring brought a big change for EES: the retirement of Dr. Catherine Carlson (effective June 1, 2022). Catherine taught hydrology and other classes that provide EES graduates with critical skills and experiences that are needed in the workplace. We sincerely thank her for 28 years of dedicated and heartfelt service to the department, the University and the students. All of us wish Catherine a happy, fulfilling, restful and well-deserved retirement.

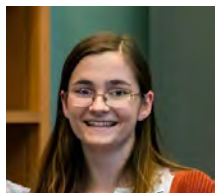
The academic year closed with a cautious return to the XL Center for a live commencement ceremony. Twelve graduating EES majors went out the door and into a brave new world. We wish them well in their careers and invite them to keep in touch with EES.

Before closing, I would like to thank Assistant Department Chair, Bryan Oakley for all his hard work during the past year and for keeping me on track. His support, guidance and gentle prodding helped me keep my optimism.

STUDENT RECOGNITION AWARDS

In the
Spotlight

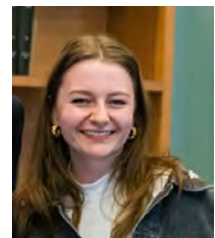
April 28, 2022



Abigail Durling

Outstanding Environmental Earth Scientist—In recognition of her enthusiasm, academic achievement and contributions to the Environmental Earth Science major.

Soft Rock Geology Recognition—Abigail has demonstrated the highest level of academic achievement in historical geology, sedimentology, and stratigraphy in the classroom and the field.

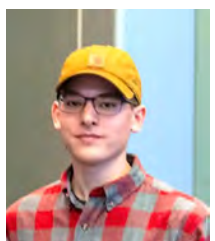


Kilee Nutbrown

Soft Rock Geology Recognition—Kilee has demonstrated the highest level of academic achievement in historical geology, sedimentology, and stratigraphy in the classroom and the field.

Solar Energy Association of CT Scholarship Award—Kilee has demonstrated the highest level of achievement in student research and academics in the classroom, laboratory and the field.

Junior Academic Excellence—In recognition of her academic excellence in the Junior Class.



Jonathan Lepire

Solar Energy Association of CT Scholarship Award—Jonathan has demonstrated the highest level of academic achievement in historical geology, sedimentology, and stratigraphy in the classroom and the field.

Sophomore Academic Excellence—In recognition of his academic excellence in the Sophomore Class.

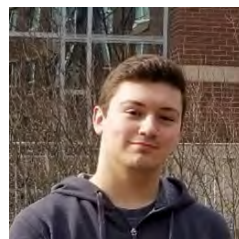
Geomorphology Research Recognition Award (3 Awardees)



Annette Coste



Aiden Gamache



Cameron Soulagnet

In recognition of the collective efforts in learning and applying digital photogrammetry to ground and airborne imagery of natural and built environments in Connecticut and Rhode Island. This includes imaging, modelling, measurement, 3D printing, and analysis of an eroding shoreline (Napatree Point, Rhode Island), important Jurassic bedrock exposures of the East Berlin Formation, tracks at Dinosaur State Park, and drone-based model of the Science Building and Clock Tower on Eastern's campus. Annette, Aiden, and Cameron learned to capture their own images, develop associated models and process data in a variety of point cloud, mesh editing, and geospatial software packages. Their work was presented at the CREATE



Emily Watling

Junior Academic Excellence In recognition of her Academic Excellence in the Junior Class.

Annette Coste—**Senior Academic Excellence** In recognition of her Academic Excellence in the Senior Class.

Congratulations To all

EES Addresses Student Employability

By Dickson Cunningham

The department made a strategic decision a few years ago to improve the career readiness of all EES majors. This coincided with university approval of a campus-wide Employability Plan, which involves all operational units, including academic departments. Eastern aims to be the top institution in the state in terms of delivering career guidance and ensuring that all students complete various employability-related activities (including successful applications for graduate study for those who plan to continue their formal education). The overall aim is to ensure that Eastern students graduate with the maximum chance of successfully building on their degree and receiving a return on the educational investment. This concept is also embedded in the University's mission statement: *Eastern Connecticut State University engages students from diverse backgrounds in a transformative, liberal arts learning experience that provides knowledge and skills to lead enriching, purposeful lives.*

In the EES Department, it was decided that the most efficient way to ensure that all students graduate with essential employability guidance and preparation is to provide a new 1-credit professional development course. This course ran for the first time in spring, 2022 and will now be a required major course beginning in 2023.

The new course titled **EES Professional Development** includes the following content and activities:

- 1) What can I do with an EES Major and job seeking strategies for EES-related careers.
- 2) OCS (Office of Career Success) resources, tools and career counseling services.
- 3) Personal, detailed self-assessment exercise with individual results matched to related professions.
- 4) Resumé building, refinement and finalization.
- 5) LinkedIn account creation.
- 6) Cover letter guidance and practice.
- 7) Interview guidance and mock interview practice.
- 8) Networking advice and strategies.
- 9) Attendance at campus-wide career fairs and workshops.
- 10) Strategies for getting accepted into graduate study programs.
- 11) Attendance at EES earth and environmental science industry presentations.
- 12) Presentation of a post-graduation career and/or graduate study plan.

This course is designed to deliver employability preparation instead of relying on student initiative to seek out post-graduation advice. During the last year, we have also held meetings with the EES Advisory Board composed of earth, environmental, sustainability and energy science professionals and their advice and recommendations have informed the proposed content of this course and other curriculum changes in EES.

Our webpage also has a useful Employability Handbook (<https://www.easternct.edu/environmental-earth-science/documents/ees-student-employability-handbook.pdf>) and a basic resumé template to get students started (<https://www.easternct.edu/environmental-earth-science/documents/ees-resume-template-example.pdf>). Our EES Honor Society chapter also organizes a visiting speaker series with invited professionals who share their employability advice with our majors. This is now back up and running as Covid rates have fallen and face-to-face meetings are considered more acceptable. During spring, 2022, we hosted Jack Cerra, a recent EES alumnus representing Atlas Environmental Company and EES alumna Alison Augenstein representing Woodard and Curran. Both gave excellent presentations that opened our students' eyes to potential careers that stem from the EES major.

FACULTY UPDATES



Beautiful Borah Peak, Idaho's highest summit at 12,662'.

Norris Geyser Basin, Yellowstone (where the Earth needs Tums!)

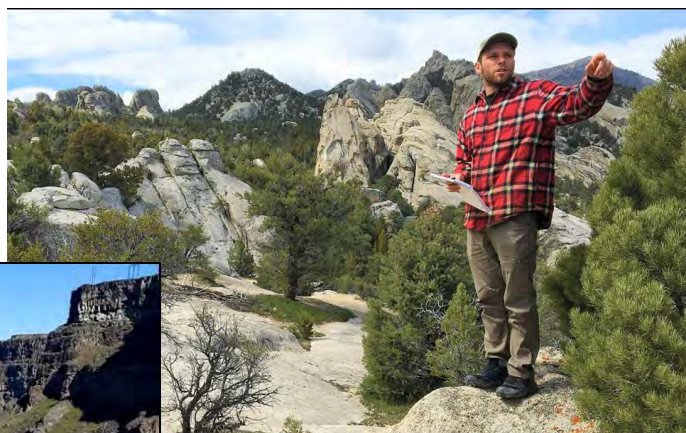
Dickson Cunningham

EES Field Course to Idaho-Wyoming, May, 2022

During late May, fifteen enthusiastic students led by Professor Curmudgeonly Cunningham and Professor Drywit Drzewiecki enjoyed a 13-day earth and environmental science field course to Idaho, and Wyoming, with a bit of Utah and Montana thrown in. Because of Covid, EES extended field courses had been put on hold for three years and so it was great to be able to restart one of the highlights of our undergraduate program. This was the third time we have run the Idaho-Wyoming field course and as always, it was an exciting educational adventure in one of America's most geologically spectacular regions.

We arrived in Salt Lake City and began our clockwise route stopping first at Antelope Island in the Great Salt Lake where we were immediately confronted with the visible effects of the western drought - low water levels and extensive mud and salt flats where the lake used to be. But, we did stroll down to the lake edge and examined the interesting algal mounds (while swatting brine flies). A few bison and pronghorn antelope also made cameo appearances. We then drove to a high lookout where we were treated to a wide panorama of the impressive snow-capped Wasatch Range with its tectonically active mountain front. We were awed by the scale of the Great Salt Lake Basin and noted the ever-growing urban-suburban sprawl, which also contributes to the regional problem of sustainable water usage.

Then it was off to southern Idaho and the beautiful Albion region with its City of Rocks National Reserve. We enjoyed an afternoon hike through the heavily jointed and knobbly granite landscape before driving up to Twin Falls and feasting on burgers and pie slices at Idaho Joes. In the morning, we visited the Snake River Canyon to see the thick flood basalts in cross-section, including pillow lavas. We also went to Shoshone Falls for a different view of the canyon stratigraphy and the deeper rhyolites that represent the older caldera history of the Snake River Plain and Yellowstone hotspot track.



Nick Perreault describing the granite landscapes of Idaho's City of Rocks



Giddy in the Gorge! (Shoshone Falls, Idaho)

Then we drove north across the Snake River Plain to Craters of the Moon National Monument, which is always one of the geological highlights of the trip because of its raw, lunar-like volcanic landscape. We climbed a cinder cone, examined spatter cones and enjoyed a rugged hike onto the vast lava plains where we scrambled over the huge 2076 ± 45 year-old Blue Dragon flood basalt and explored inflation and deflation features, including lava caves. Delighted shouts of “*aha, an aa*” and “*ahoy, a pahoe-hoe*” filled the air as we explored the remarkable surface features characteristic of young and fresh flood basalt volcanism.



Our soon to be expert volcanologists!



The vast ~2075-year-old Blue Dragon flood basalt at Craters of the Moon National Monument

15 EES students and two old goats, Craters of the Moon National Monument



Later we drove up to Mackay and into the Lost River Range valley where we had dinner reserved at the L7 Bar and Grill. The prime rib and barbecued meat sandwiches were delicious and we were also treated to wonderful live country music, which we shared with friendly Idaho ranchers and their extended families. It was an authentic rural atmosphere in a remote Idaho valley, and I think it then dawned on all of us that we really had left Connecticut behind! After such a full day, we retired to the Wagon Wheel Inn which is a lovely base to explore the region. We spent the next day hiking up Lower Cedar Creek to see the Devonian-Mississippian carbonate stratigraphy with its diverse invertebrate marine fossils. Dr Drzewiecki demonstrated his eagle-eye ability to find and identify all sorts of corals and brachiopods, and some students found beautiful take-home samples for their collections. We also saw fold and fault evidence for the Sevier Orogeny in the canyon cliffs. But, the highlight of the hike was a very impressive natural spring (exit portal for an underground stream) gushing out of the mountainside at the end of the trail. To top off the hike, we were treated to a blizzard on the return descent – the first of many wintery experiences on the trip!



The amazing underground stream outlet of Lower Cedar Creek Canyon, Lost River Range, Idaho

After lunch, we drove up the valley to the 1983 $M = 7.3$ Borah Peak earthquake zone. This site is always impressive because of the fresh surface ruptures in front of Idaho's highest peak looming above the downfaulted valley. We arrived in a snowy hailstorm and had to wait out a major squall, but the weather eventually improved and we enjoyed exploring the fault zone and learning about one of America's largest historic intraplate earthquake events. Then it was back to Mackay where we dined at the finest of local gas station pizzerias, before returning to our motel for a competitive evening of horseshoes and cornhole.



It was here that the 1983 Borah Peak earthquake caused massive surface rupturing – genuine rock and roll!



At the Borah Peak earthquake site, Idaho



Olivia Gentile – our expert on the diverse volcanic eruption history of the Snake River Plain

The following day we left early for the long drive to Yellowstone. We had several stops en route to see the rhyolite domes in the Central Snake River Plain and to climb one of the Menan Buttes tuff cones – a spectacular example of a hydrovolcano”. It was an enjoyable scramble up, although I had to take it slowly on the loose gravelly trail having recently undergone rotator cuff surgery and not wanting to fall and re-damage my partially healed shoulder. Eventually, this old geezer and a few younger stragglers (who were distracted by sagebrush ant colonies) got to the top and were treated to one of the most expansive views of the Snake River Plain with the St Anthony dune field and snowy Lemhi Range to the north and northwest. We enjoyed seeing the clear outcrop evidence for the crater’s explosive origin, including glassy lapilli, basaltic blocks and other crater ejecta.



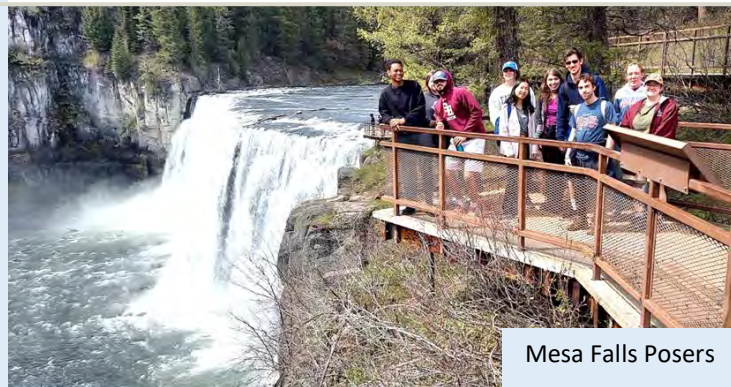
The next generation of Yellowstone bison with ever watchful mothers

We then continued on to the Island Park Caldera and stunning Mesa Falls. There were no wooden barrels available to ride over the falls, so we had to settle on taking selfies and appreciating the basaltic cliffs. Then we drove north into Montana to see the impressive Madison Landslide. Xavier told us all about the fateful 1959 Hebgen Lake earthquake and the co-seismic landslide which created Earthquake Lake and generated a remarkable debris field that extends high up the opposite side of the valley. Soon-after, I decided to ignore the weary looks and growling stomachs and squeeze in a quick stop to see the huge Hebgen Lake fault scarp, which we realized is 2.5 times the height of our student Hans (so we agreed the scarp is Hans+Hans+Ha units tall). Finally, we arrived in West Yellowstone where we checked into our plush KOA cabins and then returned to town for a nice restaurant meal. Very late that night, Nick apparently got lost looking for the communal bathrooms and wandered for hours looking for the right cabin, whilst fearing he would become a hungry bear snack!

There’s a bear there !



The next morning, we started our 2.5 days in Yellowstone with visits to all the geothermal highlights including Norris Geyser Basin, the Old Faithful area, and Mammoth Hot Springs. We also squeezed in Roaring Mountain, the Grand Prismatic Spring area, Hayden Valley and the stunning waterfalls in the Grand Canyon of the Yellowstone. This year, spring arrived late and we were surprised to find 3 feet of snow in the higher regions and Yellowstone Lake still covered in ice. The wildlife sightings were better than ever, we saw several grizzly bears – one close up, a black bear, and hundreds if not thousands of bison including many playful young calves. A moose also paid a social roadside visit and the Lamar Valley was as herbivore-filled and beautiful as ever. We were fortunate to visit Yellowstone at a time when fewer tourists are present and wildlife viewing is at its best. The weather also was adventurous as we had blizzards, rain, hail and strong sun, but thankfully not the calamitous floods that hit the park a few weeks later and made national news.



Mesa Falls Posers



Xavier Jackson Ward telling us about the devastation wrought by the 1959 Madison landslide event



Yellowstone Lake—still frozen in the last week of May!



Genevieve Rondeau telling us all about geodetic evidence for the restless magma chamber beneath our feet.



Marshmallow toasting at our luxurious KOA in West Yellowstone



Emma Bean at Artists Point with the Lower Falls of the Yellowstone River in the distance



Will Petrucci, Aiden Gamache, Nick Peteros and Olivia Gentile in front of Jackson Lake and the Grant Tetons

Next, we headed south to Jackson where we had several days to explore Grand Teton National Park. We were fortunate with clear weather so that we could see the full majesty of the range with its stunning frontal relief. The following day, we had a lovely float trip down the Snake River cruising past a mother moose and her calf and enjoying the beautiful views of the Teton range whilst floating past the famous river terraces.

Bighorn sheep on the eastern slopes of the Teton Valley



Our group at a viewpoint along the Grand Teton inner loop road



Miss Mabel the Moose munching merrily

We also went to the Gros Ventre landslide and learned about the destructive slide and subsequent lake burst that devastated the town of Kelly in 1927. The following day was our first rainy washout, so we spent the morning in Jackson visiting the National Elk Refuge visitor center and the National Museum of Wildlife Art. Both were new stops on the trip and were educational and enjoyable rainy-day activities. A planned hike to Cascade Canyon across Jenny lake had to be cancelled because of the poor weather and trail closure due to deep snow at low elevations, so instead we took a nice 5-mile loop trail around Leigh and String Lakes a bit further north.

The weather lifted a bit and this hike turned out to be quite interesting because of all the avalanche chutes along the steep mountain front and recent snow avalanche damage from this past winter/spring. Many trees looked like they had been snapped off just yesterday. In addition, in one of the avalanche sites, shrubby willows had colonized the landslide scar and a female moose found it to be the perfect mountainside buffet restaurant (with a nice view). By then, we had also worked up a keen appetite, and spent the evening in Jackson where we enjoyed the lively restaurants, shops and pleasant atmosphere.

Heavy rain continued the next morning, but we forged on and drove to Pinedale where we enjoyed a stop in the Museum of the Mountain Man before driving up Skyline Drive into the Wind River Range. We were able to reach a higher elevation than on previous trips and found some good outcrops of the Archean basement complex which for all students was by far the oldest piece of North American crust that they had ever set foot on. We then descended to a wonderful lookout over glacially scooped out Fremont Lake that is bound by huge lateral and end moraines – a textbook example of a major alpine glacier valley that marks the furthest and lowest extent of the Pinedale Glaciation event. Next we drove to the top of the Pinedale Anticline which is famous for its vast natural gas field and extensive drill platforms. As soon as we got to our stop, the weather set in with high winds, snow, and large ballistic sleet pellets. Emily was still determined to give her presentation and so we pulled the vans up side-by-side and she heroically told us everything we ever wanted to know about the gas field and modern extraction methods. Few professors could have tolerated the conditions and given such a fluent presentation!



Emily Watling ignoring the wind and snow to tell us all about the Pinedale gas field

We rolled into Kemmerer that evening after driving past beautiful variegated sedimentary outcrops along the Green River Valley and passing through tiny cowboy towns with historic old wooden saloons. Dinner was un-inspiring fast food, but we were excited to be in fish fossil land and back at the very pleasant Fossil Butte Motel. The next morning, we drove up to the American Quarry where we were hit by blizzards again and some slippery dirt roads that made us wonder if we would be able to get back to Kemmerer on the return trip. But we did manage to drive out of the quarry, perhaps because we were laden with so many fish fossils! Emily even found part of a sting ray and immediately



Our introductory lesson on fossil fish collecting at the Kemmerer American Quarry, during a Memorial Day blizzard!

Emily even found part of a sting ray and immediately sold it to a local collector for \$200! After lunch in Kemmerer, we examined roadside coal outcrops and discussed the energy economy of Wyoming. We then drove to Fossil Butte National Monument where we were amazed by the remarkable fossil collections on display. Many students remarked that they wanted to immediately return to the quarry and hopefully find a \$35,000 bird or bat fossil! Final souvenirs were then purchased at the monument shop before heading back to our motel where we held an extensive review session followed by the final exam. Afterwards, we crossed the street to dine (and slurp some giant Mexican beverages) at the excellent El Jalisience restaurant. It was a great final night celebration. Although unfortunately, one of our students took ill with Covid and had to lay low on the final day and missed our group dinner. Fortunately, she had a very mild Covid case, and she was also able to fly back with us the next day to Connecticut. Our return flights to Bradley were uneventful and we were glad to return home safely to family and friends. We now have so many happy memories to reflect on and share with others, and I think we all felt very grateful that in this era of Covid, we were still able to pull off such a marvelous educational journey in one of America's most scientifically interesting and scenic regions!



(Note, we owe special thanks to the EES Founders Fund, Provost Salka, Kim Roy and Beth Leslie for supporting our trip and helping with financial matters and trip logistics).

A FEW MORE HAPPY

MEMORIES





D. Cunningham (continued)

Another action-packed year has passed by. On the teaching front, I continue to enjoy teaching Mineralogy/Petrology, Structural Geology and the Dynamic Earth intro course. I also taught a new 1-credit EES Employability Course in the spring that will become a major requirement for future graduates. In May, I also led the Idaho-Wyoming extended field course for the third time with 15 students in tow and the able-bodied Dr. D helping out. We had a great trip with wonderful geology, scenery and wildlife viewing. Please see the separate trip report in this newsletter for further details and trip photos.

On the research front, my ongoing Central Asia projects continue to bear fruit. I published a new paper on the remarkable Langshan range in western China, which is a crustal archive of nine major regional deformation events. I also wrote a paper on the exceptional geoh heritage of the Gobi Altai region of Mongolia and the case for creating a globally recognized Geopark under the UNESCO umbrella. I also completed a major review chapter on the tectonic geomorphology of intracontinental mountain belts.

Cunningham, D. (2021). The Case for a Globally Recognized Geopark in the NE Gobi Altai Region of Mongolia. *Geoheritage*, 13(4), 1-20.

Cunningham, D., 2021, Tectonic Geomorphology of Intracontinental Mountain Ranges, in Owen, L. (Ed), Treatise on Geomorphology, Elsevier, <https://doi.org/10.1016/B978-0-12-818234-5.00091-2>.

Zhang, J., Cunningham, D., Qu, J., Zhang, B., Li, J., Zhao, H., & Zhang, Y. (2022). Poly-phase structural evolution of the northeastern Alxa Block, China: Constraining the Paleozoic-Recent history of the southern central Asian Orogenic belt. *Gondwana Research*, 105, 25-50.

Closer to home, last summer I completed some sweaty fieldwork in southern Idaho investigating Miocene caldera-emptying ignimbrites along the Yellowstone hotspot track. I also found time to squeeze in some alpine hiking in the Ruby Range in northern Nevada. Meanwhile, here in CT, I am compiling a “15 greatest geological LiDAR hits of Connecticut” image collection for possible future publication. Xavier Jackson Ward has assisted with this project, which is ongoing. I also continue to gather outcrop data on the Honey Hill Fault in the Montville area as part of another multi-year project. Finally, I submitted 2 prior studies to the CT state survey on the bedrock geology of Soapstone Mountain and peninsular geology in the Niantic-Waterford area to be published as open-file reports .



Hiking in the Ruby Range, Nevada

I am now serving as campus Employability Coordinator. This is a major administrative role where I am working with academic departments and other operational units to implement the campus Employability Plan. This involves creating an individually tailored program for each academic department in collaboration with the new Office of Career Success to deliver employability advice and career workshops to all Eastern graduates. This is an important endeavor that will support graduate success, and hopefully boost future enrollments.

On the home front, we continue to develop our property and during the last year have added a new roof, siding, a wildlife pond, and woodland trails. Our fruit trees now yield so much fruit that I am “forced” to make pear and apple cider. Our son continues to compete at the highest hockey and tennis team levels and we enjoyed a full season of hockey games across the state, tournaments in Bethlehem, PA and Avon, CT and the state high school tennis championships in May.

Finally, during summer, 2022, my son and I spent 2 weeks trekking in the Cordillera Vilcanota in Peru. We reached several high passes above 15,000’ and saw breathtaking Andean scenery. We toured major Inca sites around Cusco and the Valle Sagrado including Sacsayhuaman, Pisac, Tipón, Maras, Ollantaytambo and of course Machu Picchu. The trip was amazing and whetted our appetites for a return trip to see more of Peru, including the Amazon region.

Trekking with Sam in the Cordillera Vilcanota.
Sahusiray (19,088’) behind us.



Nevado Sirihuari (17,357’)



Misty, marvelous Machu Picchu



At the Inca salt works, Maras



At Machu Picchu

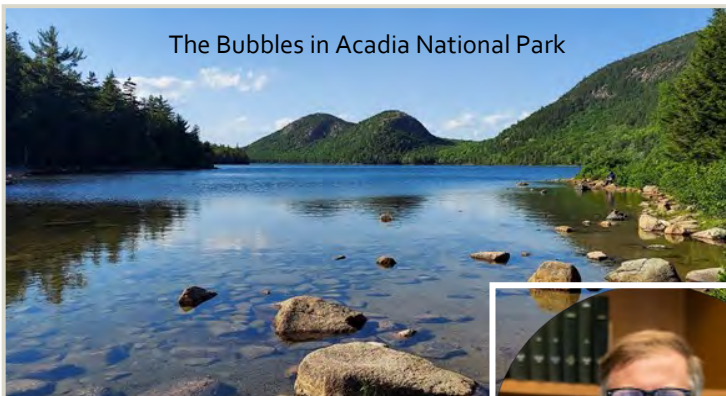


Terijay Grande (17,651')

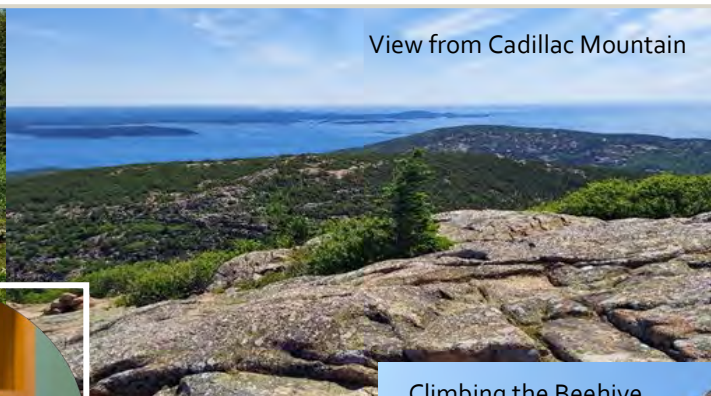


With Sam at Ollantaytambo—note the difference in workmanship between the tightly fitting original Inca walls and reconstructed modern wall sections.

The Bubbles in Acadia National Park



View from Cadillac Mountain



Climbing the Beehive



Peter Drzewiecki



Hello to all our EES alumni, students, and friends! I think almost everyone would agree that the 2021/2022 school year was a big improvement over the previous year! Life seems to be improving (except for the rampant inflation) and we are doing things that we call “normal” once again. I successfully avoided COVID until a few weeks ago, and even then, it was very mild. This past year was productive once again in terms of teaching, research, committee work, and home life.

I left off in the last Newsletter at the end of the 2020/2021 academic year. Normally we head out on a Global Field Course with students, but COVID prevented us from running one a second straight year in 2021. The logistics were just too complicated. So, as soon as summer started, I began field work with two students – Kilee Nutbrown and Abigail Durling. There is a longer report on their work elsewhere in the Newsletter, but here is what they did in a nutshell: One of the classic East Berlin sections (in the town of East Berlin) has been covered by vegetation since I arrived in CT, and I was never able to get a good look at it. In the summer of 2020, the vegetation was cut back and the outcrop was exposed beautifully. Kilee, Abigail, and I measured section there and tied it into the outcrops at Dinosaur State Park. Along the way we unsuccessfully tried to avoid ticks.



Abigail (left) and Kilee (right) measuring section in East Berlin

East Berlin Formation showing gray and black lake beds at the bottom of the section and red-dish brown playa beds at the top.



With fieldwork wrapped up, I headed back to the family home in Maine. One convenient aspect of COVID is that I, like most people, learned to work efficiently from home! As soon as the kids are out of school, I can head out to a nicer “office” on the North Atlantic coast and still get a lot done. My youngest son (Max) has a National Park Passport Book, with places to collect stamps from every National Park and many other National Park Service Units. There are three places in Maine, and Max, my wife, and I hit two of them: Acadia National Park and St. Croix Island International Historic Site. Acadia was beautiful as always! We hiked along the Ocean Trail where we saw the pink granite shoreline ledges that first brought people to Acadia, and we visited Thunder Hole. We then climbed the Beehive – one of my favorite hikes ever – which is a steep mountain named for its shape. The trail is steep with some ladders, and it is very narrow in places, but the view from the top is spectacular. We then headed to Sandy Beach to relax for a bit and then to Jordan Pond House for their famous popovers and a view of The Bubbles.

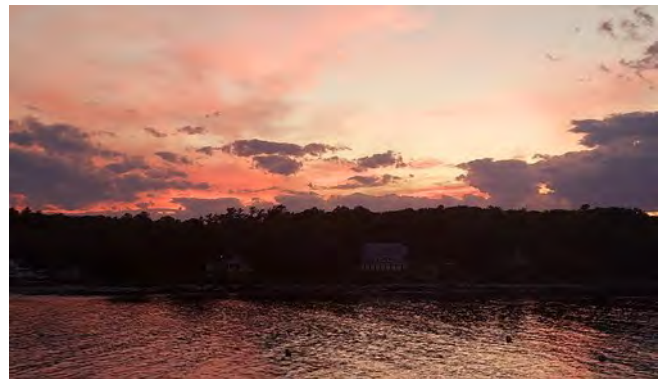
The next day, we drove to the top of Cadillac Mountain. The top of Cadillac Mountain is the first place in the United States to be touched by the sun’s rays in the morning, but nobody wanted to get up at 4:00am with me to see the sunrise. This was actually a relief. I had done it before, and I really had no desire to do it again. We took a short walk on a trail at the Sieur de Monts Nature Center. At night we stayed in Bar Harbor and enjoyed their annual pride celebration. The next day we headed even further north to the St. Croix Island International Historic Site. The tiny island, located on the St. Croix River between the US and Canada, is one of the oldest (1604-05) “permanent” settlements by post-Viking Europeans in North America – even pre-dating Jamestown. By permanent, they mean that they spent a year building houses, farms, and a tall wooden fence, but then left it after the first winter because they had no fresh water (the river froze). At night we stayed in a very run-down motel and ate dinner at Dunkin Donuts because it was the safest option...



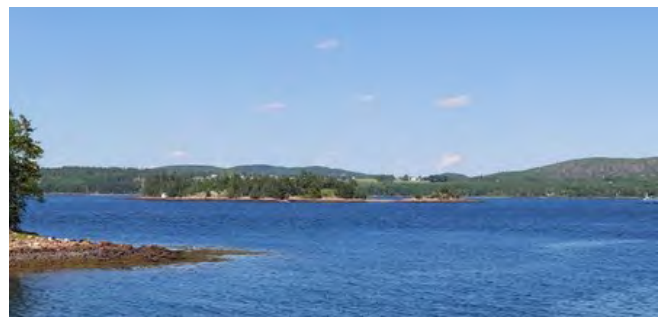
Arriving at St. Croix Island International Historic Site



Lupines in the spring



Sunset over Long Cove



St. Croix Island

In mid-July, my wife and I decided that it was “safe” enough to take a family trip. With less than a month to plan, we put together a trip out west. In mid-August, we flew to Salt Lake City with our two sons, my younger daughter and my older son’s girlfriend. We traveled northeast to Kemmerer, WY – home of JC Penney – and visited Fossil Butte National Monument. We then continued north through Grand Teton National Park. It was cloudy (and smoky from California forest fires), so we couldn’t do everything we planned. We did, however, go white water rafting when the temperature was 48°! My son’s girlfriend describes herself as more of a “all-inclusive” type of vacationer, but she loved her first white water experience. They gave us wetsuits, so we were not cold. We hiked some short trails, took a boat across Jenny Lake, and hiked up to Inspiration Point in Cascade Canyon.

We moved on to Yellowstone where we saw all the wildlife (bears, bison, elk, mountain goats, etc.), Yellowstone Falls, Mammoth Hot Springs, Old Faithful, and Grand Prismatic Spring. However, my family’s favorite thing was attending the West Yellowstone rodeo, where they drank Moscato and watched cowboys try to stay on horses and bulls. We returned to Salt Lake City where my son and his girlfriend left us, and the remainder of our group headed south to see Arches and Canyonlands National Parks, Moab, and the surrounding area. Our favorite event was sipping wine at Dead Horse Point as the sun set over the canyons. Arches remains one of my favorite places in the world. We were lucky because it was 10-15 degrees below normal temperature (only 90 degrees!) when we were there, and crowds were low.



Getting ready to raft the Snake River



Jenny Lake and the Tetons



Action at the West Yellowstone rodeo



Grand Prismatic Spring in Yellowstone



Bison herd in Yellowstone National Park

Images from Utah



Sunset at Dead Horse Point



Native American Petroglyphs in Sego Canyon



My daughter Shelby contemplating life at Canyonlands National



Delicate Arch at Arches National Park



Landscape Arch at Arches



Baby mule deer at Arches



New back patio...an eight-month labor of love

Throughout summer (and spring), I installed a patio in my backyard, completing the task just as the school year began. Having a yard made of glacial till sucks! I can't tell you how many boulders I had to dig out to level the patio. As September rolled in, courses began in person with some COVID protocols in place. Things weren't completely back to normal as there were always students absent because of COVID, and we were constantly working with them to catch up. In fall I taught Ancient Environments as usual and in spring I taught

Sedimentology and Stratigraphy. I also taught a course on dinosaurs with emphasis on Connecticut's dinosaur heritage called "Connecticut's Jurassic Park". I plan to offer this course every year, but in fall. Finally, my once-annual-trip-to-Spain was postponed yet another year, due to uncertainties with COVID. My biggest accomplishment over the year was my work as co-chair of the Committee on Liberal Arts Curriculum (COLAC). We were charged with updating the general education curriculum for all students at Eastern, making it more aligned with the university's mission as a liberal arts school. It is very difficult to get all faculty to agree on a curriculum, but in the end, we passed a university senate bill outlining the new coursework. This will replace the current LAC (which replaced the GER 15 years ago, for you more distant graduates). I also served as chair of the sabbatical leave committee third year straight.

During the summer and school year, I continued work on two papers pertaining to the sedimentology of Dinosaur State Park and aspects of how tracks are recorded in a book that Drew Hyatt is co-editing. I am happy to say that they are both out of my hands and I am just waiting for the book to appear. The first discusses the role of microbial mats in interpreting environments at the park. I contend that the dinosaurs were walking on exposed sandflats covered by microbial mats rather than walking/swimming in shallow lakes. The second paper focuses on recognizing criteria that can be used to determine which surface the dinosaurs actually walked on, and thus which tracks were recorded at the same time. This is a pre-requisite to interpreting the dinosaur paleoecology but has never been done before. I continued my work with Kilee and Abigail through the fall and spring semesters, and it culminated with a presentation at the Northeast Geological Society of America meeting in Lancaster, PA (March 2022). Abigail was unable to come, but Kilee presented a poster of the work (very well, I should add) and had lots of great feedback. I am continuing to do new work at Dinosaur State Park.

I am part of a consortium (including faculty from UConn, Columbia, RPI, Rutgers, Oxford, and Eastern) requesting money from NSF to drill a core at the Park to collect a record of climate change, extinctions, and faunal recovery across the Triassic/Jurassic boundary. A major mass extinction at the Permian/Triassic boundary eliminated over 90% of the Earth's species and forever changed the organization of life on Earth. The Triassic was a time of instability and trial and error as life began to recover. It was another extinction event at the end of the Triassic, however, that paved the way for the modern organization of life... mammals, reptiles, amphibians and birds on land and mollusks, crustaceans, echinoids, and modern fish in the oceans. Although dinosaurs were around in the Triassic, they did not rise to dominance until the Jurassic. We are trying to understand the climatic and tectonic conditions that resulted in this change, and the Hartford basin is the only place known in the world that has a continuous record across the Triassic/Jurassic boundary. Our first attempt to get funded was not successful, but we received very good reviews and are currently attempting a second submission.



My daughter Kaela and I preparing to run in the 2021 Manchester Road Race

In terms of my family, my wife continues to work as a state auditor at UConn. They have officially adopted a policy of working 50% of their time at home and 50% in the office which she enjoys. My oldest daughter, Kaela, completed her MS degree in Genetic Counseling at Brandies University and now works for Yale Health. Seeing how she is married, owns a home, has a career, and now has two puppies, I can safely say: One down, three to go! My older son Aiden graduated from UConn with a degree in Mechanical Engineering and is currently looking for a job. The second is almost done! My younger daughter Shelby finished her third year at American University in Washington DC. She got to spend a semester in Rome last spring. high school. He is involved in lacrosse and is almost an Eagle Scout!



My daughter Shelby with my two grand puppies, Niyah and Beau



Lobster trap Christmas tree in Stington, CT

I wish you all **happiness**, continued **good health**, and **success** in the upcoming year! As always, feel free to visit or e-mail to let us know how things are going.



Student Research

PROJECT TITLE: Sedimentology and Stratigraphy of the East Berlin Formation, East Berlin, CT

STUDENTS: Abigail Durling, Kilee Nutbrown

FACULTY MENTOR: Peter Drzewiecki



Fieldwork measuring section along the East Berlin Outcrop. In all pictures, Kilee Nutbrown is wearing a white cap, Peter Drzewiecki is wearing the black cap, and Abigail Durling is wearing none.

Kilee Nutbrown and Abigail Durling completed a project with Peter Drzewiecki that began with measuring a classic outcrop of the East Berlin Formation (in East Berlin, CT) in the summer of 2021. This section has assumed the role of the “type section” for the East Berlin Formation since the original type section was removed during road construction decades ago. For the past 20 years, this outcrop was covered by dense vegetation, but in the summer of 2020, it was cleared by the Department of Transportation. This allowed us access to examine the unit and collect samples for the first time since my arrival at Eastern. The section is also the closest outcrop of the East Berlin Formation to the exposures at Dinosaur State Park (DSP) and allowed us a chance to determine where the trackways at DSP occur within the East Berlin Formation.

After battling heat and ticks in the field, Abby and Kilee drafted the section. It contains alternating lake and playa (dry lake) deposits that define 6 wet/dry cycles. These cycles, called Van Houten cycles, have been dated to represent 20,000 years each. Kilee and Abby refined the record of paleoenvironmental change in terms of previous work I completed with other EES students. In addition, they cut samples that were sent away to be made into thin sections.

During the fall semester, Kilee and Abby correlated their measured section to the rocks exposed at Dinosaur State Park (about 5 miles away) to determine which of the 6 East Berlin Van Houten cycles was equivalent to the trackways at DSP. The occurrence of a thin gray mudstone bed and several sandstone beds suggested the best fit was the third cycle from the top of the East Berlin Formation. This was confirmed by looking at the stratigraphic thickness patterns and relative position of the DSP outcrops within the East Berlin Formation.

During the spring semester, Abby was occupied by her teaching residency, but the two completed a poster for the Northeast Geological Society of America meeting in Lancaster, PA in March 2022. Kilee was able to attend the meeting to present, and she did an excellent job. The poster generated nearly constant attention during the session. Kilee and Abby also presented at Eastern's CREATE conference for undergraduate research.

Stratigraphic Framework of the Track-bearing Beds at Dinosaur State Park, Rocky Hill, Connecticut

Kilee Nutbrown and Abigail Durling, Environmental Earth Science
Mentor: Peter A. Drzewiecki

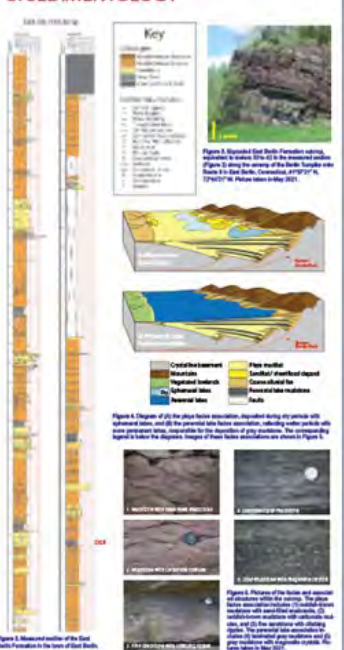
1. INTRODUCTION

The Early Jurassic East Berlin Formation (EBF) exposed along the north face of the Rocky Hill Syncline near Dinosaur State Park, Connecticut, preserves cycles of alternating lake (lacustrine) black and silty (terrestrial) gray mudstones and clay (silt) shales, and disorganized, high-energy mudstones and sandstones. These cycles, which likely represent lacustrine and fluvial systems, have been used to correlate EBF strata across the New York Basin. One such exposure is located at the Dinosaur State Park in Rocky Hill, Connecticut. Dinosaur State Park is the most intact geological site in Connecticut and displays well-preserved tracks of dinosaurs and other animals. The EBF in the Dinosaur State Park is over 100 m thick and contains the earliest mammalian tracks in the world. The EBF in the Dinosaur State Park is over 100 m thick and contains the earliest mammalian tracks in the world.

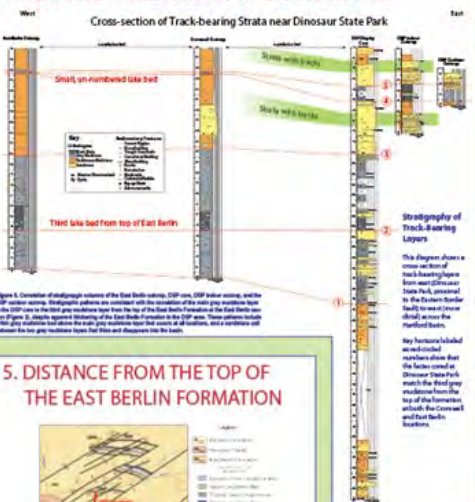
2. BACKGROUND

The EBF in the Dinosaur State Park is over 100 m thick and contains the earliest mammalian tracks in the world. The EBF in the Dinosaur State Park is over 100 m thick and contains the earliest mammalian tracks in the world. The EBF in the Dinosaur State Park is over 100 m thick and contains the earliest mammalian tracks in the world.

3. SEDIMENTOLOGY



4. DETAILED COMPARISON OF STRATIGRAPHY



6. RELATIVE POSITION IN THE EAST BERLIN FM.



5. DISTANCE FROM THE TOP OF THE EAST BERLIN FORMATION



7. CONCLUSIONS & IMPLICATIONS

- 1. Lithologies and sedimentary structures preserved in the East Berlin Formation at Dinosaur State Park and the Crowell and East Berlin sections record cyclic and non-cyclic sedimentation with alternating (high) and (low) energy lake basins.
- 2. Correlation of units from Dinosaur State Park to the Crowell and East Berlin sections (East Berlin has been named) demonstrates lateral continuity of facies and correlates with the third gray mudstone from the top of the formation at these localities.
- 3. The correlation is consistent with the stratigraphic position of the Dinosaur State Park in the relative thickness of the East Berlin Formation.
- 4. The track-bearing mudstones of Dinosaur State Park are thicker than the silty shales more abundant at the Crowell and East Berlin sections.
- 5. Thickening of the entire EBF in the Dinosaur State Park is likely related to increased accommodation and sediment supply at the basin edge near the East Berlin Fault system.

Poster presented at the 2022 NE Geological Society of America meeting and at Eastern's CREATE conference.



Drew Hyatt

With a second full year of COVID behind us hopefully we are moving back to a more normal year ahead for EES. This past year classes were mostly in person (similar to what I have done throughout), and COVID restrictions gradually lessened. For me, I certainly enjoyed the 2021-22 academic year more than the past few years, although I missed not teaching field methods (EES 350) for the first time in nearly 20 years. Not teaching field methods was in part due to the need to offer 350 in the spring of 2021, resulting in too few students for the class to make. That said, I am excited to be teaching a larger-than-normal field methods class this coming semester (but that will be part of the newsletter next year!).

For 2021-22 class sizes caps were back to pre-pandemic sizes, and outdoor mask requirements quickly faded away (in fall) followed by indoor masking requirements being lifted in April. It was nice to start to see students faces again. My fall semester involved teaching two full Dynamic Earth (EES 104) classes in class and in lab. Both sections seemed to go well providing an opportunity to get to meet a sizable number of incoming EES majors. In general students seemed to be a bit out of practice on some studying skills, but they remained engaged and did better as the semester progressed. I began 104 labs with an outdoor lab examining the geology of the campus— rain or shine! With two labs, I managed to get both rain and shine. Field work is always better when the weather is nice, but even the bad weather for one lab section did not dampen spirits. My spring classes included a second run in my new Imaging class (approved by curriculum committee in spring as EES 441 - Imaging/Image Analysis in Environmental Earth Science), and a super-sized Landforms class. Both went well and are commented on further below. I also worked with my 3 summer-research students (Aiden Gamache, Annette Coste, and Cameron Soulagnet) on photogrammetric and other processing techniques related to the summer work examining dinosaur tracks (Dinosaur State Park), coastal erosion at Napatree Point, Bedrock digital outcrop models (Lake bed to red-bed sequences studied by Dr. Drzewiecki), and built environments on campus. Again, more on this below.

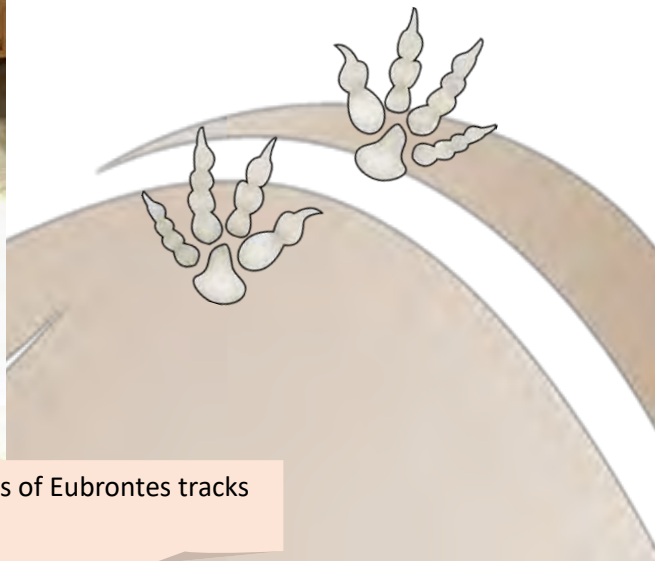


Aiden Gamache (foreground), and Cameron Soulagnet collect images and survey points from Napatree Point for photogrammetry work.



Cameron Soulagnet and Annette Coste prepare to capture images of Eubrontes tracks and photogrammetric targets at Dinosaur State Park.

Research continued to grind on for the Dinosaur State Park Book. Some sixteen or so chapters are now in and reviewed, and the whole shebang should be in the publisher's hands soon. I am excited about new work with Bryan Oakley that examines coastal change on Block Island – which received CSU funding with new work starting in the summer of 2022 as commented on below.



On a personal note, it was a year with great moments and a few challenges. My daughter got engaged (fantastic!), we had an enjoyable but COVID-induced brief visit to see some family in Canada at Christmas that included some nail-biting driving through an ice storm. While in-person family gatherings were not to be for most of our families, we had many family calls necessitated and more luck with visits this past summer.

That's the recap. Read on for a few additional details.

➤ Some Class Details

I'll focus here mostly on major's classes (EES 224, practicum work, the Imaging class, and undergraduate research – both last year and some new ongoing work). Landforms, as mentioned, with 30+ students enrolled was bigger than normal resulting in two lab sections. This is much better as it gives me a bit more time with individuals. I have incorporated more field labs, including a glacial landform lab in Mansfield, and an examination of bedrock-controlled streams at Diana's Pool. We totally lucked out with the weather having spectacularly good conditions for all lab visits. To top it off, I launched my best skipping rock ever at least in one of the lab visits! Practicum work with Aiden, Annette, and Cameron went well. All three students are a pleasure to work with and they ultimately completed an excellent scientific poster that was presented at the spring CREATE meeting (still available at: <https://www.easternct.edu/create/2022/documents/posters/coste-and-gamache-and-soulagnet-environmental-earth-science-james-hyatt.pdf>).

EES 224 Spring 2022

Landform Analysis Class on field trips to Diana's Pool in south Chaplin and to sites in Mansfield



EES 441 Spring 2022

Imaging/Image Analysis

The spring 2021 Imaging class built on my first pass the previous year, and I think went a little smoother and took students a bit further in terms of techniques. I did make a few adjustments based on previous student feedback. Notably the final exam was replaced with submitting the final poster. I also included more work with the drone imaging, including a better introduction to resources like Drone Deploy, and some discussion of new geofencing and drone identification regulations that come into full force in September 2023. Through class activities students learned best practices for photogrammetric imaging for their own geo-artifacts, how to build and export detailed models, exporting and refining mesh structures for 3D printing, change detection analysis using cloud compare software, and a new introduction to point cloud classification using arboretum imagery. Students used related learning activities to assemble a scientific poster. It was a nice group of students, and while still a ton of work to get ready, I think the class went well.



Students in the imaging class modelled sections of the Arboretum stream, rock samples in the science building, and they gained practice flying drones and capturing views of different parts of the campus.





New work with EES Students

Although I'll save details for the newsletter next year, I have really enjoyed starting work with 3 new students (Emma Bean, Olivia Gentile, and Hans Veltheim). Emma and Hans along with Dr. Oakley and myself undertook some field work on Block Island to image and model 3 distinctly different eroding coastlines. Work at Clay Head – Balls Cove went as planned, including the capture of new drone images for bluff modelling. Unfortunately, we had difficulty unlocking some geozones for two other sites which, limited our field activities on Block. However, the students also had opportunities to map, including the baseball field used by the 2022 Division III National Champion Eastern Connecticut Warriors! Initial image processing and model development is going well thus far.



The Block Island field work team
Left to right: Bryan Oakley, Hans Veltheim, Emma Bean, and Drew Hyatt.

Summer research students captured both ground and drone images for use in constructing photogrammetric models of selected locations. While the primary emphasis will be on modelling eroding coastlines on Block Island, the students also captured images for modelling the baseball field.



An "Inception" view of Emma Bean running to join her research colleagues near home plate in the sky.



Left to right: Olivia Gentile, Emma Bean and Hans Veltheim practice flying the drone.



Summer 2022

Visits with old undergraduate friends and family in and around Halifax and in Ontario



Birding and biking in the early summer of 2022 with my father, brother, sister, and cousin.



A view of some of the strange encounters in Prince Edward County.





Personal Reflection

Separate from school/EES matters, Trudy and I have been busy preparing for Hannah's upcoming wedding (I even bought a new suit!). I had a fantastic visit after the spring semester with my brother, sister, cousin, and father on a birding and biking trip in Prince Edward County in Canada. This also gave me a chance to visit Jake in Ottawa. Later this summer Trudy and I also revisited Canada for Christmas in July (which went much smoother than the COVID interrupted Christmas-last). I also squeezed in a short visit to Halifax to see some old undergraduate friends which went very well. All told, we were able to catch up on some in-person visits that had been side-railed for a while.

Here's to hoping similar conditions prevail for the upcoming school year.

Best to all for 2022-23!

Drew Hyatt

Stephen Nathan

2021-2022 Year in Review

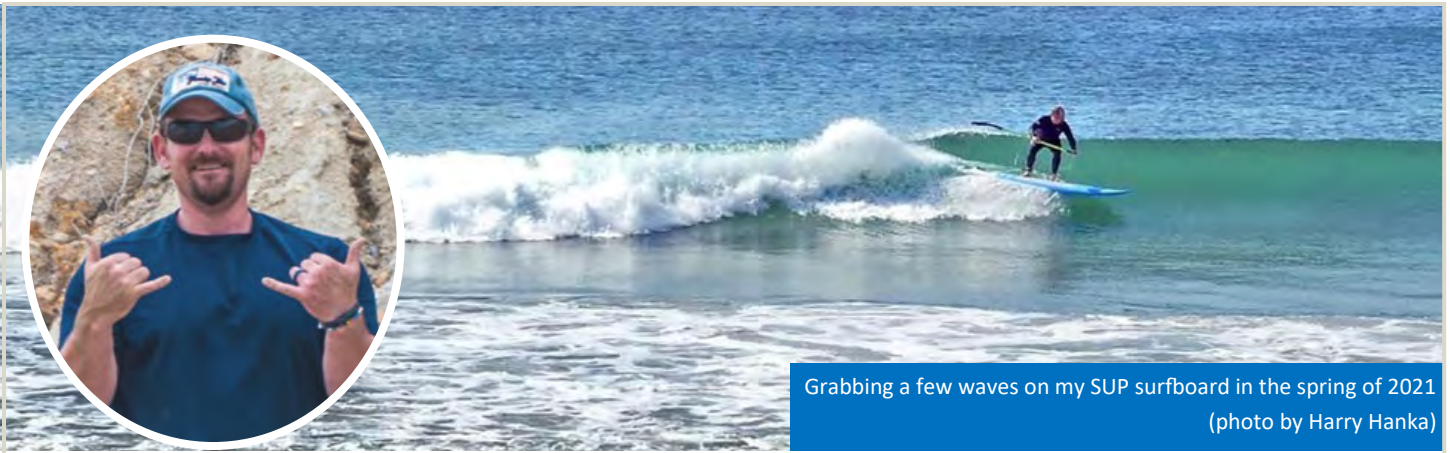


Has anyone seen where my second year as Department Chair went? Despite the familiarity of duties, I'll repeat stating the lesson I learned a year ago: I so fully respect and appreciate all that previous chairs accomplished during their tenures. Each day as Chair brought a broad mix of challenges and details to address, there was never a dull moment.

Regarding teaching, it was great to be on-ground and having my classes full again (ignoring those who cut class). To enhance the relevance of our EES courses, I continue to upgrade my Sustainable Energy (EES 205) and Energy Issues in Geoscience (EES 402) courses. For the former (EES 205) I've updated the content to keep pace with this very rapidly changing field, while for the latter (EES 402) I engage students through new active learning projects in carbon sequestration and hydropower. I also continue to revise my Oceanography course so it's pertinent to all who live in a coastal state.

My new teaching challenge for 2021-2022 was EES 305 Energy Resources. I had never taught the class before and as any first-time course instructor knows, developing content on the fly and getting comfortable with the material, meant I was often only minutes ahead of my students when walking into the classroom. It was a considerable but ultimately rewarding challenge. My chance to smooth out the kinks in the class will come during the fall 2022 semester. I will build on several course initiatives, namely, to have the students work on skills that will enhance their employability. This will consist of assignments and projects that strengthen their writing, computational and software skills; all of which are vital in the job market.

I look forward to engaging all my students in the classroom and in the laboratory for the upcoming academic year. My goal is to give all students at Eastern the strongest possible preparation so they can succeed in the rapidly growing and competitive fields of sustainable energy and energy geoscience.



Grabbing a few waves on my SUP surfboard in the spring of 2021
(photo by Harry Hanka)

Bryan Oakley

“Brighter Days, where did they go?” (Grey, 2001)

That lyric, by J.J. Grey & Mofro really covered the last couple of years, but, continuing the lyric, I am hopeful for where we are going (collectively) and that COVID continues to move behind us! As always, I start the newsletter with a comment about how the semester seems that when we look ahead to the end of the semester it seems to arrive at a glacial pace, yet the beginning of the semester seems like yesterday? After the crazy end of the spring 2020 semester, it was a welcome sight to see (masked, and then unmasked in the spring) students in the computer lab and classroom! The dynamics of the department (both students and faculty) were not the same as pre-pandemic, but given all of the other impacts and adaptations, I'll take what small victories we can get!

Despite Covid, my colleagues and I managed to continue to progress our research projects, including publishing a paper in *Geosciences* focused on the shoreline evolution of the Napatree Point barrier, and the special issue paper focused on the shoreface sediment volume on the Rhode Island south shore (with EES Alumni Cody Murphy and Madie Varney) was finally published! My on-going research projects have continued, focusing on the link between the shoreface (area just offshore of the beach and shoreline change, examining sorted bedforms on the shoreface, working with a colleague on various projects examining the shallow-water geology offshore of Cape Cod, monitoring the shoreline on Block Island (collaborating with volunteers) and Napatree Point.

Dr. Hyatt and I have continued to work on Block Island bluff erosion, and we currently have a funded research project to begin drone mapping. I continue to serve as a science advisor for the Napatree Point Conservation Area, and the Watch Hill Conservancy has funded my on-going monitoring at Napatree through 2022. The partnership between Eastern EES, the University of Rhode Island Coastal Institute and the Watch Hill Conservancy remains a great asset to the department and will continue to provide student research opportunities in the future! The research on Napatree has garnered significant local and national attention. As many of my research projects are continual and on-going, I am always looking for motivated students to help with field and lab work, especially if you have already taken GIS! Contact me for more information if you are interested in working on a project.



On the Homefront...

My kids continue to grow; I have a hard time reconciling I will have a teenager come September. Aidan is 12 ½ and recently completed 6th grade while Haley is approaching 9½ and is wrapping up 3rd grade. During the pandemic things have remained relatively normal at home, particularly since the kids were able to be vaccinated. In 2020 we adopted a rescue dog, named 'Rocky' who is now just over a year old. A DNA analysis tells us he is 50% German Shepard, 15% Bloodhound and 10% Sheltie, with some other breeds thrown in. This adds up to him being a nearly 80 lb. ball of muscle and energy but has been a great addition to the Oakley clan. We also added a vessel to our fleet of watercraft, with a 17ft center console skiff named 'Loki', and the fam has been enjoying days out at Napatree and cruising on Little Narragansett Bay.



The Oakley family atop the Jupiter Inlet Lighthouse in the winter of 2022



The Oakley kids and Julie on our 17' boat "Loki" on Wequaquet Cove in Stonington



Aidan and Haley on a winter hike up Lantern Hill, CT



Haley picking up trash in our local park. What she does, she does with style (which she did not get from me!)



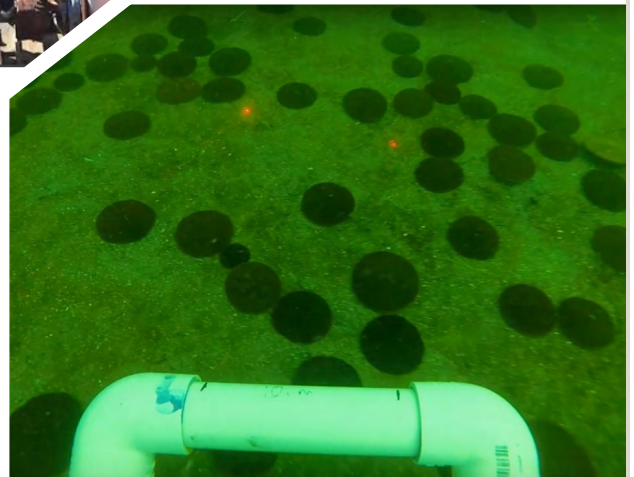
Family

Rocky atop a glacially transport boulder in Glacier Park, Westerly, RI

ACADIA NATIONAL PARK BENTHIC GEOLOGIC HABITAT MAPPING

Beginning in September 2021, I began a mapping project with John King, my colleague from the Graduate School of Oceanography at the University of Rhode Island at Acadia National Park. Working with the National Park Service, we mapped four areas around Mount Desert Island and adjacent areas using a combination of side-scan sonar, bathymetry, underwater video imagery and surface sediment grab samples. Current EES students Genevieve Rondeau and Connor Rego both contributed greatly to this work, interpreting the sonar data around two of the field areas. Visiting Bar Harbor also gave me a chance to catch up with EES Alumni Liz Lemire who relocated to Bar Harbor after graduating.

GSO/URI Scientists Alex Moen and Brian Caccioppoli aboard the specially designed 28ft pontoon boat used to map shallow coastal waters .



Example field of view from the drift video imagery from Compass Harbor Drift 4. The PVC pipe in the foreground is the front of the custom-built camera sled. The two red dots, produced by underwater laser pointers mounted on the sled are approximately 20 cm apart. The circular features in the imager are sand dollars on a sandy substrate.

Summer 2022 Fieldwork with Students

Jonathan Lepire, assisted by Emily Watling and Watch Hill Conservancy staff are working with Dr. Oakley on mapping the flood-tidal delta and inlet channel of the lagoon at Napatree Point. This dynamic system has continued to change over time, and this current project builds off of previous projects by Alyson Augentien, Madeline Varney and Joey Marsalisi. The inlet channel has shoaled considerably in recent years as the small barrier spit has grown via longshore sediment transport. Jonathan is using a multi-faceted approach to understand the dynamics of this system.

Additionally, Emily Watling will continue to work on Eelgrass Mapping in Little Narragansett Bay, building on work done previously by Nina Musco and Cameron Soulagnet is working on the Napatree Shoreface, mapping sorted bedform extent and position over time using side-scan sonar and underwater video imagery. These projects help foster the science-based management of this important part of the Napatree ecosystem.

Helicopter Flight Over Napatree Point

In late June, I had the chance to jump aboard a helicopter tour of Napatree Point Conservation Area, which is a great example of a barrier spit in the glaciated northeast, and one of my long-term field areas. This was funded by a Watch Hill Conservancy member and provided a great chance to update my aerial images (which I last collected in 2013 following 'Superstorm' Sandy. The flight was in a small helicopter, which took off from Westerly Airport, and the pilot accommodated our photography by simply taking the doors off the copter! I was warned to take everything out of my left pocket unless I wanted to lose it to the propwash from the tail rotor! I was able to capture both images and videos of Napatree Point, Sandy Point and the eelgrass beds we have been mapping the last few years. GoPro videos along Napatree Point and from Sandy Point to Napatree Point can be found on YouTube at https://youtu.be/wrYCh_3ZxkU and <https://youtu.be/dsjoTYbWB7I>



Emily Watling (left) and Jonathan Lepire (right) collecting RTK-GPS data for around the Napatree Point lagoon.



Prior to takeoff. 'Cozy' doesn't come close to describing flight conditions! Image by Philo Willets



Napatree Point viewed from the west. In the foreground is the Point, which is a small piece of the Clumps Recessional End Moraine. The remnants of Fort Mansfield are clearly visible. This mediocre photo I took was heavily edited and enhanced by Dr. Hyatt and his photography skills!

➤ EES Raises Funds for Ukrainian Children in Need ◀

By Dickson Cunningham

During spring, 2022, the department decided to organize a fundraising campaign to support Ukrainian refugee children who are innocent victims of the Russia-Ukraine war. Three separate department efforts were combined to collect funds to donate to UNICEF's Crisis in Ukraine campaign. Cash contributions totaling \$530 were received through on-line donations. We also held a very successful 3-day bake sale. EES students (and their parents) and faculty went all out baking and selling homemade cupcakes, cookies, brownies and other dessert items. The department is very grateful for their time and efforts. Emily Watling, who is accustomed to selling farm products at village markets in the summer, was exceptionally successful at luring students to the table and convincing them to contribute to our campaign. She was such a persuasive saleswoman that I am sure she could convince most of us to buy land in the Everglades! By the end, we raised \$509 from the bake sale, which provided an opportunity for anyone on campus to do a little bit to help the victims of the Ukrainian conflict.

We also gathered unwanted used books which we planned to sell to the Book Barn in Niantic. However, the Book Barn staff did not want to buy most of the books, which was disappointing, but we were still able to sell some for a total of \$72. The remaining unsold books were donated to a Goodwill charity shop also in Niantic, who were very happy to receive them.

In total, the EES Department raised $\$530 + \$509 + \$72 = \$1,111$ for the UNICEF Fund. UNICEF only takes a maximum of 3% for administrative costs so about \$1078 will directly help the Ukrainian children in need. This is a substantial result.

Thanks to all who contributed monetarily, donated time, baked, sold baked items, and provided other generous support.



EES Major Emily Watling in the Science Building entrance area selling baked items to raise funds for Ukrainian refugee children.

SUPPORTING EES STUDENTS

The faculty members of the EES Department are committed to providing our students with practical research, field, and presentation experience as often as possible. Many of the activities our students participate in are supported through EES Founders Fund, which was established for these purposes. We welcome your tax-deductible donations to this fund and encourage you to contact Mr. Joseph McGann at Institutional Advancement (860-465-4514) or email him at (McGannJ@easternct.edu), if you would like to learn more about how to contribute to experiences that open minds and support career development for new generations of EES students. Thank you in advance!

Eastern EES Facebook Page: Alumni, if you are not currently a member of the Eastern EES Facebook page, please email Bryan at OakleyB@easternct.edu and he can send you the link. The Facebook page is a great way to stay connected to the department as well as a growing resource for the EES related jobs.

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We're on the Web!

See us at:

[https://www.easternct.edu/
environmental-earth-science/
index.html](https://www.easternct.edu/environmental-earth-science/index.html)

EES Students and Faculty in
the Lost River Range, Idaho

