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BioMass

Equatorial Biology Interim class

Student Coordinator: Brenna Peterson '17

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Peruvian Medical Experience Interim Class of 2015

Summer at the Coe College Wilderness Field Station

by Emma Burck '17

Interested in taking a hands-on, experiential class this summer? The Coe College Wilderness Field Station could be for you!

The Coe College Wilderness Field Station is a thirty-minute drive from Ely, MN, just outside the Minnesota Boundary Waters. A conglomeration of cabins and small buildings on the edge of Low Lake, the field station is isolated and quaint. It's off the grid — it runs on its own generator — and lights power on at 6 am every day. A horn blow signals breakfast around seven, and twenty-or-so students from liberal arts schools around the country scramble out of their beds, pulling on the clothes they've now been re-wearing for days on end. Sleepy-eyed, they make their way to the dining hall to start the day as a group — faculty, staff, and students all together. Nourished and ready to go, students head to their classrooms to study animal behavior, aquatic ecology, boreal mammalogy, comparative environmental politics, nature writing, or ornithology. Some days class is indoors — doing lecture or lab work — but most days class is outside, weather permitting. Students and professors grab a couple canoes and head out to the water, the highway of BWCAW (Boundary Waters Canoe Area Wilderness). After class, students have nights to themselves: reading, playing cards, fishing, canoeing, exploring, and getting to know their peers. Lights power off at 10 pm.

Most days at the field station are like this one. However, students at the Wilderness Field Station also get the chance to take two canoe trips with their class, a practice 2-3 day trip and a longer 7-9 day trip. A highlight of the field station experience, the canoe trips allows students to immerse themselves in the natural world and see what they have been learning about in class firsthand. After the long canoe trip, students complete the independent research and projects they've been working on throughout the month, and present to fellow students and professors.

Pictured: 2014 Session I Field Station Students, Faculty, and Staff

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Senior Reflection

Nora Flynn '15

My first biology class at St. Olaf was titled Evolution and Diversity; this was a broad class that skimmed many topics that would resurface throughout my college career. The work of Charles Darwin was highlighted early on in the semester. His observations of the natural world, made over 150 years ago, warrant repetition, and several of my biology classes confirmed this. In my final semester of college I'm learning about Darwin again, but this time it's not in a biology class. Today I discussed natural selection and evolution in a philosophy class about science, ethics and religion. The scope of Darwin's findings is far reaching and as it turns out, can be related to many aspects of life. Bear with me while I repeat and relate them here.

1. Creatures adapt to their environment — Just as kangaroos are well adapted to life in the outback, biology students grow into the St. Olaf Biology department. We all find our own niches; where we specialize. I've found my own passion in plants and agriculture but it was only after meandering through many interests that I found my place.
2. Extinction is happening all the time — An estimated 99% of species have become extinct. This proportion of loss is not too far off from the amount of information that has entered and departed my brain throughout my years at St. Olaf. However, stunning fossils of memory remain for me to hold onto for the rest of my life. For example, I won't soon forget the significance of telomeres thanks to the deliberate teaching of Lisa Bowers, nor the complexity of the carbon cycle because of Kyle Whitinghill's patience and understanding.
3. Vestigial traits are evidence for evolution — Snakes have remnant hipbones, traces of their origins. Although I'm a biology major who likes to ponder plants, I still have the knowledge and skills I've gained in other classes. Who knows if a snake's hipbones help him along, but I'm certain that my experiences in different disciplines have helped deepen my appreciation of biology.

I knew from the first day of college that I wanted to study the natural world. None of my friends or family members were stunned when I declared. However, I've been continually surprised by my own expanding enthusiasm for learning. I attribute this to the space and opportunities for growth and exploration that the biology department has offered me.

Summer at the Coe College Wilderness Field Station...Continued:

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2014 Session I independent project presentations

Independent projects in 2014 varied from researching the most effective baits for mouse traps to conducting a comparative study of bluegill diets in different lakes to studying the differences in biodiversity of bird populations in rural, suburban, and urban areas.

Last summer the aquatic ecology class collected data on the turbidity, temperature, pH, conductivity, dissolved oxygen concentrations, and zooplankton populations of the lakes they visited on their canoe trips. Along the trips, they reconciled the data they had collected with what they observed about the size and location of lakes to hypothesize the reasons why the lakes had the properties they did. Upon return to the field station, they compiled the data to create temperature and dissolved oxygen profiles of the lakes, completing their comparative water body study.

2014 Aquatic Ecology class, on the final morning of the long canoe trip

Interested in applying? Check out http://www.public.coe.edu/fieldstation/ for application materials, session dates, and more information!

Want to talk to a field station alum?

Elysa Bond (bondea@stolaf.edu; Boreal Mammalogy), Emma Burck (burck@stolaf.edu; Aquatic Ecology), Greg Fargo (fargo@stolaf.edu; Boreal Mammalogy), Hannah Hein (hein@stolaf.edu), Andrew Wilder (wilder@stolaf.edu; Nature Writing)

Love is Owl Around Us by Sonja Helgeson '15

"Barred Owl Pair." Accessed January 7, 2015. http://s49.photobucket.com/user/Rstrick2/media/Owls/barred-owl-pair.jpg.html.

February is the month of love. St. Valentine's Day gives us the opportunity to show our affection for our secret crushes or significant others by sending them chocolates, flowers, or little love notes. But humans aren't the only species who are busy scheming up ways to win each other over in the name of love.

On frigid winter nights in February, when most other birds are either asleep or enjoying their winter get-away down south, male barred owls (Strix varia) are busy calling their female friends. They will use a variety of hoots and screeching calls to attract a female, and if she is impressed, she will respond with her own call. Haunting duets can be heard piercing the midnight silence of a snowy forest. The signature hoot of the barred owl is characterized by the mnemonic, "Who cooks for-you? Who cooks for-you allll," but it is only one of an array of calls and sounds a barred owl is capable of producing. If a female owl is nearby, the male might also perform a mating display by bowing and nodding, raising his wings, and swinging back and forth. As things progress they will also engage in courtship feeding and preening until…well, you get the idea.

Once the owls have found their soul mate, they begin house hunting for a suitable tree cavity or abandoned squirrel, hawk, or crow's nest. Barred owls are monogamous, meaning they mate for life, and will often return to the same nesting site for many years. By March they begin laying 2-4 eggs, which the mother will incubate for about a month while the father provides meals for them both. After the eggs hatch into fluffy little owlets, the parents work tirelessly to provide food for them as they grow and develop. About 40 days later they are ready to fledge, or leave the nest, and make their own way into the world. The parents still continue to periodically feed their fledglings for a few more months as they learn to become fully self-sufficient hunters. When it comes to food, barred owls are quite the generalist. They will dine on everything from small mammals, birds, fish, amphibians, a variety of invertebrates, to reptiles; they will even prey upon smaller owl species!

Barred owls have been known to hang out in the woods behind Kildahl and Mohn, and in the woods near Hilleboe and Larson. So the next time you find yourself walking back to your room after a late night in the library or with friends, stop for a minute and listen for the hooting of courting barred owls—it's the sound of a secret love story.

Class of 2015....SAVE THE DATE

For: Biology Senior Banquet
Date: May 12th, 2015
Time: To Be Determined
Come for a nice dinner, time with your professors and fellow majors, and a few games too...

Upcoming Events:

MN Academy of Science

The 28th Winchell Undergraduate Research Symposium will be held on Saturday, April 25, 2015 at the University of Northwestern – St. Paul in conjunction with the Annual Meeting of the Minnesota Academy of Science. Full details are at www.mnmas.org.
Students can present their research as a poster or oral presentation and will receive feedback from professional scientists in their discipline. The event is open to students pursuing scientific studies, including natural sciences, physical sciences, social sciences, economics, and engineering.

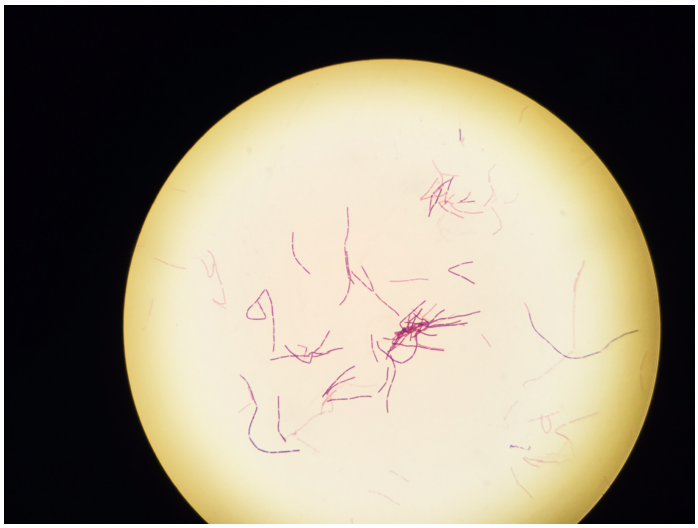
The keynote speaker for the Annual Meeting is Dr. David Odde, Professor in the Department of Biomedical Engineering at the University of Minnesota. His research seeks to discover how cells migrate and divide; currently, this research is focused on these processes as they relate to brain cancer progression.

Distinction Candidates

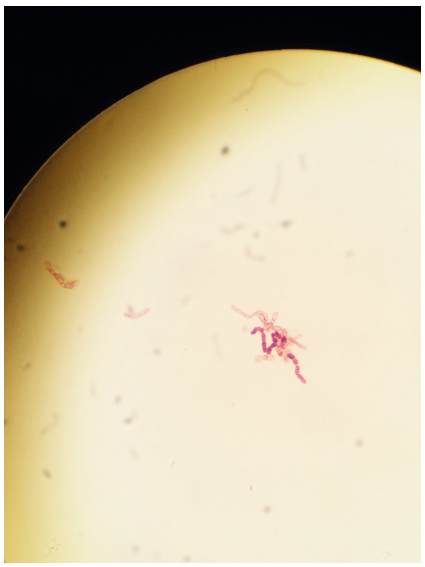
Eleven students are working hard on their distinction papers! They have done research on and off campus on topics as diverse as carbon composition in the siberian permafrost, gene expression in embryonic stem cells, lipid droplet biochemistry, soil fertility, bumblebee populations, restored forests and the feeding ecology of dolphinfish, to name a few. Distinction papers are due *Monday March 23rd* and the distinction poster session, open to all, will be held *Monday April 20th.* Good luck candidates!

As seen in Microbiology Lab this week....

Photos taken by: Hunter Lin '16



gram positive Bacillus subtilis angle #1



A student's isolated unknown gram negative Streptobacillus bacteria angle #2