



Fall 2022

Ecology Student Mini-Symposium

Wednesday, December 7, 2:30 pm
Robb Hall, Hintz Family Alumni Center



Schedule

2:30 - Social Time (Refreshments provided by EcoVents)
2:50 pm - Welcome by chair, **Jared Ali**

3:00 pm - Miranda De Priest, Master's Ecology
Advisor: Terry Bell

Searching for generalist: Environmental pH filtering on soil bacteria

We have used an active environmental selection gradient to see the impact of changing pH conditions on a soil bacterial community and find that changing pH conditions alter community composition but not alpha diversity, while some bacterial genera are less impacted than others.

3:15 pm - Margarita Fernández, PhD candidate
Advisors: David Eissenstat and Margot Kaye

Unraveling the role of leaf litter on microarthropods response to anthropic disturbance: a Patagonian perspective

Ecosystem functions are currently threatened by anthropic disturbance, including those mediated by soil fauna. While in temperate regions microarthropods support soil productivity and biogeochemical cycles to a great extent, they are usually excluded from sustainability assessments. Understanding and quantifying pathways of microarthropods decline due to vegetal cover loss and nutrient enrichment is needed in managed landscapes. Here we focused on the role of leaf litter as a key driver of the response of microarthropods to anthropic disturbance. Using a novel experimental setup, we explored how multiple nutrient enrichment impact microarthropods' community structure and their functional role in leaf litter decomposition. Changes observed in their functional role in decomposition can compromise long-term nutrient and carbon cycling. An unprecedented response to potassium drove interactions of microarthropods with other macronutrients in litter and soil. Together our results highlight different aspects of resilience in the microarthropod community structure but a divergent response to specific nutrient additions.

3:30 pm - Emily Gagne, Master's candidate
Advisor: George Perry

Delivering Bioinformatics and Genetics Workshops to Hybrid and Synchronous Audiences using Google Classroom

Learning how to visualize and understand genetic data is a valuable skill for scientists, especially as access to sequencing data expands. This talk will discuss the importance of delivering bioinformatics workshops to increase scientific capacity in different communities. We delivered a bioinformatics workshop in 2021 to adult participants in Madagascar and in 2022 to historically underrepresented Penn State undergraduate students. I will review methods that can be utilized to deliver educational materials to asynchronous and synchronous audiences when travel is difficult due to COVID-19.

3:45 pm - Lilly Germeroth, Master's candidate
Advisor: Sara Hermann

Gardener choice impacts monarch survival: milkweed species identity forms the monarch community

Monarch butterfly conservation efforts have inspired many backyard gardeners to contribute their land to hosting this declining species host plant, milkweeds. But there are many species of milkweed, each with their own suite of traits we imagined would select a certain insect community - one that may interact with monarchs differently. In backyard settings, we found monarchs use and survive on each of the recommended milkweed species to different degrees, and the impact of the cohabitating insect community varies between milkweed species. These findings will contribute to regional conservation efforts informed by in-field study of species interactions.

4:00 pm - Curt McConnell, PhD candidate
Advisors: Armen Kemanian and Jason Kaye

Divergence in the isotopic equilibration of 18O-labeled phosphate in soils
Soil microbes drive phosphate (PO₄) cycling in soils, so tracing the PO₄ assimilated and released by microbes can inform their role in other processes within the soil-plant-water system. Direct measurement of PO₄ processed by the microbial biomass is now possible by tracing oxygen-18 (¹⁸O) stable isotopes bound to P. The oxygen on PO₄ in microbes is driven to isotopic equilibrium with the surrounding soil water (¹⁸OH₂O) via an enzyme-mediated equilibrium isotope effect. Therefore, exposing microbes to isotopically enriched or depleted ¹⁸OH₂O and measuring the approach of extracted PO₄ to isotopic equilibrium enables a nearly direct measurement of PO₄ passing through the microbial biomass. However, this meta study on ¹⁸OPO₄ tracing revealed that isotopic equilibration between H₂O and PO₄ had a higher reaction constant (k) when microbes were exposed to isotopically enriched ¹⁸OH₂O compared to depleted ¹⁸OH₂O. This divergence in equilibration rates and apparent contradiction of ¹⁸O-tracing theory is likely due to competing kinetic isotope effects from PO₄ uptake, mineralization, and sorption, which will be explored in this presentation. Given this finding, relating oxygen isotopic equilibration between PO₄ and H₂O to microbially-driven PO₄ turnover must be considered carefully. Improving our understanding of in situ isotope effects is a necessary step towards refining the ¹⁸O tracing method and the ultimate modeling and understanding of the biogeochemical cycling of PO₄.

4:15 pm - Ecology DEI talk, Estelle Couradeau



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Current post-doctoral researchers

Braulio Assis (Tracy Langkilde)	Erica Lawrence (Jesse Lasky)
Marcella Baiz (David Toews)	Chia-Hua Lue (David Walter)
Amita Bhattacharya (David Kennedy)	Leilton Luna (David Towes & Julian Avery)
Henry Birt (Francisco Dini-Andreote)	Paul McLaughlin (Tyler Wagner)
Connie Bolte (Jill Hamilton)	Daniel Medina (Gui Becker)
Kristin Bondo (David Walter)	Jaya Sravanthi Mokkaapati (Christina Grozinger)
Matthew Boucher (John Tooker)	Behnam Nikparvar (Nita Bharti)
Veronica Saenz Calderón (Daniel Allen)	Namhyeon Park (Kevin Hockett)
Gordon Custer (Francisco Dini-Andreote)	Gabriela Quinlan (Christina Grozinger)
Charles Dean (Margarita Lopez-Uribe)	Santosh Rana (Jill Hamilton)
Aniruddha Deka (David Kennedy)	Jose Raul Roman (Estelle Couradeau)
Nereyda Falconi (Gui Becker)	Javi Rudolph (David Miller)
Alberto Fameli (David Walter)	Kelly Russo-Petrick (David Walter)
Diana Gamba (Jesse Lasky)	Kaitlyn Spangler (Erica Smithwick)
Sean Giery (Tracy Langkilde)	Margarita Takou (Jesse Lasky)
Valentina Gómez-Bahamón (David Toews)	Katharine Thompson (Sagan Friant)
Sohini Guha (Liana Burghardt)	Nash Turley (Margarita López-Uribe)
Antoine Guiguet (Heather Hines)	Catherine Tylan (Tracy Langkilde)
Hidetoshi Inamine (Katriona Shea)	Kurt Vandegrift (Peter Hudson)
Morgan Kain (David Miller)	Gabriel Villar (Etya Amsalem)
Melania Kammerer (Sarah Goslee)	Jo Werba (David Miller)
Jessica Kansman (Sara Hermann)	Sean Wineland (Daniel Allen)
Anissa Kennedy (Christina Grozinger)	Eric Yip (John Tooker)
Allison Kerwin (Mónica Medina)	Justin Zweck (Duane Diefenbach)

2022 Ecology Graduate Student Organization

Emily Gagne - President	Madeline Luthard - Diversity and Inclusion chair
Jessica Brown - Vice President/treasurer	Emma Rice - Curriculum rep
Olivia Trase - Secretary	Marissa Kopp- Program committee rep
Jennifer Harris - Social co-chair	Maisie MacKnight - Andersen Award rep
Eva Barr - Social co-chair	Beth Tuschhoff - Webmaster

IGDP in Ecology Committee Structure

Program committee Jared Ali, Chair Terry Bell Jennifer Macalady Margarita Lopez-Uribe Katriona Shea John Tooker Paul Bartell Marissa Kopp, EGSO rep	Admissions committee Margarita López-Uribe, Chair Tyler Wagner David Miller
Qualifying Exam committee Armen Kemanian, Chair Sagan Friant John Tooker David Toews	Curriculum committee David Miller, Chair Matthew Ferrari Christina Harden, EGSO rep
	Diversity, Equity, and Inclusion committee Sara Hermann, Chair Tomas Carlo-Joglar Estelle Couradeau Carolyn Lowry David Miller Madeline Luthard, EGSO rep

Awards given in spring semesters

Please consider nominating your students, colleagues, faculty and friends

The **Frank A. Andersen Travel Award** award is given in memory of Frank A. Andersen to a student who would benefit from travel to a scientific conference.

The **J. Brian Horton Award** recognizes outstanding achievement and service to the graduate community by a student in Ecology. A memorial to J. Brian Horton who was an untiring source of advice, help, collaboration, and inspiration to his fellow students and to faculty.

The **Edward D. Bellis Award** recognizes current faculty members in the IGDP in Ecology for outstanding contribution and dedication to educating and training of graduate students in the program.

The **Victoria Braithwaite Research Excellence Award** was established to reward Ecology graduate student research excellence. The new award will recognize outstanding research potential as demonstrated by a student being lead author on the best ecology paper published in the previous year, as determined by a committee of faculty and students.