

THE SCHOOL FOR FIELD STUDIES DIRECTED RESEARCH SPRING 2023



AUSTRALIA

Are palms better host trees for epiphytic bryophytes than other trees in lowland tropical rainforests?

Faculty advisors: Deborah Apgaua, David Tng

Student authors: Samantha Kathleen Larson¹, Allison Elizabeth Janineh², Shea Alex Tyrrell³

1 University of Minnesota, Minneapolis, 2 University of Massachusetts, 3 Bowdoin College

Bryophyte diversity in a remnant upland rainforest on the Atherton Tablelands, Queensland, Australia

Faculty advisor: Deborah Apgaua, David Tng

Student authors: Camilla J. Mancini¹, Zoe C. Strothkamp², Aidan T. Nelsen³

1 Colorado College, 2 Amherst College, 3 University of Redlands

Mangrove trees vary in epiphytic bryophyte species richness and composition

Faculty advisor: Deborah Apgaua, David Tng

Student authors: Jacqueline G. Booth¹, Ashley H. Butler², Kayla N. Engle³

1 University of Southern California, 2 Denison University, 3 Ohio State University

Shoot and leaf flammability of plants in North Queensland Australia

Faculty advisor: Deborah Apgaua, David Tng

Student authors: Audrey Crawford¹, Amy Marie Gaulke², Daniel Ire Kim², Owen Chen Tsunoda³

1 Texas Tech University, 2 Brown University, 3 University of Southern California

Dung Beetles as indicators of endemic mammals for rainforest restoration in the Atherton Tablelands

Faculty advisor: Sigrid Heise-Pavlov

Student authors: Claudia Mabley¹, Jamie Loyst², Rachel Weiss³

1 Bates College, 2 University of Vermont, 3 Drake University

Assessing nocturnal lepidopteran species diversity in forests in different stages of restoration

Faculty advisor: Sigrid Heise-Pavlov

Student authors: Dan Gonzalez-Kosasky¹, Piper Deaser², Jimmy Coyle³

1 Amherst College, 2 Gonzaga University, 3 Boston University

Erosion control and prevention in the Tablelands: Recommendations and methods

Faculty advisor: Sigrid Heise-Pavlov

Student authors: Emma Croll¹, William Horner², Dylan Zane³

1 Whitman College, 2 Grinnell College, 3 Connecticut College

Roadside vegetation management strategy in the Atherton Tablelands in far North Queensland, Australia

Faculty advisor: Sigrid Heise-Pavlov

Student authors: Rebecca Toomey¹, Shannon Doner², Catherine Bussani³, Grace Robinson⁴

1 Hamilton College, 2 Drake University, 3 Hollins University, 4 Connecticut College

BHUTAN

Comparative analysis of BEVs and FCEVs: The future of automotive innovation in Bhutan

Faculty advisor: Dr. Kuenga Wangmo

Student authors: Savian Czerny¹, Eric Maier², Niko Mantras³, Ben Mogensen⁴, Adrian Stafan⁵, Claire Wolgast⁶

1 Colorado College, 2 Franklin University, 3 University of Minnesota, 4 Saint Michael's College, 5 Hamilton College, 6 Skidmore College

The spatial, temporal, and behavioral activity patterns of large predators in the Bhutan Himalayas

Faculty advisor: Dr. Tshering Tempa

Student authors: Caitlyn Gardner¹, Faith Bugman², Joe Ravin³, Sam Takahashi⁴

1 Pikes Peak State College, 2 Muhlenberg College, 3 Gonzaga University, 4 Grinnell College

Assessing mammalian diversity and abundance across elevational gradient and forest types in Bhutan

Faculty advisor: Dr. Tshering Tempa

Student authors: Aydan Peterson¹, Iain Alexander², Maeve Cain³, Nico de Gramont⁴

1 University of St. Thomas, 2 Middlebury College, 3 University of Vermont, 4 Eckerd College

Assessing the economic viability of community forests: A case study from Paro Valley, Bhutan

Faculty advisor: Dr. Norbu Wangdi

Student authors: Moselle Fredericks¹, Charles Ganote², Milo Leahy-Miller³, Evelyn Mann⁴, Samuel Menicke⁵, Kelly Popper⁶

1 Bard College, 2 University of Massachusetts/Amherst, 3 Amherst College, 4 University of Minnesota/Twin Cities, 5 Macalester College, 6 University of Wisconsin/Madison

CAMBODIA

Water snakes in the Tonlé Sap Lake: Perceptions of water snake bycatch and trade in the late dry season in the Kampong Khleang Commune

Faculty advisor: Dr Megan English

Student authors: Meredith Dirkman¹, and Finola Bailey²

1 University of Michigan, 2 Whitman College

Fish abundance, diversity, morphology, and diets in Kampong Khleang Commune, Tonle Sap Lake, Cambodia

Faculty advisor: Dr Megan English

Student author: Graham Kelley¹

1 Skidmore College

Behavioral adaptations of semi-captive Asian elephants (*Elephas maximus*) at Kulen Elephant Forest, Cambodia: Impacts of human-elephant relationships

Faculty advisor: Dr Megan English

Student author: Divine Siam¹

1 University of Massachusetts

Don't be crass, eat some grass! Seasonal foraging behavior and activity budget of semi-captive Asian elephants (*Elephas maximus*) at Kulen Elephant Forest, Cambodia

Faculty advisor: Dr Megan English

Student authors: Rhys Farber¹ and Autumn Maier²

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Small scale fisher-people, markets, and environmental degradation on the Tonle Sap

Faculty advisor: Dr Tim Frewer

Student authors: Lea Hostetter-Habib¹ and Adam Crellin-Sazama²

1 Cornell University, 2 Clark University

A Female Focused Study of the Precarious Position of Urban Recyclers in Siem Reap, Cambodia

Faculty advisor: Dr Tim Frewer

Student Authors: Karin Schroeder¹

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Changing Livelihood Diversification along the Tonle Sap Lake: A Case Study of Kampong Khleang Commune

Faculty Advisor: Dr. Jean-Christophe Diepart

Student Authors: Wren Murphy¹ & Annie West²

1 The University of Vermont, 2 Sewanee: The University of the South

Participatory Guarantee Systems in Cambodia: Learning from the experience of smallholder farmers in the ECOFARM cooperative in Siem Reap province

Faculty advisor: Jean-Christophe Diepart

Student authors: Skylar Tempe¹ and Amelia Scharin²

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CHILE

Connecting theory to practice: an assessment of inland wetland conservation in Torres del Paine Biosphere Reserve

Faculty advisor: Dr. María Rafaela Retamal Díaz

Student authors: Jaden Golden¹, Richard Kinder¹,

1 University of San Francisco

Perceptions of marine wetland ecosystem services: impact of historical relationship of local stakeholders around Puerto Natales

Faculty advisor: Dr. María Rafaela Retamal Díaz

Student authors: Kathryn Kowal¹, Keathley Pinney Brown²

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Can Human Intervention Lead to Conservation?: A Study in the Torres del Paine Biosphere Reserve

Faculty advisor: Dr. María Rafaela Retamal Díaz

Student authors: Emilee Shields¹

1 Point Loma Nazarene University

Fire restoration management and volunteer efforts: A comparative analysis between Yosemite National Park, USA and Torres del Paine National Park, Chile

Faculty advisors: Dr. María Rafaela Retamal Díaz (Primary advisor), Dr. Shaw Nozaki Lacy (Secondary advisor)

Student authors: Oliver Fedowicz¹, Vanessa Southgate²,

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Urbanization as both a threat and a management strategy for wetland conservation: Initial research and future implications for Estero Natales

Faculty advisor: Dr. María Rafaela Retamal Díaz

Student authors: John Bergin¹, Ruby Paarlberg²

1 Gonzaga University, 2 Bates College

Equilibrium line altitude through climate data analysis in Southern Patagonian, Chile: Glacial trends within the alpine glaciers of Cerro Tenerife

Faculty advisor: Dr. Francisco Javier Aguirre González

Student author: Elijah Lines¹

1 University of Maine/Orono

Extreme events in Rio Paine, Lago Dickson, and Lago Paine located in Torres del Paine National Park, Chile

Faculty advisor: Dr. Francisco Javier Aguirre González

Student authors: Isabel Lucas¹, Liberty Sheckleton²

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Long-term precipitation, temperature, and wind trend analysis In Magallanes, Chile

Faculty advisor: Dr. Francisco Javier Aguirre González

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1 Brandeis University

Assessing endorheic lagoon sensitivity to drought conditions in The Magallanes region of southern Chile

Faculty advisor: Dr. Francisco Javier Aguirre González

Student authors: Angela Douglass¹, Myla McLain¹

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Implementing an orographic precipitation model for Torres del Paine National Park, Chile

Faculty advisor: Dr. Francisco Javier Aguirre González

Student authors: Spencer Greenfield¹

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Methods in estimating snow line elevations using remote sensing in the Tenerife and Cerro Mocho watersheds

Faculty advisor: Dr. Francisco Javier Aguirre González

Student authors: Sophia Patt¹, Madison Hinds², Eva Coleman³,

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Impacts of flashiness on fluvial macroinvertebrate morphology

Faculty advisor: Dr. Shaw Nozaki Lacy

Student authors: James Lucey (Virginia Lee Lucey)¹, Jacobi Stacy²

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Exploring geomorphological measurement methods: Field vs. Google Earth

Faculty advisor: Dr. Shaw Nozaki Lacy

Student authors: Sarah Hall¹, Margaret Morgan²,

1 Connecticut College, 2 Macalester College

Drought indices in modeling macroinvertebrate species richness

Faculty advisor: Dr. Shaw Nozaki Lacy

Student authors: Jennifer Coseno¹, Francesca Rossi²,

1 Bates College, 2 Whitman College

COSTA RICA

Evaluating local consumption and social solidarity economies: Verdes community currency initiative

Faculty advisor: Mary Little

Student authors and home schools: Eugenia Chow¹, Elizabeth Domina², Evan Li³,

1 University of North Carolina/Chapel Hill, 2 Plymouth State University, 3 Brown University

Developing a sustainable food purchasing policy: An assessment tool for the Monteverde Institute to enhance food security

Faculty advisor: Mary Little

Student authors and home schools: Chloë Lendi¹, Nathan Horlander², Tess Fitzhenry³, Thea Henry⁴

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Effects of farm management practices on coffee productivity and water source protection in Atenas, Costa Rica

Faculty advisor: Milena Cambronero

Student authors: Grace Adams-Kollitz¹, Abel Cameron², Rosemary Kehoe³, Amelia Wallis⁴,

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Carbon sequestration and soil exposure in five agroforestry coffee farms in Atenas, Costa Rica

Faculty advisor: Milena Cambronero

Student authors: Madison Culcasi¹, Anna Lowe², Emily Marino³, Autumn Potts⁴

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Assessing the impacts of climate change on coffee growers in Atenas' watershed: Perceptions and adaptation strategies.

Faculty advisor: Milena Cambroneró.

Student authors: Bianca Sanchez¹

1 Allegheny College

Sexual size dimorphism in wing area, weight, and beak length in 8 species of Costa Rican hummingbirds

Faculty advisor: Gerardo Avalos

Student authors: Channelle Chua¹ and Miranda Garcia-Cassani²

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Does specific leaf area predict carbon sequestration in six species of palms?

Faculty advisor: Gerardo Avalos

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Ecological and evolutionary causes of morphological divergence of seven hummingbird clades

Faculty advisor: Gerardo Avalos

Student authors: Jillian Paquette¹

1 Davidson College

Preliminary study of herpetofauna diversity and density in the premontane forest of Man   Center, Costa Rica

Faculty advisor: V  ctor Acosta Chaves

Student authors: Addy Cullen¹, Esme Garcia², Alicia Hober³, Reese Southworth⁴, Elena Stites⁵, Azalea Thompson⁶

1 College of William and Mary, 2 College of the Holy Cross, 3 Colby College, 4 University of Wisconsin/Madison, 5 Barnard College of Columbia University, 6 Harvard University

KENYA

Exploring the comparative advantage of conservation as a land use in the Amboseli Ecosystem

Faculty advisor: Dr. Richard Kiaka, Ph.D.

Student authors: Hanif Amanullah¹, Reece Pauling², Greta Bonomo³

1 Fordham University, 2 Bucknell University, 3 Sewanee: The University of the South

Habitat preference and feeding interactions among browsers, and the effect of community habitat interactions outside protected area in Amboseli ecosystem.

Faculty advisor: Jennifer Wanyingi

Student authors: Ebenezer Figueroa¹, Noelle Beswick², Cora Leonard³, Jaclyn Beaudoin⁴

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PANAMA

Understanding ecological loss in ocean-dependent communities in Bocas del Toro, Panama

Faculty advisor: Dr. Dinda P. Scott

Student authors: Vedaant Kuchhal¹, Abigail Garcia², Alexandra Lister-Penn³

1 Olin College, 2 Kenyon College, 3 Pennsylvania State University

A lesson in anger management: causes of male aggression in the neotropical harvestmen species *Poecilaemula iching*

Faculty advisor: Rosannette Quesada

Student authors: Emma Baird¹, Lily McCarthy², Elena Uicker²

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The effect of leg sensilla impairment on homing in a Neotropical Harvestmen (*Arachnida, Opiliones*)

Faculty advisor: Rosannette Quesada

Student authors: Kristen Beach¹, Justine Goldblatt², Ainsley Smith³, Sarah Synan⁴

1 Dickinson College, 2 The University of Vermont, 3 Vassar College, 4 The College of the Holy Cross

Using tourist values and satisfaction to guide management of a marine wildlife tourist area: An Importance-Performance Analysis of Starfish Beach, Bocas del Toro

Faculty advisor: Leon Mach

Student authors: Danielle Recco¹, Lila Potter², Ezra Fenner³

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Wildlife tourism and local stakeholder vulnerability at Starfish Beach, Bocas del Toro

Faculty advisor: Leon Mach

Student authors: Akani Bey¹, Molly Hardwick², Aidan McDougall³, Sarah Wheatley⁴

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Effects of *Acropora palmata* coral coverage on the community structure of fishes in Bocas del Toro, Caribbean Panama

Faculty advisor: Dagoberto E. Venera-Pontón

Student authors: Olivia Roberts¹, Sophia Turner², Hadley VandeVusse²

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Condition and spatial complexity of the reef-building coral *Acropora palmata* in the Bocas del Toro Archipelago

Faculty advisor: Dagoberto E. Venera-Pontón

Student authors: Kyra DeGroat¹, Hannah Orton²

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PERU

Examining stakeholders' role in regional conservation area (RCA) management in Loreto, Peru

Faculty advisor: Pamela Montero Alvarez

Student authors: Kyla Alexander¹, Courtland Dorris²

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Examining partnerships and communities' participation: a case study of the Allpahuayo Mishana National Reserve, Loreto - Peru

Faculty advisor: Pamela Montero Alvarez

Student authors: Genesis Whitlock¹

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Systematic review of the current sustainable coffee practices

Faculty advisor: Pamela Montero Alvarez

Student authors: Yuan Yuan¹

1 Boston University

Comparison of herpetofauna diversity and abundance in a pond and forest habitat of the Peruvian Amazon

Faculty advisor: Akira Armando Wong Sato

Student authors: Ty H. Cutler¹, H. Lourdes Watson²

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Fruit parasitism in a Terra Firme broadleaf forest in the Loreto Region of the Peruvian Amazon

Faculty advisor: Akira Armando Wong Sato

Student authors: Amelia D. Cotins¹, Riley M. Kelly², Abigail L. McLane³, Nneka J. Okolo⁴

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The road to birding - How three types of roads affect bird guilds in Western Amazonia

Faculty advisor: Steven Sevillano Rios

Student authors: Quinn Adams¹, Sydney Clayton², Elinor Everett³, Haley Stark⁴

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Soundscape ecology: A comparison of acoustic qualities in farmland and primary forests in the Peruvian Amazon

Faculty advisor: Steven Sevillano Rios

Student authors: Kabir Menon¹

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TANZANIA

Datoga and Hadzabe adaptation strategies to climate change impacts in Lake Eyasi Basin, Tanzania

Faculty advisor: John Mwamhanga

Student authors: Caroline Allen¹, Amanda Bean², Daisy Burns³, Keira Obert⁴

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Impacts of external factors on Hadzabe and Datoga traditional ecological practices of Lake Eyasi, Tanzania

Faculty advisor: John Mwamhanga

Student authors: Isabella Ciancio¹, Margaret McCurdy²

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Wildlife abundance, diversity, habitat selection and niche overlap in Randilen Wildlife Management Area, Northern Tanzania

Faculty advisor: John Kiringe

Student authors: Michael Cushing¹, Lucy Martin², Amelia McDermott³

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Abundance, diversity, habitat selection, and niche overlap of wildlife and livestock in Randilen wildlife management area, Northern Tanzania

Faculty advisor: John Kiringe

Student authors: Taylor Carter¹, Summer J. Smentek², Skylar Woehrle³

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Assessment of open grassland ecological health in Randilen WMA

Faculty advisor: John Kiringe

Student authors: Ameen Asbahi¹, Rachel Gavin², Grace Hassing³, Lauren Hoglin⁴

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Environmental variables drive pollinators and plant-pollinator interactions in the Tarangire-Manyara ecosystem.

Faculty advisor: Henry Njovu

Student authors: Rachel Kent¹, Leslie Nava², Danielle Brennan³

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Environmental drivers of native and non-native herbaceous flowering plants' abundance in the Tarangire-Manyara ecosystem

Faculty advisor: Henry Njovu

Student author: Rosalie Ross¹

1 Knox College

Determinants of avian feeding guild diversity across the Tarangire-Manyara Ecosystem, Tanzania.

Faculty advisor: Henry Njovu

Student author: Lizzie Reifsteck¹

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Effects of elevation on *Passeriformes* morphology in the Tarangire-Manyara Ecosystem.

Faculty advisor: Henry Njovu

Student author: Emily Jones¹

1 Hollins University

Determinants of avian species and functional diversity across the Tarangire-Manyara Ecosystem, Tanzania.

Faculty advisor: Henry Njovu

Student author: Daniel Whitman¹

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TURKS AND CAICOS ISLANDS

Population structure and dynamics of *Cardisoma guanhumi* in South Caicos

Faculty advisor: William (Bill) F. Bigelow

Student authors: Yuhan Fan¹, Bella Fernandez Wagner², Scott Flintstone³

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Diet, shell drilling, and population density of *Octopus insularis* around South Caicos

Faculty advisor: C.E. "Shades" O'Brien, Ph.D.

Student authors: Emery Stobaugh¹

1 Southwestern University

Species interactions and eyebar presence in *Octopus insularis* on South Caicos

Faculty advisor: C.E. "Shades" O'Brien, Ph.D.

Student authors: Torrey Wetzelberg¹ and Mahina Kameenui-Becker²

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The behavior and substrate preference of the Nocturnal Caribbean Reef Octopus, *Octopus briareus*

Faculty advisor: C.E. "Shades" O'Brien, Ph.D.

Student authors: Hayden Lawton¹, Saige Ferguson², Leah Atkins³

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Impacts of artificial light and substrate use on the behavior and body patterning of *Callistoctopus furvus* in South Caicos

Faculty advisor: C.E. "Shades" O'Brien, Ph.D.

Student authors: Tessa Weir¹, Emily Lekas², Gwen Gisler³

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An analysis of the prevalence and composition of microplastics in *Aliger gigas* from the area surrounding South Caicos, Turks and Caicos

Faculty advisor: Cassandra Dudek, Ph.D.

Student authors: Kathleen Brunson¹, Rachel Haughton², Taylor Lynch³, Sara Ruigrok⁴

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The distribution of *Pterois miles* and *Pterois volitans* across habitat type and anthropogenic structures in South Caicos

Faculty advisor: Cassandra Dudek, Ph.D.

Student authors: Cassidy Beach¹, Lauren McDowell², Gwyn McLearn³, and George Norris⁴

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Taming the voracious lionfish (*Pterois* spp.): an exploration of depth, sex, and sexual maturity within and outside of aggregations in South Caicos

Faculty advisor: Cassandra Dudek, Ph.D.

Student authors: Maya Faich¹, Violet Giglio², Catherine Lehmann³, Amani Tran³

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Reef Restoration on South Caicos

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