

DIRECTED RESEARCH PROJECTS

THE SCHOOL FOR FIELD STUDIES

SPRING 2024

Australia

The vascular and non-vascular plant diversity of a palm swamp forest in Mission Beach, Queensland, Australia

Faculty advisors: Dr. David Tng and Dr. Deborah Apgaua Student authors: Max Perry Newman¹, Rachael Elizabeth Tomasko², Althea Hope³, Ian Torrens-Martin³, Allen Everett Zhan⁴ 1 Brown University, 2 Kenyon College, 3 Smith College, 4 Wheaton College

Assessing the flammability of Australian littoral rainforest species and their feasibility for green firebreak plantings

Faculty advisors: Dr. David Tng and Dr. Deborah Apgaua Student authors: Anika Elizabeth Eastman¹, Katherine Anne Grace¹, Caroline Shin² 1 Skidmore College, 2 The Ohio State University

Establishing a biocultural arboretum at the Centre for Rainforest Studies

Faculty advisors: Dr. David Tng and Dr. Deborah Apgaua Student authors: Elizabeth Lauren Martinm¹, Emma Pauline Kaplan², Emma Christine³, Kenney Margaret Elizabeth Muldoon⁴ 1 University of Wisconsin Madison, 2 Grinnell College, 3 Elon University, 4 Rochester Institute of Technology

Rainforest and savanna Grevillea species exhibit divergent leaf and stem but not flammability traits

Faculty advisors: Dr. David Tng and Dr. Deborah Apgaua Student authors: Shea Elsie Issendorf¹, Elizabeth Joanne Karatzas², Hung Minh Pham³ 1 The University of Minnesota, 2 The University of Massachusetts Amherst, 3 Denison University

Exploring landowner perceptions of revegetation on the Atherton Tablelands

Faculty advisors: Dr. Mia Derhé and Dr. Sigrid Heise-Pavlov Student authors: Devon Fischer¹, Hannah Brazus², Hannah Saglimbeni³ 1 Smith College, 2 Miami University, 3 University of Virginia

From canopy to dung: how dung beetles can help assess recovery of reforested plots of land

Faculty advisors: Dr. Mia Derhé and Dr. Sigrid Heise-Pavlov Student authors: Elias Gorby¹, Elise Farley², Miyanna Gamero³, Ollie Safford⁴ 1 University of Redlands, 2 Amherst College, 3 University of Wisconsin, 4 Whitman College

Assessing leaf litter invertebrate diversity and distribution within established revegetation plots of northeast Queensland's wet tropics

Faculty advisor: Dr. Mia Derhé Student authors: Owen McCarthy¹, Grace Filson², Leah Arnold³ 1 Middlebury College, 2 Dickinson College, 3 Wheaton College

Barriers to reforestation: Mabi Rainforest restoration on a cinder cone slope in far north Queensland, Australia

Faculty advisor: Dr. Sigrid Heise-Pavlov Student authors: Sheila F. Hulseman¹, Madelyn E. Radtke², Eleanor L. Buchanan³, EJ Holm⁴, Andrew D. Kim⁵

1 College of the Holy Cross, 2 University of Wisconsin, 3 Brown University, 4 Bates College, 5 Brown University

Bhutan

Effect of distance from settlements and roads on prey species occurrence in Bumdra-Taktsang area Faculty advisor: Tshering Tempa

Student authors: Brodie Leo¹, Emma Watkins², Ethan Krull³, Jenna Ward⁴, Oliver Satola⁵ 1 Williams College, 2 Gonzaga University, 3 University of Wisconsin/Madison, 4 Clark University, 5 University of Michigan/Ann Arbor

Effects of physical properties of the Taktsang-Bumdra landscape on occupancy of predator species Faculty advisor: Tshering Tempa

Student authors: Charlie Haberstock¹, Justin Boshears-Hazen², Lauren Hagerty³, Rachel Bottum⁴, Sydney Cohen⁵, Tanner Alger⁴

1 Hamilton College, 2 University of Massachusetts/Amherst, 3 Lehigh University, 4 Grinnell College, 5 Brandeis University

Assessing the impacts of climate change on water resources: a case of Tsendona, Paro, Bhutan Faculty advisor: Norbu Wangdi

Student authors: Brandon Neifert¹, Brooke Peterson², Chloe Miller³, Jessica Dean⁴, Lillian Sharp⁵, Mia Jones⁶

1 Whitman College, 2 University of Minnesota, 3 Colorado State University, 4 Denison University, 5 University of Michigan, 6 Dickinson University

The impacts of development on the culinary traditions and food basket in Paro Valley

Faculty advisor: Kuenga Wangmo

Student authors: Adeera Batley¹, Annabel Resor², Katie McKenna³, Lizzy Jack⁴, Lorelei Smillie⁵ 1 Hamilton College, 2 University of Vermont, 3 Williams College, 4 Bates University, 5Colorado College

The impacts of climate change on the culinary traditions and food basket in Paro Valley

Faculty advisor: Kuenga Wangmo Student authors: Erica Li¹, Evelyn Zelmer², Gabrielle Levine³, Vivien Owusu-Sampah⁴, Zoe Cultrara⁵ 1 Smith College, 2 University of Richmond, 3 Brandeis University, 4 Colorado State University/Fort Collins, 5 University of Richmond

Cambodia

Soil in the Tonle Sap: assessing nutrients, pH, and microbial communities Faculty advisor: Megan English Student authors: Isabelle Larson¹, Grace Winkelman² 1 Bates College, 2 Lewis & Clark College

Assessing water quality parameters and macroinvertebrate bioindicators near Kampong Khleang Commune, Tonle Sap Lake

Faculty advisor: Megan English Student authors: Liberty Chesney¹, Jordan Durst² 1 University of Redlands, 2 The Pennsylvania State University

Strike a pose: a camera trap survey analyzing the impact of domestic water buffalo *Bubalus bubalis* reintroduction on species richness and relative abundance across seasonal ponds in Cambodia's northern plains

Faculty advisor: Megan English Student authors: Anna Hoehlein¹, Sara Reiss², Julia Willey³ 1 Elon University, 2 Vassar College, 3 University of San Diego

Survivalist fishers of the Tonle Sap

Faculty advisor: Tim Frewer Student authors: Whitney Bryington¹, Jolina Rich², Alyna Sigel³ 1 Hampshire College, 2 University of Massachusetts, 3 University of North Carolina

Filming the survivalist fishers of the Tonle Sap

Faculty advisor: Tim Frewer Student author: Mayu Joiner¹ 1 Ithaca college

Land use and land cover change in Kampong Khleang and surrounding areas

Faculty advisor: Jean-Christophe Diepart Student authors: Kaitlin Cowan¹, Erica Erdenesanaa², Nathan Parr³ 1 Franklin & Marshall College, 2 Bowdoin College, 3 University of Michigan

Livelihood diversification strategies of two villages in the Tonlé Sap floodplain: Cheay Chet and Preaek Sramaoch

Faculty advisor: Jean-Christophe Diepart Student authors: Camille Newman¹, Eliza Sullivan² 1 Wellesley College, 2 College of the Holy Cross

Chile

Indigenous presence in Torres del Paine Biosphere Reserve Faculty advisor: Rafaela Retamal D. Student authors: Kiara Bonilla¹, Owen Jakel² 1 University of Colorado/Boulder, 2 Whitman College

Wetlands in Torres del Paine Biosphere Reserve: perceptions and interactions of park rangers, estancieros, and other residents

Faculty advisor: Rafaela Retamal D. Student authors: Isha Goyal¹, Sammy Stuhlmiller² 1 University of Colorado/Boulder, 2 Whitman College

The estancia, its industry, and our future: climate change and its impacts on Magallanes Faculty advisor: Rafaela Retamal D. Student author: Michael Keegan¹ 1 Williams College

Cleaning Río Natales watershed

Faculty advisor: Rafaela Retamal D. Student author: Mariana Woeber Gardner¹ 1 Denison University

Modernist urban planning in the downfall of Chilean water conservation

Faculty advisor: Rafaela Retamal D. Student author: Cole Sullivan¹ 1 Whitman College

Evaluating the effectiveness of on-site digital cameras for capturing phenological data in southern Patagonia

Faculty advisor: Francisco Aguirre Student authors: Delaney Carlin¹, Audrey Lemoine², Erin O'Donovan³ 1 Scripps College, 2 Colby College, 3 College of the Holy Cross

Drought indicators in southern Patagonia: analysis of ENSO and SAM climate oscillation impact on endorheic lakes

Faculty advisor: Francisco Aguirre Student authors: Fiona Madrid¹, Jesse Paull², Sydney Paull³ 1 Barnard College, 2 Central Washington University, 3 Eckerd College

Snowpack contamination in southern Patagonia: feasibility and opportunities of study

Faculty advisor: Francisco Aguirre Student authors: Claire Beebe¹, Harry Robison¹ 1 Colby College

WRF hydro model for flood prediction and management of Río de las Minas watershed in Magallanes region, Chile

Faculty advisor: Francisco Aguirre Student authors: Julia Hale¹, Katelyn Woodruff² 1 Vassar College, 2 University of Colorado/Boulder

Seasonal variation of macroinvertebrate communities in southern Patagonian streams

Faculty advisor: Shaw Nozaki Lacy Student author: Al Lake¹ 1 Williams College

Parasites and projections: modeling and mapping tree and fungal niches in southern Patagonia

Faculty advisor: Shaw Nozaki Lacy Student author: Ari Lawrence¹ 1 University of Minnesota/Twin Cities

Carbon sequestration in post-wildfire reforestation area of Laguna Azul: reuptake modeling

Faculty advisor: Shaw Nozaki Lacy Student authors: Kathryn Hawkes¹, Daisy Rebozo² 1 Colorado College, 2 University of Washington

Understanding the influence of directional winds on wildfire dynamics in southern Patagonia Faculty

Faculty advisor: Shaw Nozaki Lacy Student authors: Grace Aho¹, Margaret Burgess², Pranav Parekh³ 1 University of Minnesota, 2 Whitman College, 3 Vassar College

Optimizing field methods for estimating river cross-sectional area: insights from southern Chilean Patagonia

Faculty advisor: Shaw Nozaki Lacy Student author: Grace Carter¹ 1 Williams College

Accuracy of various methods of measuring river geomorphology

Faculty advisor: Shaw Nozaki Lacy Student author: Helena Shapiro¹ 1 University of Colorado/Boulder

Costa Rica

Community action and food security through the Monteverde Community Garden Faculty advisor: Mary Little Student authors: Malin Nystorm¹, Colleen Vine², Anna Silverman³, Lauren Iversen⁴, Shane Fitzpatrick⁵, Henry Shuler⁶ 1 Barnard College, 2 Allegheny College, 3 University of Wisconsin/Madison, 4 Pennsylvania State University/State College, 5 College of the Holy Cross, 6 Dickinson College

Assessing how plant functional traits influence species flammability in Atenas, Costa Rica

Faculty advisor: Milena Cambronero Student authors: Andre Bergeron¹, Sydney Cassady², Brennan E. Holmes³, Aaliyah I. Thompson⁴ 1 Clark University, 2 University of Richmond, 3 Denison University, 4 Pennsylvania State University/State College

Flammability of native and non-native plants in the Bosque Municipal of Atenas, Costa Rica

Faculty advisor: Milena Cambronero Student authors: Jack Riccobono¹, Sónia McCollum² 1 Muhlenberg College, 2 Mount Holyoke College

Leaf traits explain species flammability in a forest fragment in Atenas, Costa Rica

Faculty advisor: Milena Cambronero Student authors: Shira Goldman¹, Ava Piebenga² 1 Smith College, 2 Colorado College

Comparing amphibian and reptile diversity between two clouded forests in Costa Rica

Faculty advisor: Víctor Acosta, assisted by Ricardo Sánchez Student authors: Kate Boutell¹, Douglas Giles², Phoebe Shubin³, Abha Upadhye⁴ 1 Oberlin College, 2 Wake Forest University, 3 University of Massachusetts/Amherst, 4 The Ohio State University

Variability in bat communities across various sites within Costa Rica's tropical premontane forest belt

Faculty advisor: Víctor Acosta, assisted by Ricardo Sánchez Student authors: Diego Ramirez¹, Leah Fikermariam², Tomás Brockett-Delgado³ 1 Yale University, 2 University of San Diego, 3 Denison University

Variation of functional traits according to size and habitat in three Cecropia species

Faculty advisor: Gerardo Avalos Student authors: Ariel Schwartzman Miles¹, Liya Miksovsky², Tyler Caine³ 1 Vassar College, 2 Yale University, 3 Brandeis University

Variation in sexual size dimorphism and fit to Rensch's rule in Costa Rican hummingbirds Faculty advisor: Gerardo Avalos

Student authors: Claire Labuda¹, Ethan Ruderman², Reece H. Brown³, Annalise H. Thapaliya⁴ 1 Colorado State University, 2 Amherst College, 3 Columbia University, 4 Lehigh University

Kenya

Effectiveness of the Mbirikani Predator Consolation Fund: mitigating human-lion conflicts and enhancing attitude, tolerance, and coexistence within communities Faculty advisor: Richard Kiaka Student authors: Aaron Richmond-Crosset¹, Alexandra Greene², Pranneil Thankavel³

1 Clark University, 2 Dickinson College, 3 University of Wisconsin

Challenges and long-term sustainability of the Mbirikani Predator Consolation Fund

Faculty advisor: Richard Kiaka Student authors: Dylan Maddux¹, Ella Elizabeth Francis², Gabrielle Roman³ 1 Grinnell College, 2 Pitzer College, 3 Yale College

Abundance, distribution, and habitat preference of grey crowned crane *Balearica regulorum gibbericeps* in Amboseli National Park and its environs

Faculty advisor: John Kiringe Student authors: Natalie Angstadt¹, Halle Banks², Sanjit Ramesh Chandran³ 1 Wesleyan University, 2 Colorado State University, 3 Yale-NUS College

Abundance, distribution, habitat quality, and key threats facing grey crowned crane in the Amboseli ecosystem, Kenya

Faculty advisor: John Kiringe Student authors: Luke Chavez¹, Amina Farah² 1 Wesleyan University, 2 Trinity College

Abundance, distribution, and threats facing grey crowned crane in Amboseli National Park and its environments

Faculty advisor: Jennifer Wanyingi Student authors: Rachel Bartelt¹, Solveig Olson² 1 University of Minnesota/Twin Cities, 2 Grinnell College

The influence of socio-cultural perceptions, politics, and intervention measures on giraffe bushmeat activities in the Amboseli ecosystem

Faculty advisor: Jennifer Wanyingi Student authors: Abigael Dawson¹, Noah Randall², Charlotte Veenstra-VanderWeele³ 1 Robert Morris University, 2 University of Colorado/Boulder, 3 Barnard College

The dynamics, severity, and community awareness of giraffe bushmeat activity within the Amboseli ecosystem

Faculty advisor: Jennifer Wanyingi Student authors: Mikayla Stowe¹, Amelia Thrasher² 1 University of Minnesota, 2 Ohio Wesleyan University

The role of community in Masai Giraffe conservation and mitigating bushmeat activity in the Amboseli Ecosystem

Faculty advisor: Jennifer Wanyingi Student authors: Sailor Brown¹, Alexandra Zolman² 1 University of Redlands, 2 Wake Forest University

Panama

Surfonomics in Bocas del Toro: a tourism demand analysis of surf ecosystem value Faculty advisor: Leon Mach Student authors: Joseph Degraw¹, Sophia Kishimoto², Julia Lynch³, Alina Malin⁴, Zea Segnitz⁵ 1 Whitman College, 2 University of San Franciso, 3 St. Michael's College, 4 University of Michigan, 5 Northeastern University

Empowering Ngöbe indigenous communities through tourism: assessing dimensions of empowerment in the Bocas del Toro archipelago

Faculty advisor: Leon Mach and Laura Bruce Student authors: Sabilah Alibhai¹, Aarani Balendran², Gabby Cournoyer² 1 Connecticut College, 2 University of Michigan

Land-use change decreases species richness and biodiversity of Panamanian leaf-litter frog communities

Faculty advisor: Daniel Medina Student authors: Isabelle Dugan¹, Owen Hardy², Kayla O'Shea³, Mattie Vandiver⁴ 1 University of Michigan, 2 Bates College, 3 Brandeis University, 4 Vassar College

Land use change induces microhabitat alterations with implications on Oophaga pumilio species

Faculty advisor: Daniel Medina Student authors: Chiara Bachmann Gómez¹, Allison Conwell², Helena Lepre³, Lucy Zullo⁴ 1 Whitman College, 2 Skidmore College, 3 University of Vermont, 4 Hamilton College

Population structure of keystone herbivorous reef fishes in Bocas del Toro, Caribbean Panama Faculty

Faculty advisor: Dagoberto E. Venera-Pontón Student authors: Charlotte Latham¹, Danielle Nader², Kasia Jackson², Kellen Kennedy³ 1 Eckerd College, 2 University of San Diego, 3 University of Michigan

Herbivory and aggression in keystone herbivorous fishes from Bocas Del Toro, Panama

Faculty advisor: Dagoberto E. Venera-Pontón Student authors: Ana Zbaraschuk¹, Katie Parker², Rosalie Averill³, Zoe Malouf⁴ 1 University of San Diego, 2 Whitman University, 3 Brandeis University, 4 Kenyon College

Tanzania

A Survey of the plant species use and availability among the Hadzabe of Lake Eyasi, northern Tanzania Faculty advisor: John Mwamhanga

Student authors: Matt Butler¹, True Usiatynski², Andrew Fredericks³ 1 Iowa State University, 2 Mount Holyoke College, 3 Hamilton College

Documenting medicinal plant usage, knowledge acquisition, and conservation perspectives of the Hadzabe northern Tanzania, Africa

Faculty advisor: John Mwamhanga Student authors: Madis Kennedy¹, Margot Collins² 1 Kenyon College, 2 University of Massachusetts/Amherst

The assessment of the tourist satisfaction and economic potential of Maasai cultural bomas, northern Tanzania

Faculty advisor: John Mwamhanga Student authors: Frainer Castillo¹, Kenya Twyman² 1 Franklin & Marshall College

Small mammal community ecology in community protected forest and Maize field in Karatu district, northern Tanzania

Faculty advisor: Egidius James Rwebuga Student authors: Ella Webber¹, Shelly Coleman², Kylie Lakin³ 1 Colby College, 2 University of San Diego, 3 Hollins University

Investigating bird species community structure in Moyo Hill Community Protected Forest and Lake Manyara Airport compounds

Faculty advisor: Egidius James Rwebuga Student authors: Zora Beaty¹, Abigail Gewirtz², Evelyn Johnson³ 1 Pomona College, 2 Colby College, 3 Davidson College

Rangeland health assessment in the Burunge Wildlife Management Area of northern Tanzania

Faculty advisor: Dr. Shem Mwasi Student authors: Daniel Block¹, Maria Giarusso² 1 Brandeis University, 2 The Pennsylvania State University/State College

Effect of zonation on herbivore density and standing crop biomass calibration in Burunge Wildlife Management Area

Faculty advisor: Dr. Shem Mwasi Student authors: Skyler Williams¹, Abby Strom², Savannah Vonesh³ 1 Smith College, 2 University of Minnesota, 3 Davidson College

Impact of invasive plants on mammal distribution and diversity in Burunge Wildlife Management Area

Faculty advisor: Dr. Shem Mwasi Student authors: Annick Adams¹, Zoey Ford² 1 Whitman College, 2 Northern Arizona University

Turks and Caicos Islands

Land Crab Ecology

Faculty advisor: William F. Bigelow Student authors: Annabelle Horsfall¹, Connor Marll², Lee Mason¹, Trey McCoy³ 1 Gonzaga University, 2 Point Loma Nazarene University, 3 Albion College

Ecotourism

Faculty advisor: William F. Bigelow Student authors: Antonia Gomez¹, Ella Carroll², Inez O'Malley³, Cassie Beeler⁴, Kaylee McCoy⁵ 1 Middlebury College, 2 University of Colorado/Boulder, 3 The Ohio State University, 4 University of Vermont, 5 University of San Diego

Over the edge: higher lucinid density observed above erosion edges compared to below in fragmented seagrass meadows of the Turks and Caicos Islands

Faculty advisor: C.E. O'Brien Student authors: Violet Apodaca¹, Kira Kaplan², Sophie Moniz³, Rory O'Connor⁴ 1 Bowdoin College, 2 Smith College, 3 Connecticut College, 4 Lehigh University

Ink-redibly mysterious: *Octopus briareus*' body patterns and behavior are affected by movement and substrate types

Faculty advisor: C.E. O'Brien Student authors: Cailey Johns¹, Alexa Heerma² 1 Denison University, 2 Albion College

Investigation of the skin patterning of nocturnal octopus species Callistoctopus furvus

Faculty advisor: C.E. O'Brien Student authors: Ryan Horrigan¹, George Wall² 1 University of Massachusetts/Amherst, 2 Guilford College

Ecological risk assessment for blue land crabs: investigating microplastic contamination and translocation in *Cardisoma guanhumi* in South Caicos

Faculty advisor: Kassandra Dudek Student authors: Arlette Aguilera¹, Eurnett Christopher², Trevor Deterville³, Laura Hooper⁴ 1 Wesleyan University, 2 Lafayette College, 3 University of San Diego, 4 Meredith College

Ontogenetic shift in Pterois volitans and Pterois miles in South Caicos

Faculty advisor: Kassandra Dudek Student authors: Cami Bender¹, Gabby Kreiner², Billy Shogren³ 1 Wake Forest University, 2 Dickenson College, 3 Amherst College

Invasive lionfish *Pterois spp.* in South Caicos: sex-specific growth parameters and population dynamics

Faculty advisor: Kassandra Dudek Student authors: Violet Glickman¹, Abigail Paul², Elisabeth Yorns³ 1 Amherst College, 2 University of Michigan, 3 Skidmore College