Princeton Environmental Institute (PEI) is pleased to host its 7th annual Discovery Day event – a multidisciplinary poster session celebrating student research on environmental issues.

Discovery Day is a culminating event for students participating in the Program in Environmental Studies, for EEB concentrators and for students receiving field-research and fellowship support from PEI. Ninety-six students from 20 academic departments mentored by 50 faculty advisers are showcasing their work. Discovery Day is an opportunity for students to display and discuss their research methodologies and results, to exchange perspectives, and to propose solutions to the world’s most pressing environmental challenges.

This year’s environmental projects have been categorized into several focal themes:

- Human Health, Water & Disease ........... [A]
- Biodiversity & Conservation ............... [B]
- Climate & Oceans ......................... [C]
- Animal Behavior, Evolution & Genetics.. [D]
- Policy & Urban Planning ................. [E]
- Energy Technology & Policy .............. [F]
- Agriculture & Food Systems ............. [G]
- Environmental History & Culture ......... [H]

We invite you to join us in offering congratulations to the students and heartfelt appreciation to the many people who have encouraged and supported our students in their research endeavors.

Support for independent field-research projects and PEI Graduate Fellowships has been generously provided by the following friends:

- The Barron Family Fund for Innovations in Environmental Studies
- The Becky Colvin Memorial Award
- The Charles W.H. Dodge ’51 *53 Senior Thesis Fund
- Mary and Randall Hack ’69 Research Fund
- Edmund Hayes, Sr. ’18 PEI Senior Thesis Fund
- Newton Family PEI Scholars Fund
- William Clay Ford, Jr. ’79 and Lisa Vanderzee Ford ’82 Graduate Fellowship
- William N. Kelley ’40 and William N. Kelley ’66 Graduate Fellowship Fund
- Thomas Jefferson Perkins Class of 1894 Graduate Fellowship Fund
- The Bob and Kathy Solomon Undergraduate Research Fund
- Walbridge Fund Graduate Award
- Sandra Wilson W ’56
Senior Thesis Projects

Aria Alexander, EEB [A]  Adviser: Andrea Graham; Micaela Martinez
Reassessing the Measles and Rubella Vaccination Schedule

Kessie Alexandre, Ph.D. candidate, ANT [E]  Adviser: João Biehl
Flooding and Green Infrastructure in the City of Newark, NJ: An Ethnographic Analysis

Ayla Allen, EEB [D]  Adviser: Cassie Stoddard
Effects of Rainfall Variability on Habitat Preference and Population Dynamics of Neotropical Primates in the Peruvian Amazon

Sophia Alvarez, ANT [E]  Adviser: Andrew Johnson
When It Rains, It Floods: An Ethnography of Infrastructure and Citizenship in New Orleans

Katherine Angier, EEB [B]  Adviser: Stephen Pacala
The Facultative Mutualism Between Ants and the Tropical Tree Genus Inga

Felicia Angus, ECO [E]  Adviser: Andrés Maggi
Winds of Change? The Impact of Renewable Portfolio Standards and Their Class Specifications on State Carbon Emissions

William Atkinson, GEO [C]  Adviser: Satish Myneni
The Role of Soil Minerals in Terrestrial Carbon Storage: A Unification of Field and Laboratory Studies

Mikaela Bankston, MOL [A]  Adviser: Daniel Notterman
Ain’t I A Woman: Assessing the Racial Differences in Female Puberty as They Relate to Environmental Chemical Exposure

Francisca Bermudez, EEB [A]  Adviser: Peter Andolfatto; Andrea Graham
Applying Next-Generation Sequencing to the Genetics and Ecology of Rhodnius pallescens, a Vector of Chagas Disease

Ailyn Brizo, CEE [A]  Adviser: Peter Jaffé
Feasibility and Environmental Implications of Urine Utilization Technologies in the Developing World

Courtney Buoncore, ANT [H]  Adviser: Serguei Oushakine
Consuming Landscape: Tongariro National Park

Miles Carey, ENG [H]  Adviser: Robert Nixon
Trash Mermaids: A New Play
Ricky Chae, EEB [A] Adviser: C. Jessica Metcalf
An Epidemiological Assessment of the Risk of Fatal Motor Vehicle Collisions with Benzodiazepine Use in South Korea

Mitchel Charles, EEB [D] Adviser: Christina Riehl

Yifeng Chen, Ph.D. candidate, ELE [F] Adviser: Gerard Wysocki
Remote Methane Sensing with Heterodyne Enhanced Chirped Laser Dispersion Spectroscopy

Cleo Chou, Postdoctoral Research Associate, EEB [C] Adviser: Stephen Pacala; Lars Hedin
Successional Dynamics Drive Nitrient Limitation of the Tropical Forest Carbon Sink

Lindsey Conlan, CEE [A] Adviser: Claire White
Two Waste Streams, One Solution: Reclaiming Concrete Aggregate and Treating Acid Mine Drainage Through a Synergistic Recycling Process

Meet What You Eat: Introducing Vertical Farming to the Princeton Community and Further

Walker Darling, GEO [C] Adviser: Daniel Sigman
Ground-truthing Coral as a Proxy: An Examination of the $\delta^{15}N$ of Four Coral Species Across the Bermuda Pedestal

Olivia Davis, WWS [F] Adviser: Denise Mauzerall

Marc Decitre, GER [H] Adviser: Michael Jennings; Thomas Levin
The Ecological Paradox: A Critique of Ecological Modernization

Zachariah DeGiulio, CEE [H] Adviser: Branko Glisic; M. Christine Boyer
The Way to Modernity: Itineraries of Kinshasa

Danielle Dockx, EEB [D] Adviser: Cassie Stoddard
Life in Color: Spontaneous Color Preference in Broad-Tailed Hummingbirds (Selasphorus platycercus) and Plumage-Color Evolution in the ‘Bee’ Hummingbird Clade

Emma Watkins, ENG [H] Adviser: Robert Sandberg
Stories on the Wind: The Use of Environmental Soundscapes in Theatrical Contexts

Kendra Weledji, EEB [B] Adviser: Andrew Dobson
The Coexistence of Two Morphotypes of a Baculovirus of the Douglas-Fir Tussock Moth

Yuzhen Yan, Ph.D. candidate, GEO [C] Adviser: Michael Bender; John Higgins
Climate Snapshots from 2 Million-Year-Old Shallow Ice Cores in the Allan Hills Blue Ice Area, East Antarctica

Annie Yang, EEB [A] Adviser: C. Jessica Metcalf
Implications of Canine Population Dynamics on Rabies Control in Madagascar Rainforests

Aamir Ali Zainulabadeen, COS [G] Adviser: Andrea LaPaugh; Paul Gauthier
A System for Vertical Farming Data Collection and Analysis

Lindy Zeng, COS [C] Adviser: David Dobkin
Impact of Remote Sensing Domain Knowledge on Satellite Imagery Classification of the Amazon Rainforest

Evan Zhao, Ph.D. candidate, CBE [E] Adviser: José Avalos
Optogenetic Synthetic Organelles for Metabolic Engineering
Caroline Salazar, ANT [H] Adviser: João Biehl
Shipibo Ritual Healing and New Modernities in the Anthropocene

Andrew Salmons, EEB [A] Adviser: Lindy McBride
Antennal Lobe Comparison in Anthropophilic and Zoophilic Mosquitoes

Abhimanyu Shah, MAE [F] Adviser: Naomi Leonard

The Meat of the Matter: Behavioral Science Nudges for a More Sustainable Diet

Sam Sherman, EEB [G] Adviser: Simon Levin
A Spatially Explicit Fishing Simulation

Christopher Shin, WWS [E] Adviser: David Wilcove
Cost-Benefit Analysis of Tourism in Ganzi Prefecture, Sichuan Province, China

Beth Stella, EEB [A] Adviser: Andrew Dobson
Bad Things Come in Threes: Childhood Malnourishment, Intestinal Worm Burden, and Vitamin A Deficiency in Northeastern India

Erica Swartwout, EEB [D] Adviser: Peter Andolfatto
A Phenotypic Assay and Genome-Wide Association Study of the foraging gene (for) in Drosophila melanogaster

Minjia Tang, EEB [A] Adviser: Julien Ayroles
Adaptive Metabolism to High-Sucrose Diets in Drosophila melanogaster

Lindsay Temple, EEB [B] Adviser: Stephen Pacala
Persistent Predation, Declining Rugosity and Spiny Lobsters: Learning More About the Caribbean Sea Keystone Urchin Species, Diadema antillarum

Timothy Treuer, Ph.D. candidate, EEB [B] Adviser: David Wilcove

Mayya Velitskaya, EEB [D] Adviser: Daniel Rubenstein
Effects of Group Perturbation on Herd Dynamics in the Domestic Horse (Equus caballus)

Nazik Elmekki, MOL [A] Adviser: Mark Brynildsen
Persistence and Metabolic Activity in Ofloxacin-treated, Growth-inhibited Populations of Escherichia coli

Addie Ewald, HIS [H] Adviser: Eleanor Hubbard
Leviathans and Lagoons: Encounters, Environmental Impact and Empathy in the Nineteenth-Century Gray Whaling Industry

Thomas Facon, EEB [B] Adviser: Daniel Rubenstein
Cattle Trading and Land-Use Strategies in the Arid and Semi-Arid Lands of Kenya: Modern Approaches to Livestock Production Challenges in an Integrated System

Peter Gatto, EEB [A] Adviser: Bryan Grenfell
Dengue Serotype Interactions and the Timing of Outbreaks During Serotypic Invasion or Replacement

Gabrielle Gibbons, EEB [B] Adviser: Corina Tarnita
Fearlessness: Habitat Use and Avoidance Behavior in the Absence of Natural Predators, Gorongosa National Park, Sofala, Mozambique

Julian Goldman, EEB [D] Adviser: Bridgett vonHoldt
Investigating the Role of Epigenetics in Adaptation to Hypoxia in Mice

Mark Goldstein, WWS [H] Adviser: Denise Mauzerall
Climate Change in American National Parks: Impacts, Management, Communication and Public Perception

Sara Goodwin, EEB [A] Adviser: Andrew Dobson
Diet and Obesity: An Experimental Study of the Contribution of Antibiotics & High Sugar Diet to Triglyceride Accumulation in Drosophila melanogaster

Michelle Greenfield, EEB [D] Adviser: Daniel Rubenstein
Effect of Anthropogenic Injuries on the Social Associations of Bottlenose Dolphins (Tursiops truncatus) in Sarasota Bay, Florida

Andrew Hartnett, WWS [E] Adviser: Elke Weber
Comparing Flood-Management Policy in the United States and the Netherlands

Analyzing the Energy and Water Use of Vertical Farming at Princeton University
Sonia Howlett, EEB [G] Adviser: Andrew Dobson
Potential for Competition Between Introduced Cattle and Endemic Giant Tortoises on Santa Cruz, Galápagos

Myesha Jemison, AAS [A] Adviser: Ruha Benjamin
Bridging Healthcare Disparities in Southern Africa: An Investigation into the Hindrances to Traditional Medicine Use in the Treatment and Prevention of Human Immunodeficiency Virus and Acquired Immune Deficiency Symptoms in Southern Africa

Clare Jeong, HIS [H] Adviser: Erika Milam
Fishing for Justice: Maori Culture and Economic Rights in New Zealand

Felicia Jiang, CEE [E] Adviser: Claire White
Urban Village: Envisioning an Alternative Future for China’s Cities

Andrew Jung, EEB [B] Adviser: Stephen Pacala
Monetizing Pollinator Biodiversity: An Evaluation Framework for the Conservation of an Ecosystem Service

Jennifer Kasbohm, Ph.D. candidate, GEO [C] Adviser: Blair Schoene
U-Pb Ages Correlate the Columbia River Flood Basalt with the Mid-Miocene Climate Optimum

Eclipsing the Barriers to Solar Installation: The Effects of Conventional Substitutes and Renewable Policy Incentives on Residential Solar Panel Installations and Capacity in the United States

Katie Kennedy, CEE [E] Adviser: Branko Glisic; Maurizio Chiaramonte
Jinkieng jri: An Engineering Documentation, Translation and Optimization Analysis of Meghalaya’s Living Root Bridges

Rabia Khan, EEB [A] Adviser: Andrew Dobson; C. Jessica Metcalf
From Statistic to Holistic: An Analysis of Measles Elimination in Sindh, Pakistan, Based on 2017 Infection Dynamics and Professional Opinion

Bryan Kudisch, Ph.D. candidate, CHM [F] Adviser: Gregory Scholes
Organic Photovoltaic Photophysics at High Magnetic Fields

Emma Latham, EEB [G] Adviser: Christina Riehl
The Effect of Intercropped Radishes on Butternut Squash Yield, Arthropod Community, Fungal Disease and the Insect Community

William Paulson, EEB [D] Adviser: Cassie Stoddard
Colour Through the Avian Eye: The Evolution of Plumage Colouration in the Birds of Paradise (Paradisaeidae)

Natalie Plonk, ART [H] Adviser: Susan Marshall
RUN/off
This project is a video of an environmental dance performance that will show in Taylor Auditorium at noon.

Stuart Pomeroy, WWS [F] Adviser: Denise Mauzerall
Winds of Change: Opportunities for Offshore Wind-Energy Integration and Development in the Northeast United States

Julie Poutois, EEB [B] Adviser: Corina Tarnita
A Modeling Approach to Examining the Effect of Viruses on Marine Bacterial Populations in Different Nutrient-Limited Environments

Lily Reisinger, EEB [B] Adviser: Daniel Rubenstein
The Function of Zebra Stripes in Thermoregulation and the Deterrence of Disease-Carrying Biting Flies

Alana Reynolds, EEB [B] Adviser: Robert Pringle
Characterizing and Mitigating Elephant Crop Raiding as a Form of Human-Wildlife Conflict in the Border Communities of Gorongosa National Park

Maegan Richards, PSY [H] Adviser: Joel Cooper
Personality and Environmental Attitudes: Priming Individual Differences to Increase Environmental Concern

Nicole Rinaldi, GEO [C] Adviser: Daniel Sigman
A Ground-Truthing Study of the Nitrogen Isotopic Composition of Enamel-Bound Organic Matter in Modern Bison Teeth

Samuel Rob, WWS [G] Adviser: David Wilcove
Reconciling Bioenergy and Food Production in Cuba: A Case for Integrating Competing Agricultural Models in the Caribbean’s Largest Island

Patrick Rooney, VIS [G] Adviser: Su Friedrich
Fishing the Short Run
This project is a film that will show in the Taylor Auditorium at 12:30 p.m. with a discussion to follow.

Melany Ruiz-Uriguen, Ph.D. candidate, CEE [A] Adviser: Peter Jaffé
Energy-Efficient Method for Ammonium Removal from Wastewater by Feamox Coupled to Electrodes
Kayla Moffett, EEB [A] Adviser: C. Jessica Metcalf
Think Beyond Pink: An Epidemiological Assessment of Breast Cancer Risk and Survivorship in Jamaica, Ghana and the United States

Joshua Murray, GEO [C] Adviser: Blair Schoene
A Deterministic Approach to Geochemical Stratigraphy

Kathleen Noble, EEB [A] Adviser: Andrew Dobson
Worms vs. Bacteria: Investigating if Soil Transmitted Helminths Protect Against Diarrheal Pathogens

Erin Nurre, EEB [D] Adviser: Daniel Rubenstein
A Behavioral Analysis of Aggression and Coat Color in Social Networks of Domestic Horses (Equus caballus)

Ciara Nutter, EEB [D] Adviser: Robert Pringle
Dietary Resource Partitioning in Large-Mammal Herbivores: the Intra- and Interspecific Diet Variation in Kafue National Park, Zambia

Corey Okubo, EEB [B] Adviser: Stephen Pacala
Using Artificial Reef Systems to Push Recovery of Diadema antillarum and Coral Reefs in the Caribbean

Hamid Omidvar, Ph.D. candidate, CEE [C] Adviser: Elie Bou-Zeid
Rapid Modification of Land-Surface Temperature During Rainfall

Christina Onianwa, EEB [A] Adviser: Simon Levin
Immunological Insurgency: Assessing Vaccine Hesitancy in the Relationship Between Pertussis Outbreak, Non-Medical Vaccination Exemptions, and Minority Communities in Texas

Daniel Pan, EEB [A] Adviser: Peter Andolfatto
Understanding the Cardiovascular Risks of Inhaling Particulate Matter: A Study of Air Pollution and Three Occupational Hazards

Larkin Papa, EEB [D] Adviser: Bridgett vonHoldt
Genetic Variation of Guide Dogs: Exploring Insertion Dynamics of Transposable Elements associated with Hypersociability

Quinn Parker, EEB [B] Adviser: Robert Pringle
The Impacts of Habitat Fragmentation on the Golden-Brown Mouse Lemur, (Microcebus ravelobensis) in the Mahamavo Forest Region, Madagascar

Allison Lee, EEB [A] Adviser: Andrea Graham
Genetic and Dietary Influences on Resource Allocation Towards Reproduction in Mice, Mus musculus

Samantha Lee, CBE [E] Adviser: Eric Larson
Assessing and Reducing the Environmental Impact of Manufacturing Water Repellent Down at the Ohio Feather Company

Mingzhen Lu, Ph.D. candidate, EEB [B] Adviser: Lars Hedin
A Red Queen’s Race — Maintenance of Biome Boundary Between the South African Fynbos and Forest Biome

Tabitha Lomur-Mensah, EEB [A] Adviser: Bridgett vonHoldt
Epigenetic Modifications in Response to Mercury Exposure: A Study of Differential Methylation Patterns in Wild Louisiana Bird Populations

Donald Martocello, GEO [C] Adviser: François Morel
H-Aquil: A Chemically Defined Cell-Culture Medium for Trace-Metal Studies in Vibrios and Other Marine Heterotrophic Bacteria

Erin McCabe, GEO [C] Adviser: Laure Resplandy
Mesoscale Processes’ Effects on Spatial and Temporal Variability in the Ocean’s Biological Carbon Pump

Ellie McNulty, EEB [B] Adviser: Christina Riehl
Exclusion of Herring Gulls and Great Black-Backed Gulls Using Overhead Parallel Lines

Darcy McRose, Ph.D. candidate, GEO [C] Adviser: François Morel
A ‘Two-for-One’ Vibrio harveyi Siderophore Gene Cluster Regulated by Iron and Quorum Sensing

Tigist Menkir, EEB [A] Adviser: Bryan Grenfell
An Integrated Approach to Evaluating the Patterns and Impact of Vaccine Confidence on Meningitis Dynamics in Nigeria and the U.K.

Meredith Mihalopoulos, EEB [A] Adviser: Lindy McBride
Investigating Olfactory Preferences in Aedes aegypti aegypti and Aedes aegypti formosus: A Display of Different Preferences For Individual Humans Across Mosquito Subspecies

Ariana Mirzada, NES [H] Adviser: Max Weiss
The Afghan Refugee Women of Diavata Camp: Environmental Considerations
Discovery Day
Wednesday, May 9, 2018
11:30 a.m. - 1:30 p.m.
Frick Chemistry Lab