

# ECOLOGY AND EVOLUTIONARY BIOLOGY (GRADUATE FIELD)

Program Website (<https://ecologyandevolution.cornell.edu/graduate/>)

## Field Description

The Graduate Program in Ecology and Evolutionary Biology offers students rich opportunities to study organic diversity, including its origins, maintenance, and consequences. The program provides broad exposure to concepts and research approaches in ecology and evolution, alongside in-depth study in one or more subdisciplines. Students pursue research questions that address fundamental issues in basic and applied sciences, spanning a wide range of spatial and temporal scales and employing experimental, observational, theoretical, statistical, molecular, and chemical approaches. Some students focus on Discipline-Based Education Research to develop evidence-based knowledge and practices to improve STEM education.

Each student's course of study is tailored to their individual goals and interests. The program emphasizes broad, integrative thinking and encourages students to be both interdisciplinary and independent. It is particularly well suited to those who can take full advantage of Cornell's expansive intellectual and technological resources in the life sciences and related fields.

Excellent laboratory and nearby field facilities are available, along with extensive collections and libraries.

Inquiries from prospective graduate students are welcomed and should be addressed to the graduate field office or to any member of the faculty.

*\*The field does not usually admit students for a terminal M.S. degree.*

## Data and Statistics

- Doctoral Program Statistics (<https://gradschool.cornell.edu/about/program-metrics-assessments-and-outcomes/doctoral-program-statistics/?SelectGradField=46>)

## Field Manual

- Manual (<https://blogs.cornell.edu/eebstudenthandbook/>)

## Subject and Degrees

### Ecology

- Ecology (M.S.) (Ithaca) (<https://catalog.cornell.edu/programs/ecology-ms/>)
- Ecology (Ph.D.) (Ithaca) (<https://catalog.cornell.edu/programs/ecology-phd/>)

### Evolutionary Biology

- Evolutionary Biology (M.S.) (Ithaca) (<https://catalog.cornell.edu/programs/evolutionary-biology-ms/>)
- Evolutionary Biology (Ph.D.) (Ithaca) (<https://catalog.cornell.edu/programs/evolutionary-biology-phd/>)

## Concentrations by Subject

### Ecology

- animal ecology
- applied ecology
- biogeochemistry
- community and ecosystem ecology
- limnology
- oceanography
- physiological ecology
- plant ecology
- population ecology
- theoretical ecology
- vertebrate zoology

### Evolutionary Biology

- ecological genetics
- paleobiology
- population biology
- systematics

## Faculty

Anurag Agrawal (<http://agrawal.eeb.cornell.edu/prof-anurag-agrawal/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology:* community and ecosystem ecology; plant ecology; population ecology; *Evolutionary Biology:* ecological genetics; population biology
- **Research Interests:** plant-animal interactions, evolutionary and community ecology of plant-insect interactions

Leslie S Babonis (<http://ecologyandevolution.cornell.edu/leslie-babonis/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology:* ecological genetics; systematics; *Ecology:* physiological ecology; vertebrate zoology
- **Research Interests:** EvoDevo, genomics, novelty, marine invertebrates

Mal Ballinger (<http://ecologyandevolution.cornell.edu/graduate-field-faculty/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology:* ecological genetics; population biology; *Ecology:* physiological ecology; vertebrate zoology
- **Research Interests:** evolutionary physiology; mammalogy; evolutionary genetics and genomics; functional genomics; adaptive evolution

William E. Bemis (<http://ecologyandevolution.cornell.edu/william-bemis/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology:* paleobiology; systematics; *Ecology:* vertebrate zoology
- **Research Interests:** evolutionary biology of fossil and living fishes

Andrew G Clark (<http://cals.cornell.edu/andrew-g-clark/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology; *Ecology*: theoretical ecology
- **Research Interests:** molecular population genetics; theoretical and statistical population genetics; evolutionary genomics; genetics of complex traits

Bryan Nicholas Danforth (<http://cals.cornell.edu/bryan-nicholas-danforth/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; *Evolutionary Biology*: paleobiology; systematics
- **Research Interests:** phylogeny; systematics; evolutionary biology; insects; bee biology

Charles G. Danko (<http://www.vet.cornell.edu/research/faculty/charles-danko-phd/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology
- **Research Interests:** evolutionary and comparative genomics, gene regulation, transcription, bioinformatics, functional genomics

Casey Brandon Dillman (<http://www.birds.cornell.edu/home/staff/casey-dillman/>)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Evolutionary Biology*: ecological genetics; systematics; *Ecology*: vertebrate zoology
- **Research Interests:** systematics, ichthyology, evolution, biogeography, natural history

Laurie E. Drinkwater (<http://cals.cornell.edu/laurie-e-drinkwater/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; biogeochemistry; community and ecosystem ecology
- **Research Interests:** agroecosystem biogeochemistry; plant-microbial interactions; agroecology; Global N cycle

Stephen Paul Ellner (<http://ecologyandevolution.cornell.edu/stephen-paul-ellner/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; theoretical ecology; *Evolutionary Biology*: population biology
- **Research Interests:** theoretical population biology and evolutionary ecology; ecological modeling

Alexander S Flecker (<http://ecologyandevolution.cornell.edu/alexander-s-flecker/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; community and ecosystem ecology; limnology
- **Research Interests:** animal ecology; community and ecosystem ecology; limnology

Jacqueline Gerson (<http://cals.cornell.edu/jacqueline-gerson/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: biogeochemistry; limnology
- **Research Interests:** Biogeochemistry, contaminant fate and transport, ecosystem ecology

Christine L Goodale (<http://ecologyandevolution.cornell.edu/christine-l-goodale/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: biogeochemistry; community and ecosystem ecology
- **Research Interests:** forest biogeochemistry; land-use change; carbon and nitrogen cycling at various scales

Swanne Pamela Gordon (<http://ecologyandevolution.cornell.edu/swanne-gordon/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; population ecology
- **Research Interests:** Polymorphism, rapid evolution, behavioral ecology, sexual selection

Megan Ann Greischar (<http://ecologyandevolution.cornell.edu/megan-greischar/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: population biology; *Ecology*: population ecology; theoretical ecology
- **Research Interests:** life history evolution, malaria, disease, transmission, epidemiology, population dynamics

Matthew P. Hare (<http://cals.cornell.edu/matthew-hare/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology
- **Research Interests:** population genetics; phylogeography; invasion biology; host-parasite co-evolution

Andrew Hein (<http://cals.cornell.edu/andrew-hein/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; applied ecology; community and ecosystem ecology; oceanography; population ecology; theoretical ecology; *Evolutionary Biology*: population biology
- **Research Interests:** Theoretical biology, computational ecology, ethology and collective behavior, mathematical modeling, machine learning and inferential methods in biology

Tory Hendry (<http://cals.cornell.edu/tory-hendry/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; applied ecology; *Evolutionary Biology*: ecological genetics; systematics
- **Research Interests:** Bacterial genomics, evolution, host-microbe interactions, symbiosis, host-pathogen interactions

Ian Hewson (<http://cals.cornell.edu/ian-hewson/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: biogeochemistry; community and ecosystem ecology; oceanography

- **Research Interests:** pelagic marine ecology; microbial and viral ecology; ecological genomics and community transcriptomics; ocean biogeochemistry

Meredith A. Holgerson (<http://ecologyandevolution.cornell.edu/meredith-holgerson/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; applied ecology; biogeochemistry; community and ecosystem ecology; limnology
- **Research Interests:** freshwater ecology, ponds and lakes, food webs, community ecology, ecosystem ecology, greenhouse gases, conservation, amphibians

Benjamin Z. Houlton (<http://ecologyandevolution.cornell.edu/benjamin-houlton/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; biogeochemistry; community and ecosystem ecology
- **Research Interests:** Global biogeochemical cycles: climate change; gene to biosphere relationships; coupled human-environmental systems; computational modeling; natural isotope abundance; data analytics and synthesis

Robert Warren Howarth (<http://ecologyandevolution.cornell.edu/robert-warren-howarth/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; biogeochemistry; community and ecosystem ecology; limnology; oceanography
- **Research Interests:** aquatic ecosystem biology, watershed science; and environmental management

Andre Kessler (<http://ecologyandevolution.cornell.edu/andre-kessler/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; community and ecosystem ecology; physiological ecology; plant ecology
- **Research Interests:** molecular and chemical ecology; plant-insect interactions; multitrophic interactions; insect herbivore-induced plant responses to herbivory; mechanisms and ecological consequences

Jaehee Kim (<http://cals.cornell.edu/jaehee-kim/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology; systematics; *Ecology*: population ecology; theoretical ecology
- **Research Interests:** Population genetics, Evolutionary biology, Phylodynamics, Eco-evolutionary dynamics

Brian Paul Lazzaro (<http://cals.cornell.edu/brian-paul-lazzaro/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology
- **Research Interests:** evolutionary genetic of post-pathogen interactions in insects

David M. Lodge (<http://ecologyandevolution.cornell.edu/david-m-lodge/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; applied ecology; community and ecosystem ecology; limnology; plant ecology; vertebrate zoology; *Evolutionary Biology*: ecological genetics; population biology
- **Research Interests:** aquatic ecology, including freshwaters and marine coastal environments; ecology and evolution of invasive species; eDNA-based monitoring and surveillance of rare species; bioeconomics; science-management-policy

Andrés López Sepulcre (<http://ecologyandevolution.cornell.edu/andres-lopez-sepulcre/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; biogeochemistry; community and ecosystem ecology; limnology; population ecology; theoretical ecology; *Evolutionary Biology*: population biology
- **Research Interests:** Eco-evolutionary dynamics, rapid evolution, life-history evolution, nutrient cycling, dispersal and invasion, ecological statistics

Irby J Lovette (<http://lovette.eeb.cornell.edu/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology; systematics; *Ecology*: vertebrate zoology
- **Research Interests:** ecological genetics; population biology; systematics

Peter McIntyre (<http://ecologyandevolution.cornell.edu/peter-mcintyre/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; applied ecology; biogeochemistry; community and ecosystem ecology; limnology; physiological ecology; vertebrate zoology
- **Research Interests:** freshwater conservation, freshwater landscape ecology, limnology, climate change, fish and fisheries, food webs, aquatic biogeochemistry, biodiversity

Philipp Messer (<http://messerlab.org/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology; *Ecology*: population ecology; theoretical ecology
- **Research Interests:** Interested in a broad range of topics in evolutionary biology and population genetics. A particular focus of the lab lies in studying cases of rapid adaptation that allow us to observe evolution in real-time and sometimes even repeatedly.

Corrie Saux Moreau (<http://moreaulab.org/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; *Evolutionary Biology*: ecological genetics; population biology; systematics
- **Research Interests:** Ecology and evolution of symbiosis; macroevolution; social insect evolution; host-microbe interactions; speciation and evolutionary diversification; evolution of gut microbiota; biogeography; phylogenetics/ phylogenomics; molecular clocks and divergence dating; biodiversity genomics; ant-plant mutualisms; entomology; comparative biology; microbiomes.

Courtney Cuinn Murdock (<http://cals.cornell.edu/courtney-murdock/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; physiological ecology; population ecology
- **Research Interests:** Disease ecology, life history, ecoimmunology, ecophysiology, host-parasite interactions, vector-borne disease transmission and control, urban ecology, climate change, land use change

Steven A. Osofsky (<http://www.vet.cornell.edu/research/faculty/steven-osofsky/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; applied ecology; population ecology; *Evolutionary Biology*: population biology
- **Research Interests:** wildlife health & conservation, one health, planetary health, biodiversity, sustainable agriculture, rural development, science policy

Ian Owens (<http://ecologyandevolution.cornell.edu/ian-owens/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; applied ecology; community and ecosystem ecology; population ecology; vertebrate zoology; *Evolutionary Biology*: ecological genetics; population biology
- **Research Interests:** Bird behavior, ecology, evolution and conservation; large-scale patterns in biodiversity; evolution in wild populations; public engagement with nature and science

Alison G Power (<http://ecologyandevolution.cornell.edu/alison-g-power/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; community and ecosystem ecology; population ecology
- **Research Interests:** agricultural ecology; ecology of cropping systems and epidemiology of insect-vector diseases

Robert A. Raguso (<http://nbb.cornell.edu/robert-raguso/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; community and ecosystem ecology; physiological ecology; plant ecology
- **Research Interests:** chemical ecology; plant reproductive ecology; the evolution of mutualism and deception; pollination ecology; evolution of communication

Robert D. Reed (<http://reedlab.org/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics
- **Research Interests:** evolutionary developmental biology; functional genomics; gene regulation; adaptation; color pattern evolution

Kerry L. Shaw (<http://nbb.cornell.edu/kerry-l-shaw/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology; systematics
- **Research Interests:** evolutionary biology; sexual selection; speciation; evolutionary genetics and genomics

Michelle K. Smith (<https://catalog.cornell.edu/graduate-school/ecology-evolutionary-biology/%20http://ecologyandevolution.cornell.edu/michelle-smith/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; population ecology; *Evolutionary Biology*: ecological genetics; population biology
- **Research Interests:** discipline-based science education research, biology education research

Jed P Sparks (<http://ecologyandevolution.cornell.edu/jed-p-sparks/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: biogeochemistry; community and ecosystem ecology; physiological ecology; plant ecology
- **Research Interests:** biogeochemistry, community, and ecosystem ecology; physiological ecology; plant ecology

Chelsea Dvorak Specht (<http://cals.cornell.edu/chelsea-specht/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; paleobiology; population biology; systematics; *Ecology*: physiological ecology; population ecology

Jennifer S. Thaler (<http://blogs.cornell.edu/thaler/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; population ecology
- **Research Interests:** insect-plant interactions, chemical ecology, tritrophic interactions

Nina Overgaard Therkildsen (<http://cals.cornell.edu/nina-overgaard-therkildsen/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; oceanography; population ecology; *Evolutionary Biology*: ecological genetics; population biology
- **Research Interests:** population and evolutionary genomics, rapid adaptation, fisheries, conservation

Maren N Vitousek (<http://ecologyandevolution.cornell.edu/maren-vitousek/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: animal ecology; physiological ecology; population ecology; vertebrate zoology

Todd Walter (<http://cals.cornell.edu/m-todd-walter/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology*: applied ecology; biogeochemistry
- **Research Interests:** Ecohydrology, terrestrial biogeochemistry, environmental biophysics, pollutant fate-transport, water-climate change, modeling

Mariana Federica Wolfner (<http://cals.cornell.edu/mariana-federica-wolfner/>)

- **Campus:** Ithaca
- **Concentrations:** *Evolutionary Biology*: ecological genetics; population biology

- **Research Interests:** function and evolution of reproductive genes, with major focus on seminal proteins and egg-activation in insects

Molly Corinne Womack (<http://www.womacklab.com/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology:* animal ecology; physiological ecology; vertebrate zoology
- **Research Interests:** Evolution, Morphology, Development, Sensory Ecology

Xiangtao Xu (<http://ecologyandevolution.cornell.edu/xiangtao-xu/>)

- **Campus:** Ithaca
- **Concentrations:** *Ecology:* biogeochemistry; community and ecosystem ecology; plant ecology; theoretical ecology
- **Research Interests:** ecological modeling/forecasting, ecological remote sensing, plant functional ecology, global change biology, terrestrial ecosystem ecology