

Natalie Robinson

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EDUCATION

PhD. University of Colorado, Boulder. Advisors: M. Deane Bowers, Robert Guralnick
Department of Ecology and Evolutionary Biology 2013

M.A. University of Colorado, Boulder. Advisor: M. Deane Bowers
Department of Ecology and Evolutionary Biology 2009

B.S. University of California, Berkeley 2003
Major: Molecular Environmental Biology

Continuing Education and Certifications

Epic React	Current
Udemy - Machine Learning A-Z (partially completed)	2020
Compass Science Communications Workshop	2017
Software/Data Carpentry Instructor Certification	2014
Bayesian Modeling for Practicing Ecologists	2014

RESEARCH INTERESTS & SKILLS

Data Engineering, Management, Visualization	Python, R, Javascript, React	Ecological Modeling
Bayesian & Frequentist Statistical Analysis	Git/Github	Community Ecology
Mobile Application Development	Markdown, SQL, HTML	Scientific Writing
Spatial Data Processing & Analyses	GIS Modeling Applications	Spatial Ecology

PROFESSIONAL EXPERIENCE

Earthshot Labs 2022-Present

Data Engineer

Development of backend data processing workflows and automated tests (Python), and frontend design (React)

Geospatial data processing (Google Earth Engine and Python libraries) and visualization

Development and maintenance of NoSQL databases

Support of cross-team data engineering efforts - database development, data processing workflows, etc.

Support of automated report generation

National Ecological Observatory Network (NEON) 2014-2022

Data Scientist II & Scientific Software Developer

Development and implementation data QA/QC algorithms and tools for staff use

Development of mobile data collection applications

Assistance with spatial data processing and workflow improvement

Development and implementation of observatory commissioning tests, and report generation

Outreach to scientific community through conference & workshop attendance/teaching

Contribution of lesson materials/coding support to 'NEON Data Skills' website

General support to science staff for technical document writing, statistical analyses, data acquisition and management, development and use of scripting tools (R, Python, Javascript) for various workflows

RESEARCH

Understanding the drivers of butterfly diversity patterns and testing model transferability across global ecosystems. 2009-2013

Dissertation research, with M. Deane Bowers and Robert Guralnick Department of Ecology and Evolutionary Biology; University of Colorado, Boulder	
Graduate Research Assistant: Modeling variables of importance to the distributions of organisms on a global scale; integrating global species distributions, remote sensing, and climate data to assess biodiversity response to climate change (with NASA Climate and Biological Response program and NCEAS), with Robert Guralnick Department of Ecology and Evolutionary Biology; University of Colorado, Boulder	2011-2013
Research Data Analyst: Statistical analyses on various research projects, using R statistical software, with Michael Grant Department of Ecology and Evolutionary Biology; University of Colorado, Boulder	2010-2012
Monitoring the effects of habitat type and land-use variables on butterfly communities: Master's Research, with M. Deane Bowers Department of Ecology and Evolutionary Biology; University of Colorado, Boulder	2006-2009
Graduate Research Assistant: Museum collection reorganization and improvement: insect teaching collection, with M. Deane Bowers Department of Ecology and Evolutionary Biology; University of Colorado, Boulder	2008
Research Assistant: Small mammal disease dynamics and population ecology, with Sharon Collinge Department of Ecology and Evolutionary Biology; University of Colorado, Boulder	2004
Lab Assistant II: Amphibian parasite and fungal pathogen ecology, with Cheryl Briggs Department of Integrative Biology; University of California, Berkeley	2003
Lab Assistant II: Gall making insect and parasitoid population ecology, with Cheryl Briggs Department of Integrative Biology; University of California, Berkeley	2002-2003
Field Assistant II: Invasion dynamics in a California grassland ecosystem, with Jeffrey Corbin Department of Integrative Biology; University of California, Berkeley	2002
The effects of invasive species on insect communities in a California grassland ecosystem. Undergraduate research with Jeffrey Corbin Department of Integrative Biology; University of California, Berkeley	2002-2003

PUBLICATIONS

Peer-reviewed:

Li, D., Record, S., Sokol, E., Bitters, M., Chen, M., Chung, A., Helmus, M., Jaimes, R., Jansen, L., Jarzyna, M., Just, M., LaMontagne, J., Melbourne, B., Moss, W., Norman, K., Parker, S., **Robinson, N.**, Seyednasrollah, B., Smith, C., Spaulding, S., Surasinghe, T., Thomsen, S., Zarnetske, P. Standardized NEON organismal data for biodiversity research. *Ecosphere*. 2022, 13(7), e4141. doi: 10.1002/ecs2.4141

Robinson, N., Barnett, D.T., Jones, K. D., Stanish, L. F., Parker, S. M. Multiple dimensions of resilience: How NEON supports ecology and community in the face of compounding disasters. *Frontiers in Environmental Science*. 2022, 10, 144. doi: 10.3389/fenvs.2022.653666

Parmentier, B., McGill, B., Wilson, A., Regetz, J., Jetz, W., Guralnick, R., Tuanmu, M-N.,

Robinson, N., Schildhauer, M. An assessment of methods and remote-sensing derived covariates for regional predictions of 1 km daily maximum air temperature. *Remote Sensing*. 2014, 6(9), 8639 – 8670. doi: 10.3390/rs6098639

Robinson N., Kadlec, T., Guralnick, R. P., Bowers, M. D. 2014. Integrating Species traits and habitat characteristics into models of butterfly diversity in a fragmented ecosystem. *Ecological Modelling*. 2014, 281(2014), 15-25. doi: 10.1016/j.ecolmodel.2014.01.022

Robinson, N., Regetz, J., Guralnick, R. P. 2014. EARTHENV-DEM90: A Nearly-global, void-free, multi-scale smoothed, 90m digital elevation model from fused ASTER AND SRTM data. *ISPRS Journal of Photogrammetry and Remote Sensing*. 87(2014): 57-67. doi: 10.1016/j.isprsjprs.2013.11.002

Robinson N., Armstead, S and Bowers, M.D. 2012. Butterfly Community Ecology: The Influences of Habitat Type, Weather Patterns and Dominant Species in a Temperate Ecosystem. *Entomologia Experimentalis et Applicata*. 145(1): 50-61. doi: 10.1111/j.1570-7458.2012.01308.x

Basey, J. M., Sackett, L. C., **Robinson N.** 2008. Optimal Science Lab Design: impacts of various Components of lab design on students' attitudes toward lab. *International Journal for the Scholarship of Teaching and Learning*, 2 (1).

Non Peer-reviewed:

Robinson N., Barton, K., Nufio, C., Bowers, M.D. 2010. Laboratory Manual for Insect Biology, University of Colorado, Boulder.

DATA PUBLICATIONS

Dryad

Robinson N., Armstead S, Bowers MD (2012) Data from: Butterfly community ecology: the influences of habitat type, weather patterns, and dominant species in a temperate ecosystem. Dryad Digital Repository. doi:10.5061/dryad.57vh3

GRANTS, AWARDS & FELLOWSHIPS

Battelle Outstanding Performance Award \$1000	Sep 2020
Battelle Outstanding Performance Award \$1000	Apr 2020
InnoCentive <i>Challenge 9933881- DataApp: A Mobile App Framework for Field Data Capture – Stage 1.</i> \$2500	Sep 2017
University of Colorado Graduate School <i>Dissertation Completion Fellowship.</i> \$9,879.82	Fall 2013
Department of Ecology and Evolutionary Biology, University of Colorado, Boulder <i>Dissertation Completion Fellowship.</i> \$9,879.82	Fall 2013
University of Colorado Graduate School <i>Travel grant to present research at the 97th Annual Ecological Society of America Meetings.</i> \$300	May 2012

- Ecology and Evolutionary Biology Departmental Grant, University of Colorado, Boulder April 2012
Understanding the Influence of Habitat Fragmentation on Butterfly Occurrence Patterns: Developing and Testing Models Across Global Ecosystems. \$2000
- Beverly Sears Graduate Student Grant, University of Colorado, Boulder April 2012
Understanding the Influence of Habitat Fragmentation on Butterfly Occurrence Patterns: Developing and Testing Models Across Global Ecosystems. \$1000
- Ecology and Evolutionary Biology Departmental Grant, University of Colorado, Boulder May 2010
Species Trait Modeling of Butterflies in Urban Fragments Along the Colorado Front Range: \$750
- Ecology and Evolutionary Biology Departmental Grant, University of Colorado, Boulder April 2009
Species Trait Modeling of Butterflies in Urban Fragments Along the Colorado Front Range: \$1500
- University of Colorado Museum of Natural History Grant, University of Colorado, Boulder April 2009
Species Trait Modeling of Butterflies in Urban Fragments Along the Colorado Front Range: \$1200
- Ecology and Evolutionary Biology Spring Symposium, University of Colorado, Boulder May 2008
Best Graduate Student Talk
- Ecology and Evolutionary Biology Departmental Grant, University of Colorado, Boulder April 2008
Long-term Survey of Butterfly Communities on City of Boulder OSMP Land: \$840
- City of Boulder Open Space and Mountain Parks Research Grant May 2007
Long-term Survey of Butterfly Communities on City of Boulder OSMP Land: \$6,235
- Ecology and Evolutionary Biology Departmental Grant, University of Colorado, Boulder April 2007
Long-term Survey of Butterfly Communities on City of Boulder OSMP Land: \$750

INVITED TALKS

- Robinson Natalie. 2011. (Talk) “Butterfly Community Variation in Urban Fragments of the Colorado Front Range.” *City of Louisville, CO Open Space Advisory Board Meeting.*
- Robinson Natalie. 2008. (Talk) “Long-term Monitoring of Butterfly Communities around City of Boulder Open Space and Mountain Parks Land.” *Boulder County Audubon Society “Butterfly Night” meeting.*

PRESENTATIONS

- Robinson, Natalie. 2019 (Talk) “NEON data for detecting patterns, trends, and phenomena in diverse ecosystems.” *Ecological Society of America Annual Meeting*
- Robinson, Natalie. 2017 (Talk) “Quality is everything: Automated data collection tools to enhance the quality of NEON's 'big data' streams.” *Ecological Society of America Annual Meeting*
- Robinson, Natalie. 2012. (Talk) “Methods for constructing a high quality 90m Global DEM.” *University of Colorado Brown Bag Series.*
- Robinson, Natalie. 2012. (Poster) “Understanding community response to habitat fragmentation: Modeling butterflies across global ecosystems.” *Ecological Society of America Annual Meeting.* F1000 poster: <http://f1000.com/posters/browse/summary/1092599>.

- Robinson Natalie. 2010. (Talk) “The Orange Skipperling (*Copaeodes aurantiaca* (Hesperiidae)): A New Record for the Colorado Front Range.” *21st Annual Meeting of the High Country Lepidopterists Society*.
- Robinson Natalie. 2010. (Talk) “To Be or Not To Be: Using Ecological Modeling to Understand Butterfly Occurrence Patterns Based on Species Traits and Environmental Variables.” *University of Colorado Museum Award Recipients Lunch-time Presentation Series*.
- Robinson Natalie. 2009. (Talk) “To Be or Not To Be: Using Ecological Modeling to Understand Butterfly Occurrence Patterns Based on Species Traits and Environmental Variables.” *Guild for the Rocky Mountain Ecologists and Evolutionary Biologists Annual Meeting*.
- Robinson Natalie. 2008. (Talk) “The Effects of Environmental and Land-use Variables on Butterfly Communities Across a Temperate Landscape.” *University of Colorado Department of Ecology and Evolutionary Biology Spring Symposium*
- Robinson Natalie. 2007. (Talk) “City of Boulder Open Space and Mountain Parks Butterfly Survey.” *18th annual High Country Lepidopterists Meeting*.

TEACHING/MENTORING

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| Ecological Society of America Workshop: “Working with Biodiversity Data
Instructor – R for data processing and visualization of NEON | Summer 2020 |
| NEON Internship Program
Mentor for internship project to build R Shiny applications for various use cases within the organization. Support of data acquisition from databases and APIs and reformatting via LaTeX for high-quality downloadable csvs and pdfs | 2019 - 2020 |
| Explore NEON Workshop: Virginia Commonwealth University
Instructor – Introduction to NEON, basics of getting and working with NEON data in R | Fall 2019 |
| NEON Summer Internship Program
Co-mentor for internship project “A Bug’s Life Changing a Plant’s Life: Exploring the Relationship Between Gypsy Moths and Deciduous Broadleaf Trees in Connection to Accumulated Growing Degree Days”. Support of data analyses and visualizations, report generation, and R Shiny app deployment | Summer 2019 |
| Ecological Society of America Workshop: “Access and Work with NEON data
Instructor – R for data getting and processing NEON data | Summer 2019 |
| STROBE Science and Technology Center Data Carpentry Workshop
Instructor – Unix Shell, Version Control with Git, Building programs with Python | Spring 2019 |
| Ecological Society of America Workshop: “Working with Time Series in R using NEON Data”
Instructor – R for processing & visualization of NEON temperature and plant phenology data | Summer 2017 |
| US Geological Survey (USGS) Data Carpentry Workshop
Instructor - R for data processing and visualization | Spring 2016 |
| Ecological Society of America Workshop: “Big Data in R”
Instructor – R for spatial data processing and visualization of NEON remote sensing data | Summer 2015 |

Software Carpentry Unicamp Workshop Summer 2015
Remote instructor – introduction to R for data processing and visualization

National Data Integrity Conference (NDIC) Data Carpentry Workshop Spring 2015
Instructor - R for data processing and visualization

NEON Summer Internship Program Summer 2014
Co-mentor: “Exploring vascular plant and carabid beetle diversity across three ecoclimatic domains using NEON provisional data”. Support of data acquisition, processing, and analysis using R and writing/report generation.

Department of Ecology and Evolutionary Biology; University of Colorado, Boulder

Teaching Assistance:

General Biology Lecture TA	Spring 2011
Biometry TA	Spring 2010
General Biology Clicker Software Manager	Spring 2009
Insect Biology Lab TA	Fall 2008, Fall 2009, Fall 2010
Evolutionary Biology Lab TA	Fall 2007, Spring 2008
General Biology Lab TA	Fall 2006, Spring 2007

Guest Lectures:

Ecology: Climate Impacts on Ecosystems (Co-taught with Liesl Erb)	Spring 2011
Insect Biology: Photoreception in Insects	Fall 2010
Insect Biology: Chemoreception in Insects	Fall 2010
Biometry: Model Fitting Using Akaike’s Information Criteria	Spring 2010
Insect Biology: The Bark Beetles	Fall 2008, Fall 2009, Fall 2011
Evolutionary Biology: Coevolution	Spring 2008
Insect Biology: Coevolution	Fall 2008

ACADEMIC SERVICE AND OUTREACH

Peer Review
Ecological Indicators Ecological Applications PLOS One
International Journal of Remote Sensing

Department of Ecology and Evolutionary Biology; University of Colorado, Boulder

Colloquium Committee: travel coordinator	Fall 2012- Fall 2013
Graduate Student Mentor (tips and advice for first year graduate students)	Fall 2010-Spring 2013
Graduate Computer Committee: Co-chair	Spring 2012
Evolution Outreach Committee: Event organizer and presenter	Spring 2008

Other

Lab rep/activity coordinator: Crestview Elementary field trip to CU Boulder	Spring 2012
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