

PHILIP THOMAS PATTON

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Experience

Graduate Research Assistant Aug 2021 - Present
University of Hawai'i at Mānoa, Hawai'i Institute of Marine Biology Honolulu, HI

- **Deep Learning:** Leveraging deep learning tools in Python to identify individuals and estimate volume from large library of cetacean photos, ultimately improving assessments of resident whale populations.

Data Analyst Sep 2020 - Jun 2021
Deschutes County, Health Services Bend, OR

- **Data Visualization:** Visualized previously unused data in Tableau dashboards such that behavioral health practitioners could quantitatively track progress towards goals, promises, and deadlines related to grant funding.

Data Analyst Feb 2019 - Jul 2019
Starbucks Coffee Company, Supply Chain AI & Machine Learning Seattle, WA

- **Machine Learning:** Suggested, critiqued, and owned improvements to Python code using version control and Scrum methods, for an algorithm that automatically restocked 34 stores. Improvements in sales forecasts, inventory estimation, and order optimization reduced waste and increased customer engagement.
- **State Space Modeling:** Incorporated outside data and simplified modeling assumptions to improve inventory estimation with custom Bayesian particle filter in Python, reducing data-collection burden by store partners from daily counts to weekly counts.

Quantitative Analyst Dec 2017 - Jan 2019
City of Seattle, Seattle City Light Seattle, WA

- **Hierarchical Linear Modeling:** Integrated disparate data sources with SQL to estimate influence of income on electricity usage using regularized hierarchical regression in R, identifying a novel customer base for policy intervention.

Graduate Research Assistant Dec 2016 - Sep 2017
University of Washington, Quantitative Ecology Seattle, WA

- **Spatial Capture Recapture Modeling:** Independently planned and executed a rigorous simulation study in R, showing how misspecifying animal movement models in spatial capture recapture studies biases estimates of population size.
- **Simulation Study Design:** Wrote programs in R to automate a process of Monte Carlo simulation, data processing, statistical analyses, and visualization for above study.

Graduate Research Assistant Aug 2014 - Dec 2016
North Carolina State University, Applied Ecology Raleigh, NC

- **Conservation Study Design:** Designed data collection, using rigorous sampling methods, for multi-year monitoring study to evaluate the effects of prospective land use actions on the mountainous Puerto Rican bird community.
- **Modeling Occurrence with False Positives:** Developed novel models for estimating occupancy for a community of species when data are false positive and false negative sampling errors. Highlighted the strengths and weaknesses of each model framework using two datasets from the field and a simulation study.
- **Modeling Occurrence with Interactions:** Created a novel framework for estimating co-occurrence between a generalist brood parasite and a community of hosts that accounted for species interactions and sampling errors.

Education

University of Hawai'i at Mānoa, Honolulu, HI
 PhD, Marine Biology May 2025 (Anticipated)
 Chair: Lars Bejder

North Carolina State University, Raleigh, NC
 M.S., Fisheries, Wildlife, and Conservation Biology Dec 2016
 Chair: Krishna Pacifici

SUNY College of Environmental Science and Forestry, Syracuse, NY
 B.S., Conservation Biology Aug 2013

Technical Skills

Languages: R, JAGS, BUGS, Python, SQL, Stan, git

Libraries: ggplot, dplyr, R-markdown, numpy, matplotlib, jupyter, pandas, TensorFlow

Applications: R Studio, Visual Studio, github, Tableau, SQL Developer

Presentations

The Ecological Society of America Conference. Misspecifying movement models in spatial capture recapture studies. Portland, OR. August 2017

EURING Analytical Meeting. Modeling and estimating co-occurrence between generalist brood parasites and host communities. Barcelona, Spain. June 2017

The Wildlife Society Conference. Multi-species occupancy models that incorporate false positive and false negative sampling errors. Raleigh, NC. October 2016

International Statistical Ecology Conference. Joint host-parasite occurrence models can improve predictions and reveal ecological traps. Seattle, WA. July 2016

Papers

Estimating co-occurrence between a generalist brood parasite and a community of host species. Patton, P.T., Pacifici, K. & Collazo, J. 2019. *In review. Available upon request*

Partial pooling of data among species improves performance of occupancy models subject to two types of sampling error. Patton, P.T., Pacifici, K., Miller, D.A.W., & Collazo, J. 2019. *In review. Available upon request*

Professional Development

Bayesian Model Selection and Decision Theory for Ecologists. International Statistical Ecology Conference (2016). Seattle, WA. Jul 2016

Flexible Programming with NIMBLE. International Statistical Ecology Conference (2016). Seattle, WA. Jul 2016

Introduction to Structured Decision Making. National Conservation Training Center. Shepherdstown, WV. Aug 2016

Professional Affiliations

Ecological Society of America. Statistical Ecology Section. Mar 2017 to Mar 2018

The Wildlife Society. Biometrics Working Group. Jul 2016 to Jul 2017

Awards

NOAA QUEST Fellowship (4 years of tuition and stipend), Pacific Islands Fisheries Science Center, NOAA Fisheries, 2021

Student Travel Award (\$500), Quantitative Ecology and Resource Management, University of Washington, 2017

Student and Postdoc Travel Award (\$750), School of Environmental and Forest Sciences, University of Washington, 2017

Travel Award (\$500), Graduate School Fund for Excellence and Innovation, University of Washington, 2017

Global Change Fellowship (\$12,000), Southeast Climate Science Center, USGS, 2015

Teaching

North Carolina State University, Graduate Teaching Assistant, Principles of Wildlife Science (FW 453), Spring 2016

SUNY College of Environmental Science and Forestry, Undergraduate Teaching Assistant, Intro. to Probability and Statistics (APM 391), Fall 2012

SUNY College of Environmental Science and Forestry, Tutor, Calculus (APM 105), Fall 2011 to Spring 2013