Philip T. Patton

Ph.D. Candidate in Marine Biology, NOAA QUEST Fellow

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Education

Ph.D. Marine Biology *Kāneʻohe, Hawaiʻi*

Hawaiʻi Institute of Marine Biology at the University of Hawaiʻi, Mānoa *Aug 2021 - May 2025*

- Chair: Lars Bejder

M.S. Fisheries, Wildlife, and Conservation Biology *Raleigh, NC, USA*

North Carolina State University *Aug 2014 - Dec 2016*

- Chair: Krishna Pacifici
- Minor in Statistics

B.S. Conservation Biology *Syracuse, NY, USA*

SUNY College of Environmental Science and Forestry *Jan 2011 - May 2013*

- Minor in Applied Statistics

Research Experience

Pacific Islands Fisheries Science Center, NOAA Fisheries *Honolulu, Hawaiʻi*

Quantitative Ecology and Socioeconomic Training (QUEST) Fellow *Aug 2021 - May 2025*

- Jointly housed at the Marine Mammal Research Program at the Hawaiʻi Institute of Marine Biology
- Developed quantitative tools for improving population assessments of island-associated dolphins in Hawaiʻi
- Evaluated deep learning algorithms for generating individual capture histories from images, producing two first author publications and three presentations at international conferences
- Supported colleagues and lab members by writing scripts for processing data and running analyses

Quantitative Ecology Lab, University of Washington *Seattle, WA, USA*

Graduate Research Assistant *Jan 2017 - Sep 2017*

- Explored the effect of misspecifying animal movement models in spatial capture-recapture via a simulation study

Quantitative Ecology Lab, North Carolina State University *Raleigh, NC, USA*

Graduate Research Assistant *Aug 2014 - Dec 2016*

- Designed and executed multi-year detection/non-detection survey of the Puerto Rican bird community
- Developed novel models for estimating multi-species occupancy when data are subject to false positive sampling errors
- Estimated co–occurrence and evaluated hypotheses about interactions between an invasive brood parasite and a community of hosts

Professional Experience

Health Services, Deschutes County *Bend, OR, USA*

Data Analyst *Oct 2020 - May 2021*

- Coordinated with physicians and therapists to wrangle and visualize behavioral health data for vulnerable rural youth

Supply Chain AI & Machine Learning, Starbucks Coffee Company *Seattle, WA, USA*

Data Analyst *Dec 2018 - Jul 2019*

- Suggested and tested improvements of a forecasting, optimization, and inventory estimation algorithm that automatically restocked 34 stores.
- Integrated novel data and processes to improve inventory estimation using Bayesian particle filter in Python

Seattle City Light, City of Seattle *Seattle, WA, USA*

Quantitative Analyst *Dec 2017 - Dec 2018*

- Estimated influence of income on electricity usage with regularized hierarchical regression, identifying customers for policy intervention

Publications

Patton, P.T., Cheeseman, T., Tactay, J.C., Sadowski, P., Falcone, E.A., Keene, E.L., McPherson, L., & Bejder, L. Automated image preprocessing for photo identification. *In prep*

Brijs, J., Moore, C., Schakmann, M., Souza, T., Grellman, K., Tran, L.L., **Patton, P.T.**, and Johansen, J.L. Post-prandial physiology does not limit energy intake of piscivores during marine heatwaves. In revision at *Science of the Total Environment*

Patton, P. T., Pacifici, K., Baird, R. W., Oleson, E. M., Allen, J. B., Ashe, E., Athayde, A., Basran, C. J., Cabrera, E., Calambokidis, J., Cardoso, J., Carroll, E. L., Cesario, A., Cheney, B. J., Cheeseman, T., Corsi, E., Currie, J. J., Durban, J. W., Falcone, E. A., …Bejder, L. (2025). Optimizing automated photo

identification for population assessments. *Conservation Biology*, e14436.

Patton, P. T., Cheeseman, T., Abe, K., Yamaguchi, T., Reade, W., Southerland, K., Howard, A., Oleson, E. M., Allen, J. B., Ashe, E., Athayde, A., Baird, R. W., Basran, C., Cabrera, E., Calambokidis, J., Cardoso, J., Carroll, E. L., Cesario, A., Cheney, B. J. …Bejder, L. (2023). A deep learning approach to photo–identification demonstrates high performance on two dozen cetacean species. *Methods in Ecology and Evolution*, 14, 2611–2625 *Featured on cover*

Vivier, F., Wells, R.S., Hill, M.C., Yano, K.M., Bradford, A.L., Leunissen, E.M., Pacini, A., Booth, C.G., Rocho-Levine, J., Currie J.J., **Patton, P.T.**, & Bejder, L. (2023) Quantifying the age-structure of free-ranging delphinid populations: testing the accuracy of Unoccupied Aerial System-photogrammetry. *Ecology and Evolution,* 13, e10082.

Patton, P. T., Pacifici, K., & Collazo, J. A. (2022). Modeling and estimating co-occurrence between the invasive Shiny Cowbird and its Puerto Rican hosts. *Biological Invasions*, 24, 2951-2960

Selected Presentations

Patton, P.T., et al. Evaluating trade-offs between automation and bias in population assessments relying on photo-identification. Paper presented, at the Biennial Conference on the Biology of Marine Mammals in Perth, Australia. November 2024.

Patton, P.T., et al. Evaluating trade-offs between automation and bias in population assessments relying on photo-identification. Poster presented at the International Statistical Ecology Conference. Swansea, Wales. July 2024. ***Best Student Poster: 2nd Place***

Patton, P.T., et al. The effect of fully automated photo-identification on mark-recapture estimates. Paper presented at the EURING Analytical Meeting. Montpellier, France. April 2023

Patton, P. T. & Gardner, B. Misspecifying movement models in spatial capture recapture studies. Paper presented at The Ecological Society of America Conference. Portland, OR, USA. August 2017

Patton, P. T., Pacifici, K., & Collazo, J. A. Multi-species occupancy models that incorporate false positive and false negative sampling errors. Paper presented at The Wildlife Society Conference. Raleigh, NC, USA. October 2016

Patton, P. T., Pacifici, K., & Collazo, J. A. Joint host-parasite occurrence models can improve predictions and reveal ecological traps. Paper presented at the International Statistical Ecology Conference. Seattle, WA, USA. July 2016

Selected Awards

2022	**Colonel Willys E. & Sandina L. Lord Endowed Scholarship**, Hawaiʻi Institute of Marine Biology	*$2,000*
2021	**Quantitative Ecology and Socioeconomic Training Fellowship**, NOAA Fisheries	*$160,000*
2015	**Global Change Fellowship**, US Geological Survey	*$12,000*
2012	**Tutor of the Semester**, Academic Support Services, SUNY College of Environmental Science and Forestry	

Selected Teaching

Hawaiʻi Institute of Marine Biology, University of Hawaiʻi, Mānoa — *Kāneʻohe, Hawaiʻi*

GRADUATE TEACHING ASSISTANT, MATHEMETICAL ECOLOGY OF MARINE SYSTEMS — *Jan 2025 - May 2025*
- Graded assignments, held office hours, helped students with in class Python exercises, and led paper discussions

GRADUATE TEACHING ASSISTANT, INTRODUCTION TO SCIENTIFIC COMPUTING — *Aug 2024 - Dec 2024*
- Helped instructors design syllabus and learning objectives, and led a lecture on version control with GitHub.

Department of Forestry and Environmental Resources, North Carolina State University — *Raleigh, NC, USA*

GRADUATE TEACHING ASSISTANT, PRINCIPLES OF WILDLIFE SCIENCE — *Jan 2016 - May 2016*
- Led and created content for weekly lab sections and aided students during in-lab activities, as well as grading assignments.

SUNY College of Environmental Science and Forestry — *Syracuse, NY, USA*

TUTOR — *Aug 2011 - May 2013*
- Worked through problem sets for groups of 1-5 students taking Calculus I and Introduction to Probability & Statistics

Mentorship

Graduate Mentorship

KYLEIGH FERTTITA, M.S. STUDENT IN MARINE BIOLOGY — *Aug 2023 - Present*
- Guided the student's development of the project, helping her find and develop effective modeling approaches

JAYDEN CARL TACTAY, M.S. STUDENT IN COMPUTER SCIENCE — *May 2024 - Present*
- Acted as project manager, liaising between computer scientists and cetacean biologists to set requirements and expectations.