CHRISTIAN A. STRATTON

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SUMMARY - *NEEDS UPDATING*

Candidate for a Ph.D. in Statistics with consulting, research and teaching experience. Strong analytical skills including model-based ordination, multi-scale occupancy modeling, mixed modeling, and Bayesian data analysis. Advanced programmer and problem solver with extensive experience with ecological data types. Skillful at collaborating and communicating complex concepts both verbally and in writing.

EDUCATION

Montana State University — Bozeman, MT
Bachelor of Science with Honors in Mathematics (focus: Statistics) — December 2016

Montana State University — Bozeman, MT
Master of Science in Statistics — May 2018

Montana State University — Bozeman, MT
Doctor of Philosophy in Statistics — May 2022
Dissertation: *Bayesian Hierarchical Latent Variable Models for Ecological Data Types*
Advisors: Dr. Andrew Hoegh and Dr. Jennifer Green

PEER-REVIEWED JOURNAL ARTICLES

IN REVIEW

Stratton, C., A. Hoegh, T.J. Rodhouse, J.L. Green, K.M. Banner, and K.M. Irvine. Clustering and unconstrained ordination with Dirichlet process mixture models. In review in *Methods in Ecology and Evolution*.

Stratton, C., K.M Irvine, K.M. Banner, E.S. Almberg, D. Bachen, and K. Smucker. Joint spatial modeling bridges the gap between disparate disease surveillance and population monitoring efforts informing conservation of at-risk bat species. In review in the *Journal of Agricultural, Biological, and Environmental Statistics*.

Oram, J., K.M. Banner, **C. Stratton**, and K.M. Irvine. Verifying species classification labels using stratified-by-species sampling reduces cost of long-term acoustic monitoring. In review in *Methods in Ecology and Evolution*.

Retel, C., A.J. Strien, K.M. Irvine, and **C. Stratton**. Trends in plant cover derived from vegetation-plot data using ordinal zero-augmented beta regression. In review in the *Journal of Vegetation Science*.

ACCEPTED

Stratton, C., K.M. Irvine, K.M. Banner, W.J. Wright, C. Lausen, J. Rae. 2022. Coupling validation effort with *in situ* bioacoustic data improves estimating relative activity and occupancy for multiple species with cross-species misclassifications. *Methods in Ecology and Evolution*, 13(6), p. 1288 – 1303.

Stratton, C., J.L. Green, and A. Hoegh. 2021. Not just normal: Exploring power with Shiny apps. *Technology Innovations in Statistics Education*, 13(1), p. 1 – 37.

Stratton, C., A.J. Sepulveda, and A. Hoegh. 2020. `msocc`: Fit and analyze computationally efficient multi-scale occupancy models in `R`. *Methods in Ecology and Evolution*, 11(9), p. 1113 – 1120.

Hoegh, A., K. Flagg, and **C. Stratton**. 2018. Contributed comment on Article by Bradley, Holan, and Wikle Invited commentary on "Computationally efficient multivariate spatio-temporal models for high-dimensional count-valued data" by Jonathan R. Bradley, Scott H. Holan, and Christopher K. Wikle. *Bayesian Data Analysis*, 13(1), p. 253 – 310.

Irvine, K.M., K.M. Banner, **C. Stratton**, W.M. Ford, and B.E. Reichert. 2022. Statistical assessment on determining local presence of rare bat species. *Ecosphere*, 13(6), p. e4142.

Khalighifar, A., B.S. Gotthold, E. Adams, J. Barnett, L.O. Beard, E.R. Britzke, P.A. Burger, K. Chase, Z. Cordes, P.M. Cryan, E. Ferrall, C.T. Fill, S.E. Gibson, G.S. Haulton, K.M. Irvine, L.S. Katz, W.L. Kendall, C.A. Long, O.M. Aodha, T. McBurney, S. McCarthy, M.W. McKown, J. O'Keefe, L.D. Patterson, K.A. Pitcher, M. Rustand, J.L. Segers, K. Seppanen, J.L. Simers, **C. Stratton**, B.R. Straw, T.J. Weller, and B.E. Reichert. 2022. *NABat ML*: Utilizing deep learning to enable crowdsourced

development of automated, scalable solutions for documenting North American bat populations. *Journal of Applied Ecology*, 56(11), p. 2849 – 2862.

Sepulveda, A.J., A. Hoegh, J.A. Gage, S.L Caldwell-Eldridge, J.M. Birch, **C. Stratton**, P.R. Hutchins, E.P. Barnhart. 2021. Integrating environmental DNA results with diverse data sets to improve biosurveillance of river health. *Frontiers in Ecology and Evolution*, 9, p. 1 – 13.

Sepulveda, A. J., C. Schmidt, J. Amberg, P. Hutchins, **C. Stratton**, C. Mebane, M. B. Laramie, and D. S. Pilliod. 2019. Adding invasive species biosurveillance to the U.S. Geological Survey streamgage network. *Ecosphere*, 10(8), p. 1 – 17.

PEER-REVIEWED TECHNICAL REPORTS

Add data release for WNS vignette.

Stratton, C., B.R. Straw, J.H. Cox, K.M. Irvine, F.C. Tousley, and B.E. Reichert. 2023. Attributed North American Grid-Based Offshore Sampling Frames: U.S. Geological Survey data release.

Stratton, C., K.M. Irvine. 2022. Summertime analysis statistical report for Little Brown, Northern Long-eared, and Tricolored bat species status assessment. Chapter B in Straw, B.R, J. A. Martin, J.D Reichard, and B.E Reichert, editors. Analytical assessments in support of the U.S. Fish and Wildlife Service 3-Bat species status assessment. Cooperator report prepared in cooperation with the U.S. Geological Survey, United States Fish and Wildlife Service and Bat Conservation International.

Stratton, C., A. Hoegh, K. M. Irvine, K. Legg, K. McCloskey, E. Shanahan, M. Tercek, and D. Thoma. 2019. Assessing spatial and temporal patterns in sagebrush steppe vegetation communities, 2012-2018: Grand Teton National Park. Natural Resource Report NPS/GRYN/NRR-2019/2020. National Park Service, Fort Collins, Colorado.

Irvine, K.M., and **C. Stratton**. 2021. Rangewide summertime model predictions for three bat species (*Myotis lucifigus*, *Myotis septentrionalis*, and *Perimyotis subflavus*) from acoustic and mist net data 2010 to 2019: US Geological Survey data release.

Udell, B.J., B.R. Straw, T.L. Cheng, K. Enns, W.F. Frick, B. Gotthold, K.M. Irvine, C. Lausen, S. Loeb, J.D. Reichard, T.J. Rodhouse, D. Smith, **C. Stratton**, W.E. Thogmartin, and B.E. Reichert. 2022. Status and trends of North American bats: Summer occupancy analysis 2010-2019. U.S. Fish and Wildlife Service.

Wessel, S.A., L. Jones, E. Kramer, **C. Stratton**, L. Shoemaker, and D. Laughlin. 2020. Predictability and stability of sagebrush-steppe restoration in a changing climate. National Park Service Annual Report Vol. 43.

PRESENTATIONS

Stratton, C., K.M. Irvine, K.M. Banner, E. Almberg, D. Bachen, and K. Smucker. *Joint spatial modeling of ecological response and disease processes improves estimator precision.* 2023. Talk given at the Joint Statistical Meetings. Toronto, Ontario, Canada.

Stratton, C., K.M. Irvine, K.M. Banner, E. Almberg, D. Bachen, and K. Smucker. *A statistical framework for integrating White-nose syndrome surveillance data and acoustic population monitoring data.* 2023. Talk given to the U.S. Geological Survey Disease Coordination Group. Virtual.

Stratton, C., K.M. Irvine, K.M. Banner, E. Almberg, D. Bachen, and K. Smucker. *Leveraging WNS surveillance and NABat data improves estimation of disease spread and bat activity.* 2023. Poster presented at the Whitenose Syndrome National Meeting. Palm Springs, California, USA.

Stratton, C., K.M. Irvine, E. Almberg, K. Smucker, and J. Gude. *Joint spatial modeling of relative activity and disease processes.* 2022. Poster presented at the ENVR 2022 Workshop: Environmental and Ecological Statistical Research and Applications with Societal Impacts. Provo, Utah, USA.

Stratton, C., K.M. Irvine, E. Almberg, K. Smucker, and J. Gude. *Bats & Stats: Assessing Impacts of White-nose Syndrome on Western Bat Species.* 2022. Talk given at the Northern Rocky Mountain Science Center. Bozeman, Montana, USA.

Stratton, C., A. Hoegh, K.M. Irvine, K.M. Banner. 2021. *Clustering and ordination with Dirichlet process mixture models.* Invited talk given at the Joint Statistical Meetings. Virtual.

Stratton, C., J.L. Green. 2021. *Beyond normal: Understanding power through* R *Shiny.* Poster

presented at the United States Conference on Teaching Statistics. Virtual.

Stratton, C., A. Hoegh, and J.L. Green. 2018. *Predicting pitch type: A case study in Bayesian hierarchical multinomial regression.* Invited talk given at the Joint Statistical Meetings. Vancouver, Canada.

Stratton, C., A. Hoegh, and J.L. Green. 2018. *Unraveling Kershaw's dominance.* Poster presented at The Cascadia Symposium on Statistics in Sports. Vancouver, Canada.

Stratton, C. and J.L. Green. 2018. *The power of technology: A Shiny applet assisted approach to teaching statistical power.* Electronic poster presented at the Electronic Conference on Teaching Statistics. Virtual.

EXPERIENCE
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Montana State University   Bozeman, MT
Post-doctoral researcher   July 2022 | Present
Advisors: Dr. Kathryn Irvine (USGS) and Dr. Katharine Banner (MSU)

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U.S. Geological Survey   Bozeman, MT
Student contractor   August 2020 | July 2022

- Authored multiple papers and statistical reports
- Consulted on multiple analyses
- Communicated with domain experts and scientists

Montana State University   Bozeman, MT
Math Learning Center Supervisor   June 2019 | December 2019

- Supervised graduate and undergraduate tutors
- Successfully coordinated monthly meetings
- Proposed and implemented logistical improvements including novel tutoring practices
- Coached new tutors on how to effectively communicate mathematics

Montana State University   Bozeman, MT
Graduate Research Assistant   January 2019 | August 2020

- Resolved a wide scope of ecological problems using various techniques
- Collaborated and communicated with domain experts in ecology and land-resource management
- Developed models and tools to aid collaborators
- Authored multiple papers, web applications, and R packages

Montana State University   Bozeman, MT
Statistical Consultant   August 2017 | May 2018

- Communicated with clients
- Identified solutions to a wide scope of problems
- Successfully collaborated across departments to resolve problems

Montana State University   Bozeman, MT
Graduate Teaching Assistant   January 2017 | December 2018

- Taught over 80 students introductory statistics
- Planned and prepared course materials including test questions and written assignments
- Coached students in a collaborative learning environment

Montana State University   Bozeman, MT
Math Learning Center Tutor   August 2014 | December 2016

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Teaching Experience

216, 217, 411, guest lecturer 408, guest lecturer 402/502

Service

STEAM day, MT ASA, DataFest, BEES

Coursework

Awards

Three Minute Thesis Competition Finalist   Bozeman, MT
Finalist for the Three Minute Thesis competition   February 2020

Dr. William A. Stannard Award for Excellence   Bozeman, MT
Recognition of outstanding graduate student teaching   May 2018

Outstanding Graduate Student Award   Bozeman, MT
Recognition of superior academic achievement among graduate students   May 2017

John L. Magaret Math/Science Scholarship   Bozeman, MT
Recipient of scholarship for outstanding academic achievement   January 2017

Milton-Chauner Math Scholarship   Bozeman, MT
Recipient of scholarship for outstanding academic achievement   August 2016

Outstanding Undergraduate Student Award   Bozeman, MT
Recognition of superior academic achievement among undergraduate students   May 2016

Outstanding Scholar Award   Bozeman, MT
Recognition of superior academic performance   May 2016

Montana State University System Award   Bozeman, MT
Scholarship for outstanding academic performance   December 2015

Phi Kappa Phi   Bozeman, MT
Member of Phi Kappa Phi, a national multi-disciplinary honor society   March 2015

Pi Mu Epsilon   Bozeman, MT
Member of Pi Mu Epsilon, a national mathematics honor society   December 2014