

THOMAS V RIECKE

Wildlife Biology Program, University of Montana
James K. Ringelman Chair in Waterfowl Conservation

RESEARCH INTERESTS

My research focuses on the collection and use of long-term demographic data to better understand the interactive impacts of environmental variation, climate, and human actions on the population trends and evolutionary ecology of wild organisms. I use models to quantify the contribution of different demographic components to population growth rates, and seek to work collaboratively across a range of ecological and evolutionary disciplines to address questions relevant to life-history evolution, applied ecology, and conservation decision making.

PROFESSIONAL APPOINTMENTS

Assistant Professor, University of Montana Department of Ecosystem and Conservation Sciences	2023–
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EDUCATION

Postdoctoral Research Associate, Schweizerische Vogelwarte Population Dynamics Section, Ecology Department	2020-2022
Postdoctoral Research Assistant, University of Nevada, Reno Department of Natural Resources and Environmental Science	2020
PhD, University of Nevada, Reno <i>Perturbations and heterogeneity: estimating demographic rates of brant in western Alaska</i> Graduate Program in Ecology, Evolution, and Conservation Biology Advisor: Dr. James S. Sedinger	2020
MSc, Stephen F. Austin State University <i>Lead exposure and nesting ecology of black-necked stilts on the Upper Texas Coast</i> Arthur Temple College of Forestry and Agriculture Advisor: Dr. Warren C. Conway	2013
BA, Austin College Major in Biology, minor in Environmental Studies	2009

PUBLICATIONS

*denotes an undergraduate mentee

Riecke TV, Fay R, Hegelbach J, Ravusin P-A, Arrigo D, Schaub M. (2025) Estimating latent individual demography heterogeneity using structural equation models. *Ecology*, **106**

Eisaguirre J, Lohman MG, Frye G, Johnson H, Riecke TV, Williams PJ. (2025) Estimating spatially explicit survival and mortality risk from telemetry data with thinned point process models. *Ecology Letters*, **28**, e70092

Riecke TV, Ravussin P-A, Longchamp L, Trollet D, Gibson D, Schaub M. (2025) A hierarchical population model for the estimation of latent breeding conditions and demographic rates of a nomadic predator. *Ecological Modelling*, **504**, 111077

Durham SE, Saunders SP, Diamond AW, Riecke TV, Major HL (2024) Divergent population trends of two sympatric auk species in the rapidly warming Gulf of Maine. *Ecology and Evolution*, **14**, e70495

Thompson J, Uher-Koch B, Daniels B, Riecke TV, Schmutz J, Sedinger BS (2024) Previous reproductive success and environmental variation influence nest-site fidelity of a sub-Arctic nesting goose *Ecology and Evolution*, **14**, e70313

Riecke TV, Gibson D, Sedinger JS (2024) Accurately estimating correlations between demographic parameters: a comment on Deane et al. (2023). *Ecology and Evolution*, **14**, e70286

Bühler R, Riecke TV, Schalcher K, Roulin A, Almasi B (2024) Individual quality and environmental factors interact to shape reproduction and survival in a resident bird of prey. *Royal Society Open Science*, **11**, 231934

Jarvis Mason ET, Riecke TV, Bellquist L, Pondella D, Semmens B (2024) Recruitment limitation increases susceptibility to fishing-induced collapse in a spawning aggregation fishery. *Marine Ecology Progress Series*, **738**, 203-224.

Forister ML, Grames EM, Halsch CA, Burls KJ, Carroll CF, Bell KL, Jahner JP, Bradford T, Zhang J, Cong Q, Grishin NV, Glassberg J, Shapiro AM, Riecke TV (2023) Assessing status and risk for western butterflies in the context of climate change, demographic uncertainty, and heterogeneous data sources. *Ecological Monographs*, **93**, e1584.

Riecke TV, Hegelbach J, Schaub M (2023) Senescence and mating tactic interact and conflict to drive reproductive success in a passerine. *Journal of Animal Ecology*, **92**, 838-849.

Gibson D, Riecke TV, Catlin DH, Hunt KL, Friedrich MJ, Karpanty SM, Koons DK, Fraser JD (2023) Climate change and industrial fishing practices codetermine survival of a long-lived seabird. *Global Change Biology*, **29**, 324-340.

Riecke TV, Lohman MG, Sedinger BS, Arnold TW, Feldheim CL, Koons DN, Rohwer FC, Williams PJ, Sedinger JS (2022) Density-dependence produces spurious relationships among demographic parameters in harvested species. *Journal of Animal Ecology*, **90**, 2261-2272.

Riecke TV, Sedinger BS, Arnold TW, Gibson D, Koons DN, Lohman MG, Schaub M, Williams PJ, Sedinger JS (2022) A hierarchical model for jointly assessing ecological and harvest effects on animal demography. *Journal of Animal Ecology*, **90**, 1612-1626.

Riecke TV, Gibson D, Sedinger JS, Schaub M (2022) Zero-inflated count distributions for capture-mark-reencounter data. *Ecology and Evolution*, **12**, e9271.

Ellis SL*, Lohman MG*, Sedinger JS, Williams PJ, Riecke TV (2022) Sex ratios of juvenile North American ducks: long-term trends and drought. *Ecology and Evolution*, **12**, e9099.

Street PA, Riecke TV, Williams PJ, Behnke TL, Sedinger JS (2022) Estimating survival and adoption rates of dependent juveniles. *Ecology and Evolution*, **12**, e9005.

Koons DN, Riecke TV, Boomer GS, Sedinger BS, Sedinger JS, Williams PJ, Arnold TW (2022) A niche for null models in adaptive resource management. *Ecology and Evolution*, **12**, e8541.

Thompson JM, Riecke TV, Daniels BL, Spragens K, Gabrielson M, Nicolai CA, Sedinger BS (2022) Survival and cause-specific mortality of American green-winged teal banded on the Yukon-Kuskokwim Delta, Alaska. *Journal of Wildlife Management*, **86**, e22223

Sedinger JS, Lindberg MS, Riecke TV, Leach AG, Nicolai CA, Koons DN (2022) Do hunters target auxiliary markers: an example using black brant? *Journal of Wildlife Management*, **86**, e22172.

Riecke TV, Kéry M, Gibson D, Schaub M (2021) Sharing detection heterogeneity information among species in community models of occupancy and abundance can strengthen inference. *Ecology and Evolution*, **11**, 18125-18135.

Lohman MG*, Riecke TV, Williams PJ, Sedinger JS (2021) Individual heterogeneity in fitness in a long-lived herbivore. *Ecology and Evolution*, **11**, 15164-15173.

Riecke TV, Gibson D, Leach AG, Lindberg MS, Schaub M, Sedinger JS (2021) Bayesian mark-recapture-resight-recovery models: increasing user flexibility with the BUGS language. *Ecosphere*, **12**, e03810.

Robinson SG, Gibson D, Riecke TV, Fraser J, Bellham HA, DeRose-Wilson A, Karpanty SM, Walker KM, Catlin DH (2020) Piping plover population increase after Hurricane Sandy mediated by immigration and reproductive output. *Ornithological Applications*, **122**, duaa041.

Leach AG, Riecke TV, Sedinger JS, Ward DH, Boyd WS (2020) Mate fidelity improves survival and breeding performance in a long-lived bird. *Journal of Animal Ecology*, **89**, 2290-2299.

Acevedo CR*, Riecke TV, Leach AG, Lohman MG*, Williams PJ, Sedinger JS (2020) Long-term research and hierarchical models reveal consistent fitness costs of being the last egg in a clutch. *Journal of Animal Ecology*, **89**, 1978-1987.

Van Dellen AW, Riecke TV, Leach AG, Nicolai CA, Person BT, Lemons PR, Eicholz MW, Lindberg MS, Schamber JL, Herzog MP, Sedinger JS (2020) Body mass dynamics of brood-rearing female black brant during the remigial moult. *Ibis*, **162**, 1175-1185.

Sedinger JS, Riecke TV, Street PA, Fischer JB (2020) Dynamics of dispersed nesting black brant on the Yukon-Kuskokwim Delta. *Journal of Fish and Wildlife Management*, **11**, 112-120.

Riecke TV, Williams PJ, Behnke TL, Gibson D, Leach AG, Sedinger BS, Street PA, Sedinger JS (2019) Integrated population models: model assumptions and inference. *Methods in Ecology and Evolution*, **10**, 1072-1082.

Sedinger BS, Riecke TV, Nicolai CA, Woolstenhulme R, Henry WG, Stewart KS (2019) Experimental harvest regulations reveal that climate, not harvest, drives population change in Nevada wood ducks. *Ecology and Evolution*, **9**, 12701-12709.

Riecke TV, Sedinger BS, Williams PJ, Leach AG, Sedinger JS (2019) Estimating correlations among demographic parameters. *Ecology and Evolution*, **9**, 13521-13531.

Riecke TV, Conway WC, Haukos DA, Moon JA, Comer CE (2019) Nest survival of black-necked stilts, *Himantopus mexicanus*, on the upper Texas coast. *Waterbirds*, **42**, 261-271.

Lohman MG*, Riecke TV, Acevedo CR*, Person BT, Uher-Koch BD, Schmutz JA, Sedinger JS (2019) Changes in behavior are unable to disrupt a trophic cascade involving a long-lived specialist herbivore and its food plant. *Ecology and Evolution*, **9**, 5281-5291.

Leach AG, Sedinger JS, Riecke TV, Van Dellen AW, Ward DH, Boyd WS (2019) Brood size affects future reproduction in a long-lived bird with precocial young. *The American Naturalist*, **193**, 458-471.

Sedinger JS, Riecke TV, Leach AG, Ward DH (2019) The black brant population is declining based on mark recapture. *Journal of Wildlife Management*, **83**, 627-637.

Leach AG, Ward DH, Sedinger JS, Riecke TV, Hupp JW, Ritchie RJ (2019) Spatial distribution of band recoveries of black brant. *Journal of Wildlife Management*, **83**, 304-311.

Riecke TV, Leach AG, Gibson D, Sedinger JS (2018) Parameterizing the robust design in the BUGS language: lifetime carry-over effects of environmental conditions during growth on a long-lived bird. *Methods in Ecology and Evolution*, **9**, 2294-2305.

Gibson D, Riecke TV, Keyes T, Depkin C, Fraser J, Catlin DH (2018) Application of Bayesian robust design model to assess the impacts of a hurricane on shorebird demography. *Ecosphere*, **9**, e02334.

Leach AG, Van Dellen AW, Riecke TV, Sedinger JS, (2017) Incubation capacity contributes to maximal clutch size in brent geese *Branta bernicla nigricans*. *Ibis*, **159**, 588-599.

Sedinger JS, Van Dellen AW, Leach AG, Riecke TV (2017) Ultimate regulation of fecundity in species with precocial young: declining marginal value of offspring with increasing brood size does not explain maximal clutch size in black brent geese. *Oecologia*, **183**, 431-440.

Riecke TV, Conway WC, Comer CE, Haukos DA, Moon JA (2015) Baseline blood lead levels of black-necked stilts on the upper Texas coast. *Bulletin of Environmental Contamination and Toxicology*, **95**, 465-469.

Riecke TV, Conway WC, Comer CE, Haukos DA, Moon JA (2014) Red imported fire ants, *Solenopsis invicta*, cause black-necked stilt *Himantopus mexicanus* nest abandonment. *Wader Study Group Bulletin*, **121**, 52-53.

GRANTS AND FELLOWSHIPS

NASA	\$785,833 (2025-2027)
<i>Multi-scale remote sensing models to improve decision making around waterbird and wetland diversity</i>	
O'Connell J, Kemink K, Riecke TV	
Delta Waterfowl	\$115,000 (2024-2026)
<i>Assessing long-term changes in sex ratios of duck populations</i>	
Riecke TV	
National Science Foundation	\$635,648 (2022-2027)
<i>LTREB: Pace of life and differential migration in changing environments</i>	
Koons DN, Aubry LM, Riecke TV , Sedinger JS	
Delta Waterfowl	\$354,000 (2018-2022)
<i>Demography, harvest, and abundance of waterfowl populations</i>	
Riecke TV , Sedinger BS, Williams PJ, Sedinger JS	
Institute for Wetland and Waterfowl Research, DU Canada	\$38,500 (2016-2018)
<i>Bonnycastle Fellowship in Wetland and Waterfowl Biology</i>	
Riecke TV	

MENTORING

GRADUATE AND UNDERGRADUATE ADVISING

Liv Lundin <i>MSc Student, University of Montana</i>	2025- Graduate advisor
Sunny Domschot <i>PhD candidate, University of Montana</i>	2023- Graduate co-advisor
Gavin Herbert <i>Undergraduate Research Collaborator, University of Montana</i> Current position: District Game Warden, North Dakota Game and Fish	2023 Senior thesis co-advisor
Sage L. Ellis <i>Undergraduate/Postbac Research Collaborator, University of Nevada, Reno</i> Current position: PhD Student, University of Wyoming	2019-2020 Research advisor
Madeleine G. Lohman <i>Undergraduate Research Collaborator, University of Nevada, Reno</i> Current position: PhD Candidate, NSF Graduate Research Fellow, University of Nevada, Reno	2017-2019 Research advisor
Cheyenne R. Acevedo <i>Undergraduate/Postbac Research Collaborator, University of Nevada, Reno</i> Current position: Wildlife Biologist, Nevada Department of Wildlife	2017-2018 Research advisor

GRADUATE COMMITTEE SERVICE

Wes Sarmiento , MSc student, Univ. of Montana	Comm. member, 2024-
Birch Gano , MSc student, Univ. of Montana	Comm. member, 2023-
Caroline Karnatz , PhD student, Univ. of Montana	Comm. member, 2024-
Colton Padilla , PhD student, Univ. of Montana	Comm. member, 2023-
Kaitlyn Vega , PhD student, Univ. of Montana	Comm. member, 2023-
Maddy Jackson , PhD student, Univ. of Montana	Comm. member, 2023-
Marco Salvo , MSc student, Univ. of Montana	Comm. member, 2023-
Mary Venegas , MSc student, Univ. of Montana	Comm. member, 2024-
Matt Webster , MSc student, Univ. of Montana	Comm. member, 2024-
Holli Holmes , MSc student, Univ. of Montana	Comm. member, 2023-
Tejaswini Devi , PhD student, Univ. of Montana	Comm. member, 2024-
Matt Misewicz , MSc, Univ. of Wisconsin-Stevens Point	Comm. member, 2024-
Andrew Greenawalt , MSc, Univ. of Wisconsin-Stevens Point	Comm. member, 2020-2022

TEACHING

Instructor ST591, Ecological Structural Equation Models	University of Montana <i>Fall 2024</i>
Instructor WILD 370, Wildlife Habitat Conservation and Management	University of Montana <i>Spring 2023, 2024</i>
Co-instructor ST595, Bayesian integrated population models	University of Montana <i>Summer 2024</i>
Co-Instructor NRES 488, Dynamics and Management of Wildlife Populations	University of Nevada, Reno <i>Fall 2016, Fall 2018</i>
Graduate Teaching Assistant NRES 488, Dynamics and Management of Wildlife Populations	University of Nevada, Reno <i>Fall 2017</i>
Graduate Teaching Assistant FOR 152, Introduction to Wildlife Management	Stephen F. Austin State University <i>Spring 2012, Fall 2012, Spring 2013</i>
Invited Guest Lecturer WFB 4800/6800, Waterfowl Ecology and Management FOR 111, Introduction to Forestry FOR 255, Vertebrate Natural History FOR 305, Wildlife Techniques FOR 450/550, Advanced Wildlife Habitat Management FOR 454/554, Non-game Wildlife Ecology	Clemson University Stephen F. Austin State University Stephen F. Austin State University Stephen F. Austin State University Stephen F. Austin State University Stephen F. Austin State University

PEER REVIEW

Ecology	The Journal of Wildlife Management
Biological Conservation	Ecosphere
Ecography	Ecology and Evolution
Journal of Animal Ecology	Journal of Avian Biology
Proceedings of the Royal Society B	Transactions of the American Fisheries Society
Ecological Applications	The American Midland Naturalist
Ecology Letters	Wildfowl
Oecologia	Wildlife Society Bulletin
Ornithological Applications	

Schaub M, Kéry M. (2022) Integrated population models: theory and ecological applications with R and JAGS. Academic Press, Waltham, MA, USA. *Invited reviewer.*

Boomer GS, Runge MC, Osnas EE. (2024) An integrated population model for northern pintail adaptive harvest management. US DoI. *Invited reviewer.*

CONFERENCE CONTRIBUTIONS

‘Contributed’ talks and posters not listed

Scientific Committee

EURING 2023 Analytical Meeting and Workshop

2022-2023

Montpellier, France

Scientific Committee

9th North American Duck Symposium

2023-2024

Portland, Oregon

ORGANIZED SYMPOSIA

Riecke TV, Arnold TW, Blommel CM, Gibson D, Lohman MG, Sedinger BS, Koons DN, and Alisauskas RT (**2024**). Changing sex ratios of North American duck populations: a problem and an opportunity, 9th North American Duck Symposium, Portland, OR, 30 August 2019.

Riecke TV, Sedinger BS (**2019**). Harvest Dynamics and Management, 8th North American Duck Symposium, Winnipeg, MB, 30 August 2019.

Behnke T, Blomberg EJ, Gibson D, Lawson AJ, Matocq MD, **Riecke TV**, Sedinger BS, Street PA, Van Dellen AW (**2019**) Merging practice and life-history theory for gamebird populations: applied and basic solutions to complex management problems. The Wildlife Society’s 26th Annual Conference, Reno, NV, 2 October 2019.

INVITED PRESENTATIONS

*denotes an Undergraduate or Postbaccalaureate Research Collaborator

Riecke TV, Arnold TW, Blommel CM, Lohman MG, Gibson D, Sedinger BS, Sedinger JS, Koons DN, Alisauskas RT. Changing duck population sex ratios: cause for concern? 9th North American Duck Symposium, Portland, OR, 6 February 2024.

Blommel CM, **Riecke TV**, Sedinger JS, Koons DN. How do waterfowl sex ratios change? Pacific black brant as a case study. 9th North American Duck Symposium, Portland, OR, 6 February 2024.

Alisauskas RT, Leafloor JO, Arnold TW, Baldwin FB, Lohman MG, Sedinger BS, **Riecke TV**. What Lincoln estimates suggest about the midcontinent population of mallards: should we be worried? 9th North American Duck Symposium, Portland, OR, 6 February 2024.

Sedinger BS, Lohman MG, Blommel CM, Gibson D, Lohman MG, **Riecke TV**. Cross-seasonal survival models indicate that increased female summer mortality drives diverging sex ratios in midcontinent mallards. 9th North American Duck Symposium, Portland, OR, 6 February 2024.

Lohman MG, **Riecke TV**, Sedinger JS, Williams PJ. Sex-specific survival in mallards may be related to spatial variation in habitat. 9th North American Duck Symposium, Portland, OR, 6 February 2024.

Gibson D, **Riecke TV**, Arnold TW, Devries JH, Dyson ME, Weegman MD. Shifts in sex ratios of dabbling, but not diving ducks are driven by declines in survival of females. 9th North American Duck Symposium, Portland, OR, 6 February 2024.

Riecke TV, Arnold TW, Blommel CM, Lohman MG, Gibson D, Sedinger BS, Sedinger JS, Koons DN, Alisauskas RT. Implications of changing duck population sex ratios for habitat and harvest management. 9th North American Duck Symposium, Portland, OR, 6 February 2024.

Riecke TV. Assessing harvest impacts. Harvest Management Working Group, 7 December 2023.

Riecke TV. Structural equation models for wildlife biology. University of Montana, 6 October 2023.

Riecke TV. Embracing heterogeneity in ecological models. Montana State University, 14 September 2023.

Riecke TV. How do we optimize harvest in a changing world? Mississippi Flyway Gamebird Technical Meeting, 24 February 2023.

Riecke TV. Using big data to improve waterfowl conservation. University of Montana, 2 May 2022.

Riecke TV, Acevedo CR*, Hegelbach J, Kéry M, Leach AG, Koons D, Lohman MG*, Sedinger JS, Williams PJ, Schaub M. Bayesian models for Vogelkunde: phenotypic selection, senescence, and mating systems. Swiss Ornithological Institute, Sempach, Switzerland, 30 November 2020.

Sedinger BS, **Riecke TV**, Williams PJ, Sedinger JS. Cross-seasonal Atlantic Flyway mallard models. Atlantic Flyway Migratory Bird Technical Sections, Portsmouth, NH, 24 February 2020.

Riecke TV, Sedinger BS, Lohman MG*, Williams PJ, Sedinger JS. Demographic analyses and harvest management of mallards in North America. Atlantic Flyway Migratory Bird Technical Sections, Portsmouth, NH, 24 February 2020.

Riecke TV, Sedinger BS, Lohman MG*, Williams PJ, Sedinger JS. Demographic analyses and harvest management of mallards in North America. Assessing Waterfowl Population Dynamics & Harvest, Roseville, CA, 23 January 2020.

Lohman MG*, **Riecke TV**, Sedinger JS, Williams PJ. Spatial variation in mallard survival in the Prairie Pothole Region. Assessing Waterfowl Population Dynamics & Harvest, Roseville, CA, 23 January 2020.

Riecke TV, Williams PJ, Behnke TL, Gibson D, Leach AG, Sedinger BS, Street PA, Sedinger JS. Integrated population models: model assumptions and inference. The Wildlife Society's 26th Annual Conference, Reno, NV, 2 October 2019.

Sedinger BS, **Riecke TV**, Sedinger JS, Rohwer FC, Feldheim CL, Williams PJ. Rethinking harvest management from a life-history perspective. The Wildlife Society's 26th Annual Conference, Reno, NV, 3 October 2019.

Sedinger JS, **Riecke TV**, Sedinger BS, Blomberg EJ. Longitudinal data and life-history theory: how should we guide the future of gamebird management? The Wildlife Society's 26th Annual Conference, Reno, NV, 3 October 2019.

Riecke TV, Sedinger BS, Arnold TW, Feldheim CL, Koons DN, Rohwer FC, Williams PJ, Sedinger JS. Abundance drives cause-specific teal mortality. 8th North American Duck Symposium, Winnipeg, MB, 30 August 2019.

Sedinger BS, **Riecke TV**, Arnold TW, Feldheim CL, Lohman MG*, Rohwer FC, Alisauskas RT, Koons DN, Sedinger JS, Williams PJ. Cross-seasonal models reveal evidence for density-dependence, climate-mediated survival, and harvest compensation in mallards. 8th North American Duck Symposium, Winnipeg, MB, 30 August 2019.

Lohman MG*, **Riecke TV**, Sedinger JS, Williams PJ. Spatiotemporal variation in waterfowl demography, 8th North American Duck Symposium, Winnipeg, MB, 30 August 2019.

Sedinger JS, **Riecke TV**, Sedinger BS. Waterfowl population models: new biological findings and harvest management. 8th North American Duck Symposium, Winnipeg, MB, 30 August 2019.

Riecke TV, Sedinger JS. Integrated population models: bias and inference. 7th North American Duck Symposium, Annapolis, MD, 4 February 2016.

Arnold TW, Clark RG, Koons DN, Osnas EE, **Riecke TV**, Schaub M, Weegman MD. Integrated population models to inform waterfowl ecology and conservation: pitfalls and promises. 7th North American Duck Symposium, Annapolis, MD, 4 February 2016.