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University of Michigan

School for Environment and Sustainability

440 Church Street

Ann Arbor, MI 48109

Education

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| 2016-2021 | Ph.D. | University of Colorado Denver Integrative and Systems Biology |
| 2002-2006 | B.A. | Colorado College Biology |

Relevant Employment

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| 2023-Present | Postdoctoral Research Fellow, University of Michigan |
| 2023 | Associate Research Scientist, Yale University |
| 2021-2023 | Postdoctoral Associate, Yale University |
| 2010-2022 | Owner/Biologist, ClearPath Environmental, LLC |
| 2020-2021 | Research Assistant, University of Colorado Denver |
| 2016-2021 | Teaching Assistant, University of Colorado Denver |
| 2004-2015 (seasonal) | Research Assistant, Colorado College Department of Biology |
| 2009-2010 | Biologist, Natural Resources Consulting/STANTEC |
| 2007-2009 | Biologist, ARCADIS U.S. |
| 2003 | Teacher Naturalist, Massachusetts Audubon Society |

Refereed Publications

- [17] Cooper, N., **SW Yanco**, CS Rushing, TS Sillett, PP Marra. *Winter and summer conditions induce carry-over effects on survival across multiple seasons in two migratory bird species*. In press: *Current Biology*
- [16] **Yanco, SW**, RY Oliver, F Iannarilli, BS Carlson, G Heine, U Mueller, N Richter, B Vorneweg, Y Andryushchenko, N Batbayar, M Dagsys, M Desholm, B Galtbalt, AE Gavrilov, OA Goroshko, EI Ilyashenko, VY Ilyashenko, J Månsson, EA Mudrik, T Natsagdorj, L Nilsson, S Sherub, H Skov, T Sukhbaatar, R Zydalis, M Wikelski, W Jetz, I Pokrovsky. *Migratory birds modulate niche tradeoffs in rhythm with seasons and life history*. In press: *PNAS*

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- [15] Linek, N^{*}, **SW Yanco**^{*}, T Volkmer, M Wikelski, and J Partecke. *Migratory lifestyle carries no energy cost in songbirds*. In press: *Nature Ecology & Evolution*.
(*shared first authorship)
- [14] Wikelski, M, M Quetting, J Bates, T Berger-Wolf, G Bohrer, L Börger, T Chapple, MC Crofoot, SC Davidson, DKN Dechmann, D Ellis-Soto, ER Ellwood, W Fiedler, A Flack, B Fruth, N Franconi, RW Havmøller, J Hirt, N Hussey, F Iannarill, M Landwehr, ME Müller, T Müller, U Müller, R Oliver, J Partecke, L Pokrovskaya, DR Rubenstein, C Rutz, K Safi, A Santangeli, L van Schalkwyk, A Sequeira, T Ramesh, P Viljoen, KA Wasik, **SW Yanco**, and R Kays. *Introducing a Unique Animal ID and Digital Life History Museum for Wildlife Data*. In press: *Methods in Ecology and Evolution*.
- [13] AK Pierce^{*}, **SW Yanco**^{*}, MB Wunder. 2024. *Migration alters energetic trade-off optimization and shapes life history*. *Ecology Letters*, 27, e14392.
(*shared first authorship)
- [12] Carello, C and **SW Yanco**. 2023. *Early successional forests support a unique composition of avian species and are especially important for migratory species*. *Journal of Tropical Ecology* 39: e22.
- [11] Gábor, L., W. Jetz, A. Zarzo-Arias, K. Winner, **SW Yanco**, S. Pinkert, C. J. Marsh, J. Mäkinen, D. Rocchini, V. Barták, S. Sharma, V. Moudrý. 2023. *Species distribution models affected by positional uncertainty in species occurrences can still be ecologically interpretable*. *Ecography* 2023: e06358
- [10] Contina, A, AK Pierce, **SW Yanco**, ES Bridge, JF Kelly, MB Wunder. 2022. *Application of stable isotopes to study movement ecology and diet variation in a migratory songbird*. *Journal of Field Ornithology* 93(4):6
- [9] Jetz W, Tertitski G, Kays R, Mueller U, Wikelski M, and Supporting authors [including **SW Yanco**]. 2022. *Biological Earth observation with animal sensors*. *Trends Ecol. Evol.* 2022;37: 293–298. doi:10.1016/j.tree.2021.11.011
- [8] **Yanco, SW**^{*}, AK Pierce^{*}, MB Wunder. 2022. *Bioenergetics of seasonality suggests life history diversity in terrestrial animals*. *Ecography* 10.1111/ecog.05900.
(*shared first authorship)
- [7] **Yanco, SW**, BD Linkhart, PP Marra, M Mika, M Ciaglo, A Carver, MB Wunder. 2021. *Niche dynamics suggest ecological factors influencing migration in an insectivorous owl*. *Ecology* 10.1002/ecy.3617
- [6] Ciaglo, M[†], R Calhoun[†], **SW Yanco**, C Stricker, M Wunder, B Linkhart. 2020. *Evidence of fall prospecting in a long-distance migrant*. *Ecology and Evolution* 11: 599-611
([†]student mentees)
- [5] Contina, A, **SW Yanco**, AK Pierce, M DePrenger-Levin, MB Wunder, AM Neophytou, CP Lostroh, BM Benito, J Chipperfield, RB O'Hara, CJ Carlson.
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2020. Comment on “A global-scale ecological niche model to predict SARS-CoV-2 coronavirus infection rate”, author Coro. *Ecological Modelling* 436: 109288
- [4] **Yanco, SW**, A. McDevitt, C. Trueman, L Hartley, and MB Wunder. 2020. A modern method of multiple working hypotheses to improve inference in ecology. *R. Soc. open sci.* 7200231
- [3] **Yanco, SW** and BD Linkhart. 2018. Changing fire regimes and faunal responses: Post-burn habitat use by Flammulated Owls in Colorado. In: Shuford, WD, Gill, RE Jr., and Handel CM, eds. *Trends and Traditions: Avifaunal Change in Western North America. Studies of Western Birds* 3. Western Field Ornithologists, Camarillo, CA. (invited paper)
- [2] Linkhart, BD, JW Fox, and **SW Yanco**. 2016. Migration timing and routes, and wintering areas of Flammulated Owls. *Journal of Field Ornithology* 87 (1): 42-54.
- [1] Linkhart, BD, EM Evers, JD Megler, EC Palm, CM Salipante, and **SW Yanco**. 2008. First observed instance of polygyny in Flammulated Owls. *Wilson Journal of Ornithology* 120 (3): 645-648.
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Preprints and Manuscripts in Review

Yanco, SW, C Rutz, B Abrahms, NW Cooper, PP Marra, T Mueller, BC Weeks, M Wikelski, RY Oliver. *Tracking individual animals can reveal the drivers of species loss. In revision: Trends in Ecology & Evolution*

Ruth Y. Oliver*, **SW Yanco***, & 58 co-authors. *Interacting effects of human mobility and landscape modification on wildlife. In revision: Science.*

(*shared first authorship)

Contina, A, **SW Yanco**, AK Pierce, HB Vander Zanden, CA Stricker, GJ Bowen, MB Wunder. *Dynamic environments generate geographic fluctuations in population structure of an inland shorebird. In review: Ecology*

Shaw, A, & 47 co-authors [including **SW Yanco**]. *Perceived and observed biases within scientific communities: a case study in movement ecology. In review: Proc. of the Royal Society B*

Preprint available: <https://www.biorxiv.org/content/10.1101/2024.07.29.605602v1>

Parker, T., H. Fraser, S. Nakagawa, E. Gould, S. Griffith, P. Vesk, F. Fidler and 200+ co-authors in alphabetical order, including **SW Yanco**. *Same data, different analysts: variation in effect sizes due to analytical decisions in ecology and evolutionary biology. In review: BMC Biology.* (Stage 1 Registered Report, passed peer review and granted in-principle acceptance March 2020)

Preprint available: <https://ecoevorxiv.org/repository/view/6000/>

Dias, T, N Lemoine, **SW Yanco**, M Zimova, BM Winger, R Bay, and BC Weeks. *Long-term increases in wing length occur independently of changes in climate and climate-driven shifts in body size.* Submitted to: *Proc. Of the Royal Society B*

Rogers, W, **SW Yanco** & W Jetz. *Choices to landscapes: Mechanisms of animal movement scale to landscape patterns.*

Preprint available: <https://www.biorxiv.org/content/10.1101/2024.02.28.582548v1>

Other Publications

Yanco, SW. 2022. Small grants like DFO's increase fair access for students to do vital avian research. *Lark Bunting* 58 (1): 22-23.

Yanco, SW. 2021. South for the winter: the basics of fall migration. *Colorado Birds* 55 (4): 213-217

Yanco, SW, ER Pansing, AK Pierce, MB. Wunder. Better models make for softer landings: A comment on Yeh et al. 2019. *BMJ Rapid Response* to Yeh et al. *BMJ* 2018;363:k5094.

Michonneau et al. [including **SW Yanco**] 2019. datacarpentry/R-ecology-lesson: Data Carpentry: Data Analysis and Visualization in R for Ecologists, June 2019. doi: [10.5281/zenodo.3264888](https://doi.org/10.5281/zenodo.3264888), <http://datacarpentry.org/R-ecology-lesson/>.

Yanco, SW and Pansing, E. 2018. Everything is a model. *Rapid Ecology*. URL: <https://rapidecology.com/2018/09/05/everything-is-a-model/>

Yanco, SW. 2018. How a tiny migratory owl can teach us about the changing role of fire in the American west. *The Lark Bunting* 54 (5).

Grants

Thirteen grants awarded, total: \$696,507

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| 2023 | \$316,521 | Enhancing our understanding of Kirtland's Warbler population dynamics through improved parameter estimation and use of a full-annual-cycle integrated population model <i>U.S. FWS, Great Lakes Fish and Wildlife Restoration Act</i> Role: Co-PI |
| 2021 | \$83,368 | Documenting post-breeding survival of Kirtland's Warblers to inform a full annual cycle integrated population model <i>U.S. FWS, Upper Mississippi/Great Lakes Joint Venture</i> Role: Key Personnel |
| 2020 | \$2,000 | Drivers of flammulated owl movement behaviors in Colorado <i>Denver Field Ornithologists</i> Role: PI |
| 2020 | \$1,500 | Ecological drivers of multi-scale movements in a sensitive raptor. <i>Colorado Field Ornithologists</i> Role: PI |

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| 2019 | \$2,000 | Drivers of flammulated owl movement behaviors in southern Colorado <i>Denver Field Ornithologists</i> Role: PI |
| 2019 | \$114,736 | Assessing influences of prescribed fire within the Hot Creek RNA on the demography, movement patterns, and habitat use of Flammulated Owls. <i>Challenge Cost Share between U.S. Forest Service and Colorado College.</i> Role: Site manager |
| 2019 | \$1,000 | Proximate ecological drivers of habitat selection behavior by a sensitive raptor. <i>Colorado Field Ornithologists</i> Role: PI |
| 2019 | \$9,600 | Migratory connectivity of Flammulated Owls. <i>Migratory Connectivity Project, Smithsonian Conservation Biology Institute (in-kind valuation)</i> Role: PI |
| 2018 | \$1,000 | Multi-scale habitat selection behavior by a sensitive raptor following prescribed fire. <i>Colorado Field Ornithologists</i> Role: PI |
| 2018 | \$1,500 | Multi-scale avian habitat selection: detecting process from pattern. <i>Denver Field Ornithologists</i> Role: PI |
| 2018 | \$6,000 | Migratory routes and timing of Flammulated Owls. <i>Migratory Connectivity Project, Smithsonian Conservation Biology Institute (in-kind valuation)</i> Role: PI |
| 2017 | \$2,100 | Spatially dynamic habitat selection in Flammulated Owls. <i>Denver Field Ornithologists</i> Role: PI |
| 2015 | \$147,682 | Assessing influences of prescribed fire within the Hot Creek RNA on the demography, movement patterns, and habitat use of Flammulated Owls. <i>Challenge Cost Share between U.S. Forest Service and Colorado College.</i> Role: Site manager |

2007 \$7,500 Territory size and habitat use by Flammulated Owls in a recently burned Forest
U.S. Forest Service
Role: Co-investigator

Software Authored

GitHub: <https://github.com/syanco>

pinpointreadR R Package: Convenience functions for reading Lotek PinPoint GPS tag data into R. Available at:
<https://github.com/syanco/pinpointreadR>

checkyourself R Package: Functions to run simple individual-based simulation models in spatial ecology. Available at
<https://github.com/syanco/checkyourself>

Invited Seminars

2024 Arkansas State University, Department of Biological Sciences
 2023 Smithsonian Conservation Biology Institute and National Zoo
 2022 Yale University, Yale Institute for Biospheric Studies

Workshops, Symposia, and Organized Sessions

2023 *Automating ornithology: Advancing our understanding of avian ecology through automated radio telemetry*. Organized Oral Session at American Ornithological Society – Society of Canadian Ornithologists Joint Meeting. London, Ontario, Canada

2022 *NASA Internet of Animals: Defining user needs for tracking animal movements and lives in a changing world*. Workshop hosted at Yale University, New Haven, CT

2022 *An individual eye on a global problem: Unique insights from animal tracking on biodiversity responses to climatic change*. Organized Oral Session at Ecological Society of America Annual Meeting, Montreal, Quebec, Canada.

2019 *Introduction to Occupancy Modeling*. Workshop presented at XVII Congreso para el estudio y conservacion de las aves en México

2019 *SeminR: Introduction to R*. Workshop hosted at University of Colorado Denver, Denver, CO.

Oral Presentations

(presenting author listed first or denoted by *)

2024 SW Yanco, C Youngflesh, M Tingley, BC Weeks. *Climate change alters the adaptive landscape of avian morphology*. Contributed oral

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- presentation to the 2024 Ecological Society of America Annual Meeting, Long Beach, CA, August 4-9, 2024.
- 2024 SW Yanco, Christian Rutz, Briana Abrahms, Nathan W. Cooper, Peter P. Marra, Thomas Mueller, Brian C. Weeks, Martin Wikelski, Ruth Y. Oliver. *More than movement: Animal tracking can help uncover the drivers of biodiversity loss*. Invited oral presentation to the 8th International Bio-logging Science Symposium, Tokyo, Japan
- 2023 SW Yanco, NW Cooper, PP Marra. *Survival Debt: Kirtland's Warblers pay the costs of winter conditions during migration and breeding*. Invited oral presentation to the American Ornithological Society – Society of Canadian Ornithologists Joint Meeting. London, Ontario, Canada
- 2023 SW Yanco, R Oliver, F Iannarilli, Data Providers, M Wikelski, W Jetz. *Migrant cranes modulate niche tradeoffs in rhythm with seasons and life history*. Contributed poster presentation to the 2023 Gordon Research Conference, Movement Ecology of Animals, Barga, Italy. May 29 – June 2, 2023.
- 2022 Oliver, RY, SW Yanco*, D Ellis-Soto, B Jesmer, W Jetz. *The COVID-19 anthropause reveals mechanisms of human impacts on animal movement*. Contributed oral presentation to the 2022 Ecological Society of America Annual Meeting, Montreal, Quebec, Canada
- 2021 SW Yanco, AK Pierce, MB Wunder. *Life history diversity in terrestrial animals is associated with metabolic response to seasonally fluctuating resources*. Contributed poster presentation to Ecology Across Borders, Joint Annual Meeting of the British Ecological Society and the French Society for Ecology and Evolution. (virtual; originally accepted as oral presentation, converted due to COVID-19)
- 2020 SW Yanco, BL Linkhart, PP Marra, MB Wunder. *Niche dynamics and ecological drivers of migration in an insectivorous owl*. Invited oral presentation to symposium: “Making the most of Disparate Data to Map Opportunities for Migratory Bird Conservation” at North American Ornithological Conference VII (virtual)
- 2019 SW Yanco, BD Linkhart, M Micah, A Carver, M Ciaglo, P Marra, MB. Wunder. 2019. *Towards a full annual biogeography of the flammulated owl*. Contributed oral presentation to the Raptor Research Foundation Annual Conference
- 2019 SW Yanco, A Pierce, MB Wunder. *Using genetic algorithms and agent-based models to explore landscapes and life histories which give rise to migration*. Contributed poster presented at Movement Ecology of Animals Gordon Research Conference. Lucca (Barga), Italy
- 2018 SW Yanco, AL McDevitt, LM Hartley, BD Linkhart, and MB Wunder. *Check yourself: using agent-based models to test the logic of hypotheses*. Contributed oral presentation to 2018 Ecological Society of America Annual Meeting, New Orleans, LA
- 2018 SW Yanco, BD Linkhart, and MB Wunder. *Home-range scale habitat selection patterns do not necessarily imply home-range scale decisions*.
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- Contributed oral presentation to the 136th state meeting of the American Ornithological Society, Tucson, AZ
- 2018 SW Yanco, A McDevitt, L Hartley, and MB Wunder. *Non-inferential approaches to agent-based modeling*. Contributed oral presentation to the 24th annual Front Range Student Ecology Symposium, Fort Collins, CO
- 2017 SW Yanco, and BD Linkhart. *Scale-dependent habitat selection by a sensitive forest raptor following wildfire*. Contributed oral presentation to the 23rd annual Front Range Student Ecology Symposium
- 2014 SW Yanco and BD Linkhart. *Habitat selection by breeding Flammulated Owls in a post-fire environment*. Invited oral presentation to the 39th annual conference of the Western Field Ornithologists, San Diego, CA
- 2012 SW Yanco and BD Linkhart. *Home-range and habitat use by Flammulated Owls (*Otus flammeolus*) following a large-scale forest fire in central Colorado*. Contributed poster presented at the 130th stated meeting of the American Ornithologists Union, Vancouver, BC
- 2010 SW Yanco, BD Linkhart and RT Reynolds. *Nest habitat characteristics of Flammulated Owls (*Otus flammeolus*) in Colorado*. Contributed oral presentation to the 128th stated meeting of the American Ornithologists Union, San Diego, CA
- 2008 SW Yanco and BD Linkhart. 2008. *Nest site selection by Flammulated Owls (*Otus flammeolus*) in a post-fire environment in Colorado*. Contributed poster presented at the 126th Meeting of the American Ornithologists' Union, Portland, OR
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Fellowships/Scholarships

- 2020-2021 Fritz Knopf Doctoral Fellowship in Avian Conservation
- 2019 Colorado Environmental Management Society Scholarship
- 2019 University of Colorado Denver, Integrative and Systems Biology Merit Scholarship
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Awards and Honors

- 2021 Outstanding Graduate Defense, University of Colorado Denver, Department of Integrative Biology
- 2021 Outstanding Graduate Student, University of Colorado Denver, Department. of Integrative Biology
- 2020 A. Brazier Howell Award, American Ornithological Society
(Given for "Best presentation on any topic in ornithology")
- 2006 Richard and Reba Beidleman Award, Colorado College
(Given to a student who has "demonstrated through courses, fieldwork, or other activities, outstanding potential for becoming a professional ecologist and/or field biologist")
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Courses Taught

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| 2022 | Guest Lecturer BIO 422 Conservation Biology | Western Connecticut State University |
| 2016-2021 | Teaching Assistant BIOL 6764 Biological Data Analysis BIOL 3763 Biostatistics BIOL 1500 Basic Biology: Cells to Organisms | University of Colorado Denver |
| 2020 | Guest Lecturer BIO 4280 Ornithology | Metropolitan State University of Denver |
| 2019 | Guest Lecturer BIOL 3700 General Ecology | University of Colorado, Colorado Springs |
| 2018 | Guest Lecturer BIOL 3763 Biostatistics | University of Colorado Denver |

Mentoring

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| 2021-present | External master's thesis committee member for Jason Tendler, University of Wisconsin-LaCrosse |
| 2021-present | Mentor to 2 masters and 2 PhD students during postdoc at University of Michigan |
| 2005-present | Mentor to >30 undergraduate students as part of long term study on Flammulated Owl demography and behavior |
| 2021-2023 | Mentor and "Biodiversity Movement" group leader to 3 postgraduate associates, 5 Phd Students, and 1 postdoctoral associate at Center for Biodiversity and Global Change, Yale University |
| 2007-2022 | Mentor to >20 undergraduates and recent graduates as part of environmental consulting activities. |
| 2016-2021 | Mentor to 9 undergraduate students during dissertation research |

Outreach

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| 2023 | Classroom visit to Town Center Learning Campus (Pre-K), Madison, CT |
| 2022 | Presentation to Connecticut Audubon Society on avian migration |
| 2021 | Panelist for American Ornithological Society event: "Interacting with your invisible audience" |
| 2021 | Presentation to Monte Vista Crane Festival on Flammulated Owls in southern Colorado |
| 2020 | Keynote Presentation to Colorado Field Ornithologists Annual Meeting |
| 2019-2020 | Led hands on and virtual visits to Colorado Bird Observatory camps on fire ecology and avian capture methods. |

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- 2019 Presentation to the Rio Grande National Forest Leadership Team Meeting on Flammulated Owl ecology, management, and conservation.
- 2019 Contributing author to Data Carpentry Lesson: Data Analysis and Visualization in R for Ecologists. DOI: [10.5281/zenodo.3264888](https://doi.org/10.5281/zenodo.3264888)
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Media Coverage

- 2024 MIT Technology Review: “[How tracking animal movement may save the planet](#)”
- 2023 Nature: “[Reproducibility trial: 246 biologists get different results from same data sets](#)”
- 2023 The Wren: “[Tiny Kamloops owls under threat from longer, more destructive fire seasons](#)”
- 2022 National Audubon Society: “[The Flammulated Owl Is a Small Raptor Facing Big Threats](#)”
- 2022 YaleNews: “[Data from space unveil a global view of animals on the move](#)”
- 2022 Science: “[War halts project to track wildlife from space](#)”
- 2022 Zip06.com: “[Why do birds migrate?](#)”
- 2019 Wild Animals Podcast: “[B5: The Flammulated Owl Who Got Away, Over, and Over, and Over Again](#)”
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Academic Service

Invited Reviewer *Movement Ecology, Basic and Applied Ecology, Scientific Reports, Ecology, eLife, Global Ecology and Biogeography, Frontiers in Ecology and the Environment, PLoSOne, Oecologia, Condor: Ornithological Applications, Journal of Experimental Marine Biology, Journal of Raptor Research, Avian Conservation & Ecology, Ornithology, Ecological Indicators, Journal of Avian Biology, Royal Society Open Science*

Guest Editor *eLife*

Board Member International Bio-Logging Society, COVID-19 Initiative Steering Committee

Board Member Center for Biodiversity and Global Change Seminar Committee

Board Member 2023 Gordon Research Seminar on Movement Ecology of Animals, Program Committee

Founder and organizer University of Colorado, Department of Integrative Biology Graduate Student Seminar Series.

Organizer University of Colorado Denver, Department of Integrative Biology Ecology and Evolutionary Biology Journal Club

Representative University of Colorado Denver, Department of Integrative Biology Space and Facilities Use Committee
