Eric S. Walsh

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EDUCATION

Ph.D. Natural Resources (2019), University of Idaho, Moscow, ID
- Project: Climate change, Northern Rockies Ecoregion, niche modeling, avifauna, interdisciplinary model linking
- Advisor: Dr. Tara Hudiburg
- Dissertation: '*Forest Ecosystem and Avian Niche Modeling: Improving Climate Change Forest Modeling via Interdisciplinary Model Linking*'

M.S. Environmental Science and Management (2013), University of Rhode Island, Kingston, RI
- Thesis: '*A Review of 35 Years of Osprey Nesting Data in the State of Rhode Island*'
- Advisor: Dr. Peter Paton

B.S. Wildlife Biology and Management (2003), University of Rhode Island, Kingston, RI
- Cum Laude GPA 3.3

PROFESSIONAL EXPERIENCE

2022 – present	**Program Director, Climate Smart Land Network** *Manomet, Plymouth, MA*
2021 – present	**Adjunct/Research Assistant Professor-Ecosystem Ecology** *University of Idaho, Moscow, ID*
2017 – 2022	**Climate Change Specialist** *Nez Perce Tribe, Lapwai, ID*
2019 – 2020	**Post-Doctoral Researcher** *University of Idaho, Moscow, ID*
2015 – 2019	**Research Assistant** *University of Idaho, Moscow, ID*
2013 – 2015	**Ecological Consulting Contractor** *U.S. EPA, Atlantic Ecology Division, Narragansett, RI*
2008 – 2013	**Owner/Entrepreneur** *The Big Biscuit, Franklin, MA*
2006 – 2008	**Business Coach** *E-Myth Iowa, Des Moines, IA*
2004 – 2007	**Research Assistant** *Louisiana State University / Iowa State University*
2002 – 2004	**Wetland Consultant** *Applied Bio-Systems, Wakefield, RI*

PRODUCTION

- **8** Peer-reviewed publications (**5** primary)
- **5** Authored scientific/agency reports
- **13** Professional meeting presentations
- **1** Invited guest presentation
- **2** Invited scientific panels (panelist)
- **5** Funded grants ($659,668)
- **1** Non-profit Board appointment
- **2yrs**. Teaching experience
- **1** business developed, implemented, and sold
- **$35 million**: Book of business size managed as a business coach
- **8 yrs**. Active volunteerism and community outreach

TECHNICAL SKILLS

- Climate change modeling/vulnerability assessments and adaptation planning/Climate Smart Agriculture
- Experience working with Traditional Ecological Knowledge
- Ecosystem process-based modeling; forest landscape modeling (LANDIS-II); carbon cycle modeling
- Wildlife and avian ecology, habitat suitability modeling
- Interdisciplinary/scientific research and program/project development and management
- Statistical analyses (parametric, non-parametric, machine learning)
- ArcGIS, ArcPro, GRASS, QGIS, FragStats
  - Geospatial data creation, integration, and management
  - Advanced Editing, Geocoding, Georeferencing
  - Statistical and quantitative spatial analyses
  - Map production, documentation, and reporting
  - Model Builder workflow design and implementation
- Report, grant, and scientific publication writing
- R, Python, Tableau
- Business systems development and management
- Budget management, personnel development

Research Assistant Professor-Ecosystem Ecology *University of Idaho*
Successes: One funded grant ($55k)
I collaborated with the Nez Perce Tribe to increase the adoption of regenerative-climate smart agriculture and study the response of ecosystem services to these changes. Collaboratively, we 1) built a program to support producers that want to make practice changes; 2) tracked the ecosystem impacts that result from producers making practice changes, and 3) aided the Tribe to manage their working lands with a focus on regenerative/climate smart agriculture.

Climate Change Specialist *Nez Perce Tribe*
Successes: Climate change vulnerability assessment (Report); Community Well-being Climate Change Survey (Survey); GIS Story Map. I worked as the Climate Change Specialist developing the Nez Perce Tribe's climate change vulnerability assessment. This has included synthesizing and reporting on the vulnerabilities of specific regional fauna, forest and rangeland habitats, agriculture systems, and cultural resources. In addition, I have built and supported much of the project's GIS and conducted the spatial analyses and data visualizations. Bridging Traditional Ecological Knowledge with western science while keeping the respect for culturally sensitive information and free, prior, and informed consent has been integral. Additionally, I co-developed and implemented a social science Tribe wide survey to better understand the community's thoughts and beliefs of climate change and the observed changes to the Tribe's environment.

Post-Doctoral Researcher *University of Idaho*
Successes: Agriculture and forest ecosystem climate change vulnerability assessment (Report); Climate smart agriculture situational analysis (Report); One peer-reviewed article (Published); One funded grant ($500k). I evaluated the state of agricultural systems across the Nez Perce Tribe Reservation and built a coalition of stakeholders, such as Tribal government and resource management divisions, external institutions (e.g., universities), federal and state resource management agencies, and private industry/agriculture producers. Additionally, I identified a need and sought funding to transition agricultural practices within the region to improve habitat and landscape ecological function through inclusion of more regenerative agriculture. I secured a USDA National Institute of Food and Agriculture (NIFA) grant ($500k) to implement a program to aid local producers and the Tribe. In addition, I collaborated with a team of researchers at the University of Idaho on a regional forest carbon cycling experiment studying the response of forest stands to thinning and drought conditions. Specifically, I aided analysis of automated tree growth datasets using machine learning algorithms (generalized linear mixed-effects tree models), and co-authored the peer-reviewed manuscript.

Research Assistant *University of Idaho*
Successes: Three peer-reviewed articles (Published); One grant funded ($81k). I was a doctoral student researching the carbon cycle and avifauna responses of forest ecosystems to climate change in the Northern Rockies. I engaged in scientific research development, ecosystem modeling, research program management, scientific communication, community outreach, mentoring, and teaching. Specific research included: ecosystem level modeling using a process-based spatially explicit forest landscape model (LANDIS-II) and avifauna habitat suitability models (both potential niche and spatially explicit realized niche models) to assess the biogeochemical, composition, structure, and habitat suitability responses of forest ecosystems under differing harvest management, fire regimes, and climate interactions. I handled hiring, mentoring, and evaluating research technicians, authoring peer-reviewed articles as the primary author on the ecosystem research, and publishing habitat suitability maps for management use. At the end of my program, I secured a Bureau of Indian Affairs grant to conduct a post-doctoral research project in collaboration with the University of Idaho and Nez Perce Tribe.

Ecological Consulting Contractor *U.S. EPA*
Successes: Two peer-reviewed articles (Published). As a research scientist working with U.S. Environmental Protection Agency on specialized scientific research projects, I conceived of and developed an estuarine study modeling the spatial distribution of contaminants in Narragansett Bay based on sewer treatment plants and onsite wastewater treatment systems within the Narragansett Bay's sewersheds and watersheds. I identified the research need and project goals, framed the project and communicated the project to senior management personnel at the EPA for acceptance. I developed the project's GIS and analyzed the data using complex spatial (kriging) and machine learning models (Random Forest). In addition, I implemented and evaluated research protocols for a salt marsh avian field study and co-authored an internal research report and peer-reviewed article for publication.

Bartowitz, K. J., **Walsh, E.S.**, Stenzel, J. E., Kolden, C. A., and Hudiburg, T. (2022) Forest carbon emission sources are not equal: putting fire, harvest, and fossil fuel emissions in context. Frontiers in Forests and Global Change, 77.

Walsh E.S. and Hudiburg T.W. (2021). Response of avian cavity nesters and carbon dynamics to forest management and climate change in the Northern Rockies. Ecosphere. https://doi.org/10.1002/ecs2.3636

Walsh E.S., Krantz S., Hudiburg T.W. 2021. A climate smart situational analysis of the Nez Perce Tribe geographic region. Report to the Nez Perce Tribe and Bureau of Indian Affairs.

Stenzel, J.E., Berardi, D.M., **Walsh, E.S.**, Hudiburg, T.W. 2021. Restoration thinning in a drought-prone Idaho forest creates a persistent carbon deficit. JGR Biogeosciences 126(3). https://doi.org/10.1029/2020JG005815

Walsh E.S. and Hudiburg T. 2019. An integration framework for linking avifauna niche and forest landscape models. PLoS ONE 14(6): e0217299. https://doi.org/10.1371/journal.pone.0217299

Walsh E.S., Vierling K., Strand E., Bartowitz K., Hudiburg T. 2018. Climate change, woodpeckers, and forests: current trends and future modeling needs. Ecology and Evolution. https://doi.org/10.1002/ece3.4876

Walsh E.S., Kreakie B.J., Cantwell M.G., Nacci D. 2017 A Random Forest approach to predict the spatial distribution of sediment pollution in an estuarine system. PLoS ONE. 12(7): e0179473. https://doi.org /10.1371/journal.pone.0179473

Berry W.J., Reinert S.E., Nightingale M.E., Lussier S.M., and **Walsh E.** 2015. Population Status of the Seaside Sparrow in Rhode Island: A 25-Year Assessment. Northeast Naturalist. 22(4):658-671

Berry W.J., Nightingale M.E., Mazzotta M.J., and **Walsh E.** 2013. Report on the utility of an expert model, and other published models, for predicting the habitat potential for birds on RI salt marshes. United States Environmental Protection Agency Office of Research and Development.

VanDeWalle T., Poole, K., Marler S., Berstein N., Chumbley C., Main S., McCullough D., Miller J., Olsen F., Parmelee J., Rosburg T., Schlict D., St. Claire M., VanDeWalle W., **Walsh E.** 2008. Ecological Assessment of Compensatory Wetland Mitigation. Unpublished report to the U.S. Environmental Protection Agency.

McCallum M.L., Bogosian III V., and **Walsh E.** 2008. Mortality of Bullfrogs (Rana catesbeiana) from an in -ground swimming pool. Journal of Kansas Herpetology 28:15.

Walsh E., Gabrey S., and McCallum M.L. 2005. *Agkistrodon piscivorus* (Western Cottonmouth) striking behavior. Herpetological Review. 36 (2):186.

McCallum M.L., **Walsh E.**, Bogosian III V., and McCallum J.L. 2004. Herpetological Inventories of Three Wildlife Management Areas in Northwestern Louisiana – Interim Report. Unpublished Interim Report to the Louisiana Department of Wildlife and Fisheries.

Paton P., **Walsh E.**, Osenkowski J., Nerone C. 2003. An inventory of the flora and fauna of WFC lands with management recommendations. Unpublished report to the Weekapaug Foundation for Conservation.

PRESENTATIONS

Walsh, E.S. and T. Hudiburg. 2021. Response of avian cavity nesters and carbon dynamics to forest management and climate change in the Northern Rockies. IALE North American National Meeting. T-07: Forest Landscapes and Ecology: Talk. April 12-16, 2021.

Walsh, E.S. and S. Krantz. 2021. The Nez Perce Tribe and Agriculture: Planning for a Climate Smart Agriculture Future. ArcGIS Story Map. https://arcg.is/X8P1G

Walsh, E.S., S. Krantz, A. Zeigler, J. Pinkham, A. Marshall, R Hoover, T. Gardali, T. Hudiburg. 2019. Building a Collaborative Tribal Climate Adaptation Program via the Integration of Cultural Values and Perspectives. PA41F: Native Science to Action: How Indigenous Perspectives Inform, Diversify, and Build Capacity in Environmental Science and Policy II Posters. 2019 American Geophysical Union Fall Meeting, San Francisco, CA. December 9-13, 2019. DOI: 10.1002/essoar.10501476.1.

Walsh, E.S. and T. Hudiburg. 2018. A Framework for Forest Landscape and Habitat Suitability Model Integration to Evaluate Forest Ecosystem Response to Climate Change. GC11G: Advancing Global Biodiversity Modeling Through Lessons Learned from Other Modeling Communities, Remote Sensing Advancements, and Model Integration and Intercomparison Efforts Posters. 2018 American Geophysical Union Fall Meeting, Washington, D.C. December 10-14, 2018.

Walsh, E.S. 2018. Climate Change and the Northern Rockies Ecoregion. Presentation to the Kootenai Environmental Alliance. November 1, 2018

Walsh, E.S. and T. Hudiburg. 2017. The Big Burn: C Emissions from the Northern Rockies 1910 Fires. B53D-1977: Biogeochemical and Biophysical Impacts of Land Use Change and Disturbance: Knowledge from Multiple Methods and Scales II Posters. 2017 American Geophysical Union Fall Meeting. New Orleans, LA. December 11-15, 2017.

Walsh, E.S. and T. Hudiburg. 2016. Future Carbon Dynamics of the Northern Rockies Ecoregion due to Climate Impacts and Fire Effects. B51J: Alteration of Disturbance-Driven Forest Dynamics under a Changing Climate I. 2016 American Geophysical Union Fall Meeting. San Francisco, CA. December 12-16, 2016.

Walsh, E.S. and T. Hudiburg. 2015. Using Forest landscape Models to Assess Future Habitat Suitability of Avian Cavity Nesters in the Northern Rockies. (Poster) 2015 Northwest Climate Conference. Coeur D'Alene, ID November 4, 2015.

Walsh, E.S., Cantwell, M.G., Kreakie, B.J., Nacci, D. 2015. Predicting the Spatial Distribution of Organic Contaminants in an Estuarine System using a Random Forest Approach. 2015 New England Estuarine Research Society Annual Meeting. Bristol, RI April 16-18, 2015

Walsh, E., Berry, W.J., Nightingale, M.E., Lussier, S.M. 2014. Recent Trends in Bird Abundance on Rhode Island Salt Marshes. New England Estuarine Research Society Annual Meeting. Salem, MA May 1-3, 2014

Walsh, E. 2014. Assessing Long-term Population Trends of Nesting Ospreys in the post-DDT era (1977 to 2012) in Rhode Island. Symposium on Ospreys in New England. 2014 Joint Meeting of the Association of Field Ornithologists and Wilson Ornithological Society. Newport, RI May 30-31, 2014.

Walsh, E. 2014. A Review of Thirty-five Years of Osprey (Pandion haliaetus) Nesting Data in Rhode Island. 19th Annual Cape Cod Natural History Conference. West Barnstable, MA March 15, 2014.

Walsh, E., Spalding H., McCallum M. 2005. Does the Red-cockaded woodpecker function as an umbrella species in the Kisatchie National Forest? Joint Meeting of the American Elasmobranch Society, American Society of Ichthyologists and Herpetologists. Tampa, Florida July 6-11, 2005.

TEACHING EXPERIENCE

2022 **Lecturer:** Terrestrial Ecosystem Ecology (FOR 330), *University of Idaho*

2015-2016 **Science Fellow:** The Confluence Project Graduate Student Educator, *University of Idaho*

2004-2005 **Teaching Assistant:** Department of Biological Sciences, *Louisiana State University-Shreveport*

VOLUNTEER/COMMUNITY OUTREACH

2021-present **Idaho Sierra Club**: I am an appointed member of the Idaho Sierra Club Executive Committee providing guidance and leadership while promoting the mission of the organization.

2019-present **Kootenai Environmental Alliance:** I sit on the Climate Action Coeur d'Alene (CDA) committee working on the community outreach initiative to advance a Climate Action Plan for the greater CDA area through community outreach and stakeholder engagement. I am currently managing an intern working on the climate assessment report.   .

2017-2019 **University of Idaho:** I aided in the development and implementation of an annual workshop for high school teachers on climate change and forest ecosystems. In 2019, I was promoted to workshop facilitator and directed the organization and implementation of the three-day intensive. I managed a team to develop

workshop sessions to teach high school teachers about the intersection of climate change and forest ecosystems.

2011 – 2015   **Audubon Society of Rhode Island:** I worked as the Osprey Monitoring Project Manager helping to facilitate and implement a citizen science program of over 100 volunteers. I implemented a web-based data acquisition program to automate citizen data acquisition; built and managed program's GIS; co-managed the process of recruiting, hiring and supervising project interns; developed and maintained effective relationships with program volunteers.

2013   **WNRI 1380 Destination Dog Radio:** I hosted a weekly hour-long radio program on animal health and wellness, where I would conduct interviews, provide service announcements, and fielded calls.

PROFESSIONAL TRAININGS

- ESRI MOOC Cartography (2021)
- U.S. Army Corps of Engineers Wetland Delineation Methods- University of Rhode Island
- Mapping of wetland habitats in accordance with Classification of Wetlands and Deepwater Habitats of the U.S. (Cowardin System)- University of Rhode Island

PROFESSIONAL MEMBERSHIPS

- American Association for the Advancement of Science/Science Program for Excellence in Science
- American Geophysical Union
- Kootenai Environmental Alliance
- Citizens Climate Lobby
- International Association for Landscape Ecologist

FUNDED GRANTS

- Idaho NRCS CIG, "Improving soil health, environmental conditions, and production via waste and vegetation management". E. Walsh (Co-PI), A. Connor (PI), $55,000 (2021)
- NIFA AFRI, "Improving The Ecological Services of Nez Perce Lands Through Agriculture Management and Decision Support Tools", E. Walsh (Co-PI), T. Hudiburg (PI), $498,668 (2020)
- Post-Doctoral Research Grant, Bureau of Indian Affairs, $81,000 (2018)
- PhD Finishing Fellowship, University of Idaho, $24,000 (2018)
- Louisiana Ornithological Society Research Grant, $1,000 (2005)

HONORS/INVITED PANELS

- Invited Panelist- Climate Restoration Solutions: AGU 2019 TH53L (December 13, 2019)
- Invited Panelist- CdA Business Community Panel Discussion on Climate Change (January 31, 2019)
- Award- Audubon Society of Rhode Island- Volunteer of the Year (2013)

PRESS

- Hope, F. (2014) Article by Eric Walsh: The 2014 Osprey Update for Audubon Society of Rhode Island Report. Summer 2014 48:3
- Kelly, J. (2014) Phone interview with Eric Walsh for Newport This Week. Report: Osprey Population Continues to Rebound (http://www.newportthisweek.com/news/2014-03-07/Nature)
- DeWolf, F. (2014) Interview with Eric Walsh for East Bay RI. Report: As Ospreys Return to the Bay, Monitors Flock to Orientation (http://www.eastbayri.com/news/as-ospreys-return-to-the-bay-monitors-flock-to-orientation/)
- McGaw, J. (2013) Phone interview with Eric Walsh for Sakonnet Times. Report: When Birds Fly South Real Work Begins (http://www.etypeservices.com/SWF/LocalUser/Bristol1/Magazine21726/Publication/Magazine21726.pdf)