



Ethan S. Duvall

PHD CANDIDATE

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About Me

I am a PhD Candidate at Cornell University and President of the Amazon Research & Conservation Collaborative (ARCC), a 501(c)(3) non-profit organization. I strive to conduct research and develop programs/projects that improve the way we understand and protect biodiversity.

Education

PhD(c), Ecology and Evolutionary Biology

ADVISOR: DR. ALEX FLECKER

Cornell University, NY

2020-present

B.S., Environmental Science, Terrestrial Ecology Emphasis

ADVISOR: DR. JOHN McLAUGHLIN

Western Washington University, WA

2016-2019

Publications

* equal authorship contribution; † mentored undergraduate researcher

Manuscripts published or in press

1. **Duvall, E.S.**, le Roux, E., Pearson, H.C., Roman, J., Malhi, Y. and Abraham, A.J., **2024**. Resisting the carbonization of animals as climate solutions. *Nature Climate Change*, pp.1-4.
2. Abraham, A.J., Doughty, C.E., Plummer, K.E. and **Duvall, E.S.**, **2024**. Supplementary bird feeding as an overlooked contribution to local phosphorus cycles. *Frontiers in Ecology and the Environment*, p.e2793.
3. **Duvall, E.S.**, Hoeneisen, N.A., Suárez, E. and Flecker, A.S., **2024**. Geophagy by a large herbivore (capybara, *Hydrochoerus hydrochaeris*) driven by a human sodium supply. *Biotropica*, 56(3), p.e13314.
4. **Duvall, E.S.**, Griffiths, B.M., Clauss, M. and Abraham, A.J., **2023**. Allometry of sodium requirements and mineral lick use among herbivorous mammals. *Oikos*, 2023(9), p.e10058.
5. Abraham, A.J., **Duvall, E.S.**, Le Roux, E., Ganswindt, A., Clauss, M., Doughty, C.E. and Webster, A.B., **2023**. Anthropogenic supply of nutrients in a wildlife reserve may compromise conservation success. *Biological Conservation*, 284, p.110149.
6. **Duvall, E.S.**, Schwabe, E.K. and Steensma, K.M., **2023**. A win-win between farmers and an apex predator: investigating the relationship between bald eagles and dairy farms. *Ecosphere*, 14(3).
7. Abraham, A.J., **Duvall, E.**, Ferraro, K., Webster, A.B., Doughty, C.E., Le Roux, E. and Ellis-Soto, D., **2023**. Understanding anthropogenic impacts on zoogeochemistry is essential for ecological restoration. *Restoration Ecology*, 31(3), p.e13778.
8. Buchanan, B.P., Sethi, S.A., Cuppett, S., Lung, M., Jackman, G., Zarri, L., **Duvall, E.**, Dietrich, J., Sullivan, P., Dominitz, A. and Archibald, J.A., **2022**. A machine learning approach to identify barriers in stream networks demonstrates high prevalence of unmapped riverine dams. *Journal of Environmental Management*, 302, p.113952.
9. **Duvall, E.S.**, **2022**. Spatiotemporal Responses of Wintering Bald Eagles to Changes in Salmon Carcass Availability in the Pacific Northwest. *Northwest Science*, 95(3-4), pp.307-316.

Manuscripts in review or revision

- **Duvall, E.S.**, Derry, L., McIntyre, P., and Flecker, A.S., **In review**. Phenology and flight shape the elemental composition of birds.

- Abraham A.J.*, Roman, J., Pearson, H., Le Roux, E., Malhi, Y., and **Duvall, E.S.*** *In review*. The uncertainty of rewilding for carbon capture and climate mitigation.
- Clauss, M., **Duvall, E.S.**, ... et al., and Abraham, A.J. *In review*. Zoos must embrace animal death for conservation and education.
- Abraham, A.J., le Roux, E., **Duvall, E.S.**, Doughty, C.E., Riond, B., Ortmann, S., Terranova, M., Clauss, M. *In review*. Sodium retention in large herbivores: physiological insights and zoogeochemical consequences.
- Abraham, A.J., Hempson, G.P., le Roux, E., Maré, C., Taylor, L., Webster, A.B., Duvall, E.S., et al., ... *In review*. Sodium constraints on large-herbivore communities in Africa.

Manuscripts in preparation

- Chen, L.†, Patterson, A., Flecker, A.S., **Duvall, E.S.** *In preparation*. Trophic position, phenology, and body size influence nutrient release by songbirds

Honors & Awards

- Best student talk (Whittaker Award), Cornell's EEB December Symposium: 2023
- Best student talk, Conference on Biological Stoichiometry: 2023
- Amazon Center for Environmental Education & Research (ACEER) Conservation Fellow: 2022
- Theodore Gordon Flyfishers (TGF) Scholar Award: 2021
- Western Washington University's Thomas Henry Huxley Award– “**This award recipient demonstrated exceptional scholastic achievement and has been involved in the community, served Huxley College, and has shown all-around excellence in environmental studies**”: 2019
- Honorary Commencement Speaker – Huxley College of the Environment, WWU: 2019

Grants & Fellowships

RESEARCH GRANTS (TOTAL AMOUNT: \$45,115)

- 2023: The Athena Fund for Research at the Cornell Lab of Ornithology (\$8,380)
- 2023: Cornell Chapter of Sigma Xi Graduate Research Award (\$1,000)
- 2023: Cornell Latin American and Caribbean Studies Program (LACS) Research Grant (\$1,500)
- 2022: USFQ-Cornell Global Strategic Collaboration Award (\$10,000 – split equally)
- 2022: Cornell Lab of Ornithology Undergraduate Experiential Learning Grant (\$5,000)
- 2022: Theodore Gordon Flyfisher's Scholar Award (\$5,000)
- 2020: The Athena Fund for Research at the Cornell Lab of Ornithology (\$5,635)
- 2020: Sustainable Biodiversity Fund; Atkinson Center for Sustainability (\$7,000)
- 2019: Dean's Fund of Sustainability Studies Award; Huxley College of the Environment (\$1,000)
- 2018: Washington Chapter of The Wildlife Society Research Grant Award (\$600)

TRAVEL GRANTS (TOTAL AMOUNT: \$5,100)

- 2024: Cornell Lab of Ornithology Student Travel Grant (\$1,250)
- 2023: Cornell EEB Orenstein Fund Travel Award (\$750)
- 2023: Cornell University Graduate Conference Travel Grant (\$500)
- 2022: Cornell University Graduate Conference Travel Grant (\$600)
- 2022: Cornell Agriculture & Life Sciences Graduate Travel Fund (\$2,000)

FELLOWSHIPS (TOTAL AMOUNT: \$110,692)

- 2024: Semlitz Sustainability Fellowship, Cornell Atkinson Center for Sustainability (\$59,108)
- 2023: Paul Graduate Fellowship in the Life Sciences, Cornell University (\$18,343)

- 2020: First-year Graduate Fellow in Life Sciences, Cornell University (\$33,241)

Presentations

Asterisks (*) indicates presenter; dagger (†) indicates mentored undergraduate

INVITED SEMINARS

1. **Duvall, E. *** (2023) Zoogeochemistry: exploring animal roles in earth's elemental cycles. *University of Toronto, Department of Biology Seminar Series*

INVITED TALKS

1. • **Duvall, E. ***, Griffiths, B., Clauss, M., and A. Abraham (2023) Drivers of sodium deficiency, supplementation, and dispersal by large herbivores. *Ecological Society of America (ESA) Conference*

ORAL PRESENTATIONS

1. **Duvall, E. *** (2023) Mega-herbivores need more salt. Cornell University, *Department of Ecology and Evolutionary Biology December Symposium *Awarded best student oral presentation**
2. **Duvall, E. ***, Derry, L., McIntyre, P., Flecker, A. (2023) Patterns of variation in the ionomics of birds. *Conference on Biological Stoichiometry *Awarded best student oral presentation**
3. **Duvall, E. ***, Derry, L., Flecker, A. (2022) Stoichiometry of birds and implications for ecosystem ecology. *Ecological Society of America (ESA) Conference*
4. **Duvall, E. ***, McLaughlin, J. (2022) Riverbird responses to dam removals on the Elwha River. *Salish Sea Ecosystem Conference*
5. **Duvall, E. ***, McLaughlin, J. (2021) Riverbird responses to dam removals on the Elwha River. *Olympic National Park Science Symposium*
6. **Duvall, E. *** (2019) Nooksack River Bald Eagles: Current Status and Conservation Recommendations. *Whatcom Wildlife Advisory Committee*

POSTERS

1. Chen, L.†*, Patterson, A., Flecker, A., and **Duvall, E.S. (2023)** River-dependent bird responses to impacts of dam removal. *Western Washington University Scholars Week*
2. **Duvall, E. ***, Jones, R.*, and Pollack, S.* (2018) River-dependent bird responses to impacts of dam removal. *Western Washington University Scholars Week*

Journals Reviewed for

Conservation Biology (1), *Journal of Environmental Management* (1), *Environmental Research Letters* (1)

Research Experience

PhD Researcher

ADVISOR: ALEX FLECKER

Cornell University

2020-present

- Investigating the stoichiometry of terrestrial vertebrates and its scaling consequences on animal nutrition, nutrient cycling, and ecosystem functioning
- Successfully completed a consortium of field and laboratory work combined with statistical modelling and analyses

Independent Researcher

ADVISOR: JOHN MC LAUGHLIN

Washington State, USA

2018-2020

- Conducted independent research after graduating from Western Washington University
- Investigated overwintering bald eagle populations and their responses to declining salmon carcasses

Teaching Positions

Comparative Anatomy & Physiology Teaching Assistant

BIOG1445

Cornell University

2021-2023

- Worked one-on-one with students daily on introductory topics of animal biology and ecology
- Conducted weekly oral exams with students to evaluate their knowledge and facilitate learning
- Led the course's Cardiopulmonary Lab, including final lab report grading and assistance

Ecology Field Camp Teaching Assistant

ESCI408, ESCI433, ESCI438, ESCI439

Cornell University

2019

- Supported semester-long field camp based along the Elwha River, WA, and Grande Ronde River, OR
- Assisted students with independent research projects and graded regular field assignments
- Led river expeditions as primary rafting guide on the Grande Ronde River, OR

Professional Positions

President & Founder

ECUADORIAN AMAZON

Amazon Research & Conservation Collaborative (ARCC)

2024-current

- Founded ARCC, a 501(c)(3) with the mission of supporting conservation in the western Amazon Rainforest through interdisciplinary research, community engagement, and communication initiatives
- Working with multiple indigenous, academic, and business partners in the Ecuadorian Amazon to tackle systematic conservation challenges
 - Empowering local conservation leadership through local research and journalism fellowships
 - Preserving Traditional Ecological Knowledge (TEK) through indigenous partnerships
 - Educating and collaborating with indigenous leaders to facilitate biodiversity conservation

GIS Program Lead

SEATTLE, WA, USA

Cascade Water Alliance

2019-2021

- Led the development, implementation, and management of Cascade's GIS program
- Oversaw GIS web application development for asset and water management

Environmental Science Intern

SEATTLE, WA, USA

Cascade Water Alliance

2018-2019

- Developed static and interactive maps and conducted spatial data analysis in support of organization needs: RFP/RFQ/Public Works; legal, planning, engineering and operations issues; algae/invasive plant treatment, stormwater, etc.

Field Technician

DARRINGTON, WA, USA

WA Dept. of Fish & Wildlife

2017-2018

- Completed multi-night backcountry expeditions in the Cascade Mountains, WA, to retrieve radio collars from mountain goats as part of the mountain goat translocation research program

Outdoor Recreation Guide

NORTH BEND, WA USA

Compass Outdoor Adventures

2014-2017

- Led mountain biking, backpacking, climbing, and other outdoor experiences for corporate groups, families, and kids camps
- Managed diverse personalities in extreme outdoor conditions and experiences

Science Communication

BLOG ARTICLES

1. **Duvall, E.** (2023, January 18). Reflections On Ecotourism And Wildlife Conservation In The Peruvian Amazon. ACEER. Retrieved from <https://aceer.org/reflections-on-ecotourism-and-wildlife-conservation-in-the-peruvian-amazon>
2. **Duvall, E.** (2019, December 11). Eagles, Salmon, and a Free-flowing River. American Rivers Retrieved from <https://www.americanrivers.org/2019/12/eagles-salmon-and-a-free-flowing-river/>
3. **Duvall, E.** (2020, June 20). Why save water in the PNW? We Need Water. Retrieved from <https://weneedwater.org/why-conserve-water-in-the-pnw/>

MAGAZINE ARTICLES

- **Duvall, E.** (2023, April 4). Riverbirds: An Integrative Measure of Ecosystem Health. *Gordon's Quill Volume 34: "Thoughts on Conservation"*

PODCAST APPEARANCES

1. CBC Radio (2023, April 1). Eagles are eating cows instead of salmon – and farmers are happy Retrieved from <https://www.cbc.ca/player/play/2188569155552>

SELECTED PRESS APPEARANCES

- USA TODAY (2023, March 18). Bald eagles adapt after climate change diminishes salmon Retrieved from <https://www.usatoday.com/story/news/nation/2023/03/18/bald-eagles-adapt-after-climate-change-11470297002/>

Volunteer Leadership Positions

President: Tropical Biology and Conservation Graduate Student Association

ITHACA, NY, USA

Cornell University

2022-2024

- Led weekly meetings and discussions with Cornell students, staff, and faculty (30+ regular people)
- Hosted Cornell's annual Tropical Biology and Conservation Symposium (2023, 2024)

Vice President: Tropical Biology and Conservation Graduate Student Association

ITHACA, NY, USA

Cornell University

2021-2022

Youth Mentor

ITHACA, NY, USA

Ithaca Learning Web

2021-2023

- Facilitated apprenticeship opportunities for Ithaca youth to gain experience in scientific field and laboratory work, as well as useful professional development skills before applying to college

Treasurer: Biogeochemistry Graduate Student Association

ITHACA, NY, USA

Cornell University

2021-2023

- Responsible for budgeting annual expenses for regular meetings, annual symposium, and writing retreats

Youth Representative Committee Member

NORTH BEND, WA, USA

North Bend Parks and Recreation

Committee

2021-2023

- Led the installation of recycling and compost bins throughout the town of North Bend, WA
- Led implementation of recreational park signs throughout the town of North Bend, WA

Co-founder: Be the change leadership conference

NORTH BEND, WA, USA

North Bend Youth Council

2021-2023

- Co-developed the “Be the change” Leadership Conference, a 2-day annual conference which brought 100+ high school students together to inspire and educate on topics of mental health, adversity, and career development

Skills & Certificates

CERTIFICATES

- Wilderness First Aid certificate, AVH Global (current as of April 2023)
- River Studies and Leadership certificate (from River Management Society)
- ACA Swiftwater Rescue Certificate: Level 2

LABORATORY & FIELD TOOLS/TECHNIQUES

- **Elemental analyses:** inductively coupled mass spectrometry (ICP-OES); gas chromatography (GC); ion chromatography (IC); mobile gas concentration analyzers (e.g., GasScouterG4301)
- **Spatial data processing:** remote sensing; image analysis; LiDAR; radio telemetry
- **Wildlife tracking and survey methods:** camera trapping, acoustic identification (birds, amphibians), visual identification (birds, amphibians, reptiles, mammals), track identification

COMPUTER SOFTWARE/PROGRAMS/LANGUAGES

- **GIS:** ArcGIS Pro; ArcGIS Online; ESRI Products; QGIS; Google Earth Engine
- **Statistical:** R, RStudio, Python, SQL, MATLAB, Java
- **Office:** Microsoft Excel, Word, PowerPoint, Canva
- **Sound/Video:** Adobe Lightroom, Adobe After Effects, Ableton, Audacity
- **Other Analytic Software:** NetLogo, Dragonfly

LANGUAGES

- English: Fluent
- Spanish: Conversational
- Quechua: Beginner
- Waorani: Beginner

Invited Workshops

Woodstoich 5: advancing synthesis and integration in ecology and evolution

Aarhus, Denmark

ACCEPTED ATTENDEE

October 2023

- Workshop hosted every four years to advance synthesis and integration in ecology and evolution
- Completed a week of intensive collaboration with international early-career researchers

Global Zoogeochimistry Workshop

Aarhus, Denmark

INVITED ATTENDEE

October 2023

- Workshop to advance synthesis of global zoogeochimistry research
- Completed a week of intensive collaboration and paper writing

Organizations & Affiliations

Association for Tropical Biology and Conservation (ATBC)

MEMBER

2022-present

Ecological Society of America (ESA)

MEMBER

2022-present

Northwest Scientific Association

MEMBER

2020-present

River Management Society

MEMBER

2019-present

Wildlife Society: Washington Chapter

MEMBER

2018-2020

Puget Sound ESRI User Group

MEMBER

2018-2020