

# Y Alyssa J. Sargent Y

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## EDUCATION

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- Ph.D., Biology (ongoing: candidate)**, Behavioral Ecophysics Lab, University of Washington 2020–  
*Topic:* Under pressure: the behavioral richness of hummingbirds in competitive landscapes (Advisor: Dr. Alejandro Rico-Guevara)
- B.Sc., Environmental Science**, Messiah University 2014–18  
*Independent research:* Avian habitat associations and environmental impact assessment for Oakwood Hills (2017–18, Advisor: Dr. David Foster)  
*Departmental honors independent research:* Noninvasive individual identification of the Panamanian golden frog (2016–17, Advisor: Dr. Erik Lindquist)

## PUBLICATIONS & MANUSCRIPTS

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- Sargent AJ**, Ward M, Fernandes AM, Talwekar Y, Muñoz-Amaya AM, Téllez-Colmenares N, Rico-Guevara A. Investigating the home ranges of hummingbirds in Colombia using two automated radio telemetry approaches. In prep for *Ornithology* (automated telemetry special issue). In prep
- Falk JJ, **Sargent AJ**, Medina-Madrid J, Rico-Guevara A. The daily life of a hummingbird: high-throughput tracking shows a spectrum of feeding and movement strategies. In review with *Ecology and Evolution*. Preprint: <https://www.biorxiv.org/content/10.1101/2025.02.25.640146v1>. In review
- Sargent AJ**, Fernandes AM, Clarkson A, Martinez SLG, Coenen A, Hansell L, Talwekar Y, Muñoz-Amaya AM, Téllez-Colmenares N, Elting R, Sun Y, Cartwright OA, Farias-Castro M, Büttner N, Rico-Guevara A. Variable evidence of radio-tag backpacks affecting hummingbird time budgets in captivity. *Animal Biotelemetry*. 14:11. 2026  
<https://doi.org/10.1186/s40317-026-00446-4>.
- Rueda-Uribe C, **Sargent AJ**, Echeverry-Galvis MÁ, Camargo-Martínez PA, Capellini I, Lancaster LT, Rico-Guevara A, Travis JM. 2024. Tracking small animals in complex landscapes: a comparison of localisation workflows for automated radio telemetry systems. *Ecology and Evolution*. 14:10, p.e70405. <https://doi.org/10.1002/ece3.70405>. 2024
- Falk J, **Sargent AJ**. 2024. The glitter in the green: in search of hummingbirds. *The Condor: Ornithological Applications* (invited commentary: book review). duae026. <https://doi.org/10.1093/ornithapp/duae026>. 2024
- Van Dyke F, Harju S, Hindy M, Cannata N, Schmidt E, Hillman E, **Sargent AJ**, Keas B. 2023. Bird communities of jack pine and red pine stand types: implications of multi- versus single-species management. *The Wilson Journal of Ornithology*. 135:3, 311–326. <https://doi.org/10.1676/22-00062>. 2023
- Hewes A, Cuban D, Groom DJE, **Sargent AJ**, Beltrán DF, Rico-Guevara A. 2022. Variable evidence for convergence in morphology and function across avian nectarivores. *Journal of Morphology*. <https://doi.org/10.1002/jmor.21513>. 2022
- Van Dyke F, Harju S, Hindy M, Cannata N, Schmidt E, Hillman E, **Sargent AJ**, Keas B. 2022. Comparative detection, density, and reproductive performance of the Kirtland's Warbler in jack and red pine habitats. *Journal of Wildlife Management*. e22233. <https://doi.org/10.1002/jwmg.22233>. 2022
- Cuban D, Hewes A, **Sargent AJ**, Groom DJE, Rico-Guevara A. 2022. On the feeding biomechanics of nectarivorous birds. *Journal of Experimental Biology*. 225:2, p.jeb243096. <https://doi.org/10.1242/jeb.243096>. 2022
- Sargent AJ**, Groom DJE, Rico-Guevara A. 2021. Locomotion and energetics of divergent foraging strategies in hummingbirds: a review. *Integrative and Comparative Biology*. 61:2, 736–748. <https://doi.org/10.1093/icb/icab124>. 2021
- Hereward H, Facey R, **Sargent AJ**, Roda S, Couldwell M, Renshaw E, Shaw K, Devlin J, Long S, Porter B, Henderson J, Emmett C, Astbury L, Maggs L, Rands S, Thomas R. 2021. Raspberry Pi nest cameras: an affordable tool for remote behavioral and conservation monitoring of bird nests. *Ecology and Evolution*. 00, 1–13. <https://doi.org/10.1002/ece3.8127>. 2021

## FUNDING (>\$319,000 PERSONALLY SECURED, \$1,200,000 COAUTHORED)

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### Coauthored Grants (\$1,200,000)

- CAREER: Hummingbird bill performance while feeding on and fighting for flowers (2440668)**, National Science Foundation, \$1,200,000 2025–30

**Lead author:** Education and Broader Impacts section (4.5 pages: 30% of 15-page total) of Project Description (personally wrote, compiled bibliography, and secured necessary Letters of Support)

**Coauthor:** Intellectual Merit section of Project Description (writing, formatting, bibliography); Project Summary; Budget; Budget Justification; Data Management Plan; and Facilities, Equipment, and Other Resources document

### **Fellowships (>\$178,000)**

<b>Graduate Research Fellowship</b> , National Science Foundation (NSF GRFP), \$152,000	2022–25
<b>Graduate Student Excellence Fellowship</b> , Washington Research Foundation and Benjamin Hall, \$10,866	2022
<b>Barbara Eddy Outreach Fellowship</b> , Burke Museum of Natural History and Culture, \$15,982	2021

### **Research Grants (>\$51,000)**

<b>P.E.O. Scholar Award</b> , Philanthropic Educational Organization International, \$25,000	2025
<b>Explorer Award for Inspirational and Scientific Trailblazing</b> , Scientific Exploration Society, £5,000 (\$5,974)	2024
<b>Student Research Grant</b> , American Ornithological Society, \$2,450	2024
<b>Robert T. Paine Experimental and Field Ecology Award</b> , University of Washington, \$6,600	2024
<b>Richard C. Snyder Award</b> , University of Washington, \$500	2024
<b>Walter and Margaret Sargent Award</b> , University of Washington, \$2,000	2023
<b>Hoag Award</b> , University of Washington, \$500	2023
<b>Personal Fundraising</b> , Private donors, \$300	2022–
<b>Outreach Grant</b> , Animal Behavior Society, \$1,000 ('22), \$1000 ('25)	2022, '25
<b>Orians Award for Tropical Studies</b> , University of Washington, \$1,500 ('21), \$900 ('24)	2021, '24
<b>Margo and Tom Wyckoff Award</b> , University of Washington, \$3,500	2021

### **Scholarships & Travel Awards (>\$89,000)**

<b>Research Exchange Award</b> , University of Washington's Research University Alliance, \$2,500	2026
<b>Charlotte Mangum Student Support</b> , Society for Integrative and Comparative Biology, \$125	2024
<b>Travel Award</b> , American Ornithological Society, \$931	2023
<b>Graduate School Conference Presentation Award</b> , University of Washington, \$500	2023
<b>Biology Department Graduate Student Travel Award</b> , University of Washington, \$500	2023
<b>Graduate Student Travel Grant</b> , Animal Behavior Society, \$700	2023
<b>Federal Work-Study</b> , Messiah University, \$6,998	2015–18
<b>Messiah University Grant</b> , Messiah University, \$19,440	2014–18
<b>Provost Scholarship</b> , Messiah University Honors Program, \$58,000	2014–18

### **AWARDS & HONORS**

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<b>Sesquicentennial Fund (Alice Virginia Coffin) Scholar</b> , Philanthropic Educational Organization International (one of 16 awardees out of 776 nominees)	2025–26
<b>Founders Memorial Award for Outstanding Poster</b> , Honorable Mention, Animal Behavior Society	2023
<b>Certified Field Naturalist</b> , Au Sable Institute	2018
<b>Departmental Honors (Research)</b> , Department of Biology, Messiah University	2016–18
<b>Dean's List</b> ; School of Science, Engineering, and Health; Messiah University	2014–18

### **SCIENCE COMMUNICATION**

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## **Hummingbird Sugar Rush / Fiebre de Azúcar en Colibríes: Curriculum Development (2021–Present)**

**Development:** Personally conceived and developed educational curriculum “Hummingbird Sugar Rush” (“Fiebre de Azúcar en Colibríes” in Spanish), with assistance from the Burke Museum’s Education Department and Colombian early-career colleagues

**Curriculum components:** [Board game](#), life-sized field game, two hands-on “deeper dive” activities (bill morphology vs. floral access trade-offs, nectar energy content vs. feeding efficiency trade-offs)

### **Execution:**

**Full curriculum:** Playtested with **44 students** (Burke Museum’s Girls/Voices in Science programs, three total sessions, ’24–25)

#### **Life-sized field game:**

- **English:** Played with **152 students** in Seattle: Aki Kurose Middle School (73 students, ’23), Lake Washington Girls Middle School (29 students, ’24), Birds Connect Seattle Nature Camp (18 students, ’25)
- **Spanish:** Played with **184 students** in Colombia: Escuela Bermejál (66 students, ’24–25), Institución Educativa Municipal Francisco José de Caldas (53 students, ’25), Escuela Tierra Negra (20 students, ’25), Feria de Ciencia Colibrí Gorriazul (45 attendees, ’26)

**Board game:** Playtested at community outreach events/sessions (see below) with **275 booth attendees** in total

## **Community Education & Events**

<b>Miyawaki Urban Forest Pollinator Party</b> , Shoreline Historical Museum Hosted booth to exhibit hummingbird specimens and playtest Hummingbird Sugar Rush board game (110 attendees)	2025
<b>DIY Science Zone</b> , GeekGirlCon Hosted booth to playtest Hummingbird Sugar Rush board game (45 booth attendees)	2023
<b>Outreach Fair</b> , Animal Behavior Society Hosted booth to playtest Hummingbird Sugar Rush board game (120 booth attendees)	2023
<b>Assorted outreach events</b> , Burke Museum of Natural History and Culture Hosted hummingbird specimen booth at annual fundraiser (’21–’24), “Rare Air” exhibit closing celebration (’25), “Behind the Scenes” night (’26)	2021–
<b>President</b> of Sigma Zeta Science and Mathematics Honor Society, Messiah University Coordinated seminars, public scientific demonstrations, judging K–8 science fairs	2016–18
<b>Oakes Museum of Natural History Assistant Collections Manager</b> , Messiah University Volunteer guide; curated, identified, and catalogued bird, egg, nest, mammal, insect specimens; gave ornithological talks to public, created displays, contributed to blog	2015–18

## **Writing & Publications**

<b>Science Journalist</b> , Integrative and Comparative Biology (blog articles) Disseminated novel research through interview-based articles (the <a href="#">Luxury Effect</a> , hummingbird <a href="#">combat/coloration</a> )	2024
<b>Editor</b> for <i>Exploration Revealed</i> , Scientific Exploration Society Guided, honed, and edited articles from contributing authors on their wildlife research expeditions (e.g., <a href="#">mammals</a> , <a href="#">hummingbirds</a> , <a href="#">honeyeaters</a> )	2023–
<b>Exploration Revealed</b> , Scientific Exploration Society (Feature article, Issue 3) <a href="#">From backyards to beyond: the surprising odysseys of radio-tagged hummingbirds</a>	2023
<b>Science Journalism Fellowship</b> , Puget Sound Institute and <i>Salish Sea Currents</i> (Feature article) <a href="#">Bird populations improve after Elwha Dam removals</a>	2022
<b>TED-Ed</b> collaboration for hummingbird-focused animation Created <a href="#">supplementary learning materials</a> for animation (>1,028,000 views)	2021
<b>Current Conservation</b> (Feature article, Vol. 14.4) <a href="#">The secret world of owl migration</a>	2021
<b>Dispatches from the Field</b> (Guest article) <a href="#">Praia, paradise, &amp; petrel poop</a>	2020
<b>Selected additional publications</b> on human-nature coexistence	2013–18

Artwork (*Peregrine Review*), personal essays (*Kelsey Review, Aspirations*), LEGO ([Beautiful LEGO: Wild!](#))

### **Invited Talks & Presentations (>4,100 citizens reached)**

<b>Rainier Audubon:</b> Chapter guest (30 attendees)	2026
<b>Huntley Area Public Library:</b> “Birds of a Feather” series (15 attendees)	2026
<b>Olympic Peninsula Audubon, Jamestown S’Klallam Tribe:</b> “Olympic BirdFest” talk and trivia (145 total attendees)	2025–
<b>Pilchuck Audubon:</b> <a href="#">Chapter guest</a> (119 attendees)	2025
<b>Cayuga Bird Club:</b> <a href="#">Monthly guest</a> (75 attendees, >100 views)	2024
<b>Philanthropic Educational Organization:</b> Chapter guest (19 attendees)	2024
<b>The Wildlife Society (Washington Chapter):</b> “Wildlife Webinar” series (20 attendees)	2023
<b>Birds Connect Seattle:</b>	2022, ’24
- “Young Birders” career series (13 student attendees, ’22)	
- “Community Speaker” series (70 attendees, ’24)	
<b>Burke Museum:</b>	2021
- “ <a href="#">Career Café</a> ” with Girls in Science (livestream and iNaturalist activity, >800 student attendees)	
- “Research Spotlight” series (51 attendees)	
- “ <a href="#">Virtual Open Door</a> ” (Instagram Live Q&A, >1,050 views)	
<b>Skype a Scientist:</b> 40 hummingbird-oriented class- and <a href="#">school-wide</a> presentations (>1,700 student attendees)	2020–

### **Interviews & Consultation**

<b>Write for You</b> <a href="#">podcast episode</a> , “Writing across genres, working in collaboration, and finding strategies that suit you”	2025
<b>Mechanical Engineering Magazine</b> <a href="#">article</a> , “Hummingbirds fitted with tiny backpacks for research”	2025
<b>KUOW/NPR</b> <a href="#">podcast episode</a> , “Hummingbirds: swords for sugar?!”	2025
<b>The Society for Integrative and Comparative Biology</b> <a href="#">article</a> , “Tiny backpacks for tiny birds: tracking hummingbird behaviors without weighing them down”	2025
<b>UW News</b> <a href="#">article</a> , “Miniature backpack-like tags offer insight into the movement of hummingbirds”	2024
<b>KUOW/NPR</b> <a href="#">article</a> , “Angry birds: hummingbirds are cute, but they’re primed to fight”	2024
<b>Birds &amp; Blooms</b> <a href="#">article</a> , “Grow nectar-rich native plants for hummingbirds”	2024
<b>Wildlife film consultation on hummingbird behavior</b> for WildStar Films (National Geographic, Disney+), BBC	2023–
<b>#itsawildlife</b> <a href="#">podcast episode</a> , “Humming about bird research and outreach with Alyssa Sargent”	2022
<b>Birds Connect Seattle</b> <a href="#">article</a> , “Snow dance: Anna’s Hummingbirds in winter”	2021

### **TEACHING ASSISTANTSHIPS (\* INCLUDED CURRICULUM DEVELOPMENT; 185 STUDENTS INSTRUCTED)**

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<b>Scientific Writing in Marine Biology</b> , University of Washington (48, 42 undergraduates)	2022–23
<b>*Ornithology</b> , University of Washington (32 undergraduates)	2021
<b>Introductory Biology</b> , University of Washington (51 undergraduates)	2020
<b>Environmental Chemistry</b> , Messiah University (12 undergraduates)	2018

### **INVITED ACADEMIC TALKS & GUEST LECTURES (131 STUDENTS/PEERS INSTRUCTED)**

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<b>Ornithology Course</b> , University of Washington (24 undergraduates) <i>Lecture:</i> Ornithological careers: the limitless creativity of fieldwork	2025
<b>Functional Morphology Course</b> , University of Washington (13 undergraduates) <i>Lecture:</i> Fight or flight . . . or both? Relating foraging strategies to hummingbird morphology	2024
<b>Ornithology Course</b> , University of Puerto Rico Mayaguez (14 undergraduates)	2023

*Talk*: Rápidos y furiosos: seguimiento de los movimientos de los colibríes territoriales

**Plastic Punk Animal Games Workshop**, University of Washington (20 graduate engineers) 2022  
*Talk*: Using games and bespoke field methodology to increase understanding of hummingbirds

**Graduate & Professional Life Course**, University of Washington 2021–  
*Lecture*: “What is outreach, anyway?” Resources to communicate complex topics well (’23–’25: 30 total graduates)  
*Lecture*: The mechanics of science communication: effectively engaging with diverse audiences (’22: 13 graduates)  
*Lecture*: Unpacking science communication and getting plugged in (’21: 17 graduates)

### **ACADEMIC CONFERENCE PRESENTATIONS (\* GRANTED AWARD)**

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- Sargent AJ**, Pen J, Stockham C, Canning K, Canaday R, Rockwood A, Clark A, Rico-Guevara A. Learning through games: a case-study in urban outreach. Society for Integrative and Comparative Biology, *Poster*. 2024
- Sargent AJ**, Fernandes AM, Elting R, Clarkson A, Martinez SL, Hansell L, Coenen A, Talwekar Y, Muñoz-Amaya M, Téllez-Colmenares N, Rico-Guevara A. Tiny backpacks: experimentally monitoring the behavior of radio-tagged hummingbirds in Colombia. Society for Integrative and Comparative Biology, *Talk*. 2024
- Sargent AJ**, Ward M, Fernandes AM, Talwekar Y, Muñoz-Amaya MA, Téllez-Colmenares N, Rico-Guevara A. Investigating the home ranges of hummingbirds in Colombia using two automated radio-telemetry approaches. American Ornithological Society, *Talk* (“Automating ornithology: Advances in avian ecology through automated radio telemetry” symposium). 2023
- Sargent AJ**, Pen J, Canaday R, Stockham C, Rockwood A, Clark A, Rico-Guevara A. Become the hummingbird: using games to engage with underrepresented groups in science. American Ornithological Society, *Poster*. 2023
- \***Sargent AJ**, Canaday R, Pen J, Rockwood A, Clark A, Stockham C, Rico-Guevara A. Hummingbird Sugar Rush: teaching complex behavioral trade-offs through games. Animal Behavior Society, *Poster*. 2023
- Sargent AJ**, Rico-Guevara A. Where do they go? Mysterious hummingbird foraging. Animal Behavior Society, *Talk*. 2021
- Sargent AJ**, Groom D, Rico-Guevara A. Reassessing hummingbird foraging: the territoriality-traplining continuum. Society for Integrative and Comparative Biology, *Talk* (“Physical mechanisms of behavior” symposium). 2021
- Sargent AJ**, Hindy M, Van Dyke F. Examining nesting site flexibility of the Kirtland’s Warbler—an endangered, extreme habitat specialist. School of Science, Engineering, and Health Research Symposia, Messiah University, *Talk*. 2018
- Sargent AJ**, Foster D. Survey of the Oakwood Hills avian community, stratified by habitat type. School of Science, Engineering, and Health Research Symposia, Messiah University, *Poster*. 2018
- Sargent AJ**, Hindy M, Van Dyke F. Kirtland’s Warbler use of red pine stands in Northern Lower Michigan. Internal Research Symposium, Au Sable Institute, *Talk*. 2017
- Sargent AJ**, E Lindquist. Non-invasive individual identification of the Panamanian golden frog (*Atelopus zeteki*). School of Science, Engineering, and Health Research Symposia, Messiah University, *Talk* (’16), *Poster* (’17). 2016–17

### **PROFESSIONAL SERVICE**

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- Outreach Committee member**, Biology Department, University of Washington 2025
- “**Decisions, Decisions—Taking Ownership over the Dissertation Process**” **panelist**, Odegaard Writing and Research Center, University of Washington (21 attendees) 2025
- Panelist**; Gabriel E. Gallardo Research, Student Leadership, & Advocacy Symposium; University of Washington 2025  
*Panel*: “Funding Graduate School—Fellowships” (70 attendees)  
*Panel*: “Applying to and Attending Graduate School” (41 attendees)
- Career-building workshop discussion leader**, Program on Climate Change, University of Washington (22 attendees) 2023
- Departmental awards peer reviewer**, Biology Department, University of Washington 2023
- NSF GRFP workshop peer reviewer**, Graduate School, University of Washington 2022
- “**Applying to Graduate School**” **panelist and host**, Biology Department, University of Washington (>200 attendees) 2020–25

- “Biology, Wildlife, Conservation, & More” career networking event co-arranger, panelist, and co-host,** YouthForce, Boys & Girls Club of King County (30 attendees) 2020
- Biology website redesign taskforce creator and co-leader,** Biology Department, University of Washington (enhancing website information and accessibility for prospective grad students) 2020

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### ACADEMIC PEER REVIEW (2020–PRESENT)

*Biology Letters* (1), *Journal of Pollination Ecology* (1), *The Oriole* (1), *Integrative and Comparative Biology* (1), *Journal of Field Ornithology* (1)

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### MENTORSHIP & SUPERVISION (18 STUDENTS/PROFESSIONALS)

- Project (supervision): How artificial nectar hotspots affect territoriality in a hummingbird assemblage** 2025–  
*Centro de Investigación Colibrí Gorriazul:* Marialejandra Castro Farias (biologist), Juan Camilo Reyes (engineer), Samantha-Lynn Martinez (wildlife filmmaker), Catalina Montaña (educator)
- Project (mentorship): Biologging ethics and time budgets of radio-tagged hummingbirds** 2023–  
*University of Washington:* Samantha-Lynn Martinez (also mentored for 2024 Mary Gates Leadership Scholarship), Laney Hansell, McKenna Dailey, Yutong Sung, Olivia Cartwright, Alexandra Coenen, Jonathan Bristle  
*Texas A&M University:* Aeris Clarkson
- Project (supervision): Characterizing hummingbird movement ecology through automated telemetry** 2022–  
*Centro de Investigación Colibrí Gorriazul:* Ana Melisa Fernandes, Nicolas Téllez-Colmenares, Miguel Angel Muñoz Amaya
- Project (supervision): Geometric morphometrics of hummingbird bills** 2020  
*University of Washington:* Linda Chen, Michelle Hsu, Monica Hu, Allison Li

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### ADDITIONAL RESEARCH & FIELD EXPERIENCE

- Field Assistant,** New York University, Dr. Valentina Alaasam (Puerto Rico, USA) 2023  
Project: Thermoregulatory evolution of hummingbirds: using urban heat islands as a natural experiment
- Research Technologist,** University of Washington, Dr. Alejandro Rico-Guevara (Washington, USA) 2020  
Lab maintenance; virtual outreach; wrote protocols, permits, and proposals; edited papers
- Banding Assistant and Owl Banding Crew Leader,** Long Point Bird Observatory, Kyle Cameron (Ontario, Canada) 2019  
Fall migration constant-effort banding
- Research Intern,** AMNH Southwestern Research Station, Dr. Susan Wethington (Arizona, USA) 2019  
Project: Blue-throated Mountain-gem site preference and nest characterization
- Field Assistant,** Cardiff University, Drs. Hannah Hereward and Veronica Neves (Azores, Portugal) 2019  
Project: Nesting study and conservation of Monteiro’s Storm-Petrels
- Field Assistant,** Cornell University and University of Queensland, Dr. Will Feeney (Brisbane, Australia) 2018  
Project: Avian brood parasitism and social behavior of Australian fairywrens
- Field Assistant,** University of Missouri, Melissa Roach (Missouri, USA) 2018  
Project: Effects of lead (Pb) on success of ground-foraging birds in Southeast Missouri
- Research Student,** Au Sable Institute, Dr. Fred Van Dyke (Michigan, USA) 2017  
Project: Kirtland’s Warbler use of red pine in Northern Lower Michigan

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### SELECTED EXTRACURRICULAR TRAININGS

- Media Lab** (9-day science and natural history filmmaking workshop), Jackson Wild 2025  
Mentored by Day’s Edge Productions and Helicase Media L.L.C. to produce 5-minute video for the Teton Raptor Center
- Writing Children’s Literature: Picture Books** (10-week course), University of Washington 2024
- Wilderness First Aid** (2-day course), REI and National Outdoor Leadership School Wilderness Medicine (’21); Longleaf Wilderness Medicine (’25)—*certification active until October 2027* 2021, ’25
- Adult and Pediatric First Aid/CPR/AED** (1-day course), American Red Cross—*certification inactive* 2021

<b>Research Data Management</b> (4-day workshop), University of Washington	2020
<b>Hummingbird Banding Training</b> (6-day workshop), Hummingbird Monitoring Network	2019

## SKILLS OVERVIEW

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**Taxa handling:** Trochilidae, Passeriformes, Procellariiformes, Strigiformes, Cuculiformes, Piciformes

**Avian processing:** mist-netting and extraction, ground trapping, baited trapping, processing (e.g., aging, sexing, recording biometrics, banding), brachial blood sampling, aging nestlings and eggs

**Avian field techniques:** ID, resighting color bands, nest searching and monitoring, territory mapping, point counting, spot mapping, behavioral monitoring

**Wildlife tracking techniques:** Automated Radio-Telemetry System setup, maintenance, data cleaning/analysis (grid, tower, base station); radio-telemeter, accelerometer, and GPS logger application/removal (glue, backpack harness); passive integrated transponder (PIT tag) implantation; radio-frequency identification (RFID) antenna maintenance

**Field electronics:** Raspberry Pi load cell and nest burrow camera maintenance, camera trapping, field video recording (JVC, GoPro, Minolta), high-speed camera operation (Chronos), wind tunnel calibration and operation

**Vegetation sampling:** ID, line-transect, Daubenmire, quadrat, DBH, density, relative cover

**Programming languages:** R (advanced); Raspberry Pi, Python (beginner)

**Software:** BORIS, BioRender (proficient); Premiere Pro, Procreate, Canva (competent); SlicerMorph, Illustrator, Photoshop (beginner)