Morgan M. Sparks

Curriculum Vitae
November 2025

Rocky Mountain Research Station,
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Research Positions

2024–Present	**Research Fish Biologist**, Rocky Mountain Research Station, USDA Forest Service
2023–2024	**Postdoctoral Fellow**, National Science Foundation (*host* Colorado State University)
2017–2023	**Research Assistant**, Department of Biology, Purdue University
2014–2016	**Research Assistant**, USGS Alaska Cooperative Fish and Widlife Research Unit, University of Alaska Fairbanks

Education

2023	Ph.D.	Biology	Purdue University
2016	M.Sc.	Fisheries	University of Alaska Fairbanks
2013	B.S.	Wildlife Biology (Aquatic) *High Honors*	University of Montana
2013	B.A.	Journalism (Print) *High Honors*	University of Montana

Publications

I have authored 8 papers in peer-reviewed journals. On Google Scholar my h-index is 6 with 135 total citations (as of 7 November 2025).

8. **Sparks, M.M.**, Maitland, B.M., Felts, E.A., Swartz, A.G., & Frater, P.N. (2025). hatchR: A toolset to predict when fish hatch and emerge. *Fisheries (Cover Article)*, vuaf078. https://doi.org/10.1093/fshmag/vuaf078
7. Yin, X., Schraidt, C.E., **Sparks, M.M.**, Euclide, P.T., Hoyt, T.J., Ruetz III, C.R., Höök, T.O., & Christie, M.R. (2025). Parallel genetic adaptation amid a background of changing effective population sizes in divergent yellow perch (Perca flavescens) populations. *Proceedings of the Royal Society B: Biological Sciences*, *292*(2038), 20242339. https://doi.org/10.1098/rspb.2024.2339
6. **Sparks, M.M.**, Schraidt, C.E., Yin, X., Seeb, L.W., & Christie, M.R. (2024). Rapid genetic adaptation to a novel ecosystem despite a large founder event. *Molecular Ecology*, *33*(20). https://doi.org/10.1111/mec.17121
5. **Sparks, M.M.**, Kraft, J.C., Blackstone, K.M.S., McNickle, G.G., & Christie, M.R. (2022). Large genetic divergence underpins cryptic local adaptation across ecological and evolutionary gradients. *Proceedings of the Royal Society B: Biological Sciences*, *289*(1984), 20221472. https://doi.org/10.1098/rspb.2022.1472
4. Yin, X., Martinez, A.S., Perkins, A., **Sparks, M.M.**, Harder, A.M., Willoughby, J.R., Sepúlveda, M.S., & Christie, M.R. (2021). Incipient resistance to an effective pesticide results from genetic adaptation and the canalization of gene expression. *Evolutionary Applications*, *14*(3), 847–859. https://doi.org/10.1111/eva.13166
3. **Sparks, M.M.**, Falke, J.A., Quinn, T.P., Adkison, M.D., Schindler, D.E., Bartz, K., Young, D., & Westley, P.A.H. (2019). Influences of spawning timing, water temperature, and climatic warming on early life history phenology in western Alaska sockeye salmon. *Canadian Journal of Fisheries and Aquatic Sciences*, *76*(1), 123–135. https://doi.org/10.1139/cjfas-2017-0468
2. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., & Quinn, T.P. (2017). Thermal adaptation and phenotypic plasticity in a warming world: Insights from common garden experiments on Alaskan sockeye salmon. *Global Change Biology (Cover Article)*, *23*(12), 5203–5217. https://doi.org/10.1111/gcb.13782
1. Eby, L.A., Pierce, R., **Sparks, M.M.**, Carim, K., & Podner, C. (2015). Multiscale Prediction of Whirling Disease Risk in the Blackfoot River Basin, Montana: A Useful Consideration for Restoration Prioritization? *Transactions of the American Fisheries Society*, *144*(4), 753–766. https://doi.org/10.1080/00028487.2015.1031914

R-packages

hatchR has a total of 1512 downloads (as of 7 November 2025).

1. Maitland, B.M., **Sparks, M.M.**, Felts, E., Swartz, A., & Frater, P.N. (2025). *hatchR: Predict Fish Hatch and Emergence Timing*. https://github.com/bmait101/hatchR

Theses

2. **Sparks, M.M.**, (2023). *The Biological Consequences of Cryptic Local Adaptation and Contemporary Evolution* [Dissertation]. Purdue University.
1. **Sparks, M.M.**, (2016). *Climate, embryonic development, and potential for adaptation to warming water temperatures by Bristol Bay sockeye salmon* [Thesis]. University of Alaska Fairbanks.

Pre-prints and in-review

2. Hemstrom, W., Gruenthal, K., Shedd, K., Euclide, P., **Sparks, M.M.**, Habicht, C., Wilson, L., & Christie, M. (in review). Variation in run-timing is strongly influenced by a large-effect locus in highly divergent lineages of pink salmon. *Proceedings of the National Academy of Sciences*.
1. **Sparks, M.M.**, Leavell, B.C., & Maitland, B.M. (in review). A generalizable tool for predicting developmental phenology for wild poikilotherms. *Ecological Applications*.

Manuscripts in preparation

1. Thurow, R., Maitland, B.M., **Sparks, M.M.**, Isaak, D., & Buffington, J. (in prep). *Habitat heterogeneity and phenotypic diversity: The influence of stream attributes on timing of Chinook Salmon spawning*. https://github.com/morgan-sparks/mfsr_phenology

Grants

I have acquired *$470,970* in research grants (showing grants >$4999):

Pending	PI. "Bull Trout movement using PIT tag arrays in the Boise Basin". *Funding from U.S. Fish and Wildlife Serivce*. Collaborators: Bryan Maitland, Dan Isaak.	$56,620
Pending	Co-PI. "Scaling satellite monitoring of fish spawning across space". *Funding from National Geographic Society*. Collaborators: Dan Dauwwalter (PI), Bryan Maitland, Kellie Carim, Russell Thurow.	$20,000
2025–2027	Co-PI. "Monitoring Chinook Salmon spawning from space". *Funding from Trout Unlimited*. Collaborators: Dan Daulwater (PI), Bryan Maitland.	$38,000
2024–2027	PI. "Bull trout genetic capture-mark-recapture". *Funding from USDA Forest Service RMRS*. Collaborators: Bryan Maitland, Dan Isaak.	$30,000
2024–2027	Partner. "From flames to fish: Development of a reproducible model of co-management for wildfire and aquatic species at Zena Creek Ranch, Idaho". *Funding from Joint Fire Science Program*. Collaborators: Jen Pierce (PI), Anna Bergstrom, Bryan Maitland.	$150,000
2023–2026	PI. "Evaluating the potential for genetic rescue in Colorado's state fish, the Greenback Cutthroat Trout". *Funding from Colorado Parks and Wildlife*. Collaborators: Kevin Rogers, Chris Funk, Eric Anderson.	$103,000
2022–2023	PI. "The roles of gene flow and local adaptation in driving fitness in a genetically depauperate fish". *Funding from NSF PRFB*. Collaborators: Kevin Rogers, Chris Funk, Eric Anderson.	$138,000
2017–2017	PI. "Rosenberg Graduate Fellowship". *Funding from Purdue University, Biological Sciences*. Collaborators: NA.	$5,000

Below are invited full proposals that were invited but withdrawn due to federal funding issues:

2025–2029	PI. "A palaeoecological toolset to address shifting baseline syndrome". *Funding from DoD SERDP*. Collaborators: Bryan Maitland, Kellie Carim, Russell Thurow.	$1,800,000

Below are invited full proposals that were not awarded:

2022–2026	PI. "Characterizing genomic risk and adaptive potential to climate change in two BLM Special Status Species fishes". *Funding from Bureau of Land Management*. Collaborators: Chris Funk, Kevin Rogers, Eric Anderson.	$196,000

Honors and Awards

Professional awards

2024 Outstanding Service Award, U.S. Forest Service, Rocky Mountain Research Station

Fellowships

2022	Bisland Dissertation Fellowship, Purdue University	One semester full support
2021	Waser Fellowship, Purdue University Department of Biological Sciences	6 months full support
2020	Purdue Research Foundation Graduate Fellowship	One year full support
2017	Andrews Fellowship, Purdue University Department of Biological Sciences	Two years full support

Student Awards

2017	Best Student Presentation	Indiana Chapter American Fisheries Society
2013	Mortar Board Outstanding Senior Award	Wildlife Biology, University of Montana
2013	3rd place Student Feature Writing	Society of Professional Journalists, Region 10
2012	Student Speaker and Representative	University of Montana Wildlife Biology 75th Anniversary
2012	Wally McClure Scholarship	Montana Chapter American Fisheries Society
2010	Montana Druids Honors Society	Wildlife Biology, University of Montana
2009	Western Undergraduate Exchange Scholarship	University of Montana

Invited Talks

2025 "Fisheries ecology and conservation for the 21st century". Wildlife Biology Program, University of Montana.

2024 "Using genomics to do genetics for fish and wildlife management". Department of Natural Resources, South Dakota State University.

2023 "Phenotypic and genetic diversity of fishes in changing environments". Rocky Mountain Research Station, US Forest Service.

2022 "The ecological and evolutionary significance of cryptic local adaptation". Ecology and Evolutionary Biology, Purdue University.

2017 "Thermal local adaptation and developmental diversity in western Alaskan sockeye salmon". Department of Forestry and Natural Resources, Purdue University.

Teaching

Teaching Assistantships

2023	BIOL 69500: Data Science for Biologists	3 credits	Purdue University
2022	BIOL 5800: Evolution	3 credits	Purdue University
2019	BIOL 19500: CURE Disease Ecology Lab	5 credits	Purdue University
2018	BIOL 58210: Ecological Statistics	3 credits	Purdue University
2015	FISH 427: Ichthyology	5 credits	University of Alaska Fairbanks

Guest Lectures

2025 "Fisheries case studies in evolution". WLF 531, South Dakota State University.

2024 "Using genomics to do genetics for fisheries applications". BIOL 640, University of Idaho.

2023 "Fisheries case studies in evolution". WLF 531, South Dakota State University.

2022 "Evolution in few generations: Rapid Evolution". BIOL 58000, Purdue University.

2019 "Introductory R: Programming and visualization". BIOL 59100, Purdue University.

2017 "Climate change and adaptation: How do organisms persist?". BIOL 58000, Purdue University.

2017 "Introduction to visualization of linear models with ggplot". BIOL 58210, Purdue University.

Mentoring

I have mentored 2 post-baccalaureates and 4 undergraduates in lab and field settings:

Post-baccalaureate

2025–Present	Amy Wang	Cornell University (EEB Mentor Match)
2019–2020	Julia Markovitz	Purdue University

Undergraduates

2021–2023	Connor Johnson	Purdue University
2017–2018	Lindsey Dice	Purdue University
2016–2017	Monroe Morris	University of Alaska Fairbanks
2015–2017	Genevieve Johnson	University of Alaska Fairbanks

Professional Service and Leadership

Service

2023–Present	Ad hoc Advisor, Greenback Cutthroat Trout Recovery Team
2020–2021	Student Representative at Town Hall, Ecology and Evolutionary Biology, Purdue University
2017–2018	Advisor, Purdue University Student Chapter of the American Fisheries Society
2016–2017	Science Advisor, Indiana Backcountry Hunters and Anglers
2015–2016	Student Representaive, Alaska Chapter of the American Fisheries Society Executive Committee
2014–2016	Outreach Coordinator, University of Alaska Fairbanks Student Chapter of the American Fisheries Society
2013–2014	Department Head Search Committee, Wildlife Biology, University of Montana
2012–2013	Secretary, Westslope Chapter of Trout Unlimited
2010–2013	President, University of Montana Student Chapter of the American Fisheries Society

Society memberships

2010–Present	American Fisheries Society
2016–2018	American Society of Naturalists
2018–2019	Society for the Study of Evolution

Session Organization

2026	Chair, Fire and Fish: 25 years of progress and challenges, American Fisheries Society National
2026	Co-chair, Perspectives on the Cutthroat Trout species complex in the genomics era, Western Division American Fisheries Society
2024	Co-chair, Science to Restore and Manage Wildland Aquatic Habitats and Watersheds, American Geophysical Union

Reviewer

Grant review:

Great Lakes Fisheries Commission

Scientific journal review:

North American Journal of Fisheries Managament, *Conservation Science and Practice*, *Molecular Ecology Resources*, *Journal of Applied Ichthyology*, *Conservation Physiology*, *Heredity*, *Evolutionary Applications*, *PLoS ONE*, *Canadian Journal of Aquatic and Fisheries Science*, *Transactions of the American Fisheries Society*

Outreach and Broader Impacts

Media and public talks

2015	Backcountry Journal	Article
2013	Montana Native News Project	Editor
2012	Montana Native News Project	Writer
2012	Missoulian	Article
2012	Montana Trout Unlimited, Trout Line	Writer

Public service and outreach

2025	Mentor	EEB Mentor Match
2024	Professional Development Seminar	Purdue University
2023	Professional Development Seminar	Fort Lewis College

Conference Presentations

Underlined names indicate undergraduate research mentees.

Presentations

18. **Sparks, M.M.**, Felts, E., Swartz, A., & Maitland, B.M. (2025a). *hatchR: A toolset to predict when fish hatch and emerge* [Paper]. Idaho American Fisheries Society.
17. **Sparks, M.M.**, Leavell, B., & Maitland, B.M. (2025b). *hatchR: A toolset to predict developmental phenology for wild poikilotherms* [Paper]. Society for Freshwater Science, PNW Chapter.
16. **Sparks, M.M.**, (2024a). *How can the genomic history of introduced salmonids inform their native range conservation and management?* [Paper]. Washington-British Columbia-Idaho Joint American Fisheries Society.

15. **Sparks, M.M.**, (2024b). *Leveraging the power of parentage analyses to investigate bull trout* [Paper]. Idaho Statewide Bull Trout Meeting.
14. **Sparks, M.M.**, Harder, A., Schraidt, C., Seeb, L., & Christie, M.R. (2023). *A large, recently evolved supergene facilitates rapid adaptation of an introduced fish* [Paper]. Coastwide Salmonid Genetics Meeting.
13. **Sparks, M.M.**, Seeb, L.W., Seeb, J.E., & Christie, M.R. (2022a). *The genomic consequences of novel age-at-maturity phenotypes in pink salmon (Oncorhynchus gorbuscha) introduced to the great lakes* [Paper]. Evolution.
12. **Sparks, M.M.**, Seeb, L.W., Seeb, J.E., & Christie, M.R. (2022b). *The genomic consequences of novel age-at-maturity phenotypes in pink salmon (Oncorhynchus gorbuscha) introduced to the great lakes* [Paper]. American Fisheries Society.
11. **Sparks, M.M.**, Seeb, L.W., Seeb, J.E., & Christie, M.R. (2021). *Genomic insights from the introduction of pink salmon (Oncorhynchus gorbuscha) to the great lakes* [Paper]. American Fisheries Society.
10. **Sparks, M.M.**, Blackstone, K.M.S., Kraft, J.C., McKnickle, G.G., Oakley, C.G., & Christie, M.R. (2019). *Uncovering cryptic local adaptation across environmental gradients: Quantifying the covariance of genetic and environmental influences on phenotypes* [Paper]. Ecological Society of America.
9. **Sparks, M.M.**, Falke, J.A., Westley, P.A.H., Adkison, M.D., Bartz, K., Quinn, T.P., Schindler, D.E., & Young, D. (2017). *Predicting developmental phenology in wild populations: A case study with western Alaska sockeye salmon* [Paper]. Indiana Chapter of the American Fisheries Society.
8. **Sparks, M.M.**, (2017). *The patterns and processes of adaptive and non-adaptive phenotypic plasticity: A meta-analysis* [Paper]. Purdue EEB Seminar.
7. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., & Adkison, M.A. (2016a). *Patterns in diversity: Bristol Bay sockeye salmon (Oncorhynchus nerka) hatch timing* [Paper]. University of Alaska American Fisheries Society Student Symposium.
6. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., & Adkison, M.A. (2016b). *Population-specific spawn timing and water temperature drive early life history phenology in western Alaska sockeye salmon* [Paper]. USGS Alaska Cooperative Unit Meeting.
5. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., Adkison, M.A., & Quinn, T.P. (2016c). *Hatch timing and embryo survival in a changing climate: Thermal adaptation and adaptive plasticity in sockeye salmon* [Paper]. Western Alaska LCC Webinar.
4. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., & Adkison, M.A. (2016d). *Predicting sockeye salmon (Oncorhynchus nerka) hatch timing by incorporating natural variability into an existing model* [Paper]. Southwest Interagency Fish Meeting.
3. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., & Quinn, T.P. (2016e). *Experimental test for thermal local adaptation and heritable phenotypic plasticity in the hatching timing by sockeye salmon using a common garden approach* [Paper]. Evolution.
2. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., & Adkison, M.A. (2015). *Does incorporating compensatory development better predict developmental phenology in sockeye salmon?* [Paper]. University of Alaska American Fisheries Society Student Symposium.
1. **Sparks, M.M.**, Eby, L.A., Pierce, R., Carim, K., & Podner, C. (2014). *Is whirling disease driving salmonid community shifts in the Blackfoot River Basin, Montana?* [Paper]. Alaska Chapter American Fisheries Society.

Posters

5. **Sparks, M.M.**, Felts, E., Swartz, A., & Maitland, B.M. (2025a). *hatchR: A toolset to predict when fish hatch and emerge* [Poster]. Idaho Water Quality Meeting.
4. **Sparks, M.M.**, Felts, E., Swartz, A., & Maitland, B.M. (2025b). *hatchR: A toolset to predict when fish hatch and emerge* [Poster]. Western Division American Fisheries Society.
3. Maitland, B.M., Felts, E., Swartz, A., & **Sparks, M.M.**, (2025). *hatchR: A toolset to predict when fish hatch and emerge* [Poster]. American Fisheries Society.
2. Dice, L.M., **Sparks, M.M.**, & Christie, M.R. (2018). *Does acclimatization time affect response to lampricide exposure in sea lamprey (Petromyzon marinus)?* [Poster]. American Fisheries Society.
1. **Sparks, M.M.**, Westley, P.A.H., Falke, J.A., & Adkison, M.A. (2015). *Predicting sockeye salmon (Oncorhynchus nerka) hatch timing by incorporating natural variability into an existing model* [Poster]. Alaska Chapter American Fisheries Society.