Megan L. Feddern, Ph.D

Research Fish Biologist, NOAA Northwest Fisheries Science Center Population Ecology Program meganlfeddern@gmail.com | (603) 651-6802 <u>Website | Google Scholar | GitHub</u>

EDUCATION

University of Washington, Ph.D. Aquatic and Fishery Sciences - Major: Aquatic and Fishery Science - Certificates: Data Science	2016 - 2021
 Committee Chair: Gordon Holtgrieve Committee Members: Eric J. Ward, Sarah Converse, Tim Essington, C Dissertation "Applied ecosystem chemistry: linking biogeochemical and processes to ecological interactions and management practices" 	ecilia Bitz d physiological
 Boston University, BA, Biology -Major: Biology, specialization in ecology and conservation biology (sur - Minor: Marine Science - Honors thesis: "Identifying high energy prey species in the Gulf of Max 	2011 - 2015 <i>mma cum laude</i>) ine ecosystem"
EMPLOYMENT	
Research Fish Biologist, NOAA, NWFSC	April 2024 - Present
Post-doctoral Research Scientist, University of Alaska Fairbanks	Feb 2022 – April 2024
NMFS-Sea Grant Population and Ecosystem Dynamics Fellow	Aug 2019 – Dec 2021
Graduate Research Fellow, University of Washington	Sep 2016 – Aug 2019
Fishery Technician, US Forest Service	May 2016 – Sep 2016
Instructor, Boston University Tropical Ecology Program	Feb 2016 – May 2016
Hydrology Intern, USFWS Inventory and Monitoring	Dec 2015 – Feb 2016
Tutor (Organic Chemistry), Boston University	Oct 2013 – May 2015
Laboratory Technician, Boston University	Sep 2011 – May 2015

PUBLICATIONS

In Review

- [3] Shaftel, R.*, Feddern, M. L., McAfee, S., Schoen, E.R., Cunningham, C.J., von Biela, V.R., Paul, J., Cheng, Y., Newman, A., Perdue, M., Schwenk, J., Falke, J.A. *In review*. Integrating climate data and river modeling to reveal Chinook salmon habitat conditions in Sub-Arctic river basins. *Ecosphere*.
- [2] Wor, C., Greenberg, D.A., Holt, C., Connors, B., Feddern, M., Freshwater, C., Britten, G.L., Mazur, M. *In review*. Recommendations for estimating and detecting time-varying spawner-recruit dynamics in salmon populations. *Ecological Applications*

Published

[11] Feddern, M.L., E. J. Ward, M. A. Litzow, M. E. Hunsicker, M. G. Jacox, I. D. Schroeder, W. H. Satterthwaite, C. J. Cunningham, N. A. Bond, M. J. Malick, B. J. Burke. 2025. Quantifying time-dependent climate and ecosystem relationships in the California Current System. *Geophysical Research Letters*.

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- [10] Feddern, M.L., R. Shaftel, E.R. Schoen, C.J. Cunningham, V.R. von Biela, Z. Liller, B.M. Connors, B. Staton, A. von Finster. 2024. Body size and early marine conditions drive changes in Chinook salmon productivity across northern latitude ecosystems. *Global Change Biology* https://doi.org/10.1111/gcb.17508
- [9] Feddern, M.L., J.M. Nielsen, G.W. Holtgrieve. 2024. The influence of dynamic resources and stable isotope incorporation rates on aquatic consumer trophic position estimation. Limnology and Oceanography Methods. https://doi.org/10.1002/lom3.10595
- [8] Feddern, M.L., E.R. Schoen, R. Schaftel, C.J. Cunningham, C. Chythlook*, B.M. Connors, A.D. Murdoch, V.R. von Biela, B. Woods. 2023. Kings of the North: Bridging disciplines to better understand climate effects on Chinook salmon in the Arctic-Yukon-Kuskokwim Region. Fisheries.https://doi.org/10.1002/fsh.10923
- [7] Welicky, R.L., M.L. Feddern, T. Rolfe, K. Leazer*, A. Moosmiller, E. Fiorenza, K.P. Maslenikov, L. Tornabene, G.W. Holtgrieve, C.L. Wood. 2023. Reconstructing trophic position over the past century for five Puget Sound fish species. Marine Ecology Progress Series. Marine Ecology Progress Series. https://doi.org/10.3354/meps14253
- [6] Feddern, M.L., G.W. Holtgrieve, E.J. Ward. 2022. Delayed trophic response of harbor seals to ocean condition and prey availability during the past century. Ecology. 104: e3865. https://doi.org/10.1002/ecy.3865
- [5] Feddern, M.L., A.J. Warlick, E.J. Ward, G.W. Holtgrieve. 2022. Recent trophic position changes in Alaskan pinnipeds using compound specific stable isotope analysis. Marine Ecology Progress Series. doi.org/10.3354/meps14014
- [4] Feddern, M.L., G.W. Holtgrieve, E.J. Ward. 2021. Stable isotope signatures in archival harbor seal bone link food web-assimilated carbon and nitrogen to a century of environmental change. Global Change Biology. doi.org/10.1111/gcb.15551
- [3] Feddern, M.L., G.W. Holtgrieve, S. Perakis, J. Hart*, H. Ro*, T.P. Quinn. 2019. Riparian soil nitrogen cycling and isotopic enrichment in response to a long-term salmon carcass manipulation experiment. Ecosphere. doi.org/10.1002/ecs2.2958
- [2] Feddern, M.L., H.R. Bassett, K.N. McElroy, M. Ree, M. Gho, and R. Hilborn. 2018. A novel method for modeling age and length selectivity of sockeye salmon as applied to the Bristol Bay Port Moller test fishery. Canadian Journal of Fisheries and Aquatic Sciences. doi.org/10.1139/cjfas-2018-0018
- [1] Anderson, C., M. Krigbaum, M. Arostegui, M.L. Feddern, J.Z. Koehn, P. Kuriyama, C. Morrisett, C. Allen Akselrud, M. Davis, C. Fiamengo, A. Fuller, Q. Lee, K. McElroy, M. Pons, and J. Sanders. 2018. How commercial fishing is managed. Fish and Fisheries doi.org/10.1111/faf.12339

In Prep (will submitted in 1-3 months)

- [4] Bassett, H*, Lorion, C.M., **Feddern, M.L.**, Ward, E.J., Davis, M.J. *In prep.* What drives hatchery salmon survival?: insights from a comprehensive vulnerability assessment.
- [3] Henry, G.N.*, Schindler, D.E., Holtgrieve, G.W., Feddern, M.L. In prep. Six decades of shifting trophic ecology in the North Pacific: sockeye salmon, climate, and competition. Nature Communications
- [2] Feddern, M.L., Ward, E.J., Litzow, M., Satterthwaite, E., Hunsicker, M., Ryznar, E. *In prep.* Timevarying relationships in ecological modeling. *Ecology Letters*
- [1] Golden, A., Samhouri, J., Hunsicker, M., Marshal, K., Oken, K., Feddern, M., Beaudreau, A. In prep. Risky business: Lessons learned developing risk tables for the U.S. West Coast assessment process.

*denotes student/supervised co-author

TECHNICAL REPORTS

M. L. Feddern

- Feddern, M. L., Schoen E. R., Shaftel R.*, Cunningham C. J. (2022). Drivers and Diversity of Chinook Salmon: Perspectives from the Arctic-Yukon-Kuskokwim Region. Technical Report. University of Alaska Fairbanks. <u>10.13140/RG.2.2.14686.51528</u>
- Feddern, M.L. and A. Spevacek. 2017. Community Solar Legislation Considerations. [White Paper]. On behalf of Washington Department of Commerce. <u>doi.org/10.13140/RG.2.2.28538.03520/2</u>
- Feddern, M.L. 2015. Monitoring changes in water temperature after mixed pipeline replacement in Hanalei National Wildlife Refuge (NWR), Hanalei, Hawai'i. US Fish and Wildlife Service Inventory and Monitoring, Water Resources Branch. *Technical Report*.

PRESENTATIONS

- Feddern, M.L., R. Schaftel, E.R. Schoen, C.J. Cunningham, V.R. von Biela, Z. Liller, B.M. Connors, B. Staton, A. von Finster. 2024. Body size and early marine conditions drive changes in Chinook salmon productivity across northern latitude ecosystems. AFS Annual Meeting.
- Feddern, M. 2024. Climate and Ecosystem Fisheries Initiative: West Coast Decision Support Team. Town Hall. AFS Annual Meeting.
- Feddern, M., E.J. Ward, M. Hunsicker, W.H. Satterthwaite, C.J. Cunningham. 2023. Non-stationary relationships between climate and fisheries in the California Current and Gulf of Alaska. PICES Annual Meeting.
- Feddern, M., E.J. Ward, M. Hunsicker, W.H. Satterthwaite, C.J. Cunningham. 2023. Non-stationary relationships between climate and fisheries in the California Current and Gulf of Alaska. Cooperative Institute for Climate, Ocean, and Ecosystem Studies Symposium.
- Feddern, M., R. Schaftel, E.R. Schoen, C.J. Cunningham. 2023. "Drivers and Diversity of Chinook Salmon in the Arctic-Yukon-Kuskokwim Region". Yukon Fish Community of Practice Speaker Series. <u>Invited Speaker.</u>
- Feddern, M., R. Schaftel, E.R. Schoen, C.J. Cunningham. 2023. "Drivers and Diversity of Chinook Salmon in the Arctic-Yukon-Kuskokwim Region". American Fisheries Society, Alaska Chapter Annual Meeting.
- Feddern, M., R. Schaftel, E.R. Schoen, C.J. Cunningham. 2023. "Drivers and Diversity of Chinook Salmon in the Arctic-Yukon-Kuskokwim Region". Alaska Marine Science Symposium.
- Feddern, M. E.J. Ward, G.W. Holtgrieve. 2022. "Using amino acid stable isotopes from pinniped museum specimens to trace a century of environmental change through northeast Pacific food webs". NOAA Northwest Fisheries Science Center. Internal Grants Program Symposium. <u>Invited Speaker.</u>
- Feddern, M., E.J. Ward, G.W. Holtgrieve. 2022. "Using amino acid stable isotopes from pinniped museum specimens to trace a century of environmental change through northeast Pacific food webs". NOAA Northwest Fisheries Science Center. Monster Seminar Jam. <u>Invited Speaker.</u>
- Feddern, M. 2021. "Ecosystem chemistry: Reconstructing a century of pinniped trophic position and biogeochemical indices in the northeast Pacific using archival museum specimens". University of Washington Quantitative Seminar. <u>Invited Speaker.</u>
- **Feddern, M.** 2020. "Food web-assimilated resources and a century of environmental change in the NE Pacific". University of Washington School of Aquatic and Fishery Sciences Graduate Student Symposium. Remote Conference.
- Feddern, M. 2020. "Reconstructing a century of predator trophic position in WA with archival harbor seal bone". Salish Sea Ecosystem Conference. Remote Conference.
- Feddern, M. 2019. "Climate Change in the Pacific Northwest". Cascadia Climate Action Climate Science on Tap. Seattle, WA.
- **Feddern, M.** 2019. "Reconstructing a century of coastal productivity and predator trophic position indicators in coastal WA and the Salish Sea with archival bone." University of Washington School of Aquatic and Fishery Sciences Graduate Student Symposim. Seattle, WA.

- Feddern, M. 2019. "Reconstructing a century of coastal productivity and predator trophic position indicators in coastal WA and the Salish Sea with archival bone." NOAA California Current Integrated Ecosystem Assessment Meeting. Seattle, WA. <u>Invited Speaker</u>
- **Feddern, M.** 2019. "Reconstructing a century of coastal productivity and predator trophic position indicators in coastal WA and the Salish Sea with archival bone." American Fisheries Society WA/BC Chapter Annual meeting. Bremerton, WA.
- Feddern, M., Ng, E., Sorel, M., and Thomas, R. 2019. "Translation of Uncertainty in Environmental Science in Popular Press." University of Washington, College of the Environment Research Derby. Seattle, WA
- **Feddern, M.** 2017. "Reconstructing historic changes in marine mammal trophic position in response prey availability and primary productivity." University of Washington School of Aquatic and Fishery Sciences Graduate Student Symposim. Seattle, WA.
- Feddern, M. 2017. "Recommendations for Washington's Community Solar Program: Case Studies from Minnesota and Colorado". UW Graduate Student and Professional Student Senate Academic conference. Seattle, WA.
- Uyehara, K., M. Reynolds, K. Courtot, C. Malachowski, T. Mayer, M. DuhrShulz, **M. Feddern**, and B. Wolfe. 2016. "Avian botulism jeopardizes island water birds: Case studies from to of Hawaii's National Wildlife Refuges." Hawaii Wetlands and Waterbird Workshop. Kaneohe, HI.
- Feddern, M. 2015. "Identifying high-energy prey sources in the Gulf of Maine Ecosystem: Implications for Marine Management." Kilachand Honors College Senior Research Symposium, Spring 2015. Boston, MA.

POSTER PRESENTATIONS

- **M. Feddern**. 2019. Reconstructing a century of coastal productivity and predator trophic position in coastal Washington and the Salish Sea using archival bone. Washington Sea Grant Symposium. Seattle, WA.
- M. Feddern, Fisher, M., J. Twedt and S Rinnan. 2017. The Public Comment Project. UW Program on Climate Change Symposium, September 2017. Friday Harbor, WA.
- **M. Feddern,** T. Mayer, B. Wishnek, and K. Uyehara. 2016. Water quality monitoring tools assist with avian botulism mitigation on Hanalei National Wildlife Refuge (NWR), Kauai, Hawaii. Hawaiian Wetlands and Water Bird Workshop, January 2016. Kaneohe, HI.
- Feddern, M. 2015. Identifying high-energy prey sources in the Gulf of Maine Ecosystem: Implications for Marine Management. Kilachand Honors College Research Symposium, May 2015. Boston.
- Feddern, M. 2014. Identifying high-energy prey sources in the Gulf of Maine Ecosystem: Implications for Marine Management. Undergraduate Research Opportunities Symposium, Fall 2014. Boston.

FELLOWSHIPS, HONORS, AND AWARDS

Faculty Merit Award, University of Washington, School of Aquatic and Fishery Sciences, 2022
Best Conference Talk, Graduate Student Symposium, 2020
Washington Sea Grant and National Marine Fisheries Service Population Dynamics Fellowship 2019 – 2021
Washington Sea Grant Graduate Fellow 2018 - 2019
University of Washington College of the Environment Research Derby, First Place, 2019
Jeff Cederholm Scholarship, American Fisheries Society WA/BC Chapter, 2018
Clairmont L. and Evelyn S. Egvedt Fellowship, University of Washington, 2016-2017
Pamela Posen Endowed Memorial Scholarship, Boston University, 2015
Undergraduate Research Opportunity Grant Recipient, Boston University, 2014
Laura Vincent Prize for Original Research, Boston University, 2013
Dean's List: Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015

TEACHING EXPERIENCE

Conservation and Management of Aquatic Resources (FSH 323): TA University of Washington: Graduate Student

Autumn 2017

Seattle, WA

Conducted weekly lab sessions on fisheries management, conservation, and writing skills. Contributed to examine questions and graded writing assignments. Delivered three guest lectures.

Tropical Ecology Program (BI 438, BI 439, BI 440, BI 441): TA	February 1, 2016 - May 1, 2016				
Boston University	Quito, Ecuador				
Coordinated and led field excursions and assisted students in developing resea	arch projects, including 8 days in				
the Galapagos, 10 days on the Ecuadorian coast, and 28 days at in Amazonian Ecuador (Tiputini Biodiversity					
Station), prepared and delivered guest lectures. Course titles: Tropical Montane Ecology, Tropical Coastal					
Ecology, Tropical Rainforest Ecology, Studies in Tropical Ecology.					
Organic Chemistry and Basic Statistics and Probability: Tutor	October 1, 2013- May 15, 2015				
Boston University Educational Resource Center	Boston, MA				
COMMUNITY SERVICE & CAREER DEVELOPMENT					

Peer Reviewer/Handling Editor	<u> 2017 – present</u>
Global Change Biology, Ecological Applications, Frontiers in Marine Science, Marine and Coasta	l Fisheries
Limnology and Oceanography Methods, Ecology and Evolution, Canadian Journal of Aquatic and	Fisheries
Science, Oecologia, NWFSC Internal Grant Expert reviewer, SeaGrant Fellow reviewer	
USGS Washington Cooperative Fish and Wildlife Research Unit	2020 - 2021
Assistant Unit Lead Search Committee, Graduate Student Representative	
Fisheries Interdisciplinary Network of Students	2016 - 2018
Graduate Student Symposium Chair	
Students Explore Aquatic Sciences	2017 -2019
Outreach Volunteer	
University of Washington Program on Climate Change	2017 - 2019
Graduate Student Steering Committee Representative	
Public Comment Project	2017 - 2019
Content Contributor	
American Fisheries Society	2018 - 2019
UW Student Chapter Elected Secretary	
Puget Sound Institute	2018
Science Communication Fellow	
Burke Museum: Girls in Science Program	2018
Outreach Volunteer	
ADDITIONAL PROFESSIONAL DEVELOPMENT	
"Applied Stock Assessment 1 and 2"	2025
University of Washington	
"NOAA Tribal Collaboration Training"	
2024	
Cultural Awareness, Engagement, and Government to Government Status	
"Bayesian Analysis for Ecologists" short-course	2022
Colorado State University	2022_
"Software Carpentry with Python" Workshop	2021
University of Washington, eScience Institute	
"Software Carpentry (R, Bash, Git, Python)" Workshop	2020
University of Washington, eScience Institute	

"Cultural Competency" Workshop	2020
University of Washington, Office of Diversity Equity and Inclusion	
"Navigating Team Collaborations Successfully" Workshop	2020
University of Washington, Graduate Student Symposium	
"Equity 101" Training	2019
University of Washington, Office of Diversity Equity and Inclusion	
"How to Successfully Interact with Press/Media" Training	2019
University of Washington, Marketing and Communications	
Science Communication Training	2016
University of Washington, College of the Environment	

ADDITIONAL TECHNICAL SKILLS

Coding

R, JAGS, STAN, Python, SQL, GitHub, Bash, ArcGIS

Data Visualizations

R Shiny Apps, Adobe Illustrator, ArcGIS StoryMap

Quantitative Analyses

Hierarchical modelling, Bayesian analysis, time series analysis (ie MARSS, DLM, DFA) multivariate statistics (PCA), stage/age structured models, extinction risk, selectivity analysis

Laboratory

Compound specific stable isotope analysis of amino acids, bulk stable isotope analysis, fatty acid methyl ester analysis, stomach content analysis (fish, cats), soil nitrate/ammonium extraction, gravimetric water content, destructive sampling of museum specimens (bone core) GC, GC/C/irMS

Field Sampling

Hydrologic/Limnologic: YSI Sondes, HOBO loggers, Secchi disk, plankton tows, nitrate and phosphate measurements, discharge/flow (flowmeter), snorkel surveys (dry suit), soil cores

Biologic: bird banding, purse seining, mist netting (birds, bats), tissue sampling (fish, birds), size measurements (fish, birds, and bats), mark-recapture (fish), resignting banded birds, nest monitoring, fish and bird ID, fluid and anti-toxin administration (birds), predator control (Havahart traps, diphacinone)

References

Name	Employer	Title	Phone	Email
Eric Ward (extensive understanding of my project management, quantitative and chemical analyst skillsets)	Northwest Fishery Science Center (NOAA)	Statistician	(206)650-7401	eric.ward@noaa.gov
Curry Cunningham (extensive understanding of my quantitative skillsets)	University of Alaska Fairbanks	Assistant Professor	(907)360-4217	cjcunningham@alaska.edu
Gordon Holtgrieve (extensive understanding of my project management, and chemical analyst skillset)	University of Washington	Assistant Professor	(206)227-9930	gholt@uw.edu
Kristin Marshall* (current supervisor as of January 2025)	Northwest Fishery Science Center (NOAA)	Population Ecology Program Manager	(206)240-2370	Kmarsh2@gmail.com

(*) Indicates current supervisor, all others are previous supervisors