Megan L. Feddern

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EDUCATION

University of Washington, Ph.D. Aquatic and Fishery Sciences   2016 - 2021
- Major: Aquatic and Fishery Science
- Certificates: Data Science
- Committee Chair: Gordon Holtgrieve
- Committee Members: Eric J. Ward, Sarah Converse, Tim Essington, Cecilia Bitz
- Dissertation "Applied ecosystem chemistry: linking biogeochemical and physiological processes to ecological interactions and management practices"

Boston University, BA, Biology   2011 - 2015
- Major: Biology, specialization in ecology and conservation biology (*summa cum laude*)
- Minor: Marine Science
- Honors thesis: "Identifying high energy prey species in the Gulf of Maine ecosystem"

EMPLOYMENT

Post-doctoral Research Scientist, University of Alaska Fairbanks	Feb 2022 – Present
NMFS-Sea Grant Population and Ecosystem Dynamics Fellow	Aug 2019 – Dec 2021
Graduate Research Assistant, 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
Data Science Intern, USFWS Inventory and Monitoring	Dec 2015 – Feb 2016
Wildlife/Hydrology Technician, Kauai National Wildlife Refuge Complex	May 2015 – Dec 2015

PEER REVIEWED PUBLICATIONS

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. 2023. Watershed-scale climate and ocean conditions influence productivity of Chinook salmon population of the Arctic-Yukon-Kuskokwim region. *In prep.*

Feddern, M.L., J.M. Nielsen, G.W. Holtgrieve. 2023. The influence of temporal isotope heterogeneity and isotope incorporation rates on consumer trophic position estimation. *In Review.*

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

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

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

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

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

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

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

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

*denotes student co-author

TECHNICAL REPORTS

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. 10.13140/RG.2.2.14686.51528

Feddern, M.L.. and A. Spevacek. 2017. Community Solar Legislation Considerations. [White Paper]. On behalf of Washington Department of Commerce. doi.org/10.13140/RG.2.2.28538.03520/2

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., 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.

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. _Invited Speaker._

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. _Invited Speaker._

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. _Invited Speaker._

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. _Invited Speaker_

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.

Altman, I., R. Boumans, J. Roman, **M. Feddern**, L. Smith, D. Wiley, and L. Kaufman. 2014. "Do Key Prey Species (KPS) drive ecosystem services in the Gulf of Maine?" Regional Association for Research on the Gulf of Maine, 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, MA.

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, MA.

RESEARCH EXPERIENCE

Non-stationary dynamics in the California Current ecosystem   2022 – present
Northwest Fisheries Science Center, University of Alaska Fairbanks   *Seattle, WA*
> Collaboration with the NWFSC, SWFSC, and University of Alaska to identify non-stationary climate – ecosystem relationships in the California Current Ecosystem using Bayesian Dynamic Linear Models. This work combines data (CalCOFI, Newport Line) collected across science centers along with physical and biogeochemical conditions. Ultimately this work will assess how incorporating non-stationary climate-biology interactions can improve short term (1 – 4 years) forecasting for living marine resources such as Pacific salmon.

Climate drivers of Chinook salmon productivity in Arctic/Yukon/Kuskokwim region   2022 – present
University of Alaska Fairbanks   *Seattle, WA*
> Conducting Bayesian hierarchical analysis of Chinook salmon spawner-recruit data across 28 population units in the Arctic / Yukon / Kuskokwim region of the US and Canada to identify freshwater and marine climate drivers of productivity over the past 20 - 40 years. This analysis will also identify trends climate-productivity relationships that are shared across population units and that are unique to a specific population unit.

Methodological assumptions of trophic position estimates   2017 – present
University of Washington: Graduate Research   *Seattle, WA*
> Using a first order kinetics model applied to stable isotope data to quantify the effects of tissue turnover rates and variability in isotope signature of primary producers on trophic position calculations using theoretical and observed data.

Spatio-temporal variability in predator trophic dynamics   2016 – 2022
University of Washington: Graduate Research   *Seattle, WA*

Using compound specific stable isotope analysis to address changes in harbor seal trophic position in coastal WA and Puget sound over the past 100 years in response to productivity and prey availability to generate indicators for integrated assessments for management.

Historical coastal productivity and environmental change   2016 – 2021
University of Washington: Graduate Research   *Seattle, WA*

Applying compound specific stable isotope analysis from archival harbor seal museum specimens to address spatial variability in food web assimilated resources (carbon and nitrogen) in response to ocean conditions in 2 regions in WA, and 3 regions in AK. Development/Application of Bayesian Dynamic Factor Analysis using a Gaussian process model.

Translation of uncertainty in environmental science in popular press   2019 – 2020
University of Washington: Research Derby   *Seattle, WA*

Using text mining strategies, we analyzed the way uncertainty is expressed in scientific articles compared to popular press reports on those articles. Popular press expresses more uncertainty when the article 'hedges' its results but this varies based on outlet.

Bio-geochemical cycling in riparian soils and compensatory management   2017 – 2019
University of Washington: Graduate Research   *Seattle, WA*

Used stable isotopes of inorganic nitrogen sources to assess the contributions of salmon carcasses to soil productivity, and the effect of nitrogen transformations on isotopic signatures.

Age and length selectivity of sockeye salmon   2017– 2018
University of Washington: Graduate Research   *Aleknagik, AK*

Testing age and length selectivity of Bristol Bay sockeye salmon in the Port Moller test fishery using an age-structured population model to assess in season management. Collaboration with Bristol Bay Science and Research Institute.

Monitoring and assessing salmonid escapement   May 1 , 2016- September 1, *2016*
US Forest Service: Fishery Technician   *Sitka, AK*

Collected and analyzed limnological data and conducted mark-recapture escapement counts for a subsistence sockeye salmon fishery.

Disease transmission and threats to endangered species   June 1, 2015 - February 1, 2016
US Fish and Wildlife Service: Hydrology and Wildlife Technician   *Hanalei, HI*

Collected and analyzed water quality and hydrologic data to assess the transmission of avian botulism in five species of endangered water birds and monitored ground nesting seabird populations for Kaua'i National Wildlife Refuge Complex.

Investigations in tropical ecosystems   January 15, 2015 - June 1, 2015
Boston University: Undergraduate Research   *Tiputini, Ecuador*

Research projects for the tropical ecology program included project planning, data collection and reports. Example Projects: plant distribution in terra firme verse varzea environments, and assimilation of foreign individuals into colonies of social spiders.

HONORS

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
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   Autumn 2017
University of Washington: Graduate Student   *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 research 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- December 15, 2015
Boston University Educational Resource Center   *Boston, MA*

COMMUNITY SERVICE & CAREER DEVELOPMENT

Peer Reviewer   2017 – present
Global Change Biology, Ecological Applications, Limnology and Oceanography Methods, Ecology and Evolution, NWFSC Internal Grant Expert 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

"Bayesian Analysis for Ecologists" short-course   2022
Colorado State University

"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
Shiny Apps, Adobe Illustrator, R

Quantitative Analyses
Hierarchical modelling, Bayesian analysis, time series analysis (ie MARSS, 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), resighting banded birds, nest monitoring, fish and bird ID, fluid and anti-toxin administration (birds), predator control (Havahart traps, diphacinone)*