

Megan L. Feddern

University of Washington • School of Aquatic and Fishery Sciences

Box 355020 • Seattle, WA 98195

mfeddern@uw.edu • meganlfeddern@gmail.com

603-651-6802

www.mlfeddern.com

EDUCATION

2016 - June 2022 (Expected) **Ph.D, University of Washington, School of Aquatic and Fishery Sciences**

- 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"

2011 - 2015 **B.A., Boston University**

- 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"

PUBLICATIONS & REPORTS

Feddern, M.L., G.W. Holtgrieve, E.J. Ward. 2021 Delayed trophic response of harbor seals to ocean condition and prey availability during the past century. *In Prep.*

Feddern, M.L., A.J. Warlick, E.J. Ward, G.W. Holtgrieve. 2021 : Recent trophic position changes in Alaskan pinnipeds using compound specific stable isotope analysis. *In Prep.*

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*. <https://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

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*.

*denotes undergraduate co-author

PRESENTATIONS

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.

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.

Ng, E., **Feddern, M.**, 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

Spatio-temporal variability in predator trophic dynamics 2016 – present

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.

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.

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 versus varzea environments, and assimilation of foreign individuals into colonies of social spiders.

HONORS

Best Conference Talk, Graduate Student Symposium, 2020

Washington SeaGrant and National Marine Fisheries Service Population Dynamics Fellowship 2019-Present

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

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.

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

USGS Washington Cooperative Fish and Wildlife Research Unit 2020 – 2021

Assistant Unit Lead Search Committee, Graduate Student Representative

Peer Reviewer 2017 – present

Ecological Applications, Limnology and Oceanography Methods, Ecology and Evolution

| | |
|---|-------------|
| Fisheries Interdisciplinary Network of Students <i>Graduate Student Symposium Chair</i> | 2016 – 2018 |
| Students Explore Aquatic Sciences <i>Outreach Volunteer</i> | 2017 – 2019 |
| University of Washington Program on Climate Change <i>Graduate Student Steering Committee Representative</i> | 2017 – 2019 |
| Public Comment Project <i>Content Contributor</i> | 2017 – 2019 |
| American Fisheries Society <i>UW Student Chapter Elected Secretary</i> | 2018 – 2019 |
| Puget Sound Institute <i>Science Communication Fellow</i> | 2018 |
| Burke Museum: Girls in Science Program <i>Outreach Volunteer</i> | 2018 |

ADDITIONAL PROFESSIONAL DEVELOPMENT

| | |
|---|------|
| "Software Carpentry with Python" Workshop <i>University of Washington, eScience Institute</i> | 2021 |
| "Software Carpentry (R, Bash, Git, Python)" Workshop <i>University of Washington, eScience Institute</i> | 2020 |
| "Cultural Competency" Workshop <i>University of Washington, Office of Diversity Equity and Inclusion</i> | 2020 |
| "Navigating Team Collaborations Successfully" Workshop <i>University of Washington, Graduate Student Symposium</i> | 2020 |
| "Equity 101" Training <i>University of Washington, Office of Diversity Equity and Inclusion</i> | 2019 |
| "How to Successfully Interact with Press/Media" Training <i>University of Washington, Marketing and Communications</i> | 2019 |
| Science Communication Training <i>University of Washington, College of the Environment</i> | 2016 |

ADDITIONAL TECHNICAL SKILLS

| |
|---|
| Coding <i>R, Python, SQL, GitHub, Bash, ArcGIS</i> |
| Data Visualizations <i>Shiny Apps, Adobe Illustrator, R</i> |
| Quantitative Analyses <i>Hierarchical modelling, Bayesian analysis, time series analysis (ie MARSS, DFA) multivariate statistics (PCA), stage/age structured models, extinction risk, selectivity analysis</i> |
| Laboratory <i>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</i> |

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)