Megan L. Feddern
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EDUCATION

2016 - 2021 ***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., E.R. Schoen, C. Cunningham, R. Schaftel. 2022. Ecological management in remote regions with rapidly changing climate. *In prep.*

Feddern, M.L., J.M. Nielsen, G.W. Holtgrieve. 2022. The influence of temporal isotope heterogeneity and isotope incorporation rates on consumer trophic position estimation. *In prep.*

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 Review.*

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

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

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.

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 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 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
Global Change Biology, Ecological Applications, Limnology and Oceanography Methods, Ecology and Evolution

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)*