

ADAM PEDERSEN

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EDUCATION

McGill University, Department of Natural Resource Science, Montreal, QC, CA

PhD in Renewable Resources, Graduation date: December 2024

Thesis title: New approaches to assess tissue concentrations and dietary accumulation of environmental contaminants in northern marine mammals

- Fonds de Recherche du Quebec Scholarship: \$25,000, each year for 4 years
- McGill Graduate Excellence Award: \$5,000 a year for 5 years
- Schulich Graduate Fellowships: \$25,000
- EcotoQ Support Scholarship: \$8,000

Wayne State University, Detroit, Michigan, United States

B.S in Environmental Science, GPA: 3.87

- Awarded two four-year scholarships based on academic performance
- Graduation date: December 2018

PUBLICATIONS

Pedersen, A. F., Fisk, A., McMeans, B., Dietz, R., Sonne, C., Rosing-Asvid, A., Ferguson, S. H., & McKinney, M. A., 2025. Fatty acid carbon isotopes as tracers of trophic structure and contaminant biomagnification in Arctic marine food webs. *Science of the Total Environment*, *in press*.

Pedersen, A. F., Bayen, S., Liu, L., Dietz, R., Sonne, C., Rosing-Asvid, A., Ferguson, S. H., & McKinney, M. A., 2024. Nontarget and suspect screening reveals the presence of multiple plastic-related compounds in polar bear, killer whale, narwhal and long-finned pilot whale blubber from East Greenland. *Environmental Pollution* 357 124417. <https://doi.org/10.1016/j.envpol.2024.124417>

Pedersen, A. F., Dietz, R., Sonne, C., Letcher, R. J., Roos, A. M., Simon, M., Rosing-Asvid, A., Ferguson, S. H., & McKinney, M. A., 2023. Feeding and biological differences induce wide variation in legacy persistent organic pollutant concentrations among toothed whales and polar bear in the Arctic. *The Science of the Total Environment* 168158. <https://doi.org/10.1016/j.scitotenv.2023.168158>

Pedersen, A. F., Dietz, R., Sonne, C., Liu, L., Rosing-Asvid, A., & McKinney, M. A. 2023. Development and validation of a modified QuEChERS method for extracting polychlorinated biphenyls and organochlorine pesticides from marine mammal blubber. *Chemosphere* 312(Pt 1), 137245. <https://doi.org/10.1016/j.chemosphere.2022.137245>

- Remili, A., Dietz, R., Sonne, C., Iverson, S. J., Roy, D., Rosing-Asvid, A., Land-Miller, H., **Pedersen, A. F.**, & McKinney, M. A., 2022. Validation of quantitative fatty acid signature analysis for estimating the diet composition of free-ranging killer whales. *Scientific Reports*, 12(1), 7938. <https://doi.org/10.1038/s41598-022-11660-4>
- Pedersen, A. F.**, Vasquez, A. A., Steis Thorsby, J., Gorrell, M., Petriv, A. M. V., Miller, C. J., & Baker, T. R., 2022. Sewage transport volumes and physical degradation rates of personal care wipes. *JAWRA Journal of the American Water Resources Association* 58(6), 1421-1432. <https://doi.org/10.1111/1752-1688.13046>
- Pedersen, A. F.**, Meyer, D. N., Petriv, A. V., Soto, A. L., Shields, J. N., Akemann, C., Baker, B. B., Tsou, W. L., Zhang, Y., & Baker, T. R. (2020). Nanoplastics impact the zebrafish (*Danio rerio*) transcriptome: Associated developmental and neurobehavioral consequences. *Environmental pollution (Barking, Essex : 1987)*, 266(Pt 2), 115090. <https://doi.org/10.1016/j.envpol.2020.115090>
- Pedersen, A. F.**, Gopalakrishnan, K., Boegehold, A. G., Peraino, N. J., Westrick, J. A., & Kashian, D. R., 2020. Microplastic ingestion by quagga mussels, *Dreissena bugensis*, and its effects on physiological processes. *Environmental Pollution (Barking, Essex : 1987)* 260, 113964. <https://doi.org/10.1016/j.envpol.2020.113964>

SELECT PRESENTATIONS

- Pedersen, A. F.**, Fisk, A., McMeans, B., Dietz, R., Sonne, C., Rosing-Asvid, A., Ferguson, S. H., McKinney, M. A. Fatty acid carbon isotopes as tracers of trophic structure and contaminant biomagnification in Arctic marine food webs. Presented at the North American Society of Toxicology and Chemistry (SETAC) meeting in Seville, Spain in May 2024.
- Pedersen, A.F.**, Bayen, S., Liu, L., Dietz, R., Sonne, C., Aqqualu A., Ferguson, S.H., McKinney, M.A. Nontarget screening reveals the presence of multiple plastic related compounds in polar bear, killer whale, narwhal and long-finned pilot whale blubber from East Greenland. Presented at the Canadian Ecotoxicology Workshop in Ottawa, Canada in October 2023.
- Pedersen, A.F.**, Dietz, R C. Sonne, L. Liu, Aqqualu A., M.A, McKinnney. Development and validation of a modified QuEChERS method for extracting polychlorinated biphenyls and organochlorine pesticides from marine mammal blubber. Presented at the North American Society of Toxicology and Chemistry (SETAC) meeting in Pittsburg, Pennsylvania in November 2022.
- Pedersen, A.F.**, R. Dietz, C. Sonne, R. Letcher, M. McKinney. “Variation in tissue concentrations of legacy POPs in four top marine predators in a changing Arctic.” Presented at the North American Society of Toxicology and Chemistry (SETAC) meeting in Portland, Oregon in November 2021.
- Pedersen, A.F.**, R. Dietz, J.P. Desforges, M. McKinney. “The role of diet in determining differential exposure to persistent organic pollutants between two southeast Greenland top predators, the polar bear (*Ursus maritimus*) and killer whale.” Presented at the Ecotoq student symposium on June 25, 2020.

Pedersen, A.F., Meyer, D., Petriv, A.M., Crofts, E., Soto, A., Zhang, Y., Baker, T.R. Identifying the ecological and human health risks of developmental and chronic exposures to microplastics in a zebrafish (*Danio rerio*) model. Presented at the Society of Toxicology and Chemistry (SETAC) in Toronto, ON in November 2019.

Pedersen, A.F., Meyer, D., Petriv, A.M., Crofts, E., Soto, A., Zhang, Y., Baker, T.R. Identifying the ecological and human health risks of developmental and chronic exposures to microplastics in a zebrafish (*Danio rerio*) model. Presented at the Emerging Contaminants in the Environment Conference (ECEC) in Champaign, Illinois in May 2019.

Pedersen, A.F., Gopalakrishnan, K., Boegehold, Kashian, D.R. Sublethal effects in *Dreissena bugensis* following exposure to microplastics. Presented orally at the Association for the Sciences of Limnology and Oceanography (ASLO) in San Juan, Puerto Rico in February 2019.

RESEARCH EXPERIENCE

Dr. Michael Petriello, Wayne State University

March 2025 – present

- Investigating associations of endogenous metabolites with pollutant mixtures using a nontargeted exposomics approach in pregnant women
- Using high resolution mass spectrometry coupled with bioinformatics software (e.g., Fluoromatch 3.0) to identify metabolites and xenobiotic chemical in the serum of pregnant women
- Using mixture modeling approaches (via quantile gcomputation in R) to investigate the joint impact of environmental chemicals on metabolic pathways (identified using Metaboanalyst)

Dr. Melissa McKinney, McGill University

January 2020 – December 2024

- Developed new approaches to monitor tissues concentrations of legacy and emerging environmental pollutants in northern marine mammals using a QuEChERS (Quick, Easy, Cheap, Effective, Rugged, Safe) extraction method and a nontarget screening approach
- Developed new approaches to assess the accumulation of legacy persistent organic pollutants (POPs) using fatty acid signatures and their stable carbon isotopes

Dr. Tracie Baker, Wayne State University

September 2018 – December 2019

- Investigated the toxicological effects of microplastic exposures in zebrafish on behavior, gene expression, mortality, fertility, and phenotypic abnormalities.
- Studied the accumulations of fats, oils, and greases (FOGs) in Michigan sewer systems and their subsequent impacts on human and environmental health
- Collaborated with the Great Lakes Water Authority drinking water facilities in Detroit, Michigan to investigate the occurrence of endocrine disrupting compounds and microplastics in tap water using LC/MS technology

Dr. Donna Kashian, Wayne State University

August 2017 – October 2018

- Explored the intake of microplastic particles into the tissues of dreissenid mussels using MADLI/TOF imaging and their relative induction of sublethal effects in response to acute exposures
- Investigated the biodiversity of fish and benthic macroinvertebrate species in the Rouge and Huron Rivers of Michigan in response to dreissenid mussel invasion

Dr. Daniel Fong, American University

Summer 2016 Internship

- Studied morphological differences between cave and surface populations of the amphipod species, *Gammarus minus*
- Used molecular biology techniques to analyze the gut microbiome diversity of *G. minus*

Dr. Mark Baskaran, Wayne State University

Winter 2016 – Summer 2017

- Studied phosphorous mass balance in Lake St. Clair, Michigan by measuring atmospheric deposition of isotopes ^{32}P and ^{33}P
- Employed a beta decay counting system to assess rain water levels of ^{32}P and ^{33}P

Dr. Michelle Tomaszewski, Wayne State University

Winter 2014- Summer 2015

- Investigated the molecular basis of animal behavior in zebra finch
- Used a variety of molecular biology tools to assess the effect of surgical manipulations on zebra finch brain behavior

LABORATORY AND FIELD TECHNIQUES AND STATISTICAL BACKGROUND

- Bioinformatic approaches using mixture modeling in R to investigate the joint impacts of chemicals of the human metabolome
- Bioinformatics software for metabolic and exposomic analyses including MetabolAnalyst
- Trained in Liquid Chromatography Mass Spectrometry (LC/MS) and Gas Chromatography Mass Spectrometry
- Trained in zebrafish and zebra finch husbandry and handling according to IUCUC protocols
- Proficient in fluorescent microscopy, especially to quantify microplastic accumulation
- Preparation of microplastic solutions and methods of exposure of chemicals to aquatic organisms
- Proficient in Geographic Information Systems (GIS) and in R Programming Language for statistical purposes
- Mark and Recapture techniques of amphipod species by staining
- Quadrat and Hess sampling of macroinvertebrate species in freshwater rivers and streams
- Sample preparation and identification of macroinvertebrate species in freshwater lakes and streams
- Transect sampling of physical environments, especially those of rivers and streams
- Water and soil chemical analyses
- Fish collection by seining and identification
- Aquatic mesocosm sampling and processing
- Techniques of molecular biology such as DNA and RNA extraction/isolation, gel electrophoresis, PCR, cryosectioning, *in-situ* hybridization, and microscopy