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# **Developing metabarcoding tools for environmental DNA-based biomonitoring in aquatic ecosystems**

- Position opportunities -

Publication date: Sunday 17 April 2016

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**A 2-year NSERC Visiting Fellow Post Doctoral position is available at the Pacific Biological Station in Nanaimo, British Columbia. The successful candidate will play a lead role in a multi-disciplinary project on validating the use of environmental DNA (eDNA)-based metabarcoding (targeting meiofauna) for benthic impact assessments of salmon farms in coastal British Columbia. Salmon aquaculture causes organic enrichment of surrounding sediments which affects biodiversity and biomass of benthic fauna concomitant with sediment chemical changes. Existing environmental impact assessments rely on manual morpho-taxonomy or abiotic proxies of organic loading with uncertain accuracy. The project aims to develop an efficient and reliable lower-cost alternative based on cataloging the diversity and abundance of benthic communities through metabarcoding of environmental DNA (eDNA).**

**To be considered for this position, please send your CV and brief email text explaining your suitability to [cathryn.abbott at dfo-mpo.gc.ca](mailto:cathryn.abbott@dfo-mpo.gc.ca)**

**Application deadline: Open until filled  
Start date: Prior to January 2017**

A post-doctoral fellow with an interest in applied ecological and evolutionary genomics and aquatic ecosystems is being sought to lead the development of metabarcoding-based biomonitoring approaches to meet federal regulatory needs.

Multiple projects are underway. The successful candidate will play a lead role in a multi-disciplinary project on validating the use of environmental DNA (eDNA)-based metabarcoding (targeting meiofauna) for benthic impact assessments of salmon farms in coastal British Columbia. Salmon aquaculture causes organic enrichment of surrounding sediments which affects biodiversity and biomass of benthic fauna concomitant with sediment chemical changes. Existing environmental impact assessments rely on manual morpho-taxonomy or abiotic proxies of organic loading with uncertain accuracy. The project aims to develop an efficient and reliable lower-cost alternative based on cataloging the diversity and abundance of benthic communities through metabarcoding of environmental DNA (eDNA).

The successful candidate will also play a key collaborative role within two other projects aimed at developing metabarcoding based eDNA biosurveillance of aquatic invasive species (AIS). Aquatic invasive species (AIS) pose a major threat to freshwater aquatic ecosystems and fisheries in BC; detecting new invasions early and accurately assessing existing AIS distributions are important to maximize the chance for effective management intervention.

The successful candidate will have a PhD in ecological and/or evolutionary genomics or another relevant area and will demonstrate well-developed bioinformatics and computational skills (including programming, e.g. Perl, R, Unix, Python) as applied to the analysis of next-generation sequencing data. Experience in the preparation of samples for NGS (Illumina) and knowledge of barcoding, metabarcoding, and/or environmental DNA sampling in aquatic systems would be an asset but not a requirement. Candidates should demonstrate a strong track record of publication and be willing to work as part of a collaborative team.

A 2 year Postdoctoral Fellowship position starting by January 2017 is available with stipend funding at NSERC Visiting Fellowship rates. Applications from international candidates will be accepted. For more information and to

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review eligibility criteria, see:

[http://www.nserc-crsng.gc.ca/Students-Etudiants/PD-NP/Laboratories-Laboratoires/index\\_eng.asp](http://www.nserc-crsng.gc.ca/Students-Etudiants/PD-NP/Laboratories-Laboratoires/index_eng.asp)

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Cathryn Abbott, Ph.D.  
Research Scientist, Pacific Biological Station