

POSTDOCTORAL FELLOW POSITION IN POPULATION GENOMICS: POSITION NUMBER 28700

DEPARTMENT OF BIOLOGICAL SCIENCES, UNIVERSITY OF MANITOBA, CANADA

POSITION START DATE: We're targeting a start between March and July 2020, but we may be able to be flexible with start dates. Funding is for two years

CLOSING DATE FOR APPLICATIONS: We will begin review of applications 9 Feb 2020 and the position will remain open until filled

RANK: Post-doctoral fellow

SALARY RANGE: \$45,000–\$55,000 per annum (plus benefits), commensurate with qualifications and experience

PROJECT OVERVIEW: Sea lamprey (*Petromyzon marinus*) are native to the Atlantic Ocean and invasive in the Great Lakes, where they cause significant damage to the ecosystem and fishery. The objectives of this project are to use whole genome re-sequencing data to 1) model the invasion history of the Great Lakes system and 2) search for signatures of selection in the freshwater populations.

Sea lamprey likely moved into Lake Erie and the upper Great Lakes following completion of the Welland Canal which allowed passage around Niagara Falls. Current population connectivity among the upper Great Lakes, Lake Erie, and Lake Ontario, and between the marine and invasive freshwater populations is not well characterized. Our goal is to use whole genome re-sequencing of individuals sampled across 20 sample sites within the Great Lakes, the Finger Lakes, and Lake Champlain, and along the Atlantic coast to model the demographics of the invasion history and gene flow within this system.

The primary management tool currently in use to control the invasive sea lamprey populations is lampricide treatment. The use of lampricides has reduced and held adult sea lamprey abundance to ~10% of that observed prior to the start of control efforts thus potentially exerting strong selection. We are in the position to test for the evolution of lampricide resistance at a suite of candidate genes associated with physiological and transcriptomic responses to experimental lampricide applications identified in ongoing related work. Given the very different environmental conditions experienced in marine and freshwater environments, we also may find evidence for selection associated with selection pressures other than lampricide applications (e.g., associated with osmoregulation and life history trait variation).

Please send any additional questions about the position to colin.garroway@umanitoba.ca

JOB DESCRIPTION: The primary task of this position will be to model gene flow and the demography of the invasion at the best resolution our data affords, and to test for signatures of selection associated with candidate loci for lampricide resistance.

We also want to stress that the PDF will have the opportunity to develop and pursue other research questions of their own interests. You will be joining a well funded sea lamprey research program that is jointly led by Margaret Docker, Ken Jeffries, and myself Colin Garroway, and comprised of 2 postdocs, 2 PhD students, and 2 MSc students with additional students working on related questions in other species.

RESPONSIBILITIES: To contribute significantly to and lead experimental design, data interpretation, and statistical analysis related to the above described research objectives.

To trial new techniques and assay systems as required and keep abreast of the research literature relevant to the project.

Disseminate research through publications in peer reviewed journals.

To attend and contribute to research seminars, departmental meetings, and international conferences.

Carry out administrative roles as required, e.g. organising physical or remote meetings with collaborators and arranging travel to meetings.

Perform professional activities such as refereeing papers, editing journals, refereeing research grants, external examining, organising conferences, committee membership, and involvement with professional bodies.

QUALIFICATIONS: PhD (current or expected at commencement of contract) in evolutionary biology, computational biology, or genetics.

Proven ability to process and analyse next-generation sequencing data.

Proficiency with analysis software and programming languages, as well as ability to write or adapt scripts and pipelines for in silico genetic analysis.

Ability to work both collaboratively and independently

Well-developed leadership and management skills

CONTACT: Applicants should send their curriculum vitae, a cover letter expressing their research experience and research interests, and the names of three referees by email to:

Colin Garroway
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The University of Manitoba is strongly committed to equity and diversity within its community and especially welcomes applications from women, racialized persons/persons of colour, Indigenous peoples, persons with disabilities, persons of all sexual orientations and genders, and others who may contribute to the further diversification of ideas. All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents will be given priority.

Application materials, including letters of reference, will be handled in accordance with the protection of privacy provision of The Freedom of Information and Protection of Privacy (Manitoba). Please note that curriculum vitae may be provided to participating members of the search process.