The Lee-Yaw lab at the University of Lethbridge in Alberta Canada is looking to recruit 1-2 graduate students to work on the evolutionary ecology of range limits focusing on long-toed salamander for the following projects:

1) Wildfire effects on genetic diversity and population connectivity

The frequency and severity of wildfires are increasing around the world, making it imperative to understand the effects of these events on wildlife populations and species of conservation concern in particular. In collaboration with Parks Canada, the Lee-Yaw lab is investigating the effects of the 2017 Kenow Wildfire on long-toed salamanders in Waterton Lakes National Park. Long-toed salamanders occur at the edge of their range in Alberta where they are considered a species of Special Concern. The Kenow Wildfire was a severe disturbance event affecting 40% of vegetated areas in the park including many of the breeding ponds used by this species. Taking advantage of pre- and post-fire samples from across the park, we will assess changes in genetic diversity and patterns of gene flow in response to the fire. This work includes opportunities for fieldwork in the stunning setting of Waterton Lakes National Park and surrounding areas of the Rocky Mountains. The project will involve molecular lab work and modelling landscape connectivity with GIS data. This project is best-suited for an MSc student, although could be extended to a PhD. Applicants should have a background or coursework in evolution, population biology, and/or ecology. Molecular lab experience is a strong asset, as is field experience, familiarity with R, and/or experience working with GIS datasets.

For more information on this project, visit: https://julleeyaw.weebly.com/wildfire-project.html

2) Genomic perspectives on range limits

I am seeking a motivated PhD student to collect and analyze genomic data (ddRADseq and/or transcriptome data) for the long-toed salamander. This species is found throughout the Pacific Northwest and is comprised of several, genetically distinct subspecies. The boundaries between subspecies afford an opportunity to study parapatric range limits involving hybridization while the species' eastern range limits in the foothills of the Rocky Mountains represent an opportunity to study limits to adaptation and range limits along elevational gradients. Tissue samples from across the species' range are available. A number of dissertation projects involving these samples are possible, including testing genetic explanations for range limits, examining hybrid zone dynamics and cytonuclear interactions, and testing biogeographic hypotheses of historical range dynamics. Prior experience in the molecular lab is essential and priority will be given to candidates who have experience with next-generation sequencing (library preparation and SNP calling). Protocol optimization and bioinformatics will be done in collaboration with other labs and may involve opportunities to travel. There is scope to pair the genomic data with other types of data (field or lab experiments, or GIS modelling) depending on the student's interests and progress.

Other projects within the scope of my research program may be considered depending on funding.

General inquiries should be sent to Julie Lee-Yaw (julie.leeyaw@uleth.ca). Applications should be sent by December 20. Please use the subject line "Graduate Studies" and include 1) a brief statement of research interests, 2) relevant experience, 3) a current CV, 4) unofficial copies of academic transcripts, and 5) intended start date and whether you are seeking a MSc or PhD. U of L deadlines for applying to graduate school are February 1 (for a May start date) and May 1 (for fall start). All students are encouraged to apply for external funding. Please note that I am currently unable to provide stipend
support for international tuition fees: I would be happy to consider students from outside of Canada who have their own funding or who are eligible for U of L graduate awards.

The Lee-Yaw lab is committed to diversity and inclusion and welcomes applications from students with diverse backgrounds, perspectives, and experiences.

Additional Information:

Lee-Yaw Lab: https://julleeyaw.weebly.com/

U of L Biological Sciences: https://www.uleth.ca/artsci/biological-sciences

U of L Graduate Studies: https://www.uleth.ca/future-student/graduate-studies/

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