



Climate Change & Species Distribution Modelling Post-Doctoral Fellow

Title: Northern Boreal Climate Change Adaptation Post-Doctoral Fellow

Position Type: Full time, 2.5 Years (second year contingent on satisfactory performance in first year)

Affiliations: Wildlife Conservation Society Canada (WCS Canada) & University of Saskatchewan

Position Location: Whitehorse, Yukon (negotiable)

Supervised by: Dr. Chrystal Mantyka-Pringle & Dr. Don Reid

Application closing date: Open

Position start date: 4th January 2021 (negotiable)

Salary range: \$55,000/year plus health benefits, travel and research expenses to be determined

Position Summary:

The WCS Canada Northern Boreal Mountains program and the University of Saskatchewan in partnership with the collaborating organizations in the South Beringia Priority Place Initiative (PPI) (i.e., Yukon First Nation Governments, Yukon Environment, Canadian Wildlife Service, Yukon Land Use Planning Council, and the Canadian Forest Service) aim to establish a web-based, digitally and regularly updatable, modeling system that can relate the effects of changing climate and risk of natural disturbance on future distributions of broad vegetation or ecological land classes in Yukon, and consequently on the future distributions of habitat for focal species such as those that are culturally significant or at risk.

Climate change presents a wicked analytical problem for conservation. Geo-physical and atmospheric models can project shifts in climate parameters in a comprehensive and dynamic fashion. However, climate is a direct and strong determinant of the niches or spaces occupied by only a subset of organisms, - notably many plants and some invertebrates. Many species, including most birds and mammals of high interest to people, are more directly affected by vegetation because plants provide forage and shelter. Conservationists have often lacked models that relate the geographical shifts in climate to shifts in vegetation communities, thereby giving the habitat template for projecting habitat suitability and supply for numerous species. Climate is a strong determinant of the distribution of various forests and other vegetation types, but other factors such as soil and natural disturbances (e.g., wild fire and insect infestations) are also influential. Natural disturbances occur partly by chance, so projections of shifts in vegetation types will necessarily be probabilistic. Without the models that relate vegetation shifts to climate shifts, land planning, forest management, and protected area management are handicapped by a lack of realistic views of the future, and will continue to react to climate impacts rather than pro-actively plan for alternative projected outcomes.

This problem is well recognized by those who deal with management of natural resources. Various initiatives are being experimented with elsewhere to achieve similar goals of this project (e.g., Scenarios Network for Alaska and Arctic Planning (SNAP), University of Alaska Fairbanks; Cascadia Partner Forum; Canadian Forest Service (SPADES); Pacific Institute for Climate Solutions). We do not plan to replicate this work. Instead, as a first step, we plan to assess which of these systems approaches, or decision-support tools, would be best to implement in northwest Canada. Subsequent steps will be coordinated by a multi-government and multi-agency project team nominated by the PPI partnership and implemented by the post-doctoral fellow. They would include:

- Organize and implement a set of meetings and workshop, with invited presenters, to evaluate and assess the relative utility of the various systems or decision-support tools and processes that are already underway, and their applicability in the north.
- Supervise the development of a web-based portal for hosting a chosen system that can be regularly updated with new spatial data sets and refined models, and populate it with existing datasets.
- Relate climate envelopes to broad vegetation or ecological land classes and parameterize selected models that project possible distributions and compositions of broad vegetation types under different future climate scenarios.
- Engage with project team and other key knowledge holders to parametrize patterns of vegetation change (e.g., shrub expansion, tree growth, tree species composition, tree line advance, grassland expansion) following natural disturbances or resulting from changing climates in different ecoregions.
- Build risk of fire and insect disturbances into projection models to produce probabilistic outcomes
- Build habitat suitability rankings for each of the broad vegetation types, and their associated successional stages, in relation to culturally significant species and species at risk
- Develop clear messaging and strategies for conveying project outcomes to users and the community

This is an interdisciplinary position in which the successful candidate will have to interact with, develop an understanding of, and work with a wide range of disciplines. It is not expected that the successful candidate would have a background in each of the disciplines, because the project team and contracted experts will provide much direction, detailed advice, and implementation. However, the successful candidate must have a strong background in some combination of the following topics: climate change projection modelling; knowledge of boreal and/or montane vegetation ecology; vegetation successional dynamics; use of GIS for spatial data management and analyses; computer programming; scenario modelling; statistical analyses of large datasets; expert elicitation; species distribution modelling.

The focus of the position would change during its course. At the start the emphasis will be on system design, modular integration, and coherent modelling tools and processes. The project will then shift towards the development or adaptation of models for various components of the

projection system, populating models with datasets, analysing datasets and modelled outputs, and scenario assessments. There will be ongoing requirements for communicating progress and relating outputs through presentation, publications, and visual story maps. Depending on regional and community health concerns, the position may include travel for engagement with partners and key knowledge holders.

The following experience will also be considered an asset: relationship building and working with Indigenous communities; working with government, academic, and private sector partners; ability to communicate research to a wide array of stakeholders through meetings, speaking engagements, and writing for both scientific and lay audiences.

Required Qualifications:

- Ph.D. with a strong computational/analytical background transferable to processing and modelling large datasets in a systems setting.
- Experience working with projections of climate data.
- Experience working with datasets involving land cover classifications and vegetation communities, and/or natural disturbance regimes, and/or species distribution models.
- Strong analytical and computational skills when working with GIS and with large datasets.
- Passion for conservation of biodiversity and ecosystems.
- Excellent oral and written communication skills for diverse audiences, including the ability to write manuscripts, make presentations, and compile scientific information graphically.
- Strong interpersonal skills and demonstrated ability to work effectively in teams
- Ability to work effectively in interdisciplinary and cross-cultural settings
- Self-motivated, with potential need to work remotely from colleagues depending on regional health concerns.
- Ability to travel to communities for engagement and communications about the project.

The successful candidate must hold a PhD by the start date of this post-doctoral fellowship, and should have a strong record of both scholarly and non-academic publications. Interested candidates should submit a cover letter, full CV (including contact information for two references, and two relevant examples of their written work). This application will remain open until the right candidate is found. We thank all candidates for their interest, however, only those selected for interview will be contacted.

How to apply:

Please send us your CV with a cover letter explaining why you would be a good fit for the position through the Fitzii application link: <https://www.fitzii.com/apply/52190?s=c4>. For

questions regarding the job description, please contact Dr. Chrystal Mantyka-Pringle (cmantykapringle@wcs.org).

Requests for accommodation can be made at any stage of the recruitment process. Applicants need to make their requirements known when contacted. For questions regarding the application process please contact tdias@wcs.org.

Deadline for applications: 16 November 2020

About WCS Canada

WCS Canada was established as a Canadian conservation organization in July 2004. Our mission is to conserve wildlife and wildlands by improving our understanding of and seeking solutions to critical problems that threaten key species and large wild ecosystems throughout Canada. We implement and support comprehensive field studies that gather information on wildlife needs and then seek to resolve key conservation problems by working with a broad array of stakeholders. We also provide technical assistance and biological expertise to local groups and agencies that lack the resources to tackle conservation concerns. WCS Canada is independently registered and managed, while retaining a strong collaborative working relationship with sister WCS programs in more than 55 nations, including an integrated North America Program. The Wildlife Conservation Society (www.wcs.org) is a recognized global leader in conservation and for more than a century has worked in North America promoting actions such as bison reintroduction, pioneering field studies, parks creation, and legislation to protect endangered wildlife.