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Summary

Subject: * Community and Landscape Ecology

Presentation Type: * Symposium Contribution
Oral
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Select Symposium: Impact of Climate Change and Land-Use Change on Alpine Birds: From Coarse-Grained Distribution Models to Fine-Grained Ecologically Meaningful Predictions

Title of Abstract: * **How might climate change effects in British Columbia affect birds? Applying SpaDES to boreal songbirds in British Columbia, Canada**

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Abstract *

The effects of climate change on biodiversity have been intensely debated over the last two decades, and several authors point to similar conclusions: boreal and hemi-boreal regions will suffer severe consequences in the near future. British Columbia's biogeoclimatic ecosystem classification regions (BEC), which describes vegetation composition, are projected to shift considerably in response to climatic changes. We asked how these BEC zone changes would affect bird distributions. Here, we demonstrate an integrated analysis of vegetation succession and projected changes in BEC zones to forecast songbird abundances and distributions under climate change. We built avian species abundance models (SAMs) using forest attributes from provincial Vegetation Resource Inventory data. We then forecasted species distribution and abundance for 2020, 2050, and 2080 with and without climate change based on projected climate-shifted BEC zones proposed by Tongli et al (2012). To accomplish this integrated analysis, we used the Spatial Discrete Events Simulator (SpaDES) package for R, and a vegetation succession model. Apart from discussing the effects of climate change on birds, we also demonstrate the benefits for bird forecasting that come with the flexibility of the SpaDES tool, such as reproducibility, easy model comparison, plotting and creating web apps.

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