**Effects of climate change on Canada lynx at their southern edge**

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Understanding the effects of climate change on species’ persistence is a major research interest, however, most studies have focused on responses at the northern or expanding range edge. There is a pressing need to explain how species can persist at their southern range when changing biotic interactions will influence species occurrence. For predators, variation in distribution of primary prey owing to climate change will lead to mismatched distribution and local extinction, unless their diet is altered to more extensively include alternate prey. We assessed whether addition of prey information in climate projections restricted projected habitat of a specialist predator, Canada lynx (*Lynx canadensis*), and if switching from their primary prey (snowshoe hare; *Lepus americanus*) to an alternate prey (red squirrel; *Tamiasciurus hudsonicus*) mitigates range restriction along the southern range edge. Our models projected distributions of each species to 2050 and 2080 to then refine predictions for southern lynx on the basis of varying combinations of prey availability. We found that models that incorporated information on prey substantially reduced the total predicted southern range of lynx in both 2050 and 2080. However, models that emphasized red squirrel as the primary species had 7-24% lower southern range loss than the corresponding snowshoe hare model. These results illustrate that persistence at the southern range may require species to exploit higher portions of alternate food, and that climate projections based solely on abiotic data can underestimate the severity of future range restriction.