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HOW TO INTEGRATE ANTHROPOGENIC DISTURBANCE, WILDFIRE AND CLIMATE CHANGE IN HABITAT QUALITY MODELING? AN EXAMPLE OF MODELING FRAMEWORK FOR CARIBOU HABITAT UNDER CUMULATIVE EFFECTS

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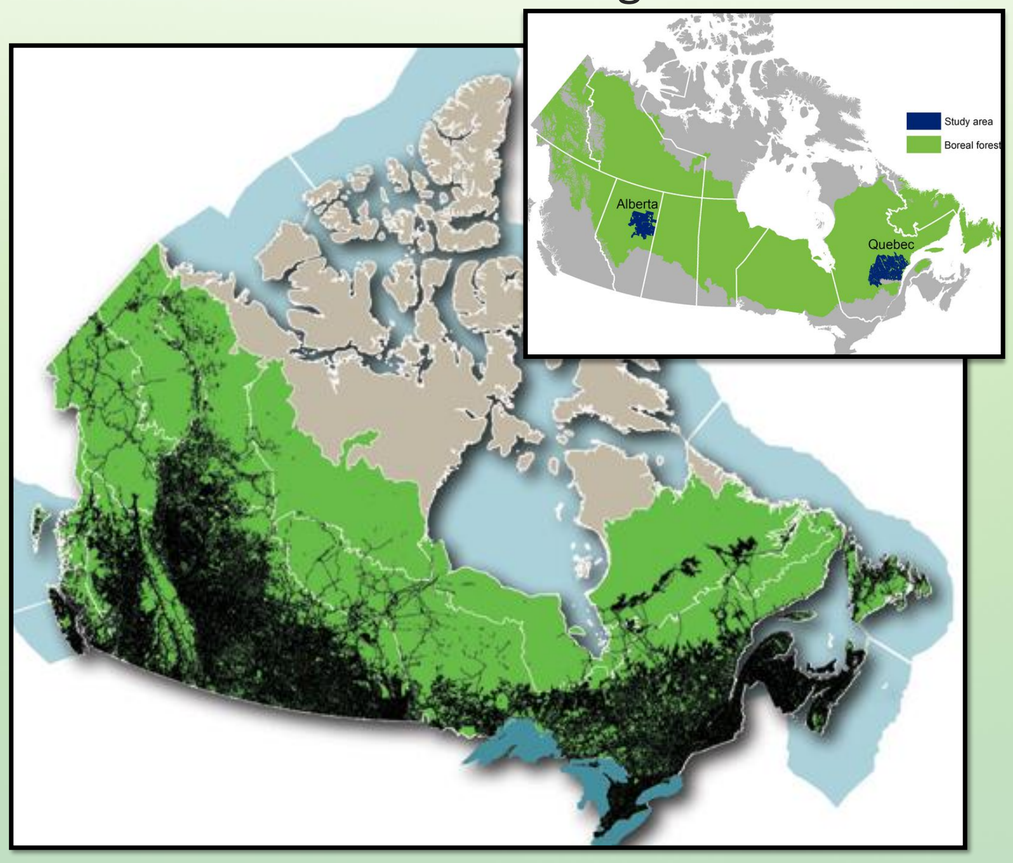
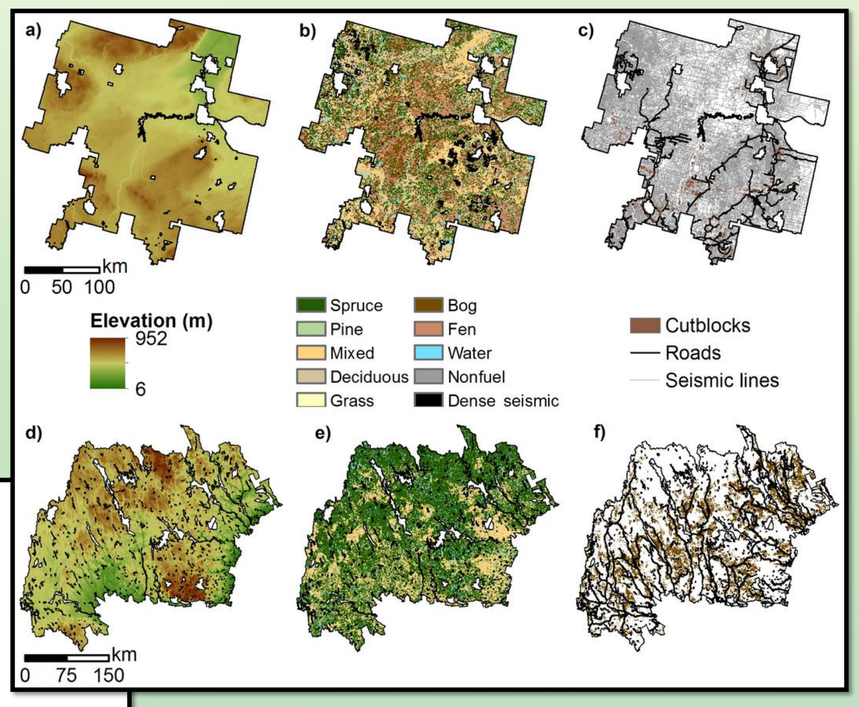
CONTEXT: Measuring how land-use changes affect the availability of resources for threatened species is critical for conservation policy and management. Natural resource management requires adaptable spatial tools for conserving and managing wildlife across highly disturbed landscapes

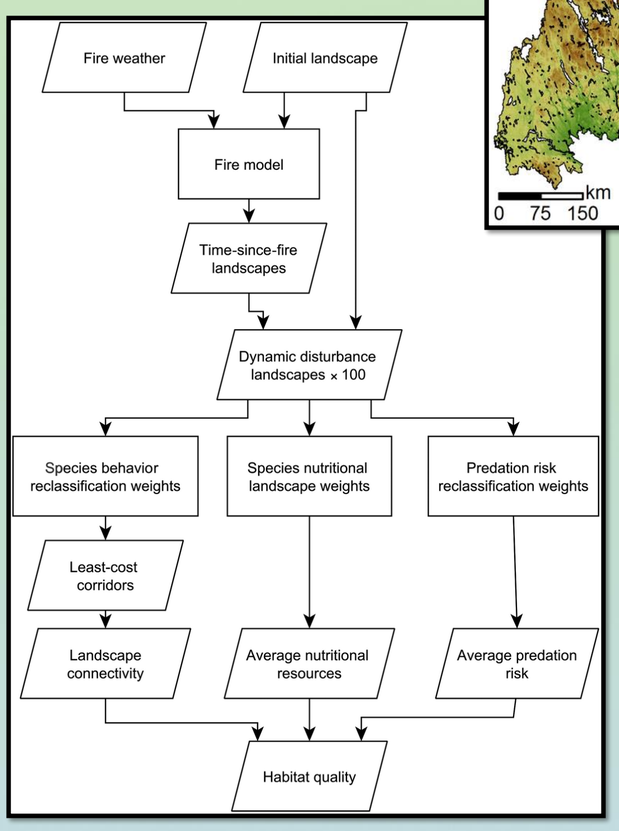
GOAL: Evaluate large-scale caribou habitat quality on a disturbance-prone landscape in the context of climate change.



METHODS:

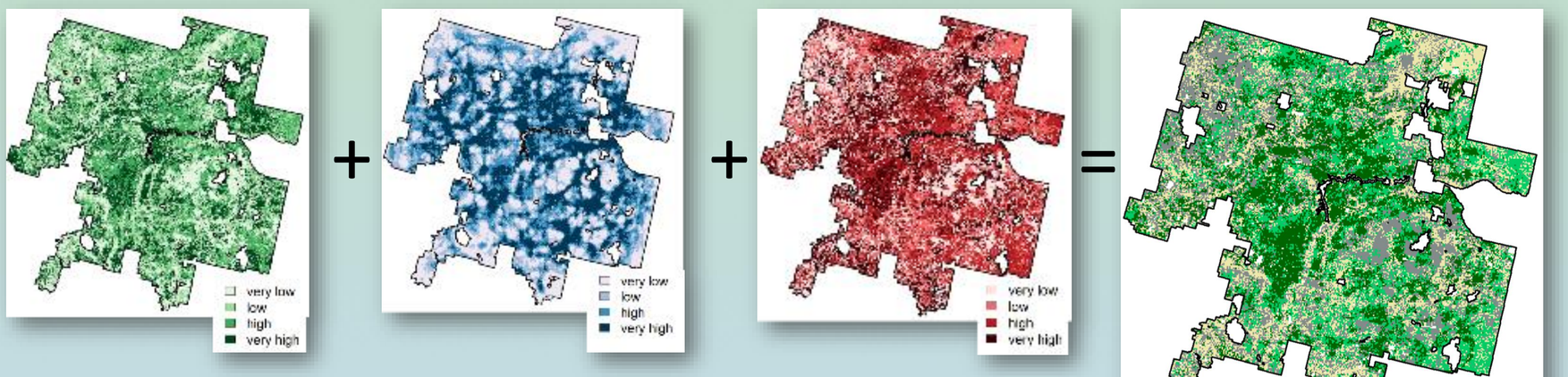
Incorporates changes in fires and human disturbances to determine habitat suitability.





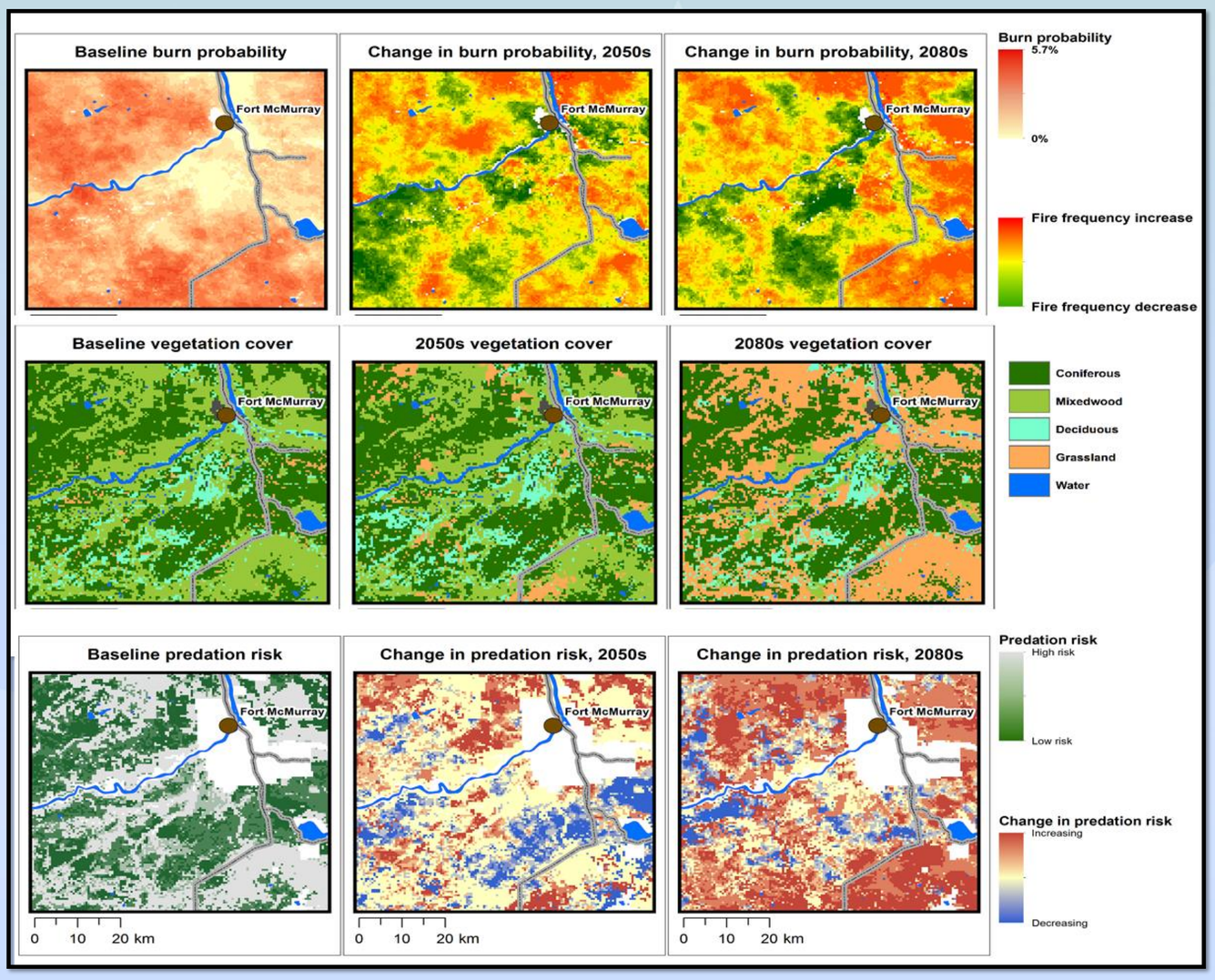
RESULTS 1: Caribou habitat suitability for Alberta

Nutrition + **Connectivity** + **Refuge Habitat** = **Habitat Suitability**



RESULTS 2: Caribou habitat quality under climate change

Wildfire + Climate Change = Vegetation Cover Change = Predation Risk



KEY MESSAGES:

This framework is adaptable and modular; it could be modified and applied to other species, regions, and disturbance regimes. It provides a nuanced representation of persistent habitat and has the potential to be a useful tool for conservation planning.

References: Whitman, E., et al.(2017). A framework for modeling habitat quality in disturbance-prone areas demonstrated with woodland caribou and wildfire. *Ecosphere*, *8*(4) ; Barber, Q., et al. (submitted). Potential impacts of climate change for the habitat of boreal woodland caribou. Forest Ecology and Mgmt.

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