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Small mammal communities in a grassland ecosystem: historic trends and future prospects

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Though inconspicuous, small mammal communities are integral to many trophic levels in ecosystems. As consumers, they increase plant diversity and soil quality, act as seed and fungal dispersers, and protect environments from pressures such as drought or fire. As prey, small mammals function as the main food source for a number of key predators. In Northern ecosystems, small mammals have large population fluctuations that cycle every 3-5 years. These cycles are susceptible to shifts in climate and habitat, leading to cascading effects in the ecological community, such as low growth and reproduction in predators and increased predation to threatened prey species, therefore the ability to predict species-specific responses to increasing threats is essential.

This project studies the response of small mammal communities in the grasslands of interior British Columbia to climate change over the past 27 years. A species monitoring program through Thompson Rivers University has been collecting fall abundance and population characteristics on deer mice and montane voles at 3-4 study sites since 1997 in the Thompson River Valley. This data will be analysed against many environmental factors to create a sophisticated predictive model. Current work serves to collect data on seasonal variation in abundance, home range, and body condition, to give context to the historic trends and help predict the prey quality for at-risk predators in the grasslands. Due to the ubiquitous nature of the deer mouse, models created through this project will advise conservation efforts throughout North America.

