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Incorporating Ecological Data into Models of Population Spread with Different Forms of Dispersal

Over the last few years, there has been significant interest in partial differential equation models with different forms of dispersal. However, much of the research done has been theoretical, with little explanation of how the model connects to real world ecological data.

In this talk, we will explore some of the assumptions that give rise to models with alternate forms of dispersal, and then develop a model that can represent the competition of two species with biased diffusion, where the species choose to diffuse according to habitat suitability and density. Habitat suitability maps will be derived from publicly available resources such as the Alberta Biodiversity Monitoring Institute (ABMI), which provides data on biodiversity across the province. We will conclude by reflecting on some of the challenges that arise when trying to connect theoretical models to practical data.