



Mathematical Biology Seminar



Monday, October 15, 2018

3 pm – 457 CAB

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Parasites of migratory caribou: effects of host movement and climate change

Host movement plays an important role in disease ecology for migratory wildlife. Migration can spread parasites to new areas, but may also improve overall host population health via culling of heavily infested individuals or escape from infection hotspots. In the Arctic, many species undergo seasonal migrations to follow changes in food availability, shelter, or mating opportunities. These migrations may also allow hosts to escape habitats where parasites accumulate in the environment. In recent decades, climate change is facilitating the range expansion of parasites and altering development and mortality rates of free-living stages. There is concern that faster development of environmentally transmitted parasites due to warming temperatures may accelerate transmission and hinder migratory animals' ability to escape parasitism. We developed a spatially explicit PDE model of host–macroparasite dynamics including temperature-dependent rates of parasite development and mortality. We apply this model to migratory caribou to understand how climate change may affect transmission and infection dynamics of helminth parasites.