

**RYERSON UNIVERSITY
DEPARTMENT OF MATHEMATICS
BIOMATHEMATICS & FLUIDS SEMINAR**

Dr. Pietro-Luciano Buono

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Date: Thursday, March 14, 2013

Time: 11:10am

Location: ENG 210

**Edge Effects on Caribou Populations:
Modelling via Advection-diffusion**

Abstract:

I will present a recent mechanistic model of forest caribou movement in the situation where a road or clear cut perturbs the home range of the animal. Caribou movements are described using a probabilistic approach and an advection-diffusion equation is obtained as a limiting case. The parameters of the model are estimated using field data and simulations are performed using a finite element method with the Streamlined-Upwind Petrov-Galerkin formulation. The main result predicts a steady-state distribution of caribou with a peak in density at 3.7 km from the nearest road or clear cut. This prediction is compared to an independent data set.

Collaborators: D. Fortin, A. Fortin, N. Courbin, C. Tye-Gingras (U.Laval), P. Moorcroft (Harvard), R. Courtois et C. Dussault (Ressources naturelles et faune, Québec).

ALL FACULTY, STAFF, STUDENTS AND GUESTS ARE WELCOME TO ATTEND