GRADUATE STUDENT POSITIONS IN THE ABRAHAMS' LAB

MSc and PhD student positions available in research at the interface of behavioural/ evolutionary ecology and physiological ecology. Our research focuses on the ways that variation in the physical environment can influence predator-prey interactions. We use aquatic systems (generally fish) for this work. Potential students can get a sense of our research interests by checking the publications linked from the lab webpage (http://www.ucs.mun.ca/~abrahamslab/).

Some examples of potential projects are given below. We are also open to discussing other project ideas that fit within the lab's research goals.

Contact: Students interested in joining the lab should email a letter of interest and a c.v. to Mark Abrahams (mabrahams@mun.ca). C.c. the email to Jeremy Mitchell (jsmitchell@mun.ca).

Potential projects:

1. Ecology of information

Physical characteristics of environments lend themselves to the use of different sensory modes. For example, vision is of limited use in an extremely turbid pond, but can be very useful in clear water. Local populations of the same species may respond to habitat variation by adjusting their investment in different sensory structures. Assessing this possibility requires field selection of samples and examination of neuroanatomy to quantify levels of investment. This project would involve extensive field-work since predator threat would also have to be examined. Newfoundland is an ideal setting for this study because of the large number of accessible ponds.

2. Detection probabilities

Water clarity may have very different effects on the ability of predators and their prey to detect one another. We are developing theoretical models that explore the effects of varying detection probabilities on predator-prey interactions. For those models to be useful, we need to quantify the relationships between probability of detection and water clarity for both predators and prey. We have equipment in the lab that can do this. These initial observations can form the basis of further field and theoretical work identifying ontogenetic changes in habitat quality.

3. Physiological ecology and habitat selection

Habitat selection decisions may reflect a trade-off between physiological requirements and effects related to predator-prey interactions. For example, prey may prefer physiologically suboptimal environments in order to avoid their predators. We have developed specialized holding tanks that can be used to explore habitat selection decisions in the presence and absence of predators (see: http://www.ucs.mun.ca/~jsmitchell). Projects along these lines can also be scaled-up to field observations and experiments.

4. Consequences of accelerated growth

Growth is a fundamental process in all animals. For a variety of reasons, growth rates are especially important in fish. Transgenic salmon provide a rare opportunity to study the consequences of accelerated growth. This project would involve determining the magnitude of growth variation under semi-natural conditions and quantifying the cost (e.g., exposure to predators) required to maintain this growth difference.