BIOLOGIE DES ORGANISMES ET DES POPULATIONS

M2 bop - 2014-2015
Research project

Supervision :

Surname: Roulin First name: Alexandre

e-mail : alexandre.roulin@unil.ch

Funding for student:

☐yes ☐ to be discussed X no

Title of the research project :

The role of predator-prey interaction in the evolution of colour polymorphism

Key words :

Colour polymorphism – reproductive success - light conditions - barn owl -

Brief description :

The aim of this project is to analyze a database of reproductive success in differently colored barn owls. The data have been collected from 1996 to 2014 in Switzerland. We want to test the hypothesis that color-specific foraging success depends on light conditions. The idea is to investigate whether reproductive success is color-dependent in interaction with light conditions determined by cloudiness and full moon. Our hypothesis is that one of the color morphs has higher foraging success when nights are dark and the other color morph when there is a lot of light at night due to full moon.

The student will learn to work with a large database (software Access), to obtain meteorological data and statistics. This project has a clear evolutionary ecology component implying that the student in charge of this project will face very diverse concepts.

Results of the present project could explain the evolutionary stability of color polymorphism in the barn owl. It will give in sight about the adaptive function of dark reddish and white plumages. Finally, this project will give new information about why barn owls strongly vary in coloration both within and among populations.

The student will participate in the fieldwork. He/she will therefore collect data that will be integrated to the long-term dataset. In this way, the student will experience all the different steps to study the link between colour-specific foraging success and light conditions.

Literature (2 references):

Galeotti, P., Rubolini, D., Dunn, P. O. &Fasola, M. (2003). Colourpolymorphism in birds: causes and functions. Journal of EvolutionaryBiology 16, 635-646.

Roulin A. 2004. Theevolution, maintenance and adaptivefunction of geneticcolourpolymorphism in birds. *BiologicalReviews* 79, 815-848.

Technical aspects of the research project:

Statistical analysis – obtain meteorogical data -

Return to Professor Frank Cézilly (frank.cezilly@u-bourgogne.fr)