PhD Position
Uncovering intra- and inter-specific movement strategies of large herbivores living in dynamic complex landscapes

SECTOR: Higher Education Institution

LOCATION: France, Grenoble

RESEARCHER PROFILE:
- First stage researcher,

INSTITUTION: Univ. Grenoble Alpes, University of Innovation

One of the major research-intensive French universities, Univ. Grenoble Alpes enjoys an international reputation in many scientific fields, as confirmed by international rankings. It benefits from the implementation of major European instruments (ESRF, ILL, EMBL, IRAM, EMFL*). The dynamic ecosystem, grounded on a close interaction between research, education and companies, has earned Grenoble to be ranked as the 5th most innovative city in the world. Surrounded by mountains, the campus benefits from a natural environment and a high quality of life and work environment. With 7000 foreign students and the annual visit of more than 8000 researchers from all over the world, Univ. Grenoble Alps is an internationally engaged university.

A personalized Welcome Center for international students, PhDs and researchers facilitates your arrival and installation.

In 2016, Univ. Grenoble Alpes was labeled «Initiative of Excellence ». This label aims at the emergence of around ten French world class research universities. By joining Univ. Grenoble Alpes, you have the opportunity to conduct world-class research, and to contribute to the social and economic challenges of the 21st century ("sustainable planet and society", "health, well-being and technology", "understanding and supporting innovation: culture, technology, organizations" "Digital technology").

* ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (International Institute for Radio Astronomy), EMBL (European Molecular Biology Laboratory), EMFL (European Magnetic Field Laboratory)

Key figures:
- + 50,000 students including 7,000 international students
- 3,700 PhD students, 45% international
- 5,500 faculty members
- 180 different nationalities
- 1st city in France where it feels good to study and 5th city where it feels good to work
- ISSO: International Students & Scholars Office affiliated to EURAXESS
SUBJECT DESCRIPTION:
In the current ‘Era of the Anthropocene’, global human impact is fundamentally altering ecological processes on earth. Thus understanding and predicting how biodiversity will respond to environmental change has become one of the most pressing questions for ecological research. Biodiversity responses to global change are ultimately mediated by proximate behavioural processes of individual organisms, affecting energy intake and expenditure and exposure to risks, and ultimately the distribution and demographic performance of individuals. Movement in particular is a key behavioural response to environmental change determining shifts in the abundance and range of species, yet we still lack the ability to understand and predict in a robust way why, and where, animals move.

The goal of this PhD project is to build upon the exceptional opportunities offered by a large set of sub-second biologging (accelerometer, magnetometer) and GPS data collected by an ongoing large UK-France collaboration and an ANR-funded project running until 2020 ("Mov-It"), which yield sub-second movement paths with associated information on the detailed behaviour, individual state and energy expenditure of each individual, collected on over 100 individuals of five wild ungulate species and three domestic ones, from six contrasting study areas across France, to develop novel mechanistic, predictive models of individual and species responses to environmental change. This will be achieved by tackling three inter-related, incremental objectives. Firstly the student will quantify movement decisions and costs under different constraints (e.g. food, weather, disturbance); then incorporate the estimated costs functions into Agent Based Models and multi-objective optimisation functions (Pareto optimisation), to model and map the full set of biologically realistic movement strategies under environmental change in complex, real landscapes. Thirdly, the student will develop from the modelling results a scenario planning tool for managers and landscape planners, allowing to build predictive models of individual movements and population and species redistributions under different scenarios of environmental change and management decisions. These aims will be further facilitated by the availability of a rich set of biological knowledge on the demography, life history and ecology of the species obtained by the long-term study sites. Furthermore, the student will profit from novel statistical and mathematical methods which we have developed to handle such complex, big data and novel quantitative models of animal movement, and to include currencies such as movement costs. Most importantly, the project is based on the understanding that there is not one single solution, in a given landscape, that solves the complex cost-benefit problem facing a herbivore for choosing where to be, what to do, how long to stay, and where to move next. Thus we look forward to work with an enthusiastic, creative, dedicated student to solve this “Movement Rubik’s Cube”.

The project will be supervised by Anne Loison at Université Grenoble Alpes, and by Luca Borger at Swansea University. A total of 18 months will be spent at the LECA laboratoire, Université Grenoble Alpes – Université SavoieMont-Blanc, and 18 months in the Department of Biosciences, College of Science at Swansea University.

ELIGIBILITY CRITERIA
The candidate should hold a Master’s degree in a relevant discipline (behaviour ecology, quantitative ecology, modelling, mathematics) or be expected to gain one by October 2018, or have a university degree equivalent to a European Master’s (5-year duration). Highly developed modelling expertise, and knowledge of movement ecology, will be required. Informal enquiries before the closing date are welcome by emailing lborger@swansea.ac.uk and anne.loison@univ-grenoble-alpes.fr / anne.loison@univ-smb.fr.

Applicants will have to send an application letter in English and attach:
- Their last diploma
- Their CV
- A short presentation of their scientific project (2 to 3 pages max)
- Letters of recommendation are welcome.
Address to send their application: anne.loison@univ-grenoble-alpes.fr and l.borger@swansea.ac.uk

SELECTION PROCESS
Application deadline: **15/09/2018** at 17:00 (CET)

Applications will be evaluated through a three-step process:

1. Eligibility check of applications in 16/09/2018
2. 1st round of selection: the applications will be evaluated by a Review Board in September 2018. Results will be given by end of September 2018.
3. 2nd round of selection: shortlisted candidates will be invited for an interview session in Grenoble in early October 2018 if necessary.

TYPE of CONTRACT: temporary-3 years of doctoral contract
JOB STATUS: Full time
HOURS PER WEEK: 35
OFFER STARTING DATE: **15 December 2018**
APPLICATION DEADLINE: 15/09/2018

Salary: between 1768.55 € and 2100 € brut per month (depending on complementary activity or not)

*Financements de la thèse*: si co-financements, préciser la durée de chacun des financements et l’organisme ou l’institution partenaire

*Grenoble University*: 50% of the funding
*Swansea University*: 50% of the funding