Programa de Pós-Graduação em Ecologia,

Universidade Federal do Rio Grande do Sul,

Av. Bento Gonçalves 9500,

Porto Alegre RS 91540–000

Thursday, 3rd March 2015

Dear Professor Dias,

I am writing to apply for a place on the Functional Trait Data Analysis course at Serra dos Órgãos National Park. I am currently an MSc student in Ecology at UFRGS, through the Erasmus Mundus International Master in Applied Ecology.

For my masters research I am analysing the influence of migration on the functional composition of Neotropical waterbird communities. To answer this question, I am using bi-annual survey data from Parque Nacional da Lagoa do Peixe, RS, wherein the waterbird community of three distinct habitats – marine coast, brackish lagoon and wet grassland – has been recorded every summer and winter for over a decade. In addition, I am compiling morphological and behavioural traits related to the foraging of these species.

Research has traditionally focussed on how non-breeding areas influence the behaviour, fitness or diversification of migratory birds species, in particular boreal migrants – perhaps reflecting the Northern Hemisphere bias of much of the ecological literature. I am interested in approaching this phenomenon from the opposite direction: how do migratory species affect the development of communities in their non-breeding environments? Similarly, do they exhibit a distinctive suite of functions which would otherwise be reduced or lacking in this environment?

My research background, however, is as a field biologist. I have a lot of experience studying the foraging and reproductive behaviour of migratory species. On the other hand, thinking at the community scale is a relatively new challenge for me. Therefore, the opportunity to spend a week learning from experienced functional ecologists would be incredibly valuable for this project.

My proposed approach to this question has at its heart two clustering analyses of the census data: one of the species composition, and one of the functional composition. I will test the hypothesis that functional traits will be more conserved within habitats between seasons, due to the different ability of each environment to support various functions, in comparison to species composition: this may be more similar within seasons across all habitats, due to the seasonal movements of both boreal and austral migratory species into and out of the whole park.

The migrant species in this study come from a very few lineages, most of which are obligately migratory. I therefore expect that phylogenetic correction will be necessary, but would appreciate some guidance in this matter. I would also like to design an appropriate null model of seasonal species exchange, to test the hypothesis that the groups of summer and winter immigrants are more functionally similar than would be expected by chance, occupying similar niches by seasonally replacing each other.

Finally, as an applied ecologist I am interested in questions related to the management of this habitat. I have two additional series of censuses conducted before and after two management interventions: alteration of the lagoon's water level, and the open and closed seasons for species exploitation. However, these data are considerably sparser, and furthermore were not collected with this analysis in mind – therefore, the ability to discuss an appropriate approach with experienced practitioners would be extremely useful.

In terms of my suitability for this course, I have extensive experience with R and would consider myself an advanced user of the environment. My dataset is ready-to-go. Also, I am originally from England so the language of instruction would not be a challenge for me.

I am excited by the opportunities that are offered by the analysis of functional traits, to approach what I consider one of nature's most intriguing phenomena – bird migration – from a holistic perspective. I believe that, with the help of the scientists on this course, this project can provide interesting results to the scientific community, insight to conservationists and managers, and a valuable breadth of perspective in my own development as a scientist.

Thank you for considering my application for this course. Please let me know if I can help with any further information.

Yours sincerely,

Josh Nightingale.