

ABSTRACT

Altitudinal gradients constitute a powerful test system for understanding distribution of species around the globe. Tropical mountains are quite rich in species even after controlling for environmental productivity, and are ideally suited for studying patterns of species distributions because they have had sufficient time for species to produce a response to environmental changes that affect their life histories. In this thesis, I investigate basic ecological mechanisms potentially behind avian distribution patterns along an altitudinal gradient in West-Central Africa. I used data collected with four methodological approaches (point counts, mist netting, random walks and artificial nest experiments) along an altitudinal gradient on Mt. Cameroon from October 2011 to September 2013. This work is focused on two interrelated themes: selection pressures on life histories (Chapters 1, 2, 3 & 4), and avian assemblage structures (Chapters 5 & 6). In the General Introduction, I present an overview of the study area with conservation implications of the study and my study objectives. In Chapters 1, 2 & 3, I investigate how selection pressures, i.e., nest predation and parasitism by haematozoa, affect bird assemblages. I used artificial nest experiments to assess nest predation rates in Chapters 1 & 2, and my results show that the structure of the vegetation has a significant influence on success of artificial nests along elevations through its influence on nest position and type. In Chapter 3, I investigate haemosporidian infections, an alternative selection pressure on avian life histories, with molecular analyses on 1044 birds belonging to 76 species and 23 families. My results reveal a low prevalence but high rate of host-parasite reciprocal specializations. Parasites mostly infect abundant bird species foraging at ground level. In Chapter 4, I explore inter-sexual-morphological variation in a monochromatic frugivorous bird species, and show that males in this species are not under intense male-male competition to develop pronounced morphological traits. Similar ecological space use or low sexual selection is presumably behind this. In Chapters 5 & 6, I look at bird assemblage distribution patterns along this altitudinal gradient and compare species richness and abundance patterns of two montane bird assemblages on different mountains. High abundances of montane species are behind a distorted generally observed positive abundance–range size relationship. The mountain with more pristine forest has species with higher abundances while the mountain with more degraded forest has higher species richness. These findings illustrate the influence of the environment on the ecology of birds, and open the path for more stringent investigations on Afrotropical mountains.

