

# AVIAN DIVERSITY AND CONSERVATION IN NYUNGWE NATIONAL PARK, RWANDA

ELISE MORTON



My research focuses on understanding anthropogenic impacts on avian community dynamics within and surrounding the Nyungwe National Park in Southwest Rwanda. The 1,019 of montane rainforest is central to the Albertine Rift, one of the most biodiverse regions in Africa. The park supports over 295 bird species, of which at least 74 are biome-restricted, 31 are range-restricted, 26 are endemic, and 8 are globally threatened or endangered. For this reason, it's been identified as an Endemic Bird Area by BirdLife International, and a top priority area for biodiversity conservation.

Anthropogenic impacts on bird communities have been shown to be wide-ranging including alterations in distribution patterns, abundance, behavior such as the timing of migration and breeding, as well as morphology. For Nyungwe National Park, an Intergovernmental Panel on Climate Change model predicts increased rainfall and intensifying warming trends through the 21st century. If realized, these projected changes in climate would lead to growing disequilibrium between climatic conditions and the ecology of this montane forest ecosystem.

Since 1997, the Wildlife Conservation Society-Rwanda has been conducting annual bird and phenology surveys of Nyungwe National Park, representing one of the largest, continuous datasets for bird populations in an African montane forest ecosystem. Of great concern, preliminary analyses indicate that many bird species in the park, including warblers, frugivores, flycatchers, and sunbirds are changing in abundance. Primary goals of my research are to estimate abundance and characterize both the population trends and distribution patterns for Nyungwe National park species. This information can be used to identify species of concern and regions of importance within the park, particularly for species that are endemic and/or threatened. Furthermore, using taxonomic and trait-based approaches to characterize patterns of diversity, these analyses will help us understand how avian communities respond to climate and landscape changes in the region.

I spent this summer at the Wildlife Conservation Society Field Station located in Gisakura, just outside of the western border of Nyungwe. The grounds are landscaped with swaths of firecracker plants, among which dozens of brightly colored sunbirds, the larger Old World equivalent of hummingbirds, are always busily extracting nectar. I woke up in the mornings to the sound and sight of Colobus monkeys, crashing through the forest canopy just above our house.

My time there was incredibly educational and productive. Most importantly, I was able to begin working with this impressive and valuable data set which includes over 92,000 observations. I had the opportunity to work directly with the WCS research staff and ornithologists, who have been leading these ongoing surveys for over 20 years. We set up ground level and tree canopy trap cameras along transects throughout the park and I was fortunate to participate in the phenology surveys.

Additionally, although bird surveys have been conducted throughout Nyungwe for two decades, little is known about the composition of bird communities at the forest edges or how they respond to encroaching agriculture and the monoculture plantations of tea, eucalyptus and pine which surround over 50% of the park. Working with the team there, I developed a research plan to survey these communities over the next two years so that we can identify land-use practices which maximize regional avian diversity. The Wildlife Conservation Society has played a pivotal role in the establishment and conservation of Nyungwe over the last 25 years. Their influence as a trusted and influential stakeholder in the region, ensures that the results of this study will provide a foundation for developing an optimized biodiversity monitoring and conservation program for Nyungwe National Park.

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