

IRES: US-Kenya, Effects of habitat changes on distribution, abundance and resource exploitation by globally-threatened and forest specialist birds in Arabuko-Sokoke Forest, Kenya

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This project seeks to engage and train undergraduate students from the United States into applied ecological research by investigating how habitat alterations affect bird communities in a tropical forest. Each year for three summers, four undergraduates and one faculty will travel to Kenya to conduct field research in Arabuko-Sokoke Forest. Arabuko-Sokoke Forest in coastal Kenya ranks second as the most important forest for bird conservation in mainland Africa. The 270 bird species known from it include six globally threatened, three near-threatened species, eight species categorized as regionally threatened in eastern Africa and several other forest-specialist birds. Both threatened and forest specialist birds show preference for certain habitat types. However, Arabuko-Sokoke Forest is under severe pressure due to selective logging, pole harvesting for building, fuel wood collection and unplanned tourism activities. These activities have different impacts on the forest and have the potentials of altering the forest structure and negatively affect forest birds including other biodiversity within the forest. Our objective is to examine how these habitat modifications relate to the distribution, abundance and resource exploitation by three rare bird species and three forest specialist birds that occur in Arabuko-Sokoke forest. Specifically, students will use census data, mist netting and the foraging behavior observations to determine the environmental and ecological factors that either promote the success or threaten the survival of these species. The PI has collaboration with Dr. Peter Njoroge, Research Scientist with the Zoology Department and the National Museums of Kenya who will be involved in co-mentorship and logistics at local level, including facilitation of acquisition of research permits and local transport. During the project, the students would also get the opportunity to interact with friendly surrounding local communities and conservation groups through guest lectures and field work.

Intellectual Merit

Our project directly addresses concerns Seymour and Hewitt offered to explain the exodus from science fields: lack of confidence, competitive atmosphere and dullness of subject matter. Students will investigate how birds respond to habitat heterogeneity, and in the end identify the axes of environmental heterogeneity that promote species survival and coexistence. This project will provide US students with opportunity for self discovery through “hands-on” training in field ecology that includes, field preparations, experimental designs, data collection and analysis, writing and research presentation in workshops, conferences and relevant scientific publications. This work will provide an opportunity for increasing the diversity and magnitude of nation’s future research capacity and infrastructure, and give US students the opportunity to develop useful research linkages important in their career developments. In addition, the proposed research investigations will advance science by elucidating mechanisms structuring the bird community of Arabuko-Sokoke Forest, which includes resource use, resource partitioning and mechanisms of coexistence.

Broader Impacts

Wilbur Wright College is a Minority Serving and Hispanic Serving Institution of about 6000 students that is part of the City Colleges of Chicago. This student population holds the key to increasing the diversity of STEM talent pool from which the nation’s future scientific talent and technical force will be drawn. To do this, we are tapping into the talent and diversity of these undergraduate students and individually mentor potential scientists and encourage them to pursue sciences as a future lifelong career. The proposed study is also ranked among the priority studies by the wildlife management authority in Kenya. The data from this research would provide the required information for the long-term conservation of the Arabuko-Sokoke Forest. In addition, the research will further the knowledge and expertise of local naturalists and tour guides, and indirectly further their careers. This will help stop the conflicts of local conservation with the need of the local people to support themselves by exploiting the forest natural resources.