

WILDLIFE RESEARCH IN SWAZILAND AND SOUTH AFRICA

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I have been working on wildlife issues in Southern Africa since 1994 when I served as an ecologist in Swaziland for the United States Peace Corps. Currently, I have three major research efforts in the region that are all focused on areas of high endemism and rapid human growth (biological hotspots). Along with four of my PhD Students we are working with group of colleagues from the University of Swaziland and UF to improve our understanding of how land-use changes (agriculture, settlement, urbanization, etc.) alter wildlife communities and ultimately impact human wellbeing. Taking an interdisciplinary approach, this projects aims to understand how land-use changes influence and reduce ecosystem services (i.e. e.g. pollination, pest control, disease resistance, seed dispersal) important to human populations. This work is critically



important to developing regions where landscapes are rapidly altered without an understanding of the actual consequences.

We are also working to address an apparent African elephant conservation paradox: the conservation of elephants is essential for the health and functioning of savannas, but successful conservation of elephants can lead to declines in the health and functioning of African savannas. This paradox has led to a contentious debate on the best way to manage African elephant that are decline in some regions and locally over abundant in other. Africa's savanna elephants are well studied but ecological data are rarely used to shape policies for their management and conservation. We are working create consensus among ecologist and to insure ecological data is used to find the proper balance between elephant population and the health of savannas. Our research will be used to determine elephant management practices in Kruger Park and Swaziland.

Also in Swaziland we have place a considerable amount of time and effort into establishing a research and monitoring program throughout the country's protected areas. These protected areas are some of the last refuges for endemic wildlife and plants found throughout the region. Working with a local Non-Governmental Organization (All Out Africa, Inc.), we developed a research plan that allows Swazi researchers and land managers to detect changes in the plant and animal communities as



they respond to pressure from development, poaching, climate change and different management practices.

Finally, are working to understand what causes the outbreaks of human diseases that are harbored in wild animals in some areas of Africa but not others. Some of the world's deadliest diseases and greatest global health challenges include bat-hosted viruses in the family Filoviridae, such as Ebola (*Ebolavirus* spp.) and Marburg (*Marburg marburgvirus*). There is an urgent need to understand what conditions lead to the "spill-over" of these bat-hosted pathogens to human populations and where these events are likely to occur in the future. The bat species that host these filoviruses have large geographic distributions, but spill-over does not occur evenly throughout their ranges. Biodiversity, human population density, and anthropogenic disturbance are broadly considered the primary drivers of zoonotic spill-over events, yet the influence of these factors has not been tested for filoviruses across regions of recent outbreaks. Along with my graduate student we are making good progress toward understand which factors have the greatest influence on these spillover events.

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