

Fostering International Collaboration with the University of KwaZulu-Natal

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In May to June 2009, the University of KwaZulu-Natal's (UKZN) School of Biological and Conservation Sciences hosted a group of postgraduate students from the University of Florida and middle school science teachers from Gainesville. Funded by the National Science Foundation, the UF students spent four weeks conducting joint research activities under the direction of UF and UKZN faculty. The goal of the visit was to establish a foundation for interdisciplinary, international research collaboration under the umbrella of ecosystem health focusing on three areas: aquatic zoology, terrestrial zoology, and invasive species management.

The aquatic zoology team was led by UF doctoral students Alexis Morris, Elisa Livengood, and Dana Ehret, who each worked on different projects related to their research interests. Alexis worked on a comparative study on the thyroid function of the elasmobranch species to determine how environmental contaminants disrupt the function of shark's thyroids. Dana focused on the aging, growth, and body changes in fossils and modern lamniform sharks, while Elisa studied the life support systems and fish husbandry practices at the uShaka Sea World Aquarium to supplement her research in the ornamental fish trade industry.

The terrestrial zoology team was focused on nutritional ecology, habitat utilization, population genetics, and the effects of environmental contaminants on Nile crocodile (*Crocodyles niloticus*) populations in the St. Lucia Estuary and the Pongola River system. The students, Josiah Townsend, Jackson Frechette, Estelle Robichaux and Elan Dalton helped capture seven adult Nile crocodiles to collect blood and urine samples, record morphological measurements, and mark the animal for future identification and reference. Moreover, the students also conducted a short study on Vervet monkey's (*Chlorocebus pygerythrus*) health to determine the level of monkeys' interaction with humans by analyzing parasite loads. Another team of UF doctoral students, Julian Resasco and Chris Woan, studied the meta-community of ants to analyze the species and



size variations within bush clumps in the New Germany Nature Reserve.

The invasive species team focused on studying the feeding preferences of mousebirds and mental models of invasive species. Kristine Callis and Rachel Naumann analyzed the ethanol preferences of mousebirds to determine if they select more or less ethanol-laden fruit (as evidence of ripeness). Dara Wald and Darina Palacio participated in an ongoing research project on the ecological impact of feral cats which could be later used to develop a mental model illustrating key concepts and variables of the South African experience compared to U.S. experience with invasive species. They interviewed scientist experts as well as local stakeholders to construct the mental model.

The UF students and Alachua County middle school science teachers, May Steward, Eugenia Campbell, Nate Stewart and Carmella O'Steen, shared informal science education lessons and programs at some primary and secondary schools in KwaZulu-Natal. They visited the Mandini and Manor

Gardens primary schools and the Siyahomula and Pholela high schools, which provided them insights into how universities in developing countries transfer knowledge and research outcomes to the primary and secondary school level science classrooms.

This international collaboration is one of several long-term graduate student research programs between UF and southern African universities. Future research programs working more closely with Ezemvelo KwaZulu Natal Wildlife and the iSimangaliso Wetland Authority are being developed to maintain this collaboration and broaden international research experiences for UF students.

Dr. Sandra Russo, Director of Program Development at the UF International Center, is the PI on this grant and Dr. Doug Levey (Biology) is the Co-PI. Funding was provided by multiple NSF grants. Drs. Todd Palmer (Biology) and Ann Donnelly (Particle Engineering) as well as Nicola Kernaghan (International Center) were group leaders.