Landscapes, Networks, & Social Resource Decisions

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- >218 million people in poverty
- Unprecedented population growth
- 64% rural
- 90% of people use fuelwood
Current approach is maintenance.

For sustainable development to work, feedbacks must work.
Sustainability implies integration of activities and objectives, not separation.
Managing for Sustainability

Whole Landscape Approach

- Improving datasets must be matched by enhanced understanding of change
- Move beyond ecosystem boundaries and administrative zones
- Integrated methods that span temporal and spatial scales needed
- Local engagement and partnerships vital
- Levels of information
  1. Environment
  2. People
  3. Governance
Landscapes, Networks, & Social Resource Decisions: Using Geospatial Technologies to Create Long-Term Models of Firewood Use

• More accurate title could be something like:
  – Landscapes, Networks, & Social Resource Decisions: Developing Interdisciplinary Approaches to and Using Geospatial Technologies to Create Long-Term Models of Human-Environment Interaction

• Outside Consultant/Collaborator
  – Peter Schmidt, University of Florida

• International Partners
  – University of Dar Es Salaam, Tanzania
    • Drs. Mabulla and Mapunda
  – Dr. Lejju, Mbarara University of Science & Technology, Uganda
Long-term Anthropogenic Influences on the Environmental Landscape of the Albertine Rift, East Africa

2 study sites:
The Crater Lakes of Western Uganda
West shore of Lake Victoria in Tanzania
Deep History to Inform Episodic Resource Exploitation
(UNH Seed Grant, NSF Archaeology High Risk – Pending)

- Using archaeological, pollen, and fungal record to inform present resource decision-making and patterns of use.
- Understand long-term patterns of resource exploitation.
- Determine resource network decisions that are most (or least) sustainable over time.
- Inform adaptive management strategies
306% increase 1960-2005

Source: Based on UN estimates

Pascal Maitre, National Geographic 2011
Population, Environment, Climate in Albertine Rift

Land Use Intensification & PA Vulnerability

*NSF Coupled Human-Natural Systems*

- How and where has land use intensified around parks in the Albertine Rift over time?
  i. Land cover change
  ii. Climate trajectory and variability
  iii. Identify risks and land use strategies of local people
  iv. Population change

- Scale up to 7 parks in Albertine Rift
PECAR

Health: Identifying and Prioritizing Risk Factors for disease
(USAID RESPOND, UMN Seed Grants, NSF GSS – pending)

- Health
- EcoHealth Consortium in Uganda
- Zoonosis (domestic and wildlife)
- Risk factors that can be used to predict the spatial and temporal patterns of anthrax exposure of domestic dogs
Resource Extraction Model

- Spatially explicit
- Agent-based
- Resource replenish
- Stochastic – run 1000X

Can be used to look at Paleo and contemporary data.