

Developing system dynamic tools for African policy makers based on the interrelationship between natural and agriculture resources

Kevin Duffy¹

¹Institute of Systems Science, Durban University of Technology, South Africa

Prof. Kevin Duffy, Institute of Systems Science, University of Technology, Durban
(031) 373 2828; kevind@dut.ac.za

“Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”¹. Sustaining food security is a growing problem as the world’s population escalates and is a challenge for the developed and developing nations of the world. However, these challenges are greater for developing nations such as in Africa because of the size and severity of the problems. An important aspect of this is poor agricultural productivity^a.

Global warming scenarios have highlighted the fragile nature of our global environment. Without nature the planet cannot survive. Environmental management is crucially affected by agriculture and the interdependence is obvious. However, how best to manage natural and agricultural resources together, is not always well understood. This fact is particularly true as the need for increased food yields conflict with preserving the environment.

We are in the early phase of developing computational technologies to increase food productivity and the transfer of these technologies to farmers and policy makers. Emphasis is placed on primary African food crops and livestock. The technologies produced will have a direct impact and should add value to agricultural production. However, the overall system, including the natural environment, is being considered. The ideas behind this project and the progress to-date will be discussed.

a. FAO, (2008). State of Food Insecurity in the World 2008, FAO

Horns of Gold: Identifying factors enabling rhino poaching and developing new tools to combat them

Gayle Pedersen

Evolutionary Genomics Group, Stellenbosch University, South Africa

Gayle Pedersen, Dept Botany and Zoology, Stellenbosch University, Private Bag X1, Matieland 7602
(072) 667 9538; gaylepedersen@hotmail.com

Rhino poaching has been a conservation calamity for many decades, but since 2008 a drastic escalation occurred that has failed to be controlled to date. International laws have attempted to control this demand in rhino horn by banning the trade, but the poaching death toll in South Africa reached 173 as June 2011 commenced.

This study aims to identify the potential causes for this heightened interest in rhino horn in order to most effectively design and implement solutions to the problem. Currently conservation responses are based on reactive crisis management, which is reliant upon indefinite funding for security and protection services or a hope that the demand will suddenly dissipate. Attempting to eliminate cultural traditions that are centuries old will never succeed, so the only alternative is to improve the management and security of rhinos in protected areas by understanding the processes promoting poaching. By assessing the risk-of-decline factor in time and space, utilising GIS tools, the impact of various physical and social influences (and their interactions with each other) on the fluctuating rates of rhino poaching across Africa can be analysed.

The application and expected outcome is to identify conservation priorities for sustainable species recovery, subsequently enabling managers to anticipate and therefore minimise these risks. It will allow managers to better allocate their resources to the areas of greatest risk, and consequently invest more in conservation education,

community-based resource management, security and monitoring. Carried out efficiently, this will prove to be a successfully proactive approach.

The use of genetics as a tool to aid law enforcement and enhance prosecution success is to be investigated as a means to increase the risks the poacher commits to. The aim is to markedly reduce the benefits of poaching, as part of this proposed future rhino management strategy.

Theme 2: Ecological challenges and conservation strategies

Carnivores, humans and parks – an assortment of challenges?

Sam M. Ferreira

SANParks Scientific Services, Skukuza, South Africa

Sam Ferreira, SANParks Scientific Services, Skukuza 1350
(013) 735 4189; +76 600 4152; samf@sanparks.org

Species management plans typically focus on the conservation species deemed threatened or that have specific value. Conservation focus, however, evolved to recognize complexity of socio-economic-ecological systems captured in the matrix of land uses in which protected areas are embedded.

Carnivores are common foci for conservationists, tour operators and hunters alike. They may provide revenue opportunities and could be keystone species that influence biological diversity. They often degrade livelihoods of people when coming into conflict with livestock land-uses. This provides an assortment of challenges.

In response, management plans at various spatial scales typically address these as issues influencing the conservation status of carnivores and respond reactively. Given the modern context of conservation, such species-focused management plans may be socially incorrect and unlikely to find political support.

I propose an approach that defines carnivores as key drivers of various socio-economic-ecological values within different land uses. I use lions as a case study as it captures challenges commonly faced by managers of small areas. Achieving objectives focusing on lions contributing to human livelihoods in a specific area are best achieved by considering each as a social unit and manage several areas as several social units interacting as a single population. Managers of such small areas then mimic social dynamics such as coalition tenure, density dependent changes in litter size, age at first birth and birth intervals as well as sub-adult dispersal.

At least three spatial scenarios are available, each of which make different population and genetic predictions, as well as carry different cost and logistical risks and benefits. Even so, I conclude that socio-political cognisant National Species Management Plans may carry much higher political value than traditional approaches and deal with an assortment of challenges in a systemic way.

Factors influencing potential dispersal routes of African wild dogs, *Lycaon pictus*, in northern KwaZulu-Natal

Brendan Whittington-Jones¹, Dan Parker² and Harriet Davies-Mostert¹

¹*Endangered Wildlife Trust, South Africa*

² *Wildlife & Reserve Management Research Group Department of Zoology & Entomology, Rhodes University*

Brendan Whittington-Jones, KZN Wild Dog Project, PO Box 550, Mtubatuba 3935
072 992 9483; brendanw@ewt.org.za

The number of African wild dogs *Lycaon pictus* in northern KwaZulu-Natal has increased substantially over the last six years. This is largely due to a managed metapopulation approach of introductions onto protected areas and private game reserves since 1998. Because of the increasing wild dog population, the likelihood of rural



Southern African Wildlife Management Association

Symposium 2011

ATKV-Hartenbos Holiday Resort, Hartenbos Southern Cape

Host: University of Stellenbosch

Co-hosts: Nelson Mandela Metropolitan University – George Campus: Saasveld

Cape Peninsula University of Technology

Table of Contents:

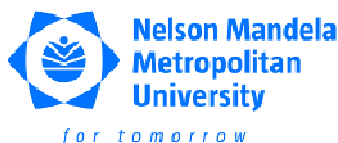
The Human-Natural Resource Interface: Reconciling Conflicting Trade-offs?

18-21 September 2011

▪ More About SAWMA	2
▪ Keynote Speakers: Symposium	3 - 4
▪ Symposium Programme Schedule	5 - 8
▪ Paper Abstracts	9 – 38
▪ Poster Abstracts	39 - 46
▪ Participants Address list	47 - 61

Organising Committee:

Louw Hoffman (University of Stellenbosch), Frans Radloff (Cape Peninsula University of Technology), Stefan Hattingh (Nelson Mandela Metropolitan University, George Campus: Saasveld) & Elma Marais (SAWMA Secretariat).



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvenoot • your knowledge partner

