

Community perceptions of vulnerable key ecological resources in Baringo, Kenya

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Introduction Key resources in arid lands are often relatively small patches of seasonal grazing or water access that critically support entire livestock production systems (Scoones, 1993). When these are lost, production systems may be destroyed. An early-warning system is needed whereby key resources at risk can be identified and protected. The Baringo District of north-central Kenya has endured decades of resource abuse and high rates of population growth—breakdowns of traditional systems have occurred and food relief is common (Little, 1992). Despite this situation, most production system research in the past has been conducted at local scales of resolution. The advent of Geographic Information Systems (GIS) technology, however, allows investigations to scale-up. Precise mapping of resource problems is now possible, and such maps can provide useful communication tools to better address issues. We have undertaken a hierarchical approach that focuses on the district, divisions, localities and communities. At the largest spatial scales we rely on social science methods to assess perceived key resources at risk according to community leaders, while at smaller scales we use ecological methods to verify and quantify resource vulnerability. Here we report on the first phase of research involving surveys of community leaders.

Materials and methods In this first research phase we interviewed 136 regional leaders as key informants, widely selected from across seven administrative divisions. Four divisions were comprised of arid pastoral zones while three were comprised of semi-arid agro-pastoral zones. Respondents were asked to rank (1 being highest) the most important key resources they perceived to be at risk in their respective divisions, and postulate sources of risk. Friedman's non-parametric analysis of variance was used to assess repeatability of rankings.

Results Preliminary data indicates that the respondents felt, overall, that herbaceous forage, water, land, and livestock were the main resources that were most vulnerable in Baringo District (Table 1). Hundreds of specific problem sites were identified and mapped as a result of these interviews. Differences in ranking ($P < 0.05$) between arid and semi-arid zones were observed from these data. Water and land in general were more highly ranked as vulnerable in the agro-pastoral zones, while forage and water were more highly ranked as vulnerable in the arid zones; water problems were pre-eminent for the district overall ($P < 0.05$). Most causes of resource vulnerability were related to population pressure and inadequate management of natural resources (Table 1).

Table 1 Identification and ranking of vulnerable key ecological resources by key informants (n=78 interviews for the arid divisions and n=58 interviews for the semi-arid divisions)

Resource	Causes of vulnerability and loss of the resource	Mean ranking of resource vulnerability	
		Agro-pastoral zones	Pastoral zones
Grazing	Sedentarisation; climate; uncontrolled grazing <i>Prosopis</i> invasion; crop farming; insecurity	3	1
Water	Poor catchments; excessive abstraction; pollution; silting; inadequate sources	1	2
Land	Increased populations; degradation	2	4
Livestock	Diseases; lack of grazing and water	4	3

Conclusions Interviews of community leaders have proven useful in a first-cut assessment of vulnerable key resources at a district scale of resolution. Patterns will be verified from future site-based observations. Overall, water was deemed as the most vulnerable resource across the arid and semi-arid spectrum, and population pressure and poor management appeared to be the root causes of most resource-related problems.

References

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