

Rangeland change and land user perspectives: research methods

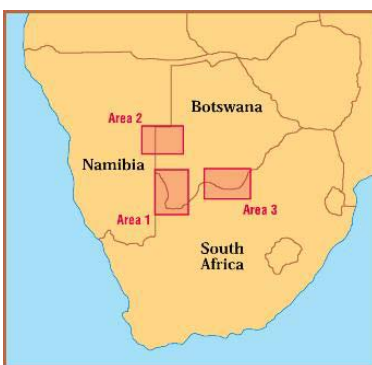
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PANRUSA Briefing Notes

PANRUSA, Poverty Policy and Natural Resource Use in Southern Africa. A DFID funded research project at the University of Sheffield UK.

Key points

- Useful ecological data can be collected rapidly in a replicable way.
- A full picture of the state of the environment needs to incorporate land users' understanding and knowledge.
- 'Participatory maps' and ecological perspectives contextualise scientific findings



Research areas:

1 Arid southwest:

- a) Mier, South Africa
- b) SW Kgalagadi, Botswana

2. Semiarid northwest:

- a) Ghanzi Dist, Botswana
- b) Omaheke, Namibia

3. Dry sub-humid southeast:

- a) NW Province South Africa
- b) Barolong, Botswana

This briefing outlines the way in which PANRUSA research has gained scientific measurements *and* land user perceptions of the state of rangeland resources. This combined approach has allowed observed vegetation states to be contextualised within the livelihood strategies of land users, so that changes from a natural state are not simply regarded as representing degradation.

Integrating methods

Environmental and social researchers in drylands now widely recognise that ecological changes associated with land use do not simply equal degradation. The environment needs to be considered within the aims and aspirations of particular land use strategies. It is well established that borehole-centred livestock production, which dominates in the Kalahari, does lead to changes in vegetation systems that radiate out from boreholes (the 'piosphere effect'). These changes can be measured and described in terms of the occurrence of different plant species or species types. What these changes mean in terms of sustainable livestock production and livelihoods will in part depend on their magnitude but also on the land use strategies of the livestock owners, their own environmental perceptions, and their accessibility to other resources and livelihood opportunities.

To gain environmental data appropriate to the overall aims of PANRUSA, research has both measured vegetation in a scientific manner and undertaken field visits with land users, who have explained their understanding of the environmental resources that are available and how they are used.

Data collection & interpretation

Vegetation data At each study site vegetation was considered at a range of distances from the borehole around which activity is centred. At each location, repeat measurements were made, combined, and mean values calculated. Trees, bushes and shrubs were counted in measured areas so that frequency (expressed per 100m²)

could be calculated. Bush encroachment is a feature of heavily grazed environments, often close to boreholes. To calculate ground cover, grasses, shrubs, weeds and other small plants were recorded at species level along transects or in quadrats, and percentage occurrence values were calculated. Since the project focuses on livelihoods, the resource value of plants was of greatest interest. Plants were grouped into:

- annual grasses, a) sour grass, b) other species;
- perennial grasses, a) nutritious or palatable species, b) hardy species c) disturbed ground species;
- weeds;
- melons and cucumbers;
- small shrubs;
- bare ground.

Annuals and weeds, both of low grazing value, tend to increase in occurrence following high grazing pressure or disturbance to the ground, but perennials also embraces species of differing grazing value.

Collecting ecological data with key informant

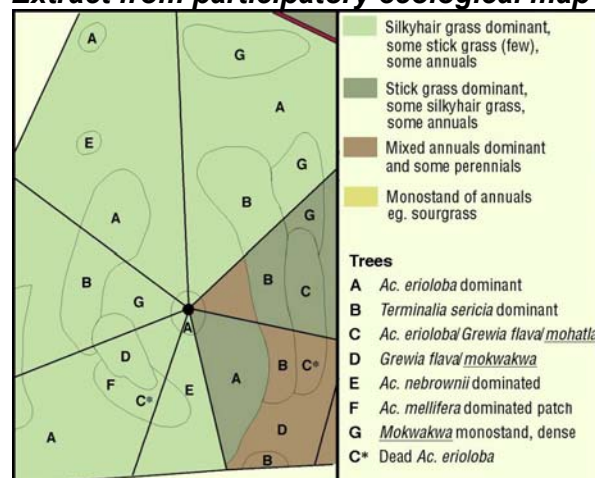


Drawing a participatory map after a field drive



Participatory data Land users and livestock owners were engaged within the wider collection of social data for PANRUSA through semi-structured interviews. Where possible at each location 'key informants', usually livestock owners or long-term residents, were identified who could provide information about their use and interpretation of the environment. These individuals accompanied a researcher on a walk or drive around the farm, and were engaged in discussion about changes in vegetation over time, the effects of droughts, and the values attached to different plant species. Where possible participant-directed maps of farms were drawn, showing areas of particular note to the informant on ecological or resource grounds (see insert of map). The participatory research often revealed aspects of environmental awareness and interpretation that might otherwise have been unidentified, for example different perceptions of the value of *Rhyogozum* amongst Botswanan and South African land users in the southwest area, and the use of bush encroached areas during droughts in Omaheke.

Extract from participatory ecological map



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