

## **Community-based natural resource management: a fallacy?**

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What is this thing called community-based natural resource management that has become a catch phrase in conservation circles in Namibia? This paper attempts to address this question and identifies several problems with the frequent use of the term.

Science is the backbone of all biological, ecological and anthropological knowledge. Years ago wildlife conservation and even wildlife management (as defined by Thomson 1992; Caughley & Sinclair 1994) was not regarded by many universities as science, but rather as an art. It was thought to be imprecise, subjective and even mythical. As a result of major advances made in these fields, especially in the USA (Leopold 1933), they have become recognised and respected in the field of science, leading to well known publications such as "*Conservation Biology*" (Soule 1986). Today wildlife or resource management and conservation (hereafter, natural resource management) conforms to the rigour of science (Giles 1978; Mentis 1980; Caughley 1985,1994) and scientific thought processes (Lakatos 1978; Mentis 1988). The evolution of natural resource management from an art form to a science has benefited both people and the resource since it increases the predictability of systems, reduces risks, allows for the modification and perfection of techniques, and allows for the transfer of knowledge and techniques (Giles 1978).

It has been recognised that successful natural resource management depends on the involvement of local communities hence "community-based natural resource management" (Martin 1984; Owen-Smith & Jacobsohn 1989; Lewis, Mwenya & Kaweche 1990; Jacobsohn 1993; Carruthers 1993). In Namibia "community-based natural resource management" has become prevalent in our conservation efforts in most of the communal areas. High profile projects, attracting substantial funding, are running in former Damaraland, Kaokoland, West and East Caprivi, Bushmanland and the Kuiseb river area. There is no doubt, based on all available literature and general opinion, that these projects are on the right track. However, do the projects conform to the scientific rigour expected in the field of natural resource management? I shall attempt to answer this question by taking the Nyae Nyae region of former eastern Bushmanland as a case example.

After an intensive socio-ecological survey conducted by the Ministry of Environment and Tourism (MET) the stage was set for a community-based natural resource management programme conducted by MET, Nyae Nyae Development Foundation (NNDF) and Nyae Nyae farmers Co-operative (NNFC). Substantial funding was acquired. The list of funding sources are long and among them are the LIFE programme, under the management of WWF (US), Namibia Nature Foundation, and BSP. This resulted in MET and four NGOs being involved in a joint venture, working with the local Ju/Hoan population in initiating and establishing a community-based natural resource management programme. Over a period of approximately four years, and the spending of probably several hundred thousand Namibia \$, there is very little tangible evidence of much progress. Why?

"Community-based natural resource management" is normally accompanied by an additional term "sustainable utilisation". There are a number of fundamental ecological steps that need to be followed if "community-based natural resource management" and "sustainable utilisation" are to succeed. The resource has to be identified, counted and its distribution determined. Often counting techniques must be designed and the counts have to be reliable with an acceptable level of precision. Counting techniques then have to be modified into a reliable and repeatable monitoring programme. Thereafter the certain relevant ecological dynamics of the resource need to be determined: these may include the rate of increase,

fecundity and mortality rates, dispersal and dispersion. Then the potential functional and numerical response of the resource to the consumer needs to be looked at. Here different types of utilisation are assessed, maximum sustainable yields are calculated and what the utilisation does to the resource mentioned. None of these points appeared to receive much attention by the parties involved in Namibia. The biggest flaw, however, appears to lie with "Community-based" side of the natural resource management.

First: social surveys and assessments of local community viewpoints and aspirations. There are inherent problems in people surveys. Several fundamental scientific questions spring to mind when collecting such data, on which the essence of the conservation programmes is based. Was there careful sample design in the preparation of such assessments and questionnaires? What is the desired level of precision in determining a community's viewpoint or opinion on any issue, and was that level obtained? This question is of crucial importance and is fundamental to any science. Sample size is then the next step. For example: how many individuals need to be questioned or how many different questions need to be asked to get a representative opinion? Normally sample size is plotted against the co-efficient of variance of the result and the sample sufficiency determined where the asymptote of 5 % of the mean is reached (Grieg-Smith 1957). What are the parameters that influence how a community responds to any particular question or action, and what is the relationship between these parameters. For example: How many different answers can be expected from the same individual in a village when asked the same question by five different persons: a) a ranger/ law enforcer in uniform, b) a researcher, c) a potential funder, speaking through an interpreter, d) an aid worker, and e) the local Dutch Reformed priest who brings food and gifts. Or even more controlled: the same question by the same person on five different occasions. To the best of my knowledge none of these questions can be answered and we have therefore no idea of the validity of such data. Yet policy is based on the results of such surveys and opinion polling. Even alternatives to the traditional surveys such as Participatory Rural Appraisal (PRA) are subject to the same concerns.

Second: local involvement and participation in natural resource management. It is the objective of most community-based natural resource management programmes that the local community would manage natural resources to their own benefit and on a sustainable basis. Lets take a brief look what this objective implies in reality. Managing natural resources is a complex business (Giles 1978; Caughley & Sinclair 1994) and there are few examples of its success any where in the world. The natural environment is intricate and the science of its' management is far exact. Indigenous culture groups such as the Ju/hoan are believed to have been able to live in harmony with their environment and to utilise those resources on a sustainable basis. This belief is supported by their vast knowledge of wildlife and ecology (Stander, Ghau, Tsisaba, Txoma & Txui 1994). However, if the Ju/hoansi were able to practice successful natural resource management, they did so in a time when movement for both humans and wildlife was unrestricted and probably in a period of much lower human population. Today, with veterinary fences and political boundaries restricting the movements of both humans and animals, the Ju/hoansi cannot be assumed to manage their natural resources in the same way we assumed they did hundreds of years ago. However, indigenous peoples, such as the Ju/hoan, may still today retain those skills and knowledge used in the management of natural resources, under those different conditions, years ago. It is important for successful "community-based natural resource management" that these skills and knowledge be identified and quantified in order to be incorporated in a management programme. This is essential since it is well known that indigenous knowledge of natural resources is often mythical (Coon 1971; Blurton Jones & Konner 1976; Liebenberg 1990). The skills of a local community may be essential and largely beneficial in the implementation of a natural resource management programme. Such a resource management programme still has to conform to the fundamental principals of resource management as a science. One often gets the feeling today that simply because a resource management programme is "community-based" the project is bound to succeed. A trade-off of either community participation or the fundamental principals of resource management can only lead to failure. The art and science of traditional knowledge of local communities combined with the

advancing and applied western scientific wildlife management skill is clearly a recipe for long term success.

In conclusion, natural resource management is complicated even if it is community-based. There are clear and fundamental guidelines to the science of natural resource management and many of these guidelines must also relate work with local communities. The project in the Nyae Nyae region, and probably all other similar projects in Namibia, do not appear to consider these fundamentals and therefore cannot succeed in the long term.

## References

- BLURTON JONES, N. & KONNER, M.J. 1976. 'Kung knowledge of animal behaviour. In: Kalahari Hunter-Gatherers. (eds. R.B. Lee & I. DeVore) Harvard University Press. Cambridge, Mass. pp. 325-348.
- CARRUTHERS, J. 1993. 'Police boys' and poachers: Africans, wildlife protection and national parks, the Transvaal 1902-1950. Koedoe 36: 11-22.
- CAUGHLEY, G. 1985. Harvesting of wildlife: past, present and future. In: Game harvest management. (Eds. S.L. Beason & S.F. Roberson). Cesar Kleberg Wildlife Research Inst., Texas.
- CAUGHLEY, G. 1994. Directions in conservation biology. J. Anim. Ecol. 63: 215-244.
- CAUGHLEY, G. & SINCLAIR, A.R.E. 1994. Wildlife ecology and management. Blackwell Scientific Publications, Oxford.
- COON, C.S. 1971. The Hunting Peoples. Jonathan Cape, London.
- GILES, R.H. 1978. Wildlife Management. Freeman and Co. San Francisco.
- GRIEG-SMITH, P. 1957. Quantitative Plant Ecology. Butterworths, London.
- JACOBSON, M. 1993. "Now they come with respect". Cult. Surv. Quart. Summer: 54-56.
- LAKATOS, I. 1978. The methodology of scientific research programmes. In: Philosophical Papers Volume 1 (Eds. J Worrall & G. Currie) Cambridge University Press.
- LEOPOLD, A. 1933. Game management. Charles Scribner's Sons, New York.
- LEWIS, D.M., MWENYA, A. & KAWECHE, G.B. 1990. African solutions to wildlife problems in Africa: insights from a community-based project in Zambia. Unasyuva. 161 (41): 11-20.
- MARTIN, R.B. 1984b. Communal area management plan for indigenous resources (Project CAMPFIRE). In: Conservation and wildlife management in Africa. (Eds. R.H.V. Bell & E. McShane-Caluzi). (U.S.) Peace Corps, Washington, D.C. pp. 279-296.
- MENTIS, M.T. 1980. Towards a scientific management of terrestrial ecosystems. S. Afr. J. Sci. 76: 536-540.
- MENTIS, M.T. 1988. Hypothetico-deductive and inductive approaches in ecology. Funct. Ecol. 2: 5-14.
- OWEN-SMITH, G. & JACOBSON, M. 1989. Involving a local community in wildlife conservation. A pilot project at Purros, south-western Kaokoland, SWA/Namibia. Quagga. 27: 21-28.
- SOULE, M.E. 1987. Viable populations for conservation. Cambridge University Press, Cambridge.
- STANDER, P., GHU, X., TSISABA, D., TXOMA, X. & TXUI, X. 1994. Tracking: a scientific method in ecology. Anim. Behav. Submitted.
- THOMSON, R. 1992. The wildlife game. The Nyala Wildlife Publication Trust, South Africa.