Integrating local plant resources and habitat management

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The use of wild plant resources as a source of basic needs is an important aspect of multiple-use of land in much of Africa, ranging from vegetation with a low species diversity, high biomass production and resilience to harvesting (e.g. Phragmites reedbeds, Cymbopogon grasslands) through to vegetation with a high diversity of species (and plant life-forms), with a multiple of uses and often low resilience to resource harvesting (e.g. medicinal plants, pole cutting, fuelwood from Afro-montane forest). Complexity and costs of managing sustainable use of wild populations increase markedly with an increasing number of uses and resource users. It is suggested that if the primary objective of core conservation areas is accepted to be the maintenance of habitat and species diversity, then the limited money and manpower available for management of core conservation areas in southern Africa limits sustainable harvesting use of plant resources to low diversity, low conservation priority vegetation types or encroaching species. For high diversity, high conservation priority sites such as Afro-montane or Coastal evergreen forest, the emphasis must be on providing alternative sources of supply to resource users outside of core areas. Botanical gardens staff, with their horticultural experience, can play a very important role through ‘bulking up’ material for supply to small farmers, herbalists and introducing additional species for agro-forestry. Botanical gardens can play a greater role in the establishment of field gene banks and ex situ conservation of vulnerable species. They can also provide a valuable educational and research role on mass production techniques to boost local stocks of threatened and commercially valuable species for cultivation by local people, whether farmers or specialist users (e.g. herbalists) in the country of origin as a means of generating employment and restoring local self-sufficiency.

Keywords: wild plant resources, traditional usage, botanic gardens, sustainable usage

Introduction

Ashton (1988) has pointed out that ‘ex situ conservation is a refuge of last resort: a high risk refuge, perhaps of no escape’, and he emphasized this through the example of long-lived tropical trees, which may not flower for 50 years, and pose a particular problem to botanical gardens staff due to their recalcitrant seeds and large size. He then posed the question whether endangered species could perhaps be conserved in situ more cheaply through careful planning and management.

In this paper, I focus on wild plant resources used by people in communal areas in Africa as an in situ and ex situ conservation problem which must be part of that planning and management. There are three main reasons for doing so. Firstly, despite the

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aesthetic and ethical reasons for conservation, a focus on useful species is similarly one of the most important motivating factors used to justify the continued existence of Botanical Gardens and herbaria in tropical Africa. Secondly, the managed use of resources within national parks or in buffer zones around them has become a widespread strategy as a means of defusing land-use conflicts (McNeeley, 1988). In some cases, where demand exceeds supply for a particular resource, this can only exacerbate conservation problems, or lead to a reduction in species diversity in areas set aside ostensibly to maintain a high level of biological diversity. Where this occurs, or where re-introduction of the species concerned is planned, botanical gardens staff can play a key role in ‘bulking up’ resources for cultivation by local resource users and reducing the utilization of re-introduced or remaining wild stocks. Thirdly, to view wild plant resources from the perspective of the rural or urban poor is an instructive and informative process for policy makers, whether for in situ or ex situ conservation of useful species. Commercially valuable natural resources provide a useful example of this, as it is this category that is being most intensively harvested as the formal economic structures of many African countries decline, and unemployed people fall back on wild plant (and animal) resources as a source of money. In many African countries, the most obvious example is the trade in fuelwood, from rural areas to rapidly growing cities. Unlike the well documented fuelwood crisis, which generates more obvious trade networks from rural source areas to towns and cities due to the volume of wood involved (Leach and Mearns, 1989), trade in other plant resources, whether for local, regional or international needs, can be far more species specific, and more of a hidden economy. As the fuelwood issue has been so well documented, I will concentrate on the conservation and horticultural implications of the informal sector trade in wild plant resources. If successful re-introductions are to take place, then there also has to be an awareness of the factors which led to the demise of the species in the first place, or which may threaten the species once introduced, and action taken to address these issues through provision of alternatives. If this is not done, re-introduced plants may be over-exploited just as wild populations were in the past. This would certainly take place, for example, if the popular medicinal plant *Siphonochilus aethiopicus* (Zingiberaceae) was introduced to montane grasslands by conservation agencies in or near communal areas in southern Africa.

People and landscape

People have long had an effect on the African landscape, and south-eastern Africa is a good example of this. Remains of *Homo sapiens* from Border Cave, in the Ingwavuma district, Natal, have been dated to 100 000 yr BP (Beaumont et al., 1978). The effects of hunter-gatherers, early farmers and pastoralists were limited, and would have added to habitat diversity. Grain farming probably established in south-eastern Africa as early as 50 BC, resulting in more permanent settlements (Hall, 1987) and concentrated effects on the surrounding vegetation due to burning, clearing and cutting of fuel (for iron-smelting and household use) and other purposes (Feely, 1980).

Under low human population densities this disturbance resulted in patchy vegetation in various stages of recovery, enhancing both habitat and species diversity. Archaeological evidence from the Cape floral region, for example, indicates that Holocene hunter-gatherers used fire as a tool to stimulate edible bulb production of Iridaceae (Deacon et