Full Length Research Paper

The trade of medicinal plants by muthi shops and street vendors in the Limpopo Province, South Africa

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Accepted 8 December, 2010

The role played by muthi shops and street vendors in the trade of medicinal plants of the Limpopo Province was investigated, in order to develop strategies that will prevent further loss of wild populations. Approximately 231 medicinal plants were traded at the investigated muthi shops and street vendors, with roots being the most preferred item. Open access communal lands are the main supply source for muthi markets. This, coupled with destructive harvesting methods and involvement of unscrupulous middlemen in collecting medicinal material, poses a serious impact on the survival of medicinal plants. The above factors have already led to a significant decline in the availability of some species in the Limpopo Province. A number of remedial actions are proposed that should arrest the decline in availability of critical medicinal species.

Key words: Limpopo province, medicinal plants, muthi shops, muthi traders, street vendors.

INTRODUCTION

According to Marshall (1998), there has been an increase in medicinal plant trade at local, regional and international levels, as urbanization has caused the subsistence-consumer to be distanced from harvesting areas. It has been estimated that in 1996, 20 000 tonnes of medicinal plants were consumed annually in South Africa (Mander, 1998). This large amount has immensely increased pressure on habitats, resulting in numerous local extinctions (Botha et al., 2004). Indeed, Cunningham (1998) reported that several plant species have been exploited to such an extent that they are seldom found outside unprotected areas in South Africa.

Medicinal plants have always played an important role within the traditional health care system of South Africa (Mander et al., 2007). It is estimated that in 1994 between 12 and 15 million or 60% of South Africans used traditional remedies from as many as 700 indigenous plant species (Meyer and Afoloyan, 1995). The average South African consumer of traditional medicine uses 750 g of plant material a year. The HIV and AIDS epidemic is also fuelling the demand for medicinal plants (Mander et al., 2007). According to Tshisikhawe (2002), muthi shops (shops trading in medicinal and spiritual plants and animals) in the Venda area, trade approximately 69 medicinal plant species, including threatened species like Brackenridgea zanquebarica and Warburgia salutaris. In 1997, research by Botha et al. (2004) revealed that 70 different plant species, representing 40 families, were traded in the Lowveld of the Limpopo Province.

To highlight the extent of trade in the Witwatersrand, Williams et al. (2001) surveyed 50 muthi shops. Results showed that, 69.2% of the medicinal species being traded were harvested from Gauteng, North West, Limpopo and Mpumalanga. Williams et al. (2001) further reported that, a total of 23 species were found to be listed as threatened on the Red Data list. According to Williams et al. (2007), there is an inverse and disproportionate relationship between the price per kg and mass of the product sold by muthi traders. Trade statistics for medicinal plants can be used as indicators of risk to plant persistence in the wild (Williams et al., 2007). Merwilla natalensis is listed as data ‘Insufficient in Red Data List of Southern African Plants’ (Hilton-Taylor, 1996). This species was reported by Mander (1997) to be commonly

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available in muthi shops where they are sold for as little as R4/kg. In contrast, a locally scarce plant, such as *Siphonochilus aethiopicus*, listed as ‘Not Threatened’ was sold for up to R800/kg. *Warburgia salutaris* listed as ‘Vulnerable’ was reported by Cunningham (1992) to be ring-barked for muthi trade at an unsustainable level. This has resulted in the use of trees with smaller diameters and the importation of medicinal material.

At the provincial level there are nature conservation ordinances which place strict limits on the trade in plants. The Limpopo Environmental Management Act (LEMA) prohibits any person without a permit to pick, sell, purchase, donate, receive as gift, be in possession of, import into, export or remove protected plants or specially protected plants in the Province (LEMA, 2004). In KwaZulu-Natal, eight of the 10 species seen most often in trade are banned from harvest or purchase without authorization permits, and 23 of the 70 most-traded medicinal products are either “protected” or “specially protected” species (Mander, 1997).

Other than the limited studies of Tshisikhawe (2002) and Botha et al. (2004) on the trade of medicinal plants, there is no detailed and comprehensive scientific information on the analysis of trade on indigenous medicinal plants in the Limpopo Province. The limited information (Tshisikhawe, 2002; Botha et al., 2004) on the trade points to a vibrant and considerable trade, with dependent demands on the natural resource base in the wider Limpopo Province. Due to this lack of comprehensive data on the trade in indigenous medicinal plants in the Limpopo Province, very limited and potentially seriously flawed decisions are currently being made on the management and conservation of indigenous medicinal plants in the Limpopo Province with its concomitant impact on poverty levels.

### METHODS

The study area includes the Capricorn (Ga-Chuenie and Polokwane), Mopani (Giyani and Tzaneen), Sekhukhune (Burgersfort and Nebo) and Waterburg (Bela-Bela and Mokopane) districts of the Limpopo Province. The Vhembe district was excluded because of the study by Tshisikhawe (2002) from that district. In each district, four muthi shops and four street vendors were visited, resulting in a total sample size of 16 muthi shops and 16 street vendors. Care was taken to select muthi shops and street vendors in different parts of a district or town, so as to eliminate any cross influential factors such as co-ownership or even co-trading between muthi shops and/or street vendors. The survey was based on a questionnaire and market observations supplemented by field visits to collection sites. As most of the market is informal, the study was not able to utilize any formally documented business data, such as information on volumes of plants sold daily, quantity of plants in stock, volumes collected and bought from middle-men and their prices and which species sold the most. This study, however, endeavoured to capture information such as plants displayed, parts of plants used, plant origin, its medicinal function(s) and plant material cost per weight. It was also important to know the manner in which plants were harvested from the wild, in order to determine whether the collection method promote sustainable harvesting.

Environmental legislation such as the Limpopo Environmental Management Act, National Environmental Management: Biodiversity Act, National Environmental Management: Protected Area Act and National Forest Act were interrogated with regard to harvesting medicinal plants with the intention of commercial gains. The only four officials responsible for enforcing environmental legislation in the Limpopo Province were interviewed via a semi-structured questionnaire, concerning the practical implementation of existing legislation and ultimately its effectiveness in practice.

### RESULTS

Approximately 231 medicinal plants were traded at the investigated muthi shops and street vendors. *Alepidea amamymbica, Drimia sanquinea, Eucomis palidiflora, Helichrysum kraussii, Hypoxis obtusa, Kirkia wilmsii, Securidaca longipendunculata* and *Siphonochilus aethiopicus* were the eight most frequently encountered species (Table 1). 23% of species were only stocked by shop traders with Molatsa being stocked by only one street vendor. The remaining 77% of species encountered, were stocked by both shop and street vendor traders. An estimated 0.96 tonnes per year of plant material are stocked by the 16 muthi traders. 64% of medicinal plants species were stocked by shops compared to 36% by street vendors. Plants are traded in a variety of forms (Figure 1), ranging from raw material.
(leaves, bark and roots) to unprocessed fragmented material (chips and slices), and semi-processed material (powders, extracts and teas). Most of the plants are mixed in-store during preparation for medicinal use. As such, products are usually bought in combination of either two or three plants, depending on the ailment. Roots, leaves and bark are generally used to treat people suffering from common ailments such as colds, flu and cuts to rare ailments such as HIV/AIDS, gynaecological problems and ulcers. Roots are mainly used for the treatment of female infertility and male impotence. Leaves are primarily used to treat colds and flu, while bark is mostly used to treat wounds. Herbs and shrubs are primarily preferred and used for their roots, especially the swollen roots. In contrast, trees are mostly used for their bark, with a few species being utilized for their leaves.

In most cases, one plant part is used to treat more than one condition, while several plant parts can be used to treat the same condition. One species can be used for different ailments depending on its administration and application. Most of the related species are used to treat similar ailments. This study indicated that, 16% of plants species encountered were listed as protected by provincial and national legislation. 10% of the listed species encountered were listed under the National Forest Act and 6% under the Limpopo Environmental Management Act. 25% of plant species are regarded by traders as scarce or becoming scarce.

Collection of medicinal plants

This study established that the major quantities of indigenous medicinal plants, which were traded mainly in provincial informal markets, are harvested from wild populations. Medicinal plants are harvested from a wide range of habitats in the province, including threatened grassland, savanna woodlands and riparian vegetation. These habitats are located on communal lands, farms and protected areas. This study showed that 75% of herbs are harvested from grasslands and 20% from savanna woodlands, with the remaining 5% from riparian vegetation. 80% of shrubs and trees are harvested from savanna woodlands and 20% from riparian vegetation. The main source of medicinal plants in the Limpopo Province is from communal lands where there is generally an easy access to natural resources. 94% of shop traders and all street vendors harvest medicinal plants from communal lands. Plants that are no longer available in communal areas are harvested on privately owned farms and protected areas. Harvesting by all traders takes place with or without the consent of the landowner or environmental authority.

The supply of important medicinal plants has declined leading to concerns by 81% of traders and all environmental enforcement officers. 44% of traders were using smaller-sized parts than before, due to a shortage of normal-sized plants in the wild. 13% of traders are currently using different plant parts than before, due to a
shortage of preferred parts. Preferred medicinal plants that are becoming difficult to obtain in the Limpopo Province are imported from neighbouring provinces, such as Mpumalanga and North West, with some plants coming from Swaziland, Mozambique and Zimbabwe. The imports of plant species such as *S. aethiopicus* and *W. salutaris*, takes place on an informal basis with no authorization. Collectors from neighbouring provinces and countries have family members working within Limpopo, thereby providing remote locations with market information and transport mechanism. This survey also showed that 77% of plant parts used are in the form of roots, with 13% in the form of bark, and 10% in the form of leaves.

**Plant conservation**

All muthi traders interviewed stated that, in general medicinal plants in nature are declining due to over-harvesting. To ensure some form of sustainability, 81% of traders harvest only a few plants in a specific area to allow species regeneration and to ensure population integrity. The remaining traders are ignorant on how to ensure species and population stability. 56% of the traders will be happy if trade can be regulated. Traders who are against regulation stated that regulation will complicate issues and that their business might be removed from them. Those who support the regulation of the trade indicated that, this will reduce the criminal element. They also regard this as a specialist business that needs people who are able to relate to this type of practice.

**Environmental legislation**

Environmental enforcement officers undertake patrols throughout the province but not necessarily in muthi shops. The public is the main source of information regarding non-compliance of legislation regarding medicinal plants. Additional information is obtained via observation by officers during patrols. Officers indicated that, the implementation of legislation on medicinal plants is difficult and confusing, since the various legislations deal with plants in general, not specifically medicinal plants. They indicated that a special section in the various legislations needs to be developed to deal with medicinal plants, as this is a special item on its own.

**DISCUSSION**

**Critical species**

Plant material traded annually in 1998 in KwaZulu-Natal, was estimated at 4 000 tonnes (Mander, 1998) and in the Eastern Cape in 2002, it was estimated at 525 tonnes (Dold and Cocks, 2002). It is currently unknown how many shop traders and street vendors are currently in business in the Limpopo Province, but with nearly 1 tonne of plant material being stocked by just 16 muthi traders annually in Limpopo, it is fair to say that, the trade in medicinal plant material in the province is substantial.

This study together with the research by Tshisikhawe (2002) and Botha et al. (2004) showed that, a significant number of plant species (nearly 400 species) are being traded by muthi shops and street vendors in the Limpopo Province (Figure 2). Unfortunately, a large portion of these species (16% in this study) are listed as protected. These species were collected because traders are unaware of which species are protected, and due to lax law enforcement. However, Mander (1998) states that enforcement of conservation legislation prohibiting the collection and sale of protected species has done little to remedy the situation. What therefore is needed, is education of traders in terms of protected species, together with research into sustainable harvesting of medicinal plants. This will, according to Marshall (1998), help both resource-users and conservationists to develop management guidelines for the collection of these critical species. In South Africa, *S. aethiopicus* is in danger of extinction following prolonged over-exploitation by the medicinal plant trade, despite being afforded legal protection (Crouch et al., 2000). This medicinal species was stocked by 81% of traders due to its high number of uses. The upcoming Red Data Book considers *S. aethiopicus* as critically endangered (SANBI, 2007) and traders in this study who alluded to the fact that, citing of this species was scarce, supports this. The main problem is the destructive harvesting of the underground parts of these plants (Zschocke et al., 2000). The solution could be to encourage traders to use alternative plant parts such as leaves instead of roots.

This study has shown that the same plant can be utilized for both its roots and bark. Loundou (2008) states that economic harvesting has depleted populations of *W. salutaris* from southern African forests. In this study, *W. salutaris* bark was stocked by only 6% of traders, with traders confirming its scarcity. According to SANBI (2007), *W. salutaris* is listed as endangered in the upcoming updated Red Data Book. Debarking of trees such as *W. salutaris* causes more damage to the plant as opposed to harvesting its leaves and fruits (Cunningham, 1988). Plant part substitution should be an important strategy for the conservation of medicinal plants (Zschocke et al., 2000) and traders should be encouraged to consider this strategy. Research should also be undertaken, to establish if substitute parts have the same efficacy as the original part. This would assist conservationists in their quest to change the usage pattern of critical species by traders.

Results of this study regarding the frequency of species encountered in trade, suggest an over-utilization and
collection of *H. obtusa*. This species also has a high occurrence in muthi shops in the Witwatersrand (Williams et al., 2000), due to claims that it cures HIV/AIDS. The high utilization is accompanied by very destructive harvesting of its roots, a situation common to the southern African region. This is contrary to the West African region where leaves are the common source for medicinal use (Cunningham, 1993). Thus, a case of part substitution can be made in order to halt the devastating impact on this species.

Slow-growing *K. wilmsii* and *S. longipendunculata* (Wyk et al., 1997) were two of the most frequently encountered species in the muthi trade (this study and the one by Tshisikhawe, 2002). The latest claims in the national media that these species have the same effect as Viagra®, will increase their current utilization, thereby posing an even greater threat to their survival. Cultivation as part of a conservation effort (Cunningham, 1993), of these popular species is therefore essential to relieve pressure on wild populations. This needs to be undertaken in conjunction with a public awareness programme on their importance and the threats posed by unsustainable and destructive harvesting destruction.

**Collection of medicinal plants**

The main source of plants for the muthi trade in the Limpopo Province is from communal lands where there is generally easy access to medicinal plants. The communal areas closest to the muthi markets have been the primary focus of harvesting activities. According to Mander (1997), natural resources in communal lands are exploited with little or no control, a fact supported by results from this study. This is because, following democratization after 1994, tribal authority control over land and natural resources weakened significantly (Shackleton et al., 1995). Ultimately this will have serious consequences in the future, in terms of the availability of medicinal plants on communal lands. As shown in this study, roots are primarily being targeted because they
store the plants nutrients, while leaves produce nutrients (Sheat and Schofield, 1995). It can be concluded that, muthi traders target plant material with concentrated nutrients. According to Mckenzi et al. (1996), the removal of roots has little effect on the future population structure of tree species. However, harvesting by uprooting shrubs and herbs not only has a detrimental effect on the population structure of the targeted species, but also has a marked effect on surrounding plants, due to exposed roots or even complete root systems, such as in the case of bulbs (Magoro, 2008).

**Plant conservation**

This study has identified a number of factors in the muthi trade in the Limpopo Province that have a significant and detrimental effect on the conservation of medicinal plants. This paper proposes the following remedial actions: 1. Formalization of the trade, 2. Establishment of community-based natural resource management mechanisms, 3. Tightening of the relevant legislation and monitoring thereof, and 4. Instituting cultivation projects for the most threatened species.

**Formalization of the trade**

By putting the muthi trade on a formal footing, a number of advantages are brought to bear. These include amongst others, the reduction of the criminal element in the trade, accurate documentation of transactions, paying of taxes, and proper monitoring of products sold to the public and ensuring compliance with relevant legislations.

**Establishment of community-based natural resource management (CBNRM) mechanisms**

Through the establishment of CBNRM mechanisms, communities would be able to manage their environment on ecological principles and benefit economically from becoming stewards over wildlife and land. Community conservation activities could also lead to the re-establishment of grass roots democracy and the freedom to control their destinies, which would further improve the socio-economic status of communities and by that, benefit conservation (Damn, 2002).

For this to happen, conservation authorizes, tribal authorities and local communities must enter into a partnership. An agreement should be established, which decrees that benefits from proper management of the permit system would flow commensurately to all partners (Damn, 2002).

**Tightening of the relevant legislation and monitoring thereof**

Though the majority (66%) of muthi traders in the Limpopo Province favour the regulation of their activities, one needs to be very careful in analyzing this. Biodiversity conservation in South Africa is based on a law enforcement approach, but it has become increasingly evident that, this approach has failed and that new methods are required (Wiersum et al., 2006). Both customary and statutory laws will often be relevant to medicinal plant conservation. According to Pant (2002), each type of legal system has its own merits and demerits. A critical question facing conservationists will often be on how these two systems can best be combined, so that their positive elements are strengthened, while avoiding a process of mutual undermining. Government policies in South Africa are viewed by traders as discriminating against indigenous healing which includes medicinal plants (Marshall, 1998). The reason for this might be that, legislation in the past has concentrated on maintaining the status quo and neglected to provide local communities with viable alternatives to collecting customary plants. There is a wide range of legal control measures applicable to medicinal plants. These range from a total ban on the harvesting of some species without possession of a permit, to proclaiming areas with important plants as protected. However, historically, legislation has done little to curb the medicinal trade (Dauskardt, 1991), and numerous controls to reduce trade are not implemented effectively due to the informal nature of the muthi trade (Mander, 1998).

There is little effective monitoring done of the illegal trade in medicinal plants because of limited resources available to conservation authorities, and the restricted levels of work carried out with user groups (Botha et al., 2004). It is thus recommended that, the number of environmental enforcement officers in the Province needs to increased and dedicated officers should be placed with strict mandates to deal with this unique user group. Monitoring should be done as frequently as possible to avoid any oversight. The misplaced view by environmental enforcement officers, that the implementation of legislation on medicinal plants is difficult and confusing, since the legislation deals with plants in general, not specifically medicinal plants, should be cleared up as a matter of urgency. According to SANBI (2006), medicinal plants can be viewed not only as problems from the conservation perspective but also more positively as conservation opportunities. This is because the actual value of these plants for health care, income or cultural identity, carries the potential for them to act as motivating forces for conservation of the species themselves and their habitats, since other non-medicinal species will also be found in the conserved habitats. Therefore, there is no need to have a special section on the legislation that deals with medicinal plants only.
Establishment of cultivation projects for the most threatened species

To take pressure off dwindling wild stocks, medicinal plants need to be actively grown by the people who rely on them (Mander, 1998) through the initiation of CBNRM projects. Moeng (2010) has shown that, the most critical species in the muthi trade can be successfully cultivated with a minimum degree of effort and difficulty. Moeng (2010) also showed that, a very large majority of muthi traders see propagation and cultivation of critical plants as a conservation strategy for medicinal plants.

However, as reported by Crouch and Edwards (2004), local cultivation is hindered by several constraints, most notably lack of water for irrigation, but also difficulties with propagation and lack of experience with proper cultivation requirements with respect to soil and light conditions. If best-practice cultivation methods can be successfully pioneered on a large scale, then the benefits would be potential new crop plants for small-scale farmers and village home gardens (Dold and Cocks, 2002).

ACKNOWLEDGEMENTS

We thank University of Limpopo for funding. Mr E. Netshuingani (Thohoyandou Botanical Garden) is acknowledged for assistance in the identification of plants. Special thanks go to Dr Tau Hlabirwa and other muthi traders, for providing valuable insights into the market dynamics.

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