

## THE USE OF INDIGENOUS PLANTS AS FOOD BY A RURAL COMMUNITY IN THE EASTERN CAPE: TUKU 'A' VILLAGE, PEDDIE

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In this short contribution the author, a Masters in Environmental Education student, introduces his research into a rural community's knowledge about, attitudes towards and extensive use of plants which grow wild in their locality, with specific reference to their diet. Taking an ethnographic approach to the study of people's relationships with plants, Shava spent a number of weeks in a village in Peddie, South Africa. Here he learned that some young people still know much about wild plants and their uses, but that these plants are playing a decreasing role in their diets. He attributes the growing negative attitudes towards wild plants to modernisation, the non-supportive role of formal education, and advertising which encouraged people to rely on store-bought foods. Environmental educators should consider paying greater attention to the role of "wild" foods in the diet. Such attention can contribute not only to the conservation of biodiversity, but also to greater food security and health.

### INTRODUCTION

#### Current Role of Food Plants in the World

There are more than 250 000 flowering plants in the world (Koopowitz & Kaye, 1990), and of these 75 000 are believed to be edible. However only 2000 species have been domesticated, with 150 being commercially cultivated. Of the latter, 30 species currently provide 905 of the world's nutritional requirements (Walters & Hamilton, 1993) and these have replaced the broad indigenous food plant base of many communities, as well as vast areas of natural vegetation. The fact that we are now mainly reliant on 30 plants for food signifies a great reduction from the potentially available food resource base. Through modern plant breeding, high yielding varieties of these 'major' cultivated food crops have been developed. These high yielding varieties require high inputs of synthetic fertilisers, pesticides, insecticides and herbicides, as well as mechanisation and irrigation as they are usually not suited to the different soil and climatic conditions of the world. The impacts of these inputs include soil compaction and erosion, land and water pollution, ecosystem destruction and biodiversity loss. In addition, the farmer is also made highly dependent on the seed and agrochemical industries. An extreme case of this dependency is genetically modified seed such as the 'terminator' maize varieties which are engineered so as to produce non-viable seed (Macleod, 1999). Besides making the farmer completely reliant on the seed producing industry, such genetic modifications can pose a very big threat to a diverse seed variety base and to the reproduction of natural plant populations if they escape into the wild. The

terminator gene, for instance, would threaten all domestic varieties of the crop as well as wild relatives through cross-pollination.

#### Indigenous Food Plants and Local Communities

Indigenous food plants have in the past played an important role in the diet of African communities. These wild food plants have provided food security to such communities even during times of drought, and they have been proven to be excellent nutritionally (Mbangata *et al.*, 1984, Tredgold 1986). Scudder (1962), in his study of the Gwembe Tonga in the Zambezi Valley, noted this reliance on indigenous food plants by rural communities. He observed that:

While agricultural relishes (especially cucurbits) may dominate during certain months of the year, frequent checks on what the Valley families were eating in the River region indicated that gathering activities supplied the main source of relish during 1956-7. Indeed for the three Mazulu Village households for which we have most data ... gathering supplied relish on more days than did agriculture, animal husbandry, fishing and hunting combined (1962:201).

Similar reliance on wild food plants was noted by Lee (1979:158) in his study of the !Kung San in Botswana. He described their sustenance as follows:

The security of the !Kung life in the Dobe area is attributable in large part to the fact that vegetable food and not meat is the primary component of their diet. Plant foods are abundant, locally available, and predictable; game animals, by contrast are scarce and unpredictable and though the !Kung hold meat in high esteem, they never depend on it for their basic subsistence.

There has however been a shift from the use of wild food plants in the diet as a result of a variety of factors (socio-cultural, economical, educational, the media, *etcetera*). Such a shift could have negative implications on the continued conservation of local plant biodiversity as traditionally communities tend to conserve those plants that they value. Campbell (1985) in Gomez (1988) observed that rural communities in Zimbabwe spared favourite fruit trees when clearing land for cultivation. Besides the threat to local plant biodiversity, an even greater threat is to the indigenous knowledge of the use of these plants. Most of this knowledge is orally transferred and, with the discontinued use of wild food plants, this passing of knowledge is no longer feasible as it does not apply to modern food plants. Gomez (1988:1) realised this when he stated that:

More serious than the physical decline and loss of traditional food resources ... is the loss of vast and ancient knowledge in identifying and recognising these resources and of the often elaborate technologies of their utilisation.

### Aims of the Research

Focussing on a village in the Eastern Cape Province of South Africa, the research reported here aims to document knowledge of wild food plants, explore changes in the use of these food plants over time, and to look into factors influencing such changes. Aspects of links between food plants and health as well as well as knowledge transfer to the youth are also investigated.

### THE STUDY AREA

Tuku 'A' Village is in the Peddie District of the Eastern Cape Province of South Africa. The surrounding vegetation is predominantly 'valley bushveld', comprising dense succulent thickets characterised by Spekboom *Acacia karoo*, euphorbias *Euphorbia spp.*, aloes *Aloes spp.*, the sweet thorn *Acacia karoo*, star apples *Diospyros spp.*,

and other species. This is interspersed on higher areas by grassland. Encroachment by the sweet thorn *Acacia karoo* is evident on eroded or disturbed areas and there are patches of *karroid*.

Tuku is a village in transition towards urbanisation, with almost every home being electrified. With the exception of a few dedicated individuals, agricultural activities are minimal. There is therefore a heavy reliance on the cash economy with most residents relying on pensions, grants and money from adult children employed in the cities, with some (particularly female-headed households) resorting to beer selling.

The population comprises mainly the elderly and the young, school-going youth. The middle aged-group is mainly in the cities though they still keep contact with (and exert influence on) the village.

### RESEARCH METHODS

Since the main aim of this research was to understand how the community related to the plants in their natural surroundings, specifically their use as food, an ethnographic case study was done in order to get a comprehensive perspective of the situation (Fraenkel & Walen, 1993). To achieve this, I stayed in a home within the village for one 10-day, one 14-day, and shorter 1-3 day periods.

Participant observation, as well as unstructured (Schurink, 1998) and focus group (Schurink, *et al.*, 1998) interviews were used in the collection of data. To help me navigate the village and to explain some difficult Xhosa terms, I worked with an assistant / interpreter from the village.

Purposive sampling was used in the selection of participants in order to allow me an in-depth focus on important issues pertinent to the study (Cantrell, 1993). This was done through an informant who knew the village residents well. It involved the selective identification of community members deemed knowledgeable in indigenous food plants. Initially, I intended to draw most of my information from the elderly, as similar previous studies had identified them as repositories of indigenous knowledge (Mtshali, 1994; Ngwane, 1999). However, during my early interviews with some of the elderly informants, I discovered that the youth also possessed this knowledge based on their contributions during the interview sessions. This prompted an investigation into the transfer of knowledge to the youth, and led to their inclusion

as participants in the study.

A total of thirteen elderly people were interviewed, comprising six women and seven men aged between 50-80 years. These were Mrs Camagu, Mrs Hola, Mrs Madeyi, Mrs Madlingozi, Mrs Mavata, Mrs Xamana, Mr Joka, Mr Magoswana, Mr Matshotyana, Mr M. Mavata, Mr S. Mavata, and Mr Sikontya. The youth groups comprised nine people, one female and eight males aged between 18-32 years. Mr V. Mavata, Mr N. Luvuno, Mr A. Twatwa and Mr Z. Deliwe made up the first youth group. This group shall be referred to as V. Mavata *et al.* The second group comprised Mr Z. Nqondi, Mr S. Dingela, and Miss D. Nqondi, and it shall be referred to as Z. Nqondi *et al.* Mr S. Luvuno and Mr N. Vuma made up the third group. Both names shall be used when referring to this group. In order to differentiate between the youth and the elderly participants, no titles shall be used when referring to the youth.

Samples of wild food plants collected from the area of study were identified with the help of staff at the Thomas Schoenfeld Herbarium in the Albany Museum.

## RESEARCH FINDINGS

### Knowledge of Wild Food Plants by the Elderly in the Community

There was a vast wealth of knowledge on wild food plants, their identification, recognition and use, amongst the selected participants regardless of the sex. More than 70 species of edible wild plants were listed for the area (see Appendix 1). These can be broadly categorised into the following: *imifuno/imifino* (wild spinach/potherbs) - twenty-one species; fruits - forty-one species; root/tuber plants - nine species, and beverage plants - seven species. In this study women knew more *imifuno* than men, whilst men on the other hand knew a greater range of wild fruits and root/tuber plants. Most of the *imifuno* were found to be 'arable weeds of cultivation' in modern agriculture terms, and were of cosmopolitan distribution/occurrence. Table 1 (below) gives examples of some frequently mentioned plants in each category.

### Knowledge Transfer to the Youth

There were several pointers indicating that community knowledge of wild food plants had been transferred to the youth:

- \* The youth were said to gather fruits from the veld when they were in season (Mrs Xamana, Mr S. Mavata, and own observations).
- \* The youth contributed local names of wild food plants and went even further to point these out in the veld (own observations).
- \* There was mention by some of the elders that they (the elders) brought home wild fruits, thereby exposing the youth to them (Mr S. Mavata).

### Dietary Importance of Wild Food Plants

Wild food plants were said to have been eaten upon availability and thus are said to have had a supplementary role in the main diet, which traditionally comprised sorghum, maize and *amasi* (soured milk), supplemented occasionally with meat (Mrs Camagu, Mrs Xamana, V. Mavata *et al.*). However, contrary to this view, was the popularity of *imifuno* and statements that when boys went out herding they never needed to come back home during the day for food as they relied on wild food plants while in the veld (Mrs Camagu, S. Luvuno and N. Vuma).

### Changes in the Use of Wild Food Plants

#### Changes over Time

Most of the elderly participants acknowledged that the diet in the village was changing. It was said there was less use of wild food plants as people were now losing interest in them and relied more on the modern diet (Mrs Camagu, Mrs Xamana, S. Luvuno and N. Vuma, Mr M. Mavata, and Mr Tshoyo).

#### Changes Related to Gender

The majority of the participants claimed that *imifuno* were in the past not eaten by men as they were believed to make them weak. However this is said to have changed with time as men are now eating *imifuno*. This change was attributed partly to economic constraints and partly to inclusion of vegetables in the modern diet and shifts in preferences (Mr Tshoyo, Mr Mavata and Z. Nqondi *et al.*).

Table 1: List of popular wild food plants in Tuku Village

a) Imifuno

Scientific Name	Common English Name(s)	Xhosa Name(s)
<i>Amaranthus hybridus</i>	pigweed	<i>iMbuya, iTyuthu uNomdlomboyi</i>
<i>Sonchus oleraceus</i>	sow thistle, wild thistle	<i>iRhabe</i>
<i>Solanum nigrum</i>	black nightshade	<i>umSobo</i>

b) Fruits

Scientific Name	Common English Name(s)	Xhosa Name(s)
<i>Carissa bispinosa</i> <i>var bispinosa</i>	carissa, num-num	<i>isaBethankuzi isiNcum'ncum'</i>
<i>Harpephyllum caffrum</i>	wild plum	<i>umNgwenya</i>
<i>Scutia myrtina</i>	cat-thorn	<i>isaPhingo</i>

c) Root/Tuber Plants

Scientific Name	Common English Name(s)	Xhosa Name(s)
<i>Cussonia spicata</i>	common cabbage tree	<i>umSenge</i>
<i>Eriospermum parvifolium</i>	N/A	<i>uNonyade</i>
<i>Ipomoea simplex</i>	N/A	<i>iGontsi</i>

d) Beverages

Scientific Name	Common English Name(s)	Xhosa Name(s)
<i>Lippia javanica</i>	lippia, fever tree, wild tea	<i>iZinziNiba, iZinziLibe</i>
<i>Metha longifolia</i>	wild mint	<i>iNxina</i>
<i>Olea europaea</i> subsp. <i>africana</i>	wild olive	<i>umNquma</i>

## Factors Contributing to Change in the Use of Indigenous Food Plants

An interplay of a variety of socio-cultural and economic factors seem to have impacted negatively on the continued use of wild food plants by the community. These factors include the following.

- \* Fear of the wild/veld - the young generation was said to have developed a fear of such things as snakes and other wild animals, with girls said to fear getting their skins scratched by bushes and thorns in the veld (Mrs Camagu, V. Mavata *et al.*).
- \* Looking down upon traditional diet - wild food plants were being labeled as 'primitive', 'dirty', 'food for the poor', and a source of disease (V. Mavata *et al.*, Mrs Madlingozi, Mrs Camagu).
- \* Distance - wild food plants were said to be too far from reach since they mainly occurred in the veld (Mr Tshoyo, Z. Nqondi, and Mr Magoswana).
- \* Tedious to prepare - some wild foods were said to take too long to prepare compared to modern food (Mr Tshoyo).
- \* Attraction to city life - the youth were said to emulate the diet of those from the city (Mrs Camagu, Mr S. Mavata, Mr Tshoyo, Mrs Xamana).
- \* Change in lifestyle - electricity and shops were said to have eliminated the need to fetch firewood, hunt or gather (Mr Sikontya, Mr Magoswana, Mr Matshotyana, and Mrs Xamagu).
- \* Change in entertainment - TV and soccer were having an impact on more traditional modes of entertainment that involved the veld.
- \* Plant availability - some plants were said to be no longer available while some no longer bore fruit due to drought and desertification (Mrs Camagu, Mrs Xamana and Mr Magoswana).
- \* Education - as the youth got educated they left the village and became less concerned with wild food plants (Mrs Camagu).

## Indigenous Food Plants and Health

A common statement amongst the elderly was that wild food plants kept them healthy and long-living. Modern diet was lamented for the poor health amongst the young generation. The elderly participants claimed that during their time deaths of the youth were unheard of and it was rare for people to go to hospital. Such health problems as high blood pressure and strokes were said to be unknown. Modern food was said to be rich in fats and sugars (Mrs Camagu, Mrs Mavata, Mrs Xamana, Mr Magoswana and Mr S. Mavata) and affecting health. Refining of modern food was considered by one participant (Mr S. Mavata) to reduce the nutritional value; of note was the refining of maize to make mealie-meal which was said to remove the germ.

Food (both meat and vegetable) which had been refrigerated over long periods was considered to be no longer fresh, particularly frozen chicken whose bones were said to become powdery (Mrs Camagu, Mr Matshotyana, Mr S. Mavata and Mr Tshoyo). Processed foods such as beef stock, *Aromat*, gravy, etc. were suspected to be sources of ill health (Mr S. Mavata, Mr Sikontya and Mrs Madlingozi). Also highly suspect were food additives which were said to be meant to entice the eye and to give artificial flavours (Mr S. Mavata and Mr S. Dingela).

## DISCUSSION AND RECOMMENDATIONS

### A Wealth of Knowledge on Wild Food Plants

There is still a vast wealth of knowledge with regards to wild food plants amongst the elderly within the community. Booth & Lucas (1989), and Cunningham (1994) discussed the value and applicability of such detailed indigenous botanical knowledge. Booth and Lucas (1989:468) stressed that:

There is an urgent need to record the usage of plants by such [so called 'primitive'] societies, as both the plants and the aboriginal societies are disappearing at a rapid rate, and yet many of our modern drugs came from such sources, as they were developed in primitive societies after long trial and error procedures.

The role of orally transmitted indigenous knowledge, in local communities is however diminishing as it is being replaced by the dominant western

knowledge system (Sibanda, 1999). In southern Africa in particular, very little is known about the food plants of indigenous communities (Dakora, 1996). There is therefore a dire need to document such information.

In educational settings such as the school, accumulated knowledge of the elderly should be drawn upon to enrich the learning environment and to enable their participation in education processes (Masuku, 1999; Ngwane, 1994). This also allows the incorporation of different knowledge systems into educational settings, thereby eliminating the domination of one knowledge form.

With regards to the use of wild food plants by the community of note is the fact that most of the *imi-funo* are what would be described as 'weeds of cultivation' in modern agriculture. These plants are of cosmopolitan distribution and are not necessarily of indigenous origin in the areas where they grow. To indigenous communities such plants are not weeds but are a potential food source, showing the broad base aspect of traditional food resources. What this demonstrates is the ability of indigenous people to adapt innovatively to changes in their environment and to utilise such changes to their benefit. This is a clear indication of the dynamism of indigenous knowledge, which should influence its definition. That indigenous knowledge is not static has been acknowledged by a number of authors including the Biodiversity Support Program (1993), Kawagely & Barnhardt (1999), and Le Roux (1999).

### Knowledge Transfer to the Youth

There is evidence in Tuku Village that knowledge on wild food plants has been transferred to the youth and thus is not confined to the elderly. This finding is contrary to that of Mtshali (1994) and Ngwane (1999) who claim that the youth are not interested in indigenous knowledge. The youth in this village have acquired knowledge with regards to local wild food plants. However, possibly because the youth are exposed to an education system which does not allow their application of this knowledge, let alone recognise it, they tend to regard it as inferior and irrelevant.

Eisner (1985:107), in his discussion on the three curricula that all schools teach, defines what the schools deliberately do not teach as the 'null curriculum', i.e.

... the options that students are not afforded, the perspectives they may never know,

much less are able to use, the concepts and skills that are not part of their intellectual repertoire.

With regards to indigenous plants this is evident in the fact that most curricula in the southern African region tend to leave them out despite their being a dominant feature of the rural environment. The agriculture syllabi, when talking on fruits, give examples of cultivated types such as apples, oranges and bananas; the food and nutrition class would focus on high protein foods such as beans and peas at the expense of local plant examples, and this would apply across the subject disciplines. What this does for the rural community context is to focus on things outside the students' local context, thus denying the learners the ability to bring into the classroom setting their already acquired knowledge. This therefore becomes a non-learner-centred, authoritarian orientation to education (Kemmis, Cole & Sugett 1983, in Fien 1993:20-21).

In a rural community setting, the above education approach could lead to a situation whereby the youth are considered well educated but cannot be incorporated into the community structure as functional community members as their education will not be relevant to the context. Henderson (1991) recounts a story about Iroquian youth who were offered the best English education of the time but were good for nothing when they came back to the community as they could not hunt or lead ceremonies and did not know their duties in the family and community or their responsibilities to the land, despite their being 'educated'. They were therefore alienated to the local community context.

Education approaches should be contextual and should encourage learners to bring in and share their experiences in the learning situation. Even students who are not brilliant in the classroom situation can be given an opportunity to enhance their self esteem, for example by taking excursions into the veld where they can participate by pointing out these wild food plants for the other students.

### Dietary Importance of Wild Food Plants

Wild food plants are said to have had a supplementary role in the community. However there are indications to the contrary such as the popularity of some food plants and the reports that when the youth went herding in the past, they relied on wild food plants such that they did not have to return

home for food during the day. I have also observed community members, particularly the youth, frequently bringing back from the veld some popular wild fruits when they were in season. This has led me to believe that the role of wild fruit plants is to some extent underestimated by the community. Maundu (1995) noted this when researching the role of wild food plants in pastoralist communities of Kenya. He cautioned against the overlooking of the role of wild food plants in rural communities, who he said, consume these plants casually and away from home. The significant role wild food plants can play in the diet of indigenous communities, despite other food types being held in high esteem, has been highlighted in the introductory section.

### Changes in the Use of Wild Food Plants and Possible Factors Influencing their Diminishing Role in the Community's Diets

Most participants acknowledged that the use of wild food plants in the village was diminishing. They stated a variety of factors as being responsible for this trend, including fear of the veld, stigmatising wild food plants, distance, time, education, urbanisation and the lure of the city, lifestyle changes in the village, change in entertainment, and wild food plant availability.

Maundu (1995) and Sibanda (1999) noted the reduced regard for indigenous food plants due to westernisation. This is said to lead to loss of traditional knowledge on edible species as well as its status. Sibanda claimed that (1999:60):

Many local people now treat their own culture, knowledge and traditions as inferior to the western knowledge system, and hence are not in a position to take this any further than just talking about it. Their own knowledge has suffered serious erosion over time because it was treated as inferior for so long. Most of the younger people now believe there is little or no value to their own knowledge and have fully embraced western knowledge system.

What many people do not realise is that the western knowledge system has actually gained strength through tapping the indigenous knowledge of other cultures (Nader, 1996). Advances in medical cures for example have been as a result of the knowledge of 'primitive' societies (Booth & Lucas, 1989). The same applies to the now widely cultivated food plants (Fox & Norwood Young,

1982).

Urbanisation also has a major role in dietary changes. Activities that in the past encouraged gathering and continued use of wild food plants, have stopped as a result of it. There is now no need to collect firewood as a result of electrification of the village. Stores have replaced traditional food sources such that very few people still rely on wild food plants from the distant veld. The city is also a major lure as it is said to provide everything from jobs to a high quality life, hence the youth were said to 'imitate' those from the city. Fox & Norwood Young (1982) claimed that city dwellers tend to know very little about wild food plants compared to those in rural areas. Another effect of the city life is the drive towards consumption of modern foods. The city, with its multiplicity of shops, offers a very broad array of food products for the consumer market, thereby perpetuating unsustainable consumption (Hillcoat & Janse van Rensburg, 1998). In the case of the rural community of Tuku, this trend is also evident as people are turning away from traditional foods in preference for modern food, which the younger generation seems to believe is of more superior quality.

While hunting and gathering could have been forms of entertainment in the past, these have now been replaced by the media and sport. Almost every home in the village has a TV set and soccer is a popular sport. This implies fewer activities that take the youth into the veld where they can collect wild food plants. In addition media advertising may be influencing the people's choice of food.

Availability of some wild food plants was said to be diminishing due to drought. This could be attributable to global climate changes (Livingstone, 1995; Maundu, 1995). Some wild trees are said to no longer bear fruit or if they do it no longer ripens. This is supported by my observation of the star apples *Diospyros spp* in the area that did bear fruit, but the fruit dried out before it ripened. An investigation into why some trees no longer bear fruit properly could be an area for future research.

### Wild Food Plants and Health

There was a common belief amongst the elderly participants that the modern diet was responsible for most of the health problems in the young generation. This belief might be a way of romanticising the past by the community elderly (Sibanda,

1999). There are currently multiple sources of disease and ill health and one cannot blame all on the modern diet. However the modern diet is fraught with its own problems and is therefore not completely blameless.

The modern diet was said to be rich in fats and sugars and the processing of food was believed to reduce their nutritional value. This statement is supported by Abraham (1991), who claimed that western processed foods lead to overconsumption of fats and sugars. He also stated that processed foods lack fibre and gives a similar example on the processing of wheat to make bread, to that of one of the participants on maize, with regards to the removal of the germ from the final product.

The impact on health of shifting to a western diet rich in fat is exemplified by Balick & Cox (1996) in their report on the River Pima Tribe of the Sonora Desert of Arizona. This tribe, who traditionally lived by harvesting wild food plants, began experiencing a high rate of diabetes (the highest in the world) upon changing to western food. Upon investigation, it was discovered that they genetically had a low insulin production which was suited to their traditional diet that had a high fibre content. When they changed to processed foods there was a high influx of sugar in their bodies resulting in high blood sugar levels in their systems, leading to diabetes.

Wild food plants in the traditional diet provided the main source of essential nutritional components, such as vitamins, minerals, proteins and fibre (Maundu, 1995; Mbangata *et al.*, 1984). Indeed their role in traditional communities was a major one (Lee, 1979; Reynolds, 1989; Scudder, 1962;). Whilst one may argue that the dietary role of such food plants has been replaced by domesticated varieties, I doubt if their role has been fully replaced, particularly in rural areas. One reason for their not being completely replaced could be affordability as well as availability. Also some foodstuffs may not be considered as essential parts of a meal. I hardly saw fruit being sold in the village, which might imply the role of wild fruits has not been replaced in the diet. The nutritional value of wild food, at least as alternative nutrient sources, should be promoted for the benefit of rural communities through such community educators as health workers. Such food plants are locally and freely available (since they are not being exploited commercially). An investigation into the nutritional value of some of these wild food plants is being undertaken in this research for

later documentation.

Prolonged periods of food refrigeration was regarded with scepticism. The food was said to lose flavor and the bones to become powdery. Food refrigerated for long periods does lose flavour and 'life', and this is a surprising concern from a rural standpoint which fits well with current dietary trends. The concern over the negative health impacts of food additives, such as colourings and flavourings, is also substantiated by Abraham (1991).

## CONCLUSION

Community indigenous knowledge on wild food plants abounds in Tuku Village, particularly amongst the elderly. However such knowledge is not confined to the elderly but has also trickled down to the youth. The role of indigenous food plants in the diet is threatened with decline, as is the traditional knowledge on their use, as a result of the interplay of various social, economic and cultural factors as well as the influence of media and western education. The modern diet, to which most people have turned, impacts negatively on health due to its usual lack of fibre and high sugar and fat content. That the role of indigenous food plants has been substituted by modern domesticated varieties is doubtful. The use of wild food plants should therefore be encouraged through revealing their nutritional value to communities, as should be the promotion of the knowledge on their availability and use. This would go a step towards the sustenance of plant biodiversity and at the same time ensure perpetuation of the knowledge on their use. At most it can support the health of rural communities through the use of a locally available and uncostly resource.

## REFERENCES

- Abraham, J. 1991. *Food and Development. The Political Dimension of Hunger and the Modern Diet*. World Wide Fund for Nature & Kogan Page, London.
- Balick, M. & Cox, P.A. 1996. *Plants, People and Culture. The Science of Ethnobotany*. Scientific American Library, New York.
- Biodiversity Support Program. 1993. *African Biodiversity: A Foundation for the Future*. Biodiversity Support Program, Beltsville.

- Booth, F. & Lucas, G. 1989. The role of botanic gardens in economic botany. In M. Swaminathan & S. Kochhar (Eds), *Plants and Society*. Macmillan, London.
- Cantrell, D. 1993. Alternative paradigms in environmental education: The interpretive perspective. In R. Mzarek (Ed.), *Paradigms in Environmental Education Research*. NAAEE, Troy.
- Cunningham, A. 1994. Combining skills: Participatory approaches to biodiversity conservation. In B. Huntley (Ed.), *Botanical Diversity in Southern Africa. Proceedings of a Conference on the Conservation and Utilization of Southern African Botanical Diversity*. Cape Town, September.
- Dakora, F. 1996. Using indigenous knowledge to increase agricultural productivity in Africa. In H. Norman, I. Snyman & M. Cohen (Eds), *Indigenous Knowledge and its Uses in Southern Africa*. Human Sciences Research Council, Pretoria.
- Dewey, J. 1985. The three curricula that all schools teach. In E. Eisner (Ed.), *The Educational Imagination*. Macmillan, New York.
- Fien, J. 1993. *Education for the Environment. Critical Curriculum Theorising and Environmental Education*. Deakin University, Geelong.
- Fox, F. & Norwood Young, M. 1982. *Food from the Veld. Edible Wild Plants of Southern Africa*. Delta Books, Craighall.
- Fraenkel, J. & Wallen, N. 1993. *How to Design and Evaluate Research in Education*. MacGraw-Hill, New York.
- Gomez, M. 1989. *A Resource Inventory of Indigenous and Traditional Foods in Zimbabwe*. University of Zimbabwe Publications, Harare.
- Henderson, M. 1991. A Mohawk vision of education. *Green Teacher*, 49, 15-18.
- Hillcoat, J. & Janse van Rensburg, E. 1998. Consuming passions: Educating the empty self. *Australian Journal of Environmental Education*, 14, 57-64.
- Kawagley, A. & Barnhardt, R. 1999. Education indigenous to place. In G. Smith & D. Williams (Eds). *Ecological Education in Action*. State University of New York, New York.
- Lee, R. 1979. *The !Kung San. Men, Women and Work in Foraging Society*. Cambridge University Press, Cambridge.
- Le Roux, K. 1999. Ethically indigenous: Articulating indigenous knowledge in/as environmental education processes. *Indigenous Knowledge in/as Environmental Education Processes. EEASA Monograph*, 3, 17-21.
- Livingstone, D. 1995. Climatic change and its impact on biodiversity in Africa. In L. Bennun, R. Aman & S. Crafter (Eds), *Conservation of Biodiversity in Africa: Local Initiatives and Institutional Roles*. Proceedings of a Conference held at the National Museums of Kenya, Nairobi, 30 August-3 September 1992.
- Macleod, F. 1999. Call for ban on illegal GM crops. *Mail and Guardian*, 20-26 August, p5.
- Mabangata, M., O'Connell, M. & Johnson, C. 1984. *Imifino*. Transkei Appropriate Technology Unit, Umtata.
- Masuku, L. 1999. The role of indigeneous knowledge in/for environmental education: the case of an Nguni story in the Schools Water Action project. Unpublished M.Ed. Thesis. Department of Education, Rhodes University.
- Maundu, P. 1995. Indigenous knowledge as a means of conserving biodiversity at community level: The Indigenous Food Plant Programme. In R. Aman, L. Bennun, & S. Crafter (Eds), *Conservation of Biodiversity in Africa: Local Initiatives and Institutional Roles*. Proceedings of a Conference held at the National Museums of Kenya, Nairobi, 30 August-3 September 1992.
- Mtshali, C. 1994. An investigation of environmental knowledge among two rural black communities in Natal. Unpublished Masters Thesis, Rhodes University, Grahamstown.
- Nader, L. 1996. Anthropological inquiry into boundaries, power, and knowledge. In L. Nader (Ed.) *Naked Science. Anthropological Inquiry into Boundaries, Power, and Knowledge*. Routledge, New York.
- Ngwane, M. 1999. Socio-cultural factors that have

contributed to the decrease of plant species in the Eastern Cape: A case study of Etyeni Village, Tsolo, Transkei. Unpublished Research Paper, Rhodes University, Grahamstown.

Reynolds, P. 1989. *Lwaano Lwanyika*. Colleen Crawford Cousins in association with Save the Children Fund (UK), Harare.

Schurink, E. 1998. The methodology of unstructured face to face interviews. In A. De Vos (Ed.), *Research at Grassroots. A Primer for Caring Professions*. J.L. van Schaik, Pretoria.

Schurink, W., Schurink, E., & M. Poggenpoel (Eds), Focus group interviewing and audiovisual methodology in qualitative research. In A. De Vos (Ed.), *Research at Grassroots. A Primer for Caring Professions*. J.L. van Schaik, Pretoria.

Scudder, T. 1962. *Kariba Studies Volume II. The Ecology of the Gwembe Tonga*. Manchester University Press, London.

Sibanda, B. 1999. CAMPFIRE: Tonga cosmology and indigenous knowledge. *Indigenous Knowledge in/as Environmental Education Processes. EEASA Monograph*, 3, 17-21.

Tredgold, M. 1986. *Food Plants of Zimbabwe*. Mambo Press, Gweru.

Walters, M. & Hamilton, M. 1993. *The Vital Wealth of Plants. WWF and the Conservation of Plants*. WWF- World Wide Fund for Nature, Gland.

## APPENDIX 1: AN INVENTORY OF INDIGENOUS FOOD PLANTS USED IN TUKU VILLAGE, PEDDIE

Key for Uses:

I - *imifuno* (wild spinach) F - edible fruit R - edible root/tuber B - beverage plant

Scientific name	Common English Name(s)	Xhosa Name(s)	Uses
<i>Acacia karoo</i>	Sweet thorn	<i>UmuNga, umNga</i>	Gum & bark edible
<i>Amaranthus hybridus</i>	Pigweed	<i>IMbuya, iTyuthu, iTyiwuthu</i>	I
<i>Amaranthus thunbergii</i>	Cape pigweed, poor-man's spinach	<i>IMbuya, iTyuthu, iTyiwuthu</i>	I
<i>Apodytes dimidiata</i>	White pear	<i>UmNqabaza, umDakane</i>	F
<i>Bergeranthus milticeps</i>	N/A	<i>UNomgushe</i>	R
<i>Biden pilosa</i>	Black jack	<i>UmHlabangubo, uQadolo, iNongwe</i>	I
<i>Buddleia salviifolia</i>	Sagewood	<i>lLothana</i>	B
<i>Burchelia bubalina</i>	Wild pomegranate	<i>UmFincafincane, umFincane</i>	F
<i>Canthium inerme</i>	Common turkey berry	<i>UmNyushubele/I</i>	F
<i>Carissa bispinosa</i> var. <i>bispinosa</i>	Carissa, num-num	<i>UmBethankunzi, isaBethankunzi, Isincum'ncum'</i>	F
<i>Carpobrotus edulis</i>	Hottentot's fig, sour fig	<i>ITyum'tyum'</i>	F
<i>Cassine aethiopica</i>	Koobo-berry, bushveld cherry	<i>UmGxube</i>	F
<i>Centella asiatica</i>	Marsh pepperwort, pennywort	<i>Unongotyazana, uNonyongwana/e</i>	I
<i>Chenopodium album</i>	White goose-foot, fat-hen	<i>IMbikicane, iMbilikicane</i>	I
<i>Citrullus lanatus</i>	Wild watermelon, watermelon	<i>Intshabotyi</i>	F, V
<i>Colpoon compressa</i>	Cape sumach	<i>IsiDuli, Intekeza, iMbulunyathi</i>	F
<i>Cordia rudis</i>	Small bone-apple	<i>INsinde, iNtsinde</i>	F
<i>Cotulia anthemoides</i>	N/A	<i>UmQokolo</i>	F
<i>Cucurbita pepo</i>	Pumpkin	<i>IThanga, amaThanga</i>	I, V
<i>Cussonia spicata</i>	Common cabbage tree	<i>UmSenge, iNsenge</i>	R
<i>Cyperus esculentus</i>	Yellow nut-grass	<i>INqoba</i>	R
<i>Diospyros dicrophylla</i>	Common star apple	<i>UmBhongisa</i>	F
<i>Dovyalis caffra</i>	Kei apple	<i>UmQokolo</i>	F
<i>Dovyalis rhamnoides</i>	Common sourberry, Cape cranberry	<i>UmQokolo</i>	F
<i>Dovyalis rotundifolia</i>	N/A	<i>UmQokolo</i>	F
<i>Ehretia rigida</i>	Puzzle bush	<i>UmHleli/e</i>	F
<i>Encephalatos</i> sp.	Cycad	<i>UmGwavu</i>	F/R
<i>Euclea undulata</i>	Common guarri, small-leaved guarri	<i>UmGwali</i>	F
<i>Eriospermum parvifolium</i>	N/A	<i>UnoNyadhe</i>	R
<i>Ficus capensis</i>	Cape fig	<i>UmKhiwane, umKhwane</i>	F
<i>Ficus craterostoma</i>	Forest fig, bastard natal fig	<i>ULuzi</i>	F
<i>Fucus ingens</i>	Red-leaved rock fig	<i>UmThombe</i>	F

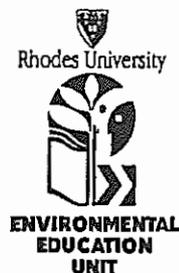
<i>Gardenia amoena</i>	Thorny gardenia	<i>IThongoti</i>	F
<i>Gunnera perpensa</i>	Wild rhubarb	<i>IQhobo</i>	R
<i>Grewia occidentalis</i>	Cross-berry	<i>UmNqabaza,</i> <i>UmNqabalaza</i>	F
<i>Harpephyllum caffrum</i>	Wild plum	<i>UmNgwenya</i>	F
<i>Helichrysum spp.</i>	Helychrysum	<i>ICHolachola</i>	B
<i>Hippobromus pauciflorus</i>	Horsewood	<i>Ulwathile, uMfazionoxolo</i>	F
<i>Hydnora africana</i>	Jackal food	<i>UNopetse</i>	F
<i>Hypochoeris radicata</i>	N/A	<i>UnoNjenti, umaJenti/e</i>	I
<i>Hypoxis argeanta</i>	N/A	<i>ILEbatheka</i>	R
<i>Ipomoea simplex</i>	N/A	<i>IGontsi</i>	R
<i>Lagenaria siceraria</i>	Bottle gourd, butternut	<i>IKhomane</i>	V
<i>Lantana rugosa</i>	Bird's brandy	<i>Utywala-bentaka</i>	F
<i>Leonotis spp.</i>	N/A	<i>Imfincafincane</i>	B
<i>Lippia javanica</i>	Lippia, fever tree, wild tea	<i>IZinziniba, uZinzilibe</i>	B
<i>Lycium ferocissimum</i>	N/A	<i>UmBhovu</i>	F
<i>Mentha longifolia subsp. Polyadena</i>	Wild mint	<i>INxina</i>	B
<i>Mimusops caffra</i>	Coastal red milkwood	<i>INTunzi, iThunzi</i>	F
<i>Moraea elliotii</i>	N/A	<i>INCembu</i>	R
<i>Olea europea subsp. Africana</i>	Wild olive	<i>UmNquma</i>	B, F
<i>Osteospermum grandidentatum</i>	N/A	<i>Iqobaqoba</i>	F
<i>Oxalis spp.</i>	Oxalis	<i>IsiMuncwana,</i> <i>isiMuncumuncwana</i>	Salad
<i>Pappea capensis</i>	Jacket plum, indaba tree	<i>ILitshe, iNgqalutshe</i>	F, B
<i>Plectranthus esculentus</i>	Native potato	<i>ITapile</i>	R
<i>Portulaca affra</i>	Porkbush	<i>IGwanitsha/I</i>	I
<i>Portulaca oleracea</i>	Common purselane, pigweed	<i>IGwanisha/I</i>	I
<i>Protorhus longifolia</i>	Red beech	<i>IKhubalo, umKhomuso</i>	I, F
<i>Rapistrum rugosum</i>	N/A	<i>IsiQwashumbe</i>	I
<i>Rhus dentata</i>	Nana berry	<i>INhlokotshane,</i> <i>iNhlokotshiyane</i>	F
<i>Rhus incisa var. effusa</i>	N/A	<i>INhlokotshane,</i> <i>INhlokotshiyane</i>	F
<i>Rhus lucida</i>	Glossy currant	<i>Inhlokotshane,</i> <i>iNhlokotshiyane</i>	F
<i>Rhus pentheri</i>	Common crowberry	<i>Inhlokotshane,</i> <i>Inhlokotshiyane</i>	F
<i>Rhus rehmaniana</i>	Blunt-leaved currant	<i>INhlokotshane,</i> <i>iNhlokotshiyane</i>	F
<i>Rhoicissus tomentosa</i>	Common forest grape	<i>IsaNqodi</i>	F
<i>Rhubus pinnatus</i>	Bramble, South African black-berry	<i>IQunube</i>	F
<i>Rumex spp.</i>	Dock	<i>IDololenkonyane</i>	I
<i>Scutia myrtina</i>	Cat-thorn	<i>IsiPhingo</i>	F
<i>Sisymbrium spp.</i>	Wild mustard	<i>IsiQwashumbe</i>	I
<i>Schotia latifolia</i>	Bush boer-bean	<i>UmGxamu</i>	F (seeds)
<i>Schulzeria umkhowaan (Termitomyce umkhowaani)</i>	Mushroom	<i>IKhowa</i>	V

<i>Solanum nigrum</i>	Black nightshade	<i>UmSobo, umSobosobo</i>	I, F
<i>Sonchus oleraceus</i>	Sow thistle, wild thistle	<i>IRhabe, iHlaba</i>	I
<i>Taraxacum officinale</i>	N/A	<i>UQudalele</i>	I
<i>Urtica urens</i>	Stinging nettle	<i>IRhawu, uRhalijane, uRhalakajane</i>	I
<i>Urtica dioica</i>	Stinging nettle	<i>IRhawurhawu, uRhalakajane</i>	I
<i>Xysmalobium undulatum</i>	Wild cotton, milk bush	<i>ITshongwe, iLothana</i>	I
<i>Zantedeschia eathiopica</i>	Arum lily	<i>INyibiba</i>	I

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