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Plant use of the Maasai of Sekenani Valley, Maasai Mara, Kenya

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Abstract

Traditional plant use is of tremendous importance in many societies, including most rural African communities. This knowledge is however, rapidly dwindling due to changes towards a more Western lifestyle, and the influence of modern tourism.

In case of the Sekenani Maasai, the recent change from a nomadic to a more sedentary lifestyle has not, thus far lead to a dramatic loss of traditional plant knowledge, when compared to other Maasai communities. However, in Sekenani, plants are used much less frequently for manufacturing tools, and for veterinary purposes, than in more remote areas. While the knowledge is still present, overgrazing and over-exploitation of plant resources have already led to a decline of the plant material available.

This paper examines the plant use of the Maasai in the Sekenani Valley, North of the Masaai Mara National Reserve. The Maasai pastoralists of Kenya and Tanzania use a large part of the plants in their environment for many uses in daily life. The plant use and knowledge of the Sekenani Maasai is of particular interest, as their clan, the "Il-Purko", was moved from Central Kenya to this region by the British Colonial Administration in 1904.

The results of this study indicate that despite their relocation 100 years ago, the local population has an extensive knowledge of the plants in their surroundings, and they ascribe uses to a large percentage of the plants found. One-hundred-fifty-five plant species were collected, identified and their Maa names and traditional uses recorded. Although fifty-one species were reported as of "no use", only eighteen of these had no Maasai name. Thirty-three were recognized by a distinctive Maa name. Thirty-nine species had a medicinal use, and 30 species served as fodder for livestock. Six species could not be identified. Of these plants five were addressed by the Maasai with distinct names. This exemplifies the Sekenani Maasai's in-depth knowledge of the plant resources.

Traditionally, the Maasai attribute most illnesses to the effect of pollutants that block or inhibit digestion. These pollutants can include "polluted" food, contact with sick people and witchcraft. In most cases the treatment of illness involves herbal purgatives to cleanse the patient. There are also frequent indications of plant use for common problems like wounds, parasites, body aches and burns.

Background

Plants have been an integral part of life in many indigenous communities, and African communities are no exception. Apart from providing building materials, fodder, weapons and other commodities, plants are especially important as traditional medicines [1]. Many tribes in Africa have a sophisticated plant knowledge [2]. Western influences have led to an accelerating decline of this tradition [3]. Most knowledge is still transferred entirely orally in many communities. Despite the "Witchcraft Act" of 1925, outlawing traditional medicine in Kenya, the practice continued in secret, until parts of the law were revoked with independence in 1963 [1]. Western style healthcare supplied by the government has expanded in the last decades, but is still often not readily available, and many regions remain completely underserved. Consequently, most communities still use herbal remedies as a readily and cheaply available alternative.

The Maasai are originally nomadic pastoralists. "Maasai" indicates a speaker of the Maa language, which belongs to the Chari-Nile branch of the Nilo-Saharan language family. Maa speaking peoples migrated into their current territory around the 16th century [4]. The Maasai are divided into 11 sections, each occupying specific areas. These sections show differences in dialect and ceremonial life [5]. At the end of the 19th century their original grazing territory encompassed almost 80 percent of Kenya and Northern Tanzania. During colonial rule, much of this land was lost to agriculture. Some sections of the Maasai were even moved completely from their homelands.

By agreement with his Majesty's Commissioner for the East African Protectorate in 1904/1911, the Il-Purko Maasai were moved South to the area around Narok [5,6]. The Maasai in the Sekenani area belong to this group. The Il-Purko, like other sections of the tribe, traditionally form homesteads, called Manyattas or Engkangs. These settlements consist of a ring of low huts surrounded by a thorn- or wooden fence. Manyattas are used for 4–5 years, and are then abandoned [7]. Originally nomadic, the life of the Maasai has undergone profound changes in the last decades. Now, many Maasai live a sedentary lifestyle, and the formerly communally owned land is being subdivided into group ranches or family units. This change in settlement pattern, together with rising populations and a continuously stronger outside influence, has had a profound impact on the Maasai's lifestyle and environment [8,9]. Maasai life is still very interwoven with the natural surroundings. This is illustrated by the intricate knowledge about the surrounding environment.

Tourism has become a major economic force in Kenya in the last decades. The Maasai Mara in particular has seen a tremendous increase in visitors and provides major

income for the country, but the distribution of this wealth to the local communities is scarce [10].

The main pillars of Maasai diet are still milk and blood from cows, and soups derived from wild collected herbs. Berries and other wild fruits supplement the diet. Both are eaten mostly by women and children. Herbal knowledge is widespread in the community. Families are often able to care for their own health. Traditional healers "laibon" are mostly responsible for the treatment of "witchcraft", and have an important ceremonial function [5].

Most Bantu speaking peoples in East Africa believe that illness is related to a curse from deceased ancestors. In contrast, the Maasai attribute most illnesses to the effect of pollutants that block or inhibit digestion. These pollutants can include "polluted" food, contact with sick people and witchcraft. In most cases, the treatment of illness involves herbal purgatives to cleanse the patient. There are also frequent indications of plant use for common problems like wounds, parasites, body aches and burns.

Major health concerns for the Sekenani Maasai include malaria, gastro-internal disorders, parasites, tuberculosis, brucellosis and Sexually Transmitted Diseases (STD's). Skin problems, burns, wounds and fractures are lesser problems associated with the daily dangers of livestock keeping.

Early accounts of Maasai plant use date back to the beginning of the last century [11,12]. Studies on Maasai Ethnobotany of the Mara region have mainly focused on the forested areas of the Loita Hills [13,14]. The most detailed study on the plant use of a Maasai community was conducted in Loita in 2000 [14] and was used as main comparison for this study.

Methodology

Study area

The Sekenani Valley is located in the Northeastern corner of the wider Maasai Mara region, just outside the popular Mara Game Reserve (Fig. 1). Twenty-four mostly sedentary Maasai families occupy Sekenani.

The region receives about 600 mm annual rainfall with peaks in April and December.

The vegetation consists, to a large extent, of **Grassland**, with Poaceae forming the main vegetation layer, interspersed with few annuals and perennials, and occasional trees and shrubs, mostly *Acacia* sp. These grasslands derive from Evergreen Bushland under constant grazing and fire pressure. Soils are mainly black cotton soils. **Wooded Grassland** shows a very similar appearance, however bush cover increases up to 40 percent. In Ever-

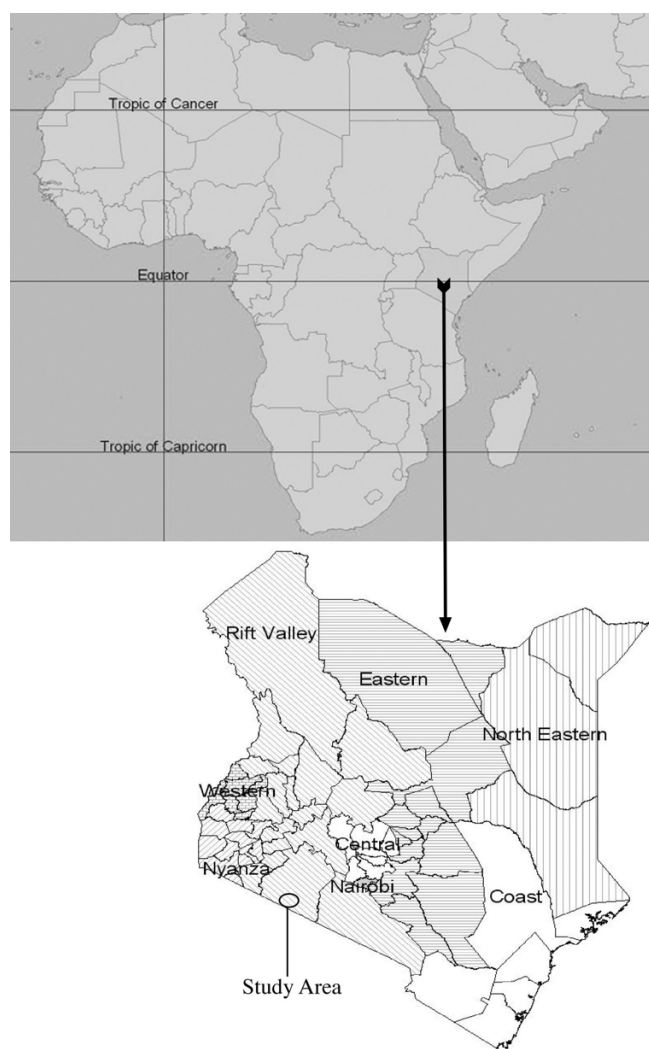


Figure 1
Map of Kenya and location of the study area.

green Bushland, shrubby vegetation and tree islands cover more than 40 percent of the ground.

Data collection

In 1994 the authors began fieldwork in the Sekenani area, and were thus well acquainted to the local population. The 24 Maasai families in the Sekenani valley are all stakeholders in Sekenani Safari Camp, the main base for all study activities. After years of field visits to the area, the local community asked the authors to conduct an inventory of the ethnobotanical knowledge of the valley. The main collection of ethnobotanical data occurred 2002.

Many ethnobotanical studies use questionnaires to interview segments of the population about their ethnobotanical knowledge. Frequently interviewees are asked to name plants they know, and to reveal the use of the

respective species. Sometimes informants are accompanied to the field to collect plant material. This methodology easily misses plants found at further distances from the villages. It often includes only a part of the population, and it gives no indication about which percentage of the flora is actually used.

To avoid these shortfalls, and to obtain a more detailed inventory of plant use, the authors tried to collect as many plant species as possible. After collecting the material the plants were photographed and pressed in Sekenani Camp. Ethnobotanical data was collected by interviews with the four Maasai co-authors (John Solio, Manja Lutura, Rumpac Lutuluo, Kimaren Kunguru). Interviews were conducted directly in the field, during collection trips, and by examination of the freshly collected specimens with members of the 24 families of Sekenani. Interviewees were chosen without distinction of gender, and after seeking oral consent from each respondent.

During the interviews, a standardized set of questions was used to inquire about each plant the authors collected. Showing interviewees the collected plants and asking them questions about each plant was preferred over asking them to recall, from memory, which plants they used. This method was preferred over pure questionnaires because it enabled information gathering about species that are known by the community, but no longer used. The authors believe that it was important to gather this information about these "unknown" or "useless" species to document that knowledge has already been lost, and to preserve the knowledge of traditional names. All interviews were carried out with at least one of the local co-authors as interpreter and assistant.

All plant species encountered were collected, and dried and processed at the University of Nairobi Herbarium. The specimens are numbered in the collection series "RBUGGG", and the collection numbers are given in [Additional file 1].

RW Bussmann and S. Mathenge identified the plant samples, and all voucher specimens are deposited at the University of Nairobi Herbarium. The nomenclature of all plants follows: for herbs [15], for trees, shrubs and lianas [16], for Cyperaceae [17], and [18] for all families.

Data on plant species, families, vernacular names, parts used, traditional use and modality of use were recorded and are compared in Appendix 1 to plant uses reported by Maundu et al. [14] for the Loita community.

Results and discussion

Traditional nomenclature

Like in many traditional societies, Maasai plant nomenclature is complex. Plant names are mostly related to plant appearance and use.

It is very common that one vernacular name refers to multiple species. "*Olosida*" for example, refers to the majority of Acanthaceae, "*Enkaiieiedya*" to all Commelinaceae, and "*Ososian*" to Pteridophytes. Maasai plant nomenclature is much more intricate than the nomenclature of many other communities. Many plants are referred to with a specific name, especially if a plant has a specific use. In addition, names might indicate morphological characteristics or habitat. Since Maa is originally not a written language, there is no agreed upon correct spelling to the names. The spelling used in this paper represents a consensus of the Maasai co-authors and [19].

Plant use

A total of 155 plant species belonging to 52 families were collected in the Sekenani Valley (Table 1). Of these, 149 could be identified (Additional file 1). This represents a large percentage of the total flora of the Sekenani Valley. All species encountered belong to the Grassland-Evergreen Bushland ecosystem.

In comparison, 267 species were collected in the Loita Hills [14]. The respective study concentrated on the forest and forest-bushland transition zone and the species found represent only about 60 percent of the plants used in the higher Loita region [14]. The grassland and bushland zones were under-represented in the Loita study. One hundred seventy-three of the species in the Loita Hills study are mostly found in *Olea-Juniperus* forest and dense bushland; they do not occur in the Sekenani region. Sekenani and Loita potentially share only 94 species found in the Loita study [14]. Forty-three species were found in both studies. However, the Loita study [14] concentrated only on useful species, rather than the complete flora. An overview on the uses attributed to plants in Sekenani is given in Table 2.

No use

Fifty-one species found in the Sekenani area had "no use" for the local Maasai community. Eighteen of these species had also no name in Maa. The most frequent families with useless species were Acanthaceae, Amaranthaceae and many Asteraceae; families that contain a high number of herbal species. This coincides with observations that traditional plant use for Maa speaking peoples focuses on woody species (for medicines, construction and firewood), and grasses (for fodder) [3].

Table 1: Plant families with number of species recorded in Sekenani and number of species with traditional use.

Plant family	Species found	Species used
Acanthaceae	11	2
Adiantaceae	2	1
Aizoaceae	1	1
Amaranthaceae	4	1
Anacardiaceae	2	2
Anthericaceae	1	1
Apocynaceae	3	2
Asclepiadaceae	2	2
Asparagaceae	2	2
Asphodelaceae	1	1
Aspleniaceae	1	0
Asteraceae	12	4
Canellaceae	1	1
Capparidaceae	2	1
Combretaceae	1	1
Comelinaceae	3	3
Commiphoraceae	1	0
Convolvulaceae	4	1
Crassulaceae	2	2
Cucurbitaceae	1	0
Cyperaceae	11	11
Dryopteridaceae	3	2
Ebenaceae	1	1
Euphorbiaceae	7	5
Fabaceae	9	6
Hyacinthaceae	1	1
Hypoxidaceae	1	1
Lamiaceae	6	3
Liliaceae	1	1
Loranthaceae	2	2
Malvaceae	3	3
Meliaceae	1	0
Menispermaceae	1	1
Mimosaceae	3	3
Moraceae	1	0
Ochnaceae	1	1
Oleaceae	1	1
Plumbaginaceae	1	1
Poaceae	12	12
Polygonaceae	1	1
Rhamnaceae	1	0
Rubiaceae	4	3
Rutaceae	3	3
Santalaceae	1	1
Sapindaceae	3	1
Scrophulariaceae	3	2
Solanaceae	1	1
Sterculiaceae	1	1
Tiliaceae	4	4
Verbenaceae	1	1
Vitaceae	2	2
Unidentified (indet.)	6	5

Table 2: Use categories of plants used by the Sekenani Maasai, and number of individual plant species used for each category.

Plant uses	Number of species used
No use	51
Medicinal	39
Fodder	30
Browsed by wild animals	22
Ceremonial	21
Construction	17
Food	14
Arms	8
Firewood	7
Tools	6
Veterinary	5
Bees	4

Medicinal species

Thirty-nine (25%) of the plant species encountered in Sekenani had some medicinal use (Table 3). This is lower than the 33% of species reported as used medicinally in Loita [14].

The most common medicinal uses in Sekenani included: Dental hygiene, malaria, and general strength and wound care. Like in more traditional Maasai communities [3], the plants used to cure diseases served mainly as strong purgatives and emetics; they "cleanse" the body and digestive system from polluting substances.

Although the number of plants used medicinally in Sekenani made up only 25 percent of all plants, this category was still statistically most important amongst all plant use

Table 3: Traditional medicinal uses of plants registered in Sekenani. Tabulated overview on use categories and number of species used for every medicinal category.

Medicinal use category	Number of species used
Dental hygiene (toothbrush)	12
Malaria	7
Strength (children)	4
Wounds	4
Hygiene (smell)	3
Soup (strength in adults)	3
Stomach problems	3
Tea and local beer	3
Skin diseases	2
Common cold	2
Chest problems	2
Joint and muscle pain	2
Parasites	2
"All diseases"	2
Venereal disease	1
Circulation	1
Depression	1

types. Easy access to governmental health care (close to one of the main Mara Ranger Headquarters) and the hospital facilities in the provincial capital Narok, has led to a pronounced decline of plants used in disease treatment. "Everyday" uses, e.g. the use of fragrant sticks as efficient toothbrush have been better maintained.

Dental hygiene

Almost a third of the plant species used medicinally in Sekenani were employed solely as toothbrush. The species used were mostly fragrant tree and shrub species (*Euclea divinorum*, *Croton dichogamus*, *Phyllanthus sepialis*, *Indigofera brevicalyx*, *I. swaziensis*, *Tephrosia hildebrandtii*, *Olea europaea*, *Grewia similes*, *G. tembensis*).

Malaria

Although malaria treatment is often available at health centers, the traditional use of herbs for the treatment of "malaria and fever" is still common. The cures mostly involve the ingestion of purgative plant extracts, obtained by boiling plant material. In the Sekenani valley the most important species used to treat malaria were *Achyranthes aspera*, *Warburgia salutaris*, *Combretum molle*, *Olea europaea*, *Sporobolus stapfianus*, *Teclea nobilis*, *Toddalia asiatica* and *Cissus quinquangularis*.

Other medicinal uses

Apart from dental hygiene and malaria treatment, only few plant species were employed for treatment of other health conditions. These include "Strengthening of children" (*Ozoroa insignis*, *Cyphostemma serpens*), "Wounds" (*Cynanchum altiscandens*, *Jasminum abyssinicum*, *J. fulminense*, *Solanum incanum*), "Good smell", where plants were burned and the fumes either inhaled or the patient sat exposed to the fumes (*Blepharis stuhlmannii*, *Rhus natalensis*, *Tarchonanthus camphorates*), preparation of strengthening "Soup" for adults, especially with *Tarchonanthus camphorates* and *Combretum molle*, care of for "Stomach problems" (*Ximena americana*, *Sporobolus stapfianus*), preparation of "Traditional tea and beer" (*Croton dichogamus*, *Ochna ovata*, *Osyris lanceolata*), "Skin diseases" (*Osteospermum vaillantii*), "Common cold", which was often seen synonymous to fever and malaria, (*Toddalia asiatica*, *Cissus quinquangularis*), "Chest problems/Pneumonia" (*Rhus natalensis*, *Conyza* sp., *Warburgia salutaris*), "Joint and muscle pain" (*Carissa edulis*, *Craterostigma plantagineum*), "Parasites", which were generally treated by using plant parasites like Mistletoes (*Odontella schimperii*, *Phragmanthera rufescens*), "Circulation" (*Combretum molle*) and "Low spirit / depression", which was treated with a Morning Glory (*Evolvulus alsinoides*).

Venereal disease

Plants for the cure of venereal diseases such as Gonorrhea, Syphilis and others, were almost negligible in Sekenani.

In contrast, plants used to treat STDs were of significant importance in Loita [14].

Fodder

Fodder for domestic animals is of paramount importance in a livestock keeping society. Most plant species used for fodder were addressed by distinct names. It is not surprising that the use for fodder had the highest statistical significance (19%) after medicinal plant use.

A large number of sedges and grasses (most importantly *Cyperus amauropterus*, *C. cyperoides*, *C. obtusifolius*, *C. vestitus*, *Mariscus remotus*, *Rhynchospora elegans*, *Brachiaria brizantha*, *Eragrostis braunii*, *Harpanche schimperii*, *Hyparrhenia hirta*, *Loudetia kagerensis*, *Panicum maximum*, *Rhynchelytrum repens*, *Setaria plicatilis*, *Sporobolus festivus*, and *Urochloa inculpta*) were mentioned as preferred fodder plants. A large number of plant species with high water content were explicitly used for forage during the dry season (*Delosperma nakurense*, *Ipomoea tenuirostris*, *Crassula pentandra*, *Bulbostylis boeckleriana*, *Phyllanthus sepialis*, *Glycine wightii*, *Plectranthus longipes*, *Cissampelos mucronata*, *Acacia hookeri*, *Polygonum salicifolium*, *Grewia bicolor*, *G. tembensis*).

Browsed by wild animals

Species browsed by wild animals had no significance in the Loita study [14]. In striking contrast, almost as many species were named in this category in Sekenani as used for domestic animals. One reason for this distinction might be the fact that many Maasai in Sekenani are involved with game tourism, and thus wildlife may have a higher importance than in Loita.

Ceremonial

Ceremonial plant use is of principal importance in daily Maasai life. Many species have a specific ceremonial significance, generally associated with blessings, age-rites and witchcraft. The most important ceremonial plant was Olive (*Olea europaea*), which was used in all ceremonies, and is thought to bring good luck. Ferns (*Doryopteris concolor*, *Athyrium* sp., and others) were used to bless women.

A wide range of species, most importantly *Asparagus africanus*, *A. falcatus*, *Commelina africana*, *C. benghalensis* and *Cyanotis foecunda*, *Cyperus cyperoides*, were used to bless cows. *C. involucratus*, *Mariscus remotus* and *Lippia javanica*, were used in circumcision ceremonies. *Hibiscus aponeurus*, *Helichrysum gerberaeifolium* played a role in witchcraft.

Construction

Plants are also of vital importance in traditional home construction. Seventeen species were used. In Sekenani, most plants in this category were used to tie the sticks together to frame traditional huts (*Cyperus distans*, *C. pin-*

guis, *Hibiscus calyphyllus*, *Pavonia patens*, *Oplismenus compositus*, *Dombeya burgessiae*, *Grewia bicolor*, *G. tembensis*). The Sekenani Maasai used mostly spiny species for fence construction (*Chaetacme microcarpa*, *Acacia polyacantha*, *Pyrostria phyllanthoidea*). *Hyparrhenia hirta* was used as thatch. The scarce timber was needed as firewood. In contrast, timber was most often used for construction of houses and fences in Loita, due to the closeness to forest [14].

Food

Fourteen plants identified in Sekenani were categorized as food, most importantly *Carissa edulis*, *Cyphostemma serpens*, *Euclea divinorum*, *Erythrococca bongensis*, *Ximena americana*, *Vangueria infausta*, *Grewia bicolor* and *G. tembensis*. The term food was generally used to refer to ripe fruits and berries eaten by women and children.

Weapons

Hardwoods used to produce weapons included *Acalypha volkensii*, *Tinnea aethiopica*, *Albizia gummifera*, *Olea europaea*, *Pyrostria phyllanthoidea*, *Tarenna graveolens* and *Teclea nobilis*. The Sekenani Maasai live a more sedentary life, where defense is much less important than in former times. Carrying spears, swords, clubs (rungus), and sticks, is still culturally important. The typical weapon carried indicates the position of men in life. Spears are normally only carried by warriors (moran), elders carry sticks. Bows and arrows are more commonly seen in young boys. Clubs are virtually carried by every male, from small herding boys to elders. Weapons also still serve an important role in protection from wild animals.

Firewood

Firewood is one of the most important commodities in the region, and the Maasai go to great efforts to collect it. The main species used were either hardwoods, or woods selected for their pleasant smell (*Tarchonanthus camphoratus*, *Euclea divinorum*, *Tinnea aethiopica*, *Albizia gummifera*, *Tarenna graveolens*).

Tools

The use of plants to make tools showed the greatest difference between the Loita and Sekenani Maasai. In the remote Loita region, a large number of plant species were used to make everyday tools. In Sekenani, it is easy to reach main roads and the provincial capital. Therefore Western tools had mostly replaced traditional plant-based tools, and only a few species were still used to make tools.

Veterinary

For both the Sekenani and Loita Maasai, access to governmental veterinary care has vastly reduced the need of plant-based medicines for livestock.

Bees

Honey has an important role in Maasai society⁵. Plant species attractive to bees were thus clearly singled out in Sekenani. Four species were explicitly mentioned as "bee pasture", i.e. very important for honey production (*Barleria grandicalyx*, *Combretum molle*, *Acacia polyacantha*, and an unidentified species).

Conclusion

Sekenani represents a Grassland and Evergreen-Bushland habitat. The data about plant use in these ecosystems give a more complete picture about Maasai plant use by supplementing other studies in the region [13,14] that have mainly focused on the ethnobotanical use of forested areas.

Traditional plant use and knowledge thereof is still essential to the Maasai families living in the Sekenani valley. Judging from the decrease of plants used in traditional tools and in veterinary medicine, it seems that the proximity to main roads, the Maasai Mara National Park and the general exposure to Western influence plant use has declined.

With changes in lifestyle and associated decline of the use of plants, it is the author's fear that Maasai ethnobotanical knowledge might continue to decline. In comparison to older studies, part of the Maasai plant knowledge has already disappeared¹². Studies from the turn of the century registered almost 500 plant species used by the Maasai¹². Since this knowledge is still mostly taught orally, without written record, the loss of knowledge is accelerating.

It is the author's hope that there will soon be an illustrated identification guide for Maasai plant use, best produced in Maa and Kiswahili. The local Maasai are owners of this traditional knowledge, and it would be of great benefit for future generations to have access to this knowledge.

Authors' contributions

All authors share these contributions to the fieldwork of this manuscript. S Mathenge and RW Bussmann identified the plant material. RW Bussmann analyzed the data and RW Bussmann and G. Gilbreath prepared the manuscript.

Declaration of competing interests

The author(s) declare that they have no competing interests.

Additional material

Additional File 1

Plants used by the Sekenani Maasai
Plants used by the Sekenani Maasai

[<http://www.biomedcentral.com/content/supplementary/1746-4269-2-22-s1.doc>]

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Additional file 1: Plants used by the Sekenani Maasai

Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al. [14])	Coll.# RBUGGG
Acanthaceae			
<i>Barleria grandicalyx</i> Lindau	Enkokii	Bees suck flower	137
<i>Blepharis stuhlmannii</i> Lindau	Orkunetiia	Boil plant and wash very young babies for smooth skin; gets rid of babies smell, flower can be sucked for sweet liquid Maundu et al.: same	136
<i>Crossandra nilotica</i> Oliver	Olosida	No use	51/163
<i>Crossandra subacaulis</i> C.B.Clarke	unknown	No use	50
<i>Dyschoriste radicans</i> Kuntze	unknown	No use	59
<i>Hypoestes triflora</i> Roem. & Schult.	Olosida	No use	47
<i>Justicia exigua</i> S. Moore	Olorook Kileleg	No use	22
<i>Justicia flava</i> Vahl.	Olosida	No use	96
<i>Justicia</i> sp.	Olosida	No use	8
<i>Phaulopsis imbricata</i> Sweet	Olosida	No use	99
<i>Thunbergia alata</i> Sims	unknown	No use	62
Adiantaceae			
<i>Doryopteris concolor</i> (Langsd. & Fisch.) Kuhn	Ososian	For women in ceremony, old men use it to bless women	56
<i>Pellea</i> sp.	Enchani Osoitok	No use	28
Aizoaceae			
<i>Delosperma nakurense</i> (Engl.) A.G.J.Herre	Epurda Ontiare	Only used for sheep to eat during dry season	112
Amaranthaceae			
<i>Achyranthes aspera</i> L.	Olekidogo	1. For malaria - remove roots, smash with water, drink, vomit Maundu et al.: fodder, roots boiled against malaria and syphilis	46
<i>Celosia anthelmatica</i> Aschers	Esonkoyo	No use	15
<i>Cyathula uncinulata</i> (Schrud.) Schinz.	Olairepirepi	No use but when pods are dry they can enter the eyes and cause damage	77
<i>Psilotrichum elliotii</i> Baker	unknown	No use	9
Anacardiaceae			
<i>Ozoroa insignis</i> Delile	Olokunonoi	Boil bark and give young children to be healthy	149
<i>Rhus natalensis</i> Krauss	Ormisigiyoi	1. Warriors burn and then put under clothes for good smell; 2. Baboons eat the fruits; 3. Maasai eat the fruit to prevent chest problems Maundu et al.: fruits edible, bark decoction for children as tonic and for stomach problems; leaves used during circumcision; twigs as toothbrush; fuel-wood	29,115
Anthericaceae			
<i>Chlorophytum sparsiflorum</i> Baker	Olagugua	When ready use bulb to seal jerry can Maundu et al.: glue prepared from roots	53

Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al. ¹⁴)	Coll.# RBUGGG
Apocynaceae			
<i>Carissa edulis</i> (Forssk.) Vahl.	Enkamuriaki	1. Eat fruit; 2. For venereal diseases boil root, slaughter a ram and mix meat with the root, boil 2 hrs and eat. 3. Same for back and joint problems: drink liquid from boiling Maundu et al.: edible fruit, latex as chewing gum, roots boiled for gonorrhea, pelvic pain, back ache, fodder	127
<i>Cyphostemma serpens</i> (A. Rich.) Descoigns	Olorodo	Only used by young children, boiled root makes them healthy; however, fruits eaten by everybody Maundu et al.: No use	111
<i>Landolphia buchananii</i> Stapf.	Enchaituryian	No use	75
Asclepiadaceae			
<i>Cynanchum altiscandens</i> K. Schum.	Ormeko Orsage	Bite leaf and put on wound Maundu et al.: young girls wear as ornament, string for building	78
<i>Sarcostemma viminale</i> (L.) R. Br.	Ololei	Poisonous, milk makes you blind when it gets into the eyes Maundu et al.: roots in soup for elders, latex for eye disease	16
Asparagaceae			
<i>Asparagus africanus</i> Lam.	Embereepapa	Wash away spirit of the person who has passed away: put in water and wash yourself, use with olive to sacrifice (drought), then burn Maundu et al.: to clean circumcised boys, as sieve	131
<i>Asparagus falcatus</i> L.	Orkiar Enkure	1. Fruits are on root; 2. Has much water, collect up to 20l; 3. Water tank Maundu et al.: leaves applied to cuts	38,151
Asphodelaceae			
<i>Bulbine abyssinica</i> A. Rich.	Alakuuyoi	The long roots are eaten by Guinea fowls and Baboons	144
Aspleniaceae			
<i>Asplenium aethiopicum</i> (N.L. Burm.) Becherer	Enchani Osoitok	No use	61
Asteraceae			
<i>Ageratum conyzoides</i> L.	Esonkuyo Enkare	Near river, No use	88
<i>Bidens pilosa</i> L.	unknown	No use	74
<i>Bidens</i> sp.	unknown	No use Maundu et al.: leaves and roots for malaria	145
<i>Conyza</i> sp.	Olobaai	1. Put into milk or water to wash goat kids to prevent ticks and flies; 2. Roots: for chest problems, boil in water, drink, then vomit. This cleans the chest; 3. When walking long hold in hand. It is believed that then food will come and that the animals will not see you	129
<i>Conyza sumatrensis</i> (Retz.) E. Walker	Oleturot	No use	89
<i>Crassocephalum picridifolium</i> S. Moore	unknown	No use	87

Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al. ¹⁴)	Coll. # RBUGGG
<i>Gutenbergia cordifolia</i> Oliv.	Nanurdelo	No use, poisonous flower, if it gets into the eye one has to see a doctor Maundu et al.: No use	143
<i>Helichrysum gerberaefolium</i> Sch. Bip. ex Hochst.	Sakutae	Young boys remove root and chew, if spat on someone the person will feel sleepy	161
<i>indet.</i>	unknown	No use	153
<i>Osteospermum vaillantii</i> (Decne.) Norlindh	Eleleshwa Ekop	For skin disease - boil whole plant, then put pot under you and steam, when sweating wash yourself (use OLOMEEI in the same way)	139,170
<i>Tarchonanthus camphoratus</i> L.	Esentyio, Killeleshua	1. Bed - home or bush, has a good smell and protects from bed bugs; 2. Underarms - for smell and if you are tired; 3. Used leaves as soup; 4. Wipe sweat; 5. Good for lighting fire Maundu et al.: inhalation of smoke for headache, dry leaves in water against tapeworm, women and children use leaves against sun, leaves in armpit as perfume, leaves used as towel, twigs for arrows, firewood, construction	142
<i>Vernonia lasiopus</i> O. Hoffm.	unknown	No use	138
Canellaceae			
<i>Warburgia salutaris</i> (Bertil. f.) Chiov.	Osokonoi	Against malaria and stomach ache. Put bark in cold water for 5 minutes, filter and drink Maundu et al.: ground bark as emetic, for malaria and pneumonia; bark with fat given to mothers for easy delivery; bark for medicine against cold, stomachache, respiratory disorders, fever; fruits edible; timber; NOT firewood	108
Capparidaceae			
<i>Capparis fascicularis</i> DC.	Enkaturdei	All parts poisonous Maundu et al.: root ground and mixed with buffalo horn against enemies, to bewitch others	13
<i>Maerua triphylla</i> A. Rich.	Enkamoloki	No use Maundu et al.: fodder	41
Combretaceae			
<i>Combretum molle</i> G. Don.	Ormaroroi	1. Root good for making soup; 2. Slaughter bull and make soup. This prevents malaria and circulatory problems; 3. Flowers are good for bees Maundu et al.: bark decoction as beverage, roots for backache, pelvic pains, gonorrhea, firewood	126
Commelinaceae			
<i>Commelina africana</i> L.	Enkaieieyia	Used to treat cows. Only used by special old men. These put magic and then place where cows pass	4
<i>Commelina benghalensis</i> L.	Enkaieieyia	Used to treat cows. Only used by special old men. These put magic and then place where cows pass Maundu et al.: for coughs and colds, spathe liquid against female infertility, female cleansing, fodder	30,148

Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al. ¹⁴)	Coll.# RBUGGG
<i>Cyanotis foecunda</i> DC. ex Hassk.	Enkaieieyia	Used to treat cows. Only used by special old men. These put magic and then place where cows pass	27
Commiphoraceae			
<i>Boscia angustifolia</i> A. Rich	Oloireroi	No use Maundu et al.: same	110
Convolvulaceae			
<i>Ecolvulus alsinoides</i> Willd.	unknown	No use	171
<i>Ipomoea cairica</i> (L.) Sweet	Olosida	No use	97
<i>Ipomoea tenuirostris</i> Choisy	Olopitaq / Olopito	1. Eaten by goats and sheep when flower is in fruit; 2. For young Maasai girls to use for tying together a hut	70,94
<i>Ipomoea wightii</i> (Wall.) Choisy	Enkaisurutiai	No use Maundu et al.: fodder	7,52
Crassulaceae			
<i>Crassula pentandra</i> Schoenland	Ormairo Giro	Found in the plains, sheep eat this during dry season as it does not dry out, gives them water	162
<i>Kalanchoe lanceolata</i> Pers.	Ekidosi	Children play removing leaves and bark to make something like a syringe	26
Cucurbitaceae			
<i>Zehneria scabra</i> Sond.	Enkasirarai	No use	85
Cyperaceae			
<i>Bulbostylis boeckleriana</i> (Schweinf.) Beetle	Eseat	Eaten by cows, sheep and buffalo	155,165
<i>Cyperus amauropus</i> Steud.	Enkurba Seai	1. Guinea fowl, Francolin, Vervet and Baboons eat roots; 2. Cows eat stems; 3. Children play with parts of root, parents teach	164
<i>Cyperus circumclusus</i> (C.B. Clarke) Schweinf.	Enkonyou	Eaten by cows, sheep and buffalo	34
<i>Cyperus cyperoides</i> (L.) Kuntze	Eseyiia	1. Fodder for domestic animals; 2. Place on side before crossing water when being circumcised; 3. Shows that you don't drink water because you drink only milk and juice when circumcised	35
<i>Cyperus distans</i> L.f.	Oseyiai	1. Joining sticks; 2. Eaten by elephants	80
<i>Cyperus involucratus</i> Rottb.	Olaimutai	Ceremonial, age rites, men use it to bless special boys during circumcision	104
<i>Cyperus obtusifolius</i>	Enkonyou	Eaten by cows, sheep and buffalo	32
<i>Cyperus pinguis</i> (C.B. Clarke) Mattf. & Kuek.	Oseyiai	1. Joining sticks; 2. Eaten by elephants	73
<i>Cyperus vestitus</i> Hochst. ex Krauss	Enkonyou	Eaten by cows, sheep and buffalo	33
<i>Mariscus remotus</i> C.B. Clarke & C.B. Clarke	Eseyiia	1. Fodder for domestic animals; 2. Place on side before crossing water when being circumcised; 3. Shows that you don't drink water because you drink only milk and juice when circumcised	37
<i>Rhynchospora elegans</i> Kük.	Olopitaq	1. Eaten by goats and sheep when flower is in fruit; 2. For young Maasai girls to use for tying together a hut	140
Dryopteridaceae			
<i>Athyrium</i> sp.	Ososian	For women in ceremony, old men use it to bless women	68
<i>Ceterach cordatum</i> (Thbg.) Desv.	unknown	No use	60

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Ebenaceae			
<i>Euclea divinorum</i> Hiern	Enkiyei	1. put meat on top of leaves to keep moist for 1-2 days; 2. Toothbrush; 3. Eat sweet berries; 4. Firewood Maundu et al.: roots boiled against malaria, tanning of leather, fruits edible, anthelmintic	23
Euphorbiaceae			
<i>Acalypha volkensii</i> Pax	Esiaeti/Esiati	Arrows	44,91
<i>Bridelia micrantha</i> Baill.	Odapashi Ebenek	No use	100
<i>Chaetacme microcarpa</i> Rendle	Ontirkish	Fencing	39,98,105
<i>Croton dichogamus</i> Pax	Olokidigai	1. Toothbrush; 2. Leaves used for Maasai beer; 3. Root flavors meat and gives strength	43
<i>Erythrococca bongensis</i> Pax	Nkayakug	Young children eat the fruit and like it very much Maundu et al.: walking sticks	135B
<i>Phyllanthus sepialis</i> Müll.Arg.	Esampu Keke	1. Toothbrush; 2. Eaten by goats and impala	24
<i>Sapium ellipticum</i> Pax	Enchaituryian	No use	82
Fabaceae			
<i>Desmodium salicifolium</i> Mart. ex Benth.	Odapashi Ebenek	No use	90
<i>Dolichos oliveri</i> Schweinf.	unknown	No use	141
<i>Glycine wightii</i> (Wight & Arn.) Verdc.	Olopito	1. Eaten by goats and sheep when flower is in fruit; 2. For young Maasai girls to use for tying together a hut	132
<i>indet.</i>	Etuwala	Teas are used as rattle, don't eat!	154
<i>Indigofera brevicalyx</i> Baker f.	Enchanai Okiken	Toothbrush when it is big	118
<i>Indigofera swaziensis</i> Bolus	Emeim	Toothbrush Maundu et al.: construction, fodder	116
<i>Indigofera volkensii</i> Taub.	Enkameriruni	No use	159
<i>Tephrosia hildebrandtii</i> Vatke	Enchanai Okiken	Toothbrush when it is big	113
<i>Tinnea aethiopica</i> Hook. f.	Nebae	Used to make arrows and fire sticks Maundu et al.: leaves against eye infections, ground with buffalo horn	114
Hyacinthaceae			
<i>Bowiea kilimandscharica</i> Mildbr.	Erpsia Lonkonoi	Use as strainer to filter soup	119
Hypoxidaceae			
<i>Hypoxis obtusa</i> Burch.	Enkamalasai	Tuber used by children to make toy calabashes Maundu et al.: <i>Hypoxis angustifolia</i> Lam. Used for same	128
Lamiaceae			
<i>Aeollanthus stormsii</i> Gürke	Ormairo Giro	No use	124
<i>Fuerstia africana</i> T.C.E.Fr.	Oloitodor Enkai	1. Children remove leaves and chew like tobacco; 2. Produces red color for decoration	12
<i>Leonotis nepetifolia</i> (L.) R. Br.	Orbibi	1. Birds like to suck flower, bird has same name as plant Maundu et al.: children suck nectar	157
<i>Orthosiphon somalensis</i> Vatke	Ormitaa	No use	21
Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al.¹⁴)	Coll.# RBUGGG

<i>Plectranthus longipes</i> Baker	Ormairo Giro	Found in the plains, sheep eat this during dry season as it does not dry out, gives them water	83,121
Liliaceae			
<i>Trachyandra saltii</i> (Baker) Oberm.	Aikuo	The long roots are eaten by Guinea fowls and Baboons	133
Loranthaceae			
<i>Odontella schimperi</i> Tiegh.	Ormegaru Keon	Against parasites in pregnant women, use leaf, burn, smash it up, then lick a little bit, this helps women to not breath so heavy	5
<i>Phragmanthera rufescens</i> (DC.) Balle	Ormegaru Keon	Against parasites in pregnant women, use leaf, burn, smash it up, then lick a little bit, this helps women to not breath so heavy	19
Malvaceae			
<i>Hibiscus aponeurus</i> Sprague & Hutchinson	Enkarani	1. Grows straight but can not be used as cow stick because cows will die; 2. Used as stick to curse	117
<i>Hibiscus calyphyllus</i> Cav.	Osukupai Naibor	1. Joining sticks; 2. Eaten by elephants	72
<i>Pavonia patens</i> (Andr.) Chiov.	Osupukai	To join sticks Maundu et al.: root against diarrhea	152
Meliaceae			
<i>Turraea bombassana</i> C. DC.	unknown	No use Maundu et al.: toothbrush, against dysentery, roots emetic, construction	122
Menispermaceae			
<i>Cissampelos mucronata</i> A.Rich.	Olopitaq/Olopito	1. Eaten by goats and sheep when flower is in fruit; 2. For young Maasai girls to use for tying together a hut	49,92
Mimosaceae			
<i>Acacia hookeri</i> Meisn.	Enchardalani	1. Elephants and goats eat plant; 2. Bark is used for constructing a home; 3. Eat bark to prevent stomach ache	174
<i>Acacia polyacantha</i> Willd.	Orkigiro	1. Fencing the village because has good thorns; 2. Eaten by elephants and goats; 3. Bees use plant	173
<i>Albizia gummifera</i> (J.F. Gmel.) C.A. Sm.	Osupakupe	1. Strong tree, makes strong stick for ceremonies and walking; 2. Spears; 3. Bark for fire Maundu et al.: fodder, timber, NOT as firewood	2
Moraceae			
<i>Ficus sur</i> Forssk.	Odapashi Ebenek	No use	102
Ochnaceae			
<i>Ochna ovata</i> F. Hoffm.	Olodo Ganayioi	1. Use leaves and bark for tea; 2. Fruit eaten by baboons Maundu et al.: construction	120
Olacaceae			
<i>Ximena americana</i> L.	Lamania	1. Ripe fruit eaten; 2. Boil branch for the young to drink, this is good for digestion Maundu et al.: fruit edible; roots in soup or tea for health	40
Oleaceae			
<i>Jasminum abyssinicum</i> DC.	Ormeko Orsage	Bite leaf and put on wound Maundu et al.: No use	25
Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al.¹⁴)	Coll.# RBUGGG
<i>Jasminum fluminense</i> Vell.	Ormeko Orsage	Bite leaf and put on wound	84,169

<i>Olea europaea</i> ssp. <i>africana</i> (Mill.) P. Green	Olorien	1. Toothbrush; 2. Ceremonies - age to elder rites, use to make sacrifice (big fire); 3. Making rungus; 4. Spear handles; 5. Calf: boil and give to drink, this kills worms; 6. Mix with SOKONOI (green hut) this cures malaria, drink half liter; 7. Boys circumcision - put on house as sign Maundu et al.: outer bark medicine for stomach upset, bark against colds, pneumonia, anthelmintic; fuel-wood; cleaning calabashes; rungus; sticks; ceremonial plant	168
Plumbaginaceae			
<i>Plumbago zeylandica</i> L.	Orgeyiantus	1. Girls use to decorate: take sheep urine and mix together, make small cuts around eyes and rub in; 2. Mash together and express to make bigger marks Maundu et al.: No use	156
Poaceae			
<i>Brachiaria brizantha</i> Stapf	Ormaguitian	Fodder for domestic animals	95
<i>Eragrostis braunii</i> Schweinf.	Empiris	Eaten by domestic animals	36
<i>Harpachne schimperi</i> Hochst.	Orioaraan	Eaten by livestock, when dry spikes can get into animals eyes	6
<i>Hyparrhenia hirta</i> (L.) Stapf	Orpesi Orasha	Eaten by domestic animals, for roofing	79
<i>Loudetia kagerensis</i> (K.Schum.) C.E.Hubb.	Enkujit	Eaten by cows, sheep and buffalo	146
<i>Oplismenus compositus</i> (L.) P.Beauv.	Empalakai	To join sticks	66
<i>Panicum maximum</i> Hochst. ex A.Rich.	Olmrisi	Eaten by animals	31
<i>Rhynchelytrum repens</i> (Willd.) C.E.Hubb.	Enkonyou	Eaten by cows, sheep and buffalo	165
<i>Setaria plicatilis</i> Hack. ex Engl.		Fodder	55
<i>Sporobolus festivus</i> Hochst. ex A.Rich.	Enyoil	Eaten by cows, sheep and buffalo	167
<i>Sporobolus stapfianus</i> Gand.	Enkonyoyo	Against malaria and stomach ache. Put bark in cold water for 5 minutes, filter and drink	109
<i>Urochloa inculpta</i> Stapf	Enoporori	Fodder for domestic animals	93
Polygonaceae			
<i>Polygonum salicifolium</i> Willd.	Enkujiria	Fodder for domestic animals	86
Rhamnaceae			
<i>Helinus mystacinicus</i> (Ait.) Steud.	unknown	No use Maundu et al.: root decoction mixed with animal fat for gonorrhea	67,76
Rubiaceae			
<i>Pentania ouranogyne</i> S.Moore	Elauo Ekop	No use	150
<i>Pyrostria phyllanthoidea</i> (Baill.) Bridson	Enkogo Olntim	1. Use for fencing when a big tree; 2. Use for making rungus	123
<i>Vangueria infausta</i> Burch.	Orgomei	1. Fruit eaten by baboons, monkeys, humans and especially children	81
Rutaceae			
<i>Tarenna graveolens</i> (S. Moore) Brem.	Ormasei	1. When dry good firewood; 2. Good for rungus Maundu et al.: No use	3,45
Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al.¹⁴)	Coll.# RBUGGG
<i>Teclea nobilis</i> Del.	Ogrilai	Toothbrush, making rungus Maundu et al.: sticks	106

<i>Toddalia asiatica</i> (L.) Lam.	Oleparmunyo	Against common cold, malaria and all other diseases: boil whole plant or make cold-water infusion Maundu et al.: roots and leaves against malaria	57
Santalaceae			
<i>Osyris lanceolata</i> Hochst. & Steud.	Olosesai	Remove bark, place on sand to dry, then mix with tea. Makes a very good tea for young and old	147
Sapindaceae			
<i>Allophylus abyssinicus</i> Radlk.	Onchani Orok	No use Maundu et al.: same	71
<i>Dodonaea angustifolia</i> L.f.	Enchani Enkashe	When you have migrated from one place to another and you come back to the first place put the branches at the gate. This shows that the cows have come back	130
<i>Dovyalis abyssinica</i> (A. Rich.) Warb.	Olekiku	No use Maundu et al.: Roots for soup, gonorrhea, fruits eaten	107
Scrophulariaceae			
<i>Craterostigma plantagineum</i> Hochst.	Enkorika Emotionyi	When you have pain on sides of body boil and drink 2 cups, also for back pains	1,48
<i>Evolvulus alsinoides</i> (L.) L.	Leleswa Ekopo	1. Boil and wash yourself when spirit feels bad; 2. Add to fire for sacrifice Maundu et al.: No use	160
<i>Striga asiatica</i> (L.) Kuntze	unknown	No use	172
Solanaceae			
<i>Solanum incanum</i> L.	Entulelei	1. fruits put in wounds for tiny marks, 2. when you have concussion/swelling make small cuts and crush yellow fruit and rub into small cuts Maundu et al.: juice of fruit applied to boils and cuts, roots boiled for tooth and throat problems	101,134
Sterculiaceae			
<i>Dombeya burgessiae</i> Gerrard	Osupukai	1. Bark used for joining houses; 2. Rub leaves when hands are dirty Maundu et al.: strings for construction	63,65
Tiliaceae			
<i>Grewia bicolor</i> Juss.	Esiteti	1. Eaten by goats and cows, must NOT be cut for animals; 2. Bark used to join sticks; 3. Toothbrush; 4. Eat ripe (red) fruit	11,18
<i>Grewia similis</i> K. Schum.	Enyalugai	1. Making sticks; 2. Toothbrush Maundu et al.: bark for cattle that ate bicarbonate, bark used to wash hair of moran before plaiting, stems for rope in construction, sticks, edible fruit, fodder	42
<i>Grewia tembensis</i> Fresen.	Esiteti	1. Eaten by goats and cows, must NOT be cut for animals; 2. Bark used to join sticks; 3. Toothbrush; 4. Eat ripe (red) fruit	14
<i>Triumfetta rhomboidea</i> Jacq.	Olairepirepi	No use but when pods are dry they can enter the eyes and cause damage, fruits stick on clothes	103
Family / Scientific name	Indigenous name	Use and parts used (in bold uses reported by Maundu et al.¹⁴)	Coll.# RBUGGG
Verbenaceae			

<i>Lippia javanica</i> Spreng.	Osinoni	Ceremonial - circumcision, put on patients bed afterwards, for good smell, sniff leaves for common cold, eaten by goats	135A
<i>Priva curtisiae</i> Kobuski	Elauo Ekop	No use	10
Vitaceae			
<i>Cissus rotundifolia</i> Vahl	Esutai	No use	20
<i>Cissus quinquangularis</i> Chiov.	Osukutut	No use, latex allergenic	17
Indet. (unidentified)			
indet.	Enkamererwani	Against common cold, malaria and all other diseases: boil whole plant or make cold-water infusion	58
indet.	Enkiyei	1. put meat on top of leaves to keep moist for 1-2 days; 2. Toothbrush; 3. Eat sweet berries; 4. Firewood	69
indet.	Enkokii	Bees suck flower	158
indet.	Edalakai	Used by weaver birds to build nests, eaten by cows and buffalos	54B
indet.	Ososian	For women in ceremony, old men use it to bless women	54
indet.	unknown	No use	125