

Woodlands and Livelihoods of African Pastoralists: The Maasai of Kajiado, Kenya

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ABSTRACT A survey study was conducted in Kajiado district, Kenya to document families and species of woody vegetation important in the livelihood systems of the Maasai. Data was collected from a total of 150 pastoralists comprising of the youth (<30 years), middle-aged (31-50 years), and elderly (>51 years) age groups. The study revealed six key roles of woody vegetation, i.e. medicinal, environmental signals, homestead and corral fencing, woodfuel, livestock fodder, and poisons to livestock. For each category, the most common families and species of woody plants were reported.

INTRODUCTION

In the past, scientists, resource managers and development workers did not acknowledge the role and significance of pastoral indigenous knowledge in resource management and livelihood systems. They viewed indigenous knowledge as primitive, backward, and of no value to management and development. However, within the past fifteen or so years, there has been a shift in this paradigm. It has increasingly become apparent that pastoralists possess knowledge about the environment they live in, and how they can sustainably interact with the biotic components in order to better their livelihoods. The 1992 earth summit in Rio de Janeiro articulated the significance of traditional practices and knowledge of local communities in sustainable use of biological resources, and how when recognized and fostered, indigenous knowledge can augment conventional and scientific efforts.

Pastoral knowledge is based on generations-long experience with their surroundings. The context of the knowledge lies in the local environment, in all its cultural, social, economic, and physical aspects. The creativity and resourcefulness of pastoral communities is dictated by the need to meet the challenges of ever changing local conditions. This has made pastoral knowledge to be dynamic based on flexibility and

diversity.

One aspect of pastoral indigenous knowledge that makes it unfamiliar to scientists is its oral nature. The knowledge is not systematically documented, and is usually passed from generation to generation through oral means. However the case, it remains a key tool for understanding man-environment interaction, and thus an avenue for fostering sustainable natural resource management. It is less expensive, readily available, environmentally familiar and has proven record of effectiveness.

Indigenous knowledge on natural resources, in general, is picked through at least three avenues. First there is the accumulated cultural knowledge passed down from generation to generation. Secondly, there is knowledge modified through contact with other cultures, and thirdly, progressive learning of the environment (Niamir, 1990; Knight, 1974). In any community therefore, the amount of indigenous knowledge held will vary with age, sex, aptitude, economic, and social class.

From the aforementioned, it is rational to integrate indigenous knowledge when formulating interventions and strategies for pastoral livelihood systems. Currently, there exists paucity of information on the role of pastoral indigenous knowledge relevant to livelihood systems, especially in Eastern Africa. This study was conducted with an overall objective of documenting the role of woody vegetation in the livelihood systems of Maasai pastoralists.

METHODOLOGY

This study was conducted in Kajiado district, Kenya over a one-year period. The district is classified as arid and semi-arid with pastoralism as the main economic activity. Data was collected from a total of 150 pastoralists using semi-structured questionnaires. The pastoralists were grouped into three age groups, i.e. youth (<30

years), middle-aged (31-50 years) and elderly (>51 years). Each member of every age group was consistently guided through the questionnaire being asked to give any knowledge of any functions of woody species in any aspect of their day-to-day life. Data from the three age groups was compiled in order to identify the key livelihood components associated with woody plants as well as plant families and species involved. Due to the large number and variety of functions, families, and species of woody vegetation reported, only those reported by more than 50 % of the respondents are published in this paper. Representative pastoralists from each category were randomly selected to assist with the identification of plants and reconfirmation of data collected.

RESULTS AND DISCUSSION

To Maasai pastoralists, woody vegetation presents a resource with multiple uses and utilities. The special value of trees and shrubs to the pastoral Maasai is probably linked to certain notions of Maasai creation myths. The pastoral Maasai believe that 'sky' and 'earth' were once one, and it was during the time of their separation that the Maasai acquired their cattle. These were said to have been let down to them from the sky by means of a rope made from the bark of a tree (*Ficus natalensis*) (Sindiga, 1994). The pastoral Maasai thus closely associate themselves with woody vegetation.

A variety of plant families and species were identified during the study, which have multiple roles in the Maasai livelihood system. From the data collected, six key livelihood functions of woody vegetation were apparent:

(i) Medicinal Value

Plant Family	Identified Species
• Solanaceae	<i>Solanum incanum</i>
• Leguminosae	<i>Acacia mellifera</i> <i>Albizia amara</i> <i>Acacia nilotica</i> <i>Albizia anthelmintica</i>
• Salvadoraceae	<i>Salvadora persica</i>
• Combretaceae	<i>Terminalia brownii</i>
• Apocynaceae	<i>Carisa edulis</i>

Traditional medicine is deeply rooted in Maasai culture. It is based on their intensive knowledge of ethnobotany (Sindiga, 1994; Jacobs, 1963). In traditional Maasai society,

herbal medicines are used both in human and livestock treatment. Drugs are derived from trees and shrubs. The bark or roots are then boiled and mixed with fatty soup to make medicine. Some diseases such as bovine pleuro-pneumonia, malignant catarrh fever in livestock, and eye diseases, pregnancy disorders, fever, and painful joints in human were treated using concoctions derived from plants. So pervasive was traditional medicine that warriors going to war were given excitants. For example *Acacia tortilis* was taken as an excitant and to prevent hunger and thirst during war (Sindiga, 1994).

(ii) Environmental Indicators

Plant Family	Identified Species
• Leguminosae	<i>Acacia drepanolobium</i> (frequently water-logged soils) <i>Acacia xanthophloea</i> (high water table) <i>Acacia stuhlmanii</i> (overgrazed range) <i>Acacia tortilis</i> (greening of leaves in dry season indicates rains about to come)

Knowledge of their surroundings forms an important element of pastoral survival. Natural indicators and early warning signals can determine whether pastoralists make the right decision or not, timing of activities e.g. movement, or even the severity of expected seasons. All such indicators have a direct effect on their main source of livelihood, that is livestock.

(iii) Homestead and Corral Fencing

Plant Family	Identified Species
• Tiliaceae	<i>Grewia bicolor</i> <i>Grewia temberensis</i>
• Leguminosae	<i>Acacia mellifera</i> <i>Acacia nilotica</i> <i>Acacia senegal</i> <i>Pterelobium stellatum</i>
• Bursaraceae	<i>Commiphora africana</i>

Fencing of homesteads and livestock corrals provides physical security, both to humans and livestock. Pastoral communities often face the danger of attack by livestock raiders and wild carnivores. Some woody species e.g. *Acacia mellifera* are famous for their protection when

used for fencing of homesteads and livestock corrals. Physical security, especially at night is an important aspect of pastoral livestock herding. This is particularly critical for the lactating cows and their calves, sheep and goats.

(iv) Wood Fuel

Plant Family	Identified Species
	<i>Terminallia brownii</i>
	<i>Terminalia brownii</i>
• Leguminosae	<i>Acacia nilotica</i>

It is becoming increasingly common for pure pastoralists to supplement their pastoral diets consisting of mainly milk, with purchased foodstuffs. This becomes common during times of drought. During such times, over-harvesting of vegetation could easily occur due to the volume of wood material needed. However, pastoralists identify species that have desirable burning characteristics such as slow burning hot flame. Further, they lop the trees rather than cut the whole individual during wood fuel harvesting. When the rains come, the lopped trees rapidly coppice thereby replenishing the wood fuel stock.

(v) Livestock Fodder

Plant Family	Identified Species
• Leguminosae	<i>Acacia tortilis</i>
	<i>Acacia seyal</i>
	<i>Albizia amara</i>
• Tiliaceae	<i>Grewia bicolor</i>
• Balanitaceae	<i>Balanites glabra</i>

Balanites Aegyptiaca

In purely pastoral systems, the dry season presents a great challenge both to livestock and humans. Pasture is scarce and of low quality (Karue, 1974; 1975; Migongo-Bake, 1984; Ekaya, 1991) and livestock production declines due to low nutrient intake and water scarcity. During this time, tree and shrub foliage remains green longer into the dry season (Ekaya, 1991), thus providing high quality browse to herbivores. Tree seedpods supply protein, phosphorus and carotene to animal diets, when the quality of herbaceous forage drops dramatically (Coppock et al., 1987; Le Houerou, 1989; Ekaya, 1991). Parts of wild wood plants, especially fruits supplement human diets.

(vi) Poisonous Plants

Plant Family	Identified Species
• Solanaceae	<i>Datura stramonium</i>
• Apocynaceae	<i>Akocanthera schimperi</i>
• Thymelaeaceae	<i>Gnidia latifolia</i>

Pastoral grazing lands are scattered with plants that are poisonous to both livestock and humans. Poisoning frequently occurs during periods of forage scarcity, when grazing animals have limited forage selection latitude particularly during the dry season. Through experience, pastoral communities easily identify plants that are poisonous, thus minimizing livestock losses.

The above functions of woody vegetation, though not exhaustive, clearly illustrate the close linkage between trees, shrubs and the livelihood systems of pastoralists. From a purely ecological point of view, trees and shrubs play a central role in the structure and function of arid land ecosystems. The deep roots of trees and shrubs provide access to soil water during dry seasons and droughts. Foliage of woody vegetation therefore remains green longer than grasses thus becoming a source of high quality feed to herbivores and much needed shade for animals and people during the heat of the day (Coughenour et al., 1985; Galvin, 1985). Further, tree shade delays the drying up of understory herbaceous vegetation during dry periods (Tolsma et al., 1987). Tree understory soils have higher fertility and moisture (Maranga, 1986; Belsky et al., 1989) and often support different species composition of herbs that are both more productive and nutrient-rich than those in tree-shade gaps (Tolsma et al., 1987; Belsky et al., 1989).

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