

Full Length Research Paper

Ethno-botanical survey of the non-timber forest products in Sapele Local Government Area of Delta State, Nigeria

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An ethno-botanical survey of the non-timber forest products (NTFPs) in Sapele Local Government Area of Delta State, Nigeria was carried out in 2008 with a view to determining the usefulness of the resources to farmers in peasant subsistence. A total of 150 useful species of both plant and animal origins was recorded as having various applications in the lives of the rural dwellers in the area. The result showed that NTFPs in Sapele LGA of Delta State has varying use categories as medicine (76), food (41), local construction (20), and crafts (8) as well as other uses (5) including, income generation socio-cultural and environmental values. The study has also demonstrated that, the people in the area collect these resources daily and many regard in selling them as a means of earning a living.

Key words: Non-timber forest products, ethno-botany, peasant subsistence.

INTRODUCTION

Non-timber forest products (NTFPs) are wild plant and animal products harvested from forests, such as wild fruits, vegetables, nuts, edible roots, honey, palm and medicinal plants, poisons snails and bush meat (Andel, 2006). Andel (2006) further maintained that, millions of people especially those living in rural areas in developing countries including Nigeria collect these products daily and many according to Sale (2006); Shomkegh et al. (2008) regard selling as a means of earning a living.

The NTFPs are also described as the Non-wood forest products (NWFPs) by the FAO (1995); FAO (2001) which include all goods or items of biological origin as well as services derived from forest or any land under similar use, and exclude wood in all its forms. They also refer to all the resources other than industrial round wood and described sawn timbers, wood chips, wood based panels and pulps that way, been extracted from forest ecosystem and utilized within the household or are marketed or have social-cultural or religious significance (Tee and

Amonum, 2008). Olafide (2003) maintained that among the diverse valuable non-timber resources of natural forest are edible and highly nutritious medicinal fruits, seeds, leaves, twigs, nuts bark roots, rattans, gum, latex and dyes. Agbogidi and Okonta (2003) stated that a large proportion of rural population earn their livelihood from the collection or extraction and sales of NTFPs thereby improving the quality of life and standard of living of rural population living near forestlands. NTFPs range from being used as food or food additives (nuts), as plant materials (fibre, creepers and flowers), plant derivation (raffia bamboo rattan, cork and essential oil to animals (such as snails) and animal products (honey, silk).

There is a direct link between forests, their products and household food security (Adeokun et al., 2002). The wide range of edible products available in the wild fruit trees include among others nuts and seeds used as food supplements, condiments, thickening agents, and flavours, relish, leaf vegetable, fresh fruits, fresh seeds, edible oil, spices, fruit drinks, non alcoholic beverages and alcoholic drinks (FORMECU, 1999). Etukudo (2000) noted that forests constitute important and cheap sources of vitamins, minerals, proteins, carbohydrate and fats and their contribution to human diets is immeasurable. The

Abbreviations: NTFPs, Non-timber forest products; NWFPs, non-wood forest products.

dietary contribution of forest trees to improved nutrition status of mankind is further enhanced by the timing of their availability which often falls at strategic period of general food shortage particularly in Nigeria (Agbogidi and Ofuoku, 2007).

Ethno-botany is a vital approach in the study of natural resources management of an indigenous people and can be summed up in four words: the people, plants, interaction and uses (Aliyu, 2006). NTFPs are wild plants and animal products harvested from forests, savannahs and other natural vegetation types (Anamayi et al., 2006). NTFPs are highly variable in components, and quantities and locations (Idumah et al., 2008). NTFPs according to FAO (2003) consist of goods of biological origin other than wood, derived from forests; other wooded land and trees are outside forests. Farmers and other inhabitants' possess appreciable indigenous knowledge arising from their long utilisation of NTFPs, how plants and wild animals are used, their distribution, classification and identification in the ecosystem. Ethno-botanical studies also provide valuable insight into the potential uses of species (Aliyu, 2006; Olufemi and Akinlosutu, 2006; Shomkegh et al., 2008).

Estimates are done by the World Health Organisation showed that 80% of the people living in developing countries use wild plants to meet some of their health and nutritional need. Life would be virtually impossible for most people living in rural areas in developing countries without the availability of palm leaves for roof thatch, medicinal plants and natural fibres to construct baskets and fish traps.

The extraction, processing and trading of NTFPs is often the only employment available for the population in remote rural areas (Andel, 2006). There is however, paucity of information on the ethno-botanical survey of the non-timber forest products in Sapele Local Government Area of Delta State.

These areas have the highest forestry activity in the state. This study therefore, typically evaluated the ethno-botanical survey of the NTFPs in Sapele Local Government of Delta State, Nigeria with a view to determined the usefulness of the resources to the farmers in peasant subsistence in Sapele area residents, other households, companies across other states in Nigeria as well as other similar regions in the developing world in general.

MATERIALS AND METHODS

The study was carried out in four sites within Sapele Local Government Area of Delta State. Sapele lies between latitude 8°14'N and longitude 8°45'E and has an area of 387 km² (Delta State Ministry of Lands and Surveys, 2008).

The study was demarcated into four zones namely Sapele North, Sapele South, Sapele East and Sapele West. A sampling village was randomly selected in each of the zones. The selected villages were Elume (Sapele North), Ugwadja (Sapele South), Eko (Sapele East) and Ajamukaruwa (Sapele West).

The ethno-botanical survey was carried out through the use of semi-structured questionnaires administered to 180 active users of

forest products (hunters, women, young people, herbalists, snail sellers, and sculptors). In each village, all NTFPs were collected and assembled while the questionnaires were used to elicit responses and information on uses and the parts used in each species while each piece of information was documented. Data collected were subjected to descriptive and inferential statistics using frequency counts and percentages.

RESULTS AND DISCUSSION

A total number of 150 species of NTFPs in different families with varying applications to the local residents was surveyed, Figure 1 indicated that 76 species are used for the treatment of various ailments by herbalists, 41 for food (as edible plants and vegetables, as condiments and as food additives), 20 for local construction purposes, 8 for crafts and 5 for other uses (Figure1).

Forest dwellers have been described as exploiters or extractors of NTFPs and almost totally live on the resources of the forest (FAO, 2001). The NTFPs play a major role in conservation of the forests woodlands in enhancing rural welfare and in supplying urban and industrial markets as well as the inputs for rural and urban economics (Adeokun et al., 2002). Against timber exploitation, the exploitation of NTFPs impacts very small perturbation and degradation on the ecosystem as its recuperation is very fast after extraction (Adeokun et al., 2007).

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NTFPs as food

As shown in Table 1, NTFPs species are used as food in the form of wild fruits, vegetables, and nuts, edible roots, as bush meat, snails, edible insects and honey.

Others are used as food additives in form of spices, flavourings, and food colourants and as fermentation agents, various animal foods such as fodder for livestock, straw, baits to catch animals and bee plants. Similar reports on the use of NTFPs as food and food condiments have been made by Andel (2006); Jimoh and Haruna (2007); Tee and Amonum (2008). Other edible food materials found in the forest include insects, rodents, wild game and fish and these have been found to have superior nutritional quality, when compared with domesticated varieties.

Besides, processed and stored forest food products help to insure a year round food supply (Jimoh and Adebisi, 2005). Jimoh and Adebisi (2005) maintained that NTFPs include a vast number of edible and no edible products gathered from the forest by forest edge people or a team of urban people for subsistence or for local and external trade.

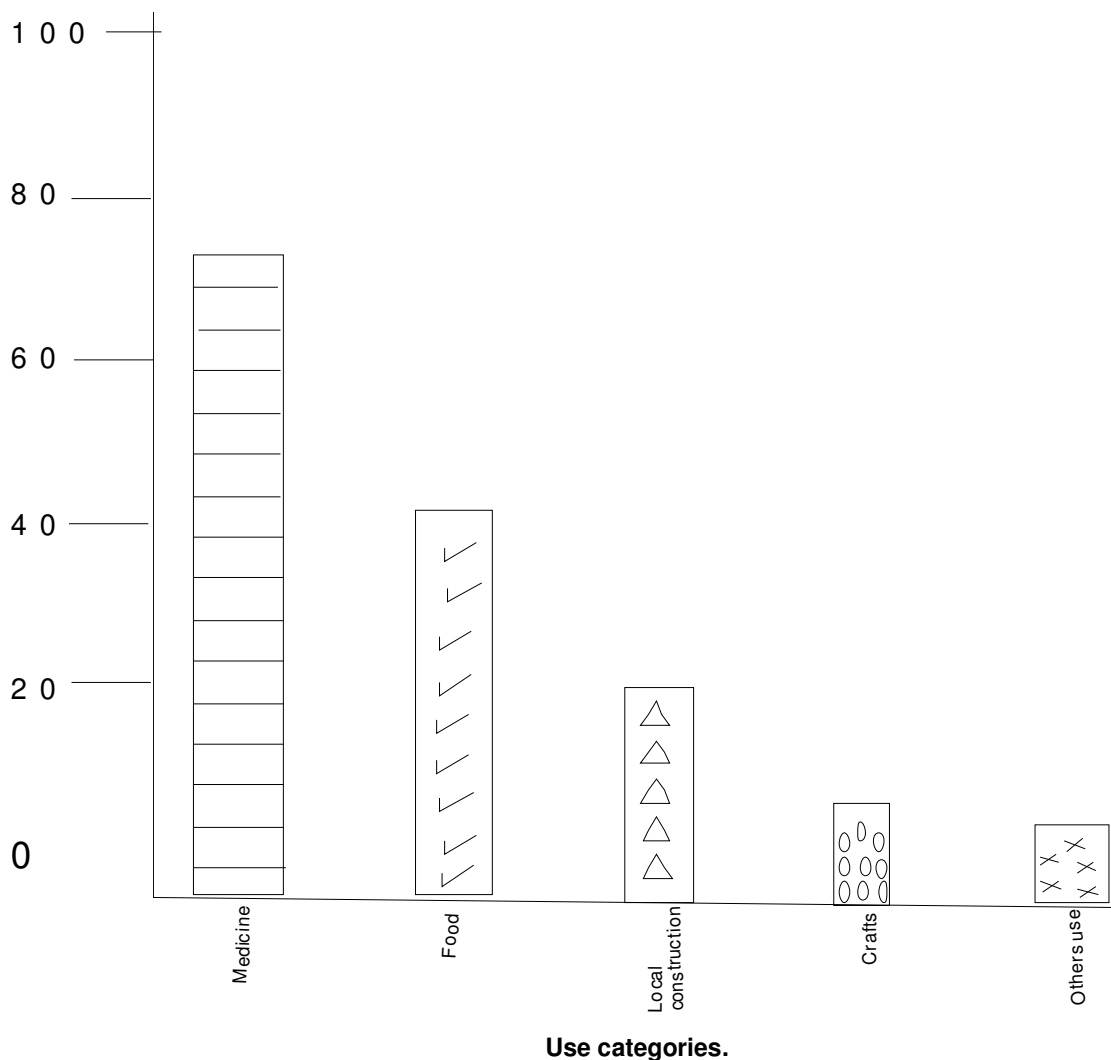


Figure1. Non-timber forest products species in Sapele L. G. A of Delta State, Nigeria and their use categories.

NTFPs for medicinal use

Various NTFPs species (76) have medicinal value for the treatment of various ailments including the treatment of stomach aches, cut/wounds, diarrhoea, ulcer and others. The roots, seeds, bark, resin, leaves are used. Others are used for fishing and to control insects. Abere and Lameed (2008) reported that the African giant land snails (*Achatina achatina* and *Archachatina marginata*) are used to cure whooping cough, anaemia, ulcer, asthma, aphrodisiac and hypertension. Abere and Lameed (2008) further maintained that the fluid of the snails is used to treat headache, treatment of dysentery, eye problems, and small pox.

The meat cures bone fracture, infertility in women while the shell is used to prepare talismans for protection and used culturally to appease the gods as well as to ward off evil spirits.

The respondents also agreed that a single species

could have multiple therapeutic values. Snails have also been successfully used to curtail aggression, malformation of bone structure and promotion of easy child birth, nourishment of lactating women, suppression of convulsion, healing of amputated fingers and circumcision of male children Abere and Lameed (2008). Sixteen (16) of the medicinal species are presented in Table 2. This finding is in agreement with previous reports of Abere and Lameed (2008).

NTFPs for local construction

Many NTFPs, 20 in number (Table 3) including *Piliostigina thonningii* *Phoenir reclinata*, *Raphia Urena Lobata* are used as valuable ropes that ease thatching of houses. Others like palm leaves or grasses are locally used as construction materials in the thatching of huts, fences and local bridges across small streams.

Table 1. Some edible NTFPS in Sapele LGA of Delta State, Nigeria.

S/N	Scientific name	Common name	Part used	Uses
1	<i>Irvingia gabonensis</i> <i>Acacia spp, prosopis spp</i>	Bush mango	Fruits Seed Leaves, whole plant	Food condiment Animal food(folder)
3	<i>Boswellia dalzielii</i>	<i>Frankiincens tree</i>	Leaves, bark	Incense, cosmetics, perfume, chewing gum, medicine, pharmaceuticals industry
4	<i>Acacia senegal, Acacia seyal, A. laeta A. nilotica</i>	Gum Arabic	Leaves bark	Medicinal, preservative in soft drink
5	<i>Moringa oleifera</i>	Magic plant	Leaves/flowers leaves	Vegetables
6	<i>Celosia trigyna</i>		Leaves	Vegetables
7	<i>Ricinus communis</i>	Castor oil	Fruit	Condiments
8	<i>Azelia africana</i>	Azelia	Fruit	Condiments
9	<i>Elaeis guinensis</i>	Oil palm	Nut, fruits/stem	Food/wine/income generation
10	<i>Talinum triangulare</i>	Water leaf	Leaves	Vegetable/income generation
11	<i>Vernonia amygdalina</i>	Bitter leaf	Leaves	Vegetable/income generation
12	<i>Celsosia argentea</i>	Cocoyam	Leaves/stem	Vegetable/food
13	<i>Bombax costatum</i>	Bombax	Fruit tender leaves	Soup
14	<i>Prosopis africana</i>	Locust bean	Seeds	Condiment
15	<i>Gambaya albida</i>	African cherry/Star apple	fruits	Snacks/ income generation
16	<i>Piper guineese</i>		Whole fruit	Condiment/medicine
17	<i>Parkia biglobosa</i>	Locust bean	Fruit pump seeds	Food/spice
18	<i>Dacrydes edulis</i>	African plum/Native pear	Boiled fruit pump, fruit and seed	Food /oil/ income generation
19	<i>Vitellaria paradoxa</i>	Shear butter	Fruit and seed	Cooking oil, candy cosmetics, chocolate, margarine's
20	<i>Piper unbelatum</i>		Fruit	Food supplement/ income generation
21	<i>Xylophia aethiopica</i>	Guinea pepper	Fruit	Dried and sold as spice in soups
22	<i>Syncephalum dulcificum</i>			Snack
23	<i>Artocarpus artilus</i>			Snack
24	<i>Raffia hookerri</i>	Raffia palm	Juices	Consumed as wine/ income generation
25	<i>Apis mellifera</i>	Honey bees	Honey	Food/ income generation
26	<i>Agaricus bosporium</i>	Mushroom	Strip and pileus	Food/ income generation
27	<i>Cola nitida</i>	Kola nut	Fruit	Food, medicinal/ income generation
28	<i>Garcinia kola</i>	Bitter kola	Fruit	Food/ income generation
29	<i>Cocos nucifera</i>	Coconut	Fruit	Food/ income generation
30	<i>Carica papaya</i>	Pawpaw	Fruits and leaves	Food and medicinal
31	<i>Tetracapidium conophorum</i>	Ukpa (Igbo)	Fruit	Food/ income generation
32	<i>Cricetomy sp</i>	Giant rat	Whole part	Food/ income generation
33	<i>Thryonomys swinderigues</i>	Grass cutter/cane rat	Whole part	Food
34	<i>Monodora myristica</i>	African nut meg	Fruits	Food supplement
35	<i>Achatina achatina</i>	African giant land snail	Whole part	Food/ income generation
36	<i>Archachatina marginata</i>	"	"	Food/ income generation
37	<i>Ocimum gratissimum</i>	Scented leaf/tea bush	Leaves tender stem	Food supplement
38	<i>Vitex doniana</i>			Food supplement /flavouring
39	<i>Crassocephalum crepidoides</i>		leaves	Food supplement
40	<i>Tetrapleura tetraptera</i>	Aridan plant	Fruits	Food, food supplement/ income generation
41	<i>Mangifera indica</i>	Mango	Fruit	Food/ income generation

Table 2. NTFPs used for traditional medicine in Sapele L. G. A. of Delta State.

S/N	Scientific name	Common name	Part used	Uses
1	<i>Piper guineense</i>		Fruit	Medicinal/income generation
2	<i>Boswellia papyrifera</i> <i>Boswellia spp</i>	Frankincense Olibanum		Medicinal, Pharmaceuticals industry
3	<i>Acacia senegal</i> , <i>A. seyal</i> , <i>A. laeta</i> , <i>A. nolitica</i>	Gum Arabic		Medicinal
4	<i>Alaetonia boomei</i>	Stool wood/pattern wood	Leaves	Traditional medicine
5	<i>Khaya</i> sp			Traditional medicine
6	<i>Anninckia clotantha</i>			Traditional medicine
7	<i>Thaumatococcus danielli</i>	Leaves	Leaves	Traditional medicine
8	<i>Carica papaya</i>	Pawpaw	Fruit and Leaves	Traditional medicine/income generation
9	<i>Vernonia amygdalena</i>	Bitter Leaves	Leaves	Traditional medicine
10	<i>Azadiracta indica</i>	Neem	Leaves	Traditional medicine
11	<i>Cola nitida</i>	Kola nut	Fruit	Traditional medicine
12	<i>Momordica foetida</i>		Leaves	Traditional medicine
13	<i>Archachatina marginata</i>	African giant land snail	Fluid, shell and	Traditional medicine
14	<i>Achatina achatina</i>	African giant land snail	meat	Traditional medicine/income generation
15	<i>Mangifera indica</i>	Mango	Bark	Traditional medicine/income generation
16	<i>Chromolaena odorata</i>	Awolowo grass/Siam weed	Leaves/tender stem	Traditional medicine

Table 3. NTFPS used for construction in Sapele L. G. A. of Delta State, Nigeria.

	Scientific name	Common name	Part used	Uses
1	<i>Raphia</i> spp	Raphia	Fibre	Mats, hats/income generation
2	<i>Laccosperma</i> spp		Stem	Furniture, basketry/income generation
3	<i>Exremospatha</i> spp			
4	<i>Oncocalamus</i> spp			
5	<i>Rothmaia whilfiedii</i>	Resins and dyes		Weaving of jute bags
6	<i>Pterocarpus osun</i>			
7	<i>Urwna lobata</i>		Reeled bark	Rope
8	<i>Chromolaena odorata</i>	Awolowo grass	Stem, and branches	Thatching
9	<i>Oxytenanthera obyssinica</i>		stems	Thatching
10	<i>Phoenix reclinata</i>		Leaves	Rope
11	<i>Pterocarpus erinaceus</i>		Stems	Thatching
12	<i>Cissus populnea</i>		stems	Rope
13	<i>Elaeis guineensis</i>		Trunk/leaves	Roofing/income generation
14	<i>Desmodium gangetium</i>		Peeled bark	Rope
15	<i>Hymenocardia acida</i>		Stems	Thatching
16	<i>Lophira lanceolata</i>		Stems	Thatching
17	<i>Ficur sur</i>		Recede bark	Rope
18	<i>Fluggea virosa</i>		Stems	Thatching
19	<i>Maranthes polyandia</i>		Stem	Thatching
20	<i>Pillio stigma thorningil</i>		Pecked bark	Rope

Table 4. NTFPs used for crafts in Sapele L. G. A. of Delta State, Nigeria.

S/n	Scientific name	Common name	Part used	Uses
1	<i>Parkia biglobosa</i>			Mortar, canoe, pestles
2	<i>Vitellaria paradoxa</i>	Shear butter		
3	<i>Prosopis africana</i>	Locust bean		
4	<i>Tectona grandis</i>	African bread fruit		
5	<i>Bombax costatum</i>	Bombax		Canoe making
6	<i>Ricinus communis</i>	Castor oil		Local beads
7	<i>Cissus ruttessens</i>			Fish poisoning
8	<i>Zanthoxylum zanthoxyloides</i>			Stamp handles

Table 5. NTFPs for other uses in Sapele L. G. A. of Delta State, Nigeria.

	Scientific name	Common name	Part used	Uses
1	<i>Massularia acuminata</i>	Chew sticks	Little stems	Tooth caring/income generation
2	<i>Luffa luffa aegyptiaca</i>	Sponge	Fruits	Washing and bathing
3	<i>Lophira lanceolata</i>	Chew sticks	Little stems	Tooth brush/buccal hygiene
4	<i>Maranthes curatellifolia</i>	Chew sticks		Tooth caring
5	<i>Pericopisi laxiflora</i>	Chew sticks		Tooth caring

Andel (2006) stated that life would be virtually impossible for most people living in rural areas of developing countries without the availability of palm leaves for root thatch. Andel (2006) posited that many people in these regions have no money to buy zinc sheets for roofing, prescription medicine, construction materials or domestic utensils.

NTFPs for crafts

The respondents affirmed that many NTFPs are used by sculptors to make various tools/implements of local importance. These materials include fibres, baskets, bow and arrow, dye-paint, varnish glue, fish traps and other domestic utensils (Table 4).

Others like teak and *Musa* spp. are used as packing leaves. Others are utensils and handicrafts such as bows, arrows, cooking tools, rope, water containers, eating bowls, chew sticks, ceremonial masks, shields jewellery, baskets, fibre net bags, necklaces, musical instruments etc.

NTFPs for other uses

Chew sticks play a critical role in the dental health care and buccal hygiene of many people in Nigeria's rural and urban centres (Table 5). NTFPs have also been identified as the most likely way of meeting the aims of development and conservation if carefully harnessed. NTFPs are a sure way to sustainable forest management in

Nigeria.

Forest based activities such as gathering and processing of NTFPs could provide employment opportunities in rural regions among young school leavers and women (Agbogidi and Okonta, 2003). NTFPs also exhibit some social and cultural (religious) uses, magic plants, drugs, sponge, narcotics, and intoxicants. They also have immense environmental uses as ornamental (Agbogidi and Eshegbeyi, 2008).

Kuponiyi (2007) stated that NTFPs are of enormous economic, socio-cultural, environmental and spiritual importance to the Nigerian populace. The study also indicated that community dwellers exploit the NTFPs for food and income to purchase the food they cannot produce. It is observed that NTFPs form genetic banks for improvement of crops and life socks.

This study has demonstrated that the non-timber forest products in Sapele Local Government Area of Delta State has use categories as food, traditional medicinal value, local construction, crafts, income generation as well as social/cultural and environmental values and the rural people depend on them directly and indirectly on daily basis.

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