C. SOME KEY SPECIES OF THE NIGERIAN FLORA

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C.1 Introduction

The alarming rate of destruction of the natural forests of Nigeria has been a subject of grave concern in recent times. Aladejana (1985) reported that the forest estate of Nigeria is approximately 9.6 million hectares or 9.8% of the total land area of the country, covering approximately 92.4 million hectares. Of this, only 2% is said to be within the unit regarded as commercial forests, most of which lies in the high forests of the southern states. Soladoye & Ola-Adams (1990) pointed out that Nigeria loses about 300 000 hectares of her forests annually while reforesting (Aladejana 1985) is between 15-17 000 hectares per annum as opposed to the projected rate of 60 000 hectares per annum.

Ola-Adams (1981) identified the factors responsible for the loss of the natural forest and its gene pool in Nigeria as uncontrolled timber exploitation, agriculture, urbanisation and increased socio-economic development. From the fore-going, it is apparent that there is a need for conservation of the genetic resources of the species as well as the ecosystems. Extensive discussions of the need for conservation have been made by Charter (1968), Roche (1973), Okali (1975), Ola-Adams & Iyamabo (1977) and Soladoye & Ola-Adams (1990). A list of the threatened and endangered or rare species of Nigerian plants which require urgent conservation has been prepared by Gbile *et al.* (1978).

The savanna zones of Nigeria have also been plagued with several socio-economic development projects as well as over-grazing, over-exploitation for firewood and uncontrolled use of fire for agriculture and hunting purposes. As a result of this, the savanna vegetation has been grossly abused and most of the useful species have either become endangered or extinct. It was reported that *Balanites* was almost extinct in Nigeria until recently (IUCN 1988). The situation has been further aggravated by the rapid encroachment of the desert. This has resulted in the declaration of some states in the northern part of Nigeria as ecological disaster zones.

In order to forestall the complete decimation of the ecosystem, various ameliorative measures are being embarked upon but these may not be able to replace the lost genes, neither will they be able to check the erosion of the gene-pool of these native economic species.

Based on the need for conservation and improvement, a list of some socio-economic/ecological key species requiring urgent attention is hereby presented (Table 1) along with short morphological descriptions, their habitat, distribution and

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uses. In arriving at this list cognizance was taken of the commodities such as food, fibre and medicines produced by these plants, their cultural value and their role in environmental management. It must be emphasised that the list is by no means exhaustive, the limitation of space has been a major constraint. Abbreviations used in the text are IUCN (International Union for the Conservation of Nature), FHI (Forest Herbarium, Ibadan), EFH (Enugu Forest Herbarium) and ABU (Ahmadu Bello University Herbarium).

Table 1 Some key species of Nigerian flora requiring urgent conservation and improvement.

Number	Species	Family
1	*Acacia senegal*	Leguminosae – Mimosoideae
2	*Adansonia digitata*	Bombacaceae
3	*Balanites aegyptiaca*	Balanitaceae
4	*Bombax buonopozense*	Bombacaceae
5	*Chrysophyllum albidum*	Sapotaceae
6	*Dennettia tripetala*	Annonaceae
7	*Faidherbia albida*	Leguminosae – Mimosoideae
8	*Garcinia kola*	Guttiferae
9	*Irvingia gabonensis*	Irvingiaceae
10	*Khaya ivorensis*	Meliaceae
11	*Massularia acuminata*	Rubiaceae
12	*Milicia excelsa*	Moraceae
13	*Parkia biglobosa*	Leguminosae – Mimosoideae
14	*Prosopis africana*	Leguminosae
15	*Pterocarpus mildbraedii*	Leguminosae – Papilionoideae
16	*Raphia hookeri*	Palmae
17	*Tetrapleura tetraptera*	Leguminosae – Mimosoideae
18	*Triplochiton scleroxylon*	Sterculiaceae
19	*Vitellaria paradoxa*	Sapotaceae
20	*Vitex doniana*	Verbenaceae
21	*Xylopia aethiopica*	Annonaceae
22	*Zanthoxylum zanthoxyloides*	Rutaceae

C.2 List of socio-economic/ecological key species

Botanical name: *Acacia senegal* (Linn.) Willd.
Synonyms: *Mimosa senegal* Linn., *Acacia verek* Guill. & Perr
Family: Leguminosae
Sub-family: Mimosoideae
English name: Gum arabic tree
Local names: Hausa: dakwara; Fulani: dibehi; Kanuri: kolkol.

Small tree up to 8m high armed with triple spines. Bark greyish and fissured, flaking off in papery patches. Easily recognised by the spines which are short, sharp and broad at the base. Leaves are bipinnate with slender common stalks 2-4cm long. There are 3-6 pairs of pinnae and about 15 pairs of leaflets. Flowering in Nigeria is between April and August. The flowers are cream coloured, fragrant, densely crowded in spikes 2.5-8cm long and about 1cm thick including the stamens. Fruits,

which are pods, could be observed as from September of every year. The fruits are usually flat and papery pods, about 4-8cm long by 1.5cm broad with straight edges or sometimes constricted between the seeds. The fruits are fawn to pale olive-green in colour with the surface covered with minute hairs. The pod often contains between 1-6 olive-brown seeds (Keay, 1989).

Distribution/Habitat: Distributional range covers the area from Senegal to north-eastern Africa and south of Mozambique. This distribution is associated with the coarse sandy stabilised dunes of the Sahel zone and usually sporadic in occurrence due to intensive use by man (Kio & Ladipo 1987).

The micro-habitats of *A. senegal* are the Sudan and Sahel zones where it is often found in scattered patches. The macro-habitat of the species is the Savanna. Herbarium records (FHI, ABU) show that the species could be found in Sokoto, Bam-Ngelzarma Forest Reserve, Borno State, Nguru, Yola, Maiduguri, Kano, Katsina, Wumiri Forest Reserve, Fuchu Forest Reserve, Zaria, Sokoto, Funtua, Gusau, Bauchi and Gombe.

Uses: The stems are used for bows and as fibres for the manufacture of very strong ropes. The species is also useful as live fences in villages. *A. senegal* produces gum arabic for commerce. Gum arabic has featured in Nigeria's export trade for over 45 years (Soladoye 1977). The gum is also useful in making ink, sweet meats, poultry pigments and for dressing fabrics as well as in pharmacy, water colour, wax polish and liquid gum. The gum is also used locally for the cure of nodular leprosy.

Botanical Name:	*Adansonia digitata* Linn.
Synonym:	*A. sphaerocarpa* A. Chev.
Family:	Bombacaceae
English name:	Baobab
Local names:	Hausa: kuka; Yoruba: ose; Edo: usi.

Baobab is a very large tree and one of the longest lived in Africa. The trunk is usually irregular and conspicuously tapered with very broad base and very narrow top. This feature is easily noticeable in the saplings. Tree is up to 24m high and 12m in girth. It is easily recognised by its large pendulous fruits and compound leaves with digitate leaflets. The leaves are often 5-7 foliate, long petiolate with obovate leaflets. Flowering occurs between May and June. The flowers are solitary in the leaf axis and pendulous on stalks about 24cm long appearing just before the leaves. The pendant white flowers are visited by fruit bats. Fruiting occurs between November and March. The fruits are ellipsoid, ovoid or spherical, 10-28cm long and 5-12cm in diameter with a woody shell covered on the outside with yellowish-brown felted hairs. The large pod often contains numerous seeds embedded in a dry acid pulp.

Distribution/Habitat: The baobab is widely distributed in the drier region of Africa. In Nigeria, its distribution extends from the savanna to the forest regions near villages and residential areas. Herbarium records (FHI, ABU) show that the species could be found in Eruwa, Ijaye Forest Reserve, Borgu, Zaria, Birnin Gwara, Ibadan, Kaduna and Maiduguri.

Uses: The wood of *A. digitata* is currently being used for light construction works and packaging materials. It is used in construction of kiosks, and supports for laying of concrete and decking of houses and bridges. The pulp of the fruit is edible. The young leaves are used as a soup vegetable. The fibre from the inner bark is very strong and often used in manufacturing durable ropes and production of some local musical instruments.

Medically, *A. digitata*'s pulp is used as a remedy or palliative and diaphoretic for fever. The leaves are used for the cure of kidney and bladder diseases, asthma, general fatigue, tonic, blood-cleanser, prophylactic and febrifuge, diarrhoea inflammations, insect bites, expulsion of guinea worm, control of internal pains and other infections. The leaves are also fed to horses. Burkill (1985) has a long list of uses to which different parts of this plant are put outside Nigeria.

Botanical name:	*Balanites aegyptiaca* (Linn.) Del.
Synonyms:	*Ximenia aegyptiaca* Linn., *Agialida senegalensis* Van Tiegh., *A. barteri* Van Tiegh., *A. tombouctensis* Van Tiegh., *Balanites zizyphoides* Mildbr. & Schlechter.
Family:	Balanitaceae
Local Names:	Hausa: aduwa; Fulani: tanni; Kanuri: kingo.

A savanna tree of about 8-10m high, evergreen and often with fluted bole. It is characterised by long straight green spines up to 8cm long, spirally arranged along the branches, with each spine having a two-leaflet compound leaf below it. Leaves are arranged alternately on the branches. The leaf petiole is about 1cm long, pubescent and often glabrescent, leaflets subsessile, obovate to orbicular-rhomboid. Flowering occurs in the species between March and June. The flowers are yellowish green and about 1.3cm diameter borne in supra axillary clusters. Fruiting occurs in March to October. The fruits are broadly ellipsoid, green at first and later yellowish at maturity and about 3-4cm long. The fruits are usually smooth or wrinkled with a yellow brown sticky edible flesh.

Distribution/Habitat: It is widespread in the Sudan and Sahel zone savanna of Africa where it is usually preserved as a fruit tree. Kio & Ladipo (1987) reported that *B. aegyptiaca* could be found in Sokoto, Katsina, Kano, Borno, and Niger states of Nigeria. Herbarium records (FHI, ABU) show that the species could be found in Jos, Wunti Forest Reserve in Borno, Jimeta, Ago-Are, Zamfara, Zaria and Kaduna .

Uses: The timber is used for agricultural implements, local furniture, joinery, window sills, walking sticks, and bent wood chairs. It provides good firewood and charcoal. The fruits are edible and the inner core of the seed is usually crushed to provide oil for cooking. The fruits and oil are used for medicinal purposes. The kernels are used for soap making and could be used to bake bread. The leaves are also used as a vegetable. The plant is reported to contain sapogenins (dicsgenin and yamogenin) used in the synthesis of steroid drugs. The plant is also important in pest control as the fruit and bark extract are toxic to the fresh water snails that are vectors

for schistosomiasis (bilharzia) and it also kills the water flea that harbours guinea worm. Spiny branches are used as fencing materials for cattle pens. Other uses in areas outside Nigeria are copiously enumerated by Burkill (1985).

Botanical Name:	*Bombax buonopozense* P. Beauv.
Synonyms:	*Gossampinus buonopozensis* (P. Beauv.) Bakh., *B. flammeum* Ulbr., *G. flammea* (Ulbr.) Bakh., *B. buesgenii* Ulbr., *G. buesgenii* (Ulbr.) Bakh., *B. angulicarpum* Ulbr., *G. angulicarpa* (Ulbr.) Bakh.
Family:	Bombacaeae
English Names:	Bombax, red-flowered silk-cotton tree, red cotton tree, West African Bombax.
Local Names:	Yoruba: ponpola; Edo: obokha; Ijaw: ido undu; Igbo: akpu.

This is the red-flowered Kapok tree of the forest regions, usually up to 40m high and 4m in girth. It is a deciduous tree with cylindrical bole and small rounded buttresses. The bark is grey, rough with small warty excrescences. Old trees are usually fissured with corky scales often armed with tent-shaped prickles composed of concentric layers which are roughly conical. Leaves are compound and digitate, glabrous with 5-8 leaflets. The leaflets are abruptly acuminate at the apex and narrowly tapered to the base (Keay 1989). Flowering usually occurs between December and February and extends to May when the tree is leafless. The deep pink or red flowers are solitary and erect on the branches. Fruiting in the species occurs between February and May. The fruits are cylindrical in shape and dark brown in colour, about 8-15cm long and about 3-5cm broad. In cross-section, the fruit is pentagonal with flat sides which break apart to expose the copious white or greyish kapok in which the numerous seeds are embedded (Keay 1989).

Distribution/Habitat: Distributed widely in Africa from Sierra Leone – Uganda, Zaire, Angola. In Nigeria, it occurs in the lowland rainforest zone especially in secondary forest and also in forest outliers. Herbarium records (FHI) show that the species could be found in Ibadan, Gambari Forest Reserve, Forest Hill, Ibadan, Shasha Forest Reserve, Ikom, Aponmu Forest Reserve, Olokemeji Forest Reserve and Akure Forest Reserve.

Uses: The bark, leaves and flowers are used chiefly for their emollient properties. A decoction of the young leaves forms a warm bath for febrile patients, especially children. The pounded bark is taken by women to increase lactation. An extract of the bark is drunk or rubbed on the head against dizziness, or rice cooked in the liquid extract is taken as a remedy. A decoction of the bark is regarded as emmenagogue among the Yorubas of Nigeria. The young leaves when dried and pulverised are sometimes used as a pot herb and the fresh leaves could be used as fodder for goats. The bark along with the spine attached is sold in the market for the preparation of ointment for treating skin diseases, such as craw-craw. Sheets of the bark are often used for roofing small huts or temporary shelters.

Botanical Name: *Chrysophyllum albidum* G. Don
Synonym: *Gambeya albida* (G. Don) Aubrév. & Pellegr.
Family: Sapotaceae
Local Names: Yoruba: osan agbalumo; Igbo: udala.

This is a fruit tree of the high forest zone of Nigeria. It attains a height of 50m but usually smaller. The bole is usually long and straight but often branched close to the ground. It is deeply fluted, sometimes with small buttresses at the base. The bark is pale greyish-brown usually exuding copious white latex when cut. The simple alternate leaves could be up to 24cm long and 7cm broad, oblanceolate, tapering rather rapidly to the acuminate apex and wedge-shaped base with whitish or yellowish fine tomentose beneath. Flowering occurs between April and June with the flowers in clusters in the axis of the leaves and covered with minute yellowish hairs. Fruiting occurs in the species between January and March. The fruits, which are edible, are a pale orange colour usually ovoid to subglobose and pointed at the apex.

Distribution/Habitat: The tree occurs in the lowland rain forest and also frequently planted in villages. It also occurs in Sierra Leone up to East Africa. Herbarium records (FHI & EFH) indicate the availability of the species in Onitsha, Ibadan, Mambilla, Adamawa, Aponmu Forest Reserve, Olokemeji Forest Reserve, Kafanchan, Ikom, Ado-Ekiti, Awka, Enugu, Owerri, Asaba, Nnewi.

Uses: The fruit is edible and according to Okafor (1991) jam, jellies and fruit juice can be produced from the fruit. The bark of the tree is used medically whilst the latex from the bark is used as bird-lime (trap).

Botanical Name: *Dennettia tripetala* Bak. f.
Family: Annonaceae
Local Names: Yoruba: ata igberi; Edo: ako; Igbo: nmimi; Ibibio: nkarika.

A medium sized tree of up to 17m high and 70cm in girth with a dense compact crown. The bole is generally very sharp with strongly scented bark. The branchlets are glabrous. The leaves are simple, alternate and entire, about 6-12cm long by 3-5cm broad, elliptic to ovate, shortly acuminate, broadly cuneate to rounded at the base, glabrous above, sometimes sparsely and finely hairy beneath. The stalk is about 5mm long. Flowering occurs between October and April. The flowers are hermaphrodite on short peduncles on branches or bole, in pairs or singly. Fruiting takes place between April and May. The fruits are edible, with a peppery, spicy taste, green at first, eventually red, with finger-like carpels constricted between the seeds.

Distribution/Habitat: This species extends throughout the rain forests and sometimes occurs in forests in savanna areas. The range extends from Senegal to Cameroon. Very common in Oban group of forests and in Olokemeji Forest Reserve, Owena, Benin, Onitsha, Nnewi, Ukpor and Iko Efanga in Nigeria.

Uses: The young leaves and fruits have a distinctive spicy taste and are a very good source of vitamins.

Botanical Name: *Faidherbia albida* (Del.) A. Chev.
Synonym: *Acacia albida* Del.
Family: Leguminosae
Sub-family: Mimosoideae
English Name: Apple Ring Tree
Local Names: Hausa: gawo; Fulani: kyaski.

This tree is readily recognised by its grey-green foliage. It is a tree with straight bole up to 2.5m in height and 3m in girth. It has a very deep tap root, up to 20m. The bark is brown, thick, and fissured. In old trees the crowns are rounded. Branches are armed with white spines. The leaves are bipinnate with a stout common stalk 3-10cm long and are arranged alternately on the branches. Each bipinnate leaf has 3-7 pairs of pinnae. *Faidherbia albida* is a unique tree in that it has a reversed flush phenology. Quite unlike the related species in the genus *Acacia*, it sheds its leaves in the wet season and produces new leaves in the dry season. Flowering in the species is between October and January while fruiting occurs between January and May. The flowers are often in stout spikes in the axils of the leaves. They are yellowish in colour. The fruits which are elongated pods are usually yellowish-green when dry, about 10-15cm long and irregularly coiled.

Distribution/Habitat: The plant is both a Sudanian and Sahelian tree with its micro-habitat in the arid savanna and macro-habitat in the savanna of tropical Africa. The range also extends southwards in east Africa to Transvaal. Herbaria collections (FHI, ABU, AFG) show that in Nigeria, the species could be found in Kaduna, Kaltungo, Bauchi, Kano, Maiduguri, Jos and Adamawa.

Uses: The wood is used locally for the manufacture of handles for implements and utensils. The tree produces gum. Medicinal values of the species include anti-vomiting (bark) and as liniment for pneumonia. The bark is also useful for the control of coughs and could assist in difficult child birth. Ashes from the wood are often used in making soap and in dehairing and tanning of hides and skins.

The species is very useful in agroforestry in the semi-arid region. It has been reported that millet harvest was increased by 152% for crops adjacent to *Faidherbia* trees in comparison to millet grown away from the plant (Anon 1989). Leaves and ripe pods are good forage for livestock. Branches are used for construction of fences for livestock. Plants are also used in various ways to combat soil degradation.

Botanical Name: *Garcinia kola* Heckel
Synonym: *G. dinklagei* Engl.
Family: Guttiferae
English Name: Bitter kola
Local Names: Yoruba: orogbo; Igbo: adu; Edo: edun.

The tree is usually up to 14m in height and can sometimes reach 32m high with a spreading crown. The bole is usually straight with a brownish, smooth bark. The tree has drooping branches which are whorled. The leaves are simple, opposite, about 7.5-16.5cm long by 3-7.5cm broad, elongated, elliptic to broadly elliptic, acute or shortly

acuminate at apex, cunneate at base; leathery with distinct resinous canals. The leaves have a stout stalk, finely hairy in young leaves and about 0.75cm long. Flowering between December and January, the flowers are greenish-white covered with fine reddish hairs. The flowers are usually in umbellate clusters at the end of short shoots. There are two types of flowers, the bisexual flowers are larger than the male flowers. Fruiting occurs between July and October. The fruits are usually reddish yellow about 7.5cm in diameter containing 2-4 brown seeds embedded in an orange coloured pulp.

Distribution/Habitat: The tree is usually found in the forest zone and could be cultivated. The distribution range extends from Sierra Leone to the Congo. Herbarium records (EFH, FHI) indicate the occurrence of the species at Ijebu-Ode, Benin, Omo and Okomu Forest Reserves, Onitsha, Nnewi, Degema, Ogoja.

Uses: Both the pulp and the seeds are edible. Seeds are used in performing traditional rites and offerings in local religious beliefs. Seeds are reputed as a poison antidote and are useful in the treatment of hepatitis (Iwu *et al.* 1987). It is often eaten to treat coughs and generally as traditional snacks. It is said to prevent heart attacks when eaten.

Botanical Name:	*Irvingia gabonensis* (O'Rorke) Baill.
Synonyms:	*Mangifera gabonensis* Aubry-Lecomte ex O'Rorke, *Irvingia barteri* Hook. f., *Irvingia tenuinucleata* Van Tiegh.
Family:	Irvingiaceae
English Names:	Wild Mango or Dika Nut
Local Names:	Hausa: goron biri; Yoruba: oro; Edo: ogwe; Igbo: obono; Efik: oyo.

A tree of about 25m height and 1.86m in girth, occasionally more in height. The tree is readily recognised by its dense dark green shining evergreen foliage and characteristic stipules. The bole is usually fluted and slightly buttressed. The bark is greyish, smooth or slightly scaly. The leaves are 6-12cm long by 3-7cm broad, elliptic to slightly obovate, shortly acuminate at apex, usually cuneate at base, leathery, dark green and shining. The leaves have a very stout stalk about 7cm long. Flowering occurs between November through March to June. The yellowish to greenish flowers are arranged in racemes or panicles among the leaves. Fruiting takes place usually between April and July and can also occur in September. The fruits are yellowish, broadly ellipsoid and about 6-9cm long with a yellowish fibrous pulp surrounding a large seed.

Distribution/Habitat: The species extends from Senegal to the Sudan and south to Angola. It is very common in the forest zone. Herbarium (FHI & EFH) records indicate that the species could be found in Onitsha, Nsukka, Ihiala, Ilaro, Aponmu Forest Reserve, Ikole, Ohe-Eshan, Irrua Forest Reserve, Ibadan and Shasha Forest Reserve.

Uses: It is a fruit tree and the seeds are used as soup condiment. Jams, jellies and

fruit juice can be produced from the fruit (Okafor 1973 & 1991, Okafor & Okolo 1974). Useful for timber and construction of ships, canoes, pestles and other household utensils. It is said to be immune to attack by termites.

Botanical Name:	*Khaya ivorensis* A. Chev.
Synonyms:	*K. klainei* Pierre ex Pellegr., *K. caudata* Stapf ex Hutch. & Dalz.
Family:	Meliaceae
English Name:	African or Lagos Mahogany
Local Name:	Yoruba: oganwo; Edo: ogwango; Igbo: ono.

This is a timber species commercially referred to as African or Lagos Mahogany. It grows up to 70m in height and 8m in girth with conspicuous buttresses. The bark is scaly, grey or reddish-brown, sometimes dark brown. The pinnate leaves are always crowded at the ends of the branches. The leaves contain 4-7 pairs of leaflets, 9-16.2cm long by 3-6cm broad, oblong, abruptly long-acuminate at apex. The stalk of the leaflets is about 0.6cm long. Flowering is between September and December. The white flowers are in panicles. Fruiting occurs between February and June. The capsules are very woody and round, breaking when matured into 5 valves. The seeds are about 3cm in diameter and narrowly winged.

Distribution/Habitat: The distribution of *K. ivorensis* extends from Ivory Coast to Gabon and Cabinda. Very common in lowland rain forests. Herbarium (FHI) records indicate the presence of the species in Oluwa, Sapoba and Okomu Forest Reserves. It is also present in Gambari and Ilaro Forest Reserves.

Uses: "Oganwo" or African Mahogany is probably the most widely used of the true mahoganies. Its most important uses are for furniture and interior decoration both in the solid and as a veneer for surface covering. It is also used for good quality joinery, ships' cabins and railway coaches.

Medicinally, a decoction from the bark is used for the cure of lumbago, coughs and in preparation of lotion for rheumatic pains, malaria fever and other diseases.

Botanical Name:	*Massularia acuminata* (G. Don) Bullock ex Hoyle
Synonym:	*Gardenia acuminata* G. Don
Family:	Rubiaceae
Local Names:	Yoruba: pako-ijebu, orin-ijebu (Ijebu chewing stick).

Keay (1989) described the habit as a borderline case between a shrub and a tree. Plant usually up to 9m high. Young branches pubescent with short hairs. The leaves are large simple, opposite entire, oblanceolate, long acuminate and practically stalkless, with a pair of stipules at right angles to each pair of leaves. Flowering occurs in the species between September and December producing greenish white to pink or reddish purple bisexual flowers. Fruiting occurs between June and August. The fruits are glabrous, ovoid, beaked, 5-9cm long and up to 6.5cm in diameter, containing several tiny stony seeds.

Distribution/Habitat: The distribution range of the species covers Sierra-Leone,

Guinea, Ivory Coast, Ghana and Southern Nigeria. It grows in the rain forest zone. Herbarium (FHI) records indicate that plants have been collected at Ijebu-Ode, Omo Forest Reserve, Ibuso-gboro, Gambari Forest Reserve, Okomu Forest Reserve, Warri.

Uses: The stem is used as a chewing stick and highly reputed for the curing of toothache and other mouth ailments. The rural dwellers earn considerable income from sales of the stem as a chewing stick. This exploitation is having a deleterious effect on the population of the plant in areas where it grows. Plants are not allowed to mature and fruit before being harvested. If the trend continues, the species will soon become endangered in Nigeria.

Botanical Name:	*Milicia excelsa* (Welw.) C. C. Berg
Synonyms:	*Chlorophora excelsa* (Welw.) Benth., *C. tenuifolia* Engl., *C. alba* Chev., *Morus excelsa* Welw., *Antiaris kerstingii* Chev., *C. regia* A. Chev. (partly)
Family:	Moraceae
Trade Name:	Iroko
Local Names:	Hausa: loko; Yoruba: iroko; Edo: uloko; Nupe: roko; Urhobo: uno; Igbo: oji; Ijaw: olokpata.

This plant is commercially known as "iroko". The tree usually attains a very large size, reaching up to 50m or more in height and up to 3m in diameter. The stem is usually cylindrical and mostly without buttresses. It is a deciduous tree with grey to dark brown or blackish bark, usually flaking off in small scales. The bole exudes a white resinous juice when slashed. The branches are in ascending order with a flat crown. The simple leaves, which are arranged alternately, can be 8-16cm long by 4-8cm broad; broadly elliptic and very shortly acuminate, usually unequally cordate but sometimes rounded at the base. Flowering occurs between December and March with the flowers occurring in single spikes in the axils of the young leaves. Male flowers are white, closely crowded in a slender pendulous catkin up to 16cm long. Female flowers are usually greenish in shorter and much fatter spikes, with styles of each flower projecting so that the inflorescence appears to be hairy (Keay 1989). Fruiting in the species occurs between February and April. The fruits are usually green, about 4-6cm long by about 2cm thick with short stalk, wrinkled and fleshy.

Distribution/Habitat: The tree has a wide natural distribution in tropical Africa, stretching from Sierra Leone to Tanzania and Mozambique, being especially exported from Nigeria and Uganda. It occurs in the rain forest and forest outliers in savanna woodland areas. Herbarium records (FHI, EFH) indicate that the species could be found at Olokemeji, Okomu and Sapoba Forest Reserves. It also occurs in Onitsha, Ibadan Jericho Reservation area, Sapele, Kabba, Benue, Zaria, Onigambari and Ijaiye Forest Reserves.

Uses: Iroko is one of the most useful woods from Africa and it is hard, long, very durable and well figured. The timber seasons very well either in kiln or under natural conditions. Iroko has excellent strength values and has great resistance to fungus and

insect attack. Iroko is used for such purposes as high-class joinery, eg window frames, sills, stair treads, fireproof doors, and also for flooring. It is used for draining boards owing to its high resistance to decay and for laboratory benches because of its size. In Nigeria, it is used for building and other heavy construction works, such as railway sleepers, fence posts, etc. Medicinally, the resinous juice is used for the treatment of craw-craw. The ashes from the bark, when mixed with palm oil, are rubbed on swellings on the body. The bark when crushed in water or palm wine is taken for the treatment of heart troubles, lumbago and general fatigue. The fruits and leaves are used as fodder for goats. Igbos of Nigeria regard the plant as very sacred and it is usually preserved.

Botanical Name:	*Parkia biglobosa* (Jacq.) R. Br. ex G. Don
Synonyms:	*P. africana* R. Br., *P. clappertoniana* Keay
Family:	Leguminosae
Sub-family:	Mimosoideae
English Name:	Locust bean tree
Local Names:	Hausa: dorowa; Fulani: narehi; Kanuri: runo; Tiv: nune; Yoruba: igba; Edo: eyiniwan; Igbo: oririli.

This plant is popularly known as the locust bean tree. It is a fruit tree, of up to 27m in height and about 3.5m in girth. It has a short crooked bole with a very wide crown. The bark is grey, very rough and flaky. Bark exudes gum when slashed. Leaf is bipinnate, the stalk is very long, up to 54cm, and swollen at base. There are about 6-11 pairs of pinnae on each leaf arranged alternately, rarely opposite. Each pinna has 14-20 pairs of leaflets. Flowering occurs between December and March. The red flowers are usually hung in large globose heads at the end of long stalks. Individual flowers are almost stalkless. Fruiting occurs between February and July. The fruits are pods of about 18-36cm long by 3cm broad; usually light brown in colour containing numerous black seeds. The seeds are usually embedded in a yellowish, mealy sweet-tasting edible pulp. The seeds are usually covered with black fairly hard testa.

Distribution/Habitat: The species is widely distributed, extending from Senegal to the Sudan. In Nigeria, it is distributed over the lower Sudan savanna, southwards to the derived savanna and the lowland forest zones of the south. The wide ecological spread and the continuous erosion of the gene pool as a result of constant harvesting of the fruits and seeds for human consumption have made the species a candidate species for conservation (Soladoye *et al.* 1989; Ladipo *et al.* 1990). Herbarium records (FHI, ABU) show that the species could be found in Yola, Adamawa, Okenne, Okeho, Kaduna, Kabba, Mokwa, Birnin Gwari, Zaria, Kano, Bauchi, Markudi, Tegina.

Uses: The plant is economically important for its seeds, which are fermented to produce a popular condiment of several Nigerian dishes. It is now industrially produced as 'Dadawa cubes' and exported to neighbouring countries. The pulp of the fruit is sweet-tasting and is made into a refreshing non-alcoholic drink sold in rural

markets. Oil extract from the seed is also edible. Extracts and washings (water) from the fermented seeds are very useful in preparing anti-termite chemicals. In some West African countries and the Sudan, the fruit husks, including the bark of the tree, are used in preparing fish poison. The bark is also used for tannin. The ash of the tree is used for soap making and preparation of snuff. Decoction from the bark of the species is used for curing fever while a mixture of the pulped bark and lemon-juice is often used for wound healing and treatment of ulcers, rickets and in preparation of a tonic.

Botanical Name: *Prosopis africana* (Guill. & Perr.) Taub.
Synonym: *Coulteria africana* Guill. & Perr.
Family: Leguminosae
Sub-family: Mimosoideae
Local Names: Hausa: kiriya; Fulani: kohi; Yoruba: ayan; Igbo: ubwa.

A tree of up to 15-20m high and up to 1.8m in girth with branches very low down. Bole clean for about 8-9m in plants growing in forest conditions. Bark very dark, fissured and scaly. Branchlets shortly pubescent or puberulous. Leaves bipinnate, greyish, green and drooping, petiole 2.5-6.6cm long, pubescent or puberulous. Rhachis about 2.7-9.5cm long; pinnae 2-4 pairs, glandular between most of the pairs of leaflets. Leaflets opposite 7-15 pairs, oblong or elliptic-lanceolate, 1.5-3cm long, 0.4-1cm wide narrowed to acute or subacute apex. Flowering occurs between December and February. The flower is creamy white or yellowish, fragrant, densely crowded in fat spikes 3-6cm long and about 1 cm broad. Spikes are solitary in the leaf axils. Individual flowers occur in shallow cup-like calyx. Fruits can be observed in April to May, sausage-shaped and very persistent, about 10-15cm long by 2.5cm thick. Fruit more or less cylindrical in shape, blackish, glossy and thick-walled. Seeds numerous in pod.

Distribution/Habitat: It is usually found in the savanna, especially in the Sudan and Sahel savanna zones. Its distribution range extends from Senegal to the Sudan and Uganda. Herbarium records (FHI, EBU) show that *P. africana* occurs in Sokoto, Nsukka, Lappai, Gurara Falls, New Bussa, Katsina, Zaria, Afaka, Ilorin, Oyo, Enugu, Adamawa, Zaria and Yola.

Uses: The wood is very heavy and hard and usually used for turnery, mortars, bedstead legs, canoes, railway sleepers, firewood and charcoal. Medicinally, the bark is useful in preparing lotion for wound healing. A decoction from the root is used for curing toothache. The leaves, young twigs and fruit pods are a delicacy to livestock. The pod is often appreciated by humans (Kennedy 1936).

Botanical Name: *Pterocarpus mildbraedii* Harms
Family: Leguminosae
Sub-family: Papilionoideae
Local Names: Hausa: madobiyar; Edo: urube; Urhobo: urhuko.

It is a medium-sized tree up to 27m in height and about 2m in girth, with drooping branches. Bark grey, smooth or longitudinally fissured. The bark oozes out bright red

juice when slashed. Branchlets glabrescent. Leaves compound-pinnate with a glabrous common stalk 12-24cm long, usually with 5-9 glabrous leaflets which are sometimes opposite with upper leaflets up to 9-18cm long by 4.25-8.25cm broad, with various shapes, abruptly acuminate at apex, and rounded at the base. The lower leaflets are more ovate. Flowering is between January and March with the flowers occuring in axillary racemes, appearing with the new flush of leaves. Flower bract very conspicuous, calyx broadly cup-shaped, glabrous outside except for the margins of the shallow teeth. Fruiting occurs between March and May. Fruits are flat and papery.

Distribution/Habitat: The species could be found from Ivory Coast to Gabon under forest conditions. Herbarium records (FHI, EFH) show that the species had been collected at Onitsha, Ogbomosho, Ibadan, Ehor, Port-Harcourt, Benin, Mamu River and Sapoba Forest Reserves, Zaria, Birnin Gwari, and Kafanchan.

Uses: The wood is used for firewood while the leaves serve as a vegetable (Okafor 1991). The plant is used in fetish-groves and shrines in the Igbo lands of Nigeria. It is also used as a timber in southern Nigeria.

Botanical Name:	*Raphia hookeri* Mann & Wendl.
Synonyms:	*R. angolensis* Rendle, *R. gigantea* Chev., *R. sassandrensis* Chev., *R. longrostris* Becc. *R. maxima* Peschuel-Loesche
Family:	Palmae
English Name:	Raffia palm or wine palm
Local Names:	Yoruba: iko; Urhobo: ovie-ogoro.

A tree with a trunk up to 12m high with the upper part being very conspicuously tangled with a mass of black fibres. Usually single but occasionally with up to 4 suckers. Leaves massive, pinnate with very large midribs. Leaflets up to 60cm long and 6cm broad with a spiny margin. Flowering occurs usually in December. Inflorescence usually terminal with massive branched spadix, pendulous up to 24cm long. The plant is monocarpic. Fruits are top-shaped or ellipsoid, 6-15cm long by 4.5-6cm thick, with stout prominent beak about 1.5cm long.

Distribution/Habitat: The species is widely distributed from Guinea to Cameroon and south to Gabon, usually occurring in the swampy areas in forest regions in colonies and could be cultivated. Herbarium specimens have been collected at Ibadan, Ogoja, Oshogbo, Ikom, Ila, Benin, Warri, Sapele, Lagos, Ijebu Water side, Abeokuta, Okitipupa.

Uses: This is the common wine palm of the forest zone. It is also cultivated for palm wine production. Wine is obtained by tapping the inflorescence. Some varieties yield over 10 gallons of palm wine a day (Otedoh 1974). It is a source of piassava and raffia fibres used for weaving bags and mats. The bamboos are used for house construction and for making beds, stools and chairs. Mesocarp of seed when crushed is used in the killing or stupefaction of fish.

Botanical Name:	*Tetrapleura tetraptera* (Schum. & Thonn.) Taub.
Synonyms:	*Adenanthera tetraptera* Schum. & Thonn., *Tetrapleura thonningii* Benth.
Family:	Leguminosae
Sub-family:	Mimosoideae
Local Names:	Yoruba: aridan; Igbo: oshosho; Edo: ighimiakia; Nupe: ikoho.

A tree up to 28m in height and 3.5m in girth. The bole is usually without buttress, but sometimes with small sharp buttresses. The bark is usually smooth, greyish, very thin with reddish strong-smelling slash. The leaves are bipinnate, glabrous or minutely hairy with a common stalk 16-28cm long, usually with 5-9 pairs of pinnae, opposite but sometimes alternate; 6-12 glabrous leaflets on each side of the pinna-stalk, always alternate. Flowers between January and April and also between June and July with flowers appearing after a new flush of leaves. Infloresecence is a raceme with pink or cream coloured flowers, usually in pairs in the upper leaf-axis. Fruiting occurs mostly in November and March. However, fruits have been collected on some trees in May, June and August. The fruits, which are strongly scented, are usually very persistent, hanging at the ends of the branches on stout stalks and are about 14-28cm long and 4-6cm across with wing-like ribs. The indehiscent fruits are dark purple-brown, glabrous and glossy, usually slightly curved. The seeds are black and flat.

Distribution/Habitat: It is widespread in tropical Africa in secondary forest. Herbarium records (FHI) indicate that the species could be found in Ibadan, Ikom and some Forest Reserves, such as Olokemeji, Okomu, Sapoba, Gambari, Aponmu and Akpaka.

Uses: The soft wings or ridges of the fruit are edible. The fruit is used in preparing soup and food flavours. The bark is usually prepared for use as an enema for constipation. The fruit could also be used in preparing pomade for use in curing rheumatism and also used in improving fertility in females. The bark is needed in preparing enema for coughs. The pod ashes are used as salts and also in soap making. The bark has various medicinal uses such as after illness tonic, beverage and enema against gonorrhoea.

Botanical Name:	*Triplochiton scleroxylon* K. Schum.
Synonyms:	*T. johnsoni* C. H. Wright, *T. nigericum* Sprague, *Samba scleroxylon* (K. Schum.) Roberty.
Family:	Sterculiaceae
English Name:	Obeche
Local Names:	Yoruba: arere; Edo: obeche; Orhobo: ewowo; Itsekiri: egin-fifen; Igbo: okpobo.

A deciduous tree, native to West Africa where it has been identified as a light demander and an early coloniser of secondary forest. It reaches up to 60m in height with a girth of about 6m and producing a light hardwood of 384kg/m^3. It has a straight cylindrical bole with greyish bark. Leaves alternate, compound digitate, palmately

lobed with up to 7 lobes but usually 5. Leaf stalk up to 8cm long. Flowering occurs between September and February. The inflorescence is a paniculate cyme. Each inflorescence is about 4-5cm long. Flower buds are covered with three early caducous broadly elliptic bracts about 3-5mm long, 2.5-4mm wide and softly tomentose on the upper surface and pilose on the lower. Fruiting occurs between January and April. The fruit is a samara, and composed of 5 winged carpels. The maricarp may be densely or sparsely pilose either from the point of attachment to the slit at the apex or only on the slit and at the point of attachment.

Distribution/Habitat: The species occupies a narrow band from Sierra Leone in the west to Central Africa in the east. It is most abundant in Nigeria, Ghana and Ivory Coast where it forms 13% of trees over 61cm in girth at breast height and 20% of those with 183cm girth at breast height (Hall & Bada 1979). The tree occurs mostly on ferruginous soils derived from the basement complex and in localities with between 1 000-2 500mm rainfall per annum. Optimal temperatures for the growth of *T. scleroxylon* ranges from 25°C to 35°C (Hall & Bada 1979). Herbarium records (FHI, EFH) indicate that the plants have been collected at Onitsha, Sapoba, Akure, Gambari Forest Reserve, Olokemeji Forest Reserve, Ibadan, Ikirun, Zaria, Benin, Ondo, Ilesha and Owo.

Uses: Obeche is a timber species used for plywood, interior joinery, boat building, corewood for blockboard, match boxes, match splints, panelling, blackboards, food containers, domestic wood-work, artificial limbs, motor bodies, etc. The young shoots and foliage are used as a vegetable while the insect pests of the species are good protein sources in Africa.

Botanical Name:	*Vitellaria paradoxa* Gaertn. f.
Synonyms:	*Butyrospermum paradoxum* (Gaertn. f.) Hepper, *B. parkii* (D. Don) Kotschy
Family:	Sapotaceae
English Name:	Shea butter or shea nut tree
Local Names:	Hausa: kadanya; Fulani: kareje; Tiv: chanimal; Yoruba: emi, emi-emi; Igbo: osisi.

Tree usually up to 15m in height and about 7m in girth. The bark is dark grey, rough, deeply fissured into more or less square pieces. The leaves are clustered at the end of stout twigs, and could be up to 18cm long and 7cm broad; elongated or slightly broadest in the upper half, usually rounded at the apex and densely hairy while young. Older leaves have sparse hairs. The stalk could be between 3-8cm long. Flowering occurs between January and February. The flowers are fragrant long stalked, clustered at the ends of leafless twigs. Fruiting in the species occurs between May and August. The fruits are usually yellow, ellipsoid, about 4cm long and 2cm broad, usually with one seed but occasionally with 2 or 3 seeds. The seeds are ovoid about 3cm long by 2cm broad with a hard bony testa and shield-shaped scar.

Distribution/Habitat: The species occurs from Senegal to the Sudan and Uganda. It is commonly found in savanna woodland, especially on poor soils. It occurs in

scattered patches in the Sudan zone of northern Nigeria. Herbarium records (FHI, ABU) indicate that the species could be found in Ibadan, Kabama Forest Reserve, Adamawa, Old Oyo Forest Reserve, Olokemeji Forest Reserve, Awba Hills, Lafiagi, Zaria, Birnin Gwari, Kaduna, Kotangora, Tegina, Mokwa, Kainji and Jebba.

Uses: This is the well known shea butter tree of northern Nigeria. It is a source of edible oil which is extracted from the seeds. The shea butter from the seed is used in the soap and candle industries. It is also used in preparing a local pomade. The shea butter is very useful medicinally, for both humans and horses. The commercial potential of the shea butter is enumerated by Kio & Ladipo (1987), Soladoye *et al.* (1989), Igboanugo & Soladoye (1992) and Ogigirigi (1985). The wood is used for carving and for making wooden bowls as well as very durable mortars and pestles.

Botanical Name:	*Vitex doniana* Sweet
Synonyms:	*V. umbrosa* G. Don, *V. cuneata* Schum. & Thonn., *V. cienkowskii* Kotschy & Peyr.
Family:	Verbenaceae
Local Names:	Hausa: dinya; Fulani: galbihi; Yoruba: cori-nla; Igbo: ucha koro.

A tree up to 18m high and 3m in girth, with a dense rounded crown and dark glossy green foliage. The bark is grey to pale brown, finely fissured longitudinally. The digitately compound leaves have a common long stalk which could be 9-18cm long with 5-7 obovate to very broadly elliptic leaflets, most rounded at the apex and tapering to the cuneate base. Flowering is between January and April. Inflorescence is branched and axillary. Flowers are purplish-white. Fruiting occurs in March. The fruit is a drupe, globose and about 2.5cm in diameter. Black when ripe.

Distribution/Habitat: Very common in the savanna woodland of tropical Africa. Herbarium records (FHI, EFH, ABU) indicate that the species could be found in Iseyin, Obodu, Abeokuta, Sepeteri, Sokoto, Kano, Jos, Bauchi, Enugu, Ikom, Gashaka, Zamfara Forest Reserve, Afaka Forest Reserve, Awun Forest Reserve and Idanre Forest Reserve.

Uses: The fruits of *V. doniana* are edible and the young leaves are consumed as a vegetable. The flowers and fruits usually attract bees and are therefore useful in bee keeping. The young leaves are also used in making ink. The ashes are used for soap making. Medicinally, decoctions from the leaf are drunk to the treatment of dysenteric diarrhoea. The leaves and bark are said to be useful in inducing conception in females.

Botanical Name:	*Xylopia aethiopica* (Dunal) A. Rich.
Synonyms:	*Unona aethiopica* Dunal, *Xylopia eminii* Engl.
Family:	Annonaceae
Local Names:	Hausa: kimba; Fulani: kimbare; Yoruba: erunke; Edo: unien; Efik: atta; Igbo: uda; Ibibio: ata; Nupe: tsunfyanyi

A tree or shrub usually tall, evergreen, up to 45m high and about 20cm diameter.

Bole straight, often buttressed, with grey fairly smooth bark. Crown profusely branched with branches and branchlets containing numerous whitish lenticles. Leaves alternate, simple, petiole 2-9mm long, blade elliptic, ovate or oblanceolate 6-17cm long, 3-6cm wide, apex obtuse to markedly acuminate, margins entire, coriaceous, dark green glabrous above, very pale glaucous green, glabrescent below. Flowering occurs in the species between March and November producing axillary inflorescences with thick pedicles. The flowers are solitary or in 3-5 flower clusters. *X. aethiopica* fruits between June and March. Fruit has about 10-12 fingers (carpels) on a common stalk. Matured fruit is reddish at first, eventually turning black. Each fruit contains about 5-7 seeds.

Distribution/Habitat: Distribution extends from Senegal to Angola, Sudan and Mozambique. It is found in evergreen rainforest, lowland forest, riverine and swamp forest in Nigeria. FHI records show that the species has been collected at Ijehu-Ode, Omo Forest Reserve, Sapoba, Mamu Forest Reserve, Owerri, Calabar, Ikom, Onitsha.

Uses: The folk medicinal uses of *X. aethiopica* are listed in our contribution to the FAO publication of some medicinal forest plants of Africa and Latin America (FAO Forestry Paper 67, 1986). A decoction of the fruit of this plant with other species listed in the above publication is used as remedy for stomach-ache, coughs, ammenorrhoea and for bathing of children as anti-convulsant. The fruit is also useful in the preparation of medicine for dizziness, and it is an important condiment in the Yoruba native decoction (Agbo). Dalziel (1937) reported that a fluid extract or a decoction of the fruit or bark is useful in the treatment of bronchitis, dysenteric conditions and biliousness.

Botanical Name:	*Zanthoxylum zanthoxyloides* (Lam.) Zepernick
Synonym:	*Fagara zanthoxyloides* Lam., *Zanthoxylum senegalense* DC., *Zanthoxylum polygonum* Schum. & Thonn., *Fagara senegalensis* (DC.) A. Chev.
Family:	Rutaceae
English Name:	Candle wood
Local Names:	Hausa: fasakwari; Yoruba: ata; Fulani: fasakorihi; Edo: ughanghan; Urhobo: ujo; Itsekiri: atako; Ijaw: korokumo.

A shrub or tree up to 18m high and 0.5m in diameter. The bole is grey and armed with large woody thorns that usually fall off due to aging, leaving the bark covered with very thick cork. Branches and branchlets are also armed with curved sharp spines. Leaves are alternate, compound with a common stalk up to 10cm long. Leaflets are about 3-5, opposite or nearly opposite pairs often with a terminal leaflet, oblong or oblong-oblanceolate, rarely elliptic or obovate 4-10cm long, 2-3.5cm broad, apex rounded or notched or very abruptly and shortly acuminate, base broadly cuneate, margins entire; coriaceous, smooth, shining, medium green above, dull light green below. It flowers between January and February and also between May and August; producing greenish-white flowers. The inflorescence is axillary or terminal

panicles. The flowers are unisexual due to abortion, greenish white to cream white, 2-3mm long. Fruiting occurs between July and September. The fruit is red and ellipsoid with only one blue black seed.

Distribution/Habitat: It is widely distributed in west tropical Africa from Senegal to Cameroo. Herbarium records (FHI, EFH) show that plants have been collected at Minna, Eruwa, Ibadan, Abeokuta, Ikeja, Enugu, Nsukka, Asaba, Benin and Awka.

Uses: A mixture of the powdered bark of the species and fruits of *Piper guineense* and that of *Xylopia aethiopica* taken with pap is said to be good for the treatment of general body weakness. Also good for the treatment of swollen legs or elephantiasis and checking of over-development of the spleen. A root powder of *Z. zanthoxyloides* is useful in the control of toothache, cure of sore throat, and relief from indigestion as well as treatment of gonorrhoea or as a urinary antiseptic. It is also used for the cure of impotence. Research work has been going on for the past two decades on the medicinal use of anti-sickling agents from the roots of *Z. zanthoxyloides* (Sofowora & Isaacs 1971). Tannin extracted from this plant when used in combination with tannin extract from *Rhizophora racemosa* is used to tan skins or leather.

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