

PALMAE (ARECACEAE) / 15 g. / 63 spp.

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The palm family is composed of about 185 genera and 2485 species (Dransfield & al., 2008), mainly distributed in tropical regions, fewer in subtropical and temperate regions. The African palm flora (excluding Madagascar) is low in terms of both number of genera and species when compared with other parts of the tropics (Dransfield, 1988). Continental Africa is represented by 17 genera and 65 species of palms; in tropical regions of the continent the family is represented by 15 genera and 63 species. The monotypic genera *Chamaerops* and *Jubaeopsis* are not considered in the current treatment as they are regarded as not naturally distributed in tropical regions of the continent.

The African palm fossil record is limited but available data provide an outline of palm evolution from the Late Cretaceous through the Neogene, the earliest unequivocal record for the continent attributed to the Campanian, between 83.5 and 70.6 Mya (Pan & al., 2006). Palms are conspicuous components of several vegetation types in Africa and are of great economic significance both to subsistence cultures and to highly organized commercial agriculture (Dransfield, 1988).

Some African palm genera (e.g. *Hyphaene*, *Raphia*) are still incompletely known or heavily undercollected in a proper way. A large amount of the available herbarium specimens are fragmentary and hence almost uninformative for taxonomic identification. An important effort of collection is needed for an accurate taxonomic recognition at the specific level.

The family was studied at a continental scale by Tuley (1995) and several treatments have been proposed in the frame of floristic inventories at regional or country level (e.g. Dransfield, 1986, 2010; Chapman & Chapman, 2001; Aké Assi, 2002; Harris, 2002; Aké Assi & al., 2006; Hawthorn & Jongkind, 2006; Sosef & al., 2006; Baker, 2008; Lisowski, 2009; Lejoy & al., 2010; Couvreur & al., 2013).

Palms are among the most economically important plants for African populations. The relatively low number of species present in the continent is in contrast with the extremely high diversity of uses proposed. For many taxa (e.g. *Borassus*, *Elaeis*, *Hyphaene*, *Laccosperma*, *Raphia*) almost all organs present a wide range of uses and this has been documented in several excellent publications (e.g. Burkill, 1997; Diniz & Martins, 2002; Sunderland, 2003; Latham & Konda, 2007).

The present contribution should merely be regarded as a thorough compilation of available data on African palms (see list below), to which we have added new data resulting from our current taxonomic and floristic studies in West African countries. The synonymy proposed is mostly based on Govaerts & Dransfield (2005) and Sunderland (2012).

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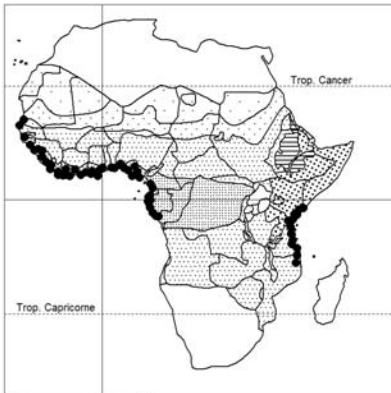
TULEY, P. (1995). *The Palms of Africa*. The Trendline Press, UK, 189 pp.

BORASSUS / 2

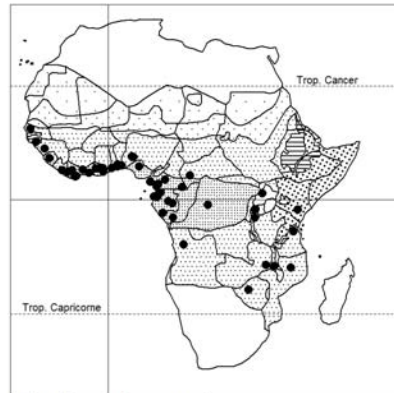
The genus *Borassus* (5 spp.) is one of the most widespread genera in the palm family. The genus is pleoanthic, dioecious and contains species with massive, solitary, frequently ventricose stems, and costapalmate leaves. The inflorescences are strongly dimorphic and bear unisexual flowers; the fruits are normally quite large.

Borassus is widely distributed in tropical Africa, Madagascar, north-eastern Arabia, through India and Southeast Asia to New Guinea (Bayton, 2007; Dransfield & al., 2008); its natural presence in Australia is still subject of controversy. These palms commonly grow in sandy lowlands, and open secondary forests or savannahs. African populations are often found in large gregarious groups (Tuley, 1995).

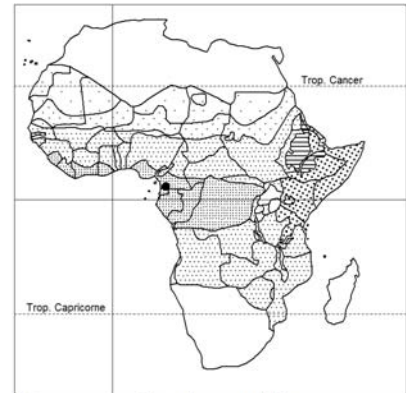
Many species are of important commercial value in different countries throughout their range of distribution. Although almost all parts of these palms are useful, the sweet sap tapped from the stem or the inflorescences remains the most important product obtained from the palm. The latter is transformed in syrup, sugar or by fermentation converted into alcohol (Mollet, 1999).



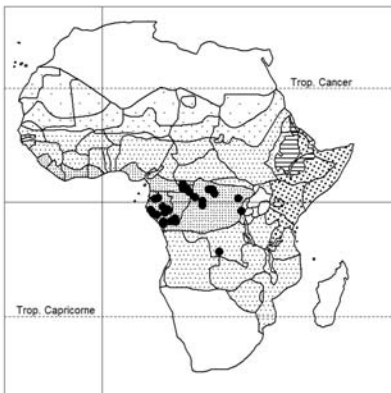
Cocos nucifera



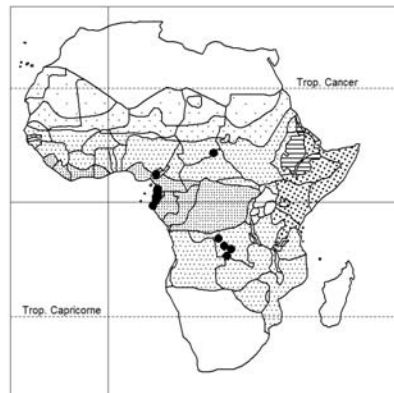
Elaeis guineensis



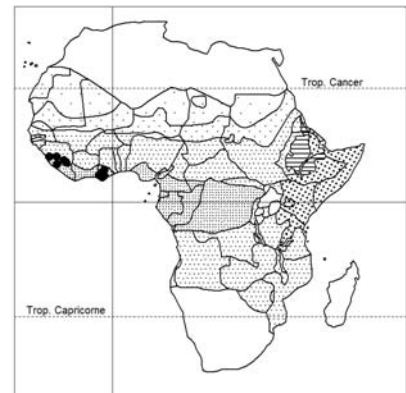
Eremospatha barendii



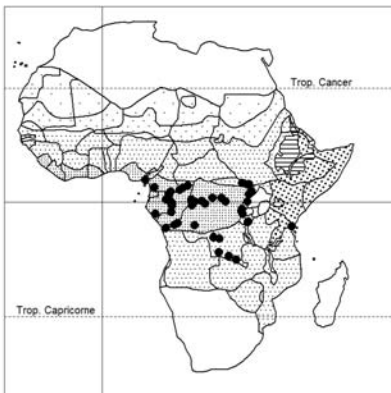
Eremospatha cabrae



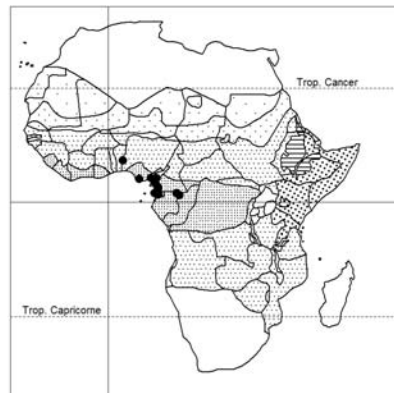
Eremospatha cuspidata



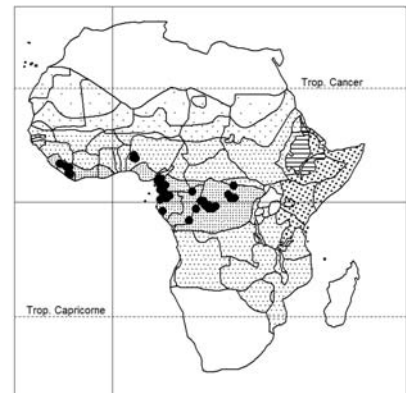
Eremospatha dransfieldii



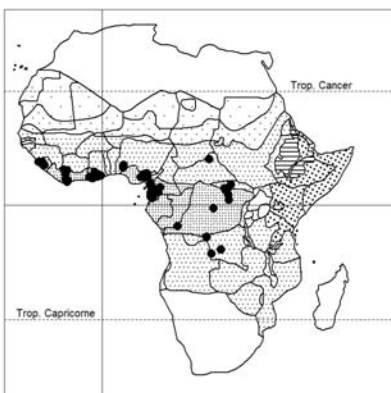
Eremospatha haullevilleana



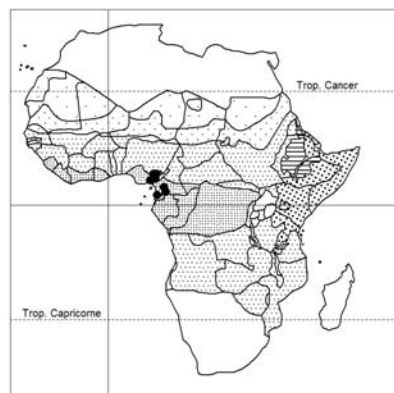
Eremospatha hookeri



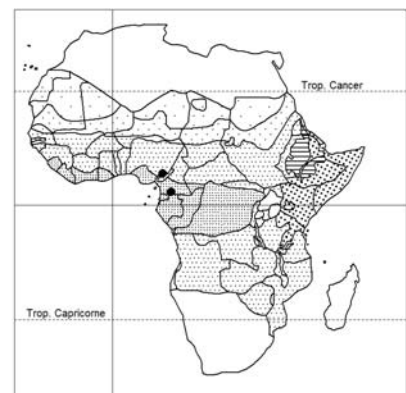
Eremospatha laurentii



Eremospatha macrocarpa



Eremospatha quinquecostulata



Eremospatha tessmanniana

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syn.: *B. aethiopicum* var. *bagamojense* Becc.; *B. aethiopicum* var. *senegalense* Becc.; *B. deleb* Becc.; *B. flabellifer* var. *aethiopicum* (Mart.) Warb.; *B. sambiranensis* Jum. & H. Perrier

Stem to 25-30 m tall and to 40-cm in diameter at breast height, almost always ventricose (reaching a diameter of 80-85 cm) about 10 m above the base of the stem; leaves 18-27 (-40); fruits massive, to 17 cm long and to 11 cm wide, broadly ovoid and usually flat-topped, the shape apparently strongly depending on the number of seeds developing and on close-packing in the infructescence, yellow to dull orange or red at maturity.

The species grows in riverine forests and savannahs in low-lying areas, particularly on sandy or alluvial soils. In West Africa the patchy distribution observed in this species may be influenced by man and elephants (Dransfield, 1982, 2010).

Found across sub-Saharan Africa as far south as northern South Africa, and the horn of Africa. The palm was not recorded by Bayton (2007) in Angola but according to Baker (2008) its presence in this country seems likely. Present also on a number of off-shore islands and also in the Sambirano region of northwest Madagascar. *B. aethiopicum* grows from sea level to 1200 m.

BORASSUS AETHIOPUM

Ecological studies on this species are available for wild populations in Ivory Coast (Barot & al., 2000; Barot & Gignoux, 2003) and Benin (Ouinsavi, 2011).

There has been some debate about the recognition of *B. aethiopicum* and *B. flabellifer* as different species; however, Dransfield (1986) and Bayton (2007) provided convincing arguments to keep them separated.

Several authors (e.g. Mollet, 1999; Bayton, 2007) have reported that this palm is used for wine production and this activity may threaten wild populations of this species in some West African countries (Sambou, 2002). The undeveloped endosperm and the cotyledonary stalks are consumed and the leaves used for thatch and weaving. The fruits have been reported to be eaten in Guinée-Bissau (Diniz & Martins, 2002) and also in Ivory Coast. For a comprehensive description of the uses of this palm in Africa see Giffard (1967) and Burkill (1997).

B. akeassii Bayton, Ouéd. & Guinko, *Bot. J. Linn. Soc.* 150: 420 (2006); *Bot. J. Linn. Soc.* 150: 420 (2006); *Kew Bulletin* 62: 574 (2007); *Fl. anal. Bénin*: 54 (2006); *Boissiera* 65: 32 (2012). – *Icon.*: *Bot. J. Linn. Soc.* 150: 421 (2006); *Kew Bulletin* 62: 576 (2007); *Palms* 53: 37-42 (2009).

syn.: *B. aethiopicum* var. *domesticus* A. Chev.

Stem to 15 m tall and to 80 cm in diameter, almost always ventricose; leaves 8-22; fruits large, 15 cm long and to 12 cm in diameter, ovoid, yellowish green at maturity.

Growing in the Sudan savannahs, with 800-1100 mm annual rainfall. Present in Benin, Burkina Faso, Central African Republic, Côte d'Ivoire, Mali, Niger, Nigeria, Senegal (Aké Assi & Guinko, 1996; Arbonnier, 2002), although the species may be much wider than suggested due to the misidentification of the palm *B. aethiopicum* (Bayton, 2007). The species is always found in lowland savannahs.

Borassus akeassii is apparently closely related to *B. flabellifer* (Aké Assi & Guinko, 1996; Ouédraogo & al., 2002). Bayton (2007) studied both species in detail and found several characters, in particular related to the transverse commissures in the leaf blade that enable a clear differentiation between them.

Bayton (2007) reported that this palm is used in Burkina Faso for wine production. The undeveloped endosperm is consumed and the leaves used for thatch and weaving.

CALAMUS / I

The genus *Calamus* (374 spp.) is the largest palm genus. It consists of pleonanthic, dioecious palms, most often with clustered, high-climbing stems and pinnate leaves; inflorescences bearing unisexual flowers; fruits covered by imbricate scales.

Calamus has a very wide distribution, occurring in tropical west and central Africa, India, Burma, south China through the Malay Archipelago to Australia and Fiji. The greatest abundance and diversity of species has been reported for the archipelagos of Malesia (Sunderland, 2012).

The genus ranges from sea-level to over 3000 m (in Asian species), although clearly most diverse in the rain forests at low altitudes (Dransfield & al., 2008).

Many species of *Calamus* (e.g. *C. caesius*, *C. manan*, *C. trachycoleus*) are of important commercial value in Asia. Although intensively used for the stem, called "rattan", the uses reported in this genus include thatching, fish traps construction, edible fruits, medicine, etc. (Dransfield & al., 2008)

BAKER, W. J. (2008). *Palmae*. In: *Plants of Angola* (E. FIGEREIDO & G. F. SMITH, eds.). *Strelitzia* 22: 172-173.

CALAMUS

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Calamus deerratus G. Mann & H. Wendl., Trans. Linn. Soc. London 24: 429 (1864); Fl. W. Trop. Afr., ed. 2 3(1): 166 (1968); Fl. Trop. E. Africa, Palmae: 43 (1986); Palm. Afr. 50 (1995); Bases Doc. Fl. Guinea Equat.: 375 (1999); Woody Pl. W. Afr. Forest: 870 (2006); Fl. anal. Bénin: 54 (2006); Check-list Pl. Vasc. Gabon: 320 (2006); Field Guide Rattans Afr. 62 (2007); Strelitzia 22: 172 (2008); Fl. Rép. Guinée: 383 (2009); Fl. Zambes. 13(2): 47 (2010); Boissiera 64: 215 (2011); Boissiera 65:32 (2012); Phytotaxa 51: 6 (2012). – Icon.: Fl. Trop. E. Africa, Palmae: 42, 164 (1986); Garcia Orta, Sér. Bot. 16: 47 (2002); Field Guide Rattans Afr. 62, 63 (2007); Fl. Zambes. 13(2): 48 (2010); Phytotaxa 51: 7 (2012).

syn.: *C. akimensis* Becc.; *C. barberi* Drude; *C. falabensis* Becc.; *C. heudelotii* Becc. & Drude; *C. laurentii* De Wild.; *C. leprieurii* Becc.; *C. perrottetii* Becc.; *C. schweinfurthii* Becc.; *Eremospatha deerrata* (G. Mann & H. Wendl.) T. Durand & Schinz; *Palmijuncus deerratus* (G. Mann & H. Wendl.) Kuntze

Stems 20-30 m long, up to 4 cm in diameter; leaves ecirrate, 1-1.75 m long; flagellum emerging from the leaf axil, up to 3.5 m long; leaflets often grouped and generally irregularly arranged; male and female inflorescences similar in aspect, up to 3,5 m long; fruits oblong to broadly ellipsoid, 1,5 cm long, 1 cm wide, covered by 17-20 rows of scales, dull brown when ripe.

This species largely prefers to grow in swamps, where it can form very dense populations, and riverine forests. It can be also found in the understory of wet forests. Species exclusively present in lowlands although in East Africa also reported to grow at 1000-1500 m (Dransfield, 1986).

Previous studies have suggested the presence of almost 10 species of *Calamus* for Africa. In most cases these species have been described from limited and incomplete collections at different stages of growth (Tuley, 1995). The detailed study of Sunderland (2012) has accurately demonstrated that the genus in Africa is represented by only one, very polymorphic, species.

This species represents the most widely distributed rattan of Africa; it is present from the Gambia and Casamance in Senegal, southwards to northern Angola and Zambia and eastwards to southern Sudan and Uganda (Baker, 2008; Lisowski, 2009; Sunderland, 2012).

Widely used as a source of cane, particularly in the absence of more desirable species. Commonly used for weaving (Diniz & Martins, 2002; Sunderland, 2007). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

COCOS / 1

The genus *Cocos* is monotypic and consists of pleoanthic, monoecious palms, with solitary stems and regularly pinnate leaves. The fruits are large, ovoid to oblong, green to yellow (size and colour largely depending on the cultivar).

The genus *Cocos* has a very wide distribution, occurring in cultivation in almost all tropical coastal areas of the world. Naturalised self-propagating populations are relatively common. The genus is most often associated to low altitudes. Its origin remains uncertain although frequently associated to western Pacific regions (Dransfield & al., 2008).

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing. Royal Botanic Gardens, Kew. 732 pp.

TULEY, P. (1995). *The Palms of Africa*. The Trendrine Press, UK, 189 pp.

VAN DER VOSSSEN, H. A. M. & G. S. MKAMILO (Eds.) (2007). *Ressources végétales de l'Afrique tropicale 14. Oléagineux*. 260 pp.

Cocos nucifera L., Sp. Pl.: 1188 (1753); Scripta Bot. Belg. 4: 106 (1993); Fl. Ethiopia & Eritrea 6: 526 (1997); Pl. Mt Cameroon: 179 (1998); Check-list Pl. Vasc. Gabon: 320 (2006); Strelitzia 22: 172 (2008); Fl. Rép. Guinée: 383 (2009); Fl. Zambes. 13(2): 63 (2010); Boissiera 65: 33 (2012).-Icon.: Fl. Zambes. 13(2): 64 (2010).

syn.: *Calappa nucifera* (L.) Kuntze; *Cocos indica* Royle; *C. mamillaris* Blanco; *Cocos nana* Griff.; *C. nucifera* var. *angustifolia* Hassk.; *C. nucifera* var. *aurea* auct.; *C. nucifera* var. *javanica* G.V. Narayana; *C. nucifera* var. *microcarpa* Hassk. ex F.W.T. Hunger (nom. superfl.); *C. nucifera* var. *nana* (Griff.) G.V. Narayana; *C. nucifera* var. *pumila* Hassk.; *C. nucifera* var. *rubescens* Hassk.; *C. nucifera* var. *spicata* K.C. Jacob; *C. nucifera* var. *synphyllica* Becc.; *Diplothemium henryanum* F. Br.; *Palma cocos* Mill. (nom. superfl.).

Stem to 25 m tall and 20-30 cm in diameter, almost always straight; leaves numerous, to 5 m long, frequently with an arched rachis and more or less pendant leaflets; inflorescences once branched, covered by a woody peduncular bract; fruits 1-seeded.

In Africa common in coastal habitats, particularly sandpits and similar in-shore island situations (Tuley, 1995).

Cocos nucifera has been subject of intensive agronomic research, in particular with respect to fruit characters. As indicated for the genus, *C. nucifera* is widespread in almost all tropical coastal areas of the world. Although predominant in low altitudes it will flower and fruit in humid equatorial regions at altitudes up to 900 m (Dransfield & al., 2008).

Much of the morphological diversity expressed in this species was described in the almost 50 varieties proposed by Blume (1847), all of them regarded by Govaerts & Dransfield (2005) as synonyms of one single polymorphic species.

Cocos nucifera is one the most economically important palm species. Particularly in the Old World almost all organs of the palm (e.g. stems, leaves, and fruits) are used. The importance of this species as a source of vegetal oil in African countries has been thoroughly documented by van der Vossen & Mkamilo (2007). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

ELAEIS / I

The genus *Elaeis* is represented by only 2 species and consists of pleoanthic, monoecious palms, with solitary stems and regularly pinnate, plumose leaves. Inflorescences unisexual, emerging from the base of the leaf sheaths. Inflorescences compact, frequently armed by the woody and sharply spiny floral bracts. Fruits laterally flattened-ovoid to oblong, yellow, orange to red when ripe (size and colour largely depending on the cultivar).

The genus *Elaeis* is distributed in the wild in tropical ecosystems of Africa and America. One species *E. oleifera* is distributed in Central America south to northern Colombia and scattered localities in the amazon region (Henderson & al., 1995), whereas *E. guineensis* is endemic from West Africa. Nowadays, this species is intensively cultivated for oil production around the world, in particular in south eastern Asian countries.

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VAN DER VOSSEN, H. A. M. & G. S. MKAMILO (2007). *Ressources végétales de l'Afrique tropicale 14. Oléagineux*. 260 pp.

Elaeis guineensis Jacq., *Select. Stirp. Amer. Hist.*: 280 (1763); *Check-list Pl. Vasc. Gabon*: 320 (2006); *Fl. W. Trop. Afr.*, ed. 2 3(1): 161 (1968); *Fl. Trop. E. Africa, Palmae*: 50 (1986); *Scripta Bot. Belg.* 4: 106 (1993); *Palm. Afr.* 102 (1995); *Pl. Mt Cameroon*: 179 (1998); *Bases Doc. Fl. Guinea Equat.*: 375 (1999); *Prelim. checklist vasc. pl. Mozambique* 30: 120 (2004); *Fl. anal. Bénin*: 56 (2006); *Woody Pl. W. Afr. Forest*: 868 (2006); *Check-list Pl. Vasc. Gabon*: 320 (2006); *Strelitzia* 22: 172 (2008); *Fl. Rép. Guinée*: 383 (2009); *Fl. Zambes.* 13(2): 66 (2010); *Boissiera* 64: 215 (2011); *Boissiera* 65: 33 (2012). – *Icon.: Fl. Trop. E. Africa, Palmae*: 49, 188-189 (1986); *Fl. Zambes.* 13(2): 67 (2010).

syn.: *Elaeis dybowskii* Hua; *E. guineensis* f. *androgyna* A. Chev.; *E. guineensis* f. *caryolitica* Becc.; *E. guineensis* f. *dioica* A. Chev.; *E. guineensis* f. *dura* Becc.; *E. guineensis* f. *fatua* Becc.; *E. guineensis* f. *ramosa* A. Chev.; *E. guineensis* f. *semidura* Becc.; *E. guineensis* f. *tenera* Becc.; *E. guineensis* subsp. *nigrescens* A. Chev. (nom. inval.); *E. guineensis* subsp. *virescens* A. Chev.; *E. guineensis* var. *albescens* Becc.; *E. guineensis* var. *angulosa* Becc.; *E. guineensis* var. *ceredia* A. Chev.; *E. guineensis* var. *compressa* Becc.; *E. guineensis* var. *gracilinux* A. Chev.; *E. guineensis* var. *idolatraca* A. Chev.; *E. guineensis* var. *intermedia* A. Chev.; *E. guineensis* var. *leucocarpa* Becc.; *E. guineensis* var. *macrocarpa* A. Chev.; *E. guineensis* var. *macrocarpa* Becc.; *E. guineensis* var. *macrophylla* A. Chev.; *E. guineensis* var. *macrosperma* Welw.; *E. guineensis* var. *madagascariensis* Jum. & H. Perrier; *E. guineensis* var. *microsperma* Welw.; *E. guineensis* var. *pisifera* A. Chev.; *E. guineensis* var. *repanda* A. Chev.; *E. guineensis* var. *rostrata* Becc.; *E. guineensis* var. *sempernigra* A. Chev.;

ELAEIS GUINEENSIS

E. guineensis var. *spectabilis* A. Chev.; *E. macrophylla* A. Chev. (nom. nud.); *E. madagascariensis* (Jum. & H. Perrier) Becc.; *E. melanococca* Gaertn.; *E. nigrescens* (A. Chev.) Prain (nom. inval.); *E. virescens* (A. Chev.) Prain; *Palma oleosa* Mill.

Stem to 30 m tall and 40-50 cm in diameter, almost always straight and densely covered by leaf sheath remnants; leaves up to 50, to 8 m long, frequently with an arched rachis and more or less regularly inserted, clustered leaflets; inflorescences and infructescences tightly compressed by the surrounding leaf sheaths; fruits 3-4 cm long, 2-3 cm in diameter, topped by a solid stigmatic remain.

This palm is mostly associated to humid areas and riparian locations, normally associated to semi-shadow conditions; however, it easily adapts to a wide range of vegetation types including open savannahs or secondary forests.

Elaeis guineensis is distributed in lowland, humid areas of West Africa and the Congo Basin. It also occurs in restricted riparian locations in East and Southern Africa, Madagascar (probably introduced) and the off-shore Indian and Atlantic Ocean islands (Tuley, 1995; Dransfield & al., 2008). Although this is species generally present in lowland areas, it has been reported to grow up to 680 m in Cameroon (Harvey & al., 2010) and in East Africa it reported to grow up to 1500 m (Dransfield, 1986).

While *Elaeis oleifera* is relatively well known from a morphologic and taxonomic point of view, the morphological plasticity displayed in *E. guineensis* originated the description of a large number of varieties, remarkably in the treatments of Chevalier (1910) and Beccari (1914). All infra-specific taxa described are nowadays regarded by Govaerts & Dransfield (2005) as synonyms of one single and polymorphic species.

The oil palm (*Elaeis guineensis*) is one of the most economically important members of the family. Almost all organs of the palm are used by local populations. The trunks and the leaves are used for house construction and thatch; the fruits are used for cooking the famous oil palm soup or *sauce graine*. The sweet sap tapped from the stem is an important product obtained from the palm (see Mollet, 1999 for details). The latter is transformed in syrup, sugar or by fermentation converted into alcohol. The oil, wine and the roots of this species have been reported to be used in local medicine in Guiné-Bissau (Diniz & Martins, 2002). The importance of this species as a source of vegetal oil in African countries has been thoroughly documented by van der Vossen & Mkamilo (2007). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

Abundant archaeological evidence of the occurrence of the endocarp of this palm in the rain forest and woodland savanna zones of West and Central Africa from about 5000 B.P. has shown the species to be an important element of subsistence economy of the region (Sowunmi, 1999).

EREMOSPATHA / II

The genus *Eremospatha* is composed of 11 species. It consists of pleoanthic, hermaphroditic, spiny palms; most often with high-climbing, solitary or clustered stems, entire-bifid leaves when juvenile and regularly or irregularly pinnate leaves at maturity, the latter with a cirrus emerging from the rachis apex. The combination of leaf sheaths without spines and stem sometimes presenting a conspicuous knee below leaf junction is quite characteristic for this genus.

Well distributed in several countries of West Africa and the Congo basin, with outliers in Uganda, Tanzania and Zambia (Sunderland, 2012).

EREMOSPATHA

Eremospatha is a shade tolerant rattan palm well represented in the lowland forest, often below 1000 m.

Many species of *Eremospatha* are of important commercial value (Sunderland, 2007) and as other African rattans, overexploitation of the wild populations is threatening the survival of many populations of these palms.

As pointed out by Sunderland (2012) many species have been described on the base of juvenile developmental stages, which are often represented by polymorphic entire-bifid leaf blades. Vegetative organs (e.g. flowers, fruits) are not known for many species and would be required for a better definition of their taxonomic status. The leaf polymorphism in two species of the genus (*Eremospatha laurentii*, *E. dransfieldii*) growing in Ivory Coast was studied by Kouassi (2005).

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SUNDERLAND, T. C. H. (2012). A taxonomic revision of the rattans of Africa (*Arecaceae*: *Calamoideae*). *Phytotaxa* 51: 1-76.

Eremospatha barendii Sunderl., *J. Bamboo Rattan* 1: 361 (2002); *Field Guide Rattans Afr.* 22 (2007); *Phytotaxa* 51: 28 (2012). – Icon.: *Field Guide Rattans Afr.* 22, 23 (2007); *Phytotaxa* 51: 29 (2012); *Palms* 57: 131 (2013).

syn.: none reported in the literature.

Stems to 25-30 m long, circular in cross-section; leaves up to 2.4 m long; cirrus up to 1.2 cm long; leaflets up to 26 on each side of the rachis, opposite or sub-opposite, linear-lanceolate, more or less regularly inserted in the rachis; inflorescences up to 30 cm long; flowers unknown; fruits oblong, 2.3-2.8 cm long and 1.5-1.7 cm in diameter.

Poorly-known species thought to occur in gaps in high forest (Sunderland, 2012).

This species is known only from two locations near Lolodorf, Cameroon (Sunderland, 2012).

Eremospatha barendii is characterized by the presence of conspicuous inflorescence bracts and a dry, splitting ocrea, the latter only shared with *E. wendlandiana*.

No uses have been recorded for this palm (Sunderland, 2007).

E. cabrae (De Wild. & T. Durand) De Wild.; *Ann. Mus. Congo Belge, Bot.*, V, 1: 95 (1903); *Palm. Afr.* 45 (1995); *Field Guide Rattans Afr.* 14 (2007); *Phytotaxa* 51: 18 (2012). – Icon.: *Field Guide Rattans Afr.* 14, 15 (2007); *Phytotaxa* 51: 19 (2012).

syn.: *Calamus cabrae* De Wild. & T. Durand; *E. rhomboidea* Burret; *E. suborbicularis* Burret

Stems of 20-30 (-50) m long; leaves 1.5-2 m; cirrus up to 1 m long; leaflets 8-10 on each side of the rachis, obovate to trapeziform, more or less regularly inserted in the rachis; inflorescences up to 40 cm long; flowers born in close pairs; fruits cylindrical to rhomboid, 2.5-3 cm long and 1.6-1.9 cm in diameter.

EREMOSPATHA CABRAE

This species is associated to swamp vegetation and riverine forests (Sunderland, 2012).

Eremospatha cabrae is restricted to Gabon, southwards to Angola and across to the lowland forests of the wider Congo Basin (Baker, 2008; Sunderland, 2012).

According to Sunderland (2007) split or whole stems are used for a wide range of purposes (woven products, construction of cane bridges, etc).

E. cuspidata (G. Mann & H. Wendl.) H. Wendl. in O.C.E.de Kerchove de Denterghem, *Palmiers*: 244 (1878); *Palm. Afr.* 51 (1995); *Check-list Pl. Vasc. Gabon*: 320 (2006); *Field Guide Rattans Afr.* 30 (2007); *Strelitzia* 22: 172 (2008); *Fl. Zambes.* 13: 40 (2010); *Phytotaxa* 51: 30 (2012); – Icon.: *Field Guide Rattans Afr.* 30, 31 (2007); *Fl. Zambes.* 13: 41 (2010); *Phytotaxa* 51: 31 (2012).

syn.: *Calamus cuspidatus* G. Mann & H. Wendl.

Stems to 12-15 m long, circular in cross-section; leaves up to 2 m long; cirrus 50-75 cm long; leaflets 15-20 on each side of the rachis, opposite or sub-opposite, linear-lanceolate, more or less regularly inserted in the rachis; inflorescences 30-38 cm long; flowers borne in close pairs; fruits oblong-cylindrical, 2-2.4 cm long and 1.6-2 cm in diameter.

This is a highly unusual African rattan as it is commonly found in the deep white savannah areas characteristic of the coastal forest of the Congo Basin, where it forms dense, scrambling thickets (Sunderland, 2012).

Relatively uncommon species restricted to the Congo Basin (Sunderland, 2012) and cited by Baker (2008) for Angola; growing from sea level to 1200 m.

The split stems are used for light basketry and weaving, particularly in the absence of other species (Sunderland, 2007).

E. dransfieldii Sunderl., *Kew Bull.* 58: 988 (2003 publ. 2004); *Woody Pl. W. Afr. Forest*: 872 (2006); *Field Guide Rattans Afr.* 18 (2007); *Phytotaxa* 51: 23 (2012). – Icon.: *Field Guide Rattans Afr.* 18, 19 (2007); *Phytotaxa* 51: 24 (2012).

syn.: none reported in the literature.

Stems to 40 m long, circular in cross-section; leaves up to 3.5 m long; cirrus 1.2-1.5 m long; leaflets up to 40 on each side of the rachis, highly variable in shape, obovate-elliptic to oblanceolate to rhomboid, inequidistant. The inflorescences, flowers and fruits have never been collected.

This is a light demanding species found particularly along forest margins, in tree-fall gaps and along road sides (Sunderland, 2012).

Eremospatha dransfieldii is mainly found in the Western region of Ghana and eastern Ivory Coast, with outliers in Sierra Leone (Sunderland, 2012). Recent floristic inventories in Ivory Coast identified a few, highly endangered, populations of this species in the South-eastern region of the country (Stauffer & Ouattara, in prep.).

The canes of this palm are mainly used for furniture frames and coarse basketry and traded in Ghana and Côte d'Ivoire (Sunderland, 2007).

EREMOSPATHA

E. haullevilleana De Wild., Ann. Mus. Congo Belge, Bot., V, 1: 96 (1903); Fl. Trop. E. Africa, Palmae: 35 (1986); palm. Afr. 45 (1995); Check-list Pl. Vasc. Gabon: 320 (2006); Field Guide Rattans Afr. 26 (2007); Strelitzia 22: 172 (2008); Phytotaxa 51: 38 (2012). – Icon.: Fl. Trop. E. Africa, Palmae: 34 (1986); Field Guide Rattans Afr. 26, 27 (2007); Phytotaxa 51: 39 (2012); Palms 57: 128 (2013).

syn.: none reported in the literature.

Stems to 25 m long, circular in cross-section; leaves bifid at juvenile stage, when adult pinnate, up to 1.2 m long; cirrus 60 cm long; inflorescences up to 35 cm long; flowers born in close sub-distichous pairs; fruits oblong, 2.5-3 cm long and 1.5-2 cm in diameter.

This species is found both in closed-canopy forest and in open areas (Sunderland, 2012). In West Africa this species has been reported in the riverine and swamp forest, apparently from lowlands to 1300 m. (Dransfield, 1982).

Eremospatha haullevilleana occurs in the lowland forest of the Congo Basin (Sunderland, 2012) and reported by Baker (2008) for Angola.

This is a preferred species for basketry and weaving throughout its range. The apical bud is consumed and in the Democratic Republic of Congo the fruits are used for decoration (Sunderland, 2007).

E. hookeri (G. Mann & H. Wendl.) H. Wendl. in O.C.E.de Kerchove de Denterghem, Palmiers: 244 (1878); Fl. W. Trop. Afr., ed. 2 3(1): 168 (1968); Palm. Afr. 45 (1995); Pl. Mt Cameroon: 179 (1998); Check-list Pl. Vasc. Gabon: 320 (2006); Field Guide Rattans Afr. 11 (2007); Phytotaxa 51: 15 (2012). – Icon.: Palm. Afr. 44 (1995); Field Guide Rattans Afr. 11-13 (2007); Phytotaxa 51: 16 (2012).

syn.: *Calamus africanus* Rollisson (nom. superfl.); *C. hookeri* G. Mann & H. Wendl.

Stems to 30 m long, often branching; leaves bifid at juvenile stage, when adult pinnate, up to 2.2 m long; cirrus up to 60 cm long; leaflets up to 20 on each side of the rachis, very variable in shape, more or less regularly inserted in the rachis; inflorescences up to 40 cm long; flowers unknown; fruits ovoid to cylindrical, 2.5-3 cm long and 1.5-1.7 cm in diameter.

This species is shade tolerant and often found under forest canopy conditions; however, it is also common in gaps and forest margins and is found in a wide range of edaphic conditions, from swamp vegetation to well-drained volcanic soil (Sunderland, 2012).

Eremospatha hookeri has a distinct Guineo-Congolian distribution primarily in the northernmost part of the Congo Basin (Sunderland, 2012); its presence in Angola remains to be confirmed (Baker, 2008).

Although recognized by handicraft makers and rattan traders as less resistant than *E. macrocarpa*, this palm is still intensively used in West African countries. In Nigeria, the base of the leaf sheath is used as chewstick (Sunderland, 2007). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

E. laurentii De Wild., Bull. Jard. Bot. État Bruxelles 5: 147 (1916); Palm. Afr. 45 (1995); Pl. Mt Cameroon: 179 (1998); Check-list Pl. Vasc. Gabon: 320 (2006); Woody Pl. W. Afr. Forest: 872 (2006); Field Guide Rattans Afr. 16 (2007); Phytotaxa 51: 20 (2012). – Icon.: Palm. Afr. 94, 95, 162, 163 (1995); Field Guide Rattans Afr. 16, 17 (2007); Phytotaxa 51: 21 (2012); Palms 57: 127 (2013).

EREMOSPATHA LAURENTII

syn.: none reported in the literature.

Stems to 30 m long, more or less triangular in cross-section; leaves up to 3 m long; cirrus 1.2-1.5 m long; leaflets up to 30 on each side of the rachis, linear-lanceolate, more or less regularly inserted in the rachis; inflorescences 24-32 cm long; flowers born in close pairs; fruits ovoid or cylindrical, 1.6-2.2 cm long and 1.7-2.0 cm in diameter.

This species is equally found in open areas as well as in canopy forests (Sunderland, 2012)

Eremospatha laurentii occurs in the northern Congo Basin, with outliers in forests of Upper Guinea, with pronounced disjunction from Ivory Coast to Benin (Sunderland, 2012). Its presence in Ivory Coast was pointed out by Kouassi & al. (2005) in the frame of a study on foliar polymorphism in species of *Eremospatha* and *Laccosperma*, and also confirmed by us during a recent visit to the Tai National Park, in the South-western part of the country.

This palm is recognized by handicraft makers and rattan traders as less resistant than *E. macrocarpa*. The canes of this palm are according to Sunderland (2007) rarely used for either furniture manufacture or basketry.

E. macrocarpa Schaedtler, Hamburger Garten- Blumenzeitung 31: 163 (1875); Fl. W. Trop. Afr., ed. 2 3(1): 168 (1968); Palm. Afr. 45 (1995); Pl. Mt Cameroon: 179 (1998); Bases Doc. Fl. Guinea Equat.: 375 (1999); Fl. anal. Bénin: 57 (2006); Woody Pl. W. Afr. Forest: 872 (2006); Field Guide Rattans Afr. 24 (2007); Fl. Rép. Guinée: 383 (2009); Boissiera 64: 215 (2011); Phytotaxa 51: 34 (2012). – Icon.: Palm. Afr. 44, 161 (1995); Field Guide Rattans Afr. 24, 25 (2007); Phytotaxa 51: 35 (2012).

syn.: *Calamus macrocarpus* G. Mann & H. Wendl. (nom. illeg.); *E. sapinii* De Wild.

Stems to 50-75 (-150 m) m long, circular in cross-section; leaves bifid at juvenile stage, when adult pinnate, up to 3.5 m long; cirrus 1.2-2 m long; leaflets up to 25 on each side of the rachis, linear-lanceolate, opposite to sub-opposite, more or less regularly inserted; inflorescences up to 55 cm long; flowers born in close pairs; fruits oblong, 2.2-2.6 cm long and 1-1.5 cm in diameter.

This is an extremely light demanding species, occurring in gap vegetation and forest margins (Sunderland, 2012). Ecological studies on the population structure, reproductive strategy and life history of this species in Ivory Coast were undertaken by Kouassi & al. (2008, 2009).

Eremospatha macrocarpa is one of the most widespread species in the genus. It is distributed from Senegal through the lowland forest of the Congo Basin (Lisowski, 2009; Sunderland, 2012).

This is the most valuable rattan species in Africa as deemed to be the best producer of cane. Its canes are stronger, more durable and flexible and are even comparable to Southeast Asia small diameter rattans (Sunderland, 2007). The species is frequently used for the manufacture of chairs, baskets, bracelets, and many other objects. For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

E. quinquecostulata Becc., Webbia 3: 279 (1910); Palm. Afr. 123 (1995); Field Guide Rattans Afr. 32 (2007); Phytotaxa 51: 10 (2012). – Icon.: Field Guide Rattans Afr. 32, 33 (2007); Phytotaxa 51: 14 (2012).

syn.: none reported in the literature.

Stems 10-20 m long, more or less circular in cross-section; leaves to 1 m long; cirrus up to 40-50 cm; leaflets arranged in groups of 2 or 4; inflorescences, flowers and fruits unknown.

This species has been reported growing in high forest.

EREMOSPATHA QUINQUECOSTULATA

The variability of this species has never been assessed. Tuley (1995) did not recognize this palm as a valid taxon and suggested that it may be better considered as a juvenile form of unknown provenance. However, Sunderland (2012) confirmed that this palm corresponds indeed to a distinct taxon. It is critical to collect and thoroughly study the reproductive organs of this still imperfectly known species in order to better establish its morphologic and taxonomic identity.

Populations of this species are only known from SE Nigeria through Cameroon (Sunderland, 2012).

This species can be easily differentiated from all other *Eremospatha* by its leaf sheaths of more or less 1 cm in diameter, inconspicuous knees and clearly inequidistant leaflets.

In Gabon the stem is split and employed for basic weaving, particularly in the absence of other species (Sunderland, 2007).

E. tessmanniana Becc., Webbia 3: 278 (1910); Bases Doc. Fl. Guinea Equat.: 375 (1999); Field Guide Rattans Afr. 28 (2007); Phytotaxa 51: 33 (2012). – Icon.: Field Guide Rattans Afr. 28, 29 (2007); Phytotaxa 51: 14 (2012).

syn.: none reported in the literature.

Stems to 60–80(–150) m long, circular in cross-section; leaves bifid at juvenile stage, when adult pinnate, to 1 m long; cirrus 40–60 cm long; inflorescences, flowers and fruits never collected.

This species grows on well-drained soils in closed-canopy forests (Sunderland, 2012).

Uncommon palm only known from the Takamanda region of the Cameroon/Nigeria border and cross border region of Cameroon and the Rio Muni territory of Equatorial Guinea (Sunderland, 2012).

No economic importance reported so far for this taxon (Sunderland, 2007).

E. wendlandiana Dammer ex Becc., Webbia 3: 290 (1910); Fl. W. Trop. Afr., ed. 2 3(1): 168 (1968); Palm. Afr. 45 (1995); Pl. Mt Cameroon: 179 (1998); Check-list Pl. Vasc. Gabon: 320 (2006); Field Guide Rattans Afr. 20 (2007); Strelitzia 22: 172 (2008); Phytotaxa 51: 26 (2012). – Icon.: Palm. Afr. 44, 162 (1995); Field Guide Rattans Afr. 20, 21 (2007); Phytotaxa 51: 27 (2012); Palms 57: 127 (2013).

syn.: *E. korthalsii* Becc.

Stems to 60 m long, more or less circular in cross-section; leaves up to 2 m long; cirrus up to 2 m long; leaflets up to 20 on each side of the rachis, rhomboid or trapezoid, more or less regularly inserted; inflorescences up to 80 cm long; flowers born in close pairs, fruits ovoid to broadly cylindrical, 2.5–3.5 cm long and 1.8–2.4 cm in diameter.

This species is commonly found in gap vegetation and forest margins, although it is commonly present in the juvenile form in closed-canopy forest (Sunderland, 2012).

Eremospatha wendlandiana is distributed from SE Nigeria to Gabon, with outliers in the Central African Republic (Sunderland, 2012). It was reported for Angola by Baker (2008).

This species is used for several minor purposes and it does not have much commercial value (Sunderland, 2007).

HYPHAENE / 7

The genus *Hyphaene* (apparently only 8 spp.) is distributed in dry regions of continental Africa, Madagascar, the Red Sea and the coasts of the Gulf of Eilat, Arabia and western India. One species reported from Sri Lanka may be an introduction (Dransfield & al., 2008). The genus *Hyphaene* is pleioanthic, dioecious and contains species with small to massive and tall, solitary or basally clustered, erect or creeping stems, costapalmate leaves and fruits conspicuously polymorphic. The presence of stem branching in some species of this genus represents a unique character with respect to other members of the palm family. These palms commonly grow in sandy lowlands, and open secondary forests or savannahs.

Herbarium samples of *Hyphaene* can be easily confused with *Borassus*. The specimens of *Hyphaene* are characterized by the presence of red dark rounded scales on the leaf blade and very indistinct lateral veins, whereas in *Borassus* specimens these scales are lacking and the lateral veins are clearly distinct.

Many species of *Hyphaene* provide an important resource for the rural population. The most important resources are the leaves which are used in basket weaving. Furthermore, the fruit is a key nutritive resource during the end of the dry season when food is scarce. Petioles and stems are used in construction and apparently adult stems were tapped in the past.

Despite its economic and ecologic importance *Hyphaene* remains and extremely poorly known genus in need of a thorough and modern taxonomic revision.

AMWATTA, C. J. M. (2004). Diversity of use of Doum palm (*Hyphaene compressa*) leaves in Kenya. *Palms* 48: 184–190.

ARBONIER M. (2009). *Arbres, arbustes et lianes des zones sèches d'Afriques de l'Ouest*. 3^e édition. Quae, MNHN, Paris, France 573 p.

BAKER, W. J. (2008). Palmae. In: Plants of Angola (E. FIGEREIDO & G. F. SMITH, eds.) *Strelitzia* 22: 172–173.

BECCARI, O. (1908). Le palme "Dum" od "Hyphaene" e più specialmente quelle dell'Africa italiana. *Agric. Colon.* 2: 137–183.

DIJKMAN, W. (1999). Leaf productivity and response to harvesting in the Ilala palm (*Hyphaene petersiana*) in southern Zimbabwe. In: TIMBERLAKE, J. & S. KATIVU (eds.), *African Plants: Biodiversity, Taxonomy and Uses*: 529–538. Royal Botanic Gardens, Kew.

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HYPHAENE

Hyphaene compressa H. Wendl., Bot. Zeitung (Berlin) 36: 116 (1878); Fl. Trop. E. Africa, Palmae: 26 (1986); Palm. Afr. 26 (1995); Fl. Ethiopia & Eritrea 6: 524 (1997); Fl. Zambes. 13(2): 56 (2010); Fl. Trop. E. Africa, Palmae: 29 (1986); Prelim. checklist vasc. pl. Mozambique 30: 120 (2004); Fl. Zambes. 13(2): 59 (2010). – Icon.: Fl. Trop. E. Africa, Palmae: 25 (1986); Palm. Afr. 154 (1995); Palms 48: 184 (2004).

syn.: *Chamaeriphes compressa* (H. Wendl.) Kuntze; *H. benadirensis* Becc.; *H. incoje* Furtado; *H. kilvaensis* (Becc.) Furtado; *H. mangoides* Becc.; *H. megacarpa* Furtado; *H. multififormis* Becc.; *H. multififormis* subsp. *ambigua* Becc.; *H. multififormis* subsp. *compressa* (H. Wendl.) Becc.; *H. multififormis* subsp. *deformis* Becc.; *H. multififormis* subsp. *diminuta* Becc.; *H. multififormis* subsp. *gibbosa* Becc.; *H. multififormis* subsp. *intermedia* Becc.; *H. multififormis* subsp. *kilvaensis* Becc.; *H. multififormis* subsp. *macrocarpa* Becc.; *H. multififormis* subsp. *mahengensis* Becc.; *H. multififormis* subsp. *manca* Becc.; *H. multififormis* subsp. *morogorensis* Becc.; *H. multififormis* subsp. *moshiensis* Becc.; *H. multififormis* subsp. *nasuta* Becc.; *H. multififormis* subsp. *obconica* Becc.; *H. multififormis* subsp. *obesa* Becc.; *H. multififormis* subsp. *odorata* Becc.; *H. multififormis* subsp. *panganensis* Becc.; *H. multififormis* subsp. *plagiosperma* Becc.; *H. multififormis* subsp. *rovumensis* Becc.; *H. multififormis* subsp. *semiplaena* Becc.; *H. multififormis* subsp. *stenosperma* Becc.; *H. multififormis* subsp. *subglobosa* Becc.; *H. multififormis* subsp. *tangatensis* Becc.; *H. multififormis* subsp. *trigibba* Becc.; *H. multififormis* subvar. *lindiensis* Becc.; *H. semiplaena* (Becc.) Furtado

Stem to 20 m tall and to 40 cm in diameter, solitary or apparently forking below ground and producing 2–4 stems of more or less the same size; leaves to 15; fruits extremely polymorphic in shape and size, to 12 cm long and 9 cm wide, orange-brown at maturity.

Hyphaene compressa grows in coastal lowland regions and extends to inland areas along water courses, growing from sea level to 1400 m. This species has been also reported growing in secondary vegetation.

At least 32 different names are nowadays considered as synonyms of this extremely polymorphic species (e.g. Dransfield, 1986); most of these synonyms correspond to infraspecific taxa proposed by Beccari (1924) for a taxonomically complex *H. multififormis*.

This species is endemic from East Africa. It was reported for Kenya and Tanzania and apparently extending north to Somalia and southwards to Mozambique (Dransfield, 2010). *Hyphaene compressa* may display some degree of hybridization with other species of *Hyphaene* present in its northern range of distribution.

The leaves of this palm fulfill many subsistence and economic needs of the nomadic pastoralist and agro-pastoralist communities in the northern and eastern regions of Kenya (Amwatta, 2004).

This is a highly polymorphic palm (Dransfield, 2010) that requires further taxonomic study.

H. coriacea Gaertn.; Fl. Trop. E. Africa, Palmae: 29 (1986); Palm. Afr. 25 (1995). –Icon.: Fl. Trop. E. Africa, Palmae: 25, 30, 32 (1986); Palm. Afr. 25, 94, 95, 153 (1995); Fl. Zambes. 13(2): 44, 59 (2010).

syn.: *Chamaeriphes coriacea* (Gaertn.) Kuntze; *C. shatan* (Bojer ex Dammer) Kuntze; *C. turbinata* (H. Wendl.) Kuntze; *Corypha africana* Lour.; *H. baronii* Becc.;

HYPHAENE CORIACEA

H. beccariana Furtado; *H. coriacea* var. *minor* Drude; *H. hildebrandtii* Becc.; *H. natalensis* Kuntze; *H. oblonga* Becc.; *H. parvula* Becc.; *H. pileata* Becc.; *H. pleuropoda* Becc.; *H. pyrifer* Becc.; *H. pyrifer* var. *arenicola* Becc.; *H. pyrifer* var. *gosciaensis* (Becc.) Becc.; *H. pyrifer* var. *margaritensis* Becc.; *H. shatan* Bojer ex Dammer; *H. spaerulifera* Becc.; *H. spaerulifera* var. *gosciaensis* Becc.; *H. tetragonoides* Furtado; *H. turbinata* H. Wendl.; *H. turbinata* var. *ansata* Becc.; *H. wendlandii* Dammer

Stem to 5 m tall and to 25 cm in diameter, solitary or clustered, with decumbent growth form; leaves 8–15; fruits extremely polymorphic in shape and size, to 6 cm long and 4 cm wide, pale green when immature, ripening dark brown.

Hyphaene coriacea grows in coastal lowland regions, especially sand dunes, and rarely extends to inland areas; it is distributed from sea level to 300 m.

At least 23 different names, all of them considered nowadays as synonyms, have been proposed for this species.

This species is distributed in Kenya and Tanzania, extending to Somalia and southwards to Mozambique and South Africa; also distributed in Madagascar (Dransfield, 2010); from sea level to 250 m.

The name *Hyphaene coriacea* has been widely misused and often applied to other species (*H. compressa*). Also, more recent field work has emphasized the plasticity of this species and the gradual continuum in form between the dwarf, coastal dune type to the more erect type (Tuley, 1995).

No uses have been reported for this species.

H. guineensis Schumach. & Thonn. in H. C. F. Schumacher, Beskr. Guin. Pl.: 445 (1827); Palm. Afr. 30 (1995); Palms 48: 14 (2004); Check-list Pl. Vasc. Gabon: 320 (2006); Strelitzia 22: 172 (2008). –Icon.: Palms 48: 10, 12, 13, 16. (2004)

syn.: *Chamaeriphes guineensis* (Schumach. & Thonn.) Kuntze; *H. depressa* Becc.; *H. doreyi* Furtado; *H. gossweileri* Furtado; *H. luandensis* Gossow. (nom. nud.); *H. mateba* Becc.; *H. nephrocarpa* Becc.; *H. welwitschii* Furtado.

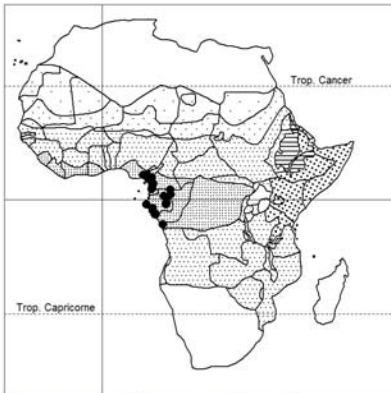
Stem to 14 m tall and to 30–35 cm in diameter, frequently solitary or apparently forking below ground and producing 2 stems of more or less the same size; leaves to 14; fruits pear-shaped of with tree prominent lobes, 6–8 cm long and 6–7 cm wide, pale green when immature, ripening dark red-brown.

Hyphaene guineensis grows in coastal lowland regions, especially on sandy soils with superficial groundwater; however, it has never been observed growing in inundated areas. This species is mostly distributed from sea level to 300 m.

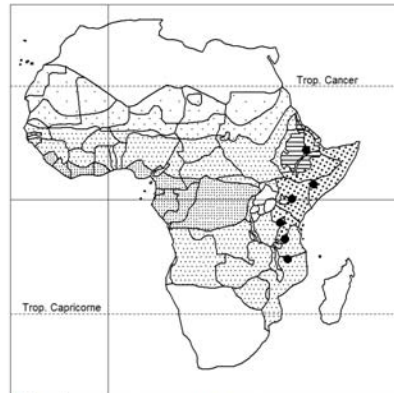
The palm is distributed in West Africa (Ghana, Guinée-Bissau, Guinée-Conakry), Central Africa (Gabon, Congo, Central African Republic) and in Angola.

This species seems to be relatively well understood from a taxonomical point of view; however, it remained rather poorly known since its first description in 1827 (Furtado, 2004; Van Valkenburg & Dransfield, 2004).

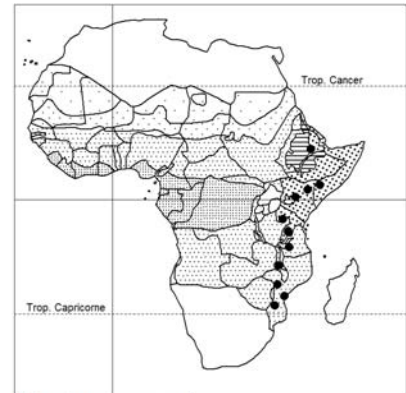
The leaflets were traditionally used in Angola and Congo for making coarse bags for packaging peanuts and oil palm nuts (Van Valkenburg & Dransfield, 2004). In South-East Ghana the wood is used for the frame of houses and the leaves are used to make hats and fans.



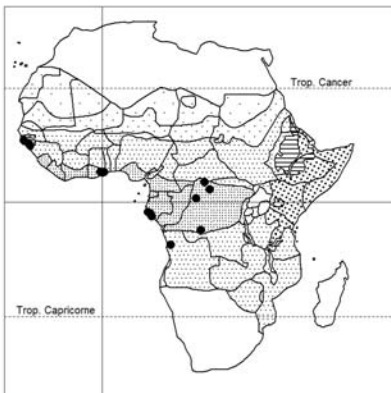
Eremospatha wendlandiana



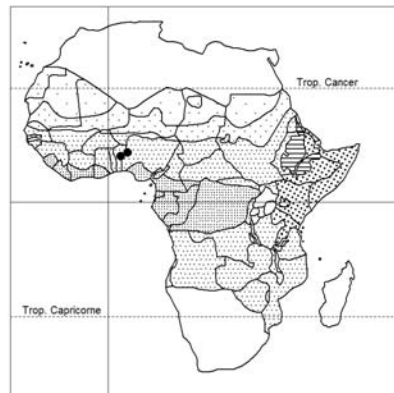
Hyphaene compressa



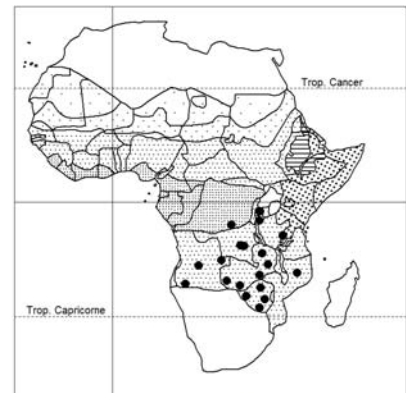
Hyphaene coriacea



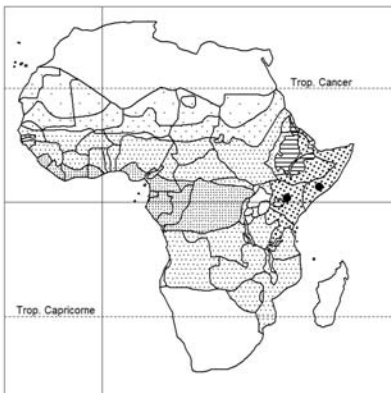
Hyphaene guineensis



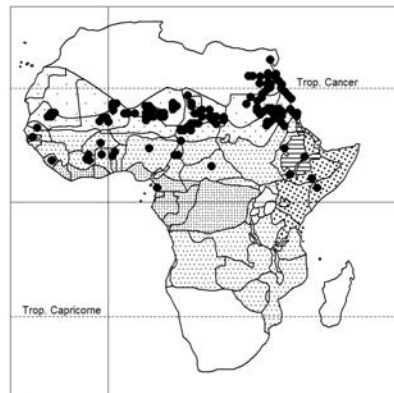
Hyphaene macrosperma



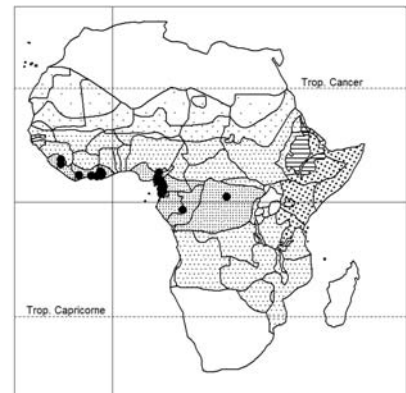
Hyphaene petersiana



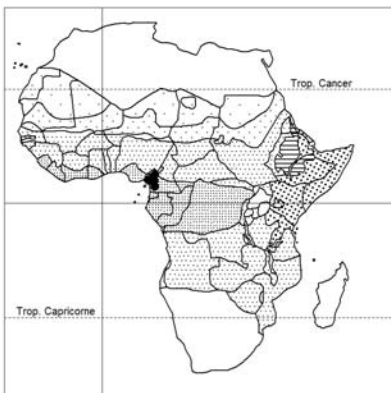
Hyphaene reptans



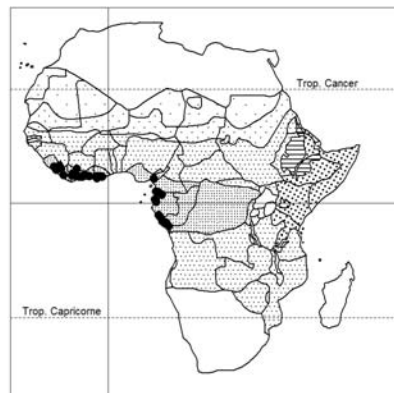
Hyphaene thebaica



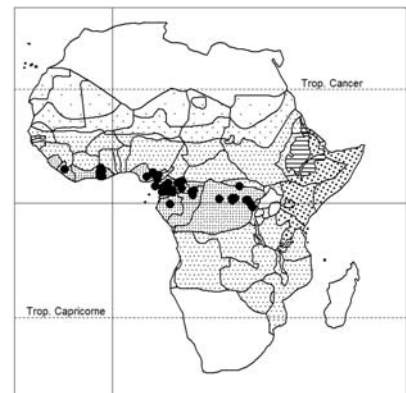
Laccosperma acutiflorum



Laccosperma korupense



Laccosperma laeve



Laccosperma opacum

HYPHAENE

H. macrosperma H. Wendl., Bot. Zeitung (Berlin) 39: 92 (1881).
syn.: *Chamaeriphes macrosperma* (H. Wendl.) Kuntze

This is an extremely poorly studied species only known from the original description proposed by Wendland (1881). This author only had fruit and seed material to establish the taxonomic identity of the palm. The fruits were described as ovate and slightly oblique, with a flat apical region, 7 cm long and 6 cm in diameter,

Its ecology remains unknown and no information was provided in the original description of the species.

Wendland (1881) indicated that the original material that he studied was collected in "Central Afrika" by Mr. Baikie. We suppose that he meant William Balfour Baikie (1825-1864), a Scottish explorer who visited the river Niger and many of its tributaries in at least two different expeditions. Although many publications (e.g. Govaerts & Dransfield, 2005) indicate that the species is endemic to Benin, its origin should be further verified as it may be also attributed to Nigeria. Additional information on this intriguing species may be found in any of the travel reports produced by Baikie.

No uses have been reported for this species.

H. petersiana Klotzsch ex Mart., Hist. Nat. Palm. 3(ed. 2): 227 (1845); Fl. Trop. E. Africa, Palmae: 24 (1986); Palm. Afr. 29 (1995); Checklist Zimbabwean vasc. pl. 33: 85 (2004); Tree Atlas Namib. 38 (2005); Checklist Zambian vasc. pl. 32: 106 (2005); Strelitzia 22: 172 (2008); Fl. Zambes. 13(2): 53 (2010). – Icon.: Fl. Trop. E. Africa, Palmae: 25, 154-156 (1986); Tree Atlas Namib. 39 (2005); Fl. Zambes. 13(2): 54 (2010).

syn.: *Chamaeriphes benguelensis* (Welw. ex H. Wendl.) Kuntze; *C. ventricosa* (J. Kirk) Kuntze; *H. aurantiaca* Dammer; *H. benguelensis* Welw. ex H. Wendl.; *H. benguelensis* var. *ventricosa* (J. Kirk) Furtado; *H. bussei* Dammer; *H. goetzei* Dammer; *H. obovata* Furtado; *H. ovata* Furtado; *H. plagiocarpa* Dammer; *H. ventricosa* J. Kirk; *H. ventricosa* subsp. *ambolandensis* Becc.; *H. ventricosa* subsp. *anisopleura* Becc.; *H. ventricosa* subsp. *aurantiaca* (Dammer) Becc.; *H. ventricosa* subsp. *benguelensis* (Welw. ex H. Wendl.) Becc.; *H. ventricosa* subsp. *bussei* (Dammer) Becc.; *H. ventricosa* subsp. *goetzei* (Dammer) Becc.; *H. ventricosa* subsp. *petersiana* (Klotzsch ex Mart.) Becc.; *H. ventricosa* subsp. *plagiocarpa* (Dammer) Becc.; *H. ventricosa* subsp. *russistensis* Becc.; *H. ventricosa* subsp. *useguhensis* Becc.

Stem to 20 m tall and to 35 cm in diameter, solitary or very rarely clustered; leaves 20-25; fruits more or less rounded, obovoid or ovoid, never regularly compressed, 5-8 cm long and 5-6 cm wide, rich red-brown to chestnut

Hyphaene petersiana grows in the savannah or in secondary vegetation; it grows on sodic-saline alluvial soils with high water tables. In East Africa it grows in inland regions, usually confined to alkaline soils with relatively high water-tables; it is distributed from sea level to 1300 m.

This species is sometimes confused with *Borassus aethiopum*, the two taxa being easily distinguished by the well-defined petiole-spines in *Hyphaene petersiana* vs. erose spines in *Borassus*, and the elongate pointed segments in *Hyphaene* vs. the stiffer, broader, more rounded segments in *Borassus* (Dransfield, 2010).

This species is distributed in Tanzania, occurring from Lakes Manyara and Eyasi southwards; common throughout the Zambesi region, reaching N. Transvaal, through the Democratic Republic of Congo to the West coast of Africa in Angola and Namibia.

The leaves of this palm are intensively collected for basket weaving and as documented by Dijkman (1999) this may represent a threat for wild populations in southern Zimbabwe

HYPHAENE

H. reptans Becc., Agric. Colon. 2: 151 (1908); Fl. Trop. E. Africa, Palmae: 23 (1986); Palm. Afr. 25 (1995). – Icon.: Palm. Afr. 156 (1995).

syn.: *H. migiurtina* Chiov.

This is an imperfectly studied taxon almost only known from the original description (cf. Beccari, 1908). It is apparently different from all other *Hyphaene* in its creeping habit, the several arms of the dichotomies radiating outwards from a central point, the stem flattened, tending to lie on the surface of the ground. Additional material is critical for a better understanding of this taxon.

This palm grows in extreme arid, desert conditions and associated with perched water tables.

This species is sometimes confused at vegetative stage with *Borassus aethiopum*, from which it can be distinguished by the presence of red dark rounded scales in the lamina and very indistinct lateral veins.

Hyphaene reptans is apparently restricted to Kenya, with reports to be confirmed in Somalia and Arabia.

No information has been reported on the economic importance of this species and in general it remains a poorly known palm that requires further study.

H. thebaica (L.) Mart., Hist. Nat. Palm. 3: 226 (1838); Fl. W. Trop. Afr., ed. 2 3(1): 169 (1968); Palm. Afr. 28 (1995); Fl. Ethiopia & Eritrea 6: 522 (1997); Fl. Egypt (Boulos) 3: 104 (2002); Fl. anal. Bénin: 58 (2006); Boissiera 55: 33 (2012). – Icon.: Palm. Afr. 151, 152 (1995); Palms 52: 23-27 (2008).

syn.: *Chamaeriphes crinita* (Gaertn.) Kuntze; *C. thebaica* (L.) Kuntze; *Corypha thebaica* L.; *Cucifera thebaica* (L.) Delile; *Douma thebaica* (L.) Poir.; *H. baikieana* Furtado; *H. crinita* Gaertn.; *H. cuciphera* Pers.; *H. dahomeensis* Becc.; *H. dankaliensis* Becc.; *H. nodularia* Becc.; *H. occidentalis* Becc.; *H. santoana* Furtado; *H. sinaitica* Furtado; *H. togoensis* Dammer ex Becc.; *H. tuleyana* Furtado; *Palma thebaica* (L.) Jacq.

Stem to 20 m tall, although reported of 4-5 m (Leeuwenberg 7588-WAG) and to 15-20 cm in diameter, frequently solitary or apparently forking below ground and producing 2 or more stems of more or less the same size; stems conspicuously branched; leaves 8-12; fruits ovoids, 4-6 cm long and 4-5 cm wide, brown to dark brown when ripe.

This is a palm of arid, desert climates, associated with the heavy soils of drainage lines and alluvial flats with high water tables.

The distribution of *H. thebaica* is rather complex due to the fact that the species is economically important and has traditionally been planted by human populations. It has been reported for the Sahel region (Burkina Faso, Mali, and Niger) and also in tropical West African countries (Côte d'Ivoire, Ghana and Senegal). This palm is also present in Cameroon, Somalia and Ethiopia (Tuley, 1995; Arbonier, 2009, Hedberg, & al., 2009). Its presence in Angola needs to be confirmed (Baker, 2008).

Possible hybridization of this species with other taxa of *Hyphaene* has been reported by several authors and observed by us in the Botanical Garden of the University of Accra (Ghana).

In some West African countries (e.g. Ghana, Nigeria) the petiole and the leaf blade are used for the elaboration of baskets hats and fans. The stems, in particular those from male individuals, are sold as timber due to its recognized resistance to insects. The fruits are known to be occasionally eaten. A detailed description on the leaf collecting practices in this species was carried out by Kahn and Luxereau (2008). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

LACCOSPERMA / 6

The genus *Laccosperma* is composed of six species. It consists of pleoanthic, hermaphroditic, spiny palms; most often with high-climbing, clustered stems and pinnate leaves, the latter with a cirrus emerging from the rachis apex. The combination of hermaphroditic flowers and armed leaf sheaths observed in *Laccosperma* is unique among African rattans.

Largely distributed in lowland areas of West and Central Africa (Congo Basin).

Laccosperma is a shade tolerant rattan palm well represented in inundated or non-inundated areas of the lowland forest. It easily reaches the canopy, where it produces large inflorescences and infructescences.

Many species of *Laccosperma* are extremely important from a commercial point of view (Sunderland, 2007). Overexploitation of the wild populations is threatening the survival of many representatives of this rattan palm genus.

As pointed out by Sunderland (2012) relatively few informative specimens are available for this genus, which has strongly hindered its taxonomic study. Some large-diameter species of *Laccosperma* are still subject of confusion and require to be studied in more detail.

BAKER, W. J. (2008). Palmae. In: Plants of Angola (E. FIGEREIDO & G. F. SMITH, eds.). *Strelitzia* 22: 172-173.

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing. Royal Botanic Gardens, Kew. 732 pp.

KOUASSI, E., K. KOUASSI & D. TRAORE (2005). Polymorphisme foliaire des espèces de rotins de la forêt classée de la Haute Dodo (Côte d'Ivoire). *Rev. Ivoir. Sci. Technol.* 6: 259-279.

KOUASSI, K. I., S. BAROT, & I. A. ZORO BI (2009). Population structure and reproductive strategy of two multiple-stemmed rattans of Côte d'Ivoire. *Palms* 53: 20-30.

KOUASSI, K. I., S. BAROT, J. GIGNOUX & I. A. ZORO BI (2008). Demography and life history of two rattan species, *Eremospatha macrocarpa* and *Laccosperma secundiflorum*, in Côte d'Ivoire. *J. Trop. Ecol.* 24: 493-503.

LISOWSKI, S. (2009). Arecaceae. Flore (Angiospermes) de la République de Guinée. *Scripta Bot. Belg.* 41: 382-384.

SUNDERLAND, T. C. H. (2007). *Field guide to the Rattans of Africa*. Royal Botanic Gardens, Kew. Kew publishing 66 pp.

SUNDERLAND, T. C. H. (2012). A taxonomic revision of the rattans of Africa (Arecaceae: Calamoideae). *Phytotaxa* 51: 1-76.

Laccosperma acutiflorum (Becc.) J. Dransf., *Kew Bull.* 37: 456 (1982); *Palm. Afr.* 37 (1995); *Pl. Mt Cameroon*: 179 (1998); *Woody Pl. W. Afr. Forest*: 870 (2006); *Field Guide Rattans Afr.* 44 (2007); *Phytotaxa* 51: 56 (2012). –Icon.: *Palm. Afr.* 158-160 (1995); *Field Guide Rattans Afr.* 44, 45 (2007); *Phytotaxa* 51: 57 (2012).

syn.: *Ancistrophyllum acutiflorum* Becc.; *Neoancistrophyllum acutiflorum* (Becc.) Rauschert

Stems 30-50 (-70) m long, circular in cross-section; leaves up to 3.5 m long; cirrus 1.2-1.8 m long; leaflets to 50 on each side of the rachis, linear-lanceolate, regularly inserted and more or less equal in size; inflorescences to 2 m long; flowers 1-1.2 cm long and 3 mm wide; fruits oblong-obovoid, 1.8-2 cm long and 1.3-1.5 cm in diameter, covered with brown scales when ripe.

This is a light demanding species commonly found in open or disturbed areas. It grows commonly in seasonally-inundated and swamp forest although it can be also present in drier areas.

Laccosperma acutiflorum is widely distributed from Sierra Leone to Cameroon south to Gabon and the Democratic Republic of Congo (Sunderland, 2012).

LACCOSPERMA ACUTIFLORUM

Frequently confused with *L. secundiflorum* from which it can be easily distinguished by the presence of linear-lanceolate (vs. sigmoid) leaflets. The leaf polymorphism of this species in Ivory Coast was studied by Kouassi (2005).

Despite the large stem size, this species is reported to possess very poor quality cane and therefore is rarely used (Sunderland, 2007).

L. korupense Sunderl., *Kew Bull.* 58: 989 (2003 publ. 2004); *Field Guide Rattans Afr.* 42 (2007); *Phytotaxa* 51: 43 (2012). –Icon.: *Field Guide Rattans Afr.* 42, 43 (2007); *Phytotaxa* 51: 44 (2012); *Palms* 57: 127 (2013).

syn.: none reported in the literature.

Stems to 10 m long, slightly oval in cross-section; leaves up to 1 m long; cirrus 70 cm long; leaflets 10-18 on each side of the rachis, opposite or sub-opposite, linear-lanceolate, irregularly inserted in the rachis. The inflorescences, flowers and fruits of this species are unknown.

This species has been reported growing in the lowland forest understory.

Restricted to the coastal forests of Cameroon, locally abundant in the Korup National Park and surrounding areas (Sunderland, 2012).

This is a relatively recently published species that is well defined by some vegetative characters (e.g. lack of acanthophylls on the cirrus); however, it remains critical to collect the reproductive organs in order to better establish its taxonomic identity.

No uses have been reported for this species (Sunderland, 2007).

L. laeve (G. Mann & H. Wendl.) Kuntze, *Revis. Gen. Pl.* 2: 729 (1891); *Palm. Afr.* 39 (1995); *Woody Pl. W. Afr. Forest*: 870 (2006); *Check-list Pl. Vasc. Gabon*: 320 (2006); *Field Guide Rattans Afr.* 38 (2007); *Strelitzia* 22: 173 (2008); *Boissiera* 64: 215 (2011); *Phytotaxa* 51: 49 (2012). –Icon.: *Field Guide Rattans Afr.* 38-41 (2007).

syn.: *Ancistrophyllum laeve* (G. Mann & H. Wendl.) Drude; *Calamus laevis* G. Mann & H. Wendl.; *Neoancistrophyllum laeve* (G. Mann & H. Wendl.) Rauschert ex J. Dransf.

Stems to 12-14 m long, circular in cross-section; leaves up to 1.5 m long; cirrus up to 70 cm long; leaflets 2-4-folded, 10-12 on each side of the rachis, sigmoid, inequidistant and unequal in size; inflorescences 40-50 cm long; flowers 6-8 mm long and 2-3 mm wide; fruits ovoid at maturity, to 1 cm long and 6-8 mm in diameter, covered with bright red to orange scales when ripe.

This is a deep shade tolerant species commonly found in high forest in the lower to mid-canopy (Sunderland, 2012).

Laccosperma laeve is distributed from Liberia and Ivory Coast to Cameroon and Gabon (Sunderland, 2012). Its presence in Angola was reported by Baker (2008). The species has not been reported in Ghana, Togo, Benin and Nigeria but this may be an artefact of collection and the palm may be found in these countries with additional botanical efforts. Indeed, we found this species during a recent visit to the Ankasa Natural Reserva (South-Western Ghana).

This species can sometimes be confused with *L. opacum*, from which it can be easily distinguished by the presence of unarmed leaflet margins. The two species often grow sympatrically.

Rarely used for basketry or weaving although in Gabon the stems are pounded and woven into a rope. In the Congo the roots are roasted and eaten to improve virility (Sunderland, 2007). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

LACCOSPERMA

L. opacum Drude, Bot. Zeitung (Berlin) 35: 635 (1877); Palmiers: 249 (1878); Revis. Gen. Pl.: 729 (1891); Fl. Trop. E. Africa, Palmae: 36 (1986); Pl. Mt Cameroon: 179 (1998); Fl. anal. Bénin: 58 (2006); Check-list Pl. Vasc. Gabon: 320 (2006); Woody Pl. W. Afr. Forest: 870 (2006); Field Guide Rattans Afr. 35 (2007); Boissiera 64: 215 (2011); Phytotaxa 51: 46 (2012). – Icon.: Palm. Afr. 38 (1995); Field Guide Rattans Afr. 35-37 (2007); Phytotaxa 51: 47 (2012).

syn.: *Ancistrophyllum opacum* (Drude) Drude; *Calamus opacus* G. Mann & H. Wendl. (nom. illeg.); *Neoancistrophyllum opacum* (Drude) Rauschert ex J. Dransf.; *Palmijuncus opacus* (Drude) Kuntze

Stems to 10-15 m long, circular in cross-section; leaves up to 1.2 m long; cirrus 50 cm long; leaflets 2-4-folded, 10-12 on each side of the rachis, sigmoid, inequidistant and unequal in size; inflorescences up to 40 cm long; flowers 8 mm long and 2 mm wide; fruits rounded, 1.2 cm in diameter, covered with pale-brown scales.

This is an extremely deep shade tolerant species commonly found in high forest in the lower to mid-canopy (Sunderland, 2012). *L. opacum* prefers well-drained soils.

Laccosperma opacum is distributed from Liberia and Ivory Coast to Cameroon, Gabon and the Congo Basin to eastern Democratic Republic of Congo (Sunderland, 2012).

This species can sometimes be confused with *L. laeve*, from which it can be easily distinguished by the presence of armed leaflet margins.

This species is rarely used for basketry or weaving although the stems are cut and the potable sap drunk, and the palm heart may be roasted and eaten (Sunderland, 2007). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

L. robustum (Burret) J. Dransf., Kew Bull. 37: 457 (1982); Check-list Pl. Vasc. Gabon: 320 (2006); Field Guide Rattans Afr. 46 (2007); Strelitzia 22: 173 (2008); Phytotaxa 51: 58 (2012). – Icon.: Field Guide Rattans Afr. 46, 47 (2007); Phytotaxa 51: 60 (2012); Palms 57: 125 (2013).

syn.: *Ancistrophyllum robustum* Burret; *Neoancistrophyllum robustum* (Burret) Rauschert

Stems to 30-45 m long, circular in cross-section; leaves up to 3.5 m long; cirrus 1.5-2 m long; leaflets 45-65 on each side of the rachis, linear-lanceolate, equidistant or inequidistant depending of the level of the rachis, conspicuously pendant; inflorescences poorly known; flowers 1 cm long and 2.5-3 mm wide; fruits oblong-obovoid, 1.2-1.5 cm long and 0.8-1.2 cm in diameter.

This species grows commonly in forest gaps and disturbed areas; it is present equally in seasonally-inundated or non-inundated areas.

Laccosperma robustum is a common species distributed from SE Nigeria to the Central Congo Basin (Sunderland, 2012). Its presence in Angola was reported by Baker (2008).

Frequently confused with other large diameter species of *Laccosperma* (*L. acutiflorum*, *L. secundiflorum*) from which it can be distinguished by its pendant (vs. horizontally arranged) leaflets.

Highly prized as a source of cane and widely traded throughout its range. The whole stems are used predominantly for furniture frames or are split and woven for coarse basketry (Sunderland, 2007).

LACCOSPERMA

L. secundiflorum (P. Beauv.) Kuntze, Revis. Gen. Pl. 2: 729 (1891); Palm. Afr. 36 (1995); Pl. Mt Cameroon: 179 (1998); Fl. anal. Bénin: 58 (2006); Woody Pl. W. Afr. Forest: 870 (2006); Check-list Pl. Vasc. Gabon: 321 (2006); Field Guide Rattans Afr. 48 (2007); Fl. Rép. Guinée: 384 (2009); Boissiera 64: 215 (2011); Phytotaxa 51: 51 (2012). – Icon.: Palm. Afr. 160 (1995); Field Guide Rattans Afr. 48, 49 (2007); Phytotaxa 51: 52 (2012).

syn.: *Ancistrophyllum laurentii* De Wild.; *A. majus* Burret; *A. secundiflorum* (P. Beauv.) G. Mann & H. Wendl.; *Calamus secundiflorus* P. Beauv.; *Laccosperma laurentii* (De Wild.) J. Dransf.; *L. majus* (Burret) J. Dransf.; *Neoancistrophyllum laurentii* (De Wild.) Rauschert; *N. majus* (Burret) Rauschert; *N. secundiflorum* (P. Beauv.) Rauschert

Stems to 30-50 m long, circular in cross-section; leaves up to 3.5 m long; cirrus 1.5-1.8 m long; leaflets 2-4-folded, 25-40 on each side of the rachis, sigmoid, regularly inserted and more or less equal in size; inflorescences 2.5-3 m long; flowers 1-1.2 cm long and 3-3.5 mm wide; fruits ovoid-oblong, 1-1.2 cm long and 0.8-1.2 cm in diameter, in development covered with bright red scales, the latter becoming brown when ripe.

This is a lowland high forest species, commonly found under a forest canopy. Ecological studies on the population structure, reproductive strategy and life history of this species in Ivory Coast were undertaken by Kouassi & al. (2008, 2009). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

Laccosperma secundiflorum is widely distributed from Senegal to Cameroon south to the Democratic Republic of Congo (Lisowski, 2009; Sunderland, 2012). Its presence in Cabinda requires to be verified (Baker, 2008).

Most large diameter species of *Laccosperma* have been treated as a *L. secundiflorum* complex; however, Sunderland (2012) provided arguments to clearly distinguish all of them (*L. acutiflorum*, *L. secundiflorum*, *L. robustum*) as different taxonomic entities.

This is the most frequently used large diameter rattan in Africa, especially used in the construction of furnitures. The canes are used for the frame of chairs, armchairs and beds and also used to make fish traps and baskets (Sunderland, 2007; Ouattara & Stauffer in prep.).

LIVISTONA / 1

The genus *Livistona* (36 spp.) is pleoanthic, hermaphroditic and contains species with small to large growth habit and palmate or costapalmate leaves. *Livistona* is distributed from Africa and Arabia to the Himalayas and Ryukyu Islands, south through Indochina and Malesia to New Guinea, the Solomon Islands and Australia (Dransfield & al., 2008; Dowe, 2009). The ecology of the genus is extremely diverse, including species from lowland and montane forest, subtropical woodlands, savannahs and desert areas.

DOWE, J. (2003). The non-Australian species of *Livistona*. *Palms & Cycads* 79-80: 4-13.

DOWE, J. (2009). A taxonomic account of *Livistona* R. Br. (Arecaceae). *Gard. Bull. Singapore* 60: 185-344.

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing. Royal Botanic Gardens, Kew. 732 pp.

FORD, H. & C. BEALY (2004). Status of the Bankoualé palm, *Livistona carinensis*, in Djibouti. *Palms* 48: 94-101.

SHAPCOTT, A., J. L. DOWE & H. FORD (2009). Low genetic diversity and recovery implications of the vulnerable Bankoualé palm *Livistona carinensis* (Arecaceae), from north-eastern Africa and the southern Arabian Peninsula. *Conserv. Genet.* 10: 317-327.

LIVISTONA

Livistona carinensis (Chiov.) J. Dransf. & N. W. Uhl, Kew Bull. 38: 200 (1983); Gard. Bull. Singapore 60: 252 (2009). – Icon.: Palm. Afr. 145 (1995); Palms & Cycads 79-80: 10, 11, 13 (2003); Palms 48: 94, 96, 97 (2004); Gard. Bull. Singapore 60: 332 (2009).

syn.: *Hyphaene carinensis* Chiov.; *Wissmannia carinensis* (Chiov.) Burret

Stem to 40 m tall and to 40 cm in diameter, covered with prominent leaf scar; leaves 30-40, forming a globose to conical crown; fruits globose, 0.5-2 (-5) cm of diameter, dark brown to black.

Livistona carinensis grows in or adjacent to intermittently flowing streams or soaks in valley bottoms, but never fully dry soils, in semi-arid regions with less than 400 mm per year.

This species is endemic from north-eastern Africa and the Southern Arabian Peninsula. It has been reported in Djibouti (Goda Mountains), Somalia (Carin, Uncad, Galgala, Marajo, Duub Shabeel and Xamur) and Yemen (in the Hadramaut region at El Mintaq and Wadi Hadjer), normally growing between 200 and 975 m (Tuley, 1995; Dowe, 2003, 2009). The populations in Yemen and Somalia are highly significant for the conservation of the species genetic diversity (Shapcott & al., 2009). Ecological data (e.g. population structure and regeneration) on wild populations from Djibouti was presented by Ford and Bealy (2004).

Based on morphology this species is similar to other *Livistona* from western and northwestern Australia, but this appears to be an example of ecological convergence. At species level *L. carinensis* contains very low genetic diversity (Shapcott & al., 2009).

The stem of this palm have been reported to be useful for timber, which has produced a rapid decline of wild populations throughout its range of distribution.

MEDEMIA / 1

The genus *Medemia* (1-2 spp.) is pleoanthic, dioecious, with large growth habit and costapalmate leaves. *Medemia* is distributed in Egyptian Nubia and northeastern Sudan. The recognition of one (*M. argun*) or two species (*M. abiadensis*, *M. argun*) has been subject of some debate (Boulos, 1968; Tuley, 1995; Gibbons & Spanner, 1996) and requires of further study.

Wild populations of *Medemia* have been reported to grow on desert conditions as well as transitional areas of desert-savannah; occasionally associated to seasonal rivers, dry for most of the year.

Confusion of *Medemia* with some members of *Hyphaene* can be avoided by noting the absence of petiole spines, the short tapered costa and the absence of any hastula (Tuley, 1995).

BOULOS, L. (1968). The discovery of *Medemia* palm in the Nubian desert of Egypt. *Bot. Notiser.* 121: 118-120.

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing. Royal Botanic Gardens, Kew. 732 pp.

GIBBONS, M. & T. SPANNER (1996). *Medemia argun* lives. *Principes* 40: 65-74.

IBRAHIM, H. & W. J. BAKER. (2009). *Medemia argun* past, present and future. *Palms* 53: 9-19.

TULEY, P. (1995). *The Palms of Africa*. The Trendrline Press, UK, 189 pp

MEDEMIA

Medemia argun (Mart.) Württemb. ex H. Wendl., Bot. Zeitung (Berlin) 39: 93 (1881); Bot. Notiser. 121: 117 (1968); Palm. Afr. 32 (1995); Principes 40: 73 (1996). – Icon.: Bot. Notiser. 121: 118 (1968); Palm. Afr. 157 (1995); Principes 40: 68, 70-72 (1996).

syn.: *Areca passalacquae* Kunth (name attributed to a fossil); *Hyphaene argun* Mart.; *Medemia abiadensis* H. Wendl.

Stem to 10 m tall and to 30-40 cm in diameter, solitary, robust and conspicuously ringed; leaves 25-50, forming a dense, rounded crown; fruits ovoid, 4-5 cm long and 2.7-3 cm wide, shiny, dark violet to black at maturity.

As indicated in the genus description this species grows on desert conditions as well as transitional areas of desert-savannah.

Gibbons and Spanner (1996) pointed out that based on differences of fruit size and ecological conditions *M. argun* and *M. abiadensis* may be regarded as different species and suggest that further studies should be undertaken in order to assess the taxonomic identity of these palms.

This species is endemic from Egyptian Nubia and north-eastern Sudan.

Leaves of juvenile palms are used as material for making rope and mats (Gibbons and Spanner, 1996). *Medemia argun* is considered a very rare and hence highly endangered palm. The uncontrolled use of the leaves may be regarded as an additional threat for the palm. A detailed historical account on *M. argun* in Egypt, including data on the populations and their conservation status was published by Ibrahim & Baker (2009).

NYPA / 1

The genus *Nypa* is monotypic and corresponds to a palm sub-family on its own (Nypoideae). It is pleoanthic, monoecious, with a prostrate growth habit, dichotomously branching stems, large pinnate leaves and an unusual inflorescence composed by one apical head-like aggregate composed of female flowers and between 5 and 10 axillar spikes of male flowers sparsely inserted in a longitudinal rachis.

Nypa is naturally distributed from Sri Lanka and the Ganges Delta to Australia, the Solomon Islands and the Ryukyu Islands. Introduced in the late 19th century to the Niger Delta in West Africa, *Nypa* has now spread thence to western Cameroon (Tuley, 1995; Sunderland & Morakinyo, 2002; Beentje & Bandeira, 2007; Dransfield & al., 2008)

Nypa is widely recognized as a mangrove palm, occurring in a large diversity of estuarine situations often subject to inter-tidal conditions; it usually grows in soft mud, often in extensive and very dense natural stands (Tuley, 1995; Dransfield & al., 2008).

BEENTJE, H. & S. BANDEIRA (2007). *Palmae. Field guide to the mangrove trees of Africa and Madagascar*. Kew publishing, Royal Botanic Gardens, 90 pp.

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing. Royal Botanic Gardens, Kew. 732 pp.

LETOUZEY, R. (1978). Notes phytogéographiques sur les palmiers du Cameroun. *Adansonia* 18: 293.

SUNDERLAND, T. C. H. & A. B. MORAKINYO (2002). *Nypa fruticans*, a weed in West Africa. *Palms* 46: 154-155.

TULEY, P. (1995). *The Palms of Africa*. The Trendrline Press, UK, 189 pp

NYPA

Nypa fruticans Wurmbr., Verh. Batav. Genootsch. Kunsten 1: 349 (1779); Bot. Mangr. 295 (1994); Palm. Afr. 85 (1995); Mangr. Trees Afr. & Mad. 32 (2007). – Icon.: Palm. Afr. 86, 180 (1995); Bot. Mangr. 296, 297 (1994); Mangr. Trees Afr. & Mad. 32 (2007).

syn.: *Cocos nypa* Lour.; *Nipa arborescens* Wurmbr. ex H. Wendl.; *N. fruticans* (Wurmbr.) Thunb.; *N. litoralis* Blanco; *Nypa fruticans* var. *neameana* F. M. Bailey

Stems short, prostrate or subterranean, up to 70 cm across; leaves 5-10, up to 10 m long; inflorescence emerging from the mud, 1-1.5 m long; fruits forming a globose head of 15-20 cm in diameter, compressed and irregularly angled, 10-12 cm long and 5-7 cm wide, dark brown at maturity.

As indicated in the genus description this species grows on a large diversity of estuarine situations often subject to inter-tidal conditions.

The morphology and ecology of this palm are almost unique among African palms. The identification of the species is relatively easy, especially when observing the structure of the inflorescence or the infructescence.

This palm was introduced from Singapore in 1906 and 1912 and again 1946. Nowadays it is spread from Lagos to the Woury Estuary near Douala (Sunderland & Morakinyo, 2002). According to Tuley (1995) there are now reservations with regard to its colonial power as it could possibly be achieving the status of a serious weed, to the exclusion of the native mangrove species.

For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997); this species is sometimes used for thatching (Beentje & Bandeira, 2007).

ONCOCALAMUS / 4

The genus *Oncocalamus* is composed of four species. It consists of pleoanthic, monoecious, spiny palms; most often with high-climbing, clustered stems, entire-bifid leaves when juvenile and pinnate leaves at maturity, the latter with a cirrus emerging from the rachis apex. *Oncocalamus* can be easily distinguished from all other African rattans due to the presence of a very complex floral arrangement. In fact, flowers are arranged in a central group of 1-3 female flowers flanked by 2 lateral cincinni of 2-4 male flowers.

This genus has a distinct Guineo-Congolian distribution and ranges from south-eastern Nigeria to northern Angola (Baker, 2008; Sunderland, 2012).

Oncocalamus grows predominantly in lowland tropical rain forest.

Some publications have argued that *Oncocalamus* is composed of only one polymorphic species (*O. mannii*); however, the most recent taxonomic assessment of the genus (Sunderland, 2012) has demonstrated that it contains four well defined species.

Unlike other African rattans almost no uses have been reported for the genus; however, they may be locally used as a source of cane (Dransfield & al., 2008).

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing. Royal Botanic Gardens, Kew. 732 pp.

SUNDERLAND, T. C. H. (2012). A taxonomic revision of the rattans of Africa (Areaceae: Calamoideae). *Phytotaxa* 51: 1-76.

ONCOCALAMUS

Oncocalamus macrospathus Burret, Notizbl. Bot. Gart. Berlin-Dahlem 15: 749 (1942); Check-list Pl. Vasc. Gabon: 321 (2006); Field Guide Rattans Afr. 54 (2007); Strelitzia 22: 173 (2008); Phytotaxa 51: 68 (2012). – Icon.: Field Guide Rattans Afr. 54, 55 (2007); Phytotaxa 51: 69 (2012).

syn.: none reported in the literature.

Stems to 30-35 m long; leaves up to 2 m long; cirrus 1.5 m long; leaflets 25-40 on each side of the rachis, linear-lanceolate or slightly sigmoid, regularly inserted and more or less equal in size; inflorescences 30-40 cm long; flowers 5 mm long and 3.5-4.5 mm wide; fruits more or less globose, 1.8-2 cm in diameter.

This species is found in forest margins, tree-fall gaps and other open areas and is particularly common in seasonally-inundated forest alongside water courses.

Oncocalamus macrospathus is distributed from Cameroon, south of the Sanaga River, to Cabinda (Baker, 2008; Sunderland, 2012).

No uses have been recorded for this species (Sunderland, 2007).

O. mannii (H. Wendl.) H. Wendl. in O. C. E. de Kerchove de Denterghem, Palmiers: 252 (1878); Fl. W. Trop. Afr., ed. 2 3(1): 168 (1968); Palm. Afr. 83 (1995); Pl. Mt Cameroon: 179 (1998); Bases Doc. Fl. Guinea Equat.: 375 (1999); Check-list Pl. Vasc. Gabon: 321 (2006); Field Guide Rattans Afr. 51 (2007); Phytotaxa 51: 65 (2012). – Icon.: Palm. Afr. 178, 179 (1995); Field Guide Rattans Afr. 51-53 (2007); Phytotaxa 51: 66 (2012); Palms 57: 125, 126 (2013).

syn.: *Calamus mannii* H. Wendl.; *C. niger* J. Braun & K. Schum. (nom. illeg.); *O. acanthocnemis* Drude; *O. phaeobalanus* Burret

Stems to 15-30 m long; leaves up to 1.2 m long; cirrus 60 cm long; leaflets 25-35 on each side of the rachis, linear-lanceolate or slightly sigmoid, regularly inserted and more or less equal in size; inflorescences 30-35 cm long; flowers 5-6 mm long and 2-3 mm wide; fruits more or less globose to sub-globose, 1.8-2.2 cm long and 1.6-2 cm in diameter.

This species is common in open areas, roadside and forest gaps.

Oncocalamus mannii is distributed from southern Cameroon to Gabon (Sunderland, 2012). Its presence in Cabinda requires to be verified (Baker, 2008).

For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997). The cane of this species is poor in quality as it is rather inflexible and prone to breaking. However, in particularly the absence of other specie, *O. mannii* can be employed for basketry (Sunderland, 2007).

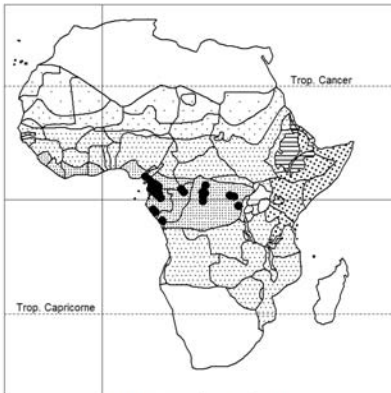
O. tuleyi Sunderl., J. Bamboo Rattan 1: 365 (2002); Field Guide Rattans Afr. 57 (2007); Phytotaxa 51: 71 (2012). – Icon.: Field Guide Rattans Afr. 57-59 (2007).

syn.: none reported in the literature.

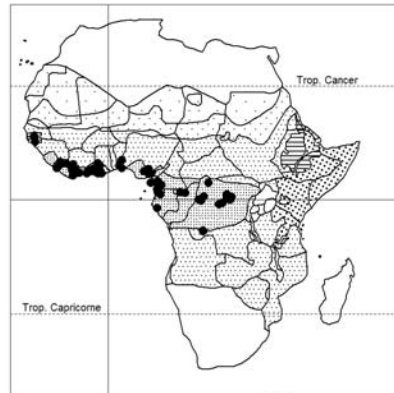
Stems to 30 m long; leaves up to 2 m long; cirrus 0.6-1 m long; leaflets 30-50 on each side of the rachis, linear-lanceolate or slightly sigmoid, regularly inserted and more or less equal in size; inflorescences 35-40 cm long; flowers at anthesis not known; fruits more or less globose, 1.9-2.1 cm long and 1.6-1.8 cm in diameter.

This species is present at the forest edge, adjacent to open areas, and in gap regrowth vegetation in forest.

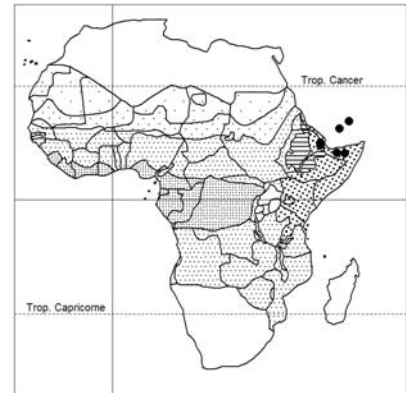
Oncocalamus tuleyi is restricted to coastal forest from SE Nigeria to SW Cameroon, north of the Sanaga River and is allopatric with *O. mannii* (Sunderland, 2012).



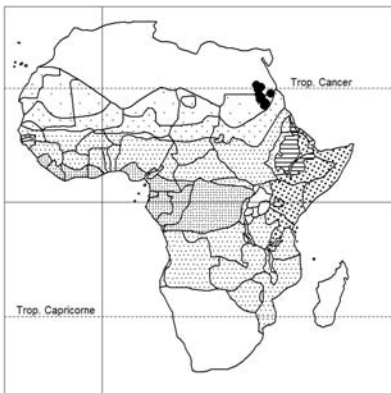
Laccosperma robustum



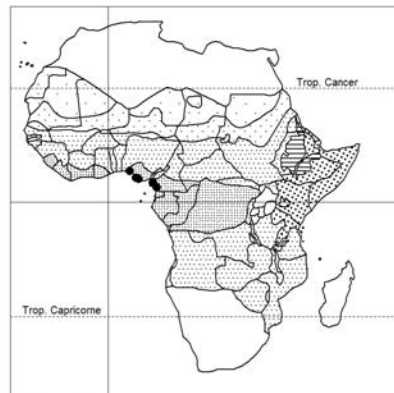
Laccosperma secundiflorum



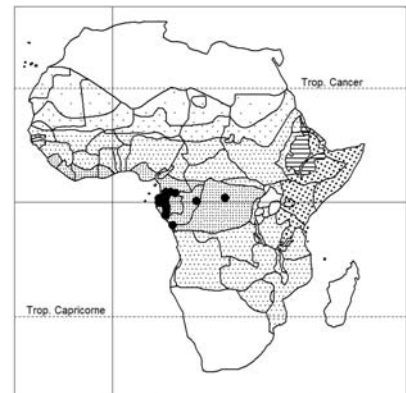
Livistona carinensis



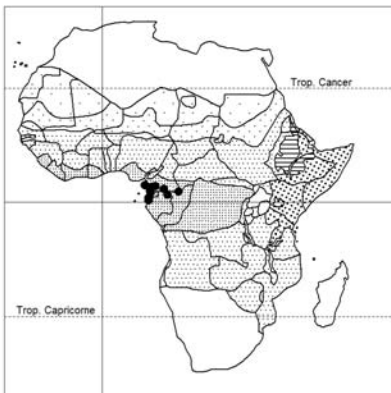
Medemia argun



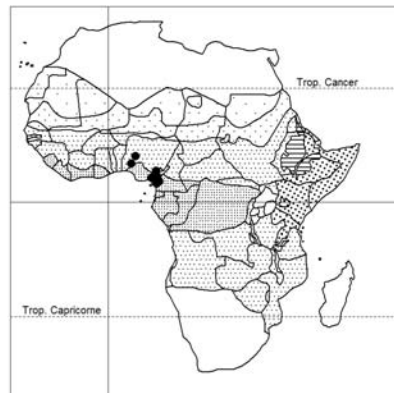
Nypa fruticans



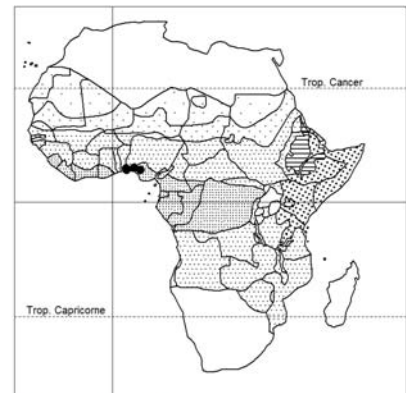
Oncocalamus macrospathus



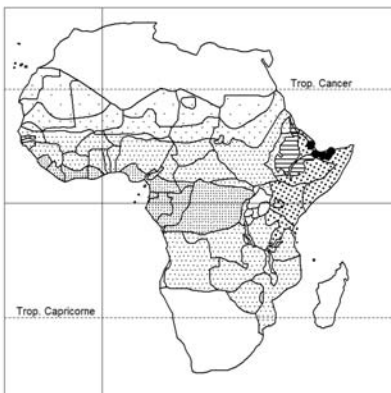
Oncocalamus mannii



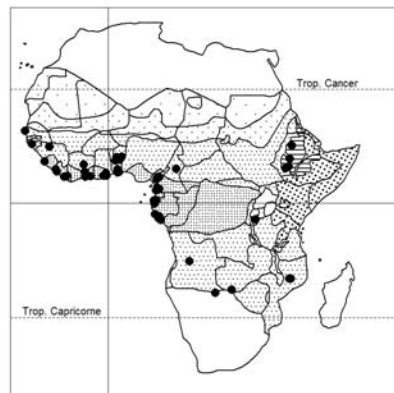
Oncocalamus tuleyi



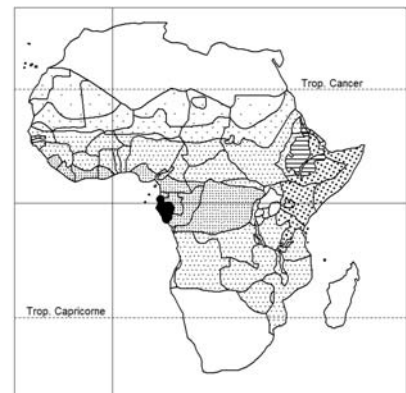
Oncocalamus wrightianus



Phoenix caespitosa



Phoenix reclinata



Podococcus acaulis

ONCOCALAMUS TULEYI

The base of the leaf sheath is often used by the indigenous communities of south-western Cameroon as chew-stick and in Nigeria the stem epidermis is often used for tying yams to their climbing poles (Sunderland, 2007).

O. wrightianus Hutch., Kew Bull. 17: 181 (1963); Fl. W. Trop. Afr., ed. 2 3(1): 168 (1968); Fl. anal. Bénin: 59 (2006); Field Guide Rattans Afr. 60 (2007); Phytotaxa 51: 63 (2012). – Icon.: Field Guide Rattans Afr. 60 (2007); Phytotaxa 51: 64 (2012).

syn.: none reported in the literature.

Stems to 10 m long; leaves up to 60 m long, unarmed; cirrus 35-45 cm long; leaflets composed of 2-4 folds, broadly lanceolate, ovate or sigmoid; inflorescences, flowers and fruits unknown.

This species has been reported growing in swamp forest.

Oncocalamus wrightianus is present from south Benin to south-western Nigeria (Sunderland, 2012).

It is critical to collect and thoroughly study the reproductive organs of this still imperfectly known species in order to better establish its morphologic and taxonomic identity.

In Nigeria the split stem is used to make tying materials of different sorts (Sunderland, 2007).

PHOENIX / 2

The genus *Phoenix* (14 spp.) is one of the most emblematic genera in the palm family. The genus is pleoanthic, dioecious and it is composed of species with dwarf to large and massive growth form, solitary or multiple stems and pinnate leaves; inflorescences interfoliar.

It is distributed from the Atlantic islands through Africa, Crete, the Middle East and India to Honkong, Taiwan, Philippines, Sumatra and Malaya (Barrow, 1998; Dransfield, 2008); two species have been reported in tropical Africa. One species (*P. atlantica* A. Chev.) present in Cape Verde Island (Henderson & al., 2006).

Many species of *Phoenix* (e.g. *P. dactylifera*) are of important commercial value in different countries throughout the range of distribution. In fact, almost all parts of these palms are extremely useful at a local context and in the case of the date palm the fruits (fresh or dried) are commercialized at a large scale.

BAKER, W. J. (2010). Palmae. In: *The plants of Dom, Bamenda Highlands, Cameroon* (CHEEK, M., Y. HARVEY & J. M. ONANA, eds.). Royal Botanic Gardens, Kew, 162 pp.

BARROW, S. (1998). A Monograph of Phoenix L. (Palmae: Coryphoideae). *Kew Bull.* 53: 513-575.

CHEVALIER, A. (1952). Recherches sur les Phoenix africains. *Revue Int. Bot. Appl. Agric. Trop.* 32: 205-356.

COLLENETTE, S. (1985). *An illustrated guide to the flowers of Saudi Arabia*. Scorpion publishing Ltd., London.

DARBYSHIRE, I. & M. CHEEK (2004). Palmae. In: *The plants of Bali Ngemba forest reserve, Cameroon* (HARVEY, Y., J. POLLARD, I. DARBYSHIRE, J. M. ONANA & M. CHEEK, eds.) A Conservation Check-list. Royal Botanic Gardens- Kew and National Herbarium of Cameroon. RBG, Kew. UK. 154 pp.

DRANSFIELD, J. (2010). Arecaceae (Palmae). In: TIMBERLAKE, J. R. & E. S. MARTINS (eds.). *Flora Zambesiaca* 13: 35-68.

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing. Royal Botanic Gardens, Kew. 732 pp.

HENDERSON, S., N. BILLOTTE & J.-C. PINTAUD (2006). Genetic isolation of Cape Verde Island Phoenix atlantica (Arecaceae) revealed by microsatellite markers. *Conservation Genetics* 7: 213-223.

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PHOENIX

Phoenix caespitosa Chiov., Fl. Somalia 1: 317 (1929); Palm. Afr. 17 (1995); Kew Bulletin 53: 543 (1998).

syn.: *P. arabica* Burret

Stemless palm, clustering and forming extensive thickets; leaves to 3 m long; leaflets up to 50 on each side of rachis, inserted in 1-2 planes of orientation; fruits spheroid-ovoid, 10-16 mm long and 8-12 mm in diameter, deep orange to purplish brown when ripe.

Phoenix caespitosa grows in dry wadis, semi-desert bushland and rocky crevices up to 900 m in Somalia (Thulin, 1995) and up to 1950 m in Saudi Arabia (Collenette, 1985).

According to Barrow (1998) this species has been reported for Somalia (Sanag, Nugaal and Bari regions) and apparently also in Djibouti (near Bankoulé) based on a report of Moore (1971). It may be also present in the Arabian Peninsula.

No uses have been reported for this species.

P. reclinata Jacq., Fragm. 1: 27 (1801); Fl. W. Trop. Afr., ed. 2 3(1): 169 (1968); Ethnobotany of the Kwanyama Ovambos: 120-121 (1985); Fl. Trop. E. Africa, Palmae: 15 (1986); Scripta Bot. Belg. 4: 107 (1993); Palm. Afr. 16 (1995); Fl. Ethiopia & Eritrea 6: 515 (1997); Kew Bulletin 53: 533 (1998); Pl. Mt Cameroon: 180 (1998); Bases Doc. Fl. Guinea Equat.: 375 (1999); S. Afr. Bot. Div. Network Report 33: 85 (2004); Prelim. checklist vasc. pl. Mozambique 30: 120 (2004); Checklist Zambian vasc. pl. 32: 106 (2005); Check-list Pl. Vasc. Gabon: 321 (2006); Strelitzia 22: 173 (2008); Fl. Rép. Guinée: 384 (2009); Fl. Zambes. 13(2): 49 (2010); Boissiera 64: 215 (2011); Boissiera 65: 34 (2012). – Icon.: Fl. Trop. E. Africa, Palmae: 16 (1986); Palm. Afr. 94, 146-148 (1995); Garcia Orta, Sér. Bot. 16: 49 (2002); Fl. Zambes. 13(2): 51 (2010).

syn.: *Fulchironia senegalensis* Lesch.; *P. abyssinica* Drude; *P. baoulensis* A. Chev.; *P. comorensis* Becc.; *P. djalobensis* A. Chev.; *P. dybowskii* A. Chev.; *P. equinoxialis* Bojer; *P. leonensis* Lodd. ex Kunth; *P. reclinata* var. *comorensis* (Becc.) Jum. & H. Perrier; *P. reclinata* var. *madagascariensis* Becc.; *P. reclinata* var. *somalensis* Becc.; *P. spinosa* Schumach. & Thonn.

Clustering palm often forming extensive thickets; stem 10-12 m long; leaves arcuate, 2-3.5 m long; leaflets 80-130 on each side of rachis, regularly arranged distally in one plane of orientation but medial and basally arranged in groups of 3-5; fruits ovoid-ellipsoid to almost obovoid, 13-20 mm long and 7-13 mm in diameter, yellow to bright orange when ripe.

Phoenix reclinata grows in extremely different habitats including seasonally inundated areas, riverine forest, and coastal savannahs and even in rain forest conditions (Barrow, 1998).

This species occurs throughout tropical and subtropical Africa, northern and south-western Madagascar and the Comoro Islands (Barrow, 1998). This is a common lowland species, reported by Darbyshire & Cheek (2004) and Baker (2010) growing up to 1570-1650 m in North-West Cameroon.

According to Barrow (1998) the vegetative polymorphism of the species, most probably related to ecological conditions, has led to recognition of certain extreme phenotypes as distinct species or varieties. Many of these taxa were described by Chevalier (1952).

All parts of this species (e.g. trunks, leaves, palm heart) are used for a wide range of purposes (Barrow, 1998). Dransfield (1982, 2010) pointed out that this species is widely used in East Africa as a source of material for fine weaving and that the fruits are rarely eaten. The fruits have been reported to be eaten in Guiné-Bissau (Diniz & Martins, 2002) and also in Ivory Coast. For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

PODOCOCCLUS / 2

The genus *Podococcus* is represented by only two species and consists of pleonanthic, monoecious palms, acaulescent or when the stem aerial then erect, solitary or clustered; leaves pinnate; inflorescences interfoliar, rarely infrafoliar, spicate, bearing male and female flowers.

The genus *Podococcus* is distributed from the Niger Delta almost to the Congo River, in a band no further than 200 km from the coast with conspicuous disjunction between the Cross River in Nigeria and the Sanaga River in Cameroon. The genus is present in lowland evergreen forest on *terra firme*, but also on relatively dry patches in swamp forest; from sea level to 700 m.

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VAN VALKENBURG, J., T. SUNDERLAND, L. NGOK BANAK & Y. ISSEMBÉ (2007). *Sclerosperma* and *Podococcus* in Gabon. *Palms* 51: 77-83.

Podococcus acaulis Hua, Bull. Mus. Hist. Nat. (Paris) 1: 315 (1895); Check-list Pl. Vasc. Gabon: 321 (2006); Kew Bulletin 63: 253 (2008). – Icon.: Kew Bulletin 63: 254 (2008).

syn.: none reported in the literature.

Clustering acaulescent palm; leaves broadly radiating from base; leaflets to 10 on each side of rachis, rhomboid, subopposite, with praemorse margins; fruits narrowly ovoid or with narrowly ovoid lobes, 2-3 cm long and 0,5-1 cm in diameter, olive-green turning purplish brown when ripe.

Podococcus acaulis is distributed in Gabon and the region just crossing the Republic of Congo border.

This species grows in lowland evergreen forest on *terra firma* including low hills, sometimes reported along streams, persisting in logged forest or present in old secondary forest.

No uses have been reported for this species

P. barteri G. Mann & H. Wendl., Trans. Linn. Soc. London 24: 426 (1864); Fl. W. Trop. Afr., ed. 2 3(1): 160 (1968); Palm. Afr. 88 (1995); Bases Doc. Fl. Guinea Equat.: 377 (1999); Check-list Pl. Vasc. Gabon: 321 (2006); Kew Bulletin 63: 253 (2008); *Strelitzia* 22: 173 (2008). – Icon.: Palm. Afr. 89, 181, 182 (1995); Kew Bulletin 63: 254 (2008).

syn.: none reported in the literature.

Small, solitary or clustered palm; stem erect, to 2 (-3) m tall; leaves undivided when juvenile becoming pinnate when adult; leaflets to 7 on each side of rachis, rhomboid, subopposite, with praemorse margins; fruits narrowly ellipsoid or with narrowly ellipsoid lobes, 3 cm long and 0,6 cm in diameter, bright orange when ripe.

Podococcus barteri is distributed from the Niger Delta almost to the Congo River, excluding the region between the Cross and the Sanaga rivers in Cameroon. The species has been also reported on the island of Bioko (Fernando Pó) in Equatorial Guinea (Aedo & al., 1999), but no specimens have been apparently found in order to confirm its presence there.

This species grows in lowland evergreen forest on *terra firma* including low hills but also on relatively dry patches in swamp forest and on river banks; it grows from 0 to 700 m.

PODOCOCCLUS BARTERI

The fruit of this palm is edible and the base of the leaf sheath is used as a chew stick for teeth cleaning (van Valkenburg & Sunderland, 2008). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

RAPHIA / 20

The genus *Raphia* is represented by 20 species and consists of hapaxanthic, monoecious palms, with massive, solitary or clustered growth habit; leaves pinnate; inflorescences interfoliar or suprafoliar, branched to 2 orders; fruits covered by imbricate scales.

The genus *Raphia* is widely distributed in tropical Africa and one species in Madagascar, the latter maybe of introduced origin. The species *R. taedigera* is present in West Africa (Otedoh, 1977) and tropical America (Henderson & al., 1995); however, this requires of further study.

Most species in this genus grow in swampland conditions but *R. regalis* has also been reported on hillslopes in humid tropical rain forest.

Since the first complete revision of the genus *Raphia* by Beccari (1910), a further 17 species and one infra-specific taxon have been described mostly based on fragmentary herbarium material. Many attempts to tackle this taxonomically difficult genus have been carried out (e.g. Hutchinson & Dalziel, 1936; Tuley & Russell, 1966). The contribution by Otedoh (1982), including the proposal of five sections within the genus and the description of several new species and varieties greatly improved our knowledge on these palms; however, the treatment of Tuley (1995) remains the most comprehensive study carried out for the genus so far. It is clear that a modern revision is urgently required in order to define the taxonomic identity of many of the still imperfectly known binomials proposed. Detailed ecological data is very scant for many species and for some of them is completely lacking.

Raphia palms are among the most economically important plants in Africa. The long and resistant leaf petioles are frequently used in house construction and the fibers from the young leaves are useful for elaborating ropes, mats or traditional robes. The high-wine producing capacity of some species (e.g. *R. hookeri*) is largely appreciated in tropical Africa (Mollet, 1999).

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BAKER, W. J. (2010). Palmae. In: *The plants of Dom, Bamenda Highlands, Cameroon* (CHEEK, M., Y. HARVEY & J. M. ONANA, eds.). Royal Botanic Gardens, Kew, 162 pp.

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FAFIOYE, O., S. O. FAGADE & A. A. ADEBISI (2005). Toxicity of *Raphia vinifera* P. Beauv. fruit extracts on biochemical composition of Nile Tilapia (*Oreochromis niloticus*, Trewavas). *Biokemistri* 17: 137-142.

HUTCHINSON, J. & J. M. DALZIEL (1936). *Raphia* P. Beauv. *Fl. West Trop. Afr.* 2: 387-390.

RAPHIA

- LISOWSKI, S. (2009). Arecaceae. Flore (Angiospermes) de la République de Guinée. *Scripta Bot. Belg.* 41: 382-384.
- MOLLET, M. (1999). L'utilisation durable des palmiers *Borassus aethiopicum*, *Elaeis guineensis* et *Raphia hookeri* pour l'extraction de vin de palme en Côte d'Ivoire: *Tropenökologisches Begleitprogramm – TÖB*, FTWF- 12f: 1- 69.
- OTEDOH, J. (1975). The distribution of *Raphia regalis* Becc. (Palmae) in Africa. *Nigerian Field* 40: 172-178.
- OTEDOH, J. (1977). The African origin of *Raphia taedigera*. *Nigerian Field* 42: 11-16.
- OTEDOH, M. O. (1982). A revision of the genus *Raphia*. *J. Nig. Inst. Oil Palm Res.* 6: 145-189.
- OUATTARA, D., F. W. STAUFFER & A. BAKAYOKO (2013). Lectotypification de *Raphia sudanica* A. Chev. (Arecaceae, Calamoideae), et commentaires sur la biologie et la conservation de l'espèce. *Adansonia* (in press).
- TULEY, P. & T. RUSSELL (1966). The *Raphia* palms reviewed. *Nigerian Field* 32: 54-65.
- WILDEMAN, E. de (1916). Palmaceae. *Bull. Jard. Bot. Bruxelles* 5: 144-148.

Raphia africana Otedoh, J. *Nigerian Inst. Oil Palm Res.* 6(22): 156 (1982); *Palm. Afr.* 64 (1995). –Icon: *J. Nig. Inst. Oil Palm Res.* 6: 175 (1982).

syn.: none reported in the literature.

Tall, basally clustered palm; stems 2-4, 5-10.7 m long or more; leaves 13-17 m long; leaflets 175-185 on each side of rachis; inflorescences 4-6, massive and pendant; fruits turbinate to oblong, 6-10 cm long and 3.5 cm in diameter, covered by light brown to ivory-yellowish scales.

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch. Unlike the rest of the members of the Section, *R. africana* is the only species that is considered as good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp.

This palm is only known from cultivation in South-East Nigeria (Cross River State), but probably also occurs southwards of the Cameroon range.

Raphia africana grows in dense rain forest but as mentioned above also cultivated in swamps and on dry land, especially at Ibiaku Offot village, Uyo-Nwaniba road and at Oban (Otedoh, 1982)

Further studies are required on this species as some similarities (e.g. growth habit, 2-4 stems branching from the base and external fibres) with *R. mannii* and *R. longiflora* have been proposed by Otedoh (1982) and Tuley (1995).

The species is known to yield much palm wine, good piassaba and raffia fibers. The long petioles and rachis are used in construction and the larvae growing in the dead stems are eaten. For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

R. australis Oberm. & Strey, *Bothalia* 10: 29 (1969); *J. Nig. Inst. Oil Palm Res.* 6: 151 (1982); *Palm. Afr.* 65 (1995); Prelim. checklist vasc. pl. Mozambique 30: 120 (2004); *Fl. Zambes.* 13(2): 45 (2010). – Icon.: *Palm. Afr.* 177 (1995).

syn.: none reported in the literature.

Stout, solitary palm; stem 10 m long; leaves in the crown forming a tight rosette; leaflets to 120 on each side of rachis; inflorescences erect, with an overall structure conical in shape; fruits ellipsoid, sometimes slightly crescent-shaped, 6-9 cm long and 3-5 cm in diameter, covered by yellowish to dark-brown scales.

The presence of 7-13 or more, erect primary branches and a main inflorescence axis 3-5 m long is shared with another species of Section *Moniliformes*, Subsection *Erectae* (*R. regalis*), as defined by Otedoh (1982).

RAPHIA AUSTRALIS

Reported from South Mozambique to the Natal and Cape Provinces in South Africa. According to Tuley (1995) this species has been also planted in several sites in South Africa.

This palm is generally associated to swamp conditions.

There are some superficial similarities with *R. farinifera*, from which it can be differentiated by its conspicuously erect compound inflorescence, a reproductive character that is only shared with *R. regalis* within the genus.

No uses have been reported for this species.

R. farinifera (Gaertn.) Hyl., *Lustgården* 31-32: 88 (1952); *Fl. W. Trop. Afr.*, ed. 2 3(1): 166 (1968); *J. Nig. Inst. Oil Palm Res.* 6: 163 (1982); *Fl. Trop. E. Africa, Palmae*: 38 (1986); *Palm. Afr.* 66 (1995); Prelim. checklist vasc. pl. Mozambique 30: 120 (2004); Checklist Zimbabwean vasc. pl. 33: 85 (2004); Checklist Zambian vasc. pl. 32: 106 (2005); *Strelitzia* 22: 173 (2008); *Fl. Zambes.* 13(2): 43 (2010). – Icon.: *Fl. Trop. E. Africa, Palmae*: 39, 172 (1986); *Fl. Zambes.* 13(2): 44 (2010).

syn.: *Metroxylon ruffia* (Jacq.) Spreng.; *R. kirkii* Engl. ex Becc.; *R. kirkii* var. *grandis* Engl. ex Becc.; *R. kirkii* var. *longicarpa* Engl. ex Becc.; *R. lyciosa* Comm. ex Kunth; *R. pedunculata* P. Beauv.; *R. polymita* Comm. ex Kunth; *R. ruffia* (Jacq.) Mart.; *R. tamatavensis* Sadeb.; *Sagus farinifera* Gaertn.; *S. pedunculata* (P. Beauv.) Poir.; *S. ruffia* Jacq.

Tall and massive, clustering or rarely solitary palm; stem to 25 m long or more, with leaves up to 20 m long; leaflets to 150-180 on each side of rachis; inflorescences pendant, 3-4 m long; fruits variable in shape, ranging from ellipsoid-ovoid to squarely cylindrical, 7.5-10 cm long and 4-5.5 cm in diameter, covered by bright orangey-brown to reddish-brown scales.

Reported to be widely distributed in West, East, Central and northerly regions of Southern Africa and also present in the North and East of Madagascar (Baker, 2008; Dransfield, 2010). This palm has been frequently reported to be cultivated. The populations of West Africa require to be studied in detail as they may represent another taxon.

This is a lowland riparian and swamp forest palm, also found in semi-cultivation conditions throughout its range of distribution. In East Africa reported to grow in gallery forest and fresh-water swamp-forest, from lowland to 2500 m (Dransfield, 1986).

There are some superficial similarities with *R. australis*, from which it can be differentiated by its clearly pendant compound inflorescence, a reproductive character that is shared with most species in the genus.

The species is used in several African countries for palm wine production and as building material.

R. gentiliana De Wild., Miss. Ém. Laurent: 29 (1905); *J. Nig. Inst. Oil Palm Res.* 6: 148 (1982); *Palm. Afr.* 67 (1995).

syn.: *R. gentiliana* var. *gilletii* De Wild.; *R. gilletii* (De Wild.) Becc.; *R. sankuruensis* De Wild.

Moderate, apparently solitary palm; stem 6 m long with leaves up to 10 m long, arching away from the axis; leaflets to 120 on each side of rachis; inflorescences pendant, 2 m long; fruits variable in shape, ranging from tapering club shaped to more globose or ellipsoid-ovoid, 4-6.5 cm long and 3-3.5 cm in diameter, covered by yellowish-brown brown scales which become darker at maturity.

RAPHIA GENTILIANA

The presence of 4-6, pendulous primary branches and a main inflorescence axis 0.5-1.6 m long is shared between this species and the other three species of Section Moniliformes, Subsection Moniliformes (*R. matombe*, *R. ruwenzorica*, *R. textilis*), as defined by Otedoh (1982).

Reported to be present in the Central African Republic to the northern and central region of the Democratic Republic of Congo.

This is most probably an inland swamp species; however, according to Tuley (1995) it is also widely cultivated.

Raphia gentiliana remains an imperfectly known taxon that requires further study.

The species has a good reputation for palm wine production and for building material.

R. hookeri G. Mann & H. Wendl., Trans. Linn. Soc. London 24: 438 (1864); Fl. W. Trop. Afr., ed. 2 3(1): 162 (1968); J. Nig. Inst. Oil Palm Res. 6: 152 (1982); Palm. Afr. 68 (1995); Bases Doc. Fl. Guinea Equat.: 377 (1999); Woody Pl. W. Afr. Forest: 868 (2006); Check-list Pl. Vasc. Gabon: 321 (2006); Fl. anal. Bénin: 61 (2006); Strelitzia 22: 173 (2008); Fl. Rép. Guinée: 384 (2009); Boissiera 64: 215 (2011). – Icon: J. Nig. Inst. Oil Palm Res. 6: 174 (1982); Palm. Afr. 69, 165-170 (1995).

syn.: *Raphia angolensis* Rendle; *R. gigantea* A. Chev.; *R. hookeri* var. *planifoliola* Otedoh; *R. hookeri* var. *rubrifolia* Otedoh; *R. longirostris* Becc.; *R. maxima* Pechuël-Loesche; *R. sassandrensis* A. Chev.; *Sagus hookeri* (G. Mann & H. Wendl.) Rollisson

Tall, solitary or rarely clustered palm; stem 15 m long or more, with leaves to 10-15 m long; leaflets to 160-180 on each side of rachis; inflorescences pendant, up to 3.5 m long; fruits variable in shape, ranging from ellipsoid to nearly cylindrical and turbinate, 5-12 cm long and 4-6 cm in diameter, covered by yellow-brown scales.

This species is widely distributed from Senegal to the Congo Basin (Otedoh, 1982; Tuley, 1995; Lisowski, 2009); its presence in Angola was reported by Baker (2008). Its current and extremely expanded distribution may be largely due to the fact that this is a highly appreciated palm (e.g. wine extraction) frequently subject to cultivation or semi-cultivation.

Wild populations are to be found near coastal swamp-riparian vegetation, under saline and deltaic conditions

The presence of abundant broad, curled, dark, ribbon-like fibers covering at the level of the leaf sheaths and the stem characterizes this and the other two species of Section Temulentae (*R. rostrata*, *R. sese*), as defined by Otedoh (1982).

Otedoh (1982) recognized three varieties for this species (*R. hookeri* var. *hookeri*, *R. hookeri* var. *planifoliola* and *R. hookeri* var. *rubrifolia*); the first two varieties were defined based on the type and angle of insertion of the leaflets in the leaf rachis, whereas *R. hookeri* var. *rubrifolia* was defined based on its orange to reddish-brown petioles. All these infra-specific taxa have been now placed under synonymy.

This is one of the most useful species within the genus. It is well known for piassaba and fiber extraction as well as largely exploited for palm wine production (see Mollet, 1999 for details). In south-central Ivory Coast women use the fibers of young leaves to manufacture traditional clothes and handicrafts. For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

RAPHIA

R. laurentii De Wild., Miss. Ém. Laurent: 26 (1905); J. Nig. Inst. Oil Palm Res. 6: 158 (1982); Palm. Afr. 70 (1995); Strelitzia 22: 173 (2008).

syn.: none reported in the literature.

Small to moderate, solitary palm; stem 2-4 m long, with leaves to 15 m long; leaflets to 160-180 on each side of rachis; inflorescences pendant or inserted at a more obtuse angle with respect to the stem, up to 2 m long; fruits ranging from oblong-cylindrical to ellipsoid-ovoid, 4.5-6 cm long and 3.5-4.5 cm in diameter, covered by orange-red scales when young, becoming yellowish-green when the fruit is ripe.

This species has been reported from Central and Southern Democratic Republic of Congo. Its presence in Angola was pointed out by Baker (2008).

Raphia laurentii forms large stands in swamp vegetation.

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch and with exception of *R. africana* generally not good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp. *R. laurentii* is the only solitary species of the Section *Raphia*.

No uses have been reported for this species.

R. longiflora G. Mann & H. Wendl., Trans. Linn. Soc. London 24: 438 (1864); J. Nig. Inst. Oil Palm Res. 6: 158 (1982); Palm. Afr. 71 (1995).

syn.: none reported in the literature.

Moderate, clustered palm; stems 2-4, about 3-7 m long, with leaves to 7-10 m long; leaflets to 160 on each side of rachis; inflorescences pendant, total size unknown; fruits ranging from ellipsoid-elongate to turbinate, 4.5-5.5 cm long and 3.5-4 cm in diameter, covered by light reddish-brown scales when young, becoming darker when the fruit is ripe.

This palm was first collected on Corisco Island (29 km southwest of the Rio Muni estuary that defines the border between Equatorial Guinea and Gabon). According to Tuley (1995) despite the limited sightings of this palm, one would nevertheless anticipate its occurrence anywhere in near-coastal swamps and offshore islands between the Niger and the Congo (Zaire) Deltas.

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch and with exception of *R. africana* generally not good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp.

Raphia longiflora presents some similarities with other two-basally branched species of Section *Raphia* (*R. mannii*, *R. africana*); however, according to Tuley (1995) it differs from these species by the presence of a characteristic obconical fruit pedicel.

No uses have been reported for this species.

R. mambillensis Otedoh, J. Nigerian Inst. Oil Palm Res. 6(22): 163 (1982); Palm. Afr. 71 (1995). –Icon.: J. Nig. Inst. Oil Palm Res. 6: 178 (1982); Palm. Afr. 165, 167, 173, 174 (1995).

syn.: none reported in the literature.

Small, almost stemless palm; stems prostrate, scarcely rising above ground, with leaves to 5-8 m long; leaflets 60-90 on each side of rachis; inflorescences 3-5, curved and arising from the ground, to 1.5 m long or more; fruits ellipsoid to turbinate, 3.5-7.5 cm long and 2.5-3.5 cm in diameter, covered by dark reddish-brown scales.

RAPHIA MAMBILLENSIS

A particular vegetative character that can be observed in this species is the presence of conspicuous filaments of yellowish-reddish brown wax along the lower mid rib of the leaflets.

This palm is distributed in the Cameroon Range and associated outlying plateau along the Nigerian border. According to Otedoh (1982) this species also grows north-eastwards through the Central African Republic to South-West Sudan.

Raphia mambillensis is a montane species, probably native to stream sides and wet hollows on the 1500 m erosion surface. This palm was reported by Darbyshire & Cheek (2004) and Baker (2010) growing up to 1570-1633 m in North-West Cameroon.

The midribs of this species are extensively used for house construction and the leaflets for thatching. Just before emergence the inflorescence is tapped for sap and the fruits reported to be used in medicine whereas the seeds could be chewed as kola. For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

R. mannii Becc., Agric. Colon. 4: t. VI, f. 8-9 (1910); J. Nig. Inst. Oil Palm Res. 6: 158 (1982); Palm. Afr. 73 (1995).

syn.: *R. wendlandii* Becc.

Small to moderate, clustered palm; stems 2-4, about 1-5 (-10) m long, with leaves to 5-12 m long; leaflets to 160-180 on each side of rachis; inflorescences 4-5, pendant, 1 m long; fruits tending to be broader at the base, and slightly oblong in shape, 5-7.5 cm long and 3.5-4.5 cm in diameter, covered by light yellow scales.

This palm has been reported from Bioko (Fernando Pó) in Equatorial Guinea and Southern Nigeria.

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch and with exception of *R. africana* generally not good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp.

No uses have been reported for this species.

R. matombe De Wild., Bull. Jard. Bot. Etat Bruxelles 5: 144 (1916); J. Nig. Inst. Oil Palm Res. 6: 148 (1982); Palm. Afr. 72 (1995); Strelitzia 22: 173 (2008).

syn.: *R. gossweileri* Burret; *R. macrocarpa* Burret

The growth habit and most leaf features of this palm remain unknown; leaflets apparently to 100 on each side of the rachis; inflorescence pendant, about 1 m long; fruits variable in size and shape ranging from near globose to turbinate, covered by tan to reddish-brown scales.

The presence of 4-6, pendulous primary branches and a main inflorescence axis 0.5-1.6 m long is shared between this species and the other three species of Section Moniliformes, Subsection Moniliformes (*R. gentiana*, *R. ruwenzorica*, *R. textilis*), as defined by Otedoh (1982).

Reported from Angola (Cabinda) to the southern region of the Democratic Republic of Congo (Otedoh, 1982; Baker, 2008).

There is no ecological data associated to this palm.

Although readily recognized by its distinctive partial inflorescence with conspicuous brown bracts and bracteoles, this remains an imperfectly known taxon that requires further study.

No uses have been reported for this species.

RAPHIA

R. monbuttorum Drude, Bot. Jahrb. Syst. 21: 111 (1895); J. Nig. Inst. Oil Palm Res. 6: 158 (1982); Palm. Afr. 74 (1995).

syn.: *R. dolichocarpa* Burret; *R. pycnosticha* Burret; *R. mortehanii* De Wild.

Small, clustered palm; stems about 2-4 m long, with leaves to 5-10 m long, erect on emergence but arching when mature; leaflets to 170-200 on each side of rachis; inflorescences 4-5, pendant, 2-3 m long; fruits ranging from cylindrical to oblong-ellipsoid in shape, 4.5-7.5 cm long and 3.5-4.5 cm in diameter, covered by reddish to brown-orange scales.

Widely distributed palm from the inland regions east of the Cameroon Range to the northerly part of the Congo Basin and the wetter areas of Southern Sudan.

This is a riparian-swamp species adapted to a wide range of rainfall conditions

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch and with exception of *R. africana* generally not good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp.

A variant form of this species, based on the presence of symmetrically arranged opposite leaflets (vs clearly opposite leaflets characteristic of the species) was originally described as *R. mortehanii* by Wildeman (1916), and treated as the variety *R. monbuttorum* var. *mortehanii* by Otedoh (1982). These taxa are now treated as synonyms of *R. monbuttorum*; however, it is clear that the establishment of the taxonomic identity of this palm requires further study.

No uses have been reported for this species.

R. palma-pinus (Gaertn.) Hutch. in J. Hutchinson & J.M. Dalziel, Fl. W. Trop. Afr. 2: 387 (1936); Fl. W. Trop. Afr., ed. 2 3(1): 162 (1968); J. Nig. Inst. Oil Palm Res. 6: 158 (1982); Palm. Afr. 74 (1995); Woody Pl. W. Afr. Forest: 868 (2006); Strelitzia 22: 173 (2008). – Icon: J. Nig. Inst. Oil Palm Res. 6: 176 (1982); Garcia Orta, Sér. Bot. 16: 49 (2002).

syn.: *R. gaertneri* G. Mann & H. Wendl.; *R. gracilis* Becc.; *Sagus palma-pinus* Gaertn.

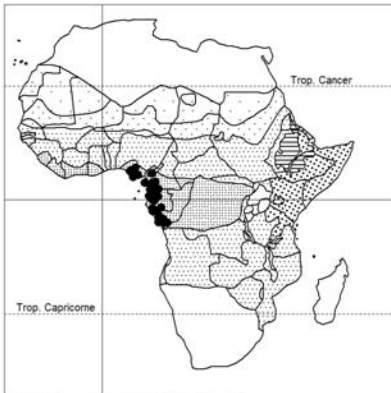
Small, almost stemless, clustered palm; stems about 2-4 m long, with leaves to 9 m long, erect on emergence and slightly arching when mature; leaflets to 100-150 on each side of rachis; inflorescences 4-6, pendant, 1-3 m long; fruits wider at the base and tapering to the apex, 3.5-5.5 cm long, covered by yellow to yellowish-brown scales.

This species is restricted to the coastal belt between the Gambia Basin West to Ghana in the Ankasa Natural Reserve (Tuley, 1982; Tuley, 1995; Lesowski, 2009). Its presence in Angola was reported by Baker (2008).

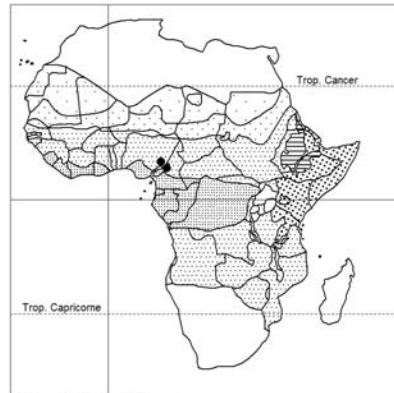
This is a lowland swamp and riparian palm, often associated with shady conditions and extremely high rain fall.

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch and with exception of *R. africana* generally not good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp.

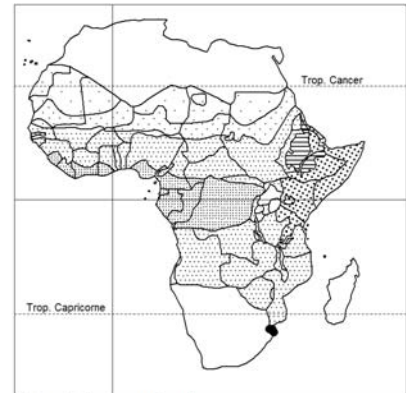
Based on differences in the morphology of the rachillae and the size of the flowers and the fruits, Otedoh (1985) proposed two subspecies for this palm (*R. palma-pinus* subsp. *palma-pinus* and *R. palma-pinus* subsp. *nodostachys*). Pending further study these infraspecific taxa were retained by Tuley (1996) but regarded as synonyms of *R. palma-pinus* by Govaerts & Dransfield (2005).



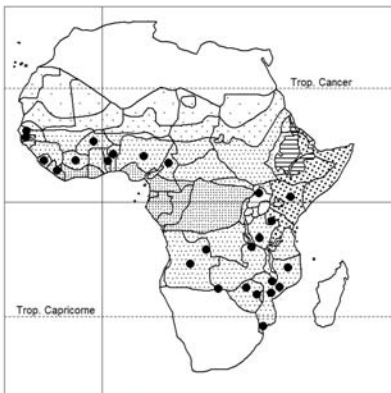
Podococcus barteri



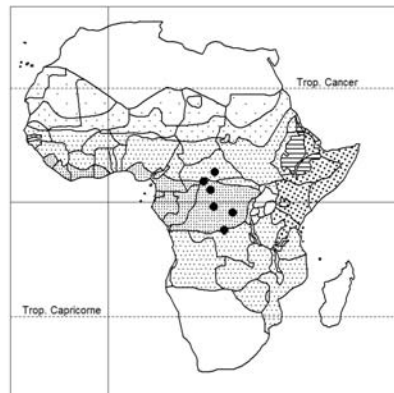
Raphia africana



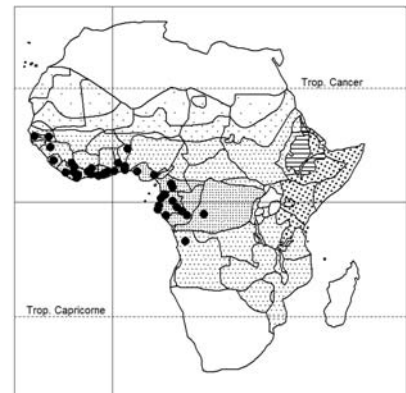
Raphia australis



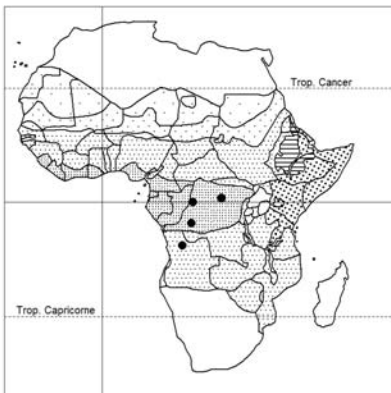
Raphia farinifera



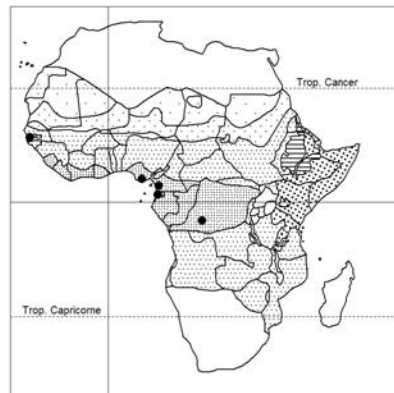
Raphia gentiliana



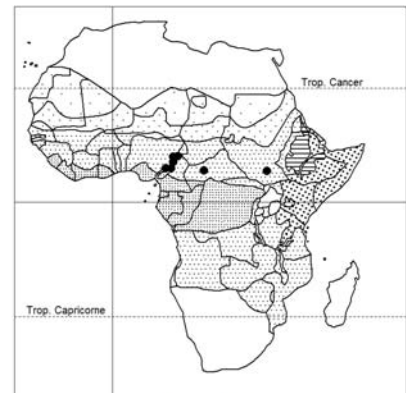
Raphia hookeri



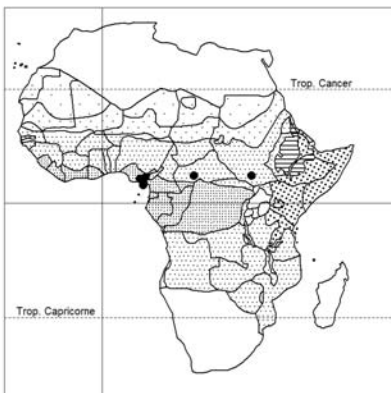
Raphia laurentii



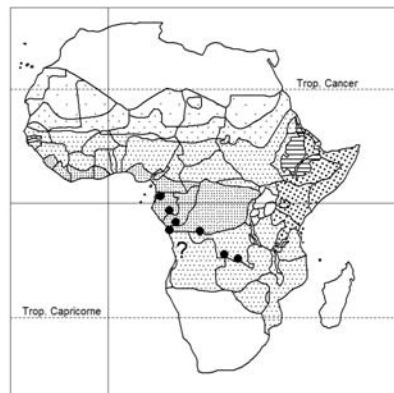
Raphia longiflora



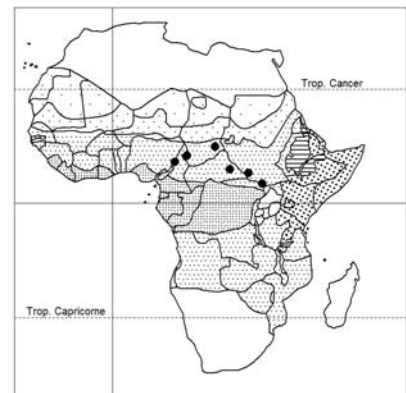
Raphia mambillensis



Raphia mannii



Raphia matombe



Raphia monbuttorum

RAPHIA PALMA-PINUS

Locals do not exploit palm wine from this palm as it does not develop any aerial stem. In south-west Ivory Coast the leaves are sometimes used for thatch and in Guiné-Bissau a large number of uses have been reported for the rachis and the leaflets (Diniz & Martins, 2002). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

R. regalis Becc., Webbia 3: 125 (1910); Fl. W. Trop. Afr., ed. 2 3(1): 166 (1968); J. Nig. Inst. Oil Palm Res. 6: 151 (1982); Palm. Afr. 75 (1995); Bases Doc. Fl. Guinea Equat.: 377 (1999); Checklist Pl. Vasc. Gabon: 321 (2006); Strelitzia 22: 173 (2008).

syn.: *R. insignis* Burret

Small, almost stemless palm; stems when present about 1 m long, with leaves extremely long, to 20-25 m, erect on emergence and slightly arching when mature; leaflets to 180 on each side of rachis; inflorescences erect, to 3 m long; fruits variable in size and shape, 4.5-9.5 cm long and 2-4.5 cm in diameter, ovoid but more narrow towards the base, with a somewhat curved form, covered by reddish-brown scales.

The presence of 7-13 or more, erect primary branches and a main inflorescence axis 3-5 m long is shared with another species of Section Moniliformes, Subsection Erectae (*R. australis*), as defined by Otedoh (1982). With leaves reaching 25 m long this species is reported to have the longest leaves in the Plant Kingdom.

This species is widely distributed from South Nigeria to Angola (Otedoh, 1982; Baker, 2008).

Raphia regalis is a tropical rainforest species apparently associated to acid soils on low hills and rocky outcrops of the Basement Complex but it is also found in more hydromorphic situations at the base of the footslopes in such situations.

The species is used as a source for building material. For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

R. rostrata Burret, Notizbl. Bot. Gart. Berlin-Dahlem 12: 307 (1935); J. Nig. Inst. Oil Palm Res. 6: 155 (1982); Palm. Afr. 76 (1995); Strelitzia 22: 173 (2008).

syn.: none reported in the literature.

Tall, solitary palm; stem 15-20 m long or more, with leaves to 12-15 m long; leaflets to 175-185 on each side of rachis; inflorescences pendant, apparently extremely long but no precise data available; fruits oblong, variable in size, generally of 4.5-9 cm long and 3-4 cm in diameter, covered by dark reddish-brown scales.

This species occurs from the lower Congo Basin southward to Angola (Otedoh, 1982; Baker, 2008).

The palm is associated to swamp ecosystems.

The presence of abundant broad, curled, dark, ribbon-like fibers covering at the level of the leaf sheaths and the stem characterizes this species and the other two species of Section Temulentae (*R. hookeri*, *R. sese*), as defined by Otedoh (1982). Tuley (1995) considers that although available data on this species is still limited the currently known differences supports its recognition as a valid species, instead of a variety of the closely related West African wine palm *R. hookeri*.

No uses reported so far for this species.

RAPHIA

R. ruwenzorica Otedoh, J. Nigerian Inst. Oil Palm Res. 6(22): 148 (1982); Palm. Afr. 77 (1995).-Icon: J. Nig. Inst. Oil Palm Res. 6: 173 (1982).

syn.: *R. monbuttorum* var. *macrocarpa* Robyns & Tournay

Tall, solitary palm; stem erect, to 10 m tall; leaflets 140-150 on each side of rachis; fruits turbinate to ellipsoid, 10-13 cm long and 5-6 cm in diameter, covered with dark brown scales.

The presence of 4-6, pendulous primary branches and a main inflorescence axis 0.5-1.6 m long is shared between this species and the other three species of Section Moniliformes, Subsection Moniliformes (*R. gentiliana*, *R. matombe*, *R. textilis*), as defined by Otedoh (1982).

This species is only known from East Democratic Republic of Congo, around lakes Edward (Idi Amin Dada) and Kivu, and Burundi. Its presence in Rwanda has also been reported.

The palm grows in high altitude savannah, between 800 and 1500 m.

This remains an imperfectly known taxon that requires further study.

Otedoh (1982) pointed out that the fibers of this palm are apparently useful for rope making.

R. sese De Wild., Miss. Ém. Laurent: 28 (1905); Scripta Bot. Belg. 4: 107 (1993); J. Nig. Inst. Oil Palm Res. 6: 155 (1982); Palm. Afr. 78 (1995).

syn.: none reported in the literature.

Moderate to tall, solitary palm; stem to 9 m long or more, with leaves to 7 m long; leaflets to 170-180 on each side of rachis; inflorescences pendant, somewhat constraint and apparently not longer than a meter; fruits ovoid-ellipsoid, 5-7 cm long and 4 cm in diameter, covered by orange-yellowish to brown scales.

Wild populations of this palm have been reported in the central and north-eastern Democratic Republic of Congo.

This species is adapted to riparian conditions.

The presence of abundant broad, curled, dark, ribbon-like fibers covering at the level of the leaf sheaths and the stem characterizes this species and the other two species of Section Temulentae (*R. hookeri*, *R. rostrata*), as defined by Otedoh (1982).

No uses have been reported for this species.

R. sudanica A. Chev., Bull. Soc. Bot. France 55(8): 95 (1908); Fl. W. Trop. Afr., ed. 2 3(1): 166 (1968); J. Nig. Inst. Oil Palm Res. 6: 166 (1982); Palm. Afr. 78 (1995); Fl. anal. Bénin: 61 (2006); Boissiera 64: 215 (2011); Boissiera 65: 34 (2012); Adansonia (2013, in press). - Icon.: Palm. Afr. 165, 167, 170, 171 (1995).

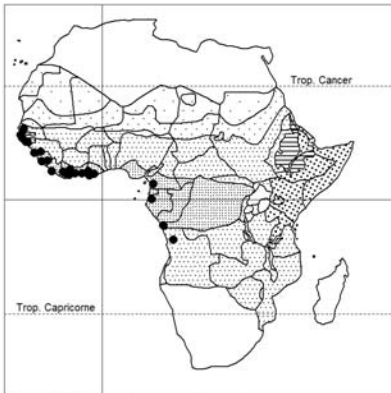
syn.: *R. bandamensis* A. Chev.; *R. heberostris* Becc.; *R. humilis* A. Chev.

Small, solitary palm; stems 1-5 (-8) m long; leaves 1-5 (-8) m long, erect on emergence and slightly arching when mature; leaflets to 40-60 on each side of rachis; inflorescences slightly pendant, to 1-1.5 m long; fruits oblong-ovoid, 4.7-5 cm long and 2.8-3 cm in diameter, covered by reddish-brown scales.

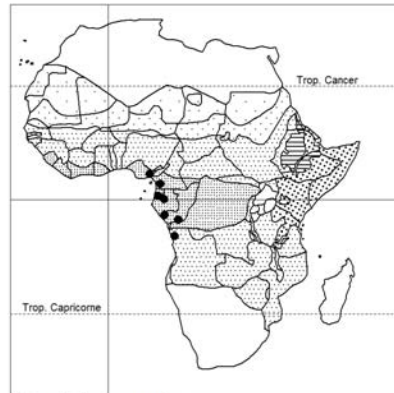
This species is widely distributed from Senegal to Cameroon (Tuley, 1995; Lesowski, 2009).

Raphia sudanica is frequently found in in-land savannahs, mostly associated to small streams and gallery forest; it normally grows at low elevations.

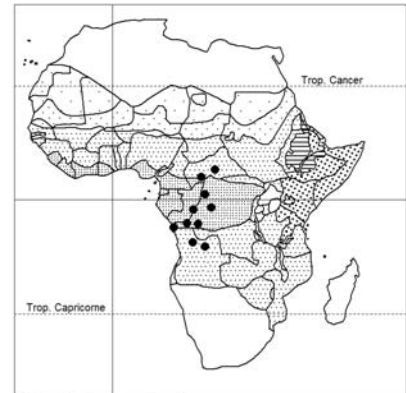
This palm is the only member of Section Obclavatae, as defined by Otedoh (1982), which is characterized by the presence of a distinct, solid maize-cob shape of the secondary branch inflorescence.



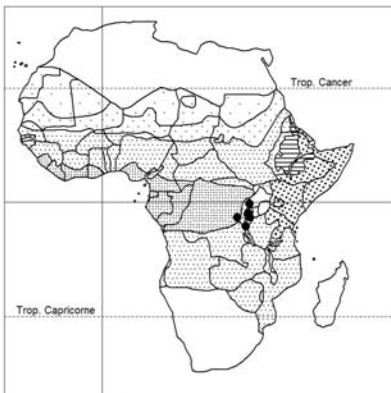
Raphia palma-pinus



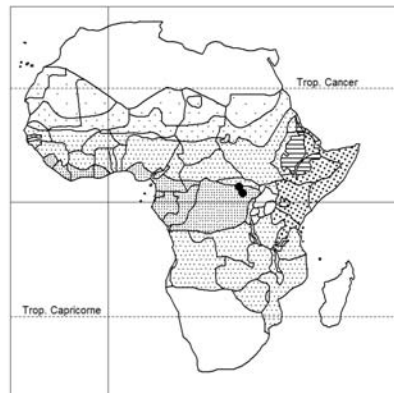
Raphia regalis



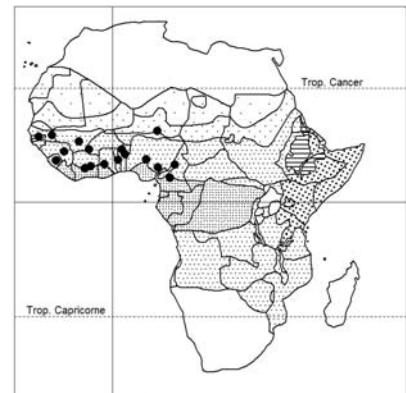
Raphia rostrata



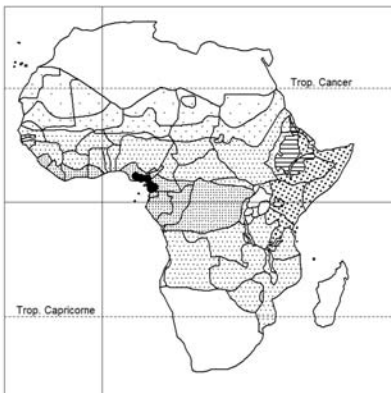
Raphia ruwenzorica



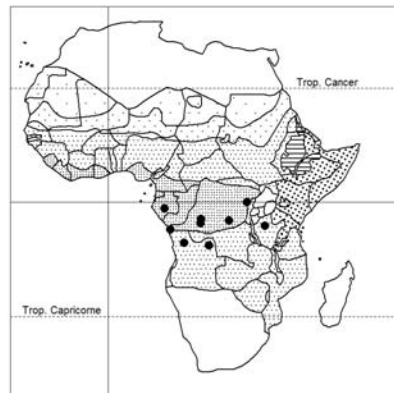
Raphia sese



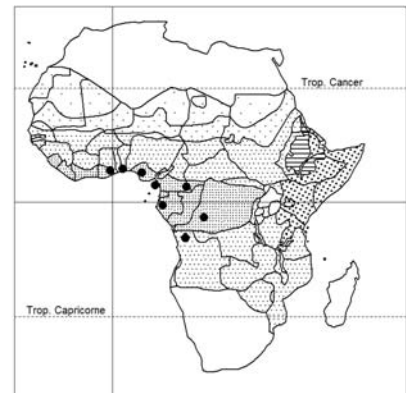
Raphia sudanica



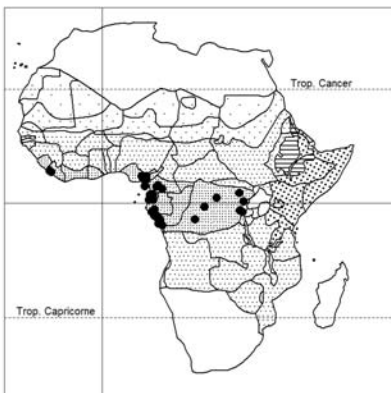
Raphia taedigera



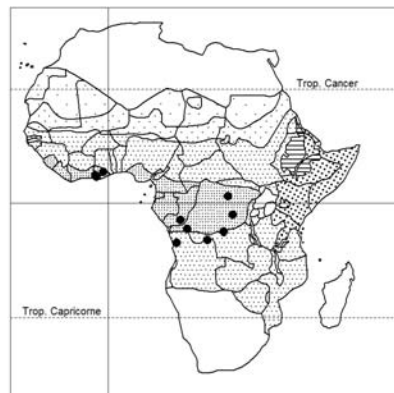
Raphia textilis



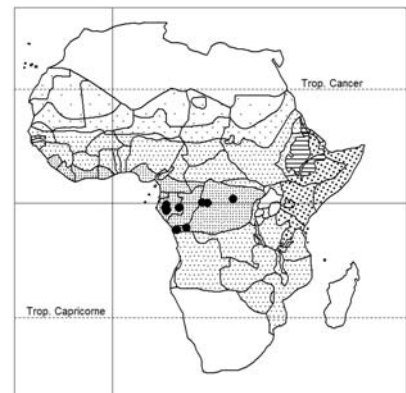
Raphia vinifera



Sclerosperma mannii



Sclerosperma profizianum



Sclerosperma walkeri

RAPHIA SUDANICA

This is an important palm for local populations. The stems, petioles and leaves are used for house construction (Arbonier, 2009). The leaflets are used for the elaboration of mats and brooms (Ouattara & al., 2013). Palm wine is apparently extracted from this palm in some West African countries. The uses of this palm in West tropical Africa were described by Burkill (1997, also separately treated as *R. humilis* A. Chev.).

R. taedigera (Mart.) Mart., Hist. Nat. Palm. 3: 217 (1838); J. Nig. Inst. Oil Palm Res. 6: 161 (1982); Palm. Afr. 79 (1995).

syn.: *Metroxylon taedigerum* (Mart.) Spreng.; *R. aulacolepis* Burret; *R. nicaraguensis* Oerst.; *R. vinifera* var. *nicaraguensis* (Oerst.) Drude; *R. vinifera* var. *taedigera* (Mart.) Drude; *Sagus taedigera* Mart.

Tall, clustered palm; stem erect, to 10-12 m tall; leaves 10-18 m long, erect when young and arching when mature; leaflets 120-180 on each side of rachis; fruits tending to be shortly oblong, 4.5-8 cm long and 2.5-4.5 cm in diameter, covered by yellowish-tan to orange-brown scales.

Raphia taedigera has been reported in Nigeria and Cameroon, although according to Tuley (1995) it could also occur anywhere near the coast and the nearby off-shore island between the Niger and Congo deltas. The presence and distribution of this species in eastern South America (coastal Brazil) and southern Central America have been documented by Henderson & al. (1995).

This palm grows in freshwater coastal swamps, commonly estuarine, behind the mangrove belt; it apparently tolerates to grow in brackish water conditions.

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch and with exception of *R. africana* generally not good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp. Tuley (1995) pointed out that this palm, at least based on the study of African collections, may be probably better considered as a variety of the closely related *Raphia vinifera*.

R. textilis Welw., Apont.: 584 (1858 publ. 1859); J. Nig. Inst. Oil Palm Res. 6: 150 (1982); Palm. Afr. 81 (1995); Strelitzia 22: 173 (2008).

syn.: *Metroxylon textile* Welw.; *R. pseudotextilis* Burret; *R. welwitschii* H. Wendl.

Small to moderate, solitary palm; stem erect, to 3-10 m tall; leaves to 7 m long, leaflets to 160 on each side of rachis; fruits turbinate to cylindrical, 6-7 cm long and 4-5 cm in diameter, covered by dark reddish-brown scales.

The presence of 4-6, pendulous primary branches and a main inflorescence axis 0.5-1.6 m long is shared between this species and the other three species of Section Moniliformes, Subsection Moniliformes (*R. gentiliana*, *R. matombe*, *R. ruwenzorica*), as defined by Otedoh (1982).

This species is widely distributed from southward Gabon across the lower Congo Basin to Angola (Otedoh, 1982; Tuley, 1995; Baker, 2008).

Ecological data on this species is relatively scant but it appears to be a riparian species that requires high rainfall regimes and there are suggestions that it is associated with plant communities at altitudes from 500 to 1000 m.

This remains an imperfectly known taxon that requires further study.

The species has traditionally been used as a source of raffia fibers, reputed to be extremely resistant.

RAPHIA

R. vinifera P. Beauv., Fl. Oware 1: 77 (1806); Fl. W. Trop. Afr., ed. 2 3(1): 162 (1968); J. Nig. Inst. Oil Palm Res. 6: 161 (1982); Palm. Afr. 81 (1995); Bases Doc. Fl. Guinea Equat.: 377 (1999); Fl. anal. Bénin: 61 (2006); Strelitzia 22: 173 (2008). – Icon: J. Nig. Inst. Oil Palm Res. 6: 177 (1982); Palm. Afr. 165-167, 174, 175 (1995).

syn.: *Metroxylon viniferum* (P. Beauv.) Spreng.; *R. diasticha* Burret; *R. vinifera* var. *nigerica* Otedoh; *Sagus raphia* Poir. (nom. illeg.); *S. vinifera* (P. Beauv.) Pers.

Small, clustering or much rarely solitary palm; stem erect, to 1.5-5 m tall; leaves extremely long, to 20 m, leaflets to 130-180 on each side of rachis; fruits oblong to near cylindrical, 5-9.5 cm long and 3-4.5 cm in diameter, covered by yellowish-brown to orange-brown scales.

Raphia vinifera is widely distributed in the West African coastal belt, eastward from the climatic break of the Accra plains in Ghana, probably as far as the Congo Delta (Otedoh, 1982; Tuley, 1995). Its presence in Angolas was indicated by Baker (2008).

This species is reported to grow in fresh water riparian vegetation and swamps; it may also exhibit some degree of salt tolerance.

This palm belongs to the large Section *Raphia*, characterized by petioles and leaf rachis of high quality and very durable thatch and with exception of *R. africana* generally not good for wine production. The fruits in this Section are usually thick and have an oil-rich edible mesocarp.

This palm is widely use as a source of raffia fibers and the long petioles used for house construction. The bitter seeds are toxics and reputed to have properties of stupefying fish (Burkill, 1985; Fafioye & al., 2005). For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

SCLEROSPERMA / 3

The genus *Sclerosperma* is represented by three species and consists of pleoanthic, monoecious palms, acaulescent or with very short stems; leaves irregularly pinnate or entire-bifid, conspicuously ascending; inflorescences interfoliar, solitary, spicate, often covered by a fibrous peduncular bract, bearing male and female flowers.

The genus *Sclerosperma* occurs from western Liberia to the tributary of the Congo River, as far east as the border region with Rwanda and southeast into Kasai Orientale in the Democratic Republic of Congo. The distribution of this genus in West Africa is quite disjunct with populations in Liberia, south west Ghana and on both sides of the Nigeria-Cameroon border. A recent visit of the Tai National Park (southwest Ivory Coast) could not confirm the presence of this interesting palm.

Most species grow in the understory and are particularly adapted to low and wet swampy areas. In Ghana it is observed also in logged forest or as remnant in cocoa plantations where it grows in full sun conditions. *Sclerosperma* is present from sea level to 1400 m.

BAKER, W. J. (2008). Palmae. In: Plants of Angola (E. FIGEREIDO & G. F. SMITH, eds.). *Strelitzia* 22: 172-173.

DRANSFIELD, J., N. W. UHL, W. J. BAKER, M. M. HARLEY & C. E. LEWIS (2008). *Genera Palmarum. The evolution and classification of Palms*. Kew Publishing, Royal Botanic Gardens, Kew. 732 pp.

VAN VALKENBURG, J., T. SUNDERLAND, L. NGOK BANAK & Y. ISSEMBÉ (2007). *Sclerosperma* and *Podococcus* in Gabon. *Palms* 51: 77-83.

VAN VALKENBURG, J. L. C. H., T. C. H. SUNDERLAND & T. L. P. COUVREUR (2008). A revision of the genus *Sclerosperma* (Arecaceae). *Kew Bull.* 63: 75-86.

SCLEROSPERMA

Sclerosperma mannii H. Wendl., Trans. Linn. Soc. London 24: 427 (1864); Fl. W. Trop. Afr., ed. 2 3(1): 161 (1968); Scripta Bot. Belg. 4: 108 (1993); Palm. Afr. 93 (1995); Bases Doc. Fl. Guinea Equat.: 377 (1999); Check-list Pl. Vasc. Gabon: 321 (2006); Woody Pl. W. Afr. Forest: 868 (2006); Kew Bull. 63: 77 (2008); Strelitzia 22: 173 (2008). – Icon.: Palm. Afr. 94, 95, 186 (1995); Kew Bull. 63: 79 (2008)

syn.: *Sclerosperma dubium* Becc.

Short or acaulescent, clustering palm; stem when present very short; leaves segmented, very large, ascending; leaflets 8-17 (-24), subopposite to alternate; fruits globose, 2.5-3 cm long and 2.2.-2.9 cm in diameter.

Sclerosperma mannii has a disjunct distribution with a population in Liberia and from southeast Nigeria southward to Congo and as far east as the border area of Congo and Rwanda. The species has been also reported on the island of Bioko (Fernando Pó) in Equatorial Guinea but no specimens have been apparently found in order to confirm its presence there. Its presence in Angola was indicated by Baker (2008).

This species grows in lowland evergreen forest, ranging from forest just behind the mangrove swamp forest, though seasonally flooded forest, to valley bottom forest at higher elevations, persisting in secondary growth; it is present from 0 to 1400 m.

The leaves are reported to be used for thatching and the endosperm of young fruits is locally consumed. For a comprehensive description of the uses of this palm in West tropical Africa see Burkill (1997).

S. profizianum Valk. & Sunderl., Kew Bull. 63: 82 (2008). – Icon.: Palm. Afr. 185 (1995); Kew Bull. 63: 81 (2008).

syn.: none reported in the literature.

Short or acaulescent, clustering palm; stem when present 1-2 m long; leaves entire, very large, ascending; fruits globose to obovoid, 3-3.5 cm long and 3-3.5 cm in diameter.

Sclerosperma profizianum has a disjunct distribution with a population in southwest Ghana (Ankasa Natural Reserve) and the other population in the larger tributary of the Congo River. The species is possibly also in Nigeria but no voucher specimen has been found in order to confirm its presence there. A recent visit to the forest of Tanoé (south border between Ivory Coast and Ghana) in order to find this species was unsuccessful.

This species is found on relatively dry patches in swampy areas, in valley bottom forest, in forest that is often waterlogged or along streams. In Ghana it was also found as remnant in cocoa plantations where it grows in full sun conditions. *S. profizianum* is restricted to lowland regions.

The leaves are frequently used for thatching (Van Valkenburg & al., 2008).

S. walkeri A. Chev., Rev. Bot. Appl. Agric. Trop. 11: 237 (1931); Check-list Pl. Vasc. Gabon: 321 (2006); Kew Bull. 63(1): 84 (2008). – Icon.: Kew Bull. 63: 79 (2008).

syn.: none reported in the literature.

Short or acaulescent palm; stem when present very short; leaves segmented, very large, ascending; leaflets (20-) 25-40, subopposite to alternate; fruits globose, 4-5 cm long and 3-3.5 cm in diameter.

Sclerosperma walkeri grows in the interior of Gabon and along the reaches of the Congo River.

SCLEROSPERMA WALKERI

This species is found in lowland evergreen rainforest, ranging from swamp forest, periodically flooded forest to lower slopes on *terra firma*, persisting in secondary growth; it is present between 300 and 400 m.

The leaves are frequently used for thatch throughout the range of distribution of the species and locally used also for matting and construction of walls (Van Valkenburg & al., 2008).

NOMINA NUDA AND TAXA WITH UNCERTAIN TAXONOMICAL IDENTITY:

The following taxa require further taxonomic study as they were not validly published or their attribution to an already existing species has not been possible:

Elaeis ubanghensis A. Chev. (nom. nud.), uncertain taxonomical identification.

Hyphaene benguelensis var. *plagiocarpa* (Dammer) Furtado, uncertain taxonomical identification.

Sclerosperma mabondo De Wild. (nom. nud.), uncertain taxonomical identification cited by Tuley (1995, p. 96).

Oncocalamus djodu De Wild. This taxon requires further taxonomic study as it is treated as provisionally accepted by (Gov-aerts & Dransfield, 2005) but not included in the treatment of Sunderland (2012).

CULTIVATED TAXA:

Palms are becoming increasingly important as ornamental plants in tropical Africa. Several publications (e.g. Dransfield, 1986, 2010; Aké Assi, 2002) and our own observations in West African countries (e.g. Ivory Coast, Ghana) show that at least 60 species, most of them of Asian origin, are cultivated in public and private gardens, as well as in the campus of several universities. It is highly predictable that this number will increase in the next years, including additional representatives of genera such as *Adonidia*, *Caryota*, *Cyrtostachys*, *Dyopsis*, *Howea*, *Hyophorbe*, *Livistona*, *Pritchardia*, *Ptychosperma*, *Syagrus* and *Washingtonia*.

SYNONYMS:

Ancistrophyllum acutiflorum Becc. = **Laccosperma acutiflorum**

laeve (G. Mann & H. Wendl.) Drude = **Laccosperma laeve**

laurentii De Wild. = **Laccosperma secundiflorum**

majus Burret = **Laccosperma secundiflorum**

opacum (Drude) Drude = **Laccosperma opacum**

robustum Burret = **Laccosperma robustum**

secundiflorum (P. Beauv.) G. Mann & H. Wendl. = **Laccosperma secundiflorum**

Areca passalacuae Kunth (name attributed to a fossil) = **Medemia argun**

Borassus aethiopum var. *bagamojense* Becc. = **Borassus aethiopum**

var. *domesticus* A. Chev. = **Borassus akeassii**

var. *senegalense* Becc. = **Borassus aethiopum**

deleb Becc. = **Borassus aethiopum**

flabellifer var. *aethiopum* (Mart.) Warb.

= **Borassus aethiopum**

sambiranensis Jum. & H. Perrier = **Borassus aethiopum**

Calamus africanus Rollisson (nom. superfl.) = **Eremospatha hookeri**

CALAMUS

- akimensis* Becc. = **Calamus deerratus**
barteri Drude = **Calamus deerratus**
cabrae De Wild. & T. Durand = **Eremospatha cabrae**
cuspidatus G. Mann & H. Wendl. = **Eremospatha cuspidata**
falabensis Becc. = **Calamus deerratus**
heudelotii Becc. & Drude = **Calamus deerratus**
hookeri G. Mann & H. Wendl. = **Eremospatha hookeri**
laevis G. Mann & H. Wendl. = **Laccosperma laeve**
laurentii De Wild. = **Calamus deerratus**
leprieurii Becc. = **Calamus deerratus**
macrocarpus G. Mann & H. Wendl. (nom. illeg.)
= **Eremospatha macrocarpa**
mannii H. Wendl. = **Oncocalamus mannii**
niger J. Braun & K. Schum. (nom. illeg.) = **Oncocalamus mannii**
opacus G. Mann & H. Wendl. (nom. illeg.)
= **Laccosperma opacum**
perrotetii Becc. = **Calamus deerratus**
schweinfurthii Becc. = **Calamus deerratus**
secundiflorus P. Beauv. = **Laccosperma secundiflorum**
Calappa nucifera (L.) Kuntze = **Cocos nucifera**
Chamaeriphes benguelensis (Welw. ex H. Wendl.) Kuntze
= **Hyphaene petersiana**
compressa (H. Wendl.) Kuntze = **Hyphaene compressa**
coriacea (Gaertn.) Kuntze = **Hyphaene coriacea**
crinita (Gaertn.) Kuntze = **Hyphaene thebaica**
guineensis (Schumach. & Thonn.) Kuntze = **Hyphaene guineensis**
macrosperma (H. Wendl.) Kuntze = **Hyphaene macrosperma**
shatan (Bojer ex Dammer) Kuntze = **Hyphaene coriacea**
thebaica (L.) Kuntze = **Hyphaene thebaica**
turbinata (H. Wendl.) Kuntze = **Hyphaene coriacea**
ventricosa (J. Kirk) Kuntze = **Hyphaene petersiana**
Cocos indica Royle = **Cocos nucifera**
mamillaris Blanco = **Cocos nucifera**
nana Griff. = **Cocos nucifera**
nucifera var. *angustifolia* Hassk. = **Cocos nucifera**
var. *aurea* auct. = **Cocos nucifera**
var. *javanica* G. V. Narayana = **Cocos nucifera**
var. *microcarpa* Hassk. ex F. W. T. Hunger (nom. superfl.) = **Cocos nucifera**
var. *nana* (Griff.) G.V. Narayana = **Cocos nucifera**
var. *pumila* Hassk. = **Cocos nucifera**
var. *rubescens* Hassk. = **Cocos nucifera**
var. *spicata* K. C. Jacob = **Cocos nucifera**
var. *synphyllica* Becc. = **Cocos nucifera**
nypa Lour. = **Nypa fruticans**
Corypha africana Lour. = **Hyphaene coriacea**
thebaica L. = **Hyphaene thebaica**
Cucifera thebaica (L.) Delile = **Hyphaene thebaica**
Diplothemium henryanum F. Br. = **Cocos nucifera**
Douma thebaica (L.) Poir. = **Hyphaene thebaica**

ELAEIS

- Elaeis dybowskii* Hua = **Elaeis guineensis**
guineensis f. *androgyna* A. Chev. = **Elaeis guineensis**
f. *caryolitica* Becc. = **Elaeis guineensis**
f. *dioica* A. Chev. = **Elaeis guineensis**
f. *dura* Becc. = **Elaeis guineensis**
f. *fatua* Becc. = **Elaeis guineensis**
f. *ramosa* A. Chev. = **Elaeis guineensis**
f. *semidura* Becc. = **Elaeis guineensis**
f. *tenera* Becc. = **Elaeis guineensis**
subsp. *nigrescens* A. Chev. (nom. inval.) = **Elaeis guineensis**
subsp. *virescens* A. Chev. = **Elaeis guineensis**
var. *albescens* Becc. = **Elaeis guineensis**
var. *angulosa* Becc. = **Elaeis guineensis**
var. *ceredia* A. Chev. = **Elaeis guineensis**
var. *compressa* Becc. = **Elaeis guineensis**
var. *gracilinux* A. Chev. = **Elaeis guineensis**
var. *idolatrix* A. Chev. = **Elaeis guineensis**
var. *intermedia* A. Chev. = **Elaeis guineensis**
var. *leucocarpa* Becc. = **Elaeis guineensis**
var. *macrocarpa* A. Chev. = **Elaeis guineensis**
var. *macrocarpa* Becc. = **Elaeis guineensis**
var. *macrophylla* A. Chev. = **Elaeis guineensis**
var. *macrosperma* Welw. = **Elaeis guineensis**
var. *madagascariensis* Jum. & H. Perrier = **Elaeis guineensis**
var. *microsperma* Welw. = **Elaeis guineensis**
var. *pisifera* A. Chev. = **Elaeis guineensis**
var. *repanda* A. Chev. = **Elaeis guineensis**
var. *rostrata* Becc. = **Elaeis guineensis**
var. *sempernigra* A. Chev. = **Elaeis guineensis**
var. *spectabilis* A. Chev. = **Elaeis guineensis**
macrophylla A. Chev. (nom. nud.) = **Elaeis guineensis**
madagascariensis (Jum. & H. Perrier) Becc. = **Elaeis guineensis**
melanococca Gaertn. = **Elaeis guineensis**
nigrescens (A. Chev.) Prain (nom. inval.) = **Elaeis guineensis**
ubanghensis A. Chev. (nom. nud.) = **uncertain taxonomical identification**
virescens (A. Chev.) Prain = **Elaeis guineensis**
Eremospatha deerrata (G. Mann & H. Wendl.) T. Durand & Schinz = **Calamus deerratus**
korthalsiiifolia Becc. = **Eremospatha wendlandiana**
rhomboidea Burret = **Eremospatha cabrae**
sapinii De Wild. = **Eremospatha macrocarpa**
suborbicularis Burret = **Eremospatha cabrae**
Fulchironia senegalensis Lesch. = **Phoenix reclinata**
Hyphaene argun Mart. = **Medemia argun**
aurantiaca Dammer = **Hyphaene petersiana**
baikieana Furtado = **Hyphaene thebaica**
baronii Becc. = **Hyphaene coriacea**
beccariana Furtado = **Hyphaene coriacea**

HYPHAENE

- benadirensis* Becc. = **Hyphaene compressa**
benguelensis Welw. ex H. Wendl. = **Hyphaene petersiana**
 var. *plagiocarpa* (Dammer) Furtado = **uncertain taxonomical identification**
 var. *ventricosa* (J. Kirk) Furtado = **Hyphaene petersiana**
bussei Dammer = **Hyphaene petersiana**
carinensis Chiov. = **Livistona carinensis**
coriacea var. *minor* Drude = **Hyphaene coriacea**
crinita Gaertn. = **Hyphaene thebaica**
cuciphera Pers. = **Hyphaene thebaica**
dahomeensis Becc. = **Hyphaene thebaica**
dankaliensis Becc. = **Hyphaene thebaica**
depressa Becc. = **Hyphaene guineensis**
doreyi Furtado = **Hyphaene guineensis**
goetzei Dammer = **Hyphaene petersiana**
gossweileri Furtado = **Hyphaene guineensis**
hildebrandtii Becc. = **Hyphaene coriacea**
incoje Furtado = **Hyphaene compressa**
kilvaensis (Becc.) Furtado = **Hyphaene compressa**
luandensis Gossw. (nom. nud.) = **Hyphaene guineensis**
mangoides Becc. = **Hyphaene compressa**
mateba Becc. = **Hyphaene guineensis**
megacarpa Furtado = **Hyphaene compressa**
migiurtina Chiov. = **Hyphaene reptans**
multiformis Becc. = **Hyphaene compressa**
 subsp. *ambigua* Becc. = **Hyphaene compressa**
 subsp. *compressa* (H. Wendl.) Becc. = **Hyphaene compressa**
 subsp. *deformis* Becc. = **Hyphaene compressa**
 subsp. *diminuta* Becc. = **Hyphaene compressa**
 subsp. *gibbosa* Becc. = **Hyphaene compressa**
 subsp. *intermedia* Becc. = **Hyphaene compressa**
 subsp. *kilvaensis* Becc. = **Hyphaene compressa**
 subsp. *macrocarpa* Becc. = **Hyphaene compressa**
 subsp. *mahengensis* Becc. = **Hyphaene compressa**
 subsp. *manca* Becc. = **Hyphaene compressa**
 subsp. *morogorensis* Becc. = **Hyphaene compressa**
 subsp. *moshiensis* Becc. = **Hyphaene compressa**
 subsp. *nasuta* Becc. = **Hyphaene compressa**
 subsp. *obconica* Becc. = **Hyphaene compressa**
 subsp. *obesa* Becc. = **Hyphaene compressa**
 subsp. *odorata* Becc. = **Hyphaene compressa**
 subsp. *panganensis* Becc. = **Hyphaene compressa**
 subsp. *plagiosperma* Becc. = **Hyphaene compressa**
 subsp. *rovumensis* Becc. = **Hyphaene compressa**
 subsp. *sempiplaena* Becc. = **Hyphaene compressa**
 subsp. *stenosperma* Becc. = **Hyphaene compressa**
 subsp. *subglobosa* Becc. = **Hyphaene compressa**
 subsp. *tangatensis* Becc. = **Hyphaene compressa**
 subsp. *trigibba* Becc. = **Hyphaene compressa**
 subvar. *lindiensis* Becc. = **Hyphaene compressa**
natalensis Kuntze = **Hyphaene coriacea**

HYPHAENE

- nephrocarpa* Becc. = **Hyphaene guineensis**
nodularia Becc. = **Hyphaene thebaica**
oblonga Becc. = **Hyphaene coriacea**
obovata Furtado = **Hyphaene petersiana**
occidentalis Becc. = **Hyphaene thebaica**
ovata Furtado = **Hyphaene petersiana**
parvula Becc. = **Hyphaene coriacea**
pileata Becc. = **Hyphaene coriacea**
plagiocarpa Dammer = **Hyphaene petersiana**
pleuropoda Becc. = **Hyphaene coriacea**
pyrifera Becc. = **Hyphaene coriacea**
 var. *arenicola* Becc. = **Hyphaene coriacea**
 var. *gosciaensis* (Becc.) Becc. = **Hyphaene coriacea**
 var. *margaritensis* Becc. = **Hyphaene coriacea**
santoana Furtado = **Hyphaene thebaica**
sempiplaena (Becc.) Furtado = **Hyphaene compressa**
shatan Bojer ex Dammer = **Hyphaene coriacea**
sinitica Furtado = **Hyphaene thebaica**
spaerulifera Becc. = **Hyphaene coriacea**
 var. *gosciaensis* Becc. = **Hyphaene coriacea**
tetragonoides Furtado = **Hyphaene coriacea**
togoensis Dammer ex Becc. = **Hyphaene thebaica**
tuleyana Furtado = **Hyphaene thebaica**
turbinata H. Wendl. = **Hyphaene coriacea**
 var. *ansata* Becc. = **Hyphaene coriacea**
ventricosa J.Kirk = **Hyphaene petersiana**
 subsp. *ambolandensis* Becc. = **Hyphaene petersiana**
 subsp. *anisopleura* Becc. = **Hyphaene petersiana**
 subsp. *aurantiaca* (Dammer) Becc. = **Hyphaene petersiana**
 subsp. *benguelensis* (Welw. ex H. Wendl.) Becc. = **Hyphaene petersiana**
 subsp. *bussei* (Dammer) Becc. = **Hyphaene petersiana**
 subsp. *goetzei* (Dammer) Becc. = **Hyphaene petersiana**
 subsp. *petersiana* (Klotzsch ex Mart.) Becc. = **Hyphaene petersiana**
 subsp. *plagiocarpa* (Dammer) Becc. = **Hyphaene petersiana**
 subsp. *russiensis* Becc. = **Hyphaene petersiana**
 subsp. *useguhensis* Becc. = **Hyphaene petersiana**
welwitschii Furtado = **Hyphaene guineensis**
wendlandii Dammer = **Hyphaene coriacea**
Laccosperma laurentii (De Wild.) J. Dransf. = **Laccosperma secundiflorum**
majus (Burret) J. Dransf. = **Laccosperma secundiflorum**
Medemia abiadensis H. Wendl. = **Medemia argun**
Metroxylon ruffia (Jacq.) Spreng. = **Raphia farinifera**
taedigerum (Mart.) Spreng. = **Raphia taedigera**
textile Welw. = **Raphia textilis**
viniferum (P. Beauv.) Spreng. = **Raphia vinifera**
Neoancistrophyllum acutiflorum (Becc.) Rauschert = **Laccosperma acutiflorum**

NEOANCISTROPHYLLUM

- laeve* (G. Mann & H. Wendl.) Rauschert ex J. Dransf.
= **Laccosperma laeve**
- laurentii* (De Wild.) Rauschert = **Laccosperma secundiflorum**
- majus* (Burret) Rauschert = **Laccosperma secundiflorum**
- opacum* (Drude) Rauschert ex J. Dransf. = **Laccosperma opacum**
- robustum* (Burret) Rauschert = **Laccosperma robustum**
- secundiflorum* (P. Beauv.) Rauschert = **Laccosperma secundiflorum**
- Nipa arborescens* Wurmbe ex H. Wendl. = **Nypa fruticans**
- fruticans* (Wurmbe) Thunb. = **Nypa fruticans**
- litoralis* Blanco = **Nypa fruticans**
- Nypa fruticans* var. *neameana* F. M. Bailey = **Nypa fruticans**
- Oncocalamus acanthocnemis* Drude = **Oncocalamus mannii**
- djodu* De Wild. = see comments on nomina nuda and taxa with uncert. tax. ident.
- phaeobalanus* Burret = **Oncocalamus mannii**
- Palma cocos* Mill. (nom. superfl.) = **Cocos nucifera**
- oleosa* Mill. = **Elaeis guineensis**
- thebaica* (L.) Jacq. = **Hyphaene thebaica**
- Palmijuncus deerratus* (G. Mann & H. Wendl.) Kuntze = **Calamus deerratus**
- opacus* (Drude) Kuntze = **Laccosperma opacum**
- Phoenix abyssinica* Drude = **Phoenix reclinata**
- arabica* Burret = **Phoenix caespitosa**
- atlantidis* A. Chev. (nom. nud.) = **Phoenix atlantica**
- baoulensis* A. Chev. = **Phoenix reclinata**
- comorensis* Becc. = **Phoenix reclinata**
- djalonensis* A. Chev. = **Phoenix reclinata**
- dybowskii* A. Chev. = **Phoenix reclinata**
- equinoxialis* Bojer = **Phoenix reclinata**
- leonensis* Lodd. ex Kunth = **Phoenix reclinata**
- reclinata* var. *comorensis* (Becc.) Jum. & H. Perrier = **Phoenix reclinata**
- var. *madagascariensis* Becc. = **Phoenix reclinata**
- var. *somalensis* Becc. = **Phoenix reclinata**
- spinosa* Schumach. & Thonn. = **Phoenix reclinata**
- Raphia angolensis* Rendle in W.P.Hiern = **Raphia hookeri**
- aulacolepis* Burret = **Raphia taedigera**
- bandamensis* A. Chev. = **Raphia sudanica**
- diasticha* Burret = **Raphia vinifera**
- dolichocarpa* Burret = **Raphia monbuttorum**
- gaertneri* G. Mann & H. Wendl. = **Raphia palma-pinus**
- gentiliana* var. *gilletii* De Wild. = **Raphia gentiliana**
- gigantea* A. Chev. = **Raphia hookeri**
- gilletii* (De Wild.) Becc. = **Raphia gentiliana**
- gossweileri* Burret = **Raphia matombe**
- gracilis* Becc. = **Raphia palma-pinus**
- heberostris* Becc. = **Raphia sudanica**
- hookeri* var. *planifoliola* Otedoh = **Raphia hookeri**
- var. *rubrifolia* Otedoh = **Raphia hookeri**
- humilis* A. Chev. = **Raphia sudanica**
- insignis* Burret = **Raphia regalis**

RAPHIA

- kirkii* Engl. ex Becc. = **Raphia farinifera**
- var. *grandis* Engl. ex Becc. = **Raphia farinifera**
- kirkii* var. *longicarpa* Engl. ex Becc. = **Raphia farinifera**
- longirostris* Becc. = **Raphia hookeri**
- lyciosa* Comm. ex Kunth = **Raphia farinifera**
- macrocarpa* Burret = **Raphia matombe**
- maxima* Pechuël-Loesche = **Raphia hookeri**
- monbuttorum* var. *macrocarpa* Robyns & Tournay = **Raphia ruwenzorica**
- mortehanii* De Wild. = **Raphia monbuttorum** var. **mortehanii**
- nicaraguensis* Oerst. = **Raphia taedigera**
- pedunculata* P. Beauv. = **Raphia farinifera**
- polymita* Comm. ex Kunth = **Raphia farinifera**
- pseudotextilis* Burret = **Raphia textilis**
- pycnosticha* Burret = **Raphia monbuttorum**
- ruffia* (Jacq.) Mart. = **Raphia farinifera**
- sankuruensis* De Wild. = **Raphia gentiliana**
- sassandrensis* A. Chev. = **Raphia hookeri**
- tamatavensis* Sadeb. = **Raphia farinifera**
- vinifera* var. *nicaraguensis* (Oerst.) Drude = **Raphia taedigera**
- var. *nigerica* Otedoh = **Raphia vinifera**
- var. *taedigera* (Mart.) Drude = **Raphia taedigera**
- welwitschii* H. Wendl. = **Raphia textilis**
- wendlandii* Becc. = **Raphia mannii**
- Sagus farinifera* Gaertn. = **Raphia farinifera**
- hookeri* (G. Mann & H. Wendl.) Rollisson = **Raphia hookeri**
- palma-pinus* Gaertn. = **Raphia palma-pinus**
- pedunculata* (P. Beauv.) Poir. = **Raphia farinifera**
- raphia* Poir. (nom. illeg.) = **Raphia vinifera**
- ruffia* Jacq. = **Raphia farinifera**
- taedigera* Mart. = **Raphia taedigera**
- vinifera* (P. Beauv.) Pers. = **Raphia vinifera**
- Sclerosperma dubium* Becc. = **Sclerosperma mannii**
- mabondo* De Wild. (nom. nud.) = **uncertain taxonomical identification**
- Wissmannia carinensis* (Chiov.) Burret = **Livistona carinensis**