7 AFRICAN AND THE WESTERN INDIAN OCEAN REGION

Africa

The continent of Africa is defined geographically to include, because of close mainland ties, the equatorial Atlantic islands (Malabo, São Tomé and Príncipe) as well as Zanzibar and Pemba, part of Tanzania, in the Indian Ocean. Excluded are the northern Atlantic island groups of the Canaries and Cape Verde.

Compared to Asia or Latin America, the palm flora of Africa is relatively poor in species diversity. Only about 50 palm species are native to the continent as defined here. However, from a utilization point of view, the low species diversity is compensated for by extensive populations of several species and a range of palm products that approaches that of Asia or Latin America.

Tuley (1995), in his book on African palms, includes a major section on utilization and Sunderland (2007) provides details on rattans. Other botanical information sources are the floras of West Africa (Russell, 1968), East Africa (Dransfield, 1986), Benin (Aké Assi *et al*., 2006) and Seychelles (Robertson, 1989).

African palms providing subsistence and commercial products have been separated into two groups on the basis of whether they are under threat or not in the wild (Table 7-1 and Table 7-2).

Threatened African Palms

The seven palms in Table 7-1 are under threat as a result of destructive exploitation by humans and animals for leaves, fruit, wood or rattan; as well as because of deforestation. The in situ conservation status of *Hyphaene* spp. over African continent is poorly known and difficult to determine because there is no modern revision of the genus and field work is hampered because of the volatile political situation in several key areas where the palms occur. Until its rediscovery in 1995 in Sudan, *Medemia argun* was feared to be extinct (Gibbons and Spanner, 1996). This palm has been brought into cultivation for ornamental purposes, but its status in the wild remains precarious. Owing to recent research on African rattans and the genera *Podococcus* and *Sclerosperma*, reflected below, knowledge of the palms of Africa is improved considerably from the first edition of this study.

Table 7-1 Threatened African Palms with Reported Uses*

Scientific Name	Selected Local Names	Distribution	Products/Uses
Dypsis pembana	*mpapindi*	*Pemba Island, Zanzibar (endemic)*	*seed harvested for ornamental plantings*
Eremospatha dransfieldii	*balu*	*W Ghana, E. Ivory Coast, Sierra Leone*	*whole canes for furniture frames, split for coarse baskets*
Hyphaene reptans	*doum*	*Somalia*	*multiple products*
Jubaeopsis caffra (monotypic)	*inkomba, Pondoland palm*	*Cape Province, South Africa (endemic)*	*seed for ornamental plantings, edible fruit?*
Livistona carinensis	*carin*	*Djiboute, Somalia*	*leaves & stems*
Medemia argun	*argoon*	*Egypt, Sudan*	*leaves to weave mats, edible fruit, stem wood ?*
Sclerosperma mannii		*Ghana to Angola*	*leaves for thatch*

* See also Table under Chapter 13.

Sources: Ford et al., 2008; Johnson, 1991a; Shapcott et al., 2009; Sunderland, 2007; van Valkenburg et al., 2007, 2008; Täckholm & Drar 1973; Tuley, 1995; Wicht, 1969.

Non-threatened African Palms

Although the nine palm taxa in Table 7-2 generally are not known to be under threat in the wild that is not necessarily the case for all species of *Eremospatha, Hyphaene, Laccosperma* and *Raphia*. This factor is elaborated on below. *Borassus aethiopum* (presumably including *B. akeasii*), wild and semi-wild *Elaeis guineensis* and *Phoenix reclinata*, on the other hand, occur in large numbers over wide areas and are the source of many different palm products.

Africa has four genera and 22 species of rattans (Sunderland 2007). The genera *Eremospatha, Laccosperma* and *Oncocalamus* are endemic to Africa. *Calamus deerratus* is a relative of the Asian rattans with a broad distribution and a highly variable growth form. These climbing palms are sources of a large number of subsistence products for local communities as well as the support of a thriving commercial trade in rattan canes and other

rattan products. In Central Africa alone, commercial rattans products annually are estimated to be worth about US$10 million (Sunderland *et al*., 2008).

Table 7-2 Non-threatened African Palms with Reported Uses

Scientific Name	**Selected Local Names**	**Distribution**	**Products/Uses**
Borassus aethiopum1	*ron, palmyra*	*African savannas*	*multiple products*
Calamus deeratus	*skote, erogbo, ki tia*	*across Africa: Senegal to Tanzania*	*canes used for weaving, furniture*
Elaeis guineensis	*African oil palm*	*humid parts of Africa*	*multiple subsistence products*
Eremospatha: cabrae, cuspidata, haullevilleana, hookeri, macrocarpa, wendlandiana	*osono* *ndera* *pongbo* *epa-emele* *penden* *eghounka*	*West Africa, Congo Basin E to Tanzania*	*whole canes for furniture frames, cane bridges; cane split to make baskets, rope; leaf sheath base as chewing stick*
Hyphaene spp.	*doum palm, lala, mokola*	*arid parts of Africa*	*multiple products*
Laccosperma: robustum, *secundiflorum*	*eka* *ohwara*	*SE Nigeria and Cameroon, S to Cabinda and W into Congo Basin*	*whole canes used for furniture & basket frames; split canes for basketry*
Oncocalamus manii	*mitou*	*S Cameroon to Gabon*	*split canes for basketry*

Scientific Name	Selected Local Names	Distribution	Products/Uses
Phoenix reclinata	*Senegal date* *wild date*	*African savannas*	*multiple products (see Table 9-27, composition of palm wine)*
Raphia spp.	*raffia*	*humid parts of Africa*	*multiple products*

Note:

1. Probably includes recently-described Borassus akeasii which has an overlapping distribution in West Africa (Bayton & Ouédraogo, 2009)

Sources: Morakinyo, 1995; Sunderland, 2004, 2007; Tuley, 1995

Since the year 2000, there has been a surge of interest in African rattans, with support from CARPE (Central African Regional Programme for the Environment) and INBAR (International Network for Bamboo and Rattan) in Beijing. A technical meeting was held in 2000 which addressed management strategies, sustainability, cultivation, processing and technology transfer from Asia to Africa. A proceeding was prepared by Sunderland and Profizi (2002).

The doum palm genus *Hyphaene* is poorly known in Africa where it chiefly occurs. Its habitat includes arid and semiarid areas and river valleys. Although as many as 26 species have been named in Africa, Dransfield *et al*. (2008) and Tuley (1995) propose the recognition of six species. The most pragmatic approach to take with respect to doum palms and their products is to promote utilization of local palm populations on a sustainable basis. Doum palms are multipurpose in nature; products include the edible mesocarp of the fruit in most species, leaves for thatch and fiber, wood and palm wine derived from tapping the trunk. This latter practice is destructive as the individual trees are killed. The data in Table 2-3 on the use of *H. petersiana* by local people in Namibia represent a good example of the potential breadth of uses.

Hyphaene products and patterns of utilization are fairly well documented. Täckholm and Drar (1973) provide information from ancient and modern Egypt; Hoebeke (1989) studied the palm and its uses in Kenya (see Table 9-21); Cunningham (1990a,b) investigated palm wine production in southern Africa; Konstant *et al*. (1995) and Sullivan *et al*. (1995) looked at *Hyphaene* utilization and the impact on palm populations in Namibia; and Cunningham and Milton (1987) did a study of basket making using mokola palm leaf fiber (*H. petersiana*) in Botswana.

Utilization of *H. compressa* leaves in a number of ways in Kenya was documented by Amwatta (2004). A study of the intensive harvesting of young leaves of *H. thebaica* in Niger revealed that the trees survived but that their development changed from a normal branching tree form into a subterranean-creeping habit which transforms palm stands into a dense canopy of leaves emerging from the underground root system. This dwarfing process also has

been described as taking place with the mazari palm (*Nannorrhops ritchiana*) in Pakistan (Kahn and Luxereau, 2008). It is not know if this leaf harvesting practice is sustainable.

The genus *Raphia* is better known scientifically than *Hyphaene*, because of research by Otedoh (1982), who described 18 African species of this mostly swamp-dwelling palm. Currently, 20 species are recognized (Dransfield *et al*., 2008). Although the taxonomy of this genus has been studied, information about the *in situ* conservation status of the various species is very sparse. Like *Hyphaene,* the *Raphia* palms provide many subsistence products. *Raphia hookeri* and *R. palma-pinus* also are sources of leaf base fiber used commercially to make stiff brushes. In commerce it is known as African bass or African piassava (Tuley, 1994). *Raphia* palms also are excellent sources of leaf stalks for construction purposes, the very large leaves make good roofing material, the fruit mesocarp yields edible oil and in many of the species the inflorescence is tapped for palm wine.

The ron palm (*Borassus aethiopum* and *B. akeasi*) and the Senegal date palm (*Phoenix reclinata)* both occur in large numbers in the African savannas and represent important local sources of subsistence products. The ron palm produces a single stem whereas the Senegal date is a suckering species and forms thickets of many stems. A study by Sambou *et al*. (1992) on *Borassus* in Senegal described the uses listed in Table 7-3. Additional information may be found in a study which considered the palm over a wide area of West Africa as well as Asia (GRET, 1987).

Table 7-3 Borassus aethiopum1 Uses in Senegal

1. Uses based on structural properties
stem: timber, boards
leaves: roofs, baskets, mats, rugs, furniture
petiole: fences, fiber
2. Uses based on nutritional and medicinal properties
food: endosperm, tuber (cotyledonary haustorium), palm heart, mesocarp, sap (wine) tapped from stem
medicinal: roots, male rachillae, stamens, mesocarp, seedling (hypocotyl), sap (wine) tapped from stem

Note:

1. Probably includes recently-described Borassus akeasii which has an overlapping distribution in Senegal (Bayton & Ouédraogo, 2009)

Source: Sambou et al. (1992)

Sambou *et al*. (1992) pointed out that in countries such as Senegal, *Borassus aethiopum* is "a victim of its own high utilitarian value;" overexploitation is a serious threat and natural populations are being reduced by drought and agriculture. They argue that strict management practices should be adopted and enforced to sustain the palm populations for the benefit of local people.

Phoenix reclinata has similar but slightly more limited uses than the ron palm. The fruit is edible but smaller and inferior to the domesticated date. Both the inflorescence and stem are tapped for palm wine, and the leaves, petioles and trunk have various uses. Because of its suckering growth habit, the Senegal date palm is not threatened by exploitation for its products.

The African oil palm (*Elaeis guineensis*), as both its common name and specific epithet imply, is native to West Africa and the Congo Basin. Although it has been the object in the 20th century of one of the most successful crop improvement efforts of any cultivated palm, extensive stands of wild or semiwild African oil palms continue to exist throughout its native range. Mesocarp and endosperm oils are major subsistence products; in addition, the palm inflorescences are tapped for palm wine[6], leaves are employed in thatching and to make baskets and mats and the petioles and wood serve as construction materials. Under these conditions, the African oil palm is a classic multipurpose species, unlike the plantation counterpart which is focused only on palm oil and palm kernel oil. In recent years, interest has broadened to more efficient use of *Elaeis guineensis* as a multipurpose subsistence tree within its native area. Beye and Eychenne (1991) published an excellent study of the African oil palm which exemplifies its "tree of life" status in the Casamance of Senegal, an approach worthy of consideration elsewhere in Africa.

Palm utilization is detailed in the humid forest zone of West Africa by Falconer and Koppell (1990). Three references abstracted in the foregoing source merit mention here. Blanc-Pamard (1980) studied utilization patterns of, *Borassus aethiopum*, *Elaeis guineensis* and *Phoenix reclinata* among the Baoulé people in Ivory Coast; Coleman (1983) did a sociological study of the rattan enterprises in the Bassam area of Ivory Coast; and Shiembo (1986) researched minor forest products in Cameroon, which included *Raphia* spp. and three species of rattan.

A few introduced, naturalized or domesticated economic palms figure in the forest products of Africa. Coconuts are grown commercially from Senegal to Equatorial Guinea in West Africa, and from Somalia to Mozambique in East Africa (Kullaya, 1994). The nipa palm (*Nypa fruticans*) was introduced early in the 20th century and has become naturalized in coastal Nigeria and Cameroon. Because it is not as well known to local peoples, it represents an underutilized palm resource, compared to the numerous uses it has in its native areas in Asia.

Finally, mention needs to be made of the date palm (*Phoenix dactylifera*), which is an important oasis species and fruit crop in the countries of North Africa, and increasingly in Sub-Saharan and Southern Africa where new plantings have been established using named varieties.

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[6] See Okereke (1982) for a description of traditional palm wine practices

Figure 7-1 Raffia palm (Raphia farinifera) cultivated in a botanic garden. Photograph by Dennis Johnson.

Figure 7-2 Doum palm (Hyphaene sp.) as an ornamental tree in Burkina Faso. Photograph by Dennis Johnson

Figure 7-3 Subspontaneous African oil palm stand (Elaeis guineensis). Guinea-Bissau, West Africa. Photograph by Dennis Johnson.

Figure 7-4 African fan palms (Borassus aethiopum) in a village in Guinea-Bissau, West Africa. Photograph by Dennis Johnson.

Madagascar

This large island off the east coast of Africa has the most remarkable palm flora in the world. Madagascar currently is believed to have about 166 palm species in 14 genera (Dransfield and Beentje, 1995; Dransfield *et al*., 2006; Dransfield *et al.*, 2008; Rakotoarinivo *et al*., 2007). Only two of these species are also found in mainland Africa, giving Madagascar a palm species endemism rate of 99 percent.

In addition to its prominence as the homeland of so many endemic palm species, Madagascar has the dubious distinction of being an area of extremely high deforestation and environmental degradation. Because of their uniqueness, certain Madagascar palms also are overexploited for seed and small plants are dug from the wild for the nursery trade. As a result of the combination of these factors, nearly all of the native palms are threatened with extinction or severe reductions in wild populations.

In Madagascar, promoting the development of forest products derived from wild palm populations must be approached with great caution. On the basis of current ethnobotanical data, about 60 palm species are used in some way by local people.

Threatened Madagascar Palms

Table 7-4 gives the names of 50 utilized palms which are known to be under threat. Local palm names given in Table 7-4 and Table 7-5 must be used with care because they are often misleading. The same name may be applied to more than one described species or the same described species may have several common names over its geographic range. Making a link between a local name and a scientific name should always be verified with additional information.

Table 7-4 Threatened Madagascar Palms with Reported Uses*

Scientific Name	Selected Local Names	Distribution[1]	Products/uses
Beccariophoenix madagascariensis (monotypic)	manarano, manara, maroala, sikomba	Mantady & SW Madagascar	stem wood for house construction; edible palm heart; young leaflets to make hats
Borassus madagascariensis	dimaka, marandravina, befelatanana	Western Madagascar	edible palm heart; edible stem starch; hollowed-out stems for containers; fruits fermented for alcohol; edible shoots of germinating seedlings
Dypsis ampasindavae	lavaboka	Nosy Be and Manongarivo Mts.	edible palm heart; stems for house construction
D. andrianatonga	tsiriki andrianatonga	Manongarivo & Marojejy Massif	stem wood for house walls; leaf decoction as medicine
D. ankaizinensis	laboka, hovatra, lavaboka	Mt. Tsaratanana	edible palm heart
D. basilonga	madiovozona	Vatovavy	edible palm heart
D. canaliculata	lopaka, monimony	Manonogarivo area & Ampasimanolotra	edible palm heart
D. ceracea	lafaza	Marojejy & Betampona areas	leaves for thatching & brooms
D. confusa	tsikara, tsimikara	Masoala, Mananara & Betampona	stems to make blow-pipes
D. crinita	vonitra	NW & NE Madagascar	leaves for thatching; leaf base fiber to make palm oil filter; heartwood used in medicine
D. decaryi	laafa	S Madagascar	leaves for thatching; edible fruit; seeds exported for horticultural use
D. decipiens	betefaka, manambe, sihara leibe	Central Madagascar, between Anazobe & Fianarantsoa	edible palm heart; leaves used in erosion control

Scientific Name	Selected Local Names	Distribution[1]	Products/uses
D. hiarakae	sinkiara, tsirika	Manongarivo, Masoala & Mananara Avaratra	stems to make blow-pipes
D. hovomantsina	hovornantsina	Maroantsetra & Mananara	edible palm heart
D. ligulata (possibly extinct)	none recorded	NW Madagascar	edible palm heart
D. madagascariensis	hirihiry, kizohazo, farihazo, madiovozona, kindro	NW & W Madagascar	stem wood for floor boards; edible palm heart: edible fruit
D. mahia	none recorded	Manombo	stems used to make blow-pipes
D. malcomberi	rahosy,vakaka	Andohahela	stem wood for house walls; edible palm heart
D. mananjarensis	laafa, lakatra, ovodaafa	East coast between Vatomandry & Tolanaro	stem wood for house planks; edible palm heart: rachis fiber
D. nauseosa	rahoma, mangidibe, laafa	Fianarantsoa	stem wood for roofing beams & floor planks
D. nossibensis		NW Madagascar, Lokobe forest	stem wood for construction
D. oreophila	kindro, lafaza, fitsiriky	Tsaratanana, Marojejy, near Maroantsetra & Mandritsara	edible palm heart; hollowed-out stem to make blowpipe
D. perrieri	besofina, menamosona, kase	Marojejy, Masoala & Mananara Avaratra	edible palm heart; leaf sheath tomentum for mattress stuffing
D. pilulifera	ovomamy, lavaboko, hozatanana	Sambirano region, Marojejy & Mantady	edible palm heart; leaves for thatch and weaving
D. prestoniana	tavilo, babovavy, tavilo	Midongy area, SE coast	edible palm heart
D. saintelucei	none recorded	extreme SE of Madagascar	destructively used to make lobster pots
D. scandens	olokoloka	Ifanadian area in NE	stems split to make fish traps, bird cages, hats
D. schatzii	tsinkiara	E Madagascar: Betarnpona	stems formerly used to make blowpipes

Scientific Name	Selected Local Names	Distribution1	Products/uses
D. thermarum	fanikara	R Ranomafana National Park	stems split to make crayfish traps
D. thiryana	tsinkiara, sinkarambolavo maroampototra, taokonampotatra	Marojejy & Masoala to Anosibe-an- Ala	leaves for thaching?
D. tokoravina	Tokoravina	Maroantstera & Mananara	edible palm heart; leaves for weaving
D. tsaralananensis	kindro	Mt. Tsaratanana	edible palm heart
D. tsaravoasira	tsaravoasira, hovotravavy, lavaboko	Marojejy, Maroantsetra & Mananara	edible palm heart
D. utilis	vonitra, vonitrandrano	E Madagascar	edible palm heart; edible fruit
Marojejya insignis	menamoso, beondroka, maroalavehivavy, betefoka, besofina, hovotralanana, mandanzezika fohitanana	E Coast, Marojejy to Andohahela	edible palm heart; leaves for thatching
Masoala kona	kona, kogne	Ifanadiana area	leaf thought to have magical properties
M. madagascariensis	kase, hovotralanana, mandanozezikaoj	Morojejy, Masoala & Mananara	leaves for thatching; edible palm heart
Orania longisquama	sindro, anivona, ovobolafotsy, vakapasy	NW & E Madagascar	stem wood for house wall planks
O. trispatha	sindro, sindroa, anivo	E Madagascar	stem wood for house construction
Ravenea albicans	hozatsiketra	NE Madagascar	edible palm heart; leaves for weaving
R. dransfieldii	anivo, ovotsarorona, lakatra, lakabolavo	Eastern Madagascar; between Marojejy Mts. & Ifanadiana	edible palm heart; leaves for hat making
R. julietiae	sindro madiniky, saroroira, vakapasy, anive. anivona	E Madagascar, between Mananara Avaratra & Vangaindrano	stem wood for construction; hollowed out stems for irrigation pipes
R. lakatra	lakatra, tsilanitafika, manarana	E Madagascar, between Andasibe & Vargaindrano	leaf fiber for hat making; edible palm heart; stem for irrigation pipes
R. madagasearіensis	anivo, anivokely, anivona, tovovoka	Central & E Madagascar	stem wood for house wall & floor planks

Scientific Name	Selected Local Names	Distribution1	Products/uses
R. .rivularis	gora, bakaly, vakaka, malio	S Central Madagascar, Mangoky & Onilahy rivers	seed collected for export
R.. robustior	hovotravavy, manara, tanave, retanan, monimony, loharanga, anivona. laafa, anivo, lakabolavo, bobokaomby, vakabe, vakaboloka	NW, E & SE Madagascar	stem wood for construction & furniture; leaves for thatching & weaving; edible palm heart; stem pith eaten.
R. sambiranensis	anivo, anivona, mafabely, soindro, ramangaisina	NW,W&E Madagascar	stem wood for floor planks; edible palm heart edible fruit; stems for irrigation pipes; pith for rice trays
R. xerophila	ahaza, anivo, anivona	S Madagascar, between Ampanihy & Ampingaratra Mts	leaf fiber for hats & baskets
Satranala decussilvae (monotypic)	satranabe	Mananara Biosphere Reserve	leaves for thatch
Voanioala gerardii (monotypic)	voanioala	Masoala Peninsula	edible palm heart

Notes:

* See also Table under Chapter 13.

1. All are endemic to Madagascar

Sources: Byg & Balslev, 2003; Dransfield & Beentje, 1995; Dransfield et al., 2006; Walker & Dorr, 1998.

Discussion

Palm hearts and stem wood represent the most prevalent reported palm usages involving threatened palms, and the two frequently go hand-in-hand. When a palm is felled for its stem wood, the heart, if edible, is also extracted and eaten. The reported cutting of palms for stem wood or palm heart is particularly alarming since about three-fourths of the involved species are single-stemmed.

Very little empirical data exist on how individual threatened palm species could be sustainably managed. One welcome exception is a study on conservation and *in situ* management of *Dypsis decaryi*. It recommends that annual leaf harvesting be no more than about 25 percent of the leaves per tree per year and that seed collection be limited to well under 95 percent of the annual crop to assure natural regeneration (Ratsirarson *et al*., 1996).

Non-threatened Madagascar Palms

A small number of native palms currently occur in sufficient populations to consider promotion of greater use of their products. Ten such species are listed in Table 7-5. Madagascar's two non-endemic palms, *Hyphaene coriacea* and *Phoenix reclinata*, are included in the table.

Table 7-5 Non-threatened Madagascar Palms with Reported Uses

Scientific Name	Local Names	Distribution	Products/Uses
Bismarckia nobilis	satra, strabe, satrana, satranabe, satrapotsy	N & W Madagascar (endemic)	flattened trunk for construction; leaves for thatch & basketry; pith for bitter sago; ornamental tree
Dypsis baronii	farihazo, tongalo	N, Central & E Madagascar (endemic)	edible palm heart; edible fruit; ornamental tree
D. fibrosa	vonitra, vonitrambohitra, ravimbontro	MW & E Madagascar (endemic)	leaves for thatching; inflorescence as brushes/brooms; mattress stuffing; edible palm heart;
D. lastelliana	menavozona, sira, ravintsira	NW, NE & E Madagascar (endemic)	pith formerly used to make salt; inedible palm heart said to be poisonous
D. lutescens	rehazo, lafahazo, lafaza	E coast (endemic)	ornamental tree; probably other uses
D. nodifera	ovana, bedoda, sincaré, tsirika, tsingovatra	NW, E & SE Madagascar (endemic)	hollowed out stems as blowpipes

Scientific Name	Local Names	Distribution	Products/Uses
D. pinnatifrons	tsingovatra, tsingovatrovatra, ovatsiketry, ambolo, hova, tsobolo	Widespread in humid forest (endemic)	hollowed out stems as blowpipes; house beams; edible palm heart; stem or inflorescence for brooms
Hyphaene coriacea	satrana, sata	W Madagascar (non-endemic)	leaf fiber for basketry, hats, rope; edible palm heart; palm wine (see Table 9-19 for composition)
Phoenix reclinata	dara, taratra, taratsy	NW & NE Madagascar; isolated stands in SW (non-endemic)	leaflets for basketry; edible fruit
Raphia farinifera (wild and cultivated)	rafia	widespread in eastern Madagascar	leaf fiber for weaving; petioles for hut construction; edible fruits; edible palm heart

Sources: See Table 7-4.

Discussion

Although the palms in Table 7-5 have development potential for forest products, there are certain factors with respect to individual products which must be taken into account. Products requiring the felling of a palm for sago, palm heart, construction wood or other stem uses, results in destruction of the individual tree. If the involved palm species is single-stemmed, this destroys seed sources and makes regeneration difficult and uncertain; such practices are inherently unsustainable. Clustering palms, on the other hand, can be harvested for such products and possess the potential to be managed on a sustainable basis.

Three introduced species of palms in Madagascar are either under cultivation or have become naturalized. These are the coconut, *Cocos nucifera*, African oil palm, *Elaeis guineensis*; and raffia palm, *Raphia farinifera*. The raffia and coconut palms are sources of numerous food and nonfood items for local people. In sharp contrast to its wide utility on the African Mainland, the African oil palm is of limited importance in Madagascar.

Seychelles, Mascarene Islands and Comoro Islands

These three small island groups of the western Indian Ocean are comparable to Madagascar in terms of native palm populations. The palm flora of each island group is unique with exceedingly high rates of palm endemism; in the Seychelles all six of the native palms are endemic. Threats to the palm populations are as great as in Madagascar, owing to human population pressures, exotic animal introductions and agriculture which have led to significant

habitat destruction. All the native palms in these islands are classified as threatened and subject to conservation measures. There should be no promotion of non-wood forest products from natural palm populations. Fortunately, coconut palms are naturalized in the islands and serve as a source of products for local people.