

THE PALMS OF THE GUIANAS

J.-J. de Granville

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Syagrus inajai

THE PALMS OF THE GUIANAS (J.-J. de GRANVILLE, 1986) :

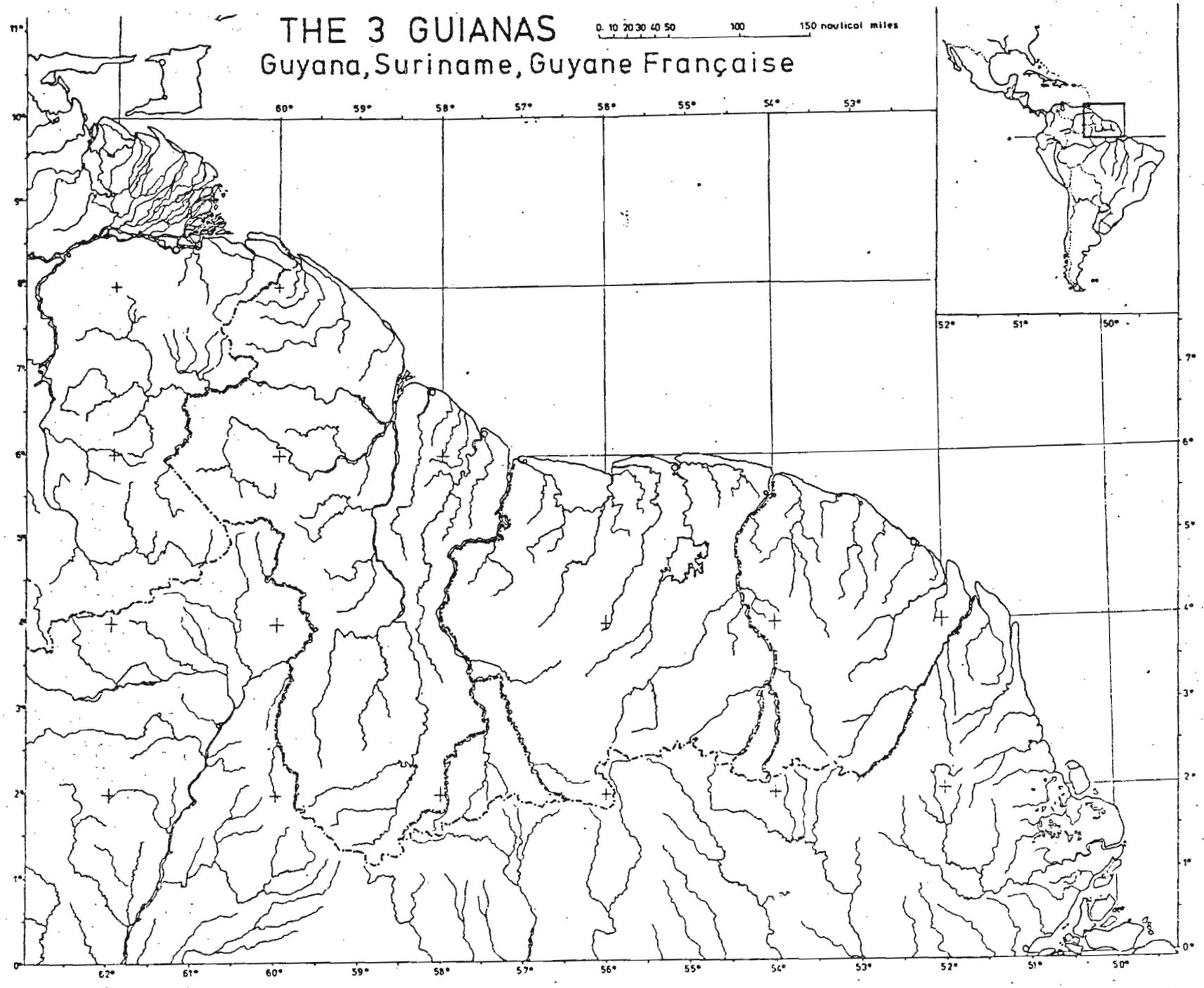
Inventaire des espèces de palmiers des trois Guyanes (Guyane française, Surinam, Guyana) et principales caractéristiques de chaque groupe pour une reconnaissance pratique sur le terrain. Instructions pour la collecte des herbiers de palmiers. Clef de détermination des genres basée sur les caractères végétatifs.

Inventory of the species occurring in the three Guianas (French Guiana, Suriname, Guyana) and main features of each group for a practical identification in the field. Guide lines for collecting palms. Key for identification of the genera based on vegetative characters.

# THE 3 GUIANAS

Guyana, Suriname, Guyane Française

0 10 20 30 40 50 100 150 nautical miles



## THE PALMS OF THE GUIANAS

J.-J. de GRANVILLE

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This paper is not a systematic treatment : it aims at helping the botanists to identify and to collect the palms in the field.

### I SURVEY OF THE PALM GROUPS OCCURRING IN THE GUIANAS

According to the litterature (especially DAHLGREN, 1936; GLASSMAN, 1972; WESSELS BOER, 1965 and 1972) and to the study of the herbarium specimens, the number of species of indigenous palms occurring in the 3 Guianas together amounts to 89, that is to say 7 % of the american species. They are distributed in 19 genera.

#### 1. THE LEPIDOCARYOID PALMS :

These palms are very easy to recognize in the field, not only by their scaly fruits, but also because they are the only ones, in the Guianas, with fan-leaves. All are caulescent. The most common and the highest one, Mauritia flexuosa (up to 35 m high !), grows everywhere in swampy and open places of the coastal and subcoastal area. Its fruits are left on the beaches by the tide. Lepidocaryum guianense, much smaller, is found only in Guyana.

#### 2. THE COCOSOID PALMS :

This large subfamily, very variable in habit, includes many genera among which the most important is Bactris.

Bactris are small to medium size palms, generally

caulescent, caespitose, very often armed on the leaf sheaths, the petiole, the rachis and sometimes on the trunk, as also on the inflorescences (spathes and fruits). A practical feature to identify the genus, even on seedlings and sterile specimens, is the presence of very small black prickles on the edge of the leaflets and a leafblade green on both sides. The blade is sometimes bifurcate but generally divided in segments more or less clustered in groups along the rachis (except in B. raphidacantha). Bactris grow generally in the understory of the rainforest. Some of them are coloniate palms living on the riverbanks like B. major or B. maraja. One grows in coastal savannas : B. campestris. 2 species are endemic to the Guayana highland : B. ulei, B. ptariana. All the other genera of Cocosoid palms have pinnate leaves.

Astrocaryum are medium size to high spiny palms. One can recognize the genus on sterile specimens owing to the blade always whitish and pruinose beneath, together with black and flat long spines on the sheath and the petiole. Because of the spines and the size of these palms, Astrocaryum are very difficult to collect ! A. paramaca is an acaulescent species, the most common everywhere in the forest. Only one species occurs in open places of the coastal area : A. vulgare.

Desmoncus are the only climbing palms in the Guianas : the apical extension of their leaf rachis bears several pairs of very characteristic recurved hooks.

Acrocomia is a monospecific genus in the Guianas. A. lasiospatha grows in coastal savannas. It is a rather tall spiny palm with persistent dead leaves under the crown.

Only 2 species of Syagrus are found in the Guianas: S. inajai, more or less localized in some places of the forest understory and S. stratincola, a rare species endemic of a few granitic outcrops. Both are medium size erect palms. The seedlings and even the young caulescent palms bear large juvenile leaves with a remarkable entire blade.

The Maximiliana-Orbignya-Scheelea-Markleya complex is represented by tall palms with very large leaves (up to 10 m long !) and pinnae clustered in groups along the rachis on one

hand, by acaulescent palms of the understory with regularly pinnate leaves on the other hand. One of the most spectacular species is M. maripa, rather common in open places, secondary forest, along the rivers, but able to grow also in primary forest. The very large woody spathes are remarkable. All the seedlings of these palms have a simple oblanceolate blade, becoming obviously dentate at the apex on the oldest seedlings.

Elaeis oleifera, localized to a few places in swamp forest, on sandy alluvia, in the coastal zone, has a short trunk, creeping or almost lacking. The numerous leaves have a petiole bearing hooks on the edges and the inflorescence is densely contracted.

### 3. THE ARECOID PALMS :

The Jessenia-Oenocarpus complex is represented by a few species of high palms very common in the canopy of the primary forest. O. bacaba is abundant everywhere. These palms have a characteristic inflorescence, hanging like a horse tail below the crown.

Euterpe is mainly represented by E. oleracea, a tall but elegant and slender clustered palm, with more or less hanging leaflets. This species, common along all the creeks where the water is stagnant, forms also very large monospecific populations in subcoastal swamps. 3 species are found at middle elevations in Guyana : E. aurantiaca, E. roraimae, E. tenuiramosa (endemic to the Roraima sandstones).

Manicaria saccifera grows in subcoastal areas, in swamp forest, along the small creeks. It is an impressive palm with huge entire erect leaves and characteristic tuberculate fruits.

Hyospathe elegans, a small palm of the understory with trijugate leaves, is often confused with Geonoma, especially on sterile specimens. Although the leaves are very similar, it can be easily distinguished from the later by its characteristic tubular leaf sheaths.

#### 4. THE GEONOMOID PALMS :

They are always small and tiny unarmed palms of the understory of primary forest. A few are single-trunk species or acaulescent, the others are cespitose. The leaf blade can be entire, bi or trijugate, irregularly pinnatisected or rarely regularly pinnate (G. maxima). The main floral features of this group is to have flowers in triads (one female and 2 males) immersed in pits spirally arranged on the rachillas.

Except Asterogyne sp. nov. aff. spicata which is a very rare species only once found in the Guianas, all these palms belong to the genus Geonoma. G. stricta is the smallest palm known in the Guianas. G. trigloch and G. euspatha are exclusively submountain species of cloud forest. G. fusca and G. appuniana are endemic to the Roraima sandstones where they grow on bluffs at higher altitudes (up to 2300 m).

#### 5. THE IRIARTEOID PALMS :

They are well recognizable by their stiltroots and their deltoid pinnae truncate and irregularly laciniate at the apex. 3 species only live in the Guianas. Iriarteia exorrhiza, the most common, is a high palm of the rainforest.

## II COLLECTING PALMS IN THE GUIANAS

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Except for the small tiny unarmed palms like Geonoma, Hyospathe and a few species of Bactris which are willingly collected by the non-palm specialists in the field, palms are very badly and uncompletely collected, owing to their size and often also to their numerous aggressive spines. Such collections are generally unusable so that the revision of the palm genera is more often than not very difficult by lack of good material. It is obvious that it is generally impossible to collect the whole parts of a palm but it is always possible to palliate these lacunas by noting a few important features.

Some authors have already written useful instructions on this subject : TOMLINSON (1965) and, very recently, DRANSFIELD (1986). So, I do not intend to repeat their papers but only to give some brief guidelines.

What is important to note and to collect in the field ?

1. ROOTS :

They are not a deciding factor in palm taxonomy. However, the presence of stiltroots, characteristic of Iriarteoid palms, must not be forgotten. If there are pneumatophores, commonly found in the species living on swampy soils, I strongly advise to collect them because of the valuable criterion of the structure of the pneumatodes (GRANVILLE, 1974). They are always tiny and easy to cut and to dry.

2. STEM :

In the small species, when the trunk is less than 2 or 3 cm thick, the better is to join a fragment of trunk to the herbarium specimen. The trunks thicker than 2 or 3 cm can be split longitudinally. If it is impossible or too difficult, one must note : the length and the thickness of the trunk, the length of the internodes, the presence of spines (size, colour, distribution on the internodes). In any case, specify if it is a caulescent or an acaulescent species; a single-trunk (model of CORNER or HOLTUM, according to HALLE, OLDEMAN & TOMLINSON, 1978) or a clustered palm (model of TOMLINSON); an erect, a creeping or a scandent palm (Desmoncus).

3. LEAVES :

It is useful to number the leaves, to note their position and if dead leaves are persisting under the crown. If it is impossible to dry a whole leaf, collect at least : the apex, a mid-part and the base of the blade, each with at least 2 pairs of segments (cut them on one side if they are too large). Collect also a portion of petiole, if possible. Complete the voucher by the following informations :

- Sheath and petiole : length and, if not collected, width, presence of spines (colour, length, distribution).

- Leaf rachis : length.

- Leaf blade : size (length and width), number and position of the segments (absolutely necessary !). In some species, the segments are at regular intervals along the rachis; in others, they

are clustered in groups of 2 to 6 and often turned in different planes. Specify also if the blade is green or whitish pruinose beneath (Astrocaryum, Jessenia).

#### 4. INFLORESCENCE AND INFRUTESCENCE :

In some cases, it can be wholly collected (Geonoma, Hyospathe, Bactris). A palm inflorescence includes not only the apical part bearing the rachillas with the flowers, but also the basal part with 2 important bracts (or spathes), very characteristic, inserted on the peduncule. The outer one (prophyll) encloses generally completely the inflorescence before anthesis. In some genera, it is soon caducous. To collect the entire inflorescence, the underlying leaf must be removed. If it is not possible to press the whole inflorescence, collect at least a fragment of the rachis with 2 or 3 entire rachillas (in many cases, the female flowers occur only at the base of the rachillas). The spathes should be also collected but it is not always possible when they are very large, thick and woody, especially the outer one (Attalea-Scheelea-Maximiliana complex). Sometimes, they can be cut in several pieces, pressed and dried. In any case, it is important to describe the inflorescence : the length of the peduncule and the position of both spathes on it, measured from the base, the length of the rachis, the number, the length and the colour of the rachillas, if they are erect or hanging.

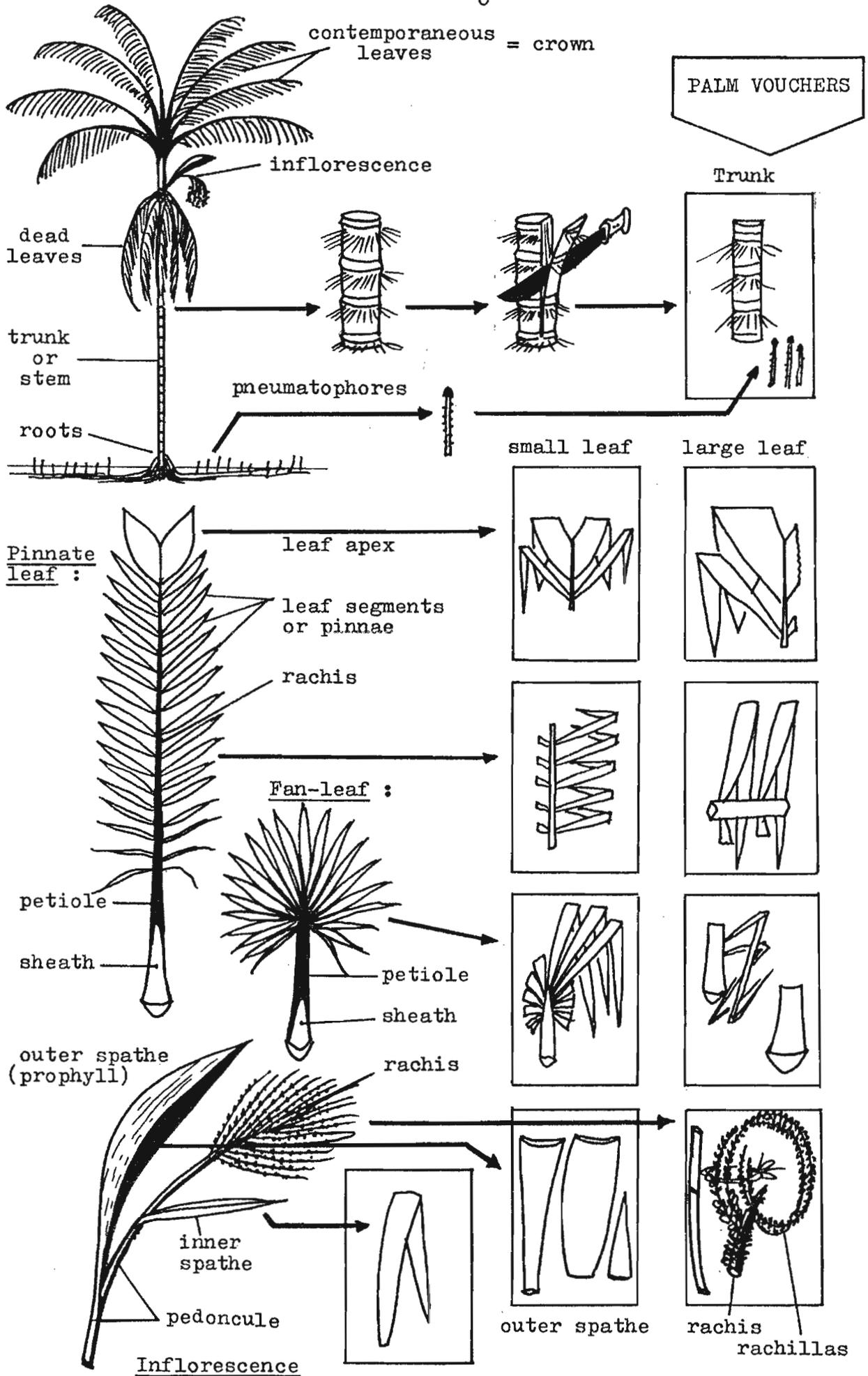
Fruits can be generally easily dried but it is necessary to note their size and their colour which cannot be preserved on the voucher.

Naturally, all these data can be completed by photographs; flowers and fruits can be also preserved in alcohol or F.A.A.

Noting so many data takes up a rather long time and involves the use of very large labels. It is inevitable but one is later well rewarded by the quality of such herbarium specimens, carefully prepared.

For more details, I strongly advise to study the very valuable DRANSFIELD's guide dealing not only with the elements to be noted and collected in the field but also with the access to the palm, the equipment, the conservation of living seeds and the material for liquid preservation.

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## APPENDIX N° 1

LIST OF PALM GENERA AND SPECIES OCCURRING  
 IN THE GUIANAS

- Acrocomia lasiospatha Mart.  
Asterogyne sp. nov. aff. spicata (Moore) Wessels Boer  
Astrocaryum aculeatum G.F.W. Meyer  
Astrocaryum jauari Mart.  
Astrocaryum munbaca Mart.  
Astrocaryum cf. murumuru Mart. vel sp. nov.  
Astrocaryum paramaca Mart.  
Astrocaryum cf. rodriguesii Trail  
Astrocaryum sciophilum (Miquel) Pulle  
Astrocaryum vulgare Mart.  
Bactris acanthocarpoides Barb. Rodr.  
Bactris sp. nov. aff. acanthocarpoides Barb. Rodr.  
Bactris aubletiana Trail  
Bactris campestris Poeppig  
Bactris concinna Mart.  
Bactris constanciae Barb. Rodr.  
Bactris cruegeriana Griseb.  
Bactris aff. cuspidata Mart.1 (B. ulei Burret sensu W. Boer ?)  
Bactris aff. cuspidata Mart.2  
Bactris elegans Barb. Rodr.  
Bactris gastoniana Barb. Rodr.  
Bactris gaviona (Trail) Drude  
Bactris cf. geonomoides Drude (B. integrifolia Wallace sensu  
 W. Boer)  
Bactris humilis (Wallace) Burret  
Bactris major Jacq.  
Bactris maraja Mart.  
Bactris monticola Barb. Rodr.  
Bactris oligocarpa Barb. Rodr.  
Bactris oligoclada Burret  
Bactris pectinata Mart.  
Bactris ptariana Steyerm.  
Bactris raphidacantha Wessels Boer  
Bactris simplicifrons Mart.  
Bactris trailliana Barb. Rodr.  
Bactris turbinocarpa Barb. Rodr.  
Bactris ulei Burret  
Bactris sp. nov.  
Bactris sp. indet.  
Desmoncus macroacanthos Mart.  
Desmoncus orthacanthos Mart.  
Desmoncus polyacanthos Mart.  
Desmoncus riparius Spruce

Elaeis oleifera (H.B.K.) Cortès  
Euterpe aurantiaca H.E. Moore  
Euterpe oleracea Mart.  
Euterpe precatoria Mart.  
Euterpe roraimae Dammer  
Euterpe stenophylla Trail ex Burret  
Euterpe tenuiramosa Dammer  
Geonoma appuniana Spruce  
Geonoma baculifera Kunth  
Geonoma cf. bartlettii Dammer  
Geonoma deversa (Poit.) Kunth  
Geonoma euspatha Burret  
Geonoma fusca Wessels Boer  
Geonoma cf. interrupta (Ruiz & Pavon) Mart.  
Geonoma maxima (Poit.) Kunth  
Geonoma oldemanii J.-J. de Granville  
Geonoma piscicauda Dammer  
Geonoma poiteauana Kunth  
Geonoma saramaccana Bailey (G. leptospadix Trail sensu W. Boer)  
Geonoma stricta (Poit.) Kunth  
Geonoma "stricta x pycnostachys Mart."  
Geonoma triglochis Burret  
Geonoma prob. sp. nov.  
Hyospathe elegans Mart.  
Iriarteia exorrhiza Mart.  
Iriarteia fusca (Karsten) Drude  
Iriarteia setigera Mart.  
Jessenia bataua (Mart.) Burret subsp. oligocarpa (Griseb. &  
Lepidocaryum guianense Beccari  
Manicaria saccifera Gaertn. Wendl.) Balik  
Markleya dahlgreniana Bondar  
Mauritia flexuosa L. f.  
Mauritia martiana Spruce  
Maximiliana macropetala Burret  
Maximiliana maripa (Corr. Serr.) Drude  
Oenocarpus bacaba Mart.  
Orbignya polysticha Burret  
Orbignya sagotii Trail  
Orbignya speciosa Mart.  
Orbignya spectabilis Mart.  
Scheelea camopiensis S.F. Glassman  
Scheelea degranvillei S. F. Glassman  
Scheelea guianensis S.F. Glassman  
Scheelea maripensis S.F. Glassman  
Scheelea passageri Burret  
Syagrus inajai (Spruce) Beccari  
Syagrus stratincola Wessels Boer

## APPENDIX N° 2

KEY FOR PRACTICAL IDENTIFICATION OF  
THE PALM GENERA IN THE FIELD

(based on vegetative characters and valid for the Guianas only)

- 1 a - Scandent palms with hooks on the leaf rachis ... Desmoncus
- 1 b - Erect or acaulescent or creeping palms ..... 2
- 2 a - Solitary palms with stiltroots, even on seedlings Iriartea
- 2 b - Palms without stiltroots ..... 3
- 3 a - Palms with fan-leaves ..... 4
- 3 b - Palms with pinnate or irregularly pinnatisect leaves ... 5
- 4 a - Stout palms with a trunk more than 10 cm thick .. Mauritia
- 4 b - Slender palms with a trunk less than 5 cm thick Lepidocaryum
- 5 a - Leaf-blade white to whitish or greyish pruinose beneath 6
- 5 b - Leaf-blade green on both sides ..... 7
- 6 a - Tall palms completely unarmed, reaching the canopy Jessenia
- 6 b - Palms havily armed with flat black spines ... Astrocaryum
- 7 a - Palms armed with spines, prickles or hooks, at least  
on the petiole ..... 8
- 7 b - Unarmed palms ..... 10
- 8 a - More than 40 contemporaneous leaves bearing hooks on  
the edge of the petiole . Palms growing in swamp forest,  
acaulescent or with a creeping trunk ..... Elaeis
- 8 b - Less than 20 contemporaneous leaves with black spines  
especially on the sheaths ..... 9
- 9 a - Solitary and tall palms with a trunk more than 20 cm  
thick, growing in open places in coastal area .. Acrocomia
- 9 b - Palms often clustered, acaulescent or with a trunk  
less than 10 cm thick ..... Bactris

- 10 a - Hudge erect leaves with a simple or irregularly pinnatisect blade, more than 5 meters long. Palms growing in swamp-forest of subcoastal area .... Manicaria
- 10 b - Leaves with a pinnate blade or, if simple, less than 3 meters long ..... 11
- 11 a - Erect, slender palms, up to 20 meters high, with a trunk more than 5 cm thick. Pinnae inserted at regular intervals on the leaf-rachis and in the same plane ..... Euterpe
- 11 b - Palms not gathering these characters together ..... 12
- 12 a - Small palms of the understory, generally cespitose. Leaves less than 2 meters long. Blade simple or irregularly pinnatisect or with less than 30 pairs of pinnae. Trunk lacking or less than 4 cm thick ..... 13
- 12 b - Solitary palms with leaves more than 2 meters long. Blade with more than 50 pairs of pinnae. Trunk lacking or more than 5 cm thick ..... 15
- 13 a - Leaf-sheaths tubular, enclosing completely the trunk on more than 10 cm. Generally 3 pairs of segments Hyospathe
- 13 b - Leaf-sheaths open on the side opposite to the petiole 14
- 14 a - Solitary palms growing in swamp-forest. Trunk approx. 4 cm thick with very short internodes, bearing adventitious roots up to 1 meter high. Blade simple ..... Asterogyne
- 14 b - Palms not gathering these characters together .. Geonoma (+ Bactris simplicifrons, B. aubletiana, B. oligocarpa, B. ulei)
- 15 a - Pinnae at regular intervals along the leaf-rachis. Palms of the understory, often acaulescent ..... Orbignya, Scheelea
- 15 b - Pinnae clustered in groups, at least in the lower half of the leaf-rachis. Tall to medium size palms ... 16
- 16 a - Trunk less than 10 cm thick. Leaves less than 4 meters long ..... Syagrus
- 16 b - Trunk more than 15 cm thick. Leaves more than 4 meters long ..... 17
- 17 a - Less than 120 pairs of pinnae, those of the upper part of the rachis at regular intervals ..... Oenocarpus
- 17 b - More than 150 pairs of pinnae, all aggregated in groups along the rachis . Maximiliana, Orbignya, Markleya
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