Checklist of the Palms of Cuba, with Notes on their Ecology, Distribution and Conservation

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Cuba has a rich palm flora despite its relatively small territory. The palms play an important role in Cuba's landscape and vegetation and in the everyday life of Cuban people, who have multiple uses for these plants (Muñiz & Borhidi 1982).

The goal of this study is to up-date the list of Cuban palms given by León (1946), taking into consideration the revisions of several palm genera from the new world and the new species reported for Cuba. This new checklist will allow future publications to use the correct nomenclature.

In preparing this checklist, we reviewed the following lists of Cuban species: Grisebach (1866), Sauvalle (1868), Beccari (1912, 1913), Dahlgren (1936), León (1946), Alain (1969), Muñiz and Borhidi (1982), Borhidi and Muñiz (1985) and Henderson et al. (1995). The nomenclature from these lists was up-dated according to the modern revisions of neotropical genera: *Calyptronoma* (Zona 1995), *Gastrococos* (Moore 1967), *Gaussia* (Quero & Read 1986), *Prestoea* (Henderson & Galeano 1996), *Pseudophoenix* (Read 1968), *Roystonea* (Zona 1996), *Sabal* (Zona 1990) and *Thrinax* (Read 1975), as well as the revision of *Bactris* for the Caribbean (Salzman & Judd 1995). The most recent additions to the list of palms from Cuba by Moya et al. (1991), Zona (1992) and Borhidi and Hernández (1993) were also included.

The family Palmae in Cuba is represented by 15 genera, two subgenera and 81 species, six hybrids and nine infraspecific taxa for a total of 96 indigenous palms (Table 1). Of these, 83 taxa (87%) are endemic, i.e., found only in Cuba. The percentage of endemics is high, one of the highest for Cuban plant families. One genus (*Gastrococos*) and two subgenera (*Copernicia* subg. *Copernicicopsis* and *Thrinax* subg. *Hemithrinax)* are endemic.

Our checklist differs from that of previous authors. *Scheelea cubensis* Burret is not included because its

Table 1. The Cuban palms according to Uhl and Dransfield (1987).

SUBFAMILY	TRIBES	SUBTRIBES	GENERA	TAXA
CORYPHOIDEAE	1	5	6	81
CEROXYLOIDEAE	2		2	3
ARECOIDEAE	2	5	7	12
TOTAL	5	10	15	96

presence in Cuba has not yet been confirmed. The name was based on a single collection that was probably erroneously attributed to the island or based on a cultivated specimen. Likewise, *Acrocomia subinermis* León ex Bailey, is omitted. This palm was described from along the road from La Cruz de Piedra to Guatao, Havana. We have found that only *Gastrococos crispa* occurs in this area. It seems likely that *Acrocomia subinermis* was based on an adult specimen of *Gastrococos crispa* with an unarmed trunk. *Elaeis guineensis* Jacq. is excluded; it was cultivated in Baracoa and erroneously considered naturalized in that region. *Hemithrinax*, formerly treated at the generic rank, is now considered to be a subgenus of *Thrinax* (Borhidi & Muñiz 1985).

In current literature, *Coccothrinax miraguama* has been cited as described by León. However, León only amplified and completed the original description made by Beccari.

Some modern authors have considered the list of Cuban palm species by Henderson et al. (1995) as definitive. However, Henderson et al. stated clearly that "… this Guide is not a taxonomic treatment, but a field guide for nonspecialists. For this reason we have tended to combine closely related and doubtfully distinct species and also groups of species that we consider to be part of species complexes." Hence, our list differs significantly from the list of Henderson et al. (1995).

There are still pressing taxonomic problems in Cuban palms. There is an urgent need for modern taxonomic revisions of *Coccothrinax*, *Copernicia* and *Acrocomia*, as well as detailed evolutionary genetic studies of hybrids and disjunct taxa.

CUBAN PALMS AND IMPORTANT SYNONYMS

Accepted names are in bold; synonyms are given in Italics.

CORYPHOIDEAE Griffith

THRINAX O. Swartz

Thrinax compacta (Griseb. & H. Wendl.) Borhidi & Muñiz

Hemithrinax compacta (Griseb. & H. Wendl.) Hook f.

Thrinax ekmaniana (Burret) Borhidi & Muñiz

Hemithrinax ekmaniana Burret

Thrinax morrisii H. Wendl.

Thrinax drudei Becc.

Thrinax microcarpa Sarg.

Thrinax punctulata Becc.

Thrinax radiata Lodd. ex Schult. & Schult f.

Thrinax parviflora Sw.

Thrinax wendlandiana Becc.

Thrinax rivularis (León) Borhidi & Muñiz var. **rivularis**

Hemithrinax rivularis León

Hemithrinax rivularis (León) Borhidi & Muñiz var. *rivularis*

Thrinax rivularis (León) Borhidi & Muñiz var. **savannarum** Borhidi & Muñiz

Hemithrinax savannarum León

Hemithrinax rivularis (León) Borhidi & Muñiz var. *savannarum* Muñiz

COCCOTHRINAX Sargent

Coccothrinax acunana León

Coccothrinax alexandri León ssp. **alexandri** León

Coccothrinax alexandri León ssp. **nitida** (León) Borhidi & Muñiz

C. alexandri León var. *nitida* León

Coccothrinax baracoensis Borhidi & Muñiz

Coccothrinax bermudezii León

Coccothrinax borhidiana Muñiz (Fig. 2)

Coccothrinax brevicrinis Borhidi & Muñiz

C. crinita (Griseb. & H. Wendl.) Becc. ssp. *brevicrinis* Borhidi & Muñiz

Coccothrinax camagueyana Borhidi & Muñiz

Coccothrinax clarensis León ssp. **clarensis**

C. clarensis León var. *perrigida* León

Coccothrinax clarensis León ssp. **brevifolia** (León) Borhidi & Muñiz

C. clarensis León var. *brevifolia* León

1. *Coccothrinax hiorami,* Guantánamo. (photo by S. Zona)

Coccothrinax crinita (Griseb. & H. Wendl. ex Wright) Becc.

Thrinax crinita Griseb. & H. Wendl.

Coccothrinax cupularis (León) Muñiz & Borhidi

C. miraguama (Kunth) Becc. var. *cupularis* León

Coccothrinax elegans Muñiz & Borhidi

Coccothrinax fagildei Borhidi & Muñiz

Coccothrinax fragrans Burret

Coccothrinax garciana León

Coccothrinax guantanamensis (León) Muñiz & Borhidi

C. argentea (Lodd.) Sargent var. *guantanamense* León

Coccothrinax gundlachii León

Coccothrinax hiorami León (Fig. 1)

Coccothrinax leónis Muñiz & Borhidi

Coccothrinax litoralis León

Coccothrinax macroglossa (León) Muñiz & Borhidi

C. miraguama (Kunth) Becc. var. *macroglossa* León

Coccothrinax microphylla Borhidi & Muñiz

2. *Coccothrinax borhidiana.* (photo by C. Morici)

Coccothrinax miraguama (Kunth) Becc. ssp. **miraguama**

*C. acuminata (*Griseb. & H. Wendl.) Sarg.

Thrinax acuminata Griseb. & H. Wendl.

Thrinax miraguana Mart.

Coccothrinax miraguama (Kunth) Becc. ssp. **arenicola** (León) Borhidi & Muñiz

C. miraguama (Kunth) Becc. var. *arenicola* León

Coccothrinax miraguama (Kunth) Becc. ssp. **havanensis** (León) Borhidi & Muñiz

C. miraguama (Kunth) Becc. var. h*avanensis* León

Coccothrinax miraguama (Kunth) Becc. ssp. **roseocarpa** (León) Borhidi & Muñiz

C. miraguama (Kunth) Becc. var. *roseocarpa* León

Coccothrinax moaensis (Borhidi & Muñiz) Muñiz

Coccothrinax munizii Borhidi

Coccothrinax muricata León

Coccothrinax nipensis Borhidi & Muñiz

Coccothrinax orientalis (León) Muñiz & Borhidi

C. yuraguana (A. Rich.) León var. *orientalis* León

Coccothrinax pauciramosa Burret

Coccothrinax pumila Borhidi & J. A. Hernández

Coccothrinax pseudorigida León

C. pseudorigida León var. *acaulis* León

Coccothrinax rigida (Griseb. & H. Wendl.) Becc.

Thrinax rigida Griseb. & Wendl.

Coccothrinax salvatoris León ssp. **salvatoris**

Coccothrinax salvatoris León ssp. **loricata** (León) Borhidi & Muñiz

C. salvatoris León var. *loricata* León

Coccothrinax savannarum (León) Borhidi & Muñiz

C. muricata León var. *savannarum* León

Coccothrinax saxicola León

Coccothrinax trinitensis Borhidi & Muñiz

Coccothrinax victorini León

Coccothrinax yunquensis Borhidi & Muñiz

Coccothrinax yuraguana (A. Rich.) León

C. miraguano Becc.

COLPOTHRINAX Grisebach & H. Wendland

Colpothrinax wrightii Griseb. & H.Wendl. ex Siebert & Voss.

Pritchardia wrightii (Griseb. & H. Wendl.) Becc.

ACOELORRAPHE H. Wendland

Acoelorraphe wrightii (Griseb. & H. Wendl.) H. Wendl. ex Becc.

Copernicia wrigthii Becc.

COPERNICIA Martius

Copernicia baileyana León

C. baileyana León var. *laciniosa* León

Copernicia brittonorum León

C. brittonorum León var. *acuta* León

C. brittonorum León var. *sabaloense* León

Copernicia x burretiana León (pro sp.) (**C. hospita x C. macroglossa**)

Copernicia cowellii Britt. & Wilson

Copernicia curbeloi León

Copernicia curtissii Becc.

C. *clarensis* León

C. *pauciflora* Burret

C. hospita Mart. var. *clarensis* León

Copernicia fallaensis León (Fig. 4)

Copernicia gigas Ekman ex Burret

C. excelsa León

Copernicia glabrescens H. Wendl. ex Becc. var. **glabrescens**

Copernicia glabrescens H. Wendl. ex Becc. var. **ramosissima** (Burret) Muñiz & Borhidi

C. ramosissima Burret

Copernicia hospita Martius

Copernicia humicola León

Copernicia longiglossa León

Copernicia macroglossa H. Wendl. ex Becc.(Fig. 6)

C torreana León

Copernicia molineti León

Copernicia x occidentalis León (pro sp.) (**C. curtissi x C. brittonorum**)

Copernicia oxycalyx Burret

C. clarkii León

Copernicia rigida Britt. & Wils. (Fig. 5)

Copernicia roigii León

Copernicia x shaferi Dahlgr. & Glassm. (pro sp.) (**C. hospita x C. cowellii**)

Copernicia x sueroana León (pro sp.) (**C. hospita x C. rigida**)

Copernicia x textilis León (pro sp.) (**C. hospita x C. baileyana**)

Copernicia x vespertilionum León (pro sp.) (**C. gigas x C. rigida**)

Copernicia yarey Burret var. **yarey**

C. holguinensis León

Copernicia yarey Burret var. **robusta** León

SABAL Adanson

Sabal domingensis Becc.

Sabal maritima (Kunth) Burret

S. florida Becc.

Sabal palmetto (Walt.) Lodd. ex J.A. & J.H. Schult.

S. parviflora Becc.

Sabal yapa Wright ex Becc. (Fig. 7)

S. mayarum Bartlett

CEROXYLOIDEAE Drude

PSEUDOPHOENIX H. Wendland ex Sargent

Pseudophoenix sargenti H. Wendl. ex Sarg. ssp. **saonae** (O. F. Cook) Read var. **saonae**

GAUSSIA H. Wendland

Gaussia princeps H. Wendl.

Gaussia spirituana Moya & Leiva (Fig. 3)

ARECOIDEAE

PRESTOEA Hook.f. ex Benth. & Hook. f.

P. acuminata (Willd.) H. E. Moore var. **montana** (Graham) Henderson & Galeano

Prestoea montana (R. Graham) Nichols.

ROYSTONEA O. F. Cook

Roystonea lenis León

R. regia (Kunth) O. F. Cook var. *pinguis* Bailey

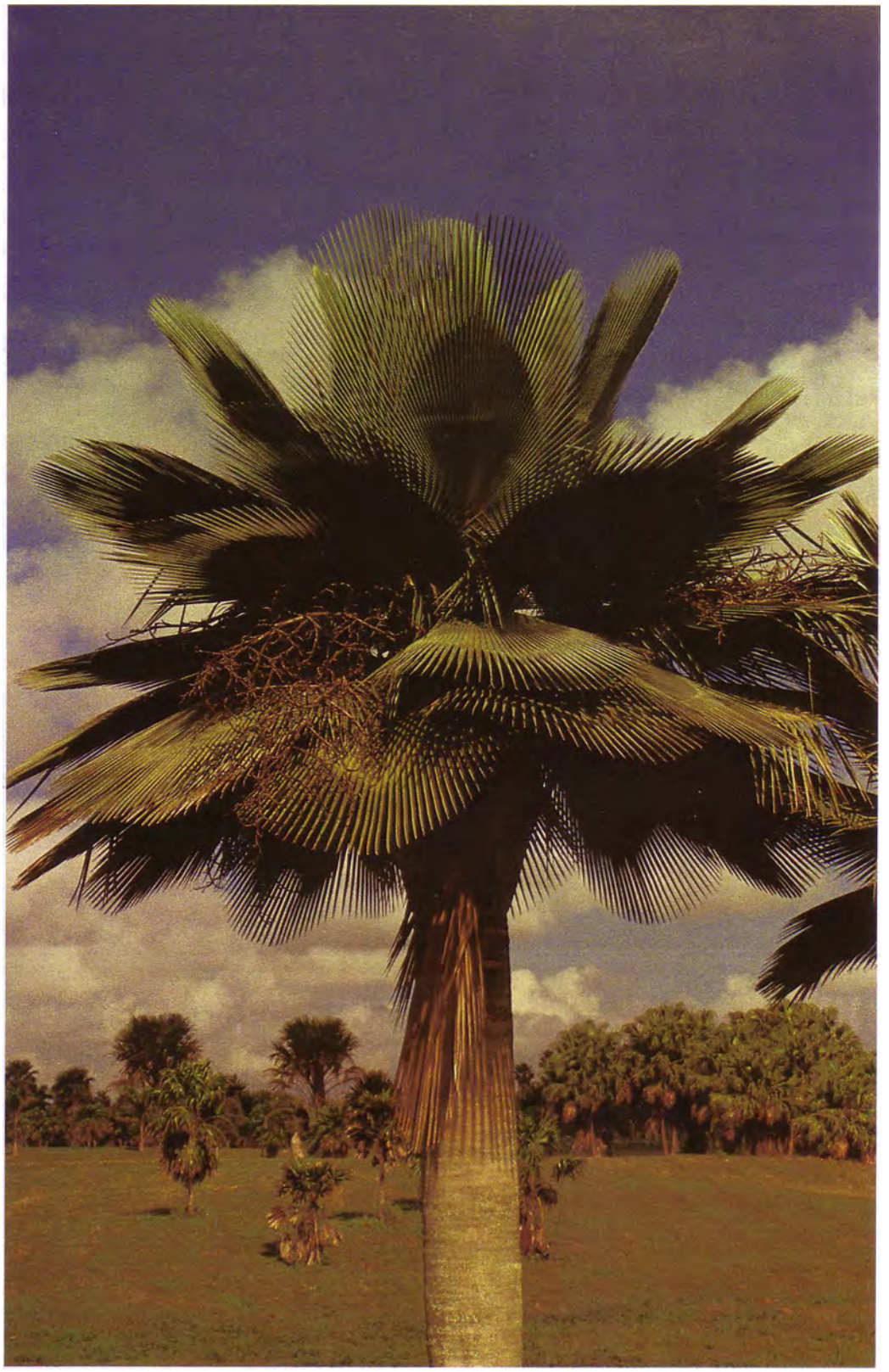
Roystonea maisiana (L. H. Bailey) Zona (Fig. 8)

R. regia (Kunth) O. F. Cook var. *maisiana* Bailey

Roystonea regia (Kunth) O. F. Cook

Oreodoxa regia Kunth

3. *Gaussia spirituana,* Sierra de Jatibonico, Sancti Spiritus.



4. *Copernicia fallaensis*, cultivated in the Jardín Botánico Nacional, Havana.

5. *Copernicia rigida* and *Bactris cubensis*, near Moa. (photo by S. Zona)

Roystonea stellata León

Roystonea violacea León

COCOS L.

Cocos nucifera L.

ACROCOMIA Martius

Acrocomia aculeata (Jacq.) Lodd. ex Mart.

A. lasiospatha Mart.

Acrocomia pilosa León

GASTROCOCOS Morales

Gastrococos crispa (Kunth) H. E. Moore (Fig. 10)

Acrocomia crispa (Kunth) Baker ex Becc.

Acrocomia armentalis (Morales) Bailey

Gastrococos armentalis Morales

BACTRIS N. J. Jacquin ex Scopoli

Bactris cubensis Burret (Fig. 5, 9)

CALYPTRONOMA Grisebach

Calyptronoma plumeriana (Mart.) Lourt. (Fig.11)

Calyptrogyne clementis León

Calyptrogyne dulcis (Wr. ex Griseb.) G. Maza

Calyptrogyne intermedia (Griseb. & H. Wendl.) G. Maza

Calyptrogyne microcarpa León

Calyptrogyne occidentalis (Sw.) G. Maza

Calyptrogyne swartzii Becc.

Calyptronoma clementis (León) A. D. Hawkes ssp. *clementis*

Calyptronoma clementis (León) A. D. Hawkes ssp. *orientalis* Muñiz & Borhidi

Calyptronoma dulcis (Wr. & Griseb.) Bailey

Calyptronoma intermedia (Griseb. & H. Wendl.) H. Wendl.

Calyptronoma microcarpa (León) A. D. Hawkes

Notes on the ecology, distribution and conservation of Cuban palms

Much of the Cuban landscape is dominated by palms, a fact obvious to anyone who visits the country. Throughout the island, in mountains, plains, coastal habitats, thickets, savannas or forests, it is possible to encounter one, two, three or even four different palm genera or species growing side by side. On the other hand, because of its high palm diversity and significant number of threatened species, a national plan for palm conservation has been recommended by Johnson and the IUCN/SSC Palm Specialist Group (1996). Accordingly, a national approach is being taken. The conservation program includes assessment and management planning (11 palm species), studies on the seed germination of threatened palms (*Coccothrinax borhidiana, Thrinax ekmaniana*), *in situ* conservation actions for endangered and critically endangered species in the National System of Protected Areas (*Thrinax ekmaniana, Coccothrinax borhidiana, C. crinita, C. brevicrinis, C. victorini*), field work for establishment of conservation categories and *ex situ* cultivation and educational activities in botanic gardens, as well as ethnobotanical studies on sustainable use of palms (*Acrocomia pilosa, Gastrococos crispa, Copernicia baileyana*).

In following paragraphs, we provide an overview of the most interesting features of the ecological and geographical distribution of Cuban palms, as well as their conservation status according to the criteria given by UICN (1994), and Peña et al. (1998). For an easier approach, the different genera will be treated in alphabetical order, giving details on remarkable or noteworthy species. The names of Cuban political provinces are abbreviated as follows, from west to east: Pinar del Río (PR), La Habana (HA), Isla de la Juventud (IJ), Ciudad de La Habana (CH), Matanzas (MA), Villaclara (VC), Cienfuegos (CI), Sancti Spiritus (SS), Ciego de Avila (CA), Camagüey (CG), Las Tunas (LT), Holguín

6. *Copernicia macroglossa*, cultivated. (photo by S. Zona)

(HO, Granma (GR), Santiago de Cuba (SC) and Guantánamo (GU). Phytogeographical subprovinces are referred as Western, Central and Eastern Cuba.

Acoelorraphe

Acoelorraphe wrightii

Local name: Guano prieto.

This graceful fan palm is abundant in seasonally flooded savannas and semideciduos forests, swamps (fresh or brackish water) and in pine forests. It is fire resistant, as fire is a somewhat common event in its habitats. This beautiful species also occurs in Florida (Everglades), Mexico (Yucatán), Central America, Bahamas and Colombia in South America (Zona 1997). In Cuba, it is present only in Western and Central Cuba (PR, IJ, HA, MA, VC, CI, SS, CG). It is a rather abundant species, and there is no threat at present.

Acrocomia

Acrocomia pilosa

Local name: Corojo

This is a stout and spiny palm, endemic to Cuba, very closely related to (and sometimes mistakenly included with) *A. aculeata* Mart. from Tropical America, which is locally cultivated in central provinces. In Cuba, *A. pilosa* lives in anthropogenic savannas and semideciduous forests of Eastern and Central-Eastern Cuba, in limestone soils (GU, CG) where it is widely used as a source of edible oil. We consider it an endangered species (EN) because it is very scarce and occurs in fragmented populations, although it has been categorized as Rare by others (Dransfield et al. 1988). A very interesting local project on sustainable use of this palm is being developed in a rural locality in Camagüey province.

7. *Sabal yapa*, Jardín Botánico Nacional (photo S. Zona)

Bactris

Bactris cubensis (Fig. 5, 9)

Local names: Palma pajúa or Pajuá.

This very thin and spiny palm is rather abundant in pine (*Pinus cubensis*) and rainforests, and thickets on serpentine and serpentine-derived soils in the north-eastern mountain ranges of Eastern Cuba (GU, SC, HO). This palm is not a threatened species. It is very difficult to cultivate outside its natural habitat.

Calyptronoma

Calyptronoma plumeriana (Fig. 11)

Local names: Manaca, Palma manaca, Flor de confite

The distribution of this very interesting species is always related to water: It is found along river banks and gallery forests in lowlands, and in montane rainforests (PR, IJ, HA, MA, CI, SS, VC, GR, SC, HO, GU). In the mountains, this palm sometimes occurs in dense populations called "*manacales*" at elevations between 500 to 900 m. There are no threats for the species, although populations in lowlands are very disturbed by agriculture. Before Zona´s taxonomic treatment of the genus (1995), there were four species attributed to the flora of Cuba: *C. dulcis, C. intermedia, C. clementis* and *C. microcarpa*.

Coccothrinax

Local names: Miraguano, Yuraguano, Yuraguana, Palma Petate (*C. crinita*)

Coccothrinax is by far the richest genus of Cuban palms, both at specific and infraspecific levels. In general, it is widespread over both the main island of Cuba and the Isle of Youth (formerly Isle of Pines). About 39 species occur in Cuba, and perhaps some more are to be discovered. However, there will also likely be some reductions to synonymy. Cuba is doubtlessly the center of evolution of this interesting palm genus, which is

8. *Roystonea maisiana*, Maisí, Guantánamo. (photo by S. Zona)

9. *Bactris cubensis*, near Moa. (photo by Virginia Salzman)

restricted to the Caribbean basin with few (about seven) species occurring outside of Cuba. *Coccothrinax* urgently needs a modern and multi-disciplinary study, including phylogenetic, biogeography, taxonomy, ecology and ethnobotany, as recommended by Johnson and the IUCN/SSC Palm Specialist Group (1996).

Coccothrinax distribution is closely related to aridity or low availability of soil water: It is often found on coastal limestone, serpentine-derived or siliceous sandy soils with sharp drainage, and in seasonally-flooded, heavy, clay soils where the dry season is very long and severe. Every outcrop of serpentinite in Cuba has its own *Coccothrinax* species. It is also abundant in pine forests. Coastal limestones of Eastern Cuba are notably rich in *Coccothrinax* species.

There are eleven species that have been categorized under the different criteria of UICN (1994): six are categorized as Vulnerable (*C. baracoensis, C. fagildei, C. nipensis, C. pseudorigida, C. savannarum* and *C. yunquensis);* one is categorized under "Endangered" (*C. camagueyana*) and four are Critically Endangered (CR) (*C. borhidiana, C. brevicrinis, C. crinita* and *C. victorini).* We believe that three species, *Coccothrinax crinita, C. brevicrinis* and *C. borhidiana* (Fig. 2), are in greatest need of conservation actions in the Caribbean region (Johnson & the IUCN 1996). In the case of the first species, only one population of approximately 60 individuals was located during recent explorations in Pinar del Río province, in secondary semideciduous forests. Use of its fibers (in brush and broom manufacture, as well as for making mattresses) and fires during the dry season have pushed this species into the critically endangered category. *Coccothrinax borhidiana* (Fig. 2) has a very narrow distribution, only about one kilometer of coastal limestone west of Matanzas bay, in Matanzas province, Central-Western Cuba.

Colpothrinax

Colpothrinax wrightii

Local name: Palma Barrigona

This very curious belly-palm is restricted to western pine forests (*Pinus tropicalis*) and savannas on siliceous sandy soils very poor in nutrients, in Pinar del Río province and the Isle of Youth. Although abundant in such ecosystems, the use of land for agricultural purposes makes this jewel of Cuban endemic flora an endangered species (Peña et al. 1998). Rural people use this palms for several purposes: The big fan leaves for thatching, the timbers for house construction, the trunk for water containers and as mortars for grinding coffee beans ("*pilón*"), and the fruits for raising pigs. This species has special protection by the Forestry Law of 1998, regulating its use. It can be easily grown in rich, limestone-derived soils like the ones of the National Botanic Garden, where this species grows vigorously.

Copernicia Martius

Copernicia is the second largest palm genus in Cuba. There are 24 species, all endemic. The main center of diversification for the genus is Central Cuba, (mainly Central-Eastern), always in plains or low altitude hills, on very diverse soils. Particularly abundant and species-rich places are the serpentine-derived soils (PR, CH, HA, MA, VC, SS, CA, LT, GR, HO, CG) and the heavy clay, hydromorphic soils that prevail in subcoastal plains of Central Cuba. Depending on their size, *Copernicia* palms are commonly named as "*Jatas*" or "*Yareyes*." The first name is given to species with slender trunks that can have up to 5–7 m of height, and the name "*Yarey*" is applied to species bearing huge, massive and tall trunks of more than 10 m heigt. *Jatas* almost always occur in serpentine soils, poor in organic matter, whereas *Yareyes* are common in heavy, clay soils in secondary savannas. A new taxonomic treatment of this very interesting and highly confusing genus is urgently needed.

In regards to conservation, the situation is confusing. The problem arises with the doubtful taxonomic status of several species, whose boundaries are not well defined, and thus the number of threatened taxa varies from eight (*Copernicia brittonorum, C. curbeloi, C. fallaensis, C. gigas, C. humicola* and *C. roigii*, in IUCN-BGCS 1989) to six (*C.* x *burretiana, C. fallaensis, C. gigas, C. oxycalyx, C.* x *sueroana* and *C.* x *vespertilliorum* in Peña et al. 1998) to only one (*Copernicia brittonorum* in Johnson & the IUCN/SSC Palm Specialist Group 1996).

Gaussia

Local name: Palma de Sierra

There are two Cuban endemic species in this small genus, which is restricted the Caribbean (Yucatán, Guatemala, Belize, Cuba, Dominican Republic and Puerto Rico) and has a total of five species. The Cuban ones are located in almost vertical karstic hills of bare rocks known as "*mogotes*." They are always on steep cliffs, living in holes filled with humus. Those karstic formations are very well developed in Western Cuba (Sierra de Viñales) where the type species of this genus lives (*Gaussia princeps*). In Central Cuba, *Gaussia spirituana* (Fig. 3) is found on *mogote*-like karstic hills in the Sierra de Jatibonico. The first mentioned species is not threatened at all, as it is abundant, and its use by

local population is negligible. Moreover, the localities are under protection. *Gaussia spirituana* is very scarce in natural populations (fewer than 100 individuals). No agriculture or any other human activity is known in these rocky hills, and only natural events such as fire pose a significant risk. We categorize it as vulnerable.

Prestoea

Prestoea acuminata var. **montana**

Local name: Palma Boba, Palma Justa

Restricted to elevations up to 800 m, this palm can be found in Eastern Cuban mountains, (GR, SC, GU) as well as in other Antillean islands. There is no threat for this graceful palm, which is not known to be cultivated in Cuba.

Pseudophoenix

Pseudophoenix sargentii ssp. **saonae** var. **saonae**

Local name: Palma de Santa Lucía, Palma de Guinea

The variety *saonae* is considered to be endemic to the northern coast and keys of Central Cuba (VC, CA, CG, LT), which are areas floristically related to Bahamas. *Pseudophoenix* also occurs on Maisí, at the easternmost extreme of Cuba (S. Zona, personal comm.). This beautiful palm is threatened by human disturbance and destruction of its coastal habitats. Its potential as an ornamental has yet to be fully exploited, as it grows well when cultivated from seed.

Roystonea

Local names: Palma Real, Palma de Seda, Palma Criolla Azul, Palma Blanca

With five of the ten known species, four of which are endemic, Cuba appears again as a center for diversification of a palm genus. Zona (1996) stated that "the endemic species of eastern Cuba (*Roystonea lenis, R. stellata, R. maisiana* and *R. violacea*) are not sister species..... Their evolutionary history is perhaps the most vexing phylogenetic problem in the genus...." Zona favored the refugium hypothesis to explain the presence of four endemic species in eastern Cuba, but whatever their history, the fact remains that the greatest richness of *Roystonea* is found in Cuba.

Roystonea regia is by far the most widespread palm in Cuba, being a typical feature of Cuban landscape in rich and well drained soils. It is the national tree because of its omnipresence, its majestic trunk and beautiful crown of long leaves. The leaves and wood are used by rural people for construction, the fruits for feeding pigs, the oil they contain for soap-making and the roots for medicinal uses. The palm is also cultivated as an ornamental. This species is also protected by the Forest Law from 1998, although no threat is recognized. On the contrary, it can be an invader when primary forest is cut. *Roystonea regia* also occurs in Yucatán, Honduras, Belize, southern Florida, Cayman Islands and Bahamas (Zona 1996). The other three species (*R. lenis, R. maisiana* [Fig. 8] and *R. violacea*) are restricted to the Guantánamo province and have been preliminarily categorized as vulnerable. *Roystonea stellata* may be extinct, as no specimens have been found despite several searches.

Sabal

Local names: Palma Cana, Guano Cana.

There are four species in Cuba, none of which are endemic or threatened. *Sabal maritima* and *S. palmetto* are the most widespread in swampy or poorly-drained soils, mostly in Western and Central Cuba, in extensive secondary savannas and semideciduous forests together with *Bucida* spp. (Combretaceae). *Sabal yapa* (Fig. 7) occurs in semideciduous forests on limestone soils, and to a lesser extent in swamps. *Sabal domingensis* was confirmed by Zona (1992) to be present in southeastern coast of Cuba (GU).

Thrinax

Local names: Guano de Costa, Miraguano de Lana, Yuraguancillo, Palmita de Jumagua

This little genus comprises seven species, of which six taxa are present in Cuba, and four are endemic (*Thrinax rivularis, T. rivularis* var. *savannarum, T. compacta, T. ekmaniana*), belonging in subgenus *Hemithrinax*. All are considered to be threatened, and a status of vulnerable has been assigned.

The two non endemic species are very abundant, found in coralline sand along the coasts (*T. radiata*) or in limestone outcrops at the interior of the country on *mogotes* (*T. morrisii*).

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