ANGELA LEIVA SÁNCHEZ

Notes on Cuban native palms

Abstract

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A brief, updated account on the taxonomic history of Cuban palms is provided, together with a key for the field identification of the 14 currently recognized native genera. Four of the most interesting genera of Cuban native palms *(Thrinax, Coccothrinax, Copernicia* and *Roystonea)* are commented. The name *Coccothrinax crinita* is lectotypified.

Key words: Cuba, *Arecaceae,* taxonomic history, lectotypification.

Introduction

Palms are ubiquitous in the Cuban landscape. It is almost impossible to spend a day in this country without seeing at least one palm species. As an indicator of the frequency of palms, 206 geographical localities are named after palms (Leiva 1999). About 81 indigenous palm species in 14 genera are known from the various ecosystems of the island. Since many years Cuban palms have drawn the attention of Cuban scientists as well as those from foreign countries.

A brief historical overview

The scientific knowledge of Cuban palms began with the discovery and collection of the first palms by Alexander von Humboldt and Aimé Bonpland. They were described and published by Kunth (1815): *Cocos crispa* Kunth (today: *Acrocomia crispa* (Kunth) Becc.), *Corypha miraguama* Kunth (today: *Coccothrinax miraguama* (Kunth) Becc.), *Oreodoxa regia* Kunth (today: *Roystonea regia* (Kunth) O. F. Cook). These are very common palms in Cuba. Botanists such as C. F. P. Martius, A. Richard, C. Wright, A. Grisebach, H. Wendland, O. Beccari, A. H. Curtiss, J. A. Shafer, N. L. Britton, P. Wilson, E. L. Ekman, L. H. Bailey, M. Burret and brother León (Josef S. Sauget) continued. The latter author made the most important contributions to Cuban palm taxonomy. In several monographic publications he treated six genera of palms and finally produced the treatment of the *Palmae* for the "Flora de Cuba" (León 1946). Muñíz & Borhidi

(1982), who also gave a brief history of the taxonomy of the Cuban palms, included the taxonomic novelties since León's Flora, which were provided, in particularly, by R. Read, H. E. Moore, B. E. Dahlgren, S. F. Glassman, as well as their own results.
After 1982, two new species of *Coccothrinax* Sarg. were described by Muñíz & Borhidi, one of them being the unique gregarious species in that genus (*C. fagildei* Borhidi & Muñíz). A very well documented revision of *Sabal* Adanson was published by Zona (1990), including three Cuban species. He also reported the presence of *S. domingensis* Becc. in E Cuba (Zona 1992). Moya & al. (1991) described a new species, *Gaussia spirituana* Moya & Leiva, from the karstic uplands of central Cuba. Borhidi & Hernández (1993-94) added a new species to *Coccothrinax*. In a revision of *Bactris* Scop. for the Greater Antilles by Salzman & Judd (1995) the supposedly endemic *Bactris cubensis* Burret was reduced to the synonymy of *B. plumeriana* Becc. Henderson & al. (1995), in a field guide to the palms of the Americas, included only few species from Cuba, mainly *Coccothrinax* Sarg. and *Copernicia* Mart. A revision of *Calyptronoma* Griseb. was produced by Zona (1995), in which the four Cuban endemic species were all considered as a single species, *Calyptronoma plumeriana* (Mart.) Lourt. More recently, in a study of the molecular phylogeny of the tribe *Geonomeae,* the genera *Calyptronoma* and *Calyptrogyne* were united in *Calyptrogyne* and the new combination *C. plumeriana* (Mart.) Roncal was validated (Roncal & al. 2005). In a treatment of *Roystonea* O. F. Cook for Flora Neotropica (Zona 1996) the author gave species rank to *R. regia* var. *maisiana* Bailey. Zona (1994) proposed to conserve the name *Oreodoxa regia* Kunth (today: *Roystonea regia* (Kunth) O. F. Cook) against *Palma elata* W. Bartram (the basionym of *R. elata* (W. Bartram) F. Harper), a species from S Florida, USA, which had been found to be conspecific with the Cuban royal palm, and consequently the older epithet *elata* would have priority. The proposal was accepted, so that the very well-known name *Roystonea regia* can be maintained (Zona 1997).

The checklist of the native palms of Cuba by Moya & Leiva (2000) included 15 genera, two subgenera, 81 species, six hybrids and nine infraspecific taxa, with 87 % of the listed species being endemic. *Sheelea cubensis* Burret, *Elaeis guineensis* Jacq. and *Acrocomia subinermis* León ex Bailey (included in Muñíz & Borhidi 1982) had to be omitted, the first two, because they had not been found in natural vegetation, the third one was considered as a misinterpretation by León of an old specimen of *Gastrococos crispa* (Kunth) H. E. Moore.

Since then a revision of *Pseudophoenix* Sarg. was published by Zona (2002), in which the subspecies and varieties of the very variable type species *P. sargentii* were separated as distinct species. Gunn (2004) reunited the unispecific endemic genus *Gastrococos* Morales in *Acrocomia*, a widespread genus in tropical America, thus reducing the 15 hitherto recognised genera for the flora of Cuba to 14.

Key for field identification of the Cuban native palm genera

1 Leaves pinnate 2
- Leaves palmate to costapalmate 9
2 Stem spiny 3
- Stem unarmed 4
3 Stem slightly ventricose to belly-like, not gregarious . . . . . *Acrocomia*
- Stem cylindrical, slender, gregarious . . . . . *Bactris*
4 Spadices infrafoliar 5
- Spadices interfoliar 6
5 Palms very tall, stem variously swollen, usually over 30 cm in diam.; with conspicuous, entire crownshaft; all over Cuba below 500 m . . . . . *Roystonea*
- Palms to 15 m, stem to 20 cm in diam.; leaf sheaths forming a partial crownshaft; restricted to the mountains above 500 m . . . . . *Prestoea*
6 Stem swollen at the middle, greyish green, waxy; flowers bisexual . . . . *Pseudophoenix*
- Stem not swollen or swollen at base, light brown or white; monoecious 7

7 Nodal scars very prominent; fruits very large, usually over 20 cm in diam. . . . . .*Cocos*
- Nodal scars inconspicuous, fruits small, below 10 cm in diam. 8
8 Stem cylindrical; in rain forests and along streams . . . . . *Calyptrogyne*
- Stem basally swollen, tapering upwardly; in karstic hills (“mogotes”) . . . . . *Gaussia*
9 Leaves costapalmate . . . . . *Sabal*
- Leaves palmate 10
10 Petioles with spines at the margins 11
- Petioles unarmed 12
11 Stems single, rarely with basal suckers; leaves very large . . . . . *Copernicia*
- Stems gregarious; leaves relatively small . . . . . *Acoelorraphe*
12 Stems swollen, belly-like; in pine forest and secondary savannas on quartzitic sandy soils in Pinar del Río and Isle of Youth . . . . . *Colpothrinax*
- Stems cylindric, slender 13
13 Petiole sheaths split at base; fruits white; seeds with smooth surface and a central cavity . . . . . *Thrinax*
- Petiole sheaths unsplit, with netlike woven fibres; fruits pink to purplish black; seeds furrowed, without central cavity . . . . . *Coccothrinax*

Notes on selected taxa

1. *Thrinax* Sw., Prodr.: 57. 1788

Solitary, unarmed palms with slender stems and circular or semicircular, palmate leaves, with lanceolate segments basally united to about ½ of its length. The slender petiole splits in the sheath. The fruits are white and the seed contains excavate endosperm. The genus has seven species, four in the subgenus *Thrinax* (two in Cuba) and three in the Cuban endemic subgenus *Hemithrinax,* differing in the branching of the inflorescences, the sessile anthers and the lack of floral bracts, and being in need of revision.

Thrinax radiata Schult. & Schult. f. is by far the commonest *Thrinax*, present on all sandy coasts of Cuba, Florida, Bahamas and Yucatán, as well as in coasts of other islands in the Caribbean basin. It is much used as an ornamental for its large and shiny, green, circular leaves, with abundant fibres at the leaf sheath, and its slender trunks with massive roots above soil level. *T. morrissii* H. Wendl. is present in bare limestone rocky hills in the interior of the country, in western Cuba, and in similar habitats in the Caribbean islands. *T. compacta* (Griseb. & H. Wendl.) Borhidi & Muñiz is strictly endemic of the limestone outcrops at the SW of the Nipe mountain range in NE Cuba. *T. ekmaniana* (Burret) Borhidi & Muñiz grows on rocky hills with hard limestone in Jumagua, at the northern coast of Villa Clara province, being the most xeromorphic of the *Thrinax* species, and *T. rivularis* (León) Borhidi & Muñiz, with its two varieties, grows in serpentine habitats of Moa and its surroundings (Moya & Leiva 2000, Morici 2000). The last four taxa with their very restricted distribution are threatened, and the conservation status of Vulnerable has been assigned to them (Johnson 1996).

2. *Coccothrinax* Sarg. in Bot. Gaz. (Crawfordsville) 27: 87. 1899

Coccothrinax has pronounced xeromorphic characters. With few exceptions its species have slender trunks, partially covered (only the uppermost part in aged palms) with the woven fibres of the leaf sheath, free or not at the ends. The leaves are generally circular, rigid, divided half way into pointed segments, with more or less silvery lower surface, with slender, unarmed petioles. The fruits are pink to purple-black, the seed contains ruminate endosperm.

The genus is widespread all over the main island of Cuba and in the Isle of Youth (formerly Isle of Pines), in coastal limestone and serpentine thickets, pine forests, seasonally flooded forests, savannas and rarely in semideciduous forests. Like *Thrinax*, it has a clear diversification centre in eastern Cuba. Of about 49 species occurring in the West Indies (Uhl & Dransfield

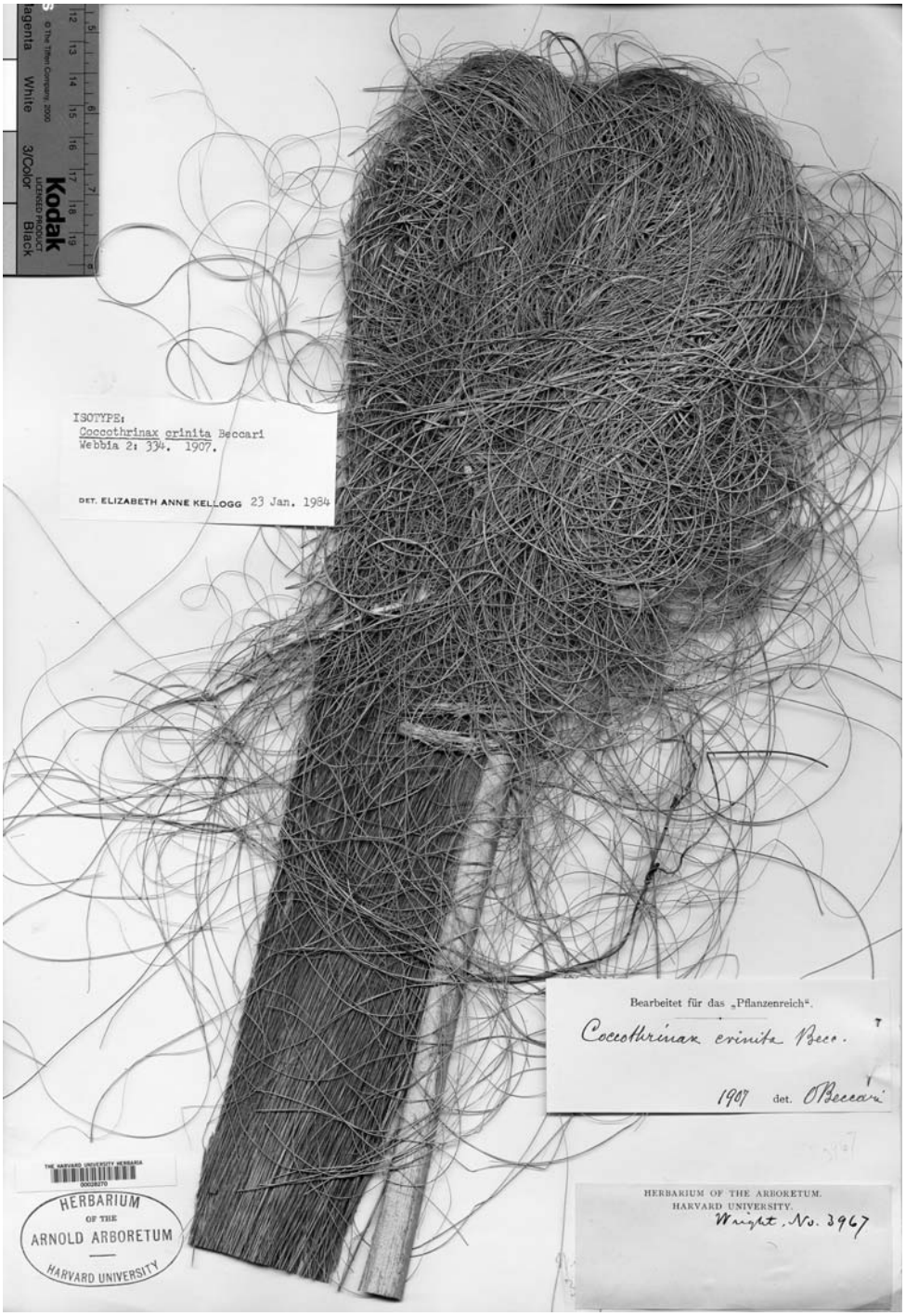

Fig. 1. Lectotype of *Coccothrinax crinita* Becc. (GH 28270)

1987), 39 have been found in Cuba (Moya & Leiva 2000). Around 50 % of them grow exclusively on serpentine outcrops and serpentine-derived soils, 34 % in xeric ecosystems on hard limestone rocks and the remaining 15 % on other soil types. The genus urgently needs a modern and multidisciplinary study, as recommended by Johnson (1996). Two species, *C. crinita* Becc. and *C. borhidiana* Muñiz, are highly endangered (Johnson 1996).

2a. *Coccothrinax crinita* Becc. in Webbia 2: 334. 1908
Lectotype (designated here): *Plantae Cubenses Wrightianae 3967* [In Cuba orientali, Las Pozas, 18.5.1860, *C. Wright*] (GH 28270; isotypes GH 18269, 28271, 28272).

In a research project on integrated conservation of the noteworthy species *Coccothrinax crinita*, conducted at the National Botanic Garden, its taxonomic history was traced. *C. crinita* was discovered by Charles Wright on 18 May of an uncertain year (year apparently cut off from the label, but given as 1860 in the GH web database) in Las Pozas, Pinar del Río province and collected under the number 3967. Duplicates were sent by A. Gray to Göttingen for study by A. Grisebach and H. Wendland, and also to Berlin and New York. It was first mentioned as *Thrinax crinita* by Grisebach & Wendland in Sauvalle (1871), but without a description (nomen nudum) according to Howard (1988). Beccari (1908) made the first description of the species based on sterile material (the reason for his question mark after the genus name in the protologue), and mentioned the duplicates of *Wright 3967* both in GH and B, without deciding which one was to be the holotype. The specimen at B was destroyed by fire during the Second World War, as Prof. Dr Werner Greuter kindly informed me. Therefore, a lectotype is designated here for *Coccothrinax crinita*: the specimen of *Wright 3967* at GH with herbarium number 28270 and a revision label written by Beccari, presenting the characteristic leaf sheath with free, very long fibres (Fig. 1). The herbarium houses three additional specimens, apparently fragments from the same plant, no. 28269 and 28272 with leaf blades and no. 28271 with a fibrose sheath. The publication year of Beccari (1908) is often indicated as 1907. The front page of the pertinent issue of Webbia gives December 1907, but the last page quotes as printing date 31 December 1907, so that the issue cannot have been published in 1907. In 1920 Ekman collected the species again at the type locality but found only two old partial inflorescences, without flowers or fruits. This allowed Burret (1929) to supplement the description by Beccari (1908). León (1939) finally provided a thorough description of this palm, based on his own collections and the ones of Roig and Nateson.

This remarkably species is the only *Coccothrinax* that is grown in nurseries as ornamental and for landscaping, because of its beautiful circular, large leave with the masses of fibres at the leaf sheath and most of all because of its relatively rapid growth.

3. *Copernicia* Endl., Gen. Pl.: 253. 1837.

Palms with more or less stout, cylindrical to fusiform trunks and large, orbicular to cuneiform leaves, sometimes with wax depositions on petioles and blades, spiny at the marginal segments, the petioles armed at the edges with dark, coarse, curved, flat spines. They occur in lowlands or low hills, in forests or secondary savannas. The inflorescences largely exceed the leaves, being very ramified, with up to 6 orders of branching.

Copernicia is the second largest palm genus in Cuba, with 24 described species and hybrids, all endemic. Only *C. gigas* Burret belongs to subgenus *Copernicia*, which includes the other species of the genus occurring outside Cuba, in South America and Hispaniola. The rest of the Cuban species belong to the endemic subgenus *Copernicia* Becc. The main centre of diversification is central eastern Cuba, although several species are restricted to western Cuba. These palms are particularly abundant and diverse in xeromorphic thickets on serpentine soil and in semideciduous forest on seasonally flooded, heavy clay soils of the subcoastal plains of central Cuba. Since the revision by Dahlgren & Glassman (1963) no modern and complete taxonomic treatment of this interesting but confusing genus has been produced. At present, R. Verdecia, from HMC in Cuba (pers. comm.) is advancing with a new treatment, mainly based on abundant specimens and annotations obtained during recent field work in central Cuba.

Concerning conservation, eight *Copernicia* species are considered as threatened (Johnson 1996). For several further, very variable species, whose boundaries are not well defined, the situation is unclear.

4. *Roystonea* O. F. Cook in Science, ser. 2, 12: 479. 1900.

Unarmed, very tall palms with greyish (exceptionally grey-brown), smooth, stout, column-like, ventricose or variably swollen trunks. The pinnate leaves are very large and with the many leaflets arranged in several (at least two) planes at the rachis giving the aspect of giant green feathers. The leaf base is sheathing and forms a noteworthy, large, green crownshaft. A long and green, caducous, peduncular bract protects the inflorescence, and when it splits and abscises from the peduncle, it falls off together with a multitude of "free trichomes" of farinaceous aspect, a unique feature in the world of palms (Zona 1996).

Of the ten existing *Roystonea* species, five are found in Cuba, of which four are endemic to the easternmost regions of Cuba, in Guantánamo province. *R. stellata* León is considered today as extinct in nature, because after numerous searches this palm was never found again (Zona 1996, Verdecia, pers. comm.).

Again, eastern Cuba appears to be an evolutionary centre for a palm genus. In the accurate and detailed treatment of *Roystonea* by Zona (1996), this author, after discussing the evolutionary relationships among *Roystonea* species, concluded that a refugium hypothesis would explain the presence of four endemic taxa in eastern Cuba.

Roystonia regia (Kunth) O. F. Cook is widespread and abundant all over the country. It is the national tree of Cuba and a typical feature of the Cuban landscape on rich and well drained soils in the plains and on the low mountains, as well as in the cities. *R. regia* also naturally occurs in neighbouring regions: Yucatán, Honduras, Belize, S Florida, the Cayman Islands and the Bahamas (Zona 1996). Today it is used as an ornamental tree in the tropics worldwide, and is still used by Cuban rural people for many purposes.

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Address of the author:
Dr Angela Leiva Sánchez, Jardín Botánico Nacional, Universidad de la Habana, Carretera del Rocío, km 3, Calabazar, C.P. 19230, Ciudad de la Habana, Cuba; e-mail: leivajbn@ceniai.inf.cu