Duanny Suárez Oropesa
Sociedad Cubana de Botánica
Calle 45, No. 5021,
entre 50 y 52
Cienfuegos, Cuba
palmascuba@gmail.com

Milián Rodríguez Lima
Sociedad Cubana de Botánica
La Chinchila, Sagua la Grande
Villa Clara, Cuba

Celio E. Moya López
Sociedad Cubana de Botánica
90 South Blvd., Apt. 2C
Boynton Beach, Florida 33435
USA
celio.moya@gmail.com

and

Donald R. Hodel
University of California,
Cooperative Extension
700 W. Main St.
Alhambra, California 91801
USA
drhodel@ucanr.edu

Coccothrinax acunana Rediscovered in Cuba after 80 Years

Brother Leon (born Joseph Sylvestre Sauget in France, 31 December 1871 and died in La Habana, Cuba, 20 November 1955) is considered the most prominent and accomplished plant collector and botanist in Cuban history. Indeed, he is often referred to as "the Father of Cuban Botany." His botanical fame extended to palms and an account of Cuban palms could not be written without consulting his numerous collections and extensive publications.

León authored treatments of *Copernicia* (1931, 1936), *Coccothrinax* (1939a & b), *Hemithrinax* (1941), *Roystonea* (1943,) and *Calyptrogyne* (1944) in Cuba. He named and described nearly half (45%) of Cuban palm taxa. León frequently collaborated with other Cuban workers who collected specimens for him, and two of them, Julián Baldomero Acuña Galé,

1. Holotype of *Coccothrinax acunana*, *Leon 16749*, at HAC. © National Cuban Herbarium (HAC). Photo by C.E. Moya.

an agronomist, botanist and former director of the Agronomic Experimental Station of San Antonio de las Vegas, and José Pérez Carabia, botanist and assistant to León, figure prominently in this account of *Coccothrinax acunana*, which was rediscovered after 80 years of botanical oblivion.

Acuña and Carabia first collected *Coccothrinax acunana* in July 1937 in forest at 1000 m elevation near Cueva del Aura, south-southwest of Pico Turquino, in the Sierra Maestra, at the far southern end of Cuba. León (1939a) named and described *C. acunana*, basing it on Acuña and Carabia's collection, which is in in the Cuban National Herbarium (HAC, *León 16749*) (Fig. 1). It was never collected again; in fact, Jestrow et al. (2017) explained that four *Coccothrinax* species have not been collected since they were originally named and described, and *C. acunana* is the one that had disappeared for the longest time.

Since its publication in 1939, the name *Coccothrinax acunana* has appeared in numerous publications, where it was considered an accepted species, including León (1946), Glassman (1972), Muñiz and Borhidi (1982), Moya and Leiva (2000); Govaerts and Dransfield (2005), Govaerts et al. (2011), and Acevedo-Rodríguez and Strong (2012). Only Henderson et al. (1995) considered it a synonym of *C. miraguama*.

On April 3, 2017, as part of field work in support of a major treatment of Cuban palms we plan to publish, two of the authors (Suárez

2. Dense mixed mesic/cloud forest on the south-soutwest flank of Pico Turquino where we found *Coccothrinax acunana*. Here is a juvenile plant with curved trunk on a rock outcrop. Photo by D.R. Hodel.

3 (top). The leaf blade of *Coccothrinax acunana* is bright green adaxially. 4 (bottom). With only a thin layer of grayish indumentum, abxially leaf surfaces of *C. acunana* are not prominently silver. Photos by D.R. Hodel.

and Hodel) made a grueling trip up the south-southwest flank of Pico Turquino to try to relocate *Coccothrinax acunana*. Leaving Santiago at 2 a.m., they traveled west along the southern coast, arriving about 4 a.m. at the small coastal village of Las Cuevas at the base of Pico Turquino. There, they hired guides, horses and mules to carry them up the steep

5 (left). Leaf base fibers of *Coccothrinax acunana* are connate at their tips. 6 (right). Inflorescences of *Coccothrinax acunana* have two, close-set, primary branches with bracts that extend at least to the first rachilla. Photos by D.R. Hodel.

forested slopes. Through the darkness they traversed dry, deciduous thorn forest and then disturbed, mesic forest. By daybreak they had arrived at about 700 m elevation, where they left the horses and continued on foot for another two hours, finally arriving in moist, cool mixed cloud forest at about 984 m elevation in the vicinity of Pico Limones, a sub-peak of the Turquino massif, where after 80 years, they rediscovered *C. acunana*.

They observed and collected *Coccothrinax acunana* for only the second time (as *MR 1706*) and photographed it for the first time in history as it occurred as widely scattered individuals in moderately dense, mountain forests that contained mesic and cloud forest elements (Fig. 2). Also for the first time, they were able to observe and report on the palm's habit and other features in its living state (Fig. 3), which, heretofore, were known only from a few dried herbarium specimens, and report a new locality for this species.

Suárez and Hodel were unsure if they were at the type locality of *Coccothrinax acunana*, although they feel that they were near it. The type locality was reported by León (1939) as Cueva del Aura (Cave of the Aura), but Suárez and Hodel saw no cave. Nicasio Viña Dávila and Arturo Salmerón López of the Eastern Center of Ecosystems and Biodiversity say that it is not a cave as such, but a grotto where stones break off a steep cliff and give the appearance of a cave. Nonetheless, Suárez and Hodel failed to find the latter formation either, but it easily could have been close to where they were. The steep, forested terrain made exploration difficult and blocked line-of-sight viewing. Later, detailed checking of maps showed that they were about 1.5 km from the type locality.

We compared *Coccothrinax acunana* with other species of the genus occurring in the Sierra Maestra in southeastern Cuba. It differs from *C. gundlachii* in the abaxial leaf blade surface not prominently silver (Fig. 4), the mostly connate tips of the sheathing leaf base fibers (Fig. 5), and the inflorescences with only two primary branches (Fig. 6). It differs from *C. elegans* in the leaf blades with more than 40 segments, the abaxial leaf blade surface not

7. *Coccothrinax acunana* grows to at least 15 m tall. Photo by D.R. Hodel.

8. In *Coccothrinax acunana* the most distal two m of trunk just below the leaves is densely covered with persistent leaf base fibers. Photo by D.R. Hodel.

9. Leaf segment tips of *Coccothrinax acunana* are unevenly bifid. Photo by D.R. Hodel.

covered with a deciduous tomentum, and the much narrower trunk, less than 10 cm in diam. It differs from the remainder of the species in the genus in its flowers with filaments connate in the proximal ½ to ¾, forming a conspicuous tube covering more than half of the ovary.

Based on the geographical and botanical evidence, we are confident that the palms found on the south-southwest flank of Pico Turquino are *Coccothrinax acunana*.

Using our recent observations and collections, we can add to the original description of *Coccothrinax acunana* as follows: solitary tree palm to 15 m tall (Fig. 7); trunk densely covered with persistent leaf base fibers in the distal 2 m just below the leaves (Fig. 8), the remainder of the trunk clean, smooth, only faintly ringed; leaf base fibers loose, coarse, with connate tips (Fig. 5); leaf blade bright green adaxially (Fig. 3), pale or opaque green with only a thin layer of grayish indumentum abaxially (Fig. 4); leaf blade segments with shoulder at ca. 80% of the distance from hastula to segment tip, segment tips enevenly bifid (Fig. 9), midrib and one submarginal secondary nerve on either side conspicuous on juvenile leaves, only midrib conspicuous on adult leaves; the two primary branches of the inflorescence very close together, the rachis bracts tubular in proximal ½, opening and expanding distally until covering the base of the primary branches and at least to the first rachilla (Fig. 6).

Occasional juvenile plants growing on rocks had short, curved trunks with horseshoe-shaped bases and aerial roots sprouting from the fibers at the proximal end, indicating a lack of secure rooting in its unstable substrate (Fig. 2)).

Specimens collected: CUBA. Santiago de Cuba province, Guamá municipality, vicinity of Pico Limones, SSW of Pico Turquino, 984 m elev., 3 April 2017, *MR 1706,* collected by Suárez and Hodel (ULV).

Phenology: Flowering of *Coccothrinax acunana* likely occurs in July.

Distribution: CUBA. Santiago de Cuba: Municipality Guamá, Sierra Maestra. Endemic.

Biogeography: Eastern Cuba subprovince, sector Maestricum, district Turquinense (Borhidi 1996).

Habitat: *Coccothrinax acunana* is found only in the Pico Turquino region of far southern Cuba, where it occurs as widely scattered individuals in mixed mesic/cloud forest at over 900 m elevation. Seifriz (1943) claimed that it occurred at a higher elevation than any other Cuban palm.

Common name: Sierra palm (Seifriz 1943).

Conservation: González-Oliva et al. (2015) and González-Torres et al. (2016) considered *Coccothrinax acunana* to be Vulnerable with fewer than 1000 mature individuals in less than 20 km^2 and in fewer than five localities. This species is not cultivated.

Acknowledgments

We are grateful to the santiagueros Rosa María Brooks Laverdeza and Nicasio Viña Dávila and to Arturo Salmerón López of the Eastern Center of Ecosystems and Biodiversity (BIOECO) for information about the Cueva del Aura.

Literature Cited

Acevedo-Rodríguez, P. and M.T. Strong. 2012. Catalogue of Seed Plants of the West Indies. Smithsonian Contributions to Botany 98. Washington D.C.

Borhidi, A. 1996. Phytogeography and Vegetation Ecology of Cuba. Akademiai Kiado, Budapest.

Glassman, F. 1972. A Revision of B. E. Dahlgren's Index of American palms. Phanerogamarum Monographiæ, Tomus VI. Cramer, Lehre, Germany.

González-Torres, L.R., A. Palmarola, L. González Oliva, E.R. Bécquer, E. Testé and D. Barrios. 2016. Lista Roja de la Flora de Cuba. Bissea 10 (número especial 1): 1–352.

González-Oliva, L., L.R. González Torres, A. Palmarola, D. Barrios and E. Testé. (Eds.) 2015. Categorización de taxones de la Flora de Cuba – 2015. Bissea 9 (número especial 4): 3–707.

Govaerts, R. and J. Dransfield. 2005. World Checklist of Palms. Royal Botanic Gardens, Kew.

Govaerts, R., J. Dransfield, S. Zona, D.R. Hodel and A. Henderson. 2011. World Checklist of Arecaceae. Royal Botanic Gardens, Kew. Online: http://apps.kew.org/wcsp/. Accessed 27 July 2017.

Henderson, A., G. Galeano and R. Bernal. 1995. Field Guide to the Palms of the Americas. Princeton University Press. Princeton, New Jersey.

Jestrow, B., B. Peguero, F. Jiménez, R. Verdecia, L. González-Oliva, C.E. Moya, W. Cinea, M.P. Griffith, A.W. Meerow, M. Maunder and J. Francisco-Ortega. 2017. A conservation framework for the critically endangered endemic species of the Caribbean palm *Coccothrinax*. Oryx. https://doi.org/10.1017/S0030605317000588

León, Hno. 1931. Contribución al estudio de las palmas de Cuba. Revista de la Sociedad de Cuba 4(2): 1–29.

León, Hno. 1936. Contribución al estudio de las palmas de Cuba. II. Género *Copernicia*. Memorias de la Sociedad Cubana de Historia Natural Felipe Poey 10: 203–226, Pl. 9–12.

León, Hno. 1939a. Contribución al estudio de las palmas de Cuba. III. Género *Coccothrinax*. Memorias de la Sociedad Cubana de Historia Natural Felipe Poey 13: 107–132, Pl. 10–15.

León, Hno. 1939b. Contribución al estudio de las palmas de Cuba. III. Género *Coccothrinax*. Memorias de la Sociedad Cubana de Historia Natural Felipe Poey 13: 133–156, Pl. 16–22.

León, Hno. 1941. Contribución al estudio de las palmas de Cuba. III. Novedadas en el género *Hemithrinax*. Memorias de la Sociedad Cubana de Historia Natural Felipe Poey 15: 379–383.

León, Hno. 1943. Contribución al estudio de las palmas de Cuba. VI. Nouveautes dans les palmiers royaux de Cuba. Memorias de la Sociedad Cubana de Historia Natural Felipe Poey 17: 1–14, Pl. 1–3.

León, Hno. 1944. Contribución al estudio de las palmas de Cuba. VII. Género *Calyptrogyne* en Cuba. Contribuciones Ocasionales del Museo Historia Natural del Colegio de La Salle 3:1–2.

León, Hno. 1946. Flora de Cuba 1. Gimnospermas. Monocotiledóneas. Contribuciones Ocasionales del Museo Historia Natural del Colegio de La Salle 8: 1–441.

Moya, C.E. and A. Leiva. 2000. Checklist of the palms of Cuba, with notes on their ecology, distribution and conservation. Palms 44: 69–84.

Muñiz, O. and A. Borhidi. 1982. Catálogo de las palmas de Cuba. Acta Botanica Academiae Scientiarum Hungaricae 28: 309–345.

Seifriz, W. 1943. The plant life of Cuba. Ecological Monographs 13: 375–426.