An Update of *Copernicia macroglossa* and *Copernicia × escarzana* (Arecaceae)

Actualización de *Copernicia macroglossa* y *Copernicia × escarzana* (Arecaceae)

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Abstract

The nomenclature, typification, and distribution of *Copenicia macroglossa* and *Copernicia × escarzana* are updated. Photographs and fragments at HAC of the holotype of *C. macroglossa* from Berlin that Beccari used to describe this species are identified and documented. The geographical and phytogeographic distribution of both taxa are provided.

Resumen

Se actualiza la nomenclatura y los tipos de *Copenicia macroglossa* y *Copernicia ×escarzana* con sus sinónimos respectivos. Se informa sobre la presencia en HAC, Cuba de fotografía y fragmentos del holotipo de *Copernicia macroglossa* de Berlín utilizados por Beccari para describir la especie. Se define la distribución geográfica y fitogeográfica de ambos taxones.

Introduction

The Arecaceae (Palmae) family in Cuba includes 15 genera and 98 infrageneric taxa: 79 species; 10 infraspecific taxa; and 9 hybrids. Of the total, 85 infrageneric taxa are endemic (86.7 %), one of the highest proportions among the plant families in the country (Moya 2020a).

The author has pre-published part of the information presented here as an installment of his contribution to the study of the palms of the Caribbean in the Repository of Environmental Information of Cuba (Moya 2020c).

1. *Copernicia macroglossa* northwest of Camagüey in Camagüey province. 22 February 2018. (D. R. Hodel).

Copernicia includes 21 species, three in South America, two in Hispaniola and 16 in Cuba, where several natural hybrids occur (Dransfield et al. 2008). For Cuba, 16 species, two varieties, and eight hybrids of *Copernicia*, all endemic, are currently reported, which adds up to a total of 26 taxa (Moya 2020a).

Charles Wright (29 October 1811, Wethersfield, Connecticut to 11 August 1885, Wethersfield, Connecticut) was an American botanist who explored and collected plants in Cuba in the mid-19th century during three expeditions over more than eight years. The first was from November 30, 1856 to August 1857, the second was from November 29, 1858 to August 1864, and the third was from May 10, 1865 to July 1867 (Howard 1988). During the mid-19th century, when Wright collected in Cuba, only nine species of Cuban palms belonging to seven genera had been reported and *Copernicia hospita* was the sole member of that genus.

With the *Wright 3969* collection, five taxa of *Copernicia* are involved with five different types belonging to two valid taxa. Along with the two valid taxa analyzed here (*Copernicia macroglossa*

2. *Copernicia* × *escarzana* near La Pimienta, Cienfuegos province. Note the presence of the petioles, evidence it is a hybrid. 15 March 2016. (D. Suárez).

[**Fig. 1**] and *C. × escarzana* [**Fig. 2**]), three validly published synonyms are implicated (*C. torreana*, *C. burretiana*, and *C. leoniana*), with the species *C. hospita* as the parent of the hybrid.

The objective of this work is to offer an update to the identification and disposition of all *Wright 3969* specimens and the type materials associated with those names and to define their geographical and biogeographic distribution.

Materials and Methods

I examined the protologues, descriptions, and status changes related to the taxa under study, including Sauvalle (1871 and 1873), Kerchove (1878), Salomon (1887), Gómez de la Maza (1893), Schaedtler (1875), Beccari (1907), León (1931 and 1936), Dahlgren and Glassman (1958 and 1963), Muñiz and Borhidi (1982), Moya et al. (2019), and Moya (2020b and 2020c). Particular attention was paid to matters of nomenclature and the designation and disposition of type specimens.

I found a total of 84 specimens associated with the taxa under study in 13 herbaria: A, BH, BRU, F, FTG, GH, HAC, K, MT, NY, P, S, and US (acronyms from Thiers 2016). I also reviewed 72 additional specimens, among which paratypes and syntypes were given priority. The total quantity of herbarium specimens examined was 156 (36 collector numbers) in 18 herbaria: A, B, BH, BR, BRU, F, FI, FTG, G, GH, HAC, K, MO, MT, NY, P, S, and US. I also reviewed all pertinent material in the National Herbarium of Cuba "Onaney Muñiz" of the Institute of Ecology and Systematics (HAC). All specimens cited were examined from high-resolution photographs except for those at HAC, which I examined in person. Specimens seen by the author are marked with ”!”, those not seen with ”[n.v.]”, and those without marks were seen as digital images.

Many inconsistencies plague Wright's collections, especially with the precise identification of locations, collection dates, and mixed species of the same specimen or with the same collection number (Howard (1988), which I will try to remedy in this article.

For the citation of specimens from HAC, where collections of different Cuban historical herbaria are currently kept, I followed Regalado et al. (2008). Thus: ECA refers to the Central Agronomic Station; EEAB refers to the numbering of C. F. Baker at the Santiago de las Vegas Agronomic Experimental Station; HABA, to the series of the Academy of Medical, Physical and Natural Sciences of Havana; LS, to the series of the Colegio de La Salle in Vedado (Havana); and Roig, to the Roig series (for which, also, the labels that distinguish the Plants of Cuba are indicated, with the initials PC). Because sometime other numbers were added to the number assigned by the collector at the time of depositing the specimen in an herbarium that eventually became part of

HAC, the number is still cited as being at HAC but is specified by adding “ex” followed by the acronym and the digits referring to the corresponding series, if any. Until HAC has barcodes, we use, based on the Shenzhen Code 9C.1 (Thurland et al. 2018), any available number that permanently identifies the specimen. For those copies with a similar label without anything that differentiates them, a period “.” and consecutive numbers are added to the sheet number series.

For typification of the names, I followed the recommendations of the International Code of Nomenclature for algae, fungi and plants (The Shenzhen code, Turland et al. 2018, referred to in the text by the word "Code". I gave special emphasis to articles 9.1 and 9.17 of the Code. The “specified here” marking is used in compliance with article 9.2 when I determined that a holotype or lectotype designation contains correctable errors.

Borhidi and Muñiz (1986 and 1996) discussed and outlined the biogeography of Cuba, which I follow here. The geographical distribution information includes the country in uppercase letters, followed in alphabetical order by the province with the municipalities in parentheses. The biogeographical information includes the province in uppercase letters, followed by the subprovince and the corresponding sector, with the districts in parentheses. The origin of the information used for each municipality or district is denoted by adding the superscripts “^{H}” for herbarium specimen, “^{R}” for bibliographic reference, “^{A}” for author field observations, and “^{P}” for personal communications.

I have maintained field observation records for the last 25 years, where the natural distribution area of the species and the hybrid was verified. My field observation number system is in this format: Serie Moya XXXX.

Results and Discussion

Prior to the taxonomic treatment, it is necessary to clarify some peculiar situations with the *Wright 3969* collection because it is very complex and controversial: six taxa were validly published using this collection as type material, including species and a hybrid.

The *Wright 3969* collection

During Charles Wright's third expedition to Cuba in 1867, he visited the “potrero Manatí” (grazing farm), southeast of Trinidad, where he collected “the palm” that was distributed as *Wright 3969* to nine herbaria comprising 43 different specimens.

Wright wrote a brief description of the species on the specimen GH28325, "Sessile leaves or (spiny petiole; a different species?)" and "Potrero Manatí March 19." Howard (1988) noted that Wright visited Manatí, near Trinidad, in March 1867; therefore, the date and location of *Wright 3969* was March 19, 1867, at the Manatí grazing farm, municipality of Trinidad, province of Sancti Spíritus.

The name *Copernicia macroglossa*

Sauvalle (1871) first used the name "*Copernicia macroglossa*" Griseb. & H. Wendl., basing it on *Wright 3969*, but provided no description, diagnosis, or reference, which makes the name a *nomen nudum*, and invalid according to article 38.1 of the Code (Moya 2020b).

Sauvalle (1873), when publishing "*Copernicia macroglossa*" Griseb. & H. Wendl., re-used the invalid name "*C. macroglossa*" Griseb. & H. Wendl. (in Sauvalle, Anales Acad. Ci. Med. Habana, 8: 562. 1871, *nom. nud.*), attributing it to Wright and basing it on the same type. Therefore, he created a later isonym without nomenclatural status, meaning only the earliest of these isonyms has nomenclatural status (Art. 6.3, Note 2).

A few years later, Schaedtler (1875) associated with the name *Copernicia macroglossa*, which Sauvalle (1871) had published as *nomen nudum* (Moya 2020b), with characteristics of a non-specific palm, "without stem, with unproportionally large fans, which almost emerge from the ground. She appears, through her dwarfish growth and vividly colored leaves rather odd than beautiful." The characterization could refer to nearly any palmate-leaved palm; thus, the above cannot be considered a description, a diagnosis, or does it provide any characteristic that relates it to the taxon in question.

It is clear that Schaedtler's (1875) statement is unaccompanied by a description or diagnosis of the taxon because it lacks a statement of a feature or features of that taxon that clearly distinguishes it from other taxa. As there is no descriptive statement that meets the requirements of Art. 38.1 (a) of the Code, it is considered *nomen nudum*. Neither is it accompanied by an illustration that validates it (articles 38.7 and 38.8) nor meets the requirements of Note 1 of article 38.1. When defining the certainty of *nomen nudum*, the application of article 38.4 is not justified.

Beccari (1907) validated the name *Copernicia macroglossa* for all specimens from *Wright 3969*, and it remained so until Dahlgren and Glassman (1958) described *Copernicia leoniana*, basing it on the short petioles armed with strong teeth of *Wright 3969*, noting that *C. macroglossa* lacked petioles. In some herbaria, the *Wright 3969* collection had both taxa mixed on the same sheet,

3. Type material of *Wright 3969* from B now at HAC. (L. Regalado).

which here I later will correctly identify with its corresponding name. The vast majority of workers have accepted Beccari (1907) as the author of *Copernicia macroglossa*.

Dahlgren and Glassman (1963) summarized all the evidence and concluded that Beccari (1907) based *Copernicia macroglossa* on the plant with thick rachillae, larger flowers, large bracteoles, and sessile leaves. They reached this conclusion from Beccari's (1907) description, which was based on *Wright 3969* and *Combs 335*, and illustrations and photographs of the palm flowers in Becccari (1913); they also noted that the specimen deposited at B was a holotype. The preceding documents that the name *Copernicia macroglossa* Becc. was validly published, in this case, by reference to a published description that was typified by the original material that the author clearly associated with the taxon in the context of the validating description; according to articles 7.8, 9.14, and 9.4 of the Code, *Wright 3969* meets the requirement as type material for valid publication of *C. macroglossa* by Beccari (1907).

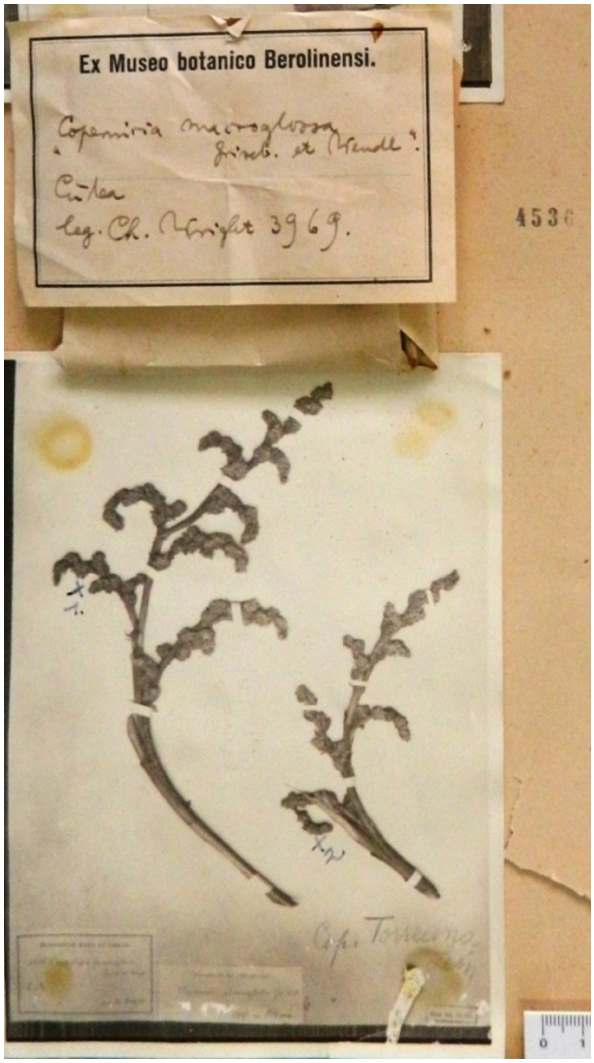
Beccari (1907) attributed the name to Wendland when he wrote "Wendl. in Kerch. Palm. 241 (nomen)" and also related it to "Sauv. Fl. Cub. No. 2368," both as *nomem nudum*. However, the name that Beccari (1907) suggested is not considered attributed to Wendland because it does not refer to a valid publication; thus, it should not be associated with the name of the new validly published taxon according to note 4 of article 46.3 of the Code. Therefore, the accepted name is *Copernicia macroglossa* Becc.

León (1931,) in turn, created new confusion when, from his collection *León 14297*, he described the new species *Copernicia torreana*, which lacked a petiole. He related this new species to "*Copernicia macroglossa* H. Wendl. ex Becc., in Webbia 2: 177, 1907 (ex parte)" while he also related the other species, which had a petiole, as "*Copernicia macroglossa* H. Wendl. ex Becc., in Webbia 2: 177, 1907 (ex parte), emend." I make this correction later.

León and Burret at LS and B

Wright collected two different *Copernicia* taxa from the same location and on the same date, which Beccari (1907) used in the description of *Copernicia macroglossa*. Due to the confusion created, León (1931) related Wright's collection two different species, depending on the presence or absence of petioles.

Burret sent two photographs and fragments of *Wright 3969* with the name *Copernicia macroglossa* Griseb. et Wendl. at B to León at LS (the latter now included in HAC). The two photographs and fragments are mounted on the same herbarium sheet at HAC (**Fig. 3**). The photo of *Wright 3969* is at the bottom left and the original B label, written in Wendland's hand, covers an envelope with fragments just above it with the number "4536" from HAC just to the right of the envelope. The two rachilla fragments are identified in ink in Burret's hand with "X_2" (upper)



4. (L) Lectotype of *Copernicia macroglossa*, fragments of *Wright 3969* from B now at HAC (4536). **5.** (R) Lectotype of *Copernicia macroglossa*, photo of *Wright 3969* from B now at HAC (4536). (L. Regalado).

and "X_1" (lower) (**Fig. 4**). Two portions of inflorescences are identified in ink in Burret's hand with"X_1" (left) and "X_2" (right) as well as the label from B and another label written and signed by Beccari in 1907 when he designated the type "*Copernicia macroglossa* Gr. et W." (**Fig. 5**). Also, in Figure 3 and written in pencil in León's hand below the "X_2," are the words "Cop. Torreana León."

Taxonomic Treatment of Both Taxa

Copernicia macroglossa Becc., Webbia 2: I77. 1907.

Type. CUBA. [Sancti Spíritus province, Trinidad municipality], "*Potrero Manatí*," 19 Mar. 1867, *Wright 3969b, p. p., emend. Moya* (lectotype, [first-step]: Dahlgren 1936: 129, A, [second-step], designated here, HAC 4536 [frag. ex B!], HAC [photo of B!]; isolectotypes: A 00028328, BRU 00054980, F 0092049.1, F 0092049.2, F 279245 [photo of A, n.v.], F 279246 [photo of GH, n.v.], FI ex B [draw., n.v.], GH 00028325, GH 00028326, GH 00028327, GH 00028329, HAC ex HABA!, K 000209133, K 000209134, K 000462348, NY 00071177, NY 1662386, NY 1662387, P 00725593, P 00725594, P 00725595).

Syntypes: CUBA. La Habana province, Guanabacoa municipality: Guanabacoa, Jata, La Havanne, 1829, *Sagra 101* (BR, F 248567 [photo of G], F, FI [n.v.], G, HAC [**Fig. 3**, R-below, photo of B! and frag. ex G-DC in B!], P×2). Cienfuegos province and municipality: Calicita RR, 13 Jul. 1895, *Combs 335* (B [dest.], FI ex B [n.v.], GH [n.v.], K [n.v.], MO [n.v.], NY).

Beccari (1907) in the protologue of *Copernicia macroglossa* did not indicate any type. For the description he used different specimens, *Wright 3969* at B, *Combs 335* at B, and *Sagra s.n.* at G, creating syntypes, according to article 9.6 of the Code. He also ascribed to Wendland the name *Copernicia macroglossa*, without considering that it was a *nomen nudum* in both Sauvalle (1871) and Kerchove (1875).

Based on articles 7.2 and 9.19(a) of the Code, it is accepted that the original material of *Wright 3969* at B, which Beccari associated and had available for description, no longer exists, as explained earlier; however, fragments (rachillae) were found at HAC, where they are identified with the correct name of the taxon, and these rachillae fragments document and establish the species as the lectotype.

Based on articles 9.2, 9.11 and recommendation 47A.1 of the Code, knowing that there is no conflict with the protologue, the collection number in the case of *Copernicia macroglossa* becomes "*Wright 3969b p. p*., emend. Moya" because Dahlgren and Glassman (1958) had already added an "a" to the type when naming *C. leoniana*.

Dahlgren (1936) cited *Wright 3969* as the type, without defining the herbaria where the specimens were deposited; here I consider it as the lectotype. Dahlgren and Glassman (1963) noting that the holotype at B was destroyed, cited *Wright 3969* "pro parte" at A as the type. Here, I replace the type that Dahlgren (1936) had designated with the lectotype designation for the fragments (HAC4536 ex B) of the original material: the "X_1" (**Fig. 4**) and the photograph (HAC of B) of the nomenclatural type: the "X_1" (**Fig. 5**) that Beccari used for the description of *C. macroglossa*. Both are deposited at HAC and are representative of the taxon; thus, I designate as isolectotypes the 19 duplicates at A, BRU, F, FI, GH, HAC, K, NY, and P.

= *Copernicia torreana* León, Revista Soc. Geogr. Cuba 4: 40. 1931.

Type. CUBA. [La Habana province, Guanabacoa municipality], "*Loma de la Jata, Guanabacoa, Habana,*" 30 Mar. 1930, *León 14297* (lectotype, [first-step]: Dahlgren 1936: 131, [second-step]: designated here, HAC ex LS 4701!; isolectotypes: A 00028336, A 00028337 ex PC, F 0092058.1 ex LS4697, F 0092058.2 ex LS, F 0092058.3 ex LS, F 0092062 ex LS 4700, HAC ex LS 4698!, HAC ex LS.1!, HAC ex LS.2!, MT 00116902.1, MT 00116902.2, NY 1662384 ex PC, P 00725606 ex PC, P 00725607, P 00725608, SR 1239 ex PC, US 00087483 ex LS, US 00087484, US 00087485 ex LS, US 00087486 ex LS).

Paratypes. CUBA. Cienfuegos province and municipality: Calicita, 13 Jul. 1895, *Combs 335* (B [dest.], FI ex B [n.v.], GH [n.v.], K [n.v.], MO [n.v.], NY); municipality Abreus: Antón Recio, *León 14282* (n.v.), 23 Dec. 1930, *León 14732* (HAC×2!, US×2 [n.v.]). La Habana province, Guanabacoa municipality: Feb. 1909, *Baker 2928* (HAC ex ECA!, FI ex ECA [n.v.]); Cuabal de Salomón, Minas, 23 Dec. 1932, *León 14252* (HAC!, BH [n.v.]), Jata Hills Guanabacoa, 1 May 1914, *Ekman 568* (S×2, G [n.v.]); 7 Dec. 1921, *Ekman 13548* (NY×2, S×2). Mayabeque province, Batabanó municipality: Batabanó, 12 Feb. 1931, *León 14789* (HAC×3!, NY×2); Madruga municipality: Madruga, 26 Mar. 1903, *Britton 722* (HAX×2, NY×3); cuabales Madruga, 4 Jan. 1930, *León 14277* (HAC×2); Santa Cruz del Norte municipality: Canasí, *Roig 4642* (n.v.). Villa Clara province, Sagua la Grande municipality: Motembo, 28 Jun. 1923, *Ekman 16848* (S); Sagua la Grande, *León 14217* (n.v.), *León 14222* (n.v.).

León (1931) designated *León 14297* as the type of *Copernicia torreana*. In doing so, he referred to a complete collection, thus creating syntypes, but did not note the herbaria where the specimens were deposited. Dahlgren (1936) and Glassman (1972) did the same, but the latter cited as the type all duplicates of *León 14297* at LS. Here I consider the designation of Dahlgren (1936) as lectotypes [first-step], designate "HAC ex LS4701," as the lectotype [second-step], and designate as isolectotypes the 19 duplicates at A, F, HAC, MT, NY, and US.

Chronology of the distribution of *Copernicia macroglossa*

Beccari (1907) noted the first collection that can be referenced to the distribution of *Copernicia macroglossa* was *Sagra 101* in 1829 from La Jata, Guanabacoa municipality, Havana province. The second was *Wright 3969b*, in 1867 from "potrero Manatí," Trinidad municipality, Sancti Spíritus province.

The third collection was *Combs 335*, in 1895, from Calicita, Cienfuegos municipality, Cienfuegos province, published in Combs (1897) that Dahlgren and Glassman (1963) identified as such. The

6. Naturalized *Copernicia macroglossa* on the beach at El Salado, Caimito municipality, Artemisa province, 6 March 2015, *Serie Moya 1505*. (C. Moya).

fourth was *Britton 722* (NY), in 1903, from "Cuabales" of Madruga, Madruga municipality, Mayabeque province, published in Britton (1903). The fifth was *Ekman 16848* (S), in 1923, from Motembo, Corralillo municipality, Villa Clara province that Burret (1929) recognized as *C. macroglossa* Becc.

The sixth collection was *León 14730*, in 1930, from Antón Recio, Abreus municipality, Cienfuegos province, which León (1931) used as the type when he described *Copernicia torreana*.

León 14789 expanded the distribution to Batabanó, Batabanó municipality and *Roig 4642* to Canasí, Santa Cruz del Norte municipality, both in Mayabeque province. León (1936) noted *Copernicia macroglossa* occurred in Yaguajay municipality of Sancti Spíritus province and Sagua la Grande and Santo Domingo municipalities of Villa Clara province. Dahlgren and Glassman (1963) noted several collections that extended the distribution to the municipality and province of Camagüey.

Moya et al. (1989) reported *Copernicia macroglossa* in La Sierpe muncipality, Sancti Spíritus province. Here, based on a review of herbarium material, expand its distribution further to include Florida municipality, Camaguey province and Matanzas municipality and province. Also,

7. *Copernicia macroglossa*, type locality at Finca Manatí, vaquería # 13, Trinidad municipality, Sancti Spíritus province, 13 March 2016, *Serie Moya 1602*. (C. Moya).

I provide new reports for the municipalities Rodas, La Habana del Este, and Caimito from the provinces Cienfuegos, La Habana, and Artemisa, respectively, which I recently visited. Ramona Oviedo (pers. comm., 13 February 2019) reported *Copernicia macroglossa* in wetlands of southern of Melena del Sur municipality, and Morales and Montero (2020) reported it growing at El Alfiletero in the La Coca Ecological Reserve in Jaruco municipality, both in Mayabeque province.

***Copernicia macroglossa* escaped from cultivation (*).**

Here I report for the first time naturalized *Copernicia macroglossa*. I observed it on March 6, 2015 on the beach at El Salado, Caimito municipality, Artemisa province, which I document it as *Serie Moya 1505* (**Fig. 6**). The palms were planted in the early 1960s when a site for recreational camping was established. They are about 60 years old (Rosalina Berazaín, pers. comm., September 28, 2020), have seeded freely, and multiple life stages and generations are present.

8. *Copernicia macroglossa* near Cartagena, Cienfuegos province. Behind are *Sabal maritima* (L) and *Copernicia hospita* (R). 27 March 2017. (D. R. Hodel).

Moya field observations. CUBA. [1985-2000]. **Sancti Spíritus** province. La Sierpe municipality: Estero Las Guásimas, 1 Feb. 1994; Los Galleguitos, 1986; Laguna Colorada, 1985-1999; Peralejo, 1999. Trinidad municipality, Laguna La Chorrera, 1996; Casilda-Ancón, 1 Sep. 1999. [Post 2014]. **Artemisa** province. **Caimito** municipality: El Salado beach (*), 6 Mar. 2015, *Serie Moya 1505*. **Camagüey** province. Florida municipality: entronque Urabo, 1 Nov. 2016, *Serie Moya 1639*. **Cienfuegos** province. Rodas municipality: Muelas Quietas, 24 May 2014, *Serie Moya 1404*; Sin Nombre, 24 May 2014, *Serie Moya 1408*. Abreus municipaility: W Antón Recio, 1 Jun. 2014, *Serie Moya 1428*. **La Habana** province. Guanabao municipality: La Jata, 4 Mar. 2015, *Serie Moya 1501*; Cuabal sur Minas, 4 Mar. 2015, *Serie Moya 1502*; Habana del Este municipality, SE El Trébol, 28 Jan. 2019, *Serie Moya 1955*. **Matanzas** province. Matanzas municipality: Tres Ceibas, 20 Jan. 2019, *Serie Moya 1908*. **Sancti Spíritus** province. Trinidad municipality: sabanas entrada Casilda, 25 May 2014, *Serie Moya 1413, 1414*; finca Manatí, vaquería # 13, 13 Mar. 2016, *Serie Moya 1602* (type locality) (**Fig. 7**).

Geographical Distribution. CUBA. Provinces Artemisa* (Caimito[A]), Camagüey (Camagüey[H], Florida[H]), Cienfuegos (**Fig. 8**) (Abreus[H], Cienfuegos[H], Rodas[A]), La Habana (Guanabacoa[H], La

Habana del Este[A]), Matanzas (Matanzas[H]), Mayabeque (Batabanó[H], Jaruco[R], Madruga[H], Melena del Sur[P], Santa Cruz del Norte[H]), Sancti Spíritus (La Sierpe[R], Trinidad[H], Yaguajay[R]) and Villa Clara (Corralillo[H], Sagua la Grande[H], Santo Domingo[R]). (**Fig. 8**).

Biogeographical Distribution. CUBA province, Western Cuba subprovince: sector Peninsularicum (Zapatense[H]). Central Cuba subprovince: sectors Havanicum (Casildense[H], Havanense[H], Jarucoënse[H], Güinense[P]) and Camagüeyacum (Camagüeyense[H], Claraënse[H] and Sagüense[H]).

Copernicia × escarzana León, Revista Soc. Geogr. Cuba 4: 42. 1931. (*C. hospita* × *C. macroglossa*).

Type. CUBA. [Sancti Spíritus province, Trinidad municipality], "*cerca de la bahía de Macío al sudeste de Trinidad*," 27 Jun. 1931, *León 14921* (lectotype, [first-step]: Dahlgren and Glassman 1963: 145; [second-step]: designated here, HAC ex LS 4574!; isolectotypes: BH 000038951.1, BH 000038951.2, F 279233 [of NY, n.v.], F 279234 [of NY, n.v.], HAC ex Roig 5873, MT 00116888, NY 00071157, NY 00071158, NY 00071159, P 00725584).

Syntype. CUBA. Cienfuegos province, Abreus municipality, sabana de palmas de Antón Recio, 31 Jan. 1931, *León 14607* (F×2, FTG, NY, US).

León (1931) described *Copernicia × escarzana* as a hybrid between *C. hospita* and *C. macroglossa*, the first hybrid reported for *Copernicia* and also for Cuban palms (**Fig. 2**). Five years later, León (1936) overlooked *C. × escarzana* and erroneously published a new binomial for the taxon, *C. burretiana*, based on the illegitimate name *C. macroglossa* of León. Dahlgren and Glassman (1958) considered *C. burretiana* invalid and described *Copernicia leoniana* to replace it. Years later, Dahlgren and Glassman (1963) returned to the binomial *C. burretiana*, stating its probable hybrid origin and considered *C. leoniana* as its synonym while erroneously making *C. × escarzana* a synonym of *C. hospita*. Two decades later, Muñiz and Borhidi (1982) erroneously reestablished the hybrid *C. × burretiana* as the accepted name. Moya et al. (2019) recognized and validated the priority of *C. × escarzana*.

In the prologue of the *Copernicia × escarzana*, León (1931) cited two collections used in the description, *León 14607* and *León 14921*, thus creating syntypes, without identifying the herbaria where the specimens were deposited. Dahlgren (1936) cited the duplicates of *León 14607* as types but Dahlgren and Glassman (1963) found that the inflorescence of *Leon 14607* at LS bears the number 16379 in ink. Because of this apparent mix-up of numbers, they had designated *Leon 14921* as the new type, which also created syntypes because they cited all duplicates of this collection as types. Here, I consider the designation of Dahlgren and Glassman (1963) as lectotype

[first-step], and designate HAC ex LS 4574 as a lectotype [second-step] and the 10 duplicates distributed among BH, F, HAC, MT, NY and P as isolectotypes.

On the specimen at P, P725584, León wrote on the label “No. 14607” but he also wrote “cotipo,” the locality “Pres la Baie de Macío,” and the date “June 27, 1931,”which correspond to the type *León 14921*.

= *Copernicia × burretiana* León, Mem. Soc. Cub. Hist. Nat. ''Felipe Poey'' 10: 208. 1936.

≡ *C. macroglossa* Becc. p. p., emend., Revista Soc. Geogr. Cuba 4: 41. 1931, replaced synonym.

Type. CUBA. [Cienfuegos province, Abreus municipality], “*sabanas de palmas de Antón Recio* (*Sta. Clara*),” fl., ft., Dec. 1930, *León and Pérez 14730*, (lectotype, [first-step]: Dahlgren and Glassman 1963: 84, LS, [second-step]: designated here, HAC ex LS.1!; isolectotypes: BH 000038100 ex LS], FTG [photo of US 87491], HAC ex LS 4534!, HAC ex LS.2!, HAC ex EEAB!, HAC ex Roig 5427!, HAC ex PC 4538!, US 00087491 ex LS).

León (1936) published *Copernicia burretiana* as an explicit substitute (*nom. nov.*) for *C. macroglossa* Becc. p. p., emend. (Beccari 1931) because the latter name is an illegitimate later homonym of *C*. *macroglossa* Becc. (Becccari 1907) and the epithet *macroglossa* was unavailable in *Copernicia.* According to article 6.11 of the Code, León had created a replacement name (*nov. nom.*).

According to article 7.4 of the Code, a replacement name is typified by the type of the replaced name, in this case *León 14730* that León (1936) indirectly recognized as a type of *Copernicia burretiana*, which, according to the article 10.3 of the Code, makes it a validly published name when he wrote "the species represented by my number 14730,..., previously referred to C. macroglossa, I am pleased to name it in honor of Dr. Max Burret . . .” However, according to article 9.4 of the Code, the paratypes that León (1931) cited are not considered original material.

León (1936) designated *León 14730* as the type of *Copernicia × burretiana*. In doing so, he referred to a complete collection, thus creating syntypes, without noting the herbaria where the specimens were deposited. Dahlgren and Glassman (1963) did the same by citing all duplicates of *León 14730* at LS as type material; here I consider it as lectotype [first-step] and designate HAC ex LS.1 as the lectotype [second-step] and the eight duplicates at BH, FTG, HAC and US and as isolectotypes.

= *Copernicia × leoniana* Dahlgren & Glassman, Principes 2: 103. 1958.

Type. CUBA. [Provincia Sancti Spíritus province, Trinidad municipality], "Potrero Manatí," Trinidad, [19 Mar. 1867], fl., ft., *Wright 3969a p. p., emend. Dahlgren & Glassman* (holotype, specified here, A 00028320, A 00028323; isotypes: BR U00054979, F 0092050.1, F 0092050.2, F 0092050.3, F 0092050.4, GH 00028321, GH 00028322, GH 00028324, HAC 4535 [frag. ex B!], HAC [photo of B!], K 000209135, K 000209136, K 000209137, NY 00071175, NY 00071178, NY 1662385, NY 1662390, NY 1662391, P 00725596, P 00725597, US 00016510, US 00989863).

Paratypes. CUBA. Camagüey province and municipality: N Cromo, 8 Feb. 1949, *Dahlgren and Cutler 49/041* (F); finca Santa Rosa, 1 Apr. 1950, *Dahlgren 50/016* (F); Sabana de Juan Grande, 7 Feb. 1952, Dalhgren and G. Moore 52/028 (F); finca Carbonera, 24 Jan. 1953, *Dahlgren 53/003* (F [n.v.], *Dahlgren 53/004* (F [n.v.]), *Dahlgren 53/005* (F [n.v.]); Florida municipality: W Caobillas, 3 Mar. 1954, *Dahlgren 54/010* (F]). Cienfuegos province, Abreus municipality: Florecita, N Antón Recio, 23 Jan. 1949, Dahlgren and Cutler 49/017 (F). Sancti Spíritus province, Trinidad municipality: near Macio Bay, Casilda, 27 Jan. 1931, *León 14922* (A, BH, MT, NY×2, P); 2 Feb. 1949, Dahlgren and Cutler 49/069 (F); finca Molina, Trinidad, 1 Mar. 1951, Dahlgren and Macbride 51/052 (F).

Dahlgren and Glassman (1958) designated *Wright 3969a* as the holotype of *Copernicia leoniana* when they wrote, "TYPE, A-2 sheets . . . ," and here the barcode of each one is specified. Also, here for the first time, the isotypes present in HAC are identified, cited, and illustrated (**Fig. 3**, above).

Dahlgren and Glassman (1963), seeing that the material distributed as *Wright 3969* included two valid taxa from the same locality, decided to modify the type of *Copernicia leoniana* as *Wright 3969a*, which is considered an amendment according to recommendation 47A.1 of the Code. Based on article 9.2 of the Code, a letter is added to differentiate the two types of *Wright 3969*; therefore, the collection number in the case of *C. leoniana* becomes *Wright 3969a* p. p., emend. Dahlgren & Glassman.

Moya field observations. CUBA. [1985-2000]. Camagüey province, Florida municipality: N Florida, 1996. Cienfuegos province, Abreus municipality: finca Antón Recio, 14 Sep. 1997. Sancti Spíritus province, Trinidad municipality: N Casilda, 1996. [Post 2014]. Cienfuegos province, Abreus municipality: W Antón Recio, 1 Apr. 2014, *Serie Moya 1430*. Matanzas province and municipality: Tres Ceibas, 20 Jan. 2019, *Serie Moya 1906, 1907*.

Geographical Distribution. CUBA. Provinces Matanzas (Los Arabos[P] and Matanzas[H]), Cienfuegos (Abreus[H] and Cienfuegos[H]), Sancti Spíritus (Trinidad[H] and Yaguajay[H]), Ciego de Ávila (Chambas[H]), and Camagüey (Camagüey[H], Céspedes[H] and Florida[H]).

Biogeographical Distribution. CUBA province, Central Cuba subprovince: sectors Havanicum (Jarucoënse[H], Güinense[P] y Casildense[H]) and Camagüeyacum (Claraënse[H] y Camagüeyense[H]).

Excluded Names:

"*Copernicia maritima*" (Kunth) Mart., in Martius, Hist. Nat. Palms, 3: 319. 1838, incorrect author citation.

"*Copernicia macroglossa*" Griseb. & H. Wendl. in Sauvalle, Anales Acad. Ci. Med. Habana, 8: 562. 1871, *nom. nud.*

"*Copernicia macroglossa*" Griseb. & H. Wendl. in Sauvalle, Fl. Cub. (Sauvalle): 152. 1873, later isonym without nomenclatural status.

"*Copernicia macroglossa*" Schaedtler, in Otto, Hamburger Garten- Blumenzeitung 31: 160. 1875, *nom. nud*.

"*Copernicia macroglossa*" H. Wendl., in Kerch. 1878. Palm 241, *nom. nud*.

"*Copernicia macroglossa*" (H. Wendl. in Kerch.) Becc., in Beccari, Webbia 2: 203. 1907, incorrect author citation.

"*Copernicia macroglossa*" H. Wendl. ex Becc., in León, Revista Soc. Geogr. Cuba 4: 40. 1931, incorrect author citation.

"*Copernicia macroglossa*" (H. Wendl. in Kerch.) ex Becc., in Dahlgren, Publ. Field Mus. Nat. Hist., Bot. Ser. 14: 9. 1936, incorrect author citation.

"*Copernicia × escarzana*" León, Revista Soc. Geogr. Cuba 4: 42. 1931, incorrect citation as a synonym for *Copernicia hospita*.

"*Copernicia escarzana*" León, in Revista Soc. Geogr. Cuba 4: 42. 1931, incorrect citation as a synonym for *Copernicia hospita*.

'*Copernicia escurzana'* León, incorrect spelling.

"*Copernicia burretiana*" León, in Mem. Soc. Cub. Hist. Nat. ''Felipe Poey'' 10: 208. 1936, incorrect author citation, it is hybrid.

"*Copernicia leoniana*" Dahlgren and Glassman, in Principes 2: 103. 1958, incorrect author citation, it is hybrid.

"*Copernicia ×burretiana*" (León) O. Muñiz & Borhidi, in Acta Bot. Acad. Sci. Hung. 28: 333. 1982, incorrect author citation.

"*Copernicia ×burretiana*" O. Muñiz & Borhidi, incorrect author citation.

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