

## A Nomenclatural Conspectus Of *Waltheria* L. (Malvaceae, Byttnerioideae) In Brazil

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### Abstract

Saunders, J. G. & L. J. Dorr. 2022. A nomenclatural conspectus of *Waltheria* (Malvaceae, Byttnerioideae) in Brazil. *Darwiniana*, nueva serie 10(1): 5-28. A nomenclatural conspectus is presented for the species of *Waltheria* (Malvaceae: Byttnerioideae) that occur in Brazil. Synonymies for 33 species, 23 endemic, are presented. Seven names are newly synonymized. In addition, eight excluded or unresolved names are discussed. Thirty-nine lectotypes are designated for *Waltheria* names, one neotype is designated for the name of an *Astropus* species, and two lectotypes for *Visenia*. These last two lectotypifications supersede previous ones, which misinterpreted and confused the original material. *Waltheria erioclada*, generally treated as a synonym of *W. indica*, is considered here to be a distinct species, and *W. martii*, also generally treated as a synonym of *W. indica*, is accepted here as the correct name for *W. albicans*.

**Keywords:** *Astropus*, Brazil, lectotypes, Malvaceae, neotype, types, *Visenia*, *Waltheria*.

### Resumen

Saunders, J. G. & L. J. Dorr. 2022. Un resumen nomenclatural de *Waltheria* (Malvaceae: Byttnerioideae) en Brasil. *Darwiniana*, nueva serie 10(1): 5-28. Se provee una revisión general de la nomenclatura de las especies de *Waltheria* (Malvaceae, Byttnerioideae) que se encuentran en Brasil. Se presentan las sinonimias de 33 especies, de las cuales 23 son endémicas. Siete nombres han sido sinonimizados. Además, se analizan ocho nombres excluidos o no resueltos. Se designan 39 lectotipos para nombres de *Waltheria*, un neotipo es designado para el nombre de una especie de *Astropus* y dos lectotipos para *Visenia*. Estas dos últimas lectotipificaciones reemplazan a anteriores que malinterpretaron y confundieron el material original. *Waltheria erioclada*, generalmente tratada como sinónimo de *W. indica*, se considera como una especie distinta, y *W. martii*, también tratada

generalmente como sinónimo de *W. indica*, se acepta aquí como el nombre correcto para *W. albicans*.

**Palabras clave:** *Astropus*, Brasil, lectotipos, Malvaceae, neotipo, tipos, *Visenia*, *Waltheria*.

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## Introduction

*Waltheria* L. (Malvaceae, Byttnerioideae) is a genus of 63 species found in the subtropics and tropics. It is best represented in the New World where there are 56 exclusively American species. Another six species occur in the Old World (Africa, Madagascar, Pacific Islands, Asia, and Australia) and one variable species is found worldwide (Saunders, 2011, 2021; Coutinho & Alves, 2019; Coutinho et al., 2020a, 2020b). Centers of diversity include Mexico (see Villaseñor, 2016) and Brazil (see Coutinho et al., 2020b; Saunders, 2021). Thirty-three species are recognized here as occurring in Brazil, of which 23 are endemic and one might represent an introduction from Mexico and Central America or northern South America.

The first account of the Brazilian species of *Waltheria* was published by St.-Hilaire (1825), who recognized 11 species of which nine were described as new. Revisiting this work, St.-Hilaire & Naudin (1842) placed one of these 11 species in synonymy and described three new species, recognizing 13 species of *Waltheria* in Brazil. Almost all of this work was based on collections made by St.-Hilaire in Brazil, and species of *Waltheria* described by other authors were overlooked or ignored, except for two species that are now referred to *W. indica* L. Vellozo (1829, 1831) published four species of *Waltheria*, *W. capitata* Vell., *W. monogynia* Vell., *W. pentagynia* Vell., and *W. terminalis* Vell., all occurring in Brazil. He was active before St.-Hilaire but his *Floræ fluminensis* was published later and posthumously. The material on which Vellozo based his flora was deposited in the “Natural History Cabinet of Rio de Janeiro” and little of it has been traced (Stafleu & Cowan, 1986), none pertaining to *Waltheria*. There are, however, original pen and ink drawings in the Biblioteca Nacional do Brasil, Rio de Janeiro ([http://objdigital.bn.br/acervo\\_digital/div\\_manuscritos/mss1198656/mss1198656.htm](http://objdigital.bn.br/acervo_digital/div_manuscritos/mss1198656/mss1198656.htm)), but descriptions, drawings, and plates are insufficiently informative for three of the four species of *Waltheria* described by Vellozo. Formal proposals will be made separately to reject the names of three of these species, which have the potential to displace well-established names or epithets. The fourth

species is referred to *Turnera cuneiformis* Juss. ex Poir. (Passifloraceae). Colla (1833) described two species of *Waltheria*, *W. martii* Colla and *W. urticifolia* Colla, from Brazil. He also described three species of *Visenia* Houtt. (= *Melochia* L.), *V. ferruginea* Colla, *V. scabra* Colla, and *V. spicata* Colla, from Brazil whose identities have been problematic until recently. Of these three we consider one to be a species of *Waltheria*, one a species of *Turnera* L., and one a species of *Malvastrum* A. Gray (Malvaceae).

Turczaninow (1858, 1863) published four new species of *Waltheria* from Brazil in his *Animadversiones*, three of them are recognized here and one is placed in synonymy. In addition, two other species of *Waltheria* that he described from other American countries are considered here to be synonyms of *Waltheria* species found in Brazil.

Schumann (1886) was the first to revise the Brazilian species of *Waltheria*. He recognized 26 species (34 taxa), including nine newly described species. He underscored the variability of *W. communis* A. St.-Hil. by proposing seven varieties, none of which are recognized here. He also proposed a new variety of *W. americana* L. (= *W. indica*) based on *W. elliptica* Cav., a species that had been recognized by St. Hilaire (1825), but similarly not recognized here. Schumann worked principally with specimens that were available to him in Berlin (B), many if not all of which were destroyed during WWII.

Saunders (1995b) revised the genus *Waltheria* worldwide, except for taxa belonging to the highly variable and widespread *W. indica* alliance. Her revision, however, was a doctoral thesis and it does not constitute effective publication under the ICN (Turland et al., 2018; Art. 30.9), which has implications for the new species and typifications she proposed in that work. She contributed treatments of *Waltheria* to several regional Brazilian floras (Saunders, 1995a, 1998, 2006; Amorim et al., 2009) and described five species endemic to Brazil (Saunders, 2021). Her *Waltheria* publications otherwise have focused on taxa found in North America (Saunders, 2015), Mexico and Central America (Saunders, 1988, 1993; Saunders & Pozner, 2007), extra-Brazilian South America (Saunders, 2005a, b, c, 2007), and Hawaii (Saunders, 2011).

Four novelties in Brazilian *Waltheria* were published by Coutinho & Alves (2019, 2020) and Coutinho et al. (2020a). The last paper borrowed heavily from Saunders (1995b) and the authors validated two species she had recognized but not validly published. Coutinho et al. (2019) also reported the presence in Brazil of one additional adventive species that is more commonly found in Mexico and Central America, and occasionally in Colombia.

## Materials And Methods

The first author of this contribution began her studies of *Waltheria* in 1984 and has examined material from the following herbaria: A, ARIZ, B, BBS, BH, BHCB, BKL, BM, BR, C, CAS, CAY, CEPEC, CTES, CW (deposited in KW), CWU (deposited in KW), DAV, DNA, E, F, FCQ, FTG, G, GH, GUA, HAL, HB, HBG, HUEFS, INPA, JE, K, KW, LE, LIL, LL, LPB, M, MA, MBM, MEXU, MICH, MO, MSC, MVM, NY, P, PR, PY, R, RB, RBR, S, SI, SING, SP, SPF, TEX, TI, U, UB, UCR, UFMT, UPGB, UPS, US, USF, W, and WIS. In addition to these herbaria, the second author examined material in Naturalis (L and U). Herbarium acronyms follow Thiers (2021). In preparing the following conspectus, all relevant protologues were reviewed and observations of physical specimens were supplemented with online images.

St.-Hilaire (1825) first published his observations on Brazilian *Waltheria* in his *Flora Brasiliae meridionalis*, which was issued in quarto and folio editions (Stafleu & Cowan, 1983: no. 10.034). The former is the edition typically cited in nomenclatural databases. However, the paging but not the text of the two versions differs and the folio alone has colored plates. While there are more or less precise publication dates for the quarto edition, no similar analysis is available for the folio one. We cite the paging for both editions, but in the absence of other evidence assume the quarto edition has priority. St.-Hilaire almost exclusively based his new species on his own collections now in Paris (P). We consulted Dwyer (1955) and Pignal et al. (2013) to glean more precise dates and localities for St.-Hilaire collections that are not numbered in one sequential order, but repeat themselves numerically in several different notebooks, which H. A. Weddell serving as an aide-naturaliste in Paris (P) arbitrarily divided into four series (A-D).

Our interpretations of the species of *Waltheria* and *Visenia* from Brazil described by Colla (1833) were facilitated by the work of Moraes et al. (2013). The context they provided was helpful although we disagree with two of their lectotype designations, which we believe were based on misleading annotations (see below). Likewise, Mosyakin et al. (2019) emphasized the importance of consulting Kiev (KW) for Turczaninow types, especially for those species Turczaninow described in the *Animadversiones*. Information on the itineraries of other early collectors active in Brazil such as Blanchet, Gardner, Glaziou, Malme, Mosén, D'Orbigny, Pohl, Regnell, Riedel, Sellow (olim Sello), and Wied (olim Wied-Neuwied) can be found in Urban (1906).

In the following conspectus, the type localities given are taken from specimen labels or if they are within quotation marks, they were copied from the published protologue. Dates are those given on the holotype, lectotype or neotype label. If inferred they are in brackets or if unknown, they are given as “s.d.” (i.e., sine dato). Type material for which a collector has not been determined is indicated by “s.c.” (i.e., sine collector). The notation “F neg. no.” refers to the “Berlin Negatives” of the Field Museum, a unique type-photographic collection of European herbaria that J. Francis Macbride began assembling in 1929 (Grimé & Plowman, 1987). These photographic images frequently are the only records of

collections destroyed during WWII. These images, however, are not original material and cannot serve as lectotypes (Turland et al., 2018; Art. 9.3; see also Staples & Prado, 2018).

Information presented here on the distribution of taxa is based on specimens examined by us, many of these specimens listed in Saunders (1995b) but supplemented by more recent review of additional specimens in the herbaria listed above and, in some instances, images provided by REFLOA Virtual Herbarium (2021) or data in Coutinho et al. (2020b). We made no attempt to verify all the state records in these last two resources: geographical distribution of *Waltheria* in Brazil is secondary to our main goal of presenting a nomenclatural conspectus.

## Results

### *Waltheria ackermanniana*

K. Schum., Fl. Bras. [Martius] 12(3): 61. 1886 (as “*Ackermanniana*”). TYPE: Brazil, Rio de Janeiro, In collib. siccis R[io]. [de] Jan[eiro]., II-1831, *L. Riedel 63* (lectotype LE barcode 00006869!, designated here; isolectotypes E barcode 00012599!, F barcode F0073606F-fragment!, K barcode 000380973 as image! [as “s.n.”], LE barcode 00006868 as image!, P barcode 06627006, p. p.!, P barcode 06627007 as image!, W 1890-0003179!).

### Distribution

Endemic to Brazil (Bahia, Minas Gerais, Piauí, Rio de Janeiro). Coutinho & Alves (2020) also report this species from Pernambuco.

### Note

Schumann (1886) cited three syntypes for this name. One (*Sellow 1171*, B† [= F neg. no. 9563]) is apparently no longer extant. Another is known from a single specimen (*Ackermann 451*, BR barcode 0000005423972!). The third (*Riedel 63*) is comparatively well-represented in herbaria and a sheet (LE barcode 00006869!) annotated by the author of the name is designated here as the lectotype. One of

us (JGS) was able to dissect a flower on this sheet and can confirm that its floral characters (i.e., unequal pistil and stamen tube lengths, and oblong petals with distinct claws and undulate margins) agree with those given in the original description. The Riedel isoelectotype at Kew (K) does not have the collector's number, but almost certainly is a duplicate of the lectotype or isoelectotype now in Saint Petersburg (LE).

A Riedel specimen in Meise (BR barcode 0000005752942!) of *Psychotria stachyoides* Benth. (Rubiaceae) collected in Campinas, Brazil in 1825 is numbered "331" and the plant also has a ticket attached to it that reads simply "No 63." This latter might be a field number. Given the different localities and dates (and taxa), we doubt this collection would be confused with the type of *Waltheria ackermanniana*.

## **Waltheria biribiriensis**

J.G. Saunders ex T.S. Coutinho & Colli-Silva, Acta Bot. Bras. 34(2): 454, fig. 2. 2020. TYPE: Brazil, Minas Gerais, Diamantina, "estrada para Biribiri, c. 4 km para Biribiri," 18°10'13.3" S, 43°36'53.8" W, 950 m a.s.l, 23-I-2007, J. R. Pirani, M. F. A. Calió, B. P. F. Loeuille & E. G. Martins 5689 (holotype SPF 00179105; isotypes SP, UFP).

### **Distribution**

Endemic to Brazil (Minas Gerais).

### **Note**

When Saunders (1995b) first proposed this new species in her unpublished thesis, she tentatively designated a collection (*Saunders et al. 3167*) as the type of this name, but when Coutinho & Colli-Silva (Coutinho et al., 2020a) validated *Waltheria biribiriensis* they designated the collection cited above as type.

## **Waltheria brachypetala**

Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 215. 1858. TYPE: Brazil, Bahia, La serra Acurua [= Açuruá], [1838], *J. S. Blanchet 2744* (holotype KW barcode 001000120!; possible isotypes BR barcode 0000005934317!, BR barcode 0000005934621!, F barcode F0073608F!, G barcode 00358709!, GH barcode 00056999, p.p.!, HAL barcode 0145596, K barcode 000380987!, LE barcode 00006872!, MO barcode MO-279572!, P barcode 02273691!, W 0071715!, W 0118156 [Rchb.]!).

*Waltheria ferruginea* A. St.-Hil. var. *glabrescens* Glaz., Mém. Soc. Bot. France 1(3): 55. 1905 (as “n. var. ? *glabrescens*”), nom. nud.

### Distribution

Endemic to Brazil (Alagoas, Bahia, Ceará, Minas Gerais, Pernambuco, Piauí, Rio Grande do Norte). Coutinho et al. (2020a) also cite a record for Paraíba that we have not confirmed. Collections from Rio de Janeiro are either mislabeled or represent cultivated material. A number of other records in REFLOVA Virtual Herbarium (2021) appear to be misidentifications of other species allied to *Waltheria ferruginea* (see Saunders, 2021).

### Note

The locality on the holotype label is Serra do Açuruá, which is east of the Rio São Francisco and south of Xique-Xique, Bahia. None of the other duplicates of *Blanchet 2744* have this locality and most have some variation of “Utinga desertum ad fluv. S. Franc.” It is possible that the locality was miscopied on the holotype label, but this cannot be established now.

In the Gray Herbarium (GH) a duplicate of *Blanchet 2744* is mounted with a different collection (*Gardner 2057*) of *Waltheria brachypetala* from Piauí: the one sheet with two collections has a single barcode hence GH barcode 00056999, p.p.

### *Waltheria bracteosa*

A. St.-Hil. & Naudin, Ann. Sci. Nat., Bot., sér. 2, 18: 37. 1842. TYPE: Brazil, Goiás, “In Prov. Goyaz,” [II-1840], *G. Gardner 3607* (holotype G barcode 00358710 [Delessert]!; probable isotypes BM, E barcode 00012597!, F barcode F0073609F!, F barcode F0073610F!, G barcode 00358711 [de Candolle]!, G barcode 00358712

[Barbey-Boissier]!, GH barcode 00057000!, K barcode 000380968 as image!, KW!, NY barcode 00074074!, NY barcode 00074097!, P barcode 02273692!, P barcode 02273693 as image!, W 0008603!).

*Waltheria regnellii* K. Schum., Fl. Bras. [Martius] 12(3): 67. 1886 (as “*Regnellii*”), nom. inval.

*Waltheria regnellii* K. Schum. ex R.E. Fr., Kungl. Svenska Vetenskapsakad. Handl., n.f, 42(12): 15. 1908 (as “*Regnellii*”). TYPE: Brazil, Minas Gerais, Uberava, 18-XII-1848, A. F. Regnell III, 276 (lectotype S-R-7493!, designated here; isolectotypes BR barcode 0000005934560 as image!, F barcode F0073612F!, LE barcode 00006879!, S13-3107!, US barcode 00512654!; probable isolectotypes C barcode 10019402! [as “1848”], F barcode F0073611F! [as “1848”], NY barcode 00074075! [as “1848”], R! [as “1848”], S13-3106! [as “s.d.”], UPS-188850! [as “IV-1845 or XII-1848”], UPS-188965! [as “XII-1848”], US barcode 00479020! [as “s.d.”]).

## Distribution

Endemic to Brazil (Bahia, Goiás, Maranhão, Mato Grosso, Minas Gerais, Piauí, Tocantins).

## Note

In the protologue of *Waltheria bracteosa*, St.-Hilaire & Naudin (1842) wrote “In prov. Goyaz legit Gardner (3607). — Herb. Deless.” and because there is only a single sheet in the Delessert herbarium (G barcode 00358710) we consider it to be the holotype. The date (“1841”) on the label of the holotype appears to be incorrect since Gardner was not in Goyaz in 1841 according to Urban (1906: 24). Gardner’s numbers are species-distribution, not collection, numbers but the similarities in leaf shape among the duplicates suggest that *Gardner 3607* is, in fact, a single gathering and we therefore assume that the duplicates cited above are probably isotypes. Schumann (1886: 67) provisionally proposed (“ad interim salutata”) the name *Waltheria regnellii* (see Turland et al. 2018; Art. 36.1(a)), which was only validly published 22 years later. There are several date discrepancies among duplicates of *Regnell III, 276* (the type number of *W. regnellii*), which lead us to believe that Regnell specimens might also have species-distribution rather than collection numbers. Fryxell (2009) equally perplexed by date discrepancies on Regnell collections came to a similar conclusion and noted that he had been unable to discover a published account of the numbering system employed by Regnell. The



isoelectotypes listed above all have the same date as the lectotype. The “probable isoelectotypes” have dates similar to that of the lectotype or no date at all. One specimen with the type number, however, has a very different date (i.e., UPS-190278! [as “29-XI-1848”]) and we explicitly exclude it from the type of *W. regnellii* because the discordant date suggests that the material might not be part of a single gathering (see Turland et al., 2018; Art, 8.2). The specimen designated as lectotype (S-R-7493!) agrees best with the protologue, not only with respect to its label data but also leaf blade dimensions that coincide with the maximum measurements given in the original description.

## **Waltheria carpinifolia**

A. St.-Hil. & Naudin, Ann. Sci. Nat., Bot., sér. 2, 18: 38. 1842. TYPE: Brazil, São Paulo, “In campis prope Paulopolim,” s.d., *A. St.-Hilaire s.n.* (lectotype P barcode 02273694! [= F neg. no. 35392], designated here).

### **Distribution**

Endemic to Brazil (Minas Gerais, Paraná, Rio Grande do Sul, Santa Catarina, São Paulo).

### **Note**

The protologue cites only the locality we record above in quotation marks and does not explicitly give a collector’s name or number. The specimen designated here as lectotype was collected by one of the authors of *Waltheria carpinifolia* and it agrees with the published description, especially in having leaves slightly scabrous above and gray tomentose below. Furthermore, the lectotype was originally in the “herbarium Richard” (now P), which according to the protologue is one of several collections the authors consulted. No other original material is known to us.

## **Waltheria cinerescens**

A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 152. [16-XI] 1825; Ibid. [folio ed.] 1:

121. 1825. TYPE: Brazil, Minas Gerais, in sabuletis propé pagum Nossa Senhora da Penha (Minas Novas), [XII-1816– III-1818], *A. St.-Hilaire B1-1195* (lectotype P barcode 02273696 as image!, designated here; isolectotypes F barcode F0073614F-fragment!, MPU barcode 016437 as image!, P barcode 02273695! [= F neg. no. 35393], P barcode 02273697 as image!).

*Astropus tomentosus* Spreng., Neue Entd. Pflanzenk. 3: 64, 397. 1822, non *Waltheria tomentosa* (J.R. Forst. & G. Forst.) H. St. John, 1971. *Waltheria astropus* Spreng., Syst. Veg. 3(ed. 16): 31. 1826 (as “*Astropus*”), nom. illeg. superfl. TYPE: Brazil [as “Brasilia”], Sine loc., 1814-1831, *F. Sellow s.n.* (neotype HAL 0071529 [Schlechtendal]!, designated here), **syn. nov.**

*Waltheria lantanifolia* A. St.-Hil. & Naudin, Ann. Sci.Nat., Bot., sér. 2, 18: 38. 1842 (as “*lantanaefolia*”). TYPE: Brazil, In Brasiliâ australiori, s.d., s.c. (lectotype P 02273698!, designated here), **syn. nov.** *Waltheria cinerea* A. St.-Hil. ex K. Schum., Fl. Bras. [Martius] 12(3): 54. 1886, nom. nud.

## Distribution

Endemic to Brazil (Alagoas, Bahia, Minas Gerais, Sergipe).

## Note

The lectotype of *Waltheria cinerescens* was selected from among three syntypes in Paris (P) collected by St.-Hilaire, each one of which is labeled *W. cinerescens* and each one of which has the locality data as given in the original description. Two of these sheets include a reference to the St.-Hilaire notebook where the collection was recorded (i.e., “Catal. B<sup>1</sup>, N<sup>o</sup> 1195”). The specimen (P barcode 02273696 as image!) designated here as lectotype is the more ample of these two and best agrees with the original description by showing a few cordate leaf bases. The specific epithet often is cited incorrectly as “*cinerascens*.”

No original material of *Astropus tomentosus* was located and therefore a neotype is designated here. *Astropus* Spreng. was described originally as a fourmerous plant, but its author later united the genus with *Waltheria* as *W. astropus* and as noted by Garcke (1890) thereby tacitly admitted his earlier error. Apart from the merosity error, the neotype agrees with the original protologue. Garcke (1890) speculated that Sprengel hesitated to transfer *A. tomentosa* to *Waltheria* because of the earlier *W. lophanthus* G. Forst. (= *W. tomentosa*), but nothing blocked Sprengel from making a combination and as a consequence *W. astropus* is an illegitimate superfluous name.

A fragment in the Field Museum (F barcode F0073623F!), which was received

from Paris (ex P barcode 06626945 as image! vel P barcode 06626947 as image!), is labeled “*Waltheria lantanaefolia* St. Hil. & N.” and “*Blanchet 1677.*” We do not consider this fragment to be type material of *W. lantanifolia* because the original description of this name does not cite a collector. Likewise, there is a Blanchet sheet in the Delessert herbarium (G-DEL [= F neg. no. 23850]) that has a ticket numbered “1677” and a printed label “Brésil (Bahia), M. Blanchet, 4<sup>e</sup> envoi, 1834” on which the name “*Waltheria lantanifolia*” and number “674” are written. This, too, cannot be linked to the original description. The specimen here considered to be the lectotype of *W. lantanifolia* has on its label the same locality as is given in the original description and the specimen also matches the morphological details presented.

## **Waltheria collina**

K. Schum., Fl. Bras. [Martius] 12(3): 63. 1886. TYPE: Brazil, Rio de Janeiro, [IX] 1831, *L. Riedel 64* (lectotype LE barcode 00003688!, designated here; isolectotypes F barcode F0073615F-fragment!, K barcode 000380972 as image! [as “s.n.”], P barcode 02273699!, P barcode 02273700 as image!).

## **Distribution**

Colombia, Venezuela, Brazil (Rio de Janeiro, São Paulo).

## **Note**

Schumann (1886) associated a single collection (*Riedel 64*) with this name without noting where it was deposited. He did, however, examine the specimen that was at Berlin (B; see F neg. no. 9565), but presumably later destroyed in WWII. The lectotype (LE barcode 0003688!) is the only syntype whose flowers were dissected by one of us (JGS), confirming that the abaxial face of the petals are glabrous along with other details in the original description. The Kew (K) specimen is certainly an isolectotype even though it lacks a collection number: in all likelihood the number was inadvertently omitted when duplicates were distributed by Saint Petersburg (LE).

## Waltheria communis

A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 155. [16-XI] 1825; Ibid. [folio ed.] 1: 123. 1825. TYPE: Brazil, Minas Gerais, “In campis herbidis provinciae Minas Geraes,” s.d., *A. St.-Hilaire s.n.* (lectotype P barcode 02273685 [as “602”] as image! [= F neg. no. 35394], designated here; isolectotypes F barcode F0073616F! [as “602”], G [= F neg. no. 23851], MPU barcode 016435 as image! [as “1954”], P barcode 02273684 [as “602”] as image!, P barcode 02273686 [as “602”]!, US barcode 00479024!).

*Waltheria douradinha* A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 153. [16-XI] 1825 (as “*Douradinha*”); Ibid. [folio ed.] 1: 122. 1825 (as “*Douradinha*”); Ibid., Pl. Usuel. Bras. 8: t. 36. [21-XII] 1825 (as “*Douradinha*”). TYPE: Brazil, [Rio Grande do Sul], in locis petrosis ad ripas fluminis Uruguay (Prov. Rio Grande do Sol & Missionum), [1820], *A. St. Hilaire C2-2495<sup>ter</sup>* (lectotype P barcode 02273676 as image!, designated here; isolectotype P barcode 02273675! [= F neg. no. 35395], P barcode 02273677 as image!).

*Waltheria glabriuscula* A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 155. [16-XI] 1825; Ibid. [folio ed.] 1: 123. 1825. *Waltheria communis* A. St.-Hil. var. *glabriuscula* (A. St.-Hil.) K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886. TYPE: Brazil, Rio de Janeiro, “in pascuis propé pagum Nossa Senhora da Penho haud longè à Paulopoli,” [1821-1822], *A. St.-Hilaire s.n.* [“673 d.”] (lectotype P barcode 02273674 as image! [= F neg. no. 35398], designated here; isolectotype P barcode 02273673!).

*Waltheria gracilis* A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 154. [16-XI] 1825; Ibid. [folio ed.] 1: 122. 1825. *Waltheria communis* A. St.-Hil. var. *gracilis* (A. St.-Hil.) K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886. TYPE: Brazil, Espírito Santo, “In apricis prope pagum Aldea velha,” [VIII–XI-1818], *A. St.-Hilaire B2-398* (lectotype P barcode 02273669!, designated here; isolectotypes MPU barcode 016432 as image!, P barcode 02273670 as image!, P barcode 02273671 as image!, P barcode 02273672 as image! [as “s.n.”]).

*Waltheria lanata* A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 154. [16-XI] 1825; Ibid. [folio ed.] 1: 122. 1825. *Waltheria communis* A. St.-Hil. var. *lanata* (A. St.-Hil.) K. Schum., Fl. Bras. [Martius] 12(3): 58. 1886. TYPE: Brazil, Minas Gerais, “In campis herbosis part. occid. prov. Minas Geraes quam vocant Certaó,” [XII-1816–III-1818], *A. St.-Hilaire B1-1727* (lectotype P barcode 02273687!, designated here; isolectotypes B† [= F neg. no. 9566], F barcode F0073622F!, G [= F neg. no. 23852], MPU barcode 016433 as image!, P barcode 02273688 as image!, P barcode 02273689 as image!, US barcode 00479027! [as “s.n.”]).

*Waltheria boliviensis* Turcz., Bull. Soc. Imp. Naturalistes Moscou 36(2): 571. 1863 (as “*Boliviensis*”). TYPE: Bolivia, Santa Cruz, Chiquitos, “prope Chiquitos,” 1850, *A. D’Orbigny 920* (lectotype G barcode 00358717! [= F neg. no. 23846], designated

here; isolectotypes P barcode 06626942 as image!, W-127587!, W-127589!).

*Waltheria communis* A. St.-Hil. var. *dietchii* K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886 (as “*Dietchii*”). TYPE: Brazil, Ad Gamellina [sic], s.d., *J. B. E. Pohl 1325* (lectotype K barcode 000380984!, designated here; isolectotypes K barcode 000380981!, W 0071716!, W 0071717!).

*Waltheria communis* A. St.-Hil. var. *henningsii* K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886 (as “*Henningsii*”). TYPE: Brazil, Sine loc., 15-XI-1828, *F. Sellow 5096* (lectotype K barcode 000380978!, designated here).

*Waltheria communis* A. St.-Hil. var. *platyphylla* K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886. TYPE: Brazil, Minas Gerais, Caldas, 30-X-1873, *H. Mosén 417* (lectotype S14-46290!, designated here; isolectotype S14-46288!).

*Waltheria communis* A. St.-Hil. var. *tomentella* K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886. TYPE: Brazil, Paraná, “S. Ignacio [= Santo Inácio] in Brasilia australis,” s.d., *F. Sellow 1438* (lectotype F barcode F0073617F!, designated here; possible isolectotype P barcode 02273679!).

*Waltheria communis* A. St.-Hil. var. *vulgaris* K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886. TYPE: Brazil, Bahia, Sine loc., s.d., *J. S. Blanchet 3664* (lectotype P barcode 02273681 as image!, designated here; isolectotypes BR barcode 0000013481919 as image!, K barcode 001213146!, LE, MO barcode MO-1475494!, P barcode 02273683!, P barcode 02273682 as image!, U barcode 1390347!, W 0070967!).

*Waltheria prostrata* K. Schum., Fl. Bras. [Martius] 12(3): 56. 1886. TYPE: Brazil, “Brasilia meridionalibus,” s.d., *F. Sellow 1060* (lectotype F barcode F0073629F!, designated here; isolectotypes LE barcode 00006878!, P barcode 02273678!).

*Waltheria vulgaris* A. St.-Hil. ex K. Schum., Fl. Bras. [Martius] 12(3): 59. 1886, nom. nud., pro syn.

*Waltheria communis* A. St.-Hil. var. *hirta* K. Schum. & Hassl., Bull. Herb. Boissier, sér. 2, 4: 73. 1903. TYPE: Paraguay, Cordillera, In valle fluminis Y-acá, in campsis pr. Chokoló, XII-1900, *E. Hassler 6747a* (lectotype G barcode 00381018!, designated here; isolectotype G barcode 00381061!).

*Waltheria communis* A. St.-Hil. var. *velutina* K. Schum. & Hassl., Bull. Herb. Boissier, sér. 2, 4: 73. 1903. TYPE: Paraguay, Cordillera, In valle fluminis Y-acá, in rupestribus pr. Piribebuy, XII-1900, *E. Hassler 6747b* (lectotype G barcode 00381062!, designated here).

*Waltheria communis* A. St.-Hil. var. *erosa* Buxb., Oesterr. Bot. Z. 73: 122. 1924. TYPE: Brazil, São Paulo, “In circuitu urbis Franca ad confines Prov. Minas Geraes,” 1902, *M. Wacket s.n.* (Not located).

*Waltheria communis* A. St.-Hil. var. *Paraibana* Monteiro, Rev. Agronomica (Rio de Janeiro) 12(3-4): 198, fig. 1954. TYPE: Brazil, Paraiba, “propre João Pessoa ad tabuleiros,” 24-I-1953, *H. Monteiro 4000* (holotype RBR barcode 00037633 as image!).

## Distribution

Bolivia, Brazil (Alagoas, Bahia, Distrito Federal, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio Grande do Sul, Santa Catarina, São Paulo), Paraguay, Uruguay, Argentina.

## Note

*Waltheria communis*, *W. glabriuscula*, *W. gracilis*, and *W. lanata* were published simultaneously. Schumann (1886: 58) was the first to combine them under *W. communis*, and accordingly this name has priority over the other names when they are considered to be synonyms (Turland et al., 2018; Art. 11.5, Ex. 22). *Waltheria douradinha* was also published at the same time as *W. communis* (and the other species enumerated above), but Schumann (1886: 67) recognized it as distinct albeit “incertae sedis.” Cristóbal & Klein (1983: 30) and Cristóbal (1998: 30) also considered *W. douradinha* and *W. communis* to be distinct. Saunders (1998: 280), however, first synonymized *W. douradinha* under *W. communis*.

The lectotype (P barcode 02273685!) of *Waltheria communis* has a label with locality data matching exactly that of the original description and an annotation (“†”) by the author of the name to indicate that he considered the specimen to represent a new species. The specimen also is ample and fertile. A St.-Hilaire specimen from Minas Gerais (SI barcode 000571!), ostensibly type material of *W. communis*, is excluded as type material because it has a locality (“Deserts de Minas”) different from that given in the original description.

The lectotype (P barcode 02273676 as image!) of *Waltheria douradinha* has St.-Hilaire’s field ticket and is annotated with the catalogue number assigned by Weddell. The isolectotypes lack field tickets. The label on the lectotype provides a locality that is almost verbatim the locality in the original description and it includes the species name published by St.-Hilaire, all written in his hand. The lectotype also agrees with the original description in having the stems ascending and inflorescence heads slightly pseudo-axillary.

The lectotype (P barcode 02273674 as image!) of *Waltheria glabriuscula* is the more ample of two syntypes in Paris (P). Its leaves better match the original description than those of the isolectotype. The lectotype label is annotated “Ne correspondent pas au n<sup>o</sup> 673 cat D” even though there is a field ticket on the plant with that number and the letter “d.” In St.-Hilaire’s unpublished notebooks, “673 d” is a species of Gentianaceae (see <http://hvsh.cria.org.br/hv?action=byCollect&book=&coll=673;&search=1>). The leaves on the lectotype and isolectotype differ one from the other especially in size, but the leaves on both

specimens fall within the range of variability seen in this species.

The lectotype (P barcode 02273669! [= F neg. no. 35397]) of *Waltheria gracilis* has the most ample inflorescence of any of the duplicates of *St.-Hilaire 398* located. As indicated in the original description, its inflorescence also has a few axillary flowers in addition to terminal capitulae, a character not apparent in the isolectotypes. Additionally, one of us (JGS) dissected a flower on the lectotype in order to confirm other floral diagnostic characters.

The lectotype (P barcode 02273687!) of *Waltheria lanata* is an ample specimen, has an original label, and is annotated with the catalogue number assigned by Weddell. It agrees with the protologue, especially in its thick, woody xylopodium (“*Radix lignosa, crassa*”) with a reddish interior and leaf blades that are plicate with subacute apices and on the distal part of stems villous below and lanate and grayish-glaucous above.

The situation described by Saunders (1995b: 466; see also her annotation on KW barcode 001001726!) where the type of *Waltheria boliviensis* was in a bundle of specimens that was dropped during the “Great War” and its label was replaced inadvertently with that from another specimen necessitates the designation of a lectotype (Turland et al., 2018; Art. 9.3). While Saunders may have been correct in stating that the specimen in KW (KW barcode 001001726!), which is now labeled *Jurgensen 121*, is by virtue of its morphology the specimen from Bolivia (not Mexico) that Turczaninow used to describe *W. boliviensis*, it is impossible to confirm this and for all intents and purposes the specimen examined by Turczaninow was lost when the bundle was dropped. A duplicate in Geneva (G barcode 00358717!) of *D’Orbigny 920*, the type collection, is designated here as lectotype. Its label data agree with the protologue and the specimen agrees with the original description especially in having subcordate leaves and angular-striate peduncles below the terminal capitulae.

We assume that Schumann examined *Pohl 1325*, the type of *Waltheria communis* var. *dietrichii*, in Berlin (B) and that the specimen is no longer extant. The lectotype (K barcode 0000380984!) for this varietal name agrees more precisely with the original description than do the isolectotypes, notably in having the leaf blades  $7 \times 2$  cm and inflorescence capitulae long-pedunculate. The isolectotypes in Vienna (W 0071716! and W 0071717!) each have two collector numbers [“*Pohl 2169* (Diar. no. 1325)”] and are the source of the locality data that were unknown (“*loco non indicato*”) to Schumann. Pohl’s name is not recorded on the Kew (K) sheets, only his collection number.

The lectotype (K barcode 000380978!) of *Waltheria communis* var. *henningsii*, which was examined by Schumann, was received at Kew (K) on exchange from Berlin (B). Several field tickets link it to the original description. The specimen was selected from among several syntypes because it best illustrates the original description and is a more complete specimen with ample fertile material.

Schumann (1886) cited two syntypes when he described *Waltheria communis* var. *platyphylla*: *Mosén 417* and “*Regnell n. III. 275 ex parte.*” A collection of the

former annotated by Schumann as “*Waltheria communis* St. Hil.  $\gamma$  *platyphylla* Schum.” is selected as the lectotype (S14-46290!). It agrees with the original description, especially in that the plant is suberect, tomentose or tomentellous, and the leaf blades are 6-7 cm long, almost as wide, and with a coarsely serrate margin. The Regnell collection, presumably another part of it (“ex parte”), was also cited by Schumann (1886) as material examined for *W. communis* var. *henningsii*.

The lectotype (F barcode F0073617F!) of *Waltheria communis* var. *tomentella* was received by the Field Museum (F) on exchange from Berlin (B). Similarly, the possible isolectotype specimen in Paris (P) also was received from Berlin (B), but for this latter specimen there are not enough data to establish unequivocally that it is a duplicate of the lectotype. One of the syntype collections (*D’Orbigny* 920) of this varietal name is also the collection number designated here as the lectotype of *W. boliviensis*. The lectotype of *W. communis* var. *tomentella* agrees with the original description in having ascending stems branched from the base, tomentellous ovate leaves with stellate hairs when mature, and 5-6 mm long sparingly ciliate stipules.

The varietal name *Waltheria communis* var. *vulgaris* is based on numerous syntypes. The lectotype (P barcode 02273681 as image!), a sheet of *Blanchet* 3664, is the only specimen that strictly agrees with the statement in the original description that the stems of this variety do not exceed 10 cm in length. The type locality is stated to be “in provincia Bahia.” The labels on two isolectotypes (P barcode 02273683! and W 0070967!), however, have a somewhat more precise locality (viz., “Jacobina”). In the protologue of this varietal name, Schumann (1886: 59) erred in citing the non-existent “*Waltheria vulgaris* St-Hil.” as a synonym.

The lectotype (F barcode F0073629F!) of *Waltheria prostrata* has mature cymes that clearly show the unusual four-sided inflorescences described in the protologue. The protologue also states the type locality is “Habitat in provinciis meridionalibus Brasiliae.” Curiously, the lectotype and an isolectotype in Paris (P barcode 02273678!), both received on exchange from Berlin (B), are labeled “Brasilia australis.” The material in Berlin (B; see F neg. no. 9573), which presumably was destroyed in WWII, was labeled simply “Brasilia.” Barring additional information explaining this discrepancy, we assume the type locality is as given in the protologue.

The lectotype (G barcode 00381018!) of *Waltheria communis* var. *hirta* was annotated by Schumann, one of the coauthors of the name, as “*Waltheria communis* St. Hil. forma [sic] nova.” A separate annotation by Hassler, the other coauthor, corrects this to “var. *hirta* K. Sch. et Hassler.” The lectotype, but not the isolectotype, has handwritten locality and descriptive (plant height and flower color) data that match what is in the protologue.

Only one sheet (G barcode 00381062!) of the type collection (*Hassler* 6747b) of *Waltheria communis* var. *velutina* was located. Schumann annotated it as “forma ad hoc incognita.” Hassler, however, wrote the published varietal name on the specimen’s label. We cannot establish that this collection consists of a single sheet,



hence our lectotype designation.

The holotype (RBR barcode 00037633 as image!) of *Waltheria communis* var. *paraibana* matches exactly the unnumbered figure, a photograph, published in the protologue. The orientation of the left hand branchlet, however, was changed after publication but this appears to be nothing more than the random placement of the branchlet by a plant mounter.

### **Waltheria coriacea**

J.G. Saunders, *Darwiniana*, n.s. 9(1): 8, figs. 2, 3A, 4A. 2021. TYPE: Brazil, Bahia, 60 km E of Mimoso on BR-242, Mimoso-Barreiras, (33 km W of Barreiras), ca. 12°07'S, 45°25'W, 18-II-1990, *J. G. Saunders, L. Breyer & G. Eiten 2071* (holotype UB 217282!; isotypes CEPEC 00071876!, CTES 71876!, K barcode 000381059!, TEX barcode 00557325!, TEX barcode 00557326!).

### **Distribution**

Endemic to Brazil (Bahia, Goiás, Maranhão, Tocantins).

### **Waltheria erioclada**

DC., *Prodr.* [A. P. de Candolle] 1: 493. 1824. TYPE: Brazil, “in Brasiliâ,” s.d., s.c. (holotype G [G barcode 00208637 [de Candolle] as image]! [= F neg. no. 8002]).

### **Distribution**

Endemic to Brazil (Minas Gerais). Reports of this species from Bahia probably represent misidentifications of *Waltheria ackermanniana*.

### **Note**

Only one specimen labeled *Waltheria erioclada* was found in the de Candolle

herbarium (G-DC) and we assume it is the only material de Candolle examined, hence the holotype. It agrees with the original description, especially in its oval leaves. The name is often placed in synonymy under *W. indica* (see e.g., Coutinho, Colli-Silva & Pirani, 2020), but this infrequently collected species shows morphological affinities to *W. ackermanniana* and *W. glazioviana* K. Schum., not to *W. indica* or allied species.

## **Waltheria excelsa**

Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 215. 1858. TYPE: Brazil, Bahia, Serra da Jacobina, s.d., *J. S. Blanchet 2685*, p.p. (holotype KW barcode 001000119!; isotypes F barcode F0073618F [fragment ex Moricand]!, G barcode 00358719 [Moricand]! [= F neg. no. 23853], K barcode 000380986!, LE as image!, MO barcode MO-309282!, P barcode 02273701!, W 1889-0118157!; possible isotypes BM, CWU!, W 0071719!).

## **Distribution**

Endemic to Brazil (Bahia, Goiás, Minas Gerais, Tocantins).

## **Note**

Apparently two different gatherings were combined to form the collection distributed as *Blanchet 2685*: material from Serra da Jacobina (the type locality) and from Barra. The holotype (KW 001000119!) has the locality as given in the original description. More importantly, Turczaninow annotated this specimen, which was in his personal herbarium, with his new species name and the specimen agrees with the original description. The locality on the label of *Blanchet 2685* in the de Candolle herbarium (G-DC [G barcode 00358718]!) is “Villa di [sic] Barra.” Barra, a locality on the west bank of the Rio São Francisco, is ca. 400 km distant from Serra da Jacobina. The de Candolle sheet therefore is not considered to be type material. The type status of a sheet in Vienna (W 0071719!) is equivocal because it does not include locality data.

## **Waltheria ferruginea**

A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 150, t. 30. [16-XI] 1825; Ibid. [folio ed.] 1: 119, t. 30. 1825. TYPE: Brazil, Minas Gerais, “Crescit in rupibus prope vicum Tapanhoacanga, haud longè ab urbe Villa do Principe,” s.d., *A. St.-Hilaire s.n.* (lectotype P barcode 02273702! [=F neg. no. 35396], designated by T. S. Coutinho et al., Acta Bot. Bras. 34: 453. 2020; isolectotypes MPU barcode 016436!, P barcode 02273703!).

### Distribution

Endemic to Brazil (Minas Gerais).

### Note

The lectotype (P barcode 02273702!) and the isolectotype in Montpellier (MPU barcode 016436!) of the name *Waltheria ferruginea* have field tickets with the number “116” (or “911”?) tied by string to the specimens. The significance of this is unknown because we have not located the relevant entry in St.-Hilaire’s notebooks (see Dwyer, 1955; Pignal et al., 2013). In any case, when Coutinho et al. (2020a) designated a lectotype they either overlooked or suppressed this detail. Schumann (1886: 55-56) considered *Waltheria brachypetala* to be synonymous with *W. ferruginea* and consequently the latter name often has been misapplied to the former and other related species. *Waltheria ferruginea* now is considered to be narrowly endemic and limited to the vicinity of Grão Mogol and Cristalia, Minas Gerais (see Saunders, 1995b, 2021; Amorim et al., 2009; Coutinho et al., 2020a).

### *Waltheria flavovirens*

J.G. Saunders, Darwiniana, n.s. 9(1): 12, figs. 3B, 6. 2021. TYPE: Brazil, Goiás, 9 km past turnoff to Santa Rosa heading N on BR-20 to Barreiras from Brasilia, and 96 km S of turnoff to Flores de Goiás, 15°00’S, 47°00’W, 16-II-1990, *J. G. Saunders, L. Breyer & G. Eiten 2053* (holotype UB 217283!; isotypes CEPEC 71871!, CTES 254977!, K barcode 000381058!, MBM 209188!, TEX barcode 00557327!).

## Distribution

Endemic to Brazil (Bahia, Goiás, Minas Gerais, Tocantins).

## **Waltheria glabribracteata**

T.S. Coutinho & M. Alves, *Phytotaxa* 430(4): 295, fig. 1. 2020. TYPE: Brazil, Mato Grosso, Vila Bela de Santíssima Trindade, Serra de Ricardo Franco, topo de Cachoeira do Jatoba, 650 m a.s.l., 14°55'06"S, 64°04'36"W, 21-III-2014, *M. F. Simon, G. Pereira-Silva, J. L. Barros, M. Mendonza, & T. S. Reis* 2232 (holotype CEN barcode 00087243 as image!; isotypes NY barcode 02702292 as image!, RB).

## Distribution

Bolivia, Brazil (Mato Grosso).

## **Waltheria glazioviana**

K. Schum., *Fl. Bras. [Martius]* 12(3): 63. 1886. TYPE: Brazil, Rio de Janeiro, Pic nord de la forteresse de Santa Cruz, 22-IV-1875, *A. F. M. Glaziou* 8273 (lectotype LE!, designated here; isolectotypes C barcode 10019404!, C barcode 10019405!, F barcode F0073619F-fragment!, F barcode F0073620F!, G barcode 00358720!, P barcode 02273705!, P barcode 02273706 as image!, R barcode 000007700 as image!, S12-17534 as image!).

## Distribution

Endemic to Brazil (Rio de Janeiro).

## Note

“*Glaziou n. 8723*” is the only collection cited in the protologue of *Waltheria glazioviana*. Schumann examined material in Berlin (B) that subsequently was destroyed in WWII (see F neg. no. 9567). Nonetheless, a number of duplicates exist and the one in St. Petersburg (LE!) is designated here as the lectotype. Flowers on this specimen were dissected by one of us (JGS) and the dissection confirms that they have the thrum morphology described in the protologue.

## **Waltheria glomerata**

C. Presl, Reliq. Haenk. 2(2): 152. 1835. TYPE: Panama, “hábitat in isthmo panamensi,” s.d., *T. Haenke s.n.* (lectotype PR 3273!, designated here; isolectotype PR 3272!; possible isolectotypes MO barcode MO-271832!, S!, W [= F neg. no. 32197]).

*Waltheria rhombifolia* Donn. Sm., Bot. Gaz. 23(1): 3. 1897. TYPE: Costa Rica, Puntarenas, Bords du Rio Ceibo (envir. de Buenos Aires), 250 m a.s.l., II-1891, *A. Tonduz 4038* [= *8091*] (lectotype US barcode 00479032!, designated here; isolectotypes BR barcode 0000013346560 as image!, BR barcode 0000013346577 as image!, G barcode 00358733 as image!).

## **Distribution**

Mexico, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Brazil (Mato Grosso). This species was relatively recently introduced into Brazil (1997 or before) where it is known from a single collection made in disturbed vegetation (Coutinho et al., 2019).

## **Note**

The lectotype (PR 3273!) of *Waltheria glomerata* was selected from two specimens collected by Haenke, both of which are original material and now deposited in Prague (PR). The lectotype agrees with the original description especially in having bracts equal in length to the calyx, the lateral ones lanceolate and acute, and the middle one oblong and 2-3-lobed, and most importantly the petals equal in length to the calyx.

The lectotype (US barcode 00479032!) of *Waltheria rhombifolia* was selected from

four syntypes cited in the protologue that were stated to be in “herb. nat. C.R.” No type material was located in the Museo Nacional de Costa Rica (CR) and as a consequence the lectotype is selected from material in the Donnell Smith, or author’s, herbarium. The lectotype has two labels: one with mostly handwritten data and the number “4038” and the other with a printed distribution label that has both a distribution number and the collector’s number (i.e., “8091. *Waltheria brevipes*, Turcz. ... Leg. Tonduz, (n. 4038 herb. nat. Cost.)”). The specimen clearly shows the obovate —or oval— rhombic leaf blades that are noted in the original description.

The name *Waltheria brevipes* Turcz. has been widely misapplied to *W. glomerata*, but *W. brevipes* is considered here to be a synonym of *W. preslii* Walp., a species considered to be endemic to Mexico. In *W. preslii* the petals are twice the length of the calyx, which is distinct from the relative lengths of the petals and calyx in *W. glomerata*.

### **Waltheria hatschbachii**

J.G. Saunders, *Darwiniana*, n.s. 9(1): 16, figs. 7. 2021. TYPE: Brazil, Minas Gerais, Munic. Cunha Magalhães, Mendahna, 16-XI-1971, *G. Hatschbach & P. Pelanda* 28038 (holotype MBM-19756!; isotypes C barcode 10019406!, CTES-35173!, US barcode 00479016!).

#### **Distribution**

Endemic to Brazil (Minas Gerais).

### **Waltheria hoehnei**

J.G. Saunders, *Darwiniana*, n.s., 9(1): 19, fig. 8-9. 2021. TYPE: Brazil, Mato Grosso, Munic. Cuyabá [= Cuiabá], Coxipo da Ponte, IV-1911, *F. C. Hoehne* 3032 (holotype SP 55193!).

#### **Distribution**

Endemic to Brazil (Mato Grosso).

## **Waltheria indica**

L., Sp. Pl. 2: 673. 1753. *Waltheria arborescens* Cav., Diss. 6: 316, t. 170, fig. 1. 1788, nom. illeg. superfl. *Waltheria americana* L. var. *indica* (L.) L. ex Endl., Ann. Wiener Mus. Naturgesch. 1: 182. 1836. *Waltheria americana* L. var. *indica* (L.) Guill., Ann. Sci. Nat. Bot., sér. 2, 7: 365. 1837, isonym. *Waltheria americana* L. var. *indica* (L.) K. Schum., Monogr. Afrik. Pflanzen-Fam. [Engler] 5: 47. 1900, isonym. TYPE: Sri Lanka [*"Habitat in India"*], *Althæa*, *Waltheria folii lanceolatis, serratis*, Herb. Hermann 3: 5, no. 244 (lectotype BM barcode 00621807 as image!, designated by W. T. Gillis, *Rhodora* 76: 100. 1974).

*Waltheria americana* L., Sp. Pl. 2: 673. 1753. *Waltheria indica* L. var. *americana* (L.) R. Br. ex Hosaka, Occas. Pap. Bernice Pauahi Bishop Mus. 13(17): 224. 1937. TYPE: "Habitat in Bahama, Barbiches, Surinamo," s.d., s.c. (lectotype LINN 852-1 as image!, designated by W. T. Gillis, *Rhodora* 76: 101. 1974).

*Waltheria melochioides* Loefl., Iter Hispan. 272. 1758 (as "*Melochioides*"). TYPE: Sri Lanka [*"Habitat in India"*], *Althæa*, *Waltheria folii lanceolatis, serratis*, Herb. Hermann 3: 5, no. 244 (neotype BM barcode 000621807 as image!, designated by L. J. Dorr & J. H. Wiersema, *Taxon* 59: 1255. 2010).

*Waltheria fruticosa* Rottb., Descr. Rar. Pl. Surin. 28. 1776 (as "*Fruticosa*"); *Ibid.*, Acta Lit. Univ. Hafn. 1: 296. 1778 (as "*Fruticosa*"); *Ibid.*, Descr. Rar. Pl. Surin., ed. 2, 18. 1798 (as "*Fruticosa*"), nom. nud. *Waltheria elliptica* Cav., Diss. 6: 316, t. 171, fig. 2. 1788. *Waltheria indica* L. var. *elliptica* (Cav.) Garcke, in Schweinfurth, Beitr. Fl. Aethiop. 48. 1867. *Waltheria americana* L. var. *elliptica* (Cav.) K. Schum., Fl. Bras. [Martius] 12(3): 65. 1886. TYPE: "Habitat in India Orientali," "2.

*Waltheria elliptica*" (lectotype the illustration cited in the protologue [Diss. 6: 316, t. 171, fig. 2], designated here).

*Waltheria corchorifolia* Pers., Syn. Pl. 2(1): 216. 1806. TYPE: Brazil, Rio de Janeiro, s.d., *J. Dombey s.n.* [Herbier d'Antoine Laurent de Jussieu, Catal. N<sup>o</sup> 12,494] (lectotype P-JUSS [P barcode 00672023] as image!, designated here).

*Waltheria obtusa* Willd. ex Schldl., Linnaea 3(3): 274. 1828, nom. nud., pro syn. *Waltheria pedunculata* Willd. ex Schldl., Linnaea 3(3): 274. 1828, nom. nud., pro syn.

*Waltheria caesia* Klotzsch ex Ri. Schomb., Reis. Br.-Guiana 3: 1173. 1849 [as "1848"], nom. nud.

*Waltheria surinamensis* Turcz., Bull. Soc. Nat. Imp. Naturalistes Moscou 36(1): 571. 1863 (as "*Surinamensis*"). TYPE: Suriname, In reg. inter. ad fluv. Surinam., IV-1847, A. Kappler 1859 [A. Kappler. Pl. Surinam. Ed. R. F. Hohenacker, 1849] (holotype KW barcode 001000115!; isotypes L barcode 0820700!, P barcode

06604440 as image!, U barcode 0210398!).

*Waltheria paniculata* Miq. ex K. Schum., Fl. Bras. [Martius] 12(3): 64. 1886, nom. nud., pro syn. *Waltheria indica* L. var. *prostrata* M. Gómez, Dicc. Bot. Nombres Vulg. Cub. Puerto-Riq. 71. 1889, nom. nud.

*Waltheria americana* L. var. *glandulosa* R.E. Fr., Kongl. Svenska Vetensk. Acad. Handl., n.f., 42(12): 14. 1908. TYPE: Paraguay, Estancia Santa Maria, 28-I-1896, *J. D. Anisits 2041* (holotype S12-17522 as image!).

## Distribution

A cosmopolitan weedy species found in all Brazilian states.

## Note

In the present conspectus, we have adopted a narrow concept of *Waltheria indica* and chosen to list only the New World synonyms, which are the ones of most concern to anyone interested in the Brazilian flora. Several names that have been synonymized under *W. indica* in Brazil, however, are excluded in our interpretation of the species. *Waltheria erioclada* considered to be a synonym of *W. indica* by Coutinho, Colli-Silva & Pirani (2020), is recognized here as distinct (see above). *Waltheria laevis* D. Wolf ex Schrank and *Riedlea berteroana* Balb. ex DC. (as “*Riedleia berteriana*”), both cited by Schumann (1886: 64) as synonyms of *W. americana* (= *W. indica*), are synonyms of *W. glabra* Poir., a Caribbean species not known to occur in Brazil (Dorr, 2012) and therefore not treated here.

*Waltheria indica* and *W. americana* were published simultaneously. Brown (1818: App. 5: 478, 484) apparently was the first to unequivocally combine the two names, and he adopted *W. indica* for the combined species. When the two names are considered synonyms, Brown’s choice must be adopted (see Turland et al., 2018; Art. 11.5, Ex. 22).

Gillis (1974: 100-101) was the first to designate a lectotype for *Waltheria indica*. Verdcourt (1995: 418) independently designated the same Hermann specimen as the lectotype of this name, but his designation was superfluous. St. John (1976) and Verdoorn (1981) considered material in the Linnean herbarium (LINN 852.3 and LINN 852.2, respectively) to be the type of *W. indica*, but neither of the specimens they cited is original material and in both cases their designations were published subsequent to that of Gillis.

Gillis (1974: 101) was the first to designate a specimen in the Linnean herbarium (LINN 852.1) as the lectotype for *Waltheria americana*. Subsequently, St. John (1976)



discussed this specimen and a second one (LINN 852.2) in connection with the type of *W. americana*, but he failed to distinguish between them and therefore did not effectively designate a lectotype for *W. americana*, which in any case would have been a superfluous designation.

*Waltheria arborescens* is a superfluous name for *W. indica*. In the protologue Cavanilles (1788) cites both *W. indica* and *W. americana* in synonymy and he provides indirect references to the original publication of both names by citing their treatment in the *Systema Plantarum* (Reichard, 1780), which links back to the original protologues of both Linnean names.

*Waltheria fruticosa* Røttb. is a nomen nudum. The author compared his plant to *W. indica* L. (as “*Americana* L.?”), but he did not provide a description or diagnosis and his text simply discussed the plant’s medicinal properties (see Turland et al., 2018; Art. 38.1(a), Art. 38.3), which is insufficient for valid publication.

The single specimen cited in the protologue of *Waltheria elliptica* has not been located. The collection was made in the East Indies and sent to Lamarck by Sonnerat (““Habitat in India Orientali. V.S. communicatam à D. de Lamarck, ex collectis a D. Sonnerat””). Curiously, the protologue of *W. microphylla* Cav. (not treated here) uses identical language to describe its type locality and the sole specimen associated with that name. This suggests there was a lapsus by Cavanilles that dates back to when both names were published simultaneously. A search of the microfiche of the Lamarck herbarium (P-LA) failed to yield material suitable for a lectotype. Similarly, Garilleti (1993: 148), in a survey of Cavanilles-related material in the Linnean (LINN) and Madrid (MA) herbaria, did not find original material of either name that can be unequivocally associated with either Sonnerat or Lamarck. Therefore, the illustration (t. 171, fig. 2) published with the original description of *W. elliptica* is the only original material known and designated here as the lectotype.

The protologue of *Waltheria corchorifolia* states “Hab. in Rio Janeiro in Brasilia. (Herb. Juss.)” The only specimen in the Herbar d’Antoine Laurent de Jussieu (P-JUSS) that agrees with these data is one collected by Dombey, which is selected here as the lectotype (P barcode 00672023 as image!).

The holotype (KW barcode 001000115!) of *Waltheria surinamensis* is a specimen examined and annotated by the author of the name. Turczaninow (1863) compared this new species to *W. paniculata* Benth. However, further study might show it to be more closely related to *W. martii* Colla and therefore not part of *W. indica* s.str.

## **Waltheria involucrata**

Benth., J. Bot. [Hooker] 4: 125. 1841 [as “1842”]. *Sitella involucrate* (Benth.)

L.H. Bailey, Gentes Herb. 4(9): 350. 1940. TYPE: Guyana [“British Guiana”], Rupununi District, on the high banks of the Rupununi [River], 1837 [1838?], *Ro. Schomburgk, ser. I, 722* (lectotype K barcode 000380988 [Bentham]!, designated by Bailey, Gentes Herb. 4(9): 350. 1940; isolectotypes BM, F barcode F0073621F!, G [G barcode 00358721] as image!, G barcode 00358722 as image!, G barcode 00358723 as image!, GH barcode 00057001!, K barcode 000779776 [Hooker]!, KW barcode 001001725!, L barcode 0820699!, P barcode 02273707!, TCD barcode 0003752 as image!, US barcode 00433596!, W-0071726!).  
*Waltheria macropoda* Klotzsch ex Ri. Schomb., Reis. Br.-Guiana 3: 1173. 1849 [as “1848”], nom. nud.

### Distribution

Colombia, Venezuela, Guyana, Brazil (Acre, Amazonas, Rondônia, Roraima).

### Note

Bailey (1940) designated a lectotype for *Waltheria involucrata* when he wrote “Material of my 1247 was compared for me in 1930 by the late N. E. Brown with the Bentham type at Kew ....” Bailey (1940) had cited the type collection (“*Schomburgk no. 772*”) in a previous paragraph. Inasmuch as *Schomburgk 772* was the only collection associated with the name in Bentham’s protologue and because there are two specimens at Kew, one each in the herbaria assembled by Bentham and Hooker, Bailey’s mention of the “Bentham type at Kew” narrowed his designation of lectotype to a single sheet.

The text associated with “*Waltheria macropoda* Klotzsch ex Ri. Schomb.” states simply that it is a “perennial herb,” which does not satisfy the requirements of the ICN (Turland et al., 2018; Art. 38.1) for a description or diagnosis. The plant was collected by Richard Schomburgk “Auf den Ufern des Zuruma’ (i.e., “On the banks of the Zuruma [= Suruma]”) in Guyana. Although we have not seen any material, Schumann (1886: 52) cites a Richard Schomburgk collection of *W. involucrata* with this same locality (i.e., “ad Suruma: Rich. Schomburgk n. 753”).

### *Waltheria macropoda*

Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 216. 1858. TYPE: Brazil, Bahia,

La serra Jacobina, s.d., *J. S. Blanchet 2579* (lectotype KW barcode 001000116! p.p.[“A” and “C”], designated here; isolectotypes E barcode 00012601!, E barcode 00012786, F barcode F0073624F!, G barcode 00358724!, K barcode 000380967 as image!, LE barcode 00006874!, LE barcode 00006875!, P barcode 02273713!, P barcode 02273714!, W 0071727!).

## Distribution

Endemic to Brazil (Bahia, Goiás, Minas Gerais, Pernambuco, Piauí, Sergipe).

## Notes

Two syntypes, *Blanchet 2579* and *Gardner s.n.*, are cited in the protologue. The former is designated here as the lectotype of *Waltheria macropoda*. The sheet (KW barcode 001000116!) containing the lectotype, however, includes both syntypes: two elements (“A” and “C”) correspond with *Blanchet 2579* and one (“B”) with *Gardner s.n.* The Blanchet material agrees with the protologue: 3-4 inflorescences (capitulae) in the upper axils of young leaves, densely congested 3-bracteolate flowers, and petals twice the calyx in length. An isolectotype at Kew (K barcode 000380967!) is attributed to Moricand, not Blanchet, but the locality, collection number, and specimen agree with the lectotype. Since Moricand had material of the Blanchet collection in his herbarium, which was given to Geneva (G) in 1908, we assume the person who sent the specimen to Kew as exchange recorded Moricand’s name and not that of the collector.

In her unpublished thesis, Saunders (1995b) incorrectly considered *Waltheria macropoda* Klotzsch ex Ri. Schomb. (= *W. involucrata*) to be a valid name and treated *W. macropoda* Turcz. as a later homonym. She consequently proposed a replacement name derived from an annotation (viz., “*Waltheria Martiana* Schum.”) that Schumann attached to a specimen of *Blanchet 2579* (F barcode F0073624F!). Schumann subsequently reannotated this specimen as *W. macropoda* Turcz. and recognized Turczaninow’s species in the *Flora Brasiliensis* (Schumann, 1886: 66-67) while suppressing his unpublished herbarium name. Before Saunders realized that the Schomburgk name was a nomen nudum, she annotated a number of specimens of *W. macropoda* Turcz. as “*W. martiana*.”

*Waltheria macropoda* is sometimes confused with *W. bracteosa* and *W. operculata* Rose.

## Waltheria maritima

A. St.-Hil., Fl. Bras. Merid. [quarto ed.] 1(4): 153. [16-XI] 1825; Ibid. [folio ed.] 1: 121. 1825. TYPE: Brazil, Espírito Santo, in arenosis maritimis propè Meïahype haud longè ab urbe Benevente (Prov. Spiritû Sancti), [VIII-XI-1818], A. *St.-Hilaire* B2, 288S (lectotype P barcode 02273710 as image! [= F neg. no. 35400], designated here; isolectotypes MPU barcode 016431 as image!, P barcode 02273709!, P barcode 02273711 as image!; probable isolectotype F barcode F0073625F-fragment!).

*Visenia ferruginea* Colla, Herb. Pedem. 1: 432. 1833. TYPE: Brazil, Bahia, Mucuri, s.d., s.c. [*Prinz zu Wied s.n.*] (lectotype TO as image!, designated here), **syn. nov.**

*Waltheria aspera* K. Schum., Fl. Bras. [Martius] 12(3): 55. 1886. TYPE: Brazil, Rio de Janeiro, Restinga de la Tijuca, 29-IX-1872, A. *Glaziou* 6097 (lectotype P barcode 02273712!, designated here), **syn. nov.**

## Distribution

Endemic to Brazil (Espírito Santo, Rio de Janeiro).

## Note

Three syntypes of *Waltheria maritima* are in Paris (P). All three were annotated by St.-Hilaire who appended a mark (“†”) following the name on each label to indicate that he considered the material to represent a new species. All three also have field tags or labels (viz., “288 S”). The lectotype (P barcode 02273710 as image!) is the specimen with the exact wording of the locality in the original description: the isolectotype labels have slight variations in wording. Additionally, the lectotype has leaves that match exactly the dimensions cited in the protologue. A fragment of *Waltheria maritima* in the Field Museum (F barcode F0073625F!) lacks collecting data, but presumably it was removed from the lectotype or one of the isolectotypes in Paris (P) and not Montpellier (MPU). The text of a descriptive holographic label in Colla’s hand on the specimen designated here as lectotype of *Visenia ferruginea* (Fig. 1) substantially agrees with the original description published by Colla (1833). This, as noted by Fryxell (1976) in a similar context, underscores the identification of the specimen as the type of the name in question. In this case, the label text states that the specimen

differs from *V. scabra* Colla, not that it is that species, and similar language is in the protologue. Moraes et al. (2013: 33), however, selected this specimen (Fig. 1) as the lectotype of *V. scabra* even though it is in serious conflict with the latter protologue and is here superseded (Turland et al., 2018; Art. 9.19(c)). *Visenia scabra* is described as having leaves that are petiolate and round with crenate margins. The specimen designated here as lectotype of *V. ferruginea*, in addition to being linked to the protologue via its holographic label, has ovate rather than round leaves that are unevenly coarsely toothed, not crenate. “*Melochia* 1” is a tentative identification on Colla’s label.



**Fig. 1.** Lectotype of *Visenia ferruginea* Colla (= *Waltheria maritima* A. St.-Hil.) in the Colla herbarium (TO). The text of the holographic label in the lower-right corner substantially agrees with that of the protologue. The label on the left (“1.

*Melochia ...*”) added by Martius provides information on the type locality, Mucuri, and suggests that the specimen was collected by Wied. Goldberg’s annotation appears to have created confusion concerning the specimen’s correct identity. The holographic label states how the specimen differs from *V. scabra* Colla, not that it is that species.

(Reproduced with permission). Color version at

<http://www.ojs.darwin.edu.ar/index.php/darwiniana/article/view/953/1241>

Goldberg (1967), who revised *Melochia*, examined this specimen and identified it as *Waltheria*. Unfortunately, he also wrote “Type of *Visenia scabra*?” on his annotation slip, which may be the source of the subsequent confusion with *V. scabra* (q.v.).

The lectotype (P barcode 02273712!) of *Waltheria aspera* is one of the three syntypes cited by Schumann (1886) who probably examined all three in Berlin (B). A possible duplicate of one syntype (“*Princ. Nuwied n. 455*”) was located by Moraes et al. (2013: 32) in Turin (TO), but they indicated that the specimen lacks a number. All material of another syntype (*Sellow 1127*) evidently was destroyed in WWII (see F neg. no. 9564). Therefore, the syntype (*Glaziou 6097*) found in Paris (P) is the best choice for lectotype, especially as it has the collector and number given in the protologue. The specimen also was annotated by Schumann who provided locality data not given in the protologue. The name *Waltheria aspera* has been widely misapplied to specimens of *W. cinerescens*. Moraes et al. (2013) considered *W. aspera* to be a synonym of *W. scabra* (Colla) P.L.R. Moraes & Guglianone, a combination founded on what we argue is, in fact, a species of Passifloraceae (see “Excluded and unresolved names” below).

## **Waltheria martii**

Colla, Herb. Pedem. 1: 433. 1833 (as “*Martii*”). TYPE: Brazil, Espírito Santo, Cachoeiro de Itapemirim, 1815, *Prinz zu Wied s.n.* [*W. Klaenze 118*] (lectotype TO as image!, designated by P. L. R. Moraes et al., Harvard Pap. Bot. 18: 32. 2013; isolectotypes BR barcode 0000005850082as image!, MEL barcode 2341129A as image!).

*Waltheria albicans* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 214. 1858. TYPE: Brazil, Bahia, “la Serra Jacobina,” 1837, *J. S. Blanchet 2791* [spahlm pro 2691] (lectotype KW barcode 001000121!, designated here; isolectotypes CW!, E barcode 00014229!, G barcode 00358705!, G barcode 00358706 as image!, G barcode 00358707! [= F neg. no. 23845], G barcode 00358708!, LE barcode 00006870!, P barcode 02273668 as image!, W 0118143 [Rchb.]!), **syn. nov.**

## Distribution

Mexico, Colombia, Venezuela, Guyana, Bolivia, Brazil (Alagoas, Amazonas, Bahia, Ceará, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Pernambuco, Piauí, Sergipe), Paraguay, Argentina.

## Note

The protologue of *Waltheria martii* states simply “Communicata a cl: Martio sine nomine specifico ex *Brasilia*.” Moraes et al. (2013: 32), however, noted that many of the specimens in Colla’s herbarium ostensibly collected by Martius were, in fact, collected by Wied and they selected one of them as the lectotype. Moraes et al. (2013: 32) considered *W. martii* to be a synonym of *W. indica*, but they relied on an overly broad concept of the latter species. Pin flowers of *W. martii* have a long exserted elongate-plumose stigma whereas those of *W. indica* have a penicillate stigma equal to or slightly longer than the stamens.

In the protologue of *Waltheria albicans*, Turczaninow (1858) clearly erred when he wrote “Blanchet 2791” instead of “2691.” The former collection is the type of *Eugenia flavescens* var. *parvifolia* O. Berg (Myrtaceae). The latter collection is the type of *W. albicans* and the lectotype (KW barcode 001000121!), designated here, is a sheet annotated by the author of the name. The locality data visible on the specimen are not complete, which suggest Turczaninow had more than one sheet available to him when he prepared the original description. In any case, the lectotype itself agrees with the original description. There are conflicting dates on several of the duplicates of *Blanchet 2691* and not all of them have dates. The conflicts, however, are probably perceived rather than real. Some dates clearly refer to the date material was received by a herbarium and not when it was collected by Blanchet.

*Waltheria martii* and *W. albicans* appear to be conspecific. In addition to being similar in gross morphology, the two species share a long exserted elongate-plumose stigma in pin flowers. *Waltheria martii* is the earliest validly published name for this species and thus has priority over *W. albicans*.

## *Waltheria matogrossensis*

J.G. Saunders, *Darwiniana*, n.s. 9(1): 22, figs. 3C, 4B, 11. 2021. TYPE: Brazil, Mato Grosso, Munic. Cuiabá, Chapada dos Guimarães, Morro São Jerônimo,



entre a Rodovia e o Morro, 4 km depois da Casa de Pedras, 25-VI-1990, *N. Saggi 12445* (holotype UFMT!; isotypes CTES 254973!, TEX barcode 00557328!).

### **Distribution**

Endemic to Brazil (Mato Grosso, Mato Grosso do Sul).

### **Note**

This species is often confused with *Waltheria polyantha* K. Schum.

### **Waltheria operculate**

Rose, *Contr. U.S. Natl. Herb.* 5: 183. 1899. TYPE: Mexico, Road between Tapaná [= Tapanatepec?], Oaxaca and Tonalá, Chiapas, ca. 60-150 m a.s.l., 1-3-VIII-1895, *E. W. Nelson 2876* (holotype US barcode 00479029!; isotypes GH barcode 00056991!, GH barcode 00056992!).

*Waltheria excelsa* Turcz. var. *hirsuta* Hassl., *Addenda Pl. Hassl.* 12. 1917, nom. nud.

*Turnera valleana* Standl. & L.O. Williams, *Ceiba* 1(2): 88. 1950. TYPE: Honduras, Choluteca, cerca de Choluteca, 20 m [a.s.l.], 31-X-9-XI-1949, *P. C. Standley 24564* (holotype F barcode F0074074F as image!; isotypes EAP, GH barcode 00351451 as image!, NY barcode 00380579 as image!, US barcode 00114938!).

### **Distribution**

Mexico, Honduras, Colombia, Venezuela, Bolivia, Brazil (Alagoas, Bahía, Ceará, Mato Grosso do Sul, Minas Gerais, Paraíba, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Tocantins), Paraguay. Coutinho, Colli-Silva & Pirani (2020) also cite records from the Brazilian states of Maranhão, Mato Grosso, and Sergipe, but we have not confirmed these reports.

## Note

Schumann (1886) confused this species with *Waltheria macropoda* Turcz.

## Waltheria petiolata

K. Schum., Fl. Bras. [Martius] 12(3): 61. 1886. TYPE: Brazil, Rio de Janeiro, Sine loc. [Haut du Morro Queimado], s.d. [18-XI-1869], A. M. F. *Glaziou* 3874 (lectotype C barcode 10019408 [Warming]!, designated here; isolectotype P barcode 06604412 as image!).

## Distribution

Endemic to Brazil (Rio de Janeiro).

## Note

Two syntypes, *Glaziou* 3874 and *Pohl* 1354, are cited in the protologue of *Waltheria petiolata*. The former collection is designated here as lectotype. Two sheets of this collection were found and there is evidence that a third had been in Berlin (B, see F neg. no. 9570) but was destroyed in WWII. The lectotype (C barcode 10019408!) is the only sheet among the extant original material that was annotated by Schumann with the name *W. petiolata*. Uncertainties in identifying duplicates of *Pohl* 1354 made this syntype less suitable for selection as the lectotype of *Waltheria petiolata*. Schumann (1886: 61) cited this syntype as “*Pohl* *dupl. n. 1354*.” The significance of “*dupl.*” is unclear, although it is occasionally applied to other Pohl collections in Schumann’s treatment of *Waltheria*. Kew (K) has two sheets of *Waltheria petiolata* received from Vienna (W) both of which have this number but no collector identified on either sheet (K barcode 000380974!, K barcode 000380975!). What appears to correspond to these specimens in Vienna, however, is a specimen collected by Schüch (W 0070935!) and not Pohl.

## **Waltheria polyantha**

K. Schum., Fl. Bras. [Martius] 12(3): 60, t. 13, fig. 2. 1886. TYPE: Brazil, Minas Gerais, Serra de Itambé, s.d, *F. Sellow 1938, 1437* (lectotype F barcode F0073627F!, designated here).

### **Distribution**

Endemic to Brazil (Minas Gerais).

### **Note**

Two syntypes are cited in the protologue: “*Sello n. 1938, 1437*” and “*Martius.*” It is not clear why the Sellow collection has two numbers, but both numbers are on the lectotype (F barcode F0073627F!) label and penciled on a determination slip on the no longer extant Berlin specimen (B; see F neg. no. 9572) seen by Schumann. The Berlin specimen lacks a label per se or at least one cannot be seen on the photograph. Inasmuch as the Sellow collection in the Field Museum (F) is the only original material located, it is designated here as the lectotype. According to Urban (1906: 106), Sellow visited the type locality, Serra da Itambé, only once on 9-X-1818.

## **Waltheria rotundifolia**

Schrank, Syll. Pl. Nov. 2: 65. 1826 [as “1828”]. TYPE: Culta ex seminibus Brasil, s.d., s.c. (lectotype M barcode 0209849 [Zucarrini] as image!, designated here). *Waltheria pohliana* K. Schum., Fl. Bras. [Martius] 12(3): 62. 1886 (as “*Pohliana*”). TYPE: Brazil, Minas Gerais, Ad Serras Gonzalves [= Gonçalves], s.d., *J. B. E. Pohl 2935* [Diar. no. 1337] (lectotype W 0071731!, designated here; isolectotypes F barcode F0073628F!, K barcode 000380969!, K barcode 000380971!; probable isolectotypes W 0071729!, W 0071730!), **syn. nov.** *Waltheria americana* L. var. *vulgaris* K. Schum. ex Glaz., Mém. Soc. Bot. France 1(3): 55. 1905, nom. nud.

## Distribution

U.S.A., Mexico, Guatemala, El Salvador, Honduras, Brazil (Alagoas, Bahia, Ceará, Minas Gerais, Paraíba, Pernambuco [including Fernando de Noronha], Piauí, Rio Grande do Norte, Rio de Janeiro, Sergipe).

## Note

*Waltheria rotundifolia* is based on material that was cultivated in the botanical garden in Munich, of which Schrank, the author of the name, was the first director (Stafleu & Cowan, 1985). According to the protologue, the seed was from Brazil (“Brasilia, unde D. de Martius semina misit. Colitur in Caldario”). The lectotype (M barcode 0209849 as image!) is the only original material found in Munich (M) that is explicitly labeled as being cultivated from seed from Brazil. This specimen also agrees with the original description.

The name *Waltheria pohliana* is based on two syntypes: “*Regnell n. III. 274*” and “*Pohl dupl. n. 1337*.” The specimen (W 0071731!) designated here as lectotype is one of the duplicates of the latter collection. Morphologically it matches well the material Schumann had of this collection in Berlin (B, see F neg. no. 9571), which had been acquired from Vienna (“Hrb. Musei Palat. Vindob.”) with greatly simplified locality data (“Brasilia”). The Berlin duplicate evidently was destroyed in WWII.

The lectotype of *W. pohliana* is labeled “2935 (d[iar]. no. 1337)” but all of the duplicates were distributed by Vienna (W) as “*Pohl 1337*,” which is the only Pohl number cited by Schumann (1886: 62). The probable isoelectotypes are not numbered and one of them has no label data at all.

## *Waltheria saundersiae*

T.S. Coutinho & M. Alves, Syst. Bot. 44(3): 681, figs. 1-2. 2019. TYPE: Brazil, Bahia, Morro do Chapéu, Rio Ferro Doido, 11°37'34”S, 41°00'14”W, 898 m [a.s.l.], 1-IX-2017, *T. S. Coutinho & M. Alves 238* (holotype UFP; isotypes HUEFS, RB).

## Distribution

Endemic to Brazil (Bahia).

### **Waltheria selloana**

K. Schum., Fl. Bras. [Martius] 12(3): 53, t. 13, fig. 1. 1886 (as “*Selloana*”). TYPE: Brazil, “WALTHERIA I. Selloana ...” (lectotype the illustration cited in the protologue [Fl. Bras. [Martius] 12(3): 53, t. 13, fig. 1. 1886], designated here).

### **Distribution**

Endemic to Brazil (Bahia).

### **Note**

Schumann (1886: 54) cited a single collection (“*Sello 188*”) from “inter Victoria et Bahia.” He presumably examined it in Berlin (B), but the specimen did not survive WWII. No duplicates have been found despite an extensive search of herbaria. The only other original material is the illustration, which therefore is designated here as lectotype.

### **Waltheria terminans**

J.G. Saunders ex T.S. Coutinho & Colli-Silva, Acta Bot. Bras. 34(3): 456, fig. 3. 2020. TYPE: Brazil, Minas Gerais, Joaquim Felício, Serra do Cabral, Bocaina, 23-XI-1984, *M. C. H. Mamede, A. M. Guilietti, R. M. Harley & B. Stannard s.n.* (holotype SPF 35981; isotypes K barcode 001217181, K barcode 001217182, UFP 86645).

### **Distribution**

Endemic to Brazil (Minas Gerais).

## Note

When Saunders (1995b) first recognized this species as new in her unpublished thesis, she tentatively designated a collection (*Arbo et al.* 5086) as the type of her proposed new name, but when Coutinho & Colli-Silva (in Coutinho et al., 2020a) validated *Waltheria terminans* they designated the collection cited above as type.

## **Waltheria vernonioides**

R.E. Fr., Kungl. Svenska Vetenskapsakad. Handl., n.f, 42(12): 13, t. 3, fig. 1. 1908. TYPE: Brazil, Mato Grosso, Cuyabá [= Cuiabá], 27-IV-1903, *G. O. A. Malmé II, 3161* (lectotype S-R-7494!, designated here; possible isolectotype S13-3153!).

## Distribution

Endemic to Brazil (Bahia, Goiás, Mato Grosso, Tocantins).

## Note

There are two specimens of *Waltheria vernonioides* in Stockholm (S) marked “holotype” and “isotype,” respectively. The ICN (Turland et al. 2018; Art. 7.10), however, requires that a type designation be effectively published and the mere annotation of a herbarium sheet does not meet this requirement. We therefore designate the specimen (S-R-7494!) labeled “holotype” as the lectotype because its printed label includes the collection number as well as the habitat data that are given in the protologue. The possible isolectotype (S13-3153!) has two labels: a printed label with 3-V-1903 as the date (entered in ink by hand) and a penciled label with 27-IV-1903 as the date. The reason for this date discrepancy is unknown. Furthermore, neither of these two labels includes the habitat data (“In dumetis subhumidis solo argillaceo”) provided in the protologue.

## **Waltheria viscosissima**

A. St.-Hil., Fl. Brasil. Merid. [quarto ed.] 1(4): 150. [16-XI] 1825; Ibid. [folio ed.] 1: 119. 1825. TYPE: Brazil, Minas Gerais, prope praesidiolum vulgo Quartel de Texeira, in sylvis vulgò Caatingas (Minas Novas), [XII-1816–III-1818], A. St.-Hilaire B1-1452 (lectotype P barcode 01900179!, designated here; isolectotypes MPU barcode 016430 as image! [as “s.n.”], P barcode 01900178!, P barcode 01900180! [as “s.n.”]; probable isolectotype F barcode F0073631F-fragment as image!).

*Waltheria hirsuta* C. Presl, Reliq. Haenk. 2(2): 152. 1835. TYPE: Mexico, «Habitat in terris occidentalibus Mexici,» s.d., T. Haenke s.n. (lectotype PR 3271A!, designated here; isolectotype PR 3271B!).

*Waltheria tubiflora* Klotzsch, Linnaea 14: 300. 1840, nom. nud.

*Waltheria mollis* Willd. ex K. Schum., Fl. Bras. [Martius] 12(3): 53. 1886, nom. nud., pro syn. *Waltheria machrisiana* L.B. Sm., Los Angeles County Mus. Contr. Sci. 23: 10, figs. 5-6. 1958. TYPE: Brazil, Goiás, 17 km E of Formosa, region of the southern Serra Dourada, 48°50'W, 13°45'S, 19-V-1956, E. Y. Dawson 14974 (holotype R barcode 000104986 as image!; isotypes RSA barcode 0006326 [ex LAM] as image!, US barcode 00479028!).

## Distribution

Mexico, Colombia, Venezuela, Guyana, Bolivia, Brazil (Acre, Alagoas, Amapá, Amazonas, Bahia, Ceará, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Pernambuco, Rio Grande do Norte, Rôndonia, Roraima, São Paulo, Sergipe, Tocantins), Paraguay.

## Note

The lectotype (P barcode 0019001179!) of *Waltheria viscosissima* has a field ticket that ties the sheet to the relevant entry in St.-Hilaire's notebooks and the locality written on its label agrees with the information given in the protologue. The sheet, amply fertile, also matches the range of leaf sizes provided in the original description. Other duplicates of *St.-Hilaire 1452* have less documentation or one or more leaves larger than described. Although one of the two Paris (P) and the sole Montpellier (MPU) isolectotypes of *W. viscosissima* lack the collector's number, they have the same label data as the lectotype: the Montpellier specimen even has the same handwriting. The fragment at the Field

Museum (F) was removed from a St.-Hilaire specimen in Paris (P), but there is no other information now associated with this fragment.

The lectotype of *Waltheria hirsuta* (PR 3271A!) is the more complete of two Haenke sheets that are original material and now in Prague (PR). It agrees with the protologue except the petals are undoubtedly yellow, not purple (“*purpurea*”). Almost certainly Presl who never saw the plants in the field, mistook the dried petal color for the color of living flowers.

## Excluded and unresolved names

### *Visenia scabra*

Colla, Herb. Pedem. 1: 431. 1833. *Waltheria scabra* (Colla) P. L. R. Moraes & Guglielmone, Harvard Pap. Bot. 18(1): 32. 2013. TYPE: Brazil, Rio de Janeiro, Cabo Frio, s.d., s.c. [*Prinz zu Wied s.n.*] (lectotype TO as image!, designated here). = **Passifloraceae** (fide Goldberg, in sched.).

### Note

A careful comparison of the published protologue of *Visenia scabra* with the descriptive holographic label on the specimen in the Colla herbarium (TO) designated here as lectotype shows that their texts are virtually identical. Thus, this specimen, which also is labeled “3. *Melochia* ...,” is the only material suitable for a lectotype of *V. scabra*. Goldberg (1967: 354), who revised *Melochia*, stated that the description of *V. scabra* was “inadequate for a determination” despite having annotated this specimen in 1960 as Turneraceae (= Passifloraceae) and “Type of *Visenia ferruginea*?” Moraes et al. (2013) designated the specimen that we consider to be the type of *V. ferruginea* (see “Note” above sub *Waltheria maritima*) to be the lectotype of *V. scabra*. They seem to have relied on Goldberg’s annotations on these specimens rather than original material to come to their conclusions. Goldberg annotated the specimen labeled “1. *Melochia*” as “Type of *Visenia scabra*?” and the one labeled “3. *Melochia*” as “Type of *Visenia ferruginea*?” In any case, the choice of lectotype for *V. scabra* made by Moraes et al. (2013) must be superseded because it is in serious conflict with the protologue (Turland et al., 2018; Art. 9.19(c)).

### *Visenia spicata*



Colla, Herb. Pedem. 1: 431. 1833. TYPE: Brazil, Rio de Janeiro, “Campos,” s.d., s.c. [*Prinz zu Wied* s.n.] (lectotype TO as image!, designated by P. L. R. Moraes et al., Harvard Pap. Bot. 18: 32. 2013), **syn. nov.**  
= *Malvastrum americanum* (L.) Torr., Rep. U.S. Mex. Bound., Bot. [Emory]: 38. 1859.

### Note

The lectotype, also labeled “4. *Melochia*,” agrees with *Malvastrum americanum* based on its stem vestiture, leaf shape and venation, and floral epicalyx. Moraes et al. (2013) cite a second Wied collection (Brazil, Bahia, Rio de Bellome [= Rio Jequitinhonha], 1816, *Prinz zu Wied* s.n., BR barcode 0000013306403 as image!), which also is *M. americanum*.

Previously, Goldberg (1967: 354) excluded *Visenia spicata* from *Melochia* and stated simply that it “belongs to the Malvaceae.” Moraes et al. (2013: 32) were also unsuccessful in resolving the identity of this name.

### *Waltheria angustifolia*

L., Syst. Nat., ed. 10, 2: 1140. 1759. TYPE: Sine loc., s.d., s.c. (lectotype LINN 852.4 as image!, designated here), **syn. Nov**  
= *Melochia spicata* (L.) Fryxell, Syst. Bot. Monogr. 25: 457. 1988.

### Note

This name previously was considered to be a synonym of *Waltheria indica* L. (see e.g., Jarvis, 2007: 927). However, the only original material (Jarvis, 2007: 927) is the tip of an inflorescence of *Melochia spicata* and it is designated here as the lectotype.

### *Waltheria capitata*

Vell., Fl. Flumin. 274. 1829 [as “1825”]; Ibid., Fl. Flumin. Icon. 7: t. 4. [29-IX] 1831

[as “1827”]. TYPE: Brazil (Not designated).

### **Note**

An original pen and ink drawing for this species is preserved in the Biblioteca Nacional do Brasil, Rio de Janeiro (cat. no.: mss1198656\_008; see: [http://objdigital.bn.br/acervo\\_digital/div\\_manuscritos/mss1198656/mss1198656\\_008.jpg](http://objdigital.bn.br/acervo_digital/div_manuscritos/mss1198656/mss1198656_008.jpg)).

The description is inadequate to identify this species. Moreover, while the description mentions sessile flowers, the original drawing (and published plate) shows pedicillate flowers.

## **Waltheria monogynia**

Vell., Fl. Flumin. 274. 1829 [as “1825”]; Ibid., Fl. Flumin. Icon. 7: t. 6. [29-IX] 1831 [as “1827”]. TYPE: Brazil (Not designated).

### **Note**

An original pen and ink drawing for this species is preserved in the Biblioteca Nacional do Brasil, Rio de Janeiro (cat. no.: mss1198656\_010; see: [http://objdigital.bn.br/acervo\\_digital/div\\_manuscritos/mss1198656/mss1198656\\_010.jpg](http://objdigital.bn.br/acervo_digital/div_manuscritos/mss1198656/mss1198656_010.jpg)).

The description is inadequate to identify this species and describes a plant with solitary flowers. Solitary flowers do not occur in *Waltheria*. They are usually in pairs within cymose clusters.

## **Waltheria pentagynia**

Vell., Fl. Flumin. 274. 1829 [as “1825”]; Ibid., Fl. Flumin. Icon. 7: t. 5. [29-IX] 1831 [as “1827”]. TYPE: Brazil (Not designated).

### **Note**

An original pen and ink drawing for this species is preserved in the Biblioteca Nacional do Brasil, Rio de Janeiro (cat. no.: mss1198656\_009; see: [http://objdigital.bn.br/acervo\\_digital/div\\_manuscritos/mss1198656/mss1198656\\_009.jpg](http://objdigital.bn.br/acervo_digital/div_manuscritos/mss1198656/mss1198656_009.jpg)).

The description is inadequate to identify this species because it details a plant that is pentagynous or with five styles. *Waltheria* species have a solitary style.

### **Waltheria terminalis**

Vell., Fl. Flumin. 275. 1829 [as “1825”]; Ibid., Fl. Flumin. Icon. 7: t. 7. [29-IX] 1831 [as “1827”]. TYPE: Brazil, “Monad. Pent. *Waltheria terminalis* [t.] 7” (lectotype the original pen and ink drawing for the *Floræ Fluminensis* preserved in the Manuscript Section, of the Biblioteca Nacional, Rio de Janeiro [cat. no.: mss1198656\_011], designated here).

= **Turnera cuneiformis** Juss. ex Poir., Encycl. [J. Lamarck & al.] 8: 142. 1808.

### **Note**

The published Vellozo plates were prepared and issued posthumously and there is no evidence that Vellozo ever saw them. Original pen and ink drawings that serve as the basis for these published plates, however, are archived in the Biblioteca Nacional do Brasil, Rio de Janeiro and are thought to be original material.

Urban (1883) considered *Waltheria terminalis* to be a synonym of *Turnera ulmifolia* var. *cuneiformis* (Juss. ex Poir.) Urb. While Arbo (2005) did not mention the Vellozo species, she did accept Urban’s variety but at species rank.

### **Waltheria urticifolia**

Mart. ex Colla, Herb. Pedem. 1: 433. 1833 (as “*urticæfolia*”). TYPE: Brazil, Rio de Janeiro, Cabo Frio, s.d., s.c. (lectotype TO as image!, designated by P. L. R. Moraes et al., Harvard Pap. Bot. 18: 29. 2013).

= **Peltaea obsita** (Mart. ex Colla) Krapov. & Cristóbal (fide Moraes et al., Harvard Pap. Bot. 18: 29. 2013).

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