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## NOMENCLATURE

# Typification of plant names published by Giovanni Casaretto based on specimens collected in Brazil and Uruguay

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**Abstract** Giovanni Casaretto (1810–1879) was appointed by King Charles Albert of Savoy-Carignano, Kingdom of Sardinia, as the botanist and mineralogist of a planned circumnavigation of the globe. After collecting in a few localities in southern Brazil and Uruguay, Casaretto collected for almost nine months, from April to December 1839, in Rio de Janeiro and its vicinity. While in Rio, he also bought about 100 collections from Riedel and about 500 collections from Clausen, which were made in the states of Rio de Janeiro, São Paulo, and Minas Gerais, which he re-numbered and integrated into his collections. He also made significant collections in the state of Bahia, and a few collections in and around Recife (Pernambuco). Based on the preceding collections, Casaretto published a total of 101 names (in 36 plant families, delimited according to APG III), of which, according to the present study, 27 names are currently accepted, 12 serve as basionyms for currently accepted names, 7 are illegitimate due to superfluity, and 55 are heterotypic synonyms of previously published names. All the 101 names of Casaretto are hereby typified, and *Eugenia casarettoana* Delprete is here proposed as a substitute name for an illegitimate later homonym. In addition, a lectotype and an epitype for *Couratari estrellensis* Raddi are here designated.

**Keywords** Bahia; Cariniana; Peter Clausen; *Couratari*; Minas Gerais; nomenclature; Pernambuco; Giuseppe Raddi; Ludwig Riedel; Rio de Janeiro; Santa Catarina; São Paulo; taxonomy

## ■ INTRODUCTION

In 1838, Giovanni Casaretto (1810–1879) was appointed by King Charles Albert of Savoy-Carignano, Kingdom of Sardinia (now part of Italy), as the botanist and mineralogist for a planned circumnavigation of the globe. A complete account of Casaretto's life, travels, botanical collections, and publications was recently published by Delprete (2016). Short biographies with some information about his itinerary in Brazil were published by Urban (1906), Casaretto & Peccenini-Gardini (1991), Casaretto & Delprete (2003), and Baldini & Guglielmonè (2012).

The royal frigate *La Regina*, under the control of Commander Giovan Battista Albini and Prince Eugene Savoy-Carignano as Ship Captain, left the port of Genoa, Italy, on 8 November 1838 and arrived at the Island of São Sebastião, State of São Paulo, southern Brazil, on 28 January 1839. The frigate continued her itinerary and stopped at the Island of Santa Catarina (14–17 February 1839; Brazil) and at Montevideo (26 February–16 March 1839; Uruguay), where Casaretto made numerous collections. The frigate then started her trip southwards but about halfway towards the Malvinas (Falkland) Islands, she was badly damaged in a terrible sea

storm and returned to Rio de Janeiro on 28 April 1839 for repair. From April to December 1839, Casaretto collected in Rio de Janeiro and surroundings, and also purchased approximately 100 collections made by Riedel and approximately 500 made by Clausen in the states of Rio de Janeiro, São Paulo and Minas Gerais. From Rio, in December 1839, the frigate started her return to Italy, with two stops in Salvador (1 January–8 February 1840; Bahia) and Recife (22–28 February 1840; Pernambuco), where Casaretto gathered botanical specimens, then arrived back in Genoa in May 1840. More details about Casaretto's collection dates and localities and a travel map are presented in Delprete (2016). Casaretto organized his herbarium into 162 bundles, with 3007 collections corresponding to 13,667 specimens from Brazil and Uruguay. He numbered his collections in consecutive numerical order in his own herbarium, including those acquired from Riedel and Clausen; therefore, Casaretto's numbers are not collection numbers, but herbarium numbers (see discussion below).

**Publication of new names in the *Atti* and in the *Decades*.** — Shortly after his return to Italy, Casaretto started working on the new species to be described from the specimens that he collected in Brazil and Uruguay, and those

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bought from Riedel and Clausen. In September 1840, at the Seconda Riunione degli Scienziati Italiani (Second Reunion of Italian Scientists), in Turin, he made his first public presentation about his botanical expeditions in Brazil and his intentions to start publishing his new species. At this meeting, Giuseppe Moris (1796–1869) and Alphonse de Candolle (1806–1893; son of Augustin Pyramus de Candolle) praised his work and commented on the importance of his observations. In the proceedings of that Reunion, a succinct version of his presentation was included (Casaretto in Moris & De Visiani, 1841: 159–163). In September 1841, during the Terza Riunione degli Scienziati Italiani (Third Reunion of Italian Scientists), in Florence, he made a second public presentation of his observations on his botanical collections made in Brazil, and announced the formal publication of his first ten new species in the *Atti della Terza Riunione degli Scienziati Italiani* (hereafter “*Atti*”; Casaretto, 1842b: 512–516), which he later re-published in *Decas I* (Casaretto, 1842d), except for *Ficus radicans*, which he renamed *Ficus arpazusa* in *Decas I*. During the following years, Casaretto (1842a,c,d,e, 1843a,b,c, 1844, 1845a,b) published the series *Novarum stirpium brasiliensium decades* (hereafter “*Decades*”) in 10 fascicles, each one including 10 species, for a total of 100 names, 98 of which were from Brazil and 2 from Uruguay. A small correction is necessary regarding the publication date of the *Atti della Terza Riunione*. Delprete (2016), after a careful analysis of Casaretto’s and Moris’s correspondence, estimated that the publication date of these proceedings was October 1842 (although the first page reports “1841”). However, it has recently been realized that a copy of this volume at TO, donated to Moris (President of the Botany Section of that Reunion), has a handwritten dedication dated 20 June 1842. This is the most reliable publication date for the *Atti della Terza Riunione*. For a summary of publication dates of the *Atti* and the *Decades*, including this correction, see Table 1.

In total, Casaretto published 101 names because in the *Atti* he published *Ficus radicans* Casar. (Casaretto, 1842b: 515). Casaretto, realizing that the binomial *F. radicans* was already used by Desfontaines (1829: 413), in *Decas I* he (Casaretto, 1842d: 15) renamed this species *Ficus arpazusa* Casar. (see discussion of this case below).

His original intention was to continue the series and publish many more new names, which are reported in his unpublished catalogues and sometimes on his specimen labels. However, due to several problems including the lack of financial support from the Italian government, he switched his endeavors to the family business.

**Casaretto’s herbarium: specimen numbering, collectors and dates.** — There are a few short notes attempting to clarify Casaretto’s specimen numbering system (Robinson, 1934; Lourteig, 1971; Howard, 1960a,b, 1985), with only partial success. Casaretto made extensive collections in the Brazilian states of Santa Catarina, São Paulo, Rio de Janeiro, Bahia and Pernambuco, Uruguay, and Gibraltar. He numbered his collections in consecutive numerical order, although with several inconsistencies. Also, the pteridophytes, bryophytes,

**Table 1.** Publication dates of Casaretto’s *Decades* and the *Atti della Terza Riunione degli Scienziati Italiani* based on evidence from letters sent by Casaretto to Moris and Alphonse de Candolle, or the dates indicated on the first pages of the *Decades* when no external evidence indicates otherwise.\*

Casaretto publication	Publication date	Date reported on first page	<i>Decades</i> and <i>Atti</i>
1842a	June 1842	“May 1842”	<i>Decas II</i>
1842b	June 1842	“1841”	<i>Atti della Terza Riunione</i>
1842c	July 1842	“August 1842”	<i>Decas III</i>
1842d	October 1842	“May 1842”	<i>Decas I</i>
1842e	November 1842	“October 1842”	<i>Decas IV</i>
1843a	March 1843	“March 1843”	<i>Decas V</i>
1843b	April 1843	“April 1843”	<i>Decas VI</i>
1843c	September 1843	“July 1843”	<i>Decas VII</i>
1844	June 1844	“June 1844”	<i>Decas VIII</i>
1845a	August 1845	“August 1845”	<i>Decas IX</i>
1845b	September 1845	“September 1845”	<i>Decas X et Index</i>

\*For references and discussion, see Delprete (2016) and the Introduction (Section ‘Publication of new names in the *Atti* and in the *Decades*’), above. Stafleu & Cowan (1976) reported the same publication dates provided on the title page of each *Decas*, because they did not have any external evidence. The real publication dates not always correspond to those provided on the title pages of the *Decades* and of the *Atti*.

lichens and fungi are numerically arranged after the flowering plants collected in the same region, independently of their date of collection (Delprete, 2016: table 2). In addition, Casaretto renumbered the specimens purchased from Riedel and Clausen and intercalated them within the numerical order of his own collections. Therefore, Casaretto’s numbers are not collection numbers, but herbarium numbers. Because of this, Casaretto’s numbers should be preceded by “Herb. No.” and, if the original collector from whom he purchased the specimens is known, he should also be cited.

When Casaretto cited the original collector, either Riedel or Clausen, their original collection number is missing. In addition, there are certain inconsistencies, as Casaretto cited one collector in his publications, while on the specimen label he reported a different original collector. For the reasons above explained, it is impossible to trace potential duplicates of Riedel’s and Clausen’s collections present in other herbaria. A summary of Casaretto’s collection dates, herbarium numbers, localities, collectors, and plant groups is presented in Delprete (2016: table 2).

It should be noted that Peter Clausen's last name on herbarium labels and several references, including Casaretto's citations, is often spelled "Claussen" because he added one "s" to his last name after his arrival in Brazil, where he was also known as "Pedro Claudio Dinamarquez". However, his real last name was Clausen, and he should not be confused with the mycologist Peter Claussen (1877–1959); see Lanjouw & Stafleu (1954) and Brummitt & Powell (1992).

Casaretto, along with the publication of his new species, cited, or sometimes omitted, the original collector from whom he purchased the specimens, for example, "Serra da Caraça in prov. Minas Gerais (Claussen)" (Casaretto, 1845a: 77) and "in provincia Minas Gerais (Riedel)" (Casaretto, 1845b: 86). Although he assigned herbarium numbers to most of his specimens from Uruguay and Brazil, for the new species described in the *Atti* and in the *Decades* he did not cite a collection number or herbarium number, and for many of them he reported more than one locality.

In most literature of subsequent authors, Casaretto's herbarium numbers were cited as collection numbers, with the exception of those cited by Pennington (1990: 398, 441, respectively), as, for example, "Rio de Janeiro: Lagoa das Freitas, (fl), *Riedel s.n.* (holotype, TO, Casaretto herb. no. 1921)" and "Rio de Janeiro (fl), *Riedel s.n.* (holotype, TO, Casaretto herb. no. 1923)".

Also, several authors reported Casaretto's collection dates erroneously. For example, Sales & al. (2006) published *Mandevilla guanabara* Casar. ex M.F.Sales & al., indicating the type as "Bahia do Rio de Janeiro, 1857, *G. Casaretto 1483*"; Secco (2004) cited the type of *Alchornea iricurana* as "Brasil. Rio de Janeiro: Tijuca, Corcovado, 1857 (fl. pist. fr), *Casaretto 1233*". However, Casaretto collected in the surroundings of Rio de Janeiro in 1839. The specimen labels at G and G-DC have handwritten "hb. reg. Turin. 1857", where "1857" indicates the year when Casaretto's specimens were sent from Turin to the Candolle Herbarium at Geneva (now G and G-DC; see discussion below), which was erroneously interpreted by these authors as the year of collection.

#### **Casaretto's Brazilian and Uruguayan specimens: history, herbaria, and specimens mounted on multiple sheets.**

— Shortly after he returned to Italy in 1841, Casaretto received permission from the Italian government to transfer his entire Brazilian herbarium (more than 13,000 specimens) to his own residence in the town of Chiavari, near Genoa, where he could study them. As Casaretto was a member of a wealthy family, he had ample space to store the specimens, appropriate microscopes to observe them in full detail, and a large botanical library. He spent the following decade studying and organizing them.

In a letter dated 8 December 1849, Casaretto (1849) notified Moris that the Minister of Public Education, Knight Cristoforo Mameli (1795–1872), asked him to return his collections of Brazilian plants to Turin. In the same letter, Casaretto mentioned that the specimens purchased from Riedel had labels, but that he had not yet written the information on them, and that this operation would further delay the return

of the specimens. Meanwhile, he sent to Turin nine packages of specimens, containing 21 plant families of angiosperms. In a letter dated 19 June 1850, Casaretto (1850) informed Moris about the shipment of the third and fourth crates to Turin, which included 13 bundles, from No. 63 to No. 75, containing the specimens of 10 families of flowering plants. In a letter dated 11 March 1853, Casaretto (1853) informed Moris that he had sent the last portions of his Brazilian specimens to Turin. The seventh and last crate contained 62 bundles, from No. 101 to No. 162, corresponding to the specimens of the remaining 67 families of angiosperms, plus the ferns, bryophytes, fungi, and algae, and three bundles of taxa *incertae sedis*. He also explained that the last package, still missing, contained lichens and was still with Giuseppe De Notaris (1805–1877), who had agreed to return it separately to Turin. De Notaris was a botany professor at the University of Genoa from 1843 to 1872, after which he moved to the University "La Sapienza" of Rome, where he founded a herbarium and amassed a substantial collection of mosses and other cryptogams. It is unknown if De Notaris eventually returned Casaretto's Brazilian lichens to Turin. In his inventories, Casaretto indicated that his collections from Brazil and Uruguay, including those purchased from Riedel and Clausen, were arranged into 162 bundles for a total of 3007 gatherings with 13,667 specimens, and those he collected in Gibraltar corresponded to 122 gatherings with 477 specimens.

The most complete set of Casaretto's collections from Brazil and Uruguay is preserved in the Herbarium of the Department of Plant Biology, Turin University (TO). Most of the 3007 gatherings from Brazil and Uruguay are extant there, many of them mounted on several sheets, corresponding to about 13,000 sheets, although the exact number is unknown, as they are interspersed in the General Herbarium, and many duplicates were sent to Geneva (see below). Only the original specimens corresponding with the new names published by Casaretto are kept separately at TO. The remainder of Casaretto's specimens at TO continue to be poorly studied because this herbarium does not send specimens on loan. To assist the international botanical community, TO personnel has been sending images of specimens, when requested by specialists. A short summary of Casaretto's Brazilian collections at TO was presented by Guglielmone & al. (2009), who also reported some inconsistencies among the various unpublished catalogues produced by Casaretto.

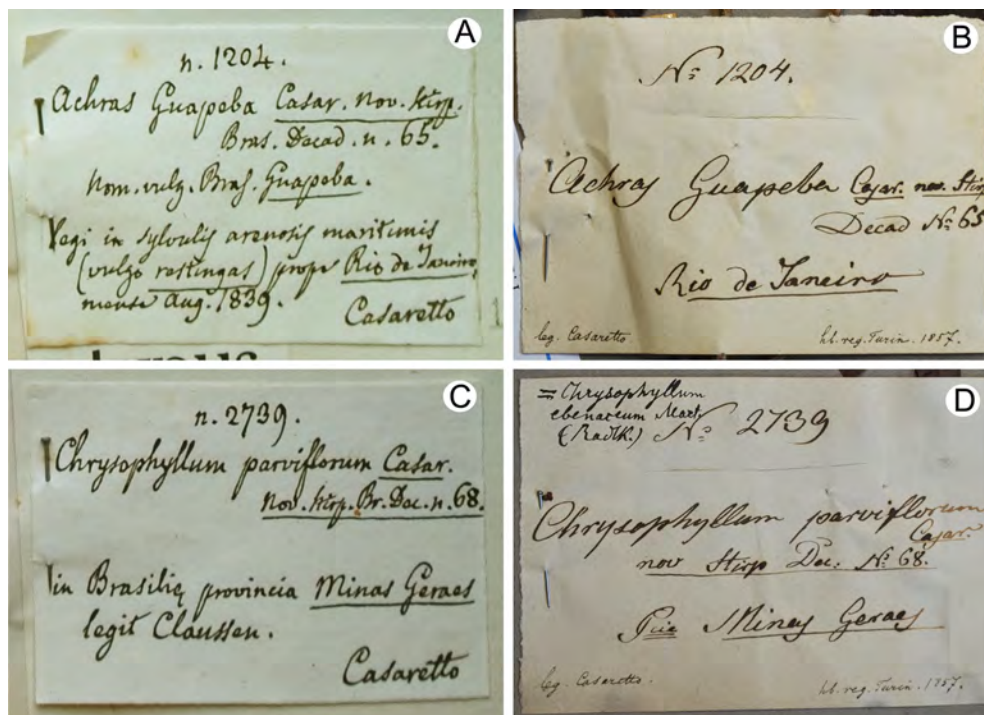
From 1841 and throughout the 1850s, Casaretto received several letters from Alphonse de Candolle asking to send duplicates of his Brazilian specimens to Geneva, to be studied for the continuation of the *Prodromus*, started by his father (A.P. de Candolle, 1824–1839) and continued by the former (A.L.P.P. de Candolle, 1844–1873). Casaretto made several requests to the local authorities asking permission to send duplicates to Geneva. However, the instructions of the authorities of the Kingdom of Sardinia were clear: Casaretto was not allowed to send any scientific specimen that he collected (or bought) in Brazil to any herbarium, because they were property of the government. As explained above, Casaretto's



Brazilian Herbarium, housed at his residence for study, was completely returned to the University of Turin by 1853. In 1857, with the intervention of Giuseppe Moris, then Senator of the Kingdom of Sardinia, the Herbarium of the Turin University received the permission to send duplicates to Geneva, and, in October of the same year, 693 specimens from Casaretto's Brazilian Herbarium were sent from Turin to the Candolle Herbarium (now G and G-DC). The labels of these specimens have handwritten "hb. reg. Turin. 1857" (Turin Royal Herbarium 1857), where "1857" indicates the year that these specimens were sent from Turin to Geneva, and also "leg. Casaretto" (collected by Casaretto), although many of them were instead originally collected by Riedel or Clausen (Fig. 1). The original collector of these specimens is indicated on the labels of the TO specimens, in Casaretto's publications, and Casaretto's unpublished catalogues, although with numerous inconsistencies. To confirm the shipment of the specimens from Turin arrived at Geneva, Alphonse de Candolle (1857) sent a letter dated 8 November 1857 to Moris in which he acknowledged the receipt of several hundred specimens collected by Casaretto in Brazil, and stated that as an expression of gratitude, he was returning the field books of Carlo Bertero (1789–1831; Delprete & al., 2002), bound in a large volume, which Giovanni Battista Balbis (1765–1831) had

loaned to his father, Augustin Pyramus de Candolle, many years before. In addition, Alphonse de Candolle (1880: 402), in his *Phytographie*, reported: "CASARETTO. Université de Turin. – Des doubles du Brésil (693 dans herb. de Candolle)." Further research in the archives of the G and TO institutions did not produce any additional information about this shipment. The large number of Casaretto specimens at Geneva facilitated the description of several new species by subsequent authors, sometimes using the unpublished names of Casaretto either in his unpublished catalogues and/or on his specimen labels, by Augustin Pyramus de Candolle's descendants, Alphonse (1806–1893, his son) and Casimir de Candolle (1836–1918, his grandson). This is also the case for Johannes Müller Argoviensis (1828–1896), who was the curator of the Candolle Herbarium (1851–1869), and the director of the Conservatoire et Jardin botaniques de Genève (1869–1896). Other subsequent authors also used Casaretto's specimens at G as types for describing new species, as they have regularly been sent out on loan.

Stafleu & Cowan (1976: 463) reported that Casaretto's "general herbarium and library is at GE". However, in GE are present only the specimens that Casaretto collected in Crimea and Ukraine in 1836, and those from the surroundings of Genoa that he collected after his return from Brazil. His rich



**Fig. 1.** Comparison of labels from Casaretto specimens at TO and G. **A**, Label pinned on sheet No. 1 of the lectotype of *Achras guapeba* Casar. at TO (Casaretto Herb. No. 1204), handwritten by Casaretto; **B**, Label pinned on the isotype of *Achras guapeba* at G (Casaretto Herb. No. 1204), handwritten by TO staff. Note "hb. reg. Turin. 1857", see Introduction and Materials and Methods; **C**, Label pinned on sheet No. 1 of the lectotype of *Chrysophyllum parviflorum* Casar. at TO (Casaretto Herb. No. 2739), handwritten by Casaretto. Note that the specimen was collected by Clausen in Minas Gerais; **D**, Label pinned on the isotype of *Chrysophyllum parviflorum* at G (Casaretto Herb. No. 2739), handwritten by TO staff. Note "leg. Casaretto" (see Introduction and Materials and Methods). — Photographs by P.G. Delprete. Reproduced with permission. © TO Herbarium, Department of Life Sciences and Systems Biology, University of Turin, and © Conservatoire et Jardin botaniques de la Ville de Genève.

botanical library is not at GE, but was dismantled and sold by his descendants.

A few fragments of Casaretto's specimens are preserved at A, F, and GH; they are fragments removed from G specimens, mounted along with a photo of the original specimen at G, on the same sheet. Additional fragments of Casaretto's collections are present at L and M, which were removed from TO specimens. Several specimens collected by Casaretto in Brazil are also present at P, most of them cryptogams, and a few angiosperm specimens collected by Clausen.

When possible, Casaretto made each gathering with several duplicates. After the 693 specimens were sent to Geneva, the remaining sheets were kept at TO. In fact, numerous gatherings at TO are mounted on multiple sheets. These specimens are now part of the TO historical collections, and will never be distributed. For each gathering corresponding to the same Casaretto herbarium number, the multiple sheets are consecutively numbered (i.e., 1, 2, 3, etc.), and on sheet No. 1 is pinned the original specimen label. Therefore, Casaretto's original specimens mounted on several sheets consecutively numbered are treated as single specimens with multiple preparations. In addition, the TO specimens do not have barcodes or accession numbers.

## ■ MATERIALS AND METHODS

For a complete analysis of the material studied in this project, we undertook a full search of the herbaria where Casaretto specimens are present, i.e., those of Turin (TO) and Geneva (G and G-DC). Also, because Casaretto presented his first ten new species from Brazil at the Third Reunion of Italian Scientists in Florence, in 1841, we also searched for Casaretto specimens in the Florence herbaria (FI and FI-W).

**The Turin Herbarium (TO).** — According to Casaretto's unpublished catalogues, 3007 collections are present at TO, many of them mounted on multiple sheets. If we take into account Casaretto's unpublished catalogues and that 693 specimens were sent to Geneva in 1857 (see below), Casaretto's collections at TO should correspond to a total of about 13,000 sheets. However, as they are interspersed throughout the General Herbarium, it is impossible to establish their exact number. In order to facilitate their study and typification, original specimens corresponding with the names published by Casaretto in the *Atti* and in the *Decades* are kept separated, although still part of the TO General Herbarium.

At TO, specimens and labels are pinned on the sheets (i.e., not glued, as in G and G-DC). All the sheets of this herbarium, including specimens with multiple preparations, have a label with the heading "MUSEUM BOTANICUM R. HORTI TAURINENSIS — HERBARIUM GENERALE" (Fig. 2). These labels should not be interpreted as specimen labels in a strict sense, but as an accessory to identify the sheets belonging to the General Herbarium at TO, just like the stamp of a herbarium logo used in many herbaria to indicate that those specimens belong to their collections. In case of multiple preparations of the same specimen, on these labels

are handwritten the sequential sheet numbers corresponding to each sheet. In addition, multiple sheets with the same Casaretto herbarium number are often pinned together, with a sole common label pinned on sheet No. 1 of that set. Therefore, according to Art. 8.3 of the *International Code of Nomenclature for algae, fungi, and plants* (Turland & al., 2018, *Shenzhen Code*; hereafter the *Code*): "A specimen may be mounted as more than one preparation, as long as the parts are clearly labelled as being part of that same specimen, or bearing a single, original label in common. Multiple preparations from a single gathering that are not clearly labelled as being part of a single specimen are duplicates, irrespective of whether the source was one individual or more than one." In addition, Example 9 of Art. 8.3 applies to Casaretto's gatherings at G and TO: "In the herbaria in Geneva (G and G-BOIS, but not G-DC) specimen folders may be used to house preparations, consisting of one to numerous herbarium sheets that comprise a single specimen and possess a single original label. Although the sheets themselves are usually not individually labelled as being part of the same specimen, they are physically kept together. The individual sheets are not therefore duplicates, but are parts of a single specimen." In conclusion, Casaretto's specimens at TO with multiple preparations should be treated according to Example 9 of Art. 8.3 of the *Code*, because the sheets of the same specimen are consecutively numbered, have a sole common label pinned on the first sheet, and are physically kept together, and often pinned together as a set with multiple sheets.

A set of letters exchanged between Casaretto and Giuseppe Moris (then director of the Herbarium and Botanical Garden of Turin) and Alphonse de Candolle is preserved at TO, referring to his botanical publications, herbarium specimens, and general information, and several unpublished catalogues that Casaretto prepared for his Brazilian herbarium. All these letters have been carefully studied, and supplied additional information regarding collection data and publication dates.

**The Geneva Herbaria (G and G-DC).** — Delprete (2016) erroneously estimated that about 3000 Casaretto's specimens were sent from Turin to Geneva, hypothesizing that about one duplicate for each collection was sent to the latter institution. This overestimation was due to the fact that at the time he was unable to find any record, published or unpublished, regarding this shipment. One important reference was overlooked, as Alphonse de Candolle (1880: 402) in *La phytographie* stated that on October 1857, 693 specimens from the Casaretto Herbarium were sent from Turin to Geneva. At that time, Alphonse de Candolle was working on the continuation of the great project started by his father, the *Prodromus*. When Casaretto's specimens arrived at Geneva they were organized by family. Those of the families already treated in the *Prodromus* by 1857 were integrated into Candolle's general herbarium (now G), and those of the families that in this year were still to be treated or to be revised in the *Monographiae phanerogamarum* were filed in the *Prodromus* and *Monographiae phanerogamarum* herbaria respectively (now G-DC).

In the G-DC Herbarium, specimens are filed according to the classification of the *Prodromus* and the *Monographiae phanerogamarum*. On the other hand, the G General Herbarium has recently been entirely re-filed according to the APG III system (Angiosperm Phylogeny Group, 2009; Chase & Reveal, 2009). As at TO, specimens and labels at G and G-DC are pinned on the sheets (Figs. 1, 3).

Specimens with multiple preparations at G are kept together, sometimes sequentially numbered, and always with a common label pinned on the first sheet. Therefore, Art. 8.3 of the *Code* applies, and multiple sheets with the same Casaretto herbarium number should be treated as a single specimen (see comments in section “The Turin Herbarium (TO)”, above).

Casaretto’s specimens at G and G-DC have labels handwritten by TO staff, with “hb. reg. Turin. 1857” usually at the bottom of the label (Fig. 1). In addition, these labels also report “leg. Casaretto” (collected by Casaretto), even when the original collector was Riedel or Clausen. These two statements gave rise to numerous misinterpretations by subsequent authors.

**The Florence Herbaria (FI and FI-W).** — Casaretto presented his first ten new species from Brazil at the Third Reunion of Italian Scientists (Terza Riunione degli Scienziati Italiani) in Florence in September 1841. These ten new species were published in the Proceedings of the Third Reunion of Italian Scientists (*Atti della Terza Riunione degli Scienziati Italiani*), in June 1842 (although the title page of the volume reports the year 1841). In the *Atti*, Prof. Giuseppe Moris and Prof. Pietro Savi (1811–1871), President and Secretary of the Botany Section, respectively, organized a summary of the oral presentations made at the 3rd Section of the Reunion. On page 512 of the *Atti*, the introduction to Casaretto’s (1842b) presentation as “Il Dott. Giovanni Casaretto dimostra alla Sezione esemplari secchi di 10 di piante da lui raccolte al Brasile, e per il primo nominate, e caratterizzate nel modo che segue” (Dr. Giovanni Casaretto shows to the Section dry specimens of ten plants collected by him in Brazil, and firstly named, and characterized in the following way). This sentence means that Casaretto showed the specimens to the audience, and not that he deposited them in the Florence Herbarium. In addition, the authorities of the Kingdom of Sardinia did not allow Casaretto to transfer any scientific specimen collected (or bought) during the trip to Brazil and Uruguay to any herbarium, other than the one in Turin (TO). In fact, Italy in 1841 was not yet unified as a country, and while Florence was the capital of the Grand Duchy of Tuscany, Turin was the capital of the Kingdom of Sardinia. In order to check if, by a remote possibility, specimens of the first ten species described by Casaretto in the *Atti* were deposited in Florence, we searched for them in FI and FI-W (Herbarium Webbianum). The first ten species described by Casaretto are: *Tropaeolum brasiliense* (Tropaeolaceae), *Simaba longifolia*, *Simaba laevis*, *Simaba maiana* (Simaroubaceae), *Cinchona riedeliana* (Rubiaceae), *Chaptalia araneosa* (Asteraceae), *Chrysophyllum glycyphloeum* (Sapotaceae), *Strychnos gomesiana* (Loganiaceae), *Alchornea janeirensis* (Euphorbiaceae), and *Ficus radicans* (renamed *Ficus arpazusa* in the *Decades*; Moraceae). After

exhaustive searches in FI and FI-W for these ten names as well as possible synonyms and currently accepted names, we confirm that no Casaretto specimen is present in these herbaria.

**Methods adopted for the typification of Casaretto’s names.** — Considering the taxonomic value of Casaretto’s taxa, it is extremely important to typify all the names, clarify their identity, and stabilize their nomenclature. The main goals of this paper are to revise the existing typifications of the names published by Casaretto, provide the necessary corrections, and present formal typifications of the names not yet typified. In his publications, Casaretto cited only the locality of the gatherings, and did not cite a collector’s name or collecting number or date. Therefore, in line with the reasoning of Art. 40.3 Note 2 of the *Code* (Turland & al., 2018), none of Casaretto’s specimens would be treated as syntypes, although they would be part of his original material, from which lectotypes and isolectotypes can be selected; when the TO specimen of a given Casaretto name is demonstrated to be the sole specimen used by him to describe that taxon (Art. 9.1 (b)), it is treated as the holotype (see explanation below).

McNeill (2014) published a very helpful article explaining the methods to be adopted when dealing with type specimens, and especially holotypes. In this article, after a discussion on the evolution of the concept of holotype throughout the various versions of the *Code*, he advised that it is “wise for authors who are doubtful as to whether or not a particular specimen in one herbarium is the holotype to cite it as: ‘Lectotype, designated here (or perhaps holotype)’.” In the same article, he also stated “In summary, establishing that a specimen (or very occasionally an illustration) is a holotype is only possible under the following circumstances: If, prior to 1958, no specimen is indicated in the protologue, there will be a holotype only if it can be shown that a single specimen (or illustration) was the only element upon which the validating description or diagnosis was based ([*Melbourne Code*] Art. 9.3).” When Casaretto published the names of his new species, in 1842–1845, all the specimens were kept in his Brazilian Herbarium, at his residence, and the authorities of the Kingdom of Sardinia did not allow him to distribute them. Casaretto’s Brazilian Herbarium was returned in three shipments from Casaretto’s residence to Turin in 1850–1853, several years after he published his new species, and the duplicates for G and G-DC were sent in 1857, i.e., more than a decade after the publication of Casaretto’s names. In fact, after exhaustive searches in numerous herbaria, we are absolutely sure that Casaretto’s Brazilian specimens are deposited only at TO (complete set), and G and G-DC (partial sets), with the exception of a few fragments sent from TO, G and G-DC to some herbaria during the 1900s. Therefore, following McNeill’s recommendations, in those cases where we can be certain that Casaretto “used only one specimen or illustration, [...], when preparing the account of [a] new taxon, it [the sole element at TO] must be accepted as the holotype” (*Shenzhen Code* Art. 9 Note 1).

Some typifications of Casaretto’s names have already been attempted in specialized literature; however, most of them are in need of corrections regarding the citation of Casaretto’s



herbarium numbers, the herbarium of deposit, collection dates and localities, and publication dates. The study of Casaretto's original material was carried out through the following steps:

(1) An initial exhaustive bibliographic search to determine if Casaretto's names have already been fully or partially typified by subsequent authors. A preliminary analysis of families treated in the series *Flora Neotropica Monographs* revealed that numerous Casaretto's taxa have already been typified by several specialists (however, most of these typifications are in need of corrections).

(2) Specimens at TO were studied in September 2017. Work at this institution was particularly important because it is where Casaretto's main herbarium is kept and where his unpublished catalogues and correspondence are preserved. All original specimens of Casaretto's taxa at TO are kept separated from the general herbarium; they were carefully examined, annotated and photographed. Digital images were deposited there, and a copy of these images is kept with the authors for personal consultation, and for possible requests by interested specialists.

(3) Casaretto's specimens in Geneva are interspersed throughout G and G-DC, and a considerable effort was required to retrieve them. They were studied during September and October 2017. Some of the type specimens were already digitized and available in JSTOR Global Plants (<https://plants.jstor.org>); however, the images of many Casaretto type specimens at G and G-DC were not available via the internet at the time of the study. All original specimens of Casaretto's taxa at G and G-DC were examined, annotated and photographed.

## ■ NOMENCLATURAL TREATMENT

Plant names described by Casaretto are here organized by family delimited according to the APG III system (Angiosperm Phylogeny Group, 2009; Chase & Reveal, 2009). Families, genera and species are organized alphabetically. Numbers preceding Casaretto's names are those assigned by him in the *Atti* and in the *Decades*.

Barcode numbers of herbarium specimens, when available, are cited after the herbarium code; when the barcode number is not available, the accession number, when available, is cited instead. All specimens cited have been examined, unless indicated by "n.v." (not seen) after the herbarium code.

### Asteraceae

6. *Chaptalia araneosa* Casar. in Atti Riunione Sci. Ital. 3: 514. Jun 1842 ("1841") ≡ *Thysanthema araneosa* (Casar.) Kuntze, Revis. Gen. Pl. 1: 369. 1891 – Type: Brazil: "Habitat in Brasiliae provincia, Minas Geraes." **Lectotype (designated here):** "Serra da Caraça", s.d. [collection date unknown, before 1840], *Casaretto Herb. No. 2810 (Clausen s.n.)* (TO [1 sheet]; isoelectotype: G barcode G00446557).

### Accepted name. – *Chaptalia araneosa*

Casaretto (1842b: 514) cited the locality as "Habitat in Brasiliae provincia, Minas Geraes", but did not provide any other collection details. Subsequently, in *Decas I* (Casaretto, 1842d: 12), he cited two gatherings made by Clausen: "Crescit in campis igne quotannis crematis ac in montibus Serra do Ouro Preto et Serra da Caraça, in Brasiliae provinciâ Minas Gerais (Clausen)."

Hind (2000: 937) cited and commented on the type of *Chaptalia araneosa* as: "'habitat in Brasiliae provincia, Minas Geraes' (holotype: FI). ['Crescit in campis igne quotannis crematis ac in montibus Serra do Ouro Preto et Serra da Caraça, in Brasiliae provinciâ Minas Gerais (Clausen).'] — citation taken from *Decas I* (Casaretto 1842[d]: 12). This information is given because one is left with the impression from the introduction to Casaretto's descriptions that he collected the material, although he never collected in Minas Gerais (Urban 1906: 11)." An important correction is necessary to Hind's type citation. Casaretto's complete set is at TO, and partial sets are at G and G-DC. None of his collections are at FI or FI-W (see Materials and Methods). From the introduction to Casaretto's presentation in the *Atti* (Casaretto, 1842b: 512), it is obvious that Casaretto, in 1841, showed the specimens of his first ten new species to the audience of the Third Reunion of Italian Scientists held in Florence, and returned home with them after the Reunion was finished. Also, after exhaustive searches in FI and FI-W, we are certain that no specimen from the Casaretto Brazilian Herbarium is present in these herbaria, and that no original specimen of *Chaptalia araneosa* has ever existed in FI or FI-W. According to Art. 9.4, "original material comprises the following elements: (a) those specimens and illustrations [...] that the author associated with the taxon, and that were available to the author [...]; (b) any illustration published as part of the protologue; (c) the holotype and those specimens which, even if not seen by the author of the description or diagnosis validating the name, were indicated as types (syntypes or paratypes) of the name at its valid publication; and (d) the isotypes or isosyntypes of the names irrespective of whether such specimens were seen by either the author of the validating description or diagnosis or the author of the name [...]." Applying these provisions to the present case: (a) obviously, a nonexistent FI specimen cannot have been available to Casaretto, (b) no illustration was published along with the protologues in Casaretto's publications, and (c) and (d) do not apply as no holotype exists, none having been designated by Casaretto and there is evidence (Casaretto, 1842d) that more than one gathering was used, and no other types were indicated by the original author. Therefore, since there is no original material at FI, we cannot correct Hind's use of "holotype" to "lectotype" under Art. 9.10 and 9.12. Eligible original material for possible lectotypification exists at G and TO. In conclusion, Hind's type citation is erroneous and should not be followed.

At TO there are two gatherings of *Chaptalia araneosa* corresponding to the two localities cited by Casaretto (1842d). Both of them were collected by Clausen in Minas Gerais, and then sold to Casaretto while he was in Rio de Janeiro. One of them, mounted on a single sheet, has the label "n. 2786. Chaptalia araneosa



Casar., Nov. Stirp. Bras. Dec. n. 6. In monte Serra de Ouro Preto (in Brasiliae provincia Minas Geraes) Legit Claussen. Casaretto". The other specimen is also mounted on a single sheet, and has the label "n. 2810. Chaptalia araneosa Casar., Nov. Stirp. Bras. Dec. n. 6. in Monte Serra da Caraça (in Brasiliae provincia Minas Geraes) legit Claussen. Casaretto" (Fig. 2). This sheet has four plants mounted on it, all of them of the same species, and is here designated as the lectotype of this name.

At G there is a specimen, barcode G00446557, with a single plant and the label "N. 2810, Chaptalia araneosa Casar., Nov. Stirp. Dec. No. 6. Mo<sup>te</sup> Serra da Caraça, P<sup>cia</sup> Minas Geraes, leg. Casaretto. hb. reg. Turin. 1857". This specimen is an islectotype.

96. *Flotovia flagellans* Casar., Nov. Stirp. Bras. 10: 86. Sep 1845 ≡ *Dasyphyllum flagellans* (Casar.) Cabrera in Revista Mus. La Plata, Secc. Bot. 9(38): 60. 1959 ("flagellare") – Type: Brazil: "Habitat in provinciâ Minas Geraes (Claussen)." **Lectotype (designated here):** s.d. [before 1840], *Casaretto Herb. No. 2779 (Clausen s.n.)* (TO [2 sheets]; islectotype: G barcode G00446558).

*Accepted name.* – *Dasyphyllum flagellans* (Casar.) Cabrera

The basionym epithet *flagellans* is a 1-ending adjective for all three genders. Cabrera (1959), however, in his transfer of *Flotovia flagellans* to *Dasyphyllum*, corrected the basionym epithet as "flagellaris" and cited his new combination epithet as "flagellare" (correctable errors); he did not cite any original material from Casaretto's herbarium.

At TO there is a specimen mounted on two sheets consecutively numbered, constituting a single specimen (Art. 8.3); the label of sheet No. 1 shows "n. 2779. Flotovia flagellans Casar. Nov. Stirp. Brasil. Dec. n. 96. Habui in Brasiliae provincia Minas Geraes a Claussen. Casaretto." The other sheets do not have any label. This specimen is here designated as the lectotype of this name.

At G, a specimen (barcode G00446558) mounted on a single sheet, possessing a branch with numerous leaves and flowering heads, and the label "No. 2779. Flotovia flagellans Casar. Nov. stirp. Dec. n. 96. Pcia Minas Geraes. Leg. Casaretto. hb. reg. Turin. 1857." This specimen is an islectotype.

At BM, a specimen, with the barcode BM001010218, has a label showing "No., Composita, Baccaris, April, P. Claussen, Coll. 1840, Minas Geraes, Brasilia" and two annotations: "Probably a type specimen, Flotovia flagellans, Nov. Stirp. Brasil. Decades 10: 86. 1845, det. M.M. Saavedra, III/2010" and "Dasyphyllum flagellare (Casar.) Cabrera, Determinavit M.M. Saavedra, III/2010". Since Casaretto bought Clausen's collections in 1839, the BM specimen is not likely to be original material seen by Casaretto for this name, albeit published in 1845.

95. *Porophyllum caesium* Casar., Nov. Stirp. Bras. 10: 86. Sep 1845 – Type: Brazil: "Habitat in provinciâ Minas Geraes (Claussen)." Holotype: "Prope Ouro Preto", s.d. [before 1840], *Casaretto Herb. No. 2821 (Clausen s.n.)* (TO [3 sheets]).

*Accepted name.* – *Porophyllum gracile* Benth.

At TO there is a single specimen mounted on three sheets, which are kept together and consecutively numbered; therefore, these three sheets constitute a single specimen (Art. 8.3). On sheet No. 1, the label shows "n. 2821. *Porophyllum caesium* Casar. Nov. Stirp. Bras. Dec. n. 95. Prope Ouro Preto (in Brasiliae provincia Minas Geraes) legit Claussen. Casaretto". The other two sheets do not have any label. This specimen is the holotype of this name.

After exhaustive search at G and G-DC, no original specimen of *Porophyllum caesium* was found.

At P there are two specimens of *Porophyllum caesium* collected by Clausen in Minas Gerais. The first one (barcode P02140865) has an "Isotype" label and a specimen label with the printed text "Herb. Mus. Paris." and "BRÉSIL (Minas Geraës). M. Claussen 1839" ["1839" was struck through and substituted by "1841"], and a handwritten text showing "*Porophyllum caesium* Casar. (Walp. Repert. b. syst.), 1208, n. 10." The second specimen (barcode P02140866) has a label "Isotype", a specimen label with the printed text "Herb. Mus. Paris." and "BRÉSIL (Minas Geraës), Mr Claussen 1841" and a handwritten text showing "*Porophyllum caesium* Casar. (Walp. Repert. b. syst.), (n. 10)." As both specimens were collected in 1841, they cannot be original material for *P. caesium*.

85. *Senecio organensis* Casar., Nov. Stirp. Bras. 9: 77. Aug 1845 ≡ *Graphistylis organensis* (Casar.) B.Nord. in Opera Bot. 44: 58. 1978 – Type: Brazil: [Rio de Janeiro] "Reperi in altioribus praeruptisque jugis montium Serra dos Orgãos extra superiorem sylvarum primaevarum limitem." Holotype: s.d. [May 1839], *Casaretto Herb. No. 798 (TO [1 sheet])*.

*Accepted name.* – *Graphistylis organensis* (Casar.) B.Nord.

Nordenstam (1978) transferred *Senecio organensis* to *Graphistylis* B.Nord., and made the new combination *G. organensis* (Casar.) B.Nord., under which he recognized two forms. For the autonym, he cited the basionym without mentioning any original material collected by Casaretto.

At TO there is a single sheet with the label "n. 798. Senecio organensis Casar. Nov. Stirp. Bras. Dec. n. 85. Legi in altioribus praeruptisque jugis montium Serra dos Orgaos (in Brasiliae provincia Rio de Janeiro) limitem, mense Maio 1839. Casaretto". This specimen is the holotype of *Senecio organensis* Casar.

No specimen corresponding to *Casaretto Herb. No. 798* is present at either G or G-DC.

## Bignoniaceae

53. *Jacaranda clauseniana* Casar., Nov. Stirp. Bras. 6: 53. Apr 1843 – Type: Brazil: "Habitat in provinciâ Minas Geraes (Claussen)." Holotype: s.d. [before 1840], *Casaretto Herb. No. 2878 (P. Clausen s.n.)* (TO [1 sheet]).

*Accepted name.* – *Jacaranda caroba* (Vell.) DC.

Gentry (1992: 64) cited the type of *Jacaranda clauseniana* Casar. as "Brazil, Minas Gerais, *Claussen 26190* (holotype



**Fig. 2.** Lectotype of *Chaptalia araneosa* (Asteraceae) at TO. Number “4147” stamped on the lower right corner corresponds to the genus number according to the Durand (1888) classification adopted in the TO herbarium. Photograph by P.G. Delprete. Reproduced with permission. © TO Herbarium, Department of Life Sciences and Systems Biology, University of Turin.



G; isotypes BR (as 648, K).” If two or more specimens exist for this name, then Gentry’s citation constitutes an act of inadvertent lectotypification, but he did not indicate that he saw a specimen at any of the cited herbaria. After exhaustive search at G and G-DC, we were unable to locate “*Claussen 26190*”, and we believe that Gentry’s citation is erroneous, as further discussed below. In addition, it is impossible to establish a direct link between “*Claussen 26190*” and a Casaretto herbarium number. Therefore, the inadvertent lectotypification proposed by Gentry is superseded (*Shenzhen Code* Art. 9.19). For this species name, the TO herbarium houses a single original specimen with the label “n. 2878. *Jacaranda clauseniana* Casar. Nov. Stirp. Bras. Dec. n. 53. In Brasiliae provincia Minas Geraes legit Claussen. Casaretto.” This specimen is the holotype of this name.

Two specimens collected by Clausen in Minas Gerais and preserved at BR, are not original material of *Jacaranda clauseniana*. One specimen (BR barcode 000000880389) has a handwritten label with the text “*Jacaranda clauseniana*?” and the printed text “P. Claussen. Minas Geraes. Coll. 1840. Brasilia.” At the middle portion of this label, the printed text “Aug.–April” was struck through and substituted by “Dec.” The second specimen (BR barcode 000000880350) has a label with the handwritten text “No. 648, *Jacaranda clauseniana* Cas.” and the printed text “Aug.–April. P. Claussen. Minas Geraes. Coll. 1840. Brasilia.” As already mentioned, Casaretto bought Clausen’s specimens while he was in Rio de Janeiro in April–December 1839, and therefore, these two Clausen specimens, collected in 1840, are not part of the original material seen by Casaretto and do not qualify for typification.

At G there is a specimen (barcode G00446575), mounted on a single sheet, with three labels. One label has the handwritten text “J.C. *Jacaranda* (Caroba). Frutex. Minas. Cachoeira do Campo. Novbr. 39 [Nov 1839]”. On the second label is printed “Brésil (Minas Geraes). P. Claussen, 2e envoi reçu en octobre 1839.” The third label has the handwritten (author unknown) text “*Jacaranda clauseniana* Casar. (Bureau).” Although this specimen was collected before October 1839, it is impossible to establish a direct link between this specimen and *Casaretto Herb. No. 2878*; therefore, it is here treated as possible original material of *J. clauseniana*.

### Calophyllaceae

37. *Kielmeyera membranacea* Casar., Nov. Stirp. Bras. 4: 39. Nov 1842 (“Oct 1842”) – Type: Brazil: “Crescit in arenosis maritimis prope *Rio de Janeiro*” [locality “Penha”]. **Lectotype (designated here):** s.d. [Jan 1839], *Casaretto Herb. No. 633* (Riedel s.n.) (TO [3 sheets]; isolectotype: G barcode G00446571).

*Accepted name.* – *Kielmeyera membranacea*

At TO, *Casaretto Herb. No. 633* of *Kielmeyera membranacea* is mounted on three consecutively numbered sheets. Sheet No. 1 has two labels showing “n. 633. *Kielmeyera*. Arbor vel arbusculus 6–12 ped., fol. glaberr. nitidis, fl. albi, in sylv. locis arenosis da Penha. Jan. 1839”

and “n. 633. *Kielmeyera membranacea* Casar. Nov. Stirp. Brasil. Decad. N. 37. Habui ex Brasilia in sylvulis arenosis maritimis (vulgo restingas) loco dicto Penha prope urbe Rio de Janeiro, a Riedel. Casaretto.” This specimen, mounted on three sheets, is here designated the lectotype of this name.

At G there is a sheet (barcode G00446571) with three loose leaves and an inflorescence rachis. It has the original label made at TO stating “hb. reg. Turin. 1857. No. 633. *Kielmeyera membranacea* Casar. Nov. Stirp. Decad. No. 37. Vulgo restingas | loco dicto Penha, Rio de Janeiro, a Riedel. Leg. Casaretto.” This specimen is an isolectotype.

### Caryocaraceae

71. *Caryocar edule* Casar., Nov. Stirp. Bras. 8: 67. Jun 1844 – Type: Brazil: “Crescit in arenosis maritimis prope *Rio de Janeiro*, rara (Riedel).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 1948* (Riedel s.n.) (TO [1 sheet]) (vide Prance & Silva, 1973: 48).

*Accepted name.* – *Caryocar edule*

Prance & Silva (1973: 48) cited the type of *Caryocar edule* as “Riedel 1948, Brazil, Rio de Janeiro (holotype, TO).” However, “1948” is not Riedel’s collection number, but Casaretto’s herbarium number for this specimen, of which Riedel was the original collector. At TO is present a single sheet with the label “n. 1948. *Caryocar edule* Casar. Nov. Stirp. Bras. Decad. N. 71. Nom. Vulg. Brasil. Piqui. In arenosis maritimis prope Rio de Janeiro legit Riedel.” This specimen is the holotype of this name.

After an exhaustive search at G and G-DC, no original material of *Caryocar edule* was found.

### Clusiaceae

63. *Clusia ganabaria* Casar., Nov. Stirp. Bras. 7: 60. Sep 1843 (“Jul 1843”) – Type: Brazil: [Rio de Janeiro] “Reperi in rupibus maritimis circa sinum Fluminensem (*bahia do Rio de Janeiro*) olim ab Americanis, teste Théveto et Lério, *Ganabara* nuncupatum, unde nomen specificum hausit.” **Lectotype (designated here):** s.d. [Jun 1839], *Casaretto Herb. No. 1864* (TO [2 sheets]; isolectotype: G-DC barcode G00733624).

*Accepted name.* – *Clusia criuva* subsp. *parviflora* (Engl.) Vesque

Engler (1888: 407–408) treated *Clusia ganabaria* Casar. as synonym of *C. criuva* Cambess., and among the collections listed, he mentioned “Bahia do Rio de Janeiro: Casaretto n. 1864 in herb. DC?”. He did not use the term type and doubtfully cited Candolle’s herbarium; therefore, he did not typify the name.

At TO there is a specimen mounted on two sheets consecutively numbered, constituting a single specimen (see Art. 8.3). Sheet No. 1 has the label “No. 1864. *Clusia ganabaria* Casar. Nov. Stirp. Bras. Decad. N. 63. Legi in Brasilia, in rupibus maritimis circa sinum Fluminensium (*bahia do Rio de*

Janeiro), mense Junio 1839. Casaretto.” On sheet No. 2 there is no label. On these two sheets are mounted a few branches with leaves and a few immature fruits. This specimen is here selected as the lectotype of *Clusia ganabarica*.

At G-DC there is a specimen (barcode G00733624), mounted on the lower portion of a sheet (on the upper portion is a Gaudichaud collection), with an original label associated with loose leaves, one flower in an envelope, and a small leafless twig. The label shows: “No. 1864 (*Clusia sellowiana* Schlecht) *Clusia Ganabarica* Casar. Nov. Stirp. Bras. Decad. N. 63. Bahia do Rio de Janeiro. Leg. Casaretto. hb. reg. Turin. 1857.” This specimen is an isoelectotype.

62. *Clusia mammosa* Casar., Nov. Stirp. Bras. 7: 60. Sep 1843 (“Jul 1843”) – Type: Brazil: “Reperi in sylvis primaevis circa *Passagem* prope Bahiam.” Holotype: s.d. [Jan 1840], *Casaretto Herb. No. 2142* (TO [1 sheet]). Accepted name. – *Clusia nemorosa* var. *lhotzkyana* Engl.

Casaretto did not cite the collector’s name. Engler (1888: 422) treated *Clusia mammosa* as a synonym of *C. nemorosa* var. *lhotzkyana* Engl., and among the collections listed he cited “*Brasiliae* prov. Bahia [...], in sylvis primaevis ad *Passagem*, Casaretto”. He did not use the term type.

At TO there is a single sheet with the label “n. 2142. *Clusia mammosa* Casar. Nov. Stirp. Bras. Decad. N. 62. Legi in *Brasilia*, in sylvis primaevis circa *Passagem* prope Bahiam, mense Jan. 1840. Casaretto.” This specimen has two leafless branchlets, several loose leaves, and two immature fruits, and is the holotype of this name.

After an exhaustive search at G and G-DC, no original specimen of *Clusia mammosa* was found.

64. *Clusia rupicola* Casar., Nov. Stirp. Bras. 7: 61. Sep 1843 (“Jul 1843”) – Type: Brazil: [Rio de Janeiro] “Reperi in altioribus ac praeruptibus jugis montium *Serra dos Orgãos*, ad superiorem sylvarum primaevarum limitem.” Holotype: s.d. [May 1839], *Casaretto Herb. No. 855bis* (TO [1 sheet]).

Accepted name. – *Clusia fragrans* Gardner

Engler (1888: 404–405) treated *Clusia rupicola* as synonym of *C. fragrans* Gardner, but did not cite any specimen for *C. rupicola*.

At TO, a single sheet is present, with the label “n. 855bis. *Clusia rupicola* Casar. Nov. Stirp. Bras. Decad. N. 64. Legi in altioribus ac praeruptibus jugis montium *Serra dos Orgãos*, in *Brasiliae* provincia Rio de Janeiro, mense Maio 1839. Casaretto.” The specimen has two branchlets, one of them with an immature fruit, and the other one with a loose leaf. This sheet is the holotype of this name.

After an exhaustive search at G and G-DC, no original specimen of *Clusia rupicola* was found.

## Connaraceae

92. *Omphalobium comans* Casar., Nov. Stirp. Bras. 10: 84. Sep 1845 = *Bernardinia comans* (Casar.) G.Schellenb.

in *Candollea* 2: 103. 1925 – Type: Brazil: “Reperi in sylvis circa *Rio de Janeiro*.” Lectotype (designated by Forero in *Fl. Neotrop. Monogr.* 36: 27. 1983): s.d. [Dec 1838], *Casaretto Herb. No. 554* (*Riedel s.n.*) (G barcode G00305694; isoelectotype: TO [2 sheets]).

Accepted name. – *Bernardinia fluminensis* (Gardner) Planch. var. *fluminensis*

Forero (1983: 27) cited the type of *Omphalobium comans* as “*Tipo. Brasil. Rio de Janeiro, sin fecha, fl., Casaretto 554* (G).” Although Forero did not formally designate a lectotype, his citation is treated as an inadvertent act of lectotypification as allowed by the *Shenzhen Code* Art. 7.11 and 9.10. This specimen (barcode G00305694) has Casaretto’s label showing “No. 554, *Omphalobium comans* Casar. nov. Stirp. Decad. No. 92, Rio de Janeiro, hb. reg. Turin. 1857, leg. Casaretto.” In addition, Forero (1983) treated this taxon as a synonym of *Bernardinia fluminensis* (Gardner) Planch. var. *fluminensis*.

At TO there is a gathering mounted on two sheets numbered 1 and 2, constituting a single specimen (see Art. 8.3). Sheet No. 1 has two labels showing: “n. 554. *Cnestis*. Frutex rami diffusi subscandentis, flores albi. In collibus umbrosis, R. Jan. Dbr. 1838 [Rio de Janeiro, Dec 1838]” and “n. 554. *Omphalobium comans* Casar. Nov. Stirp. Brasil. Decad. N. 92. In collibus umbrosis circa urbem Rio de Janeiro legit Riedel. Casaretto.” Sheet No. 2 has no label. This specimen is an isoelectotype.

## Dilleniaceae

12. *Davilla itaparicensis* Casar., Nov. Stirp. Bras. 2: 19. Jun 1842 (“May 1842”) – Type: Brazil: [Bahia] “Reperi in insulâ *Itaparica* ad ostium sinus Bahiensis, in maritimis, una cum *D. flexuosa* Aug. St.-Hil. Utrasque legi cuni fructu mense Februario.” Lectotype (designated by Kubitzki in *Mitt. Bot. Staatssamml. München* 9: 95. 1971): s.d. [Feb 1840], *Casaretto Herb. No. 2268* (TO [2 sheets]; isoelectotypes: G barcode G00237398, M [fragment ex TO] barcode M-0212869).

Accepted name. – *Davilla nitida* (Vahl) Kubitzki

Kubitzki (1971: 95) cited “Typus: Casaretto 2268 (TO), *Brasilien, Bahia*.” At TO there is a single specimen mounted on two sheets numbered 1 and 2. Sheet No. 1 has the label “N. 2268, *Davilla Itaparicensis* Casar., Nov. Stirp. Brasil. N. 12, Legi in *Brasilia*, in maritimis insula *Itaparica* ad ostium sinus Bahiensis, mense Febr. 1840. Casaretto.” Sheet No. 2 has no label. Although Kubitzki did not formally designate a lectotype, his citation is treated as an inadvertent act of lectotypification as allowed by the *Shenzhen Code* Art. 7.11 and 9.10.

At G there is an isoelectotype (barcode G00237398) with a short branch with a rachis bearing several fruits, and a few loose leaves in an envelope. It has the label “No. 2268. *Davilla itaparicensis* Casar. nov. Stirp. Brasil. Decad. No. 12, hb. reg. Turin. 1857, leg. Casaretto.”

At M is preserved a sheet with fragments removed from the TO specimen, with a few loose leaves and several fruits.



It has the typewritten label “Typus von *D. itaparicensis* Casar., Casaretto Nr. 2268, a. 1840, Brasilien, Bahia, Itaparica (Fragm. Typi, TO).” This specimen is an isolectotype (vide Art. 8.3 Ex. 8).

11. *Davilla latifolia* Casar., Nov. Stirp. Bras. 2: 19. Jun 1842 (“May 1842”) – Type: Brazil: “Crescit prope *Rio de Janeiro*.” Lectotype (designated by Kubitzki in Mitt. Bot. Staatssamml. München 9: 79. 1971): “prope Laranjeira”, s.d. [before 1840], *Casaretto Herb. No. 1874 (Riedel s.n.)* (TO [1 sheet]; isolectotypes: G barcode G00237396, M [fragment ex TO] barcode M-0212871). *Accepted name.* – *Davilla latifolia*

Casaretto (1842a: 19) neither cited any collector’s name nor indicated that Riedel collected this specimen. However, the TO specimen, mounted on a single sheet, has a label showing “N. 1874, *Davilla latifolia* Casar., Nov. Stirp. Bras. Decad. N. 11. Habui ex viciniis Urbis Rio de Janeiro prope Laranjeira a Riedel”, meaning that it was originally collected by Riedel. Kubitzki (1971: 79) cited “Typus: Casaretto (leg. Riedel) Nr. 1874 (TO), Brasilien, Rio de Janeiro.” Kubitzki’s citation is treated as an inadvertent act of lectotypification as allowed by the *Shenzhen Code* Art. 7.11 and 9.10.

At G there is an isolectotype (barcode G00237396) with one mature leaf, and an infructescence with several mature fruits. It has the handwritten label “No. 1874, Casar. nov. Stirp. Brasil. Decad. No. 11, leg. Casaretto, hb. reg. Turin. 1837.”

At M there is a sheet, barcode M-0212871, with fragments removed from the TO specimen, consisting of a few leaf pieces and a few loose fruits. It has the typewritten label “*Davilla latifolia* Casaretto, Leg. Riedel, Laranjeira b. Rio de Janeiro, Fragg. Typi ex TO.” This specimen is an isolectotype (vide Art. 8.3 Ex. 8).

#### Ericaceae

40. *Gaylussacia rigida* Casar., Nov. Stirp. Bras. 4: 40. Nov 1842 (“Oct 1842”) ≡ *Adnaria rigida* (Casar.) Kuntze, Revis. Gen. Pl. 2: 383. 1891 – Type: Brazil: [Rio de Janeiro] “Legi in cacuminibus montium *Serra dos Orgãos* extra superiorem sylvarum primaevarum limitem, cum fructibus maturis mense Majo.” Lectotype (designated by Sleumer in Bot. Jahrb. Syst. 86: 367. 1967): s.d. [May 1839], *Casaretto Herb. No. 805* (TO [1 sheet]; isolectotype: L [fragment ex TO] barcode L 0007223).

*Accepted name.* – *Gaylussacia rigida*

Meissner (1863: 148) recognized *Gaylussacia rigida* Casar. as a distinct species, but simply cited the collection locality as “Habitat in *Serra dos Orgãos*” without citing a Casaretto collection. Sleumer (1967) maintained *G. rigida* as a separate species, and among the specimens studied, he cited “Brasilien. Estado do Rio: *Serra dos Orgãos*, in cacuminibus montium, Casaretto anno 1839 (TO, Typus von *G. Rigida*)”. Although he did not cite Casaretto’s herbarium number and did not formally designate the lectotype, his citation is construed here as an act of inadvertent lectotypification (Art. 7.11, 9.10).

At TO there is a single specimen with two labels, “n. 805. *Gaylussacia rigida* Nob., 2 fructi analizzati” and “n. 805. *Gaylussacia rigida* Casar. Nov. Stirp. Brasil. Dec. n. 40. Legi in cacuminibus montium *Serra dos Orgãos* (in Brasiliae provincia Rio de Janeiro) extra superiorem sylvarum primaevarum limitum, mense Maio 1839. Casaretto.” This specimen is the lectotype of this name.

At L (where Sleumer worked), there is a sheet (barcode L 0007223) with an envelope containing a few small twigs and numerous loose leaves that were removed from the TO specimen and sent to L in 1965 for Sleumer’s study. A label handwritten by Giuseppe Ariello (TO herbarium curator at that time) reports the exact same text from the TO specimen label. On the same sheet is a pink label with the typewritten note “Fragm of the Holotype *Gaylussacia rigida* Casaretto.” This specimen is an isolectotype (vide Art. 8.3 Ex. 8).

After exhaustive search at G and G-DC no original specimen of *Gaylussacia rigida* collected by Casaretto was found. At G there is a specimen with the label “Organ mountains. (*Serra dos Orgãos*), M. Gardner. (Reçu en 1838.)” with handwritten “*Gaylussacia*” and “474”. On the same specimen is pinned another label saying “Ericaceae, *Gaylussacia rigida* Casar., dupl. lectotype! Det. G.O. Romão, 11 May 2009.” However, *Gardner 474* is the type of *G. octosperma* Gardner, which is a heterotypic synonym of *G. rigida*.

#### Euphorbiaceae

20. *Alchornea iricurana* Casar., Nov. Stirp. Bras. 2: 24. Jun 1842 (“May 1842”) ≡ *Alchornea glandulosa* subsp. *iricurana* (Casar.) Secco in. Neotrop. Monogr. 93: 78. 2004 – Type: Brazil: “Crescit in montibus *Tijuca* et *Corcovado* prope *Rio de Janeiro*.” **Lectotype (designated here):** “legi in monte *Tijuca*”, s.d. [Aug 1839], *Casaretto Herb. No. 1233* (TO [2 sheets]; isolectotype: G-DC barcode G00325545; photo G-DC at MICH).

*Accepted name.* – *Alchornea glandulosa* subsp. *iricurana* (Casar.) Secco

Secco (2004: 78) cited the type of *Alchornea iricurana* Casar. as “Brasil. Rio de Janeiro: *Tijuca*, *Corcovado*, 1857 (fl. pist. fr), *Casaretto 1233* (holótipo, TO; isótipos, G, MICH).” Although he cited the gathering at TO as holotype, it cannot be treated as an inadvertent lectotypification because, according to Art. 7.11, a lectotypification published from 2001 should be accompanied by the phrase “here designated” or a similar expression. Additionally, he erred in citing the collection date as “1857”, whereas Casaretto made this gathering in August 1839. As noted above, “1857” pertains to the date when this specimen was sent from Turin to Geneva, to be subsequently incorporated into the G-DC herbarium.

At TO there are two specimens of *Alchornea iricurana*: *Casaretto Herb. No. 1856* and *Casaretto Herb. No. 1233*, which correspond to the two localities of *Corcovado* and *Tijuca*, respectively. Specimen No. 1233 is mounted on two sheets numbered

1 and 2; sheet No. 1 has the label “n. 1233, *Alchornea iricurana* Casar., Nov. Stirp. Brasil. Decad. N. 20, legi in monte Tijuca prope urbem Rio de Janeiro, mense aug. 1839. Casaretto”, while sheet No. 2 has no label. This specimen, mounted on two sheets, is here designated the lectotype of this name.

At G-DC there is a specimen (barcode G00325545) with the handwritten label “No. 1233, *Alchornea Iricurana* Casar., nov. Stirp. Dec. No. 20, Monte Tijuca, Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” Secco (2004) reported that this specimen is at G, but it is at G-DC instead. This specimen is an isolectotype.

Secco (2004: 78) reported that one of the isotypes of *Alchornea iricurana* Casar. is at MICH. However, after exhaustive search no original specimen collected by Casaretto is present in that herbarium (Richard Rabeller, Curator, pers. comm.). At MICH is preserved a sheet with a black and white photograph of the specimen at G-DC. The photograph was produced as part of the efforts that the Field Museum of Natural History undertook to photograph specimens in selected herbaria in the 1930s. This photograph corresponds with Negative No. 7152.

9. *Alchornea janeirensis* Casar. in Atti Riunione Sci. Ital. 3: 515. Jun 1842 (“1841”) – Type: Brazil: “*Habitat in sylvis circa Rio de Janeiro.*” **Lectotype (designated here):** “Legi in monte vulgo Morro da Babylonia”, s.d. [Aug 1839], *Casaretto Herb. No. 1172* (TO [2 sheets]; isolectotype: G-DC barcode G00325472).

*Accepted name.* – *Alchornea triplinervia* (Spreng.) Müll.Arg.

Along with the original description of *Alchornea janeirensis* Casar., Casaretto (1842b: 515) indicated the collection locality as “*Habitat in sylvis circa Rio de Janeiro.*” In *Decas I* (Casaretto, 1842d: 15; published after the *Atti*) he was more precise and reported the collection locality “*Reperi in sylvis circa Rio de Janeiro, ac praesertim in monte vulgo Morro da Babylonia.*”

Secco (2004: 111) treated *Alchornea janeirensis* as a synonym of *A. triplinervia* (Spreng.) Müll.Arg. and cited its type as “S. loc., *Blanchet 3494* (holótipo, TO; isotipo, F).” Because this was published after 2001, it cannot be treated as an inadvertent lectotypification because “here designated” or a similar expression was not stated. Also, as there is no connection between *Blanchet 3494* and original material cited by Casaretto, this typification is erroneous and cannot be corrected.

At TO there are two original gatherings of *Alchornea janeirensis*. One gathering is mounted on a single sheet with the label “N. 1882, *Alchornea janeirensis* Casar., Nov. Stirp. Bras. Dec. N. 9, in Brasilia, prope urbem Rio de Janeiro, legit Riedel. Casaretto.”

The other gathering at TO is mounted on two sheets numbered 1 and 2. Sheet No. 1 has the label “N. 1172, *Alchornea janeirensis* Casar., Nov. Stirp. Bras. Dec. N. 9. Legi in monte vulgo morro da Babylonia prope urbem Rio de Janeiro, mense Aug. 1839. Casaretto.” This gathering has several fertile branches, and is here designated the lectotype of this name.

At G-DC there is a specimen (barcode G00325472) with a frondose branch and numerous inflorescences, with the label “No. 1172. *Alchornea janeirensis* Casar., Nov. Stirp. Bras. Dec. N. 9. Rio de Janeiro, leg. Casaretto. hb. reg. Turin. 1857.” This specimen is an isolectotype.

99. *Croton migrans* Casar., Nov. Stirp. Bras. 10: 88. Sep 1845 ≡ *Oxydectes migrans* (Casar.) Kuntze, Revis. Gen. Pl. 2: 612. 1891 – Type: Brazil: “*Reperi in sylvis arenosis maritimis (vulgo restingas) in provincia Rio de Janeiro.* Accepi etiam ex interiore Brasiliae provincia Minas Geraes a Claussen.” **Lectotype (designated here):** “*Legi in sylvis arenosis maritimis (vulgo restingas) in Brasiliae provincia Rio de Janeiro*”, s.d. [Aug 1839], *Casaretto Herb. No. 1255* (Clausen s.n.) (TO [5 sheets]; isolectotype: G-DC barcode G00311767).

*Accepted name.* – *Croton splendidus* Mart. ex Colla

Lima & Pirani (2008: 210) cited the type of *Croton migrans* Casar. as “[Brasil], ‘reperi in sylvis arenosis maritimis (vulgo restingas) in provincia Rio de Janeiro’ [ago. 1839], Casaretto 1255 (lectótipo, TO!).” Since Lima and Pirani did not use the phrase “designated here” or an equivalent, their citation does not constitute a lectotypification (Art. 7.11). At TO there is a single specimen of *Casaretto Herb. No. 1255*, mounted on five sheets consecutively numbered, of which only the first sheet has a label with collection data. On sheet No. 1 is pinned Casaretto’s handwritten label showing “n. 1255. *Croton migrans* Casar. Nov. Stirp. Bras. Dec. n. 99. Legi in sylvis arenosis maritimis (vulgo restingas) in Brasiliae provincia Rio de Janeiro, mense Aug. 1839. Casaretto.” This specimen is here designated lectotype of this name.

At G-DC there is a specimen of *Casaretto Herb. No. 1255* (barcode G00311767) with two fertile branches, and the label “No. 1255, *Croton migrans* Casar., nov. Stirp. Dec. No. 99, Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” This specimen is an isolectotype.

At GH there are two specimens that could be considered as possible original material of *Croton migrans*. One specimen (barcode 00257958) has a label with the heading “Ex Herbarium Musei Britannici” and the handwritten annotation (author unknown) “*Croton migrans* Casar., Minas Geraes, Brazil, P. Claussen. 1840.” As Casaretto bought Clausen’s specimens while he was in Rio de Janeiro during April–December 1839, this specimen, collected in 1840, was not bought or seen by Casaretto, and does not constitute original material.

The other specimen at GH (barcode 00257959) has a label with the heading “Ex herbario horti Petropolitani” and the handwritten annotation (author unknown) “*Croton migrans* Casar. (Müll.Arg.), Brasilia, Riedel.” This specimen does not represent original material, as Casaretto did not report any collection from Riedel for this taxon.

At A there is a specimen (barcode 00257960) with two well-preserved branches, and a label with the heading “Herb. Mus. Paris”, the handwritten annotation (author unknown) “*Croton splendidum* Mart. ex Colla; Hb. Pedem. 5: 110.

1836” and the printed text “Minas Geraes, Bresil, M. Claussen No. 60.” This specimen is not original material of *C. migrans*, as the type of this name was collected by Casaretto in Rio de Janeiro.

100. *Croton salutaris* Casar., Nov. Stirp. Bras. 10: 89. Sep 1845 – Type: Brazil: “Reperi in montibus Serra dos Orgãos in provincia Rio de Janeiro.” **Lectotype (designated here):** s.d. [May 1839], *Casaretto Herb. No. 856* (TO [2 sheets]; isoelectotype: G-DC barcode G00311745). *Accepted name.* – *Croton salutaris*

At TO there are three original gatherings of *Croton salutaris* Casar. The first gathering is mounted on two sheets numbered 1 and 2. On sheet No. 1 is pinned a label showing “n. 981. Croton salutaris Casar. Nov. Stirp. Bras. Dec. n. 100. Legi in montibus Serra dos Orgaos (in Brasiliae provincia Rio de Janeiro), mense Maio 1839.” The second gathering at TO has a label showing “n. 939. Croton salutaris Casar. Nov. Stirp. Bras. Dec. n. 100. Legi in montibus Serra dos Orgaos (in Brasiliae provincia Rio de Janeiro), mense Maio 1839.” The third gathering is mounted on two sheets numbered 1 and 2. Sheet No. 1 has the label “n. 856. Croton salutaris Casar. Nov. Stirp. Bras. Dec. n. 100. Legi in montibus Serra dos Orgaos (in Brasiliae provincia Rio de Janeiro), mense Maio 1839.” The specimen *Casaretto Herb. No. 856* at TO is here selected as the lectotype of this name.

At G-DC is kept a specimen (barcode G00311745) of a fertile branch with numerous leaves, and Casaretto’s label “No. 856, Croton salutaris Casar. nov. stirp. Dec. No. 100. M<sup>bus</sup> Serra dos Orgãos, P<sup>cia</sup> Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857” (Fig. 3). This specimen is an isoelectotype.

97. *Ditaxis simoniana* Casar., Nov. Stirp. Bras. 10: 87. Sep 1845 ≡ *Argythamnia simoniana* (Casar.) Müll.Arg. in Linnaea 34: 145. 1865 – Type: Brazil: “Reperi in sylvis caeduis montis Corcovado prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Oct 1839], *Casaretto Herb. No. 1840* (TO [6 sheets]; isoelectotype: G-DC barcode G00313059).

*Accepted name.* – *Argythamnia simoniana* (Casar.) Müll.Arg.

At TO there are three gatherings of *Ditaxis simoniana* Casar. The first gathering is mounted on a single sheet with the label “n. 1432. Ditaxis simoniana Casar. Nov. Stirp. Bras. Dec. n. 97. Legi in sylvis Corcovado prope urbem Rio de Janeiro, mense Sept. 1839. Casaretto.” The second gathering is also mounted on a single sheet with the label “n. 1703. Ditaxis simoniana Casar. Nov. Stirp. Bras. Dec. n. 97. Legi in monte Corcovado prope urbem Rio de Janeiro, mense Sept. 1839. Casaretto.” The third gathering is mounted on six sheets consecutively numbered, and only the first one has the label with collection data: “n. 1840. Ditaxis simoniana Casar. Nov. Stirp. Bras. Dec. n. 97. Legi in sylvis montis Corcovado prope urbem Rio de Janeiro, mense Oct. 1839. Casaretto.” The specimen *Casaretto Herb. No. 1840* mounted on six sheets at TO is here designated the lectotype of *Ditaxis simoniana* Casar.

At G-DC there is a specimen (barcode G00313059) with a frondose branch with one flower, and Casaretto’s label showing “No. 1840, Ditaxis simoniana Casar. nov. Stirp. Dec. No. 97, M<sup>tis</sup> Corcovado, Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” This specimen is an isoelectotype.

- Redia* Casar., Nov. Stirp. Bras. 6: 51. Apr 1843 [= *Cleidion* Blume] – Type: *Redia tricocca* Casar.

*Etymology.* – Casaretto (1843b: 51–52) dedicated the name of this genus to Francesco Redi (1626–1697), who, in Casaretto’s words (translated from Italian), was a “physician, philosopher, and famous poet, who during the XVII century shed light on numerous subjects of Natural History”.

51. *Redia tricocca* Casar., Nov. Stirp. Bras. 6: 52. Apr 1843 ≡ *Cleidion tricoccum* (Casar.) Baill. in Adansonia 4: 370. 1864 – Type: Brazil [Bahia]: “Reperi in collibus argillosis circa parvulam urbem S. Amaro in provincia Bahiensis.” **Lectotype (designated here):** s.d. [Jan 1840], *Casaretto Herb. No. 2175* (TO [5 sheets]; isoelectotype: G-DC barcode G00318018).

*Accepted name.* – *Cleidion tricoccum* (Casar.) Baill.

Baillon (1864: 370) treated the monotypic genus *Redia* Casar. as a synonym of *Cleidion* Blume and published the new combination *C. tricoccum* (Casar.) Baill. He cited the gatherings “Casaretto, in collibus argillosis circa parvula urbem S.-Amaro, in provincial Bahiensis. – A. S. H. [A. Saint-Hilaire], cat. A<sup>1</sup>, n. 562, env. de Rio de Janeiro, bords du Parahyba. – Salzmann, Bahia (herb. Mus. [P]).”

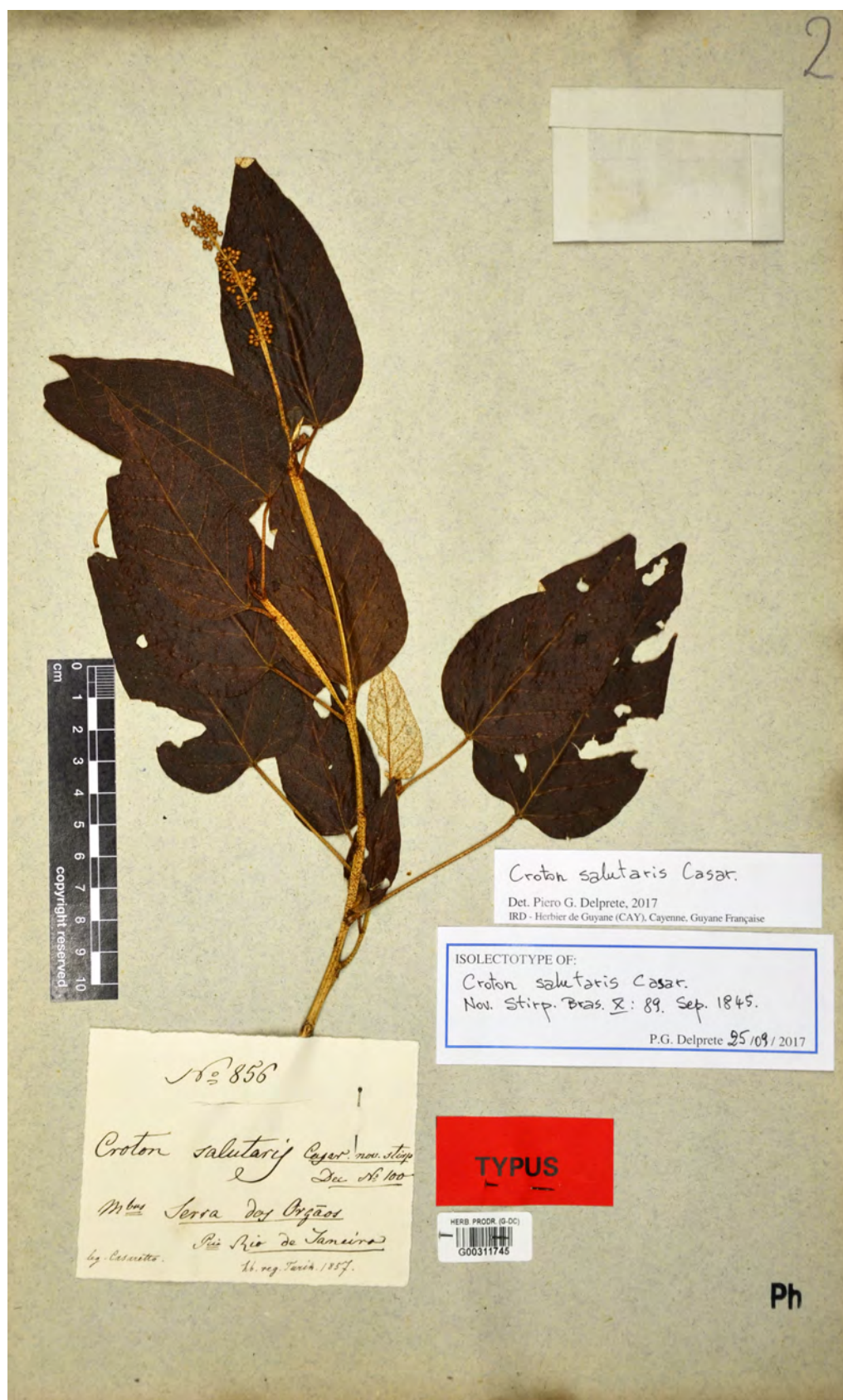
At TO there are three original gatherings of *Redia tricocca* Casar. One of them has a label showing “n. 2172. Redia tricocca Casar. Nov. Stirp. Bras. Dec. n. 51. Exemplaria cum floribus masculis. Legi in collibus circa oppidum S. Amaro (in Brasilia provincia Bahiensis), mense Jan. 1840. Casaretto.” The second gathering at TO has a label showing “n. 2174 (bis). Redia tricocca Casar. Nov. Stirp. Bras. Dec. n. 51. Exemplar cum floribus masculis et femineis. Legi in collibus circa oppidum S. Amaro (in Brasilia provincia Bahiensis), mense Jan. 1840. Casaretto.” The third gathering is mounted on five sheets consecutively numbered, of which only the first one has a label with collection data: “n. 2175. Redia tricocca Casar. Nov. Stirp. Bras. Dec. n. 51. Exemplaria cum floribus femineis et fructibus. Legi in collibus circa oppidum S. Amaro (in Brasilia provincia Bahiensis), mense Jan. 1840. Casaretto.” The specimen of five sheets of *Casaretto Herb. No. 2175* at TO is here designated the lectotype of this name.

In G-DC there is a specimen of *Casaretto Herb. No. 2175* (barcode G00318018), labeled “No. 2175, Redia tricocca Casar. Nov. Stirp. Dec. No. 51, S<sup>o</sup>: Amaro, P<sup>cia</sup> Bahiensis, leg. Casaretto, hb. reg. Turin. 1857.” This specimen is an isoelectotype.

## Humiriaceae

38. *Humirium dentatum* Casar., Nov. Stirp. Bras. 4: 39. Nov 1842 (“Oct 1842”) ≡ *Sacoglottis dentata* (Casar.) Urb. in





**Fig. 3.** Isolectotype of *Croton salutaris* (Euphorbiaceae) at G-DC, barcode G00311745. Photograph by P.G. Delprete. Reproduced with permission. © Conservatoire et Jardin botaniques de la Ville de Genève.



Martius & al., Fl. Bras. 12(2): 444. 1877 = *Humiriastrum dentatum* (Casar.) Cuatrec. in Contr. U.S. Natl. Herb. 35(2): 136. 1961 – Type: Brazil: “Habitat in sylvulis arenosis maritimis (vulgo restingas) in prov. Rio de Janeiro.” Holotype: “prope Marica” [Restinga de Maricá], s.d. [before 1840], *Casaretto Herb. No. 1964* (Riedel s.n.) (TO [1 sheet]).

*Accepted name.* – *Humiriastrum dentatum* (Casar.) Cuatrec.

Cuatrecasas (1961: 136) transferred *Humirium dentatum* Casar. to *Humiriastrum dentatum* (Casar.) Cuatrec. and cited the type as “G. Casaretto, Brazil, from the sandy maritime woods called restingas in the Province of Rio de Janeiro.” He added, “I have seen no authentic material of *H. dentatum*, but it is possible that specimens in Paris without the collector’s name (from the Drake or Richard Herbaria) belong to the Casaretto collections.”

At TO is present a single sheet with the label “n. 1964. *Humirium dentatum* Casar. Nov. Stirp. Bras. Decad. N. 38. Habui ex sylvulis arenosis maritimis (vulgo restingas) prope Marica, in Brasiliae provincia Rio de Janeiro, a Riedel. Casaretto.” This specimen is the holotype of *Humirium dentatum*.

After an exhaustive search at G and G-DC, no original specimen of *Humirium dentatum* was found.

## Lamiaceae

48. *Aegiphila hirta* Casar., Nov. Stirp. Bras. 5: 47. Mar 1843 – Type: Brazil: [Rio de Janeiro, Corcovado], “Reperi in monte Corcovado prope Rio de Janeiro.” Holotype: s.d. [Sep 1839], *Casaretto Herb. No. 1728* (TO [2 sheets]).

*Accepted name.* – *Aegiphila mediterranea* Vell.

At TO there is a single specimen mounted on two sheets numbered 1 and 2. On sheet No. 1 is pinned the label “Aegiphila n. 1728, Aegiphila hirta Casar. Nov. Stirp. Brasil. Dec. n. 48. Legi in monte Corcovado prope urbem Rio de Janeiro, mense Sept 1839. Casaretto.” This specimen is the holotype of *Aegiphila hirta* Casar.

After exhaustive search at G and G-DC, no original material of *Aegiphila hirta* was found.

49. *Aegiphila oleifera* Casar., Nov. Stirp. Bras. 5: 47. Mar 1843 – Type: Brazil: “Reperi in monte vulgo Morro de [sic] Babylonia prope Rio de Janeiro.” Holotype: s.d. [Aug 1839], *Casaretto Herb. No. 1175* (TO [2 sheets]).

*Accepted name.* – *Aegiphila fluminensis* Vell.

At TO there is a single specimen mounted on two sheets; sheet No. 1 has the label “Aegiphila n. 1175. Egiphila [sic!] oleifera Casar. Nov. Stirp. Bras. Dec. n. 49. Legi in monte vulgo Morro da Babylonia prope urbem Rio de Janeiro, mense Aug. 1839. Casaretto.” This specimen of two sheets is the holotype of *Aegiphila oleifera* Casar.

After exhaustive search at G and G-DC, no original material of *Aegiphila oleifera* was found.

## Lecythidaceae

*Cariniana* Casar., Nov. Stirp. Bras. 4: 35. Nov 1842 (“Oct 1842”) – Type: *C. brasiliensis* Casar.

*Eponymy.* – Casaretto (1842e: 35–36) dedicated the name of this genus to Prince Eugene of Savoy-Carignano (Eugenio di Savoia-Carignano; 1816–1888), the king’s cousin, who participated in the voyage to Brazil, representing the royal family as Ship Captain.

31. *Cariniana brasiliensis* Casar., Nov. Stirp. Bras. 4: 36. Nov 1842 (“Oct 1842”) – Type: Brazil: “Crescit in sylvis primaevae circa Rio de Janeiro.” Lectotype (designated by Prance in Fl. Neotrop. Monogr. 21: 239: 1979): s.d. [Dec 1838], *Casaretto Herb. No. 584* (Riedel s.n.) (TO [2 sheets]; isolectotype: G barcode G00369166).

*Accepted name.* – *Cariniana legalis* (Mart.) Kuntze

At TO there are two original gatherings of *Cariniana brasiliensis* Casar. The first specimen is mounted on a single sheet with the label “n. 2487. *Cariniana brasiliensis* Casar. Nov. Stirp. Bras. Dec. n. 31. Habui ex viciniis Urbis Rio de Janeiro a Riedel. Casaretto.” The second specimen is mounted on two sheets. Sheet No. 1 has two labels, “n. 584. *Pyxidaria macrocarpa* Schott. Floris parvi albi, arbor praealta, lignum utilissimum, durissimum. Jiquitibá. Brasil. R. Jan. Dbr. [Rio de Janeiro, Dec] 1838” and “n. 584. *Cariniana brasiliensis* Casar. Nov. Stirp. Bras. Dec. n. 31. Nom. Vulg. Brasil. Jiquitibá, Jequitibá. In Brasiliae provincia Rio de Janeiro legit Riedel. Ego vidi in sylvis primaevae montis Corcovado prope urbem Rio de Janeiro. Casaretto.”

At G is preserved an isolectotype specimen mounted on a single sheet (barcode G00369166) with the label “No. 584, *Cariniana Brasiliensis* Casar., Casar. nov. Stirp. Decad. No. 31, Rio de Janeiro, hb. reg. Turin. 1857, leg. Casaretto.”

Prance (in Prance & Mori, 1979: 239) treated *Cariniana brasiliensis* as a synonym of *Cariniana legalis* (Mart.) Kuntze and cited its type as “Casaretto 584, Brazil, Rio de Janeiro (holotype, TO; isotype, G, photos, F, GH, US).” According to the *Code*, Prance’s citation is an error to be corrected; therefore, the TO specimen of *Casaretto Herb. No. 584* (Riedel s.n.) is the lectotype of this name, and the G specimen is an isolectotype.

46. *Cariniana excelsa* Casar., Nov. Stirp. Bras. 5: 46. Mar 1843, nom. superfl. & illeg. (*Couratari estrellensis* Raddi cited in synonymy). Locality: Brazil. [São Paulo and Rio de Janeiro]: “Reperi in sylvis primaevae insulae S. Sebastiani. — In montibus vulgo Serra d’Estrella (Raddi).”

*Couratari estrellensis* Raddi in Mem. Mat. Fis. Soc. Ital. Sci. Modena, Pt. Mem. Fis. 18(2): 403, t. 5, fig. 2a–d. 1820 – **Lectotype (designated here):** Brazil: [Rio de Janeiro, Serra da Estrella], s.d. [5 Nov 1817–1 Jun 1818], *Raddi s. n.* (FI barcode FI051893 [fruit collection Fr. 704]). **Epitype**

**(designated here):** Brazil: Rio de Janeiro, Tijuca, 9 Oct 1874 (fl), *Glaziou 7644* (NY barcode 00376111).

**Accepted name.** – *Cariniana estrellensis* (Raddi) Kuntze

Since Casaretto did not cite a type, as a superfluous name, *Cariniana excelsa* is automatically typified by the type of *Couratari estrellensis* (vide Art. 7.5). Therefore, any type designation should be for *Couratari estrellensis*.

Raddi (1820) published *Couratari estrellensis* based on material that he collected on Serra da Estrella, Rio de Janeiro. Casaretto (1843a: 46) described *Cariniana excelsa* Casar. listing *Cour. estrellensis* in synonymy, and cited the original material as “Reperi in sylvis primaevae insulae S. Sebastiani. — In montibus vulgo *Serra d’Estrella* (Raddi).” The second locality corresponds to that cited by Raddi to describe *Cour. estrellensis*. Regarding the collection locality “sylvis primaevae insulae S. Sebastiani [São Paulo, Island of São Sebastião]” cited by Casaretto, we searched exhaustively TO, G and G-DC, but no material was found. It is unknown why Casaretto renamed *Cour. estrellensis* Raddi. If Casaretto wanted to place this taxon in his new genus *Cariniana*, he should have proposed the new combination *Car. estrellensis*, which was later published by Kuntze (1898) instead.

Prance (in Prance & Mori, 1979: 242–243) treated *Cariniana excelsa* as an illegitimate name synonymous with *Car. estrellensis* (Raddi) Kuntze. He cited the type of *Couratari estrellensis* as “Raddi sn, Brazil, Rio de Janeiro, fl (holotype, FI).” The most important set of Raddi’s collections is at PI (his private herbarium), incomplete sets are at FI and BOLO, and additional specimens are present in other herbaria (Goldenberg & Baldini, 2002; Baldini & Longhi-Wagner, 2006; Longhi-Wagner & Baldini, 2007; Longhi-Wagner & al., 2010; Baldini & Pignotti, 2018). After exhaustive searches in FI, PI and BOLO, no original Raddi herbarium specimen of *Car. estrellensis* was found. In addition, Prance cited “fl”, meaning flowering material. However, Raddi (1820), along with the original description stated (translated from Italian) “Extremely rare tree 100–120 feet [30–40 m] tall, that I found in the Mountains of Estrella, where is known as *Balata vermelha*, of which it was not possible to observe the flowers, so it was not possible to compare it with the other species described by Aublet named *Couratari guianensis* [...] to establish its generic characters. Nevertheless, although its fruit is similar to that of *Lecythis*, it differs from the latter by its compressed, winged seeds, while in *Lecythis* they are not [compressed and winged], which is a character that in my opinion is sufficient to establish a separate genus, and is also what Aublet thought.” He further described its fruit as (translated from Italian) “elongated capsule, externally round, internally triangular, woody, hard, operculated. The rim of its opening is irregularly dentate, and its internal walls are impressed, caused by the convex part of the seeds. The operculum is convex, round, united with a woody receptacle, wider at the middle, triangular and almost free, which seems to be a continuation. The seeds are flat inside and convex outside, scabrous-reticulate, and with a distal

long, membranous, sinuate wing.” Therefore, Raddi’s original material must be a fruiting specimen, and by consequence Prance’s citation of a flowering specimen as holotype is erroneous.

After extensive search in the fruit collection at FI, a glass jar was found, with the handwritten label (author unknown) “CL. XIII, *Couratari estrellensis* Raddi, Balata vermelho, Fr. 704.” This jar (barcode FI051893) contains three capsules, one operculum, and several seeds of *Couratari estrellensis* (Fig. 4). Further confirmation that this is original material is the fact that Raddi in his accurate description did not describe leaves or any other vegetative parts. In addition, two letters exchanged between NY and FI curators in 1972, present in the FI archives, state that a loan of eight herbarium specimens of Lecythidaceae was sent from FI to NY (where Prance worked at that time), proving that this glass jar was not sent on loan. We were also able to find the eight specimens that were sent on loan to NY, which were later returned to FI. Therefore, the possibility of an error of “fl” instead of “fr” in Prance’s citation is excluded, and the content of this jar, barcode FI051893, is here designated the lectotype of this name.

To avoid any ambiguity about the identity of *Couratari estrellensis*, the specimen *Glaziou 7644* at NY (barcode 00376111), possessing flowering branches and a determination label written by Prance, and cited in his revision (Prance & Mori, 1979), is here selected as epitype.

## Leguminosae

***Chrysoxylon* Casar., Nov. Stirp. Bras. 7: [59]. Sep 1843 (“Jul 1843”) – Type: *Chrysoxylon vinhatico* Casar.**

**Etymology.** – The generic name refers to the golden-yellow wood of this taxon. Casaretto reported that its common name is “vinhatico” (hence the specific epithet).

61. ***Chrysoxylon vinhatico* Casar., Nov. Stirp. Bras. 7: [59]. Sep 1843 (“Jul 1843”), nom. superfl. & illeg. (*Cassia fluminensis* Vell. cited in synonymy). Locality: “Habitat in sylvis primaevae provinciae Rio de Janeiro.”**

*Cassia fluminensis* Vell., Fl. Flumin.: 168. 1829 (“1825”) – **Lectotype (designated here):** [illustration] “Decand. Monog. CASSIA FLUMINENSIS” in Vellozo, Fl. Flumin. Icon. 4: t. 72. 1831 (“1827”).

**Accepted name.** – *Dimorphandra exaltata* Schott

Since Casaretto did not cite a type, as a superfluous name, *Chrysoxylon vinhatico* is automatically typified by the type of *Cassia fluminensis* (vide Art. 7.5). Therefore, any type designation should be for *Cassia fluminensis*.

Casaretto (1843c: [59]) published *Chrysoxylon vinhatico* Casar. and cited *Cassia fluminensis* Vell. in synonymy; therefore, Casaretto’s name is illegitimate. In the discussion just below these citations, Casaretto stated that his new taxon is slightly different from *Cassia fluminensis* because Vellozo’s illustration has larger leaflets with acuminate apex; however, he concluded that they are the same species.



**Fig. 4.** Lectotype of *Couratari estrellensis* (Lecythidaceae) at FI, barcode FI051893. Note the glass jar with the handwritten label showing “CL. XIII, *Couratari estrellensis* Raddi, Balata vermelho, Fr. 704” and the three capsules, one operculum, and several seeds contained in the jar. Photograph by Lorenzo Cecchi. Reproduced with permission. © FI Herbarium, Botany Section of the Museum of Natural History, University of Florence.

It remains a mystery why Casaretto decided to describe a new genus and proposed a new name for this species while citing Vellozo’s taxon in synonymy. Therefore, Vellozo’s tabula 72 published in *Florae fluminensis icones* volume 4 (Vellozo, 1831) is here designated as the lectotype of *Chrysoxylon vinhatico*.

Lima (1995: 128) cited “*Cassia fluminensis* Vell., Fl. Flum. 168. 1829 [1825]; Icon. 4: tab. 72. 1831 [1827]. Nomenclatura atual: *Dimorphandra exaltata* Schott.” He added (translated from Portuguese), “Vellozo’s plant was not cited by Silva (1976 [sic! 1986]); however, the plate of *Florae fluminensis* does not leave any doubt about the synonymy here presented.”

At TO there is a single sheet with the label “n. 1953. *Chrysoxylon vinhatico* Casar. Nov. Stirp. Bras. Decad. N. 61. Nom. Vulg. Brasil. Vinhatico. Circa Piiba prope Maricá (in Brasiliae provincia Rio de Janeiro) legit Riedel. Casaretto.” This specimen has two leafless branches with old flowers and fruits.

After exhaustive search at G and G-DC no original specimen of *Chrysoxylon vinhatico* was found.

**Clelia** Casar., Nov. Stirp. Bras. 10: 83. Sep 1845 [= *Calliandra* Benth.] – Type: *Clelia ornata* Casar. [= *Calliandra harrisii* (Lindl.) Benth.].

**Eponymy.** – Casaretto (1845b: 83–84) dedicated the genus name to Marchioness Clelia Durazzo-Grimaldi (1760–1830), born in Genoa, who devoted most of her life to the study of botany and established a famous botanical garden on her property (Villa Durazzo-Pallavicini, now part of the Civic Museum of Natural History of Genoa).

91. ***Clelia ornata*** Casar., Nov. Stirp. Bras. 10: 84. Sep 1845 – Type: Brazil: [Rio de Janeiro] “Reperi in insulis sinus Fluminensis (*bahia do Rio de Janeiro*).” **Lectotype (designated here):** s.d. [Jun 1839], Casaretto Herb. No. 1477 (TO [1 sheet]; isolectotype: G barcode G00191192).

**Accepted name.** – *Calliandra harrisii* (Lindl.) Benth.

Barneby (1998: 126) treated *Clelia ornata* Casar. as a synonym of *Calliandra harrisii* (Lindl.) Benth. and cited the type as “Holotypus to be sought at TO. – Equated with *C. harrisii* by Benth, 1875: 540.” At TO there is a single sheet of the original collection of *Clelia ornata* with the label



“n. 1477. Clelia ornata Casar. Nov. Stirp. Brasil. Decad. N. 91. Legi in Brasiliae in insulis sinus Fluminensis [island in the bay of Rio de Janeiro], mense Junio 1839. Casaretto.” This specimen is here designated lectotype of this name.

At G there is a specimen (barcode G00191192) with a leafy branch and a few loose fruits in the included envelope, and the label “No. 1477, Clelia ornata Casar., nov. Stirp. Decad. No. 91, Bahia do Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” This specimen is also annotated as “Coll. Casaretto 1477, Calliandra harrisii (Lindl.) Benth., fide Barneby, R. (1998). Calliandra. Mem. New York Bot. Gard. 74. Part III.” This specimen is an isoelectotype.

52. *Lupinus chrysomelas* Casar., Nov. Stirp. Bras. 6: 52. Apr 1843 – Type: Brazil: “Habitat in montibus Serra da Caraça in provinciâ Minas Geraes (Clausen).” Lectotype (designated by Monteiro & Gibbs in Notes Roy. Bot. Gard. Edinburgh 44: 71–74. 1986): s.d. [before 1840], *Casaretto Herb. No. 2902 (Clausen s.n.)* (G barcode G00371115; isoelectotype: TO [3 sheets]; possible isoelectotype: G barcode G00446559).

*Accepted name.* – *Lupinus arenarius* Gardner

Casaretto (1843b: 52) stated that the original material of *Lupinus chrysomelas* Casar. was collected by Clausen in Serra da Caraça, Minas Gerais, and was later integrated in his herbarium. Monteiro & Gibbs (1986) treated *L. chrysomelas* as a synonym of *L. arenarius* Gardner and cited its type as “Type: Minas Gerais, Serra da Mutuca, iv 1852, Casaretto 2902 (G, photo TEX).” Their usage of the term “type” is a correctable error for lectotype, and it is construed here that Monteiro and Gibbs inadvertently lectotypified the name on the G specimen (Art. 7.11, 9.10). In addition, the locality and collection date cited by Monteiro & Gibbs (1986) has several errors that need to be corrected because the collection locality is Serra da Caraça, and not “Serra da Mutuca”, the gathering was originally made by Clausen, and the collection date is not “iv 1852” as they wrote. It is unknown where they obtained this erroneous information, as Casaretto was in Brazil in 1839–1840, and he never collected in Minas Gerais. However, they reported the correct Casaretto herbarium number.

At G there is a sheet (barcode G00371115) with a fruiting specimen and the label “No. 2902. Lupinus chrisomelas Casar. Nov. Stirp. Decad. 4 [sic! 6] \_, 52\_ Montibus Serra da Caraça, P\_ Minas Geraes, leg. Casaretto, hb. reg. Turin. 1857.” This sheet also has the annotation “Holotype of Lupinus chrysomelas Casar., Nov. Stirp. Bras. Dec. 6: 52. 1843. = *L. arenarius* Gardn. Rev. R. Monteiro, XI.1984.” This specimen is the lectotype of *Lupinus chrysomelas*.

At G there is another specimen (barcode G00446559), mounted on two sheets, with a printed label showing “Brésil (Minas Geraes), P. Clausen, 3<sup>e</sup> envoi reçu en janvier 1840” and the handwritten (probably by Clausen) label “80, Leguminosa. Lupinus? Frutex 1-2 ped. Flor. Coerulei. Serra da Caraça, Junio 1839 (16).” This gathering is a possible isoelectotype of *Lupinus chrysomelas*.

At TO there is an original gathering of *Lupinus chrysomelas* mounted on three sheets consecutively numbered, constituting a single specimen (Art. 8.3). On sheet No. 1 (the sole sheet with collecting data) is pinned a label showing “n. 2902. Lupinus chrysomelas Casar. Nov. Stirp. Brasil. Decad. N. 52. In Montibus Serra da Caraça (in Brasilia provincia Minas Gerais) legit Clausen. Casaretto.” This specimen is an isoelectotype.

## Loganiaceae

8. *Strychnos gomesiana* Casar. in Atti Riunione Sci. Ital. 3: 515. Jun 1842 (“1841”) – Type: Brazil: “Habitat in sylvis circa Rio de Janeiro.” **Lectotype (designated here):** s.d., *Casaretto Herb. No. 1970 (Riedel s.n.)* (TO [1 sheet]). **Epitype (designated here):** “legi in monte vulgo Morro da Babylonia prope Rio de Janeiro”, s.d. [Aug. 1839], s.d., *Casaretto Herb. No. 1164* (TO [2 sheets]).

*Accepted name.* – *Strychnos trinervis* (Vell.) Mart.

Along with the original description in the *Atti*, Casaretto (1842b: 515) stated that he found this species “in sylvis circa Rio de Janeiro”. Shortly after, in *Decas I* (Casaretto, 1842d: 14; published after the *Atti*), he cited the collection locality as “Reperi in sylvis circa Rio de Janeiro, ac praesertim in vulgo Morro da Babylonia.”

At TO there are two original gatherings of *Strychnos gomesiana* Casar. One of them, mounted on a single sheet, has the label “n. 1970. Strychnos gomesiana Casar. Nov. Stirp. Bras. Decad. N. 8. In sylvis circa Rio de Janeiro legit Riedel. Casaretto.” Because the collection locality cited in the label is the same reported in the *Atti*, this specimen is here designated the lectotype of this name.

The other original specimen in TO is mounted on two sheets consecutively numbered. On sheet No. 1 is pinned the label “n. 1164, Strychnos gomesiana Casar. Nov. Stirp. Bras. Decad. N. 8. Nom. Vulg. (Iusitanico) Cruzeiro, legi in monte vulgo Morro da Babylonia prope Rio de Janeiro, mense aug. 1839. Casaretto.” Because the lectotype specimen has branches with only a few fruits, this specimen, with branches bearing numerous inflorescences and flowers in anthesis, is here designated the epitype of *S. gomesiana*.

After exhaustive search at G and G-DC no original specimen of *Strychnos gomesiana* was found.

## Malvaceae

14. *Pachira cyathophora* Casar., Nov. Stirp. Bras. 2: 21. Jun 1842 (“May 1842”) – Type: Brazil: “Reperi prope Rio de Janeiro, in maritimis praesertim, et in insulis sinus Fluminensis.” Holotype: s.d. [Jun 1839], *Casaretto Herb. No. 1348* (TO [1 sheet]).

*Accepted name.* – *Pseudobombax grandiflorum* (Cav.)

A. Robyns var. *grandiflorum*

Schumann (1886: 229) transferred *Pachira cyathophora* Casar. to *Bombax cyathophorum* (Casar.) K. Schum. and, among other collections, cited “in provincia Rio de Janeiro prope capitalem: Casaretto”. Robyns (1963: 50–60) treated *Pachira*



*cyathophora* as a synonym of *Pseudobombax grandiflorum* (Cav.) A. Robyns var. *grandiflorum*, and cited the type as “Rio de Janeiro: [...] Casaretto 1348 (f., fl.; holotypus *Pa. cyathophora* TO); [...]” (Robyns, 1963: 54). At TO there is a specimen, mounted on a single sheet, with the label “N. 1348, *Pachira cyathophora* Casar. Nov. Stirp. Brasil. Decad. N. 14, Legi in Brasilia in insulis sinus Fluminensis (bahia do Rio de Janeiro), mense Jun. 1839. Casaretto.” This specimen is the holotype. After exhaustive search at G and G-DC no original specimen of *Pachira cyathophora* was found.

15. *Pachira stenopetala* Casar., Nov. Stirp. Bras. 2: 21. Jun 1842 (“May 1842”) = *Bombax stenopetalum* (Casar.) K. Schum. in Martius & al., Fl. Bras. 12(3): 226. 1886 = *Bombacopsis stenopetala* (Casar.) A. Robyns in Bull. Jard. Bot. État Bruxelles 33: 221. 1963 – Type: Brazil: “Occurrit passim prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Nov 1838], *Casaretto Herb. No. 581* (TO [sheet No. 2]).

*Accepted name.* – *Pachira endecaphylla* (Vell.) Carv.-Sobr.

Casaretto (1842a: 21–22) published *Pachira stenopetala* Casar. and cited the locality “Occurrit passim prope Rio de Janeiro.” Schumann (1886: 226) transferred *Pachira stenopetala* Casar. to *Bombax stenopetalum* (Casar.) K. Schum. and, among other collections, cited “in provincia Rio de Janeiro prope capitalem: Casaretto”. Robyns (1963: 221–223) transferred *Pachira stenopetala* to *Bombacopsis stenopetala* (Casar.) A. Robyns and cited the type as “Holotypus: Riedel in Casaretto 581 (TO).” Carvalho-Sobrinho & al. (2013: 816) synonymized *Pachira stenopetala* with *P. endecaphylla* (Vell.) Carv.-Sobr. and cited the type as “Holotype: Brazil. Rio de Janeiro, Riedel in Casaretto 581 (TO!).”

*Casaretto Herb. No. 581* at TO is composed of two different gatherings, which are original material: one originally collected by Riedel, and the other collected by Casaretto. On sheet No. 1 is pinned the label “N. 581, *Pachira stenopetala* Casar., Nov. Stirp. Brasil. Decad. N. 15. Habui ex Brasilia prope urbem Rio de Janeiro, a Riedel. Casaretto.” This sheet also has the label “*Bombacopsis stenopetala* (Casar.) A. Robyns comb. nov., Holotypus! Determinavit A. Robyns, 6.IX.1962.” On this sheet is mounted a branch with several compound leaves, and a loose flower in anthesis.

Sheet No. 2 of *Casaretto Herb. No. 581* at TO has Casaretto’s handwritten label “N. 581, *Carolinea* n. sp., arbor 20 ped., flor. albi, passim pr. Rio de Janeiro, novbr. [Nov] 1838.” It also has the printed label “TYPUS” and the handwritten label “*Bombacopsis stenopetala* (Casar.) A. Robyns comb. nov. Determinavit A. Robyns, 6.IX.1962.” This specimen, collected by Casaretto in November 1838, has one branch with several compound leaves and three flowers. Casaretto’s label on this sheet corresponds word for word to the locality cited in the original publication.

Both Robyns (1963) and Carvalho-Sobrinho & al. (2013) cited “Riedel in Casaretto 581 (TO)” as the holotype; however, following the above observations, the typification of

*Pachira stenopetala* needs to be corrected. In his publications, Casaretto consistently cited (although with a few inconsistencies) who was the original collector of the specimens included in his Brazilian herbarium. In the case of *Pachira stenopetala*, in the original publication he cited the locality “Occurrit passim prope Rio de Janeiro” without citing Riedel as original collector. Therefore, although he did not directly cite a specimen, the sole specimen corresponding with his published locality and collected by Casaretto is sheet No. 2. Therefore, sheet No. 2 of *Casaretto Herb. No. 581* at TO is here designated the lectotype of this name.

Sheet No. 1 of *Casaretto Herb. No. 581* at TO was collected by Riedel and has the locality “prope urbem Rio de Janeiro”. Therefore, because Casaretto in the original publication did not cite Riedel as the original collector and because the label of this specimen reports a slightly different locality than the one reported in the original publication, sheet No. 1 is original material but is not a type.

After an exhaustive search at G and G-DC no original specimen of *Pachira stenopetala* was found.

34. *Pavonia glomerata* Casar., Nov. Stirp. Bras. 4: 38. Nov 1842 (“Oct 1842”) – Type: Brazil: “Legi in collibus circa Cachoeira et S. Amaro in provinciâ Bahiensi.” Lectotype (designated by Fryxell in Fl. Neotrop. Monogr. 76: 193. 1999): s.d. [Jan 1840], *Casaretto Herb. No. 2046* (TO [2 sheets]; isolectotype: G barcode G00446562).

*Accepted name.* – *Pavonia fruticosa* (Mill.) Fawc. & Rendle

Gürke (1892: 484) treated *Pavonia glomerata* Casar. as a synonym of *P. typhalaea* (L.) Cav. and among the specimens cited he listed “in provincia Bahia: [...] Casaretto n. 2046”. Fryxell (1999: 193) treated *P. glomerata* as a synonym of *P. fruticosa* (Mill.) Fawc. & Rendle and cited the type as “(Fide Gürke). Type: Brazil. Bahia: In hills near Cachoeira and Santo Amaro, Casaretto s.n. (holotype, TO–n.v.).”

At TO there are two original gatherings of *Pavonia glomerata*. One of them has the label “No. 2208 (quater), *Pavonia glomerata* Casar. Nov. Stirp. Brasil. Decad. N. 34. Legi in collibus circa S. Amaro (in Brasiliae provincia Bahiensi), mense Januario 1840. Casaretto.” The other gathering is mounted on two sheets, and on Sheet No. 1 is pinned the label “No. 2046. *Pavonia glomerata* Casar. Nov. Stirp. Brasil. Decad. N. 34. Legi in collibus circa Cachoeira et S. Amaro (in Brasiliae provincia Bahiensi), mense Januario. Casaretto.”

Fryxell (1999: 193), by citing the type locality “In hills near Cachoeira and S. Amaro, Casaretto s.n.”, which corresponds to the locality of *Casaretto Herb. No. 2046*, and “holotype, TO–n.v.” indicated his choice and inadvertently lectotypified this species name on the TO specimen (his use of the term “holotype” is correctable to lectotype; Art. 7.11, 9.10).

At G there is a specimen (barcode G00446562) with a handwritten label showing “No. 2046. *Pavonia glomerata* Casar. Nov. Stirp. Provincia Bahiensi. Leg. Casaretto. hb. reg. Turin. 1857.” This specimen is an isolectotype.

33. *Pavonia lappacea* Casar., Nov. Stirp. Bras. 4: 37. Nov 1842 (“Oct 1842”) – Type: Brazil: [São Paulo] “Legi in insulâ S. Sebastiani (in prov. S. Pauli).” Holotype: s.d. [Feb 1839], *Casaretto Herb. No. 64* (TO [1 sheet]). Accepted name. – *Pavonia schiedeana* Steud.

Gürke (1892: 488–489) treated *Pavonia lappacea* Casar. as a synonym of *P. rosea* Schltld. (an illegitimate name because it is a later homonym of *P. rosea* Wall. ex Moris [1833]), although among the specimens cited he did not mention a Casaretto collection. Fryxell (1999: 202) cited the type of *Pavonia lappacea* Casar. as “Brazil. São Paulo: in the island of S. Sebastiani, Casaretto s.n. (holotype, TO?–n.v.).” At TO there is one specimen of *Casaretto Herb. No. 64*, mounted on a single sheet with the label “*Pavonia lappacea* Casar. Nov. Stirp. Brasil. Decad. N. 33. Legi in insula S. Sebastiani (in Brasiliae provincia S. Paulo), mense Februario 1839.” This specimen is the holotype.

After exhaustive search at G and G-DC no original specimen of *Pavonia lappacea* was found.

35. *Pavonia microphylla* Casar., Nov. Stirp. Bras. 4: 38. Nov 1842 (“Oct 1842”), non E.Mey. ex Harv. & Sond. 1860, nom. illeg. = *Typhalea microphylla* (Casar.) Monteiro in Anais Congr. Soc. Bot. Brasil 12: 30. 1961 – Type: Brazil: [Bahia] “Reperi in insulâ Itaparica et in collibus circa Cachoeira in provinciâ Bahiensi”. Lectotype (designated by Fryxell in Fl. Neotrop. Monogr. 76: 232. 1999): “Legi in collibus circa Cachoeira”, s.d. [Jan 1840], *Casaretto Herb. No. 2058* (TO [7 sheets]; isolectotype: G barcode G00446560 [Field Neg. No. F-23703]).

Accepted name. – *Pavonia martii* Colla

Gürke (1892: 490–491) treated *Pavonia microphylla* Casar. as a distinct species, and among the specimens he listed “Habitat in sylvis et locis apricis prov. Bahia [...], Casaretto n. 2058; [...]” Fryxell (1999: 232) treated *P. microphylla* as a synonym of *P. martii* Colla, and cited its type as “Brazil. Bahia: on the island of Itaparica and in hills around Cachoeira, *Casaretto 2058* (holotype, TO?–n.v.; isotypes, CTES [fragment], G as photo F-23703).” Fryxell’s use of the term “holotype” is an error to be corrected for lectotype, and his citation is construed here as an inadvertent act of lectotypification of this species name on the TO specimen (see Art. 7.11, Rec. 9A).

At TO there is one gathering mounted on seven sheets consecutively numbered. On sheet No. 1 is pinned a label showing “n. 2058. *Pavonia microphylla* Casar. Nov. Stirp. Brasil. Decad. N. 35. Legi in collibus circa Cachoeira (in Brasiliae provincia Bahiensi), mense Januario 1840. Casaretto.” The other six sheets only have the institutional labels with the sheet number and Casaretto herbarium number handwritten in pencil. Therefore, this specimen, mounted on seven sheets, is the lectotype of *P. microphylla*.

At G is preserved a specimen (barcode G00446560) with a handwritten label showing “No. 2058. *Pavonia microphylla* Casar. Nov. Stirp. Brasil. Decad. N. 35. Leg. Casaretto. Provincia Bahiensis. hb. reg. Turin. 1857.” This specimen is an

isolectotype. The photo of this specimen corresponds to F Negative No. F-23703.

32. *Pavonia monatherica* Casar., Nov. Stirp. Bras. 4: 37. Nov 1842 (“Oct 1842”) – Type: Brazil: “Reperi in montibus Serra dos Orgãos in provinciâ Rio de Janeiro.” Lectotype (designated by Fryxell in Fl. Neotrop. Monogr. 76: 204–205. 1999): s.d. [May 1839], *Casaretto Herb. No. 1056* (TO [2 sheets]; isolectotype: G barcode G00446561).

Accepted name. – *Pavonia stellata* (Spreng.) Spreng.

Gürke (1892: 488–489) treated *Pavonia monatherica* Casar. as a distinct species, and among the specimens studied he listed “prope Rio de Janeiro: Casaretto n. 1056”. Fryxell (1999: 204) cited the type of *P. monatherica* as “Brazil. Rio de Janeiro, Organ Mtns., Casaretto [1056] (isotype, G as photo F-23704)” without citing the holotype and the herbarium where it is preserved. He cited the G specimen of *Casaretto Herb. No. 1056* as isotype, assuming that the holotype was at TO, as he implied in the same publication for other *Pavonia* names published by Casaretto (*P. glomerata*, *P. lappacea*, *P. microphylla*, and *P. procumbens*; see discussion under these names). However, Casaretto (1842e: 37) only cited the locality where he collected the original material, without citing any herbarium; therefore, there is no holotype or isotype, according to Art. 9.5 and 9.10 of the Code, Fryxell’s citation is an error that can be corrected (John McNeill and John Wiersema, pers. comm.). In this specific case, we make our correction in agreement with what Fryxell intended with the citation of the G specimen as isotype, and correct his designation to that of an isolectotype, and the TO specimen as the lectotype. Therefore, the G specimen (barcode G00446561) with the label “No. 1056. *Pavonia monatherica* Casar. Nov. Stirp. Decad. N. 32. Rio de Janeiro. Leg. Casaretto. hb. reg. Turin. 1857” is the isolectotype of this name.

The specimen *Casaretto Herb. No. 1056* at TO is mounted on two sheets. On sheet No. 1 is pinned the label “n. 1056. *Pavonia monatherica* Casar. Nov. Stirp. Brasil. Decad. N. 32. Legi in montibus Serra dos Orgãos (in Brasiliae provincia Rio de Janeiro), mense Maio 1839. Casaretto.” On sheet No. 2 there is no label. This specimen is the lectotype of this name.

36. *Pavonia procumbens* Casar., Nov. Stirp. Bras. 4: 39. Nov 1842 (“Oct 1842”), nom. illeg., non (Wight & Arn.) Walp. Sep 1842 – Type: Brazil: [Bahia] “Legi in insulâ Itaparica et in collibus apricis circa Bahiam.” Lectotype (designated here): “in insula Itaparica”, s.d. [Feb 1840], *Casaretto Herb. No. 2293* (TO [1 sheet]).

Accepted name. – *Pavonia cancellata* (L.) Cav.

Casaretto (1842e: 39) published *Pavonia procumbens* Casar. in November 1842 (Delprete, 2016); however, this binomial was already used for another species, published by Walpers (1842: 301) in September 1842 (Stafleu & Cowan, 1988). Therefore, Casaretto’s name is an illegitimate homonym.

Gürke (1892: 515) treated *Pavonia procumbens* as a synonym of *P. cancellata* var. *deltoidea* (Mart.) A.St.-Hil. &

Naudin and among the specimens he listed “in insula Itaparica: Casaretto n. 2293”. Fryxell (1999: 60–62) treated *P. procumbens* Casar. as a synonym of *P. cancellata* (L.) Cav., and cited its type as “Brazil. On Itaparica island and in open hills near Badia [sic!], Bahia, now the city of Salvador], *Casaretto s.n.* (holotype, TO?–n.v.)”. Fryxell’s type citation is an error that cannot be corrected because at TO there are two original gatherings of *P. procumbens* Casar., both collected on the island of Itaparica. The first specimen at TO has the label “n. 2010. Pavonia procumbens Casar. Nov. Stirp. Brasil. Decad. N. 36. Legi in Brasilia, in insula Itaparica (ad ostium sinus Bahiensis), mense Januario 1840. Casaretto.” The other specimen is also mounted on a single sheet, with the label “n. 2293. Pavonia procumbens Casar. Nov. Stirp. Brasil. Decad. N. 36. Legi in Brasilia, in insula Itaparica (ad ostium sinus Bahiensis), mense Februario 1839. Casaretto.” The specimen *Casaretto Herb. No. 2293* has a flower in anthesis, and is here selected as the lectotype of this illegitimate name. However, a small correction is necessary, because the collection date reported on the label is “February 1839”, but Casaretto collected in Bahia in January–February 1840.

After exhaustive search at G and G-DC no original specimen of *Pavonia procumbens* was found.

### Melastomataceae

93. *Henriettea brasiliensis* Casar., Nov. Stirp. Bras. 10: 85. Sep 1845 – Type: Brazil: “Reperi in sylvis circa Bahiam.” Lectotype (designated by Wurdack in Görts-van Rijn, Flora of the Guianas 99: 110. 1993): [Bahia, Salvador], s.d. [Jan 1840], *Casaretto Herb. No. 2139* (TO [3 sheets]; isolectotype: G-DC barcode G00328208).

*Accepted name.* – *Henriettea succosa* (Aubl.) DC.

Wurdack (1993: 110) treated *Henriettea brasiliensis* Casar. as synonym of *H. succosa* (Aubl.) DC. and cited its type as “Brazil, Bahia, Casaretto s.n. (holotype TO, not seen; isotype G?).” Although he did not cite Casaretto’s herbarium number, it is noted here that at TO is present a single specimen mounted on three sheets consecutively numbered. Sheet No. 1 has a label showing “n. 2139. Henriettea brasiliensis Casar. Nov. Stirp. Brasil. Dec. n. 93. Legi in Brasilia, in sylvis primaevae circa Passagem prope Bahiam, mense Jan. 1840. Casaretto.” The other two sheets do not have any label. Wurdack’s use of the term “holotype” is correctable to lectotype, and it is construed here that he inadvertently designated the lectotype (Art. 7.11, 9.10).

At G-DC there is a single specimen (barcode G00328208), consisting of a sterile branch and a few old flowers, with the label “(H. succosa DC., A. Cogniaux) No. 2139. Melastomataceae. Henriettea brasiliensis Casar. Nov. Stirp. Dec. n. 93. Passagem prope Bahiam. Leg. Casaretto. hb. reg. Turin. 1857.” This specimen is an isolectotype.

94. *Miconia flammea* Casar., Nov. Stirp. Bras. 10: 85. Sep 1845 = *Acinodendron flammeum* (Casar.) Kuntze, Revis. Gen. Pl. 2: 951. 1891 – Type: Brazil: “Habitat in provincia Minas Geraes (Riedel).” **Lectotype (designated**

**here):** “Circa Cachoeira do Campo”, s.d. [before 1840], *Casaretto Herb. No. 2710* (Riedel s.n. or Clausen s.n.) (TO [4 sheets]; isolectotype: G-DC barcode G00317470). *Accepted name.* – *Miconia flammea*

At TO there is a specimen mounted on four sheets consecutively numbered. On sheet No. 1 is pinned a label showing “n. 2710. Miconia flammea Casar. Nov. Stirp. Bras. Dec. n. 94. Circa Cachoeira do Campo (in Brasiliae provincia Minas Gerais) legit Claussen. Casaretto.” Although Casaretto (1845: 85–86) mentioned Riedel as the original collector, the TO specimen label shows Clausen as the collector. Obviously, Casaretto erred in one of his citations, and it is impossible to know the name of the collector with certainty.

At G-DC there is a single specimen (barcode G00317470) with Casaretto’s label showing “No. 2710, Miconia flammea Casar. nov. Stirp. Dec. No. 94, Cachoeira do Campo, Minas Gerais, leg. Casaretto, hb. reg. Turin. 1857.” Two corrections are necessary to this label: Casaretto never collected in the state of Minas Gerais, and, as discussed above, this specimen was instead collected by either Riedel or Clausen, and was later renumbered *Casaretto Herb. No. 2710*. This specimen is an isolectotype.

Goldenberg & al. (2013: 49) cited the type of *Miconia flammea* Casar. as “Brazil. Riedel s.n. (Holotype: TO).” Although they cited the location of the type, they did not use the term “type” or “lectotype” and the required phrase “here designated” (or an equivalent). Therefore, it is asserted here that they did not do inadvertent lectotypification (Art. 7.11).

### Meliaceae

16. *Cabralea inaequilatera* Casar., Nov. Stirp. Bras. 2: 22. Jun 1842 (“May 1842”) – Type: Brazil: “Crescit prope Rio de Janeiro.” Holotype: s.d. [before 1840], *Casaretto Herb. No. 1898* (Riedel s.n.) (TO [1 sheet]).

*Accepted name.* – *Cabralea canjerana* subsp. *polytricha* (A.Juss.) T.D.Penn.

Pennington (1981: 241) cited the type of *Cabralea inaequilatera* Casar. as “*Casaretto s.n.*, Brazil, near Rio de Janeiro, fl (holotype, TO, n.v.)”. At TO there is one specimen mounted on a single sheet with the label “N. 1898. Cabralea inequilatera Casar., Nov. Stirp. Brasil. Decad. N. 16. In Brasilia prope Rio de Janeiro, legit Riedel. Casaretto.” This specimen is the holotype of this name.

After exhaustive search at G and G-DC no specimen of *Casaretto Herb. No. 1898* could be found. However, at G there is a specimen (barcode G00446563) with the label “Riedel n. 2646 ex hort. Petrop.” This label indicates that it was collected by Riedel, although the collection locality is not mentioned. The specimen is a branchlet removed from the Rio de Janeiro Imperial Herbarium (now Botanical Garden of Rio de Janeiro). Because there is no evidence to directly connect this specimen to *Casaretto Herb. No. 1898*, it can only be treated as probable original material.

17. *Cabralea tomentosa* Casar., Nov. Stirp. Bras. 2: 22. Jun 1842 (“May 1842”) – Type: Brazil: “Habitat in Brasiliae



provincia Minas Geraes (Riedel).” Holotype: s.d. [collection date unknown, before 1840], *Casaretto Herb. No. 2979* (Riedel s.n. or Clausen s.n.) (TO [1 sheet]).

*Accepted name.* – *Cabralea canjerana* subsp. *polytricha* (A.Juss.) T.D.Penn.

In the original publication, Casaretto (1842a: 22–23) wrote that *Cabralea tomentosa* Casar. was originally collected by Riedel in the state of Minas Gerais. However, the sole specimen at TO corresponding with this name has the label “N. 2979, *Cabralea tomentosa* Casar., Nov. Stirp. Brasil. Decad. N. 17. Habui ex Brasilia provincia Minas Geraes a Claussen. Casaretto.” As both Riedel and Clausen collected specimens in the state of Minas Gerais that were later integrated in Casaretto’s Herbarium, it is impossible to know who was the original collector of this gathering.

Casimir de Candolle (1878a,b) treated *Cabralea tomentosa* as a synonym of *C. polytricha* A.Juss. In *Flora Brasiliensis* (A.C.P. de Candolle, 1878a: 179), among the specimens of the typical variety, he cited “prope Rio de Janeiro: Casaretto n. 1898!”

Pennington (1981: 241) treated *Cabralea tomentosa* as a synonym of *C. canjerana* subsp. *polytricha* (A.Juss.) T.D. Penn., and cited the type as “Riedel s.n., Brazil, Minas Gerais, fr (holotype, TO n.v.)” The sole specimen corresponding with *C. tomentosa* is *Casaretto Herb. No. 2979* and is the holotype of *C. tomentosa*.

After exhaustive search at G and G-DC no original specimen of *C. tomentosa* was found.

18. *Trichilia multiflora* Casar., Nov. Stirp. Bras. 2: 23. Jun 1842 (“May 1842”) – Type: “Crescit circa Rio de Janeiro.” Lectotype (designated by Pennington in Fl. Neotrop. Monogr. 28: 51. 1981): s.d. [before 1840], *Casaretto Herb. No. 1897* (Riedel s.n.) (TO [2 sheets]; isoelectotype: G-DC barcode G00702477).

*Accepted name.* – *Trichilia hirta* L.

Casimir de Candolle (1878a: 205) treated *Trichilia multiflora* Casar. as a distinct species, and cited the specimen “Habitat prope Rio de Janeiro: *Casaretto!*” without citing the herbarium of deposit of the specimen nor Casaretto’s herbarium number. Later the same year, he (Candolle, 1878b: 670) maintained it as a separate species and cited “In Brasilia prope Rio de Janeiro (Casaretto in herb. Taurin.).”

Pennington (1981: 51) treated *Trichilia multiflora* as a synonym of *T. hirta* L., and cited “Type: *Casaretto s.n.*, Brazil, near Rio de Janeiro, fr (holotype, TO n.v.; isotype G-DC).” At TO there is a specimen mounted on two sheets, originally collected by Riedel. Sheet No. 1 has the label “N. 1897, *Trichilia multiflora* Casar., Nov. Stirp. Brasil. Decad. N. 18, In Brasilia circa Rio de Janeiro legit Riedel. Casaretto.” Pennington’s citation is construed here as an act of inadvertent lectotypification on this specimen (Art. 7.11, 9.10).

At G-DC there is a specimen (barcode G00702477) with a few sterile twigs and a portion of an inflorescence, and the label “*Trichilia multiflora* Casaretto, fragmenta ex herb. Taurin.” The label of this specimen does not bear the typical handwriting “hb. reg. Turin. 1857.” This specimen was

extracted from *Casaretto Herb. No. 1897* at TO and probably sent to Geneva after 1857, to be studied by Casimir de Candolle. This specimen is an isoelectotype.

## Moraceae

10. *Ficus arpazusa* Casar., Nov. Stirp. Bras. 1: 15. Oct 1842 (“May 1842”) = *Ficus radicans* Casar. in Atti Riunione Sci. Ital. 3: 515. Jun 1842 (“1841”), nom. illeg., non Desf. 1829 – Type: Brazil: “Hab. in sylvis primaevae circa Rio de Janeiro.” Holotype: s.d. [Aug 1839], *Casaretto Herb. No. 1234* (TO [2 sheets]).

*Accepted name.* – *Ficus pertusa* L.f.

Casaretto (1842b: 515) published *Ficus radicans* Casar. in the *Atti*. The title page of the *Atti* reports “1841” as publication date, but was instead published in June 1842, before the first *Decas*, which was published in October 1842. For discussion of Casaretto’s publication dates, see Introduction (Publication of new names in the *Atti* and in the *Decades*), and Table 1. Casaretto apparently realized that the binomial *F. radicans* was already used by Desfontaines (1829: 413). Therefore, in *Decas I*, Casaretto (1842d: 15, published after the *Atti*) renamed this species *Ficus arpazusa* Casar. and cited the gathering as “Reperi in sylvis primaevae circa Rio de Janeiro.”

Miquel (1853), in his treatment of the Urticineae for *Flora Brasiliensis* (where most of the Neotropical species of *Ficus* L. were reduced to synonymy under *Pharmacosycea* Miq.), did not mention *Ficus arpazusa* or *F. radicans*.

Carauta (1989: 64–68) treated *Ficus arpazusa* as a synonym of *F. citrifolia* Mill., and among the numerous specimens reported he cited “Rio de Janeiro: Casaretto 1234 (VIII.1839) TO”. However, he did not designate a type for Casaretto’s name.

At TO there is a specimen, mounted on two sheets consecutively numbered. On sheet No. 1 is pinned the original label handwritten by the TO staff “N. 1234, *Ficus arpazusa* Casar. Nov. Stirp. Bras. Dec. N. 10, legi in sylvis primaevae circa Rio de Janeiro, mense Aug. 1839. Casaretto.” It also has two additional labels, “*Ficus pertusa* L. f., Gordon P. DeWolf, Jr. VIII/13/1958” and “Kew Negative No. 5256, date July 61, Intl. R2.” This specimen of two sheets is the holotype of *Ficus arpazusa*.

After exhaustive search at G and G-DC no original specimen of *Ficus arpazusa* was found.

50. *Ficus lanuginosa* Casar., Nov. Stirp. Bras. 5: 48. Mar 1843 – Type: Brazil: “Reperi in sylvulis arenosis maritimis (vulgo *Restingas*) prope *Taypú* in provincia *Rio de Janeiro*.” Holotype: s.d. [Oct 1839], *Casaretto Herb. No. 1809* (TO [1 sheet]).

*Accepted name.* – *Ficus hirsuta* Schott

Miquel (1853), in his treatment of the Urticineae for *Flora Brasiliensis* did not mention *Ficus lanuginosa* Casar. Carauta (1989: 115–118), treated *F. lanuginosa* as a synonym of *F. hirsuta* Schott, and among the numerous specimens cited he reported “Niterói, perto de Itaipu; Casaretto 1809 (XII [sic! Oct] 1839) TO 5254”. However, he did not designate a type for Casaretto’s name.



At TO there is a single sheet of the original Casaretto collection, with the label “n. 1809, *Ficus lanuginosa* Casar. Nov. Stirp. Bras. Dec. n. 50. Legi in sylvulis arenosis maritimis (vulgo restingas) prope pagum Taypú (in Brasiliae provincia Rio de Janeiro), mense Oct. 1839. Casaretto.” On the upper left of the sheet is glued a small label saying “Kew Negative No. 5254, Date July 61, Intls. R2” which explains the number “5254” after the TO herbarium code cited by Carauta (1989). This specimen is the holotype of *Ficus lanuginosa*.

After exhaustive search at G and G-DC no original specimen of *Ficus lanuginosa* was found.

90. *Trophis hilariana* Casar., Nov. Stirp. Bras. 9: 80. Aug 1845 ≡ *Sorocea hilariana* (Casar.) Bureau in Candolle, Prodr. 17: 254. 1873 – Type: Brazil: “In sylvis primaevus prov. Rio de Janeiro, S. Pauli et Minas Geraes secus fluvium Rio Jiquitinhonha (Aug. S.<sup>1</sup> -Hil.): in monte Corcovado (Riedel): in sylvulis maritimis vulgo *Restinga de Taypú* in prov. Rio de Janeiro, et in collibus circa oppidum S. Amaro in prov. Bahiensi (ego).” **Lectotype** (first-step, designated by Berg, Fl. Ecuador 60: 37. 1998, **second-step, designated here**): “In sylvis montis Corcovado prope urbem Rio de Janeiro legit Riedel”, s.d. [Feb 1839], *Casaretto Herb. N. 591* (Riedel s.n.) (TO [3 sheets]; isolectotype: G barcode G00438480).

*Accepted name.* – *Sorocea guilleminiana* Gaudich.

Along with the description of *Trophis hilariana*, Casaretto cited several localities from the states of Rio de Janeiro, São Paulo, and Minas Gerais. Berg (1998: 37) treated *Trophis hilariana* Casar. as a synonym of *Sorocea guilleminiana* Gaudich., and cited its type as “Brazil, Rio de Janeiro, Riedel s.n. (not traced).” By citing the gathering from Rio de Janeiro collected by Riedel, although without indicating the herbarium of deposit, Berg’s citation is here interpreted as an inadvertent first-step lectotypification.

Berg (2001: 98) maintained *T. hilariana* as a synonym of *S. guilleminiana* and cited the following gatherings: “Brasil. Bahia: “São Amaro” [sic! Santo Amaro], Casaretto s.n. (TO-n.v.); Rio de Janeiro, Restinga de Taypú, Casaretto s.n. (TO-n.v.); Rio de Janeiro, Corcovado, Riedel s.n. (TO-n.v.).”

At TO there are three original gatherings with the same localities cited by Casaretto in the protologue of *T. hilariana*, and Berg’s (2001) specimen citations. The first gathering is mounted on a single sheet and has a label showing “n. 1813. *Trophis hilariana* Casar. Nov. Stirp. Bras. Dec. n. 90. Legi in sylvulis arenosis maritimis (vulgo restingas) prope pagum Taypú (in Brasiliae provincia Rio de Janeiro), mense Oct. 1839. Casaretto.” The second gathering has a label showing “n. 2188. *Trophis hilariana* Casar. Nov. Stirp. Bras. Dec. n. 90. Legi in collibus circa oppidum S. Amaro (in Brasiliae provincia Bahiensis), mense Januario 1840. Casaretto.” The third specimen is mounted on three sheets consecutively numbered. On sheet No. 1 are pinned two labels showing “n. 591. *Trophis*. Arbor. In sylvis Corcovado. Febr. 1839” and “n. 591. *Trophis hilariana* Casar. Nov. Stirp. Bras. Dec. n. 90. In sylvis montis Corcovado prope urbem Rio de Janeiro legit Riedel.

Casaretto.” The specimen *Casaretto Herb. No. 591* (Riedel s.n.) at TO is here designated as the second-step lectotype of *T. hilariana*.

At G there is a specimen (barcode G00438480) with Casaretto’s label showing “No. 591. Urticeae, *Trophis hilariana*, Corcovado urbem Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” It also has a label showing “Revised for Flora Neotropica, *Sorocea guilleminiana* Gaud. Lectotype of *Trophis hilariana* Casaretto, Det.: C.C. Berg, 1982-1983.” This specimen is an isolectotype.

## Myrtaceae

47. *Calyptanthus dichotoma* Casar., Nov. Stirp. Bras. 5: 47. Mar 1843 ≡ *Chytraculia dichotoma* (Casar.) Kuntze, Revis. Gen. Pl. 1: 238. 1891 – Type: Brazil: “Habitat in provincia S. Paulo (Riedel).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 1969* (Riedel s.n.) (TO [1 sheet]).

*Accepted name.* – *Calyptanthus dichotoma* Casar.

Berg (1857: 48) treated *Calyptanthus dichotoma* Casar. as a distinct species, and only indicated “Habitat in prov. S. Pauli: Pl. Oreas” without citing a specimen from Casaretto’s herbarium. At TO there is a single sheet of *C. dichotoma*, with the label “n. 1969, *Calyptanthus dichotoma* Casar. Nov. Stirp. Brasil. Decad. n. 47. In Brasiliae provincia S. Paulo legit Riedel. Casaretto.” This specimen is the holotype of this name.

No original gathering of *Calyptanthus dichotoma* was found at G and G-DC.

84. *Eugenia myriophylla* Casar., Nov. Stirp. Bras. 9: 77. Aug 1845 – Type: Brazil: “Habitat in montibus vulgo *Serra da Caraça* in provincia Minas Geraes (Clausen).” **Lectotype (designated here)**: s.d. [before 1840], *Casaretto Herb. No. 2684* (Clausen s.n.) (TO [8 sheets]; isolectotype: G barcode G00446572; possible isolectotype: G barcode G00446573).

*Accepted name.* – *Blepharocalyx myriophyllus* (Casar.) Morais & Sobral

Berg (1857: 375) transferred *Eugenia myriophylla* Casar. to *Myrciaria*, making the new combination *M. myriophylla* (Casar.) O.Berg, and cited the following gatherings: “Habitat in prov. Goyazensi: Gardner n. 3182; et in prov. Minarum prope Cachoeira do Campo: Clausen n. 1672.” These two gatherings do not correspond to the original material used by Casaretto to describe *E. myriophylla*.

Morais and Sobral (in Morais & Lombardi, 2006) cited the type of *Eugenia myriophylla* as “Tipo: Serra da Caraça, Clausen 2684, holótipo TO.” However, as their publication is post-2001, their statement cannot be interpreted as an inadvertent act of lectotypification because they did not use the phrase “here designated” or an equivalent (Art. 7.11). In addition, the number 2684 is not Clausen’s collection number, but is Casaretto’s herbarium number. Also, because of the morphological characters of this species, they transferred this taxon to *Blepharocalyx*, proposing the new combination *B. myriophyllum* (Casar.) Morais & Sobral, which is here followed.

At TO there is a specimen of original material mounted on eight sheets consecutively numbered. On sheet No. 1 is pinned the label “n. 2684. *Eugenia myriophylla* Casar. Nov. Stirp. Bras. Dec. n. 84. In montis Serra da Caraça (in Brasiliae provincia Minas Geraes) legit Claussen. Casaretto.” On the other seven sheets there is no label. This specimen, mounted on eight sheets, is here designated the lectotype of *Eugenia myriophylla*.

A specimen at G (barcode G00446572) has a label showing “No. 2684. *Eugenia myriophylla* Casar. Nov. Stirp. Dec. No. 84. M<sup>bus</sup> Serra da Caraça. P<sup>cia</sup> Minas Geraes. Leg. Claussen. Casaretto. hb. reg. Turin. 1857.” This specimen is an isoelectotype.

An additional specimen at G (barcode G00446573) has the penciled label “Myrciaria myriophylla Bq.” It also has the handwritten label (author unknown, probably Clausen) “64, Myrcia, frutex. Serra da Caraça, Jul 39 (30)” and the printed label “Brésil (Minas Geraes). P. Claussen, 3<sup>e</sup> envoi reçu en janvier 1840.” Because it was collected in July 1839 on Serra da Caraça, this specimen is a possible isoelectotype.

39. *Eugenia rotundifolia* Casar., Nov. Stirp. Bras. 4: 40. Nov 1842 (“Oct 1842”), nom. illeg., non (Arn.) Wight 1841 = *Eugenia casarettoana* Delprete, **nom. nov.** – Type: Brazil: “Reperi in arenosis maritimis inter Copo-Cabana et Lagoa de Rodrigo de Freytas prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Aug 1839], *Casaretto Herb. No. 1021* (TO [3 sheets]; isoelectotype: G barcode G00446564).

*Accepted name.* – *Eugenia casarettoana* Delprete

Berg (1857: 287) treated *Eugenia rotundifolia* Casar. as a distinct species, emended it with additional characters, and recognized two varieties. However, he did not realize that this binomial was already used for the combination *E. rotundifolia* (Arn.) Wight for a taxon from Sri Lanka. Therefore, Casaretto’s name is a later homonym and illegitimate. Apparently, this species is endemic to the *restingas* (coastal vegetation, near sea level) of the state of Rio de Janeiro, and is distinguished by its round, leathery leaves with narrowly revolute margin (Eve Lucas, pers. comm.). Therefore, the new name *E. casarettoana* Delprete is here proposed for this species.

At TO there is a specimen mounted on three sheets consecutively numbered. On sheet No. 1 is pinned a label showing “n. 1201. *Eugenia rotundifolia* Casar. Nov. Stirp. Bras. Decad. N. 39. Legi in arenosis maritimis inter Copo-Cabana et Lagoa de Rodrigo de Freytas prope Rio de Janeiro, mense Aug. 1839. Casaretto.” The specimen consists of these three sheets and is here designated the lectotype of *Eugenia casarettoana*.

At G there is a sheet (barcode G00446564) with the label “No. 1201. *Eugenia rotundifolia* Casar. Nov. Stirp. Decad. N. 39. M<sup>mis</sup> Copo-Cabana Lagoa de Rodrigo de Freytas Rio de Janeiro. Leg. Casaretto. hb. reg. Turin. 1857.” This specimen is an isoelectotype.

### Nyctaginaceae

73. *Pisonia cafferiana* Casar., Nov. Stirp. Bras. 8: 68. Jun 1844 (“*cafferana*”) = *Guapira cafferiana* (Casar.) Lundell in

*Wrightia* 4(2): 80. 1968 – Type: Brazil: “Reperi in sylvis montis Corcovado prope Rio de Janeiro cum praecedente.” **Lectotype (designated here):** s.d. [Sep 1839], *Casaretto Herb. No. 1699* (TO [2 sheets]; isoelectotype: G barcode G00383903).

*Accepted name.* – *Guapira opposita* (Vell.) Reitz

Schmidt (1872: 358–359) treated *Pisonia cafferiana* Casar. as a distinct species, and among the specimens studied he cited “in sylvis montis Corcovado: Casaretto”. Lundell (1968: 80) published the new combination *Guapira cafferiana* (Casar.) Lundell, but without citing any specimen. Reitz (1970) did not mention *Pisonia cafferiana* in his treatment of *Pisonia* for the state of Santa Catarina, southern Brazil.

At TO there are two original gatherings of *Pisonia cafferiana*. The first gathering is mounted on two sheets consecutively numbered; on sheet No. 1 is pinned the label “n. 1679. *Pisonia cafferiana* Casar. Nov. Stirp. Bras. Dec. n. 73. Legi in monte Corcovado prope urbem Rio de Janeiro, mense Sept. 1839. Casaretto.” The second gathering is also mounted on two sheets consecutively numbered. Sheet No. 1 has the label “n. 1699. *Pisonia cafferiana* Casar. Nov. Stirp. Bras. Dec. n. 73. Legi in monte Corcovado prope urbem Rio de Janeiro, mense Sept. 1839. Casaretto.” This specimen, *Casaretto Herb. No. 1699*, mounted on two sheets, is here selected as the lectotype of this name.

At G there is a sheet (barcode G00383903) with two labels showing “No. 1699. *Pisonia cafferiana* Casar. Nov. Stirp. Dec. n. 73. Leg. Casaretto. hb. reg. Turin. 1857” and “*Guapira opposita* (Vell.) Reitz, Syntipo de *Pisonia cafferiana* Casar. Rev. C. Farney / III-1999. Jardim Botânico do Rio de Janeiro.” This specimen is an isoelectotype.

72. *Pisonia palicouroides* Casar., Nov. Stirp. Bras. 8: 68. Jun 1844 (“*palicouroides*”), nom. superfl. & illeg. [*Bessera calycantha* Vell. 1829 cited in synonymy]. Localities: “Reperi in montibus Corcovado, Gavia, Babylonia, prope Rio de Janeiro.”

*Bessera calycantha* Vell., Fl. Flumin. 147. 1829 (“1825”) – **Lectotype (designated here):** [illustration] “Heptand. Monog. BESSERA CALYCANTHA” in Vellozo, Fl. Flumin. Icon. 4: t. 2. 1831 (“1827”).

*Accepted name.* – *Guapira opposita* (Vell.) Reitz

Casaretto (1844) published *Pisonia palicouroides* Casar. citing *Bessera calycantha* Vell. in synonymy; therefore, *P. palicouroides* is a superfluous, illegitimate name. Both the description and illustration of *Bessera calycantha* are quite detailed, and this name is validly published. Therefore, as lectotype of *B. calycantha* is here designated tabula 2 of volume 4 of *Florae fluminensis icones* (Vellozo, 1831).

Reitz (1970: 32–37) published the new combination *Guapira opposita* (Vell.) Reitz., and treated *Pisonia palicouroides* as one of its synonyms without citing any type material for this name.

74. *Pisonia pernambucensis* Casar., Nov. Stirp. Bras. 8: 69. Jun 1844 – Type: Brazil: “Reperi circa urbem Pernambuco

[now city of Recife].” Holotype: s.d. [Feb 1840], *Casaretto Herb. No. 2299* (TO [1 sheet]).

*Accepted name.* – *Guapira pernambucensis* (Casar.) Lundell Schmidt (1872: 361) treated *Pisonia pernambucensis* Casar. as a synonym of *P. subcordata* Sw., and among the specimens listed he cited “circa urbem Pernambuco: Casaretto”. Lundell (1968: 83) published the new combination *Guapira pernambucensis* (Casar.) Lundell, without citing any specimen.

At TO there is a single sheet of the original collection of *Pisonia pernambucensis* with the label “n. 2299. *Pisonia pernambucensis* Casar. Nov. Stirp. Bras. Dec. n. 74. Legi in Brasilia prope urbem Pernambuco, mense Febr. 1840. Casaretto.” This specimen is the holotype of this name.

No original specimen of *Pisonia pernambucensis* was found at G or G-DC.

75. *Pisonia tomentosa* Casar., Nov. Stirp. Bras. 8: 69. Jun 1844 – Type: Brazil: “Habitat in provinciâ Minas Geraes (Claussen).” Holotype: s.d., *Casaretto Herb. No. 2876* (Claussen s.n.) (TO [1 sheet]).

*Accepted name.* – *Guapira tomentosa* (Casar.) Lundell Schmidt (1872: 361) treated *Pisonia tomentosa* Casar. as a distinct species, and among the specimens studied he cited an unnumbered Casaretto collection. Lundell (1968: 84) published the new combination *Guapira tomentosa* (Casar.) Lundell without citing any specimen.

At TO there is a single sheet of original material of *Pisonia tomentosa* with the label “n. 2876. *Pisonia tomentosa* Casar. Nov. Stirp. Bras. Dec. n. 75. In Brasiliae provincia Minas Geraes legit Claussen. Casaretto.” This specimen is the holotype of this name.

No original specimen of *Pisonia tomentosa* was found at G or G-DC.

### Phyllanthaceae

98. *Phyllanthus arenicola* Casar., Nov. Stirp. Bras. 10: 88. Sep 1845 ≡ *Diasperus arenicola* (Casar.) Kuntze, Revis. Gen. Pl. 2: 598. 1891 – Type: Brazil “Reperi in sylvis arenosis maritimis (vulgo restingas) prope Taipú in provinciâ Rio de Janeiro.” **Lectotype (designated here):** s.d. [Oct 1839], *Casaretto Herb. No. 1793* (TO [2 sheets]; isoelectotype: G-DC barcode G00316158).

*Accepted name.* – *Phyllanthus arenicola*

Müller Argoviensis (1873: 64) treated *Phyllanthus arenicola* Casar. as a distinct species and cited several collections: “Habitat in arenosis maritimis prope Rio de Janeiro, loco dicto Taipú: Casaretto n. 1793 (v. in Hb. DC.), Lund, Riedel n. 1301, Schott n. 4604.”

Webster (2002) also maintained *Phyllanthus arenicola* as a distinct species and cited its type as “Brazil. Rio de Janeiro: Taipú, 1839/1840, *G. Casaretto 1793* (holotype: G!).” Martins & al. (2014) followed Webster, and cited the type of this name as “Brasil. Rio de Janeiro. Taipú, 1839/40, *G. Casaretto 1793* (holótipo G. n.v., referido por Webster (2002)).” Since neither Webster (2002) nor Martins & al. (2014) made a formal

lectotype designation, their citation of the term “holotype” does not constitute an inadvertent act of lectotypification (Art. 7.11).

At TO there is a specimen mounted on two sheets consecutively numbered. Sheet No. 1 has a label showing “n. 1793. *Phyllanthus arenicola* Casar. Nov. Stirp. Bras. Dec. n. 98. Legi in sylvis arenosis maritimis (vulgo restingas) prope Taipú (in Brasiliae provincia Rio de Janeiro), mense Oct. 1839. Casaretto.” This specimen, mounted on two sheets, is here designated the lectotype of *Phyllanthus arenicola*.

At G-DC is a sheet (barcode G00316158) with Casaretto’s label showing “No. 1793, *Phyllanthus arenicola* Casar. nov. Stirp. Dec. No. 98, Taipú, P<sup>cia</sup> Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” This specimen is an isoelectotype.

### Phytolaccaceae

*Gallesia* Casar., Nov. Stirp. Bras. 5: 43. Mar 1843 – Type:

*Gallesia scorododendrum* Casar., nom. superfl. & illeg.

*Eponymy.* – Casaretto dedicated the name of this genus to Giorgio Gallesio (1772–1839), Italian botanist and political figure, born at Finalborgo, near Savona, Liguria, and who gave him detailed instructions regarding collecting techniques and a list of important fructiferous plants to be studied during his planned trip around the World (Ferraro, 2001).

41. *Gallesia scorododendrum* Casar., Nov. Stirp. Bras. 5: 44. Mar 1843, nom. superfl. & illeg. [*Crateva gorarema* Vell. 1829 cited in synonymy].

*Crateva gorarema* Vell., Fl. Flumin: 200. 1829 (“1825”) ≡ *Gallesia gorarema* (Vell.) Moq. in Candolle, Prodr. 13(2): 8. 1849 (“gorazema”) – **Lectotype (designated here):** [illustration] “Dodec. Monog. CRATAEVA GORAREMA” in Vellozo, Fl. Flumin. Icon. 5: t. 4. 1831 (“1827”). **Epitype (designated here):** Brazil: [Rio de Janeiro and São Paulo, Island of São Sebastião], “Reperi in sylvis primaevae circa Rio de Janeiro, et in insulâ S. Sebastiani”, s.d. [Jan 1838], *Casaretto Herb. No. 539* (Riedel s.n.) (TO [2 sheets]; isoelectotype: G barcode G00440045).

*Accepted name.* – *Gallesia integrifolia* (Spreng.) Harms Casaretto (1843a: 44) described *Gallesia scorododendrum* and cited *Crateva gorarema* in synonymy; therefore, *G. scorododendrum* is a superfluous illegitimate name. Harms (in Heimerl, 1934: 144), noticed that Casaretto’s name is illegitimate, and proposed the new combination *Gallesia integrifolia* (Spreng.) Harms (basonym: *Thouinia integrifolia* Spreng. 1821).

Rohwer (1982), in his taxonomic revision of *Gallesia* Casar., cited the original gatherings of *G. scorododendron* as “Syntypes: Casaretto 539 and ? (TO? n.v., isosyntype No. 539 G)” however, as this name is illegitimate, Rohwer’s citation has no formal status.

Because Casaretto cited *Crateva gorarema* in synonymy, the type of *Gallesia scorododendrum* is Vellozo’s *Florae fluminensis icones* plate 4 of volume 5, which is designated here as the lectotype of *C. gorarema*. Also, because Vellozo’s plate is



insufficient to show the full identity of this species, to avoid any ambiguity about this taxon, we here designate *Casaretto Herb. No. 539* at TO as the epitype of *C. gorarema* because it has both flowering and fruiting branches. The TO specimen is mounted on two sheets consecutively numbered. On sheet No. 1 are pinned two labels, “No. 539, Pau d’alho Brasilianorum, Nov. Gen. proxim Segueriae. Arbor praealta, flores herbacei. In sylvis primaevae Rio Jan. et St. Paulo. Jan 1838” and “N. 539. Galesia scorododendron Casar., Nov. Stirp. Brasil. Dec. N. 41. Nom. Vulg. Bras. Pao d’alho. In sylvis primaevae Brasiliae pro. Rio de Janeiro et S. Paulo legit Riedel. Casaretto.”

A specimen at G (barcode G00440045) has two labels. The first label shows: “No. 539, Galesia scorododendron Casar. nov. Stirp. Dec. No. 41, S. Paulo, Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” The other label is handwritten by Rohwer and shows: “Galesia integrifolia (Spreng.) Harms, Isosyntype of *G. scorododendron* Casaretto, Nov. stirp. bras. dec. 5 (1843) 44, Dat. Feb. 1982, rev. J. Rohwer.” This specimen is an isoepitype of *C. gorarema*.

### Plantaginaceae

87. *Stemodia cruciflora* Casar., Nov. Stirp. Bras. 9: 78. Aug 1845 – Type: Brazil: “Legi ad margines viarum camprestrium circa *Praia grande* et in monte *Corcovado* prope *Rio de Janeiro*.” Lectotype (designated by Turner & Cowan in *Phytologia* 74: 318. 1993): “ad margines viarum campestrium circa *Praia Grande*”, s.d. [Oct 1839], *Casaretto Herb. No. 1746* (TO [4 sheets]; isolectotype: G barcode G00343835).

*Accepted name.* – *Stemodia trifoliata* (Link) Rchb.

Turner & Cowan (1993: 318) designated the specimen “*Casaretto 1746*” at TO as the lectotype *Stemodia cruciflora* and that at G-DC as isolectotype, and stated “The isolectotype label is written in the hand of Casaretto and was apparently transferred from Turin, Italy, to G-DC in 1857, according to label data. Material from monte Corcovado collected by Casaretto, as alluded to in the protologue, was not located.” However, the isolectotype is at G, and not at G-DC, which is an error to be corrected.

The TO lectotype is mounted on four sheets consecutively numbered. On sheet No. 1 is pinned a label showing “n. 1746. *Stemodia cruciflora* Casar. Nov. Stirp. Bras. Dec. n. 87. Legi ad margines viarum campestrium circa *Praia Grande* prope urbem Rio de Janeiro, mense Oct. 1839. Casaretto.” In the same herbarium, there is an additional specimen, mounted on a single sheet, with the label “n. 750. *Stemodia cruciflora* Casar. Nov. Stirp. Bras. Dec. n. 87. Legi in *Corcovado* prope urbem Rio de Janeiro, mense Maio 1839. Casaretto”; this is the specimen mentioned as “not located” by Turner & Cowan (1993: 318).

At G there is a sheet (barcode G00343835) with a handwritten label showing “No. 1746, *Stemodia cruciflora* Casar. nov. Stirp. Dec. No. 87, *Praia Grande*, Rio de Janeiro, leg. Casaretto, hb. reg. Turin. 1857.” On this sheet

are pinned two additional labels showing “Lectotype of: *Stemodia cruciflora* Casaretto, Nov. Stirp. Bras. Dec. 9: 78. 1844, B.L. Turner, 1992” and “University of Texas Herbarium (LL, TEX), *Stemodia trifoliata* (Link) Reichenb., det. C. Cowan, 1992.” Although Turner annotated this specimen as lectotype, in their publication (Turner & Cowan, 1993: 318) it was stated that this specimen is an isolectotype.

### Polygalaceae

13. *Polygala pachyrrhiza* Casar., Nov. Stirp. Bras. 2: 20. Jun 1842 (“May 1842”) – Type: Brazil: “Habitat in collibus siccis circa *Jurijuba* et *Piratininga*, prope *Rio de Janeiro*.” **Lectotype (designated here):** “in collibus circa *Jurijuba*”, s.d. [before 1840], *Casaretto Herb. No. 1918* (Riedel s.n.) (TO [1 sheet]; isolectotype: G barcode G00446576).

*Accepted name.* – *Gymnospora violoides* (A.St.-Hil. & Moq.) J.F.B. Pastore

Bernardi (2000: 351) treated *Polygala pachyrrhiza* Casar. as a synonym of *P. violoides* A.St.-Hil. & Moq. and cited “Indicatio locotypica: ‘Habitat in collibus siccis circa *Jurijuba* et *Piratininga* [sic! *Piratininga*], prope *Rio de Janeiro*’” without indicating any type specimens. Among the numerous Brazilian specimens listed for *P. violoides*, he cited “near *Rio de Janeiro*? *G. Casaretto 1918*, sin fecha (G)”.

Pastore & Moraes (2013: 305) cited the type of *Polygala pachyrrhiza* as “Brazil. Rio de Janeiro ‘Habitat in collibus siccis circa *Jurijuba* et *Piratininga*, prope *Rio de Janeiro*’, s.d., *G. Casaretto 1918* (holotype, GE not seen; isotype, G).” However, at GE there are no collections of Casaretto from Brazil. Furthermore, they did not attempt to make a formal lectotype designation, and therefore, their usage of the term “holotype” does not constitute an inadvertent act of lectotypification of this name (Art. 7.11).

At TO there are two original gatherings of *Polygala pachyrrhiza*. The first gathering is mounted on a single sheet with two labels, “N. 674, *Polygala*, an n. genus? radice crassa repens, flores albi. In collibus siccis prope *Piratininga*, R. Jan. [Rio de Janeiro], 1838 febr.”, and “N. 674, *Polygala pachyrrhiza* Casar. Nov. Stirp. Bras. Decad. N. 13, Nom. Vulg. Bras. Poaya, Habui ex collibus siccis prope *Piratininga*, in Brasiliae, provincia Rio de Janeiro a Riedel. Casaretto.”

The other gathering at TO is a single sheet with the label “N. 1918, *Polygala pachyrrhiza* Casar. Nov. Stirp. Bras. Decad. N. 13, Nom. Vulg. Bras. Poaya, Habui ex Brasilia in collibus circa *Jurijuba*, prope *Rio de Janeiro* a Riedel. Casaretto.” This specimen, originally collected by Riedel and later integrated in Casaretto’s herbarium (No. 1918), is here designated the lectotype of this name.

At G there is a sheet (barcode G00446576) with three labels showing “*P. surinamensis* Moric.”; “No. 1918. *Polygala pachyrrhiza* Casar. Nov. Stirp. Bras. Decad. N. 13, Leg. Casaretto, hb. reg. Turin. 1857”; and “Isotype of *Polygala pachyrrhiza* Casaretto = *Gymnospora violoides* (A.St.-Hil. &

Moq.) J.F.B. Pastore, Pastore determ. Anno 2013.” This specimen is an isoelectotype.

### Polygonaceae

78. *Coccoloba alnifolia* Casar., Nov. Stirp. Bras. 8: 71. Jun 1844 – Type: Brazil: “Reperi in sylvis arenosis maritimis (vulgo *Restingas*) prope *Rio de Janeiro*.” Lectotype (designated by Howard in J. Arnold Arbor. 41: 217. 1960): s.d. [Aug 1839], *Casaretto Herb. No. 1194* (TO [2 sheets]; isoelectotype: A barcode 00055107 [fragments ex TO]).

Accepted name. – *Coccoloba alnifolia*

Howard (1960b: 217) stated that there are two original gatherings of *Coccoloba alnifolia* Casar. at TO, and selected *Casaretto Herb. No. 1194* as the lectotype. The first specimen at TO is mounted on two sheets consecutively numbered and pinned together. On sheet No. 1 is pinned the label “n. 1270. *Coccoloba alnifolia* Casar. Nov. Stirp. Bras. Dec. n. 78. Legi in sylvis arenosis maritimis (vulgo *restingas*) prope *Rio de Janeiro*, mense Aug. 1839. Casaretto.” The other specimen is also mounted on two sheets consecutively numbered. Sheet No. 1 has Casaretto’s label “No. 1194, *Coccoloba alnifolia* Casar. nov. stirp. Br. Dec. No. 78. legi in sylvis arenosis maritimis (vulgo *restingas*) apud Copo-Cabana prope urbem *Rio de Janeiro*, mense Aug. 1839. Casaretto.” This latter specimen is the lectotype of this name.

No original specimen of *Coccoloba alnifolia* Casar. was found at G or G-DC.

At A (wherein Howard worked) is kept a sheet (barcode 00055107) with a photograph of the lectotype specimen at TO, and a pocket containing several loose leaves and one loose inflorescence. This specimen is an isoelectotype.

79. *Coccoloba laevis* Casar., Nov. Stirp. Bras. 8: 71. Jun 1844 – Type: Brazil: “Reperi in insulâ *Itaparica* ad ostium sinus Bahiensis, in maritimis arenosis.” Holotype: s.d. [Feb 1840], *Casaretto Herb. No. 2264* (TO [1 sheet]; isotype: A barcode 00056410 [fragments ex TO]).

Accepted name. – *Coccoloba laevis*

Howard (1960b: 245) stated about *Coccoloba laevis* Casar. that “Casaretto did not cite a specimen in the original description, but in the same publication he described other species based on his own collections. One sheet, *Casaretto 2264*, in the Turino herbarium, fits the description of *Coccoloba laevis* in all details and should be considered the holotype. I assume that Casaretto unintentionally omitted the citation of a specimen.” At TO is preserved the sole original gathering of *C. laevis*, with a few branches mounted on a single sheet, and Casaretto’s label “n. 2264, *Coccoloba laevis* Casar. Nov. Stirp. Bras. Dec. n. 79, legi in maritimis insula *Itaparica*, prope Bahiam, mense Febr. 1840. Casaretto.” This specimen is the only element upon which the validating description of *C. laevis* was based (Art. 9.3) and is the holotype of this name.

No original specimen of *Coccoloba laevis* was found at G or G-DC.

At A there is a sheet (barcode 00056410) with a photograph of the TO specimen, and a pocket containing several loose leaves and one loose inflorescence extracted from the TO specimen. The A specimen is an isoelectotype.

80. *Coccoloba mollis* Casar., Nov. Stirp. Bras. 8: 72. Jun 1844 – Type: Brazil: [Bahia] “Reperi in insulâ *Itaparica* ad ostium sinus Bahiensis, in maritimis arenosis”. Holotype: s.d. [Feb 1840], *Casaretto Herb. No. 2218* (TO [1 sheet]; isotype: A barcode 00055129 [fragments ex TO]).

Accepted name. – *Coccoloba mollis*

Howard (1960b: 253) stated about *Coccoloba mollis* Casar. that “Casaretto cited no collection by number or name of collector in the original publication, so one must assume that he was referring to his own collection. Such a specimen, now in Turino herbarium, was made on the island of *Itaparica*, near Bahia [now Salvador], Brazil, and the data on the label agrees in description and location with that published by Casaretto. The label on the specimen also stated the number of the collection as 2118 and the catalogue number as 80. Lindau [Lindau, 1890: 133] cited ‘*Casaretto 2218*’ and ‘*Meisner 80*.’ These are one and the same sheet. This single sheet in the Turino herbarium, the holotype of this species, is a sterile specimen in poor condition consisting of two leafless twigs and five detached leaves, probably coming from an adventitious root since one twig is extremely pubescent.” A few corrections are necessary to Howard’s statement. While “*Casaretto 2218*” is Casaretto’s herbarium number, “80” is the number that Casaretto assigned to *Coccoloba mollis* in his *Decades* (i.e., not in a “catalogue”). Also, Meisner has no relation to the collections cited by Casaretto.

At TO is present a single sheet with a twig and several loose leaves (as described by Howard), and Casaretto’s label “n. 2218, *Coccoloba mollis* Casar. Nov. Stirp. Bras. Dec. n. 80, legi in maritimis insula *Itaparica*, prope Bahiam, mense Febr. 1840. Casaretto.” This is the sole original specimen used by Casaretto to describe *C. mollis* and is the holotype.

No original specimen of *Coccoloba mollis* was found at G or G-DC.

At A there is a sheet (barcode 00055129) with a photograph of the TO specimen, and a pocket containing a tiny twig and a leaf. This specimen is an isotype.

76. *Coccoloba scandens* Casar., Nov. Stirp. Bras. 8: 70. Jun 1844 – Type: Brazil: “Crescit ad ripas fluminis *Parahyba* in Brasiliâ tropicâ [State of *Rio de Janeiro* or *Minas Gerais*, *Paraíba* River (also called *Paraíba do Sul* River)] (Riedel).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 2681* (Riedel s.n.) (TO [1 sheet]).

Accepted name. – *Coccoloba scandens*

Howard (1960b: 378) stated about *Coccoloba scandens* Casar. that “Lindau (Bot. Jahrb. 13: 184. 1890) cited this species in synonymy of *Coccoloba sticticaulis*. Apparently,

however, he did not see the type (*Casaretto 76*), for this specimen is cited neither under *C. sticticaulis* nor in his list of specimens studied. The Casaretto herbarium is extant at Turino, but I have not been able to see this specimen. Since Lindau was in error in several other instances where he cited Casaretto species, reducing them without seeing the specimens involved, it seems advisable to list this species without placement at the present time. This reference appears to be the earliest valid publication of the name *Coccoloba scandens*. The specific epithet has been used at least four times in the genus, mostly as *nomina nuda*, for four different species.” In the same treatment, under *C. sticticaulis* Weddell, Howard (1960b: 384) wrote “Lindau (Bot. Jahrb. 13: 184. 1890) placed the name *Coccoloba scandens* Casaretto (q.v.) in the synonymy of *C. sticticaulis* and referred to Meis[s]ner’s treatment in the *Flora Brasiliensis* and De Candolle’s *Prodrum*. Neither Lindau nor Meisner saw or cited Casaretto’s collection. Both authors cited a Riedel collection from Parahyba which I have not seen. Lindau cited *Riedel 2681* and Meisner, *Riedel s.n.* If Lindau is correct in considering *C. scandens* Casaretto identical to *C. sticticaulis* Weddell, then Casaretto epithet must be used for this species.” Significant corrections are necessary to Howard’s discussion. In the first statement, Howard reported the type as “*Casaretto 76*”; however, “76” is the number that Casaretto assigned to *C. scandens* following the numerical sequence in his *Decades*; therefore, “76” is not a collection number or a herbarium number. Also, Lindau cited the type as “*Riedel 2681*”; however, as explained above, the specimen was collected by Riedel, without collection number, and corresponds with *Casaretto Herbarium No. 2681*.

At TO there is a single sheet of the original collection, with two labels, “n. 2681. *Coccoloba*. Frutex scandens, flores albi. In ripa rivi Parahyba. Aug. 1838” and “n. 2681. *Coccoloba scandens* Casar. Nov. Stirp. Bras. Dec. n. 76. In ripa fluminis Parahyba (Brasilia) legit Riedel. Casaretto.” This specimen is the holotype of the name *C. scandens*.

No original specimen of *Coccoloba scandens* was found at G or G-DC.

77. *Coccoloba vellosiana* Casar., Nov. Stirp. Bras. 8: 70. Jun 1844 (*Polygonum frutescens* Vell., Fl. Flumin.: 162. 1829 [“1825”] Fl. Flumin. Icones 4: t. 44. 1831 [“1827”], nom. illeg., non L. 1753) – Locality: Brazil: “Habitat in arenosis maritimis et collibus siccis circa *Rio de Janeiro* (Riedel)” (TO [2 sheets]).

*Polygonum frutescens* Vell., Fl. Flumin.: 162. 1829 (“1825”), nom. illeg. – **Lectotype (designated here):** [illustration] “Octand. Trig. POLYGONUM FRUTESCENS” in Vellozo, Fl. Flumin. Icones: 4: t. 44. 1831 (“1827”).

**Accepted name.** – *Coccoloba arborescens* (Vell.) R.A. Howard  $\equiv$  *Polygonum arborescens* Vell. 1829

Casaretto (1844), by choosing the epithet *vellosiana*, indicated that his *Coccoloba vellosiana* is a replacement name for *Polygonum frutescens* Vell. (Vellozo, 1829).

Howard (1960b: 388) stated about *Coccoloba vellosiana* “In an earlier study (loc. cit. [Howard, 1960a: 44–45]) I placed this epithet in the synonymy of *Coccoloba arborescens* (q.v.). Although Casaretto cited an unnumbered Riedel collection in the original description, he also indicated that his new species was a transfer of *Polygonum frutescens* Vellozo. *Coccoloba vellosiana*, therefore, must also be rejected as an illegitimate name.”

Although Howard (1960b: 388) did not realize that *P. frutescens* Vell. is an illegitimate name and that *C. vellosiana* is a legitimate replacement name with priority from 1844, the name *C. arborescens* is legitimate and has priority from 1829.

At TO there is an original gathering of *Coccoloba vellosiana* Casar., mounted on two sheets consecutively numbered. On sheet No. 1 is pinned the label “n. 568. *Coccoloba vellosiana* Casar. Nov. Stirp. Bras. Dec. n. 77. In arenosis maritimis collibusque siccis prope urbem Rio de Janeiro legit Riedel. Casaretto.”

No specimen of *Coccoloba vellosiana* was found at G or G-DC.

89. *Triplaris crenata* Casar., Nov. Stirp. Bras. 9: 80. Aug 1845 – Type: Brazil: “Crescit in sylvis circa *Rio de Janeiro* (Riedel).” Lectotype (designated by Pendry in Syst. Bot. Monogr. 67: 97. 2004): s.d. [Dec 1838], *Casaretto Herb. No. 567* (Riedel s.n.) (TO [3 sheets]; possible isolectotype: G barcode G00437698).

**Accepted name.** – *Ruprechtia crenata* (Casar.) R.A. Howard

Howard (1985: 504), when he made the new combination *Ruprechtia crenata* (Casar.) R.A. Howard, wrote “Casaretto based *Triplaris crenata* on an unnumbered Riedel collection from Rio de Janeiro. It is not clear whether the holotype is in Turin, Genoa, or elsewhere. Correspondence on this problem has not been answered.” In other words, Howard did not attempt to designate the lectotype for this name.

Pendry (2004: 97) cited the type of *Triplaris crenata* Casar. as “Type: Brazil. Rio de Janeiro: in sylvis circa Rio de Janeiro, Riedel 567 (lectotype, here designated: TO!; isolectotype? TO!).”

The original specimen of *Triplaris crenata* at TO is mounted on three sheets consecutively numbered. Sheet No. 1 has two labels, “n. 567. *Triplaris* n. sp., arbor 40 ped., fl. Rubric. In Sylv. R. Jan., rarissima. Dbr. [Dec] 1838” and “n. 567. *Triplaris crenata* Casar. Nov. Stirp. Bras. Dec. n. 89. In sylvis circa Rio de Janeiro legit Riedel. Casaretto.” Therefore, Pendry’s type citation requires two corrections. The TO gathering is mounted on three sheets consecutively numbered, and should be regarded as one specimen with multiple preparations. Also, Pendry cited this collection as “*Riedel 567*” while “567” is Casaretto’s herbarium number, and should be cited as *Casaretto Herb. No. 567*. In conclusion, according to the *Code*, Pendry’s citation is a lectotypification on *Casaretto Herb. No. 567* for this name.

A specimen at G (barcode G00437698), mounted on a single sheet, has two labels, “1025. *Triplaris*, nov. species.



Mes: arbor 30-40 ped. Rio Jan.: Florebat, an: Jan 1837” and “*Triplaris crenata* Casaretto! Decad. 9, No. 89, nov. sp., Rio de Janeiro, Dr Riedel dedit, Guillemín No. 1025, 1839”. This specimen did not originate from TO, as it does not have the typical “hb. reg. Turin. 1857” handwritten at the base of the label, and it does not have any evidence to directly connect it to *Casaretto Herb. No. 567*. Therefore, most likely it was not seen by Casaretto. However, as this specimen was collected by Riedel and the collection date is “Jan 1837”, it is here treated as a possible isoelectotype.

88. *Triplaris macrocalyx* Casar., Nov. Stirp. Bras. 9: 79. Aug 1845 – Type: Brazil: “Reperi in sylvis arenosis maritimis (vulgo restingas) prope Taypú in provinciâ Rio de Janeiro.” Holotype: s.d. [Oct 1839], *Casaretto Herb. No. 1789* (TO [2 sheets]).

*Accepted name.* – *Ruprechtia lundii* Meisner

Pendry (2004: 90) cited the type of *Triplaris macrocalyx* Casar. as “Brazil. Rio de Janeiro: ‘in sylvis maritimis (vulgo restingas) prope Taypú,’ Casaretto 1789 (holotype: TO!; isotype: TO!).” At TO is preserved a sole gathering of *T. macrocalyx*, mounted on two sheets, numbered 1 and 2. On sheet No. 1 is pinned the label “n. 1789. *Triplaris macrocalyx* Casar. Nov. Stirp. Bras. Dec. n. 88. Legi in sylvis arenosis maritimis (vulgo restingas) prope Taypú (in Brasiliae provincia Rio de Janeiro), mense Oct. 1839. Casaretto.” Sheet No. 2 has no label. The TO specimen, mounted on two sheets, is the only one used by Casaretto to describe this taxon, and is the holotype of this name.

### Portulacaceae

19. *Portulaca eriophora* Casar., Nov. Stirp. Bras. 2: 23. Jun 1842 (“May 1842”) ≡ *Portulaca pilosa* var. *eriophora* (Casar.) Hauman in *Anales Mus. Nac. Buenos Aires* 32: 443. 1925 – Type: Uruguay: “Legi ad litora fluvii la Plata, et supra ipsa moenia urbis Montevideo. Florebat mense Martio”. **Lectotype (designated here):** s.d. [Mar 1839], *Casaretto Herb. No. 463* (TO [1 sheet]; isoelectotype: G barcode G00446566).

*Accepted name.* – *Portulaca gilliesii* Hook.

Rohrbach (1872: 303–304) treated *Portulaca eriophora* Casar. as a synonym of *P. pilosa* L., and among the numerous South American specimens he listed “in Uruguay prope urbem Montevideo et ad littora fluminis La Plata: Sello, Casaretto”. Hauman (1925: 443) treated *P. eriophora* as a variety of *P. pilosa*, proposing the necessary combination. Legrand (1942: 35–38, pl. 5; 1962: 72–73) treated *P. pilosa* var. *eriophora* (Casar.) Hauman as a synonym of *P. gilliesii* Hook. var. *gilliesii*, without citing any original material collected by Casaretto.

At TO there is a specimen, mounted on a single sheet, with the label “n. 463, *Portulaca eriophora* Casar., Nov. Stirp. Brasil. Decad. N. 19, legi in manis urbis Montevideo, mense Martio 1839. Casaretto.” This specimen is here designated as the lectotype for this name.

At G is preserved a specimen (barcode G00446566), mounted on a single sheet, with the label “No. 463, *Portulaca eriophora* Casar., nov. Stirp. Brasil. Dec. No. 19. Montevideo. Hb. Reg. Turin. 1857. Eg. Casaretto.” This specimen is an isoelectotype.

### Primulaceae

54. *Myrsine bahiensis* Casar., Nov. Stirp. Bras. 6: 53. Apr 1843 – Type: Brazil: [Bahia] “Reperi in insulâ Itaparica ad ostium sinus Bahiensis.” Holotype: s.d. [Feb 1840], *Casaretto Herb. No. 2219* (TO [1 sheet]).

*Accepted name.* – *Myrsine parvifolia* A.DC.

Miquel (1856: 313) treated *Myrsine bahiensis* Casar. as a synonym of *M. parvifolia* A.DC. without any additional comments, and without citing a Casaretto specimen.

At TO there is an original specimen of *Myrsine bahiensis*, mounted on a single sheet, with the label “n. 2219. *Myrsine Bahiensis* Casar. Nov. Stirp. Bras. Dec. n. 54. Legi in Brasilia, in insula Itaparica prope Bahiam, mense Febr. 1839. Casaretto.” The label on this specimen has a minor error, as Casaretto collected in Bahia in January–February 1840 (not February 1839, as reported in the label). Therefore, it was probably collected in February 1840. This specimen is the holotype of this name.

After exhaustive searches at G and G-DC no original specimen of *Myrsine bahiensis* was found.

56. *Myrsine capororoca* Casar., Nov. Stirp. Bras. 6: 54. Apr 1843 – Type: Brazil: “Reperi in maritimis circa Rio de Janeiro, et in insulâ S. Sebastiani.” **Lectotype (designated here):** “Legi in insula S. Sebastiani” [São Paulo: Island of São Sebastião], s.d. [Apr 1839], *Casaretto Herb. No. 494* (TO [1 sheet]).

*Accepted name.* – *Myrsine coriacea* (Sw.) R.Br. ex Roem. & Schult.

Miquel (1856: 314–315) treated *Myrsine capororoca* Casar. as a synonym of *M. flocculosa* Mart. without any additional comments, and among the numerous specimens cited is “in maritimis circa Rio de Janeiro et in insula S. Sebastiani: Casaretto”.

At TO there are two original gatherings with the name *Myrsine capororoca*. One of them, mounted on a single sheet, has the label “n. 1522. *Myrsine capororoca* Casar. Nov. Stirp. Bras. Dec. n. 56. Legi in maritimis prope pagum Magè (in Brasilia provincia Rio de Janeiro), mense Jul. 1839. Casaretto.” The other gathering, also mounted on a single sheet, has the label “n. 494. *Myrsine capororoca* Casar. Nov. Stirp. Bras. Dec. n. 56. Legi in insula S. Sebastiani (in Brasiliae provincia S. Pauli), mense Apr. 1839. Casaretto.” This specimen, collected on the Island of São Sebastião, state of São Paulo, Brazil, is here designated as the lectotype of *M. capororoca*. According to Jon Ricketson and John Pipoly (pers. comm.), Myrsinaceae specialists, this name is a synonym of *M. coriacea* (Sw.) R.Br. ex Roem. & Schult.

After exhaustive search at G and G-DC no original specimen of *Myrsine capororoca* was found.

55. *Myrsine fragilis* Casar., Nov. Stirp. Bras. 6: 53. Apr 1843 – Type: Brazil: “Reperi in montibus *Serra dos Orgãos* circa praedium vulgo *Fazenda de S. Anna do Paquequer*, in provinciâ *Rio de Janeiro*.” Holotype: s.d. [May 1839], *Casaretto Herb. No. 1000* (TO [1 sheet]).

Accepted name. – *Myrsine gardneriana* A.DC.

Miquel (1856: 309) treated *Myrsine fragilis* Casar. as a synonym of *M. gardneriana* A.DC. without any additional comments, and without citing a Casaretto specimen.

At TO there is an original specimen of *Myrsine fragilis*, mounted on a single sheet, with the label “n. 1000. *Myrsine fragilis* Casar. Nov. Stirp. Bras. Dec. n. 55. Legi in montibus *Serra dos Orgãos* circa praedium vulgo *Fazenda de S. Anna do Paquequer* (in Brasiliae provincia *Rio de Janeiro*), mense Maio 1839. Casaretto.” This specimen is the holotype of this name.

After exhaustive searches at G and G-DC no original specimen of *Myrsine fragilis* was found.

57. *Myrsine glauca* Casar., Nov. Stirp. Bras. 6: 54. Apr 1843 – Type: Brazil: “Habitat in provinciâ *Minas Geraes* (Claussen).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 2877* (Clausen s.n.) (TO [2 sheets]).

Accepted name. – *Myrsine umbellata* Mart.

Miquel (1856: 310) treated *Myrsine glauca* Casar. as a synonym of *M. umbellata* f. *acutifolia* Miq. with the comments “Forsan species!” and “Ex phrase satis congrua, nec non ex ipso specimine citata.” For this form, he cited “var.  $\alpha$  [*acutifolia*] in Minis prope oppidum de Ouro Preto: M. [Martius]; ibidem cum  $\beta$ . [forma maior Miq.]: Claussen n. 152; [...]”

At TO there is a single original gathering of *Myrsine glauca*, mounted on two sheets consecutively numbered. On sheet No. 1 is pinned the label “n. 2877. *Myrsine chrysocarpa* Nob. – *Myrsine glauca* Casar. Nov. Stirp. Bras. Dec. n. 57. In Brasiliae provincia *Minas Geraes* legit Claussen. Casaretto.” This specimen, mounted on two sheets, is the holotype of *Myrsine glauca*.

At G and G-DC no specimen that can be connected with certainty to *Casaretto Herb. No. 2877* was found.

58. *Myrsine laurifolia* Casar., Nov. Stirp. Bras. 6: 55. Apr 1843 – Type: Brazil: “Habitat in arenosis maritimis collibusque siccis circa *Rio de Janeiro* (Riedel).” Lectotype (designated here): s.d. [before 1840], *Casaretto Herb. No. 657* (Riedel s.n.) (TO [2 sheets]; isolectotype: G barcode G00446565).

Accepted name. – *Myrsine laurifolia*

Miquel (1856: 313) recognized *Myrsine laurifolia* Casar. as a distinct species, and cited the sole gathering as “Crescit in arenosis maritimis (Restingas) et collibus siccis prope *Rio de Janeiro*: Riedel”, which corresponds with Casaretto’s description of the original material. However,

Miquel’s citation did not mention “type” or the herbarium of deposit.

At TO there is a single original specimen of *Myrsine laurifolia*, mounted on two sheets consecutively numbered. Sheet No. 1 has two labels, showing “n. 657. *Myrsine*. Arbor 12-15 ped., flores herbacei. In arenosis maritimis collibus siccis R. Jan. [Rio de Janeiro], Novbr. 1838” and “n. 657. *Myrsine laurifolia* Casar. Nov. Stirp. Bras. Dec. n. 58. In arenosis maritimis collibusque siccis circa *Rio de Janeiro* legit Riedel. Casaretto.” This specimen is here designated as the lectotype of this name.

At G there is a sheet (barcode G00446565) with a fruiting branch and the label “No. 657. *Myrsine laurifolia* Casar. Nov. Stirp. Dec. N. 58. *Rio de Janeiro*. Leg. Casaretto. hb. reg. Turin. 1857.” This specimen is an isolectotype.

60. *Myrsine maritima* Casar., Nov. Stirp. Bras. 6: 56. Apr 1843 – Type: Brazil: “Reperi in sylvis arenosis maritimis inter *Copo-Cabana* et *Lagoa de Rodrigo de Freytas* prope *Rio de Janeiro*.” Holotype: s.d. [Aug 1839], *Casaretto Herb. No. 1184* (TO [1 sheet]).

Accepted name. – *Myrsine guianensis* (Aubl.) Kuntze

Miquel (1856: 307–308) treated *Myrsine maritima* Casar. as a synonym of *M. rapanea* R.Br. ex Roem. & Schult., with the following comment “Ad hanc praesertim spectare videtur *Myrsine maritima* Casar. supra laudata, apud *Rio de Janeiro* lecta: foliis petiolatis obovatis vel obovato-oblongis coriaceis glaberrimis, supra nitidusculis, utrinque (sub lente) minutissime et opace punctulato-perforatis, penninervis, nervis utrinque parum sed paullulo magis supra quam subtus manifestis approximatis subparallelis ac in nervum a margine paullo distantem confluentibus; floribus axillaribus glomeratis subsessilibus pentameris; calycibus glabris.” However, he did not cite any gathering made by Casaretto.

At TO there is an original specimen, mounted on a single sheet, with the label “n. 1184. *Myrsine maritima* Casar. Nov. Stirp. Bras. Dec. n. 60. Legi in sylverulis arenosis maritimis inter *Copo-Cabana* et *Lagoa de Rodrigo de Freytas* prope *Rio de Janeiro*, mense Aug. 1839. Casaretto.” This specimen is the holotype of this name.

No specimen that can be connected with certainty to *Casaretto Herb. No. 1184* was found in G or G-DC.

59. *Myrsine neriifolia* Casar., Nov. Stirp. Bras. 6: 55. Apr 1843, non Siebold & Zuccarini 1846, nom. illeg. – Type: Brazil: “Crescit circa urbem *Villa Rica* in provinciâ *Minas Geraes* (Claussen).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 2815* (Clausen s.n.) (TO [1 sheet]).

Accepted name. – *Myrsine umbellata* Mart.

Miquel (1856: 311–312) treated *Myrsine neriifolia* Casar. (as “*neriifolia*”) both as a synonym of *M. umbellata* var. *major* Miq. as “ex parte (forma hujus acutiuscula)” and of *M. lancifolia* as “ex parte.” Among the specimens cited under *M. lancifolia* he cited “in prov. *Minarum*. a. 1840: Claussen n. 152 (forma major);” however, this gathering is not original material because Casaretto bought Clausen’s specimens in 1839.

At TO there is a sole original specimen, mounted on a single sheet, with the label “n. 2815. Myrsine neriifolia Casar. Nov. Stirp. Bras. Dec. n. 59. Circa Ouro Preto (in Brasiliae provincia Minas Geraes) legit Claussen. Casaretto.” This specimen is the holotype of this name.

At G or G-DC no specimen that can be connected with certainty to *Casaretto Herb. No. 2815 (Claussen s.n.)* has been found.

## Rhamnaceae

83. *Rhamnus arenicola* Casar., Nov. Stirp. Bras. 9: 76. Aug 1845 ≡ *Scutia arenicola* (Casar.) Reissek in Martius & al., Fl. Bras. 11(1): 93. 1861 ≡ *Adolia arenicola* (Casar.) Kuntze, Revis. Gen. Pl. 1: 117. 1891 – Type: Brazil: “Reperi in arenosis maritimis circa Rio de Janeiro.” **Lectotype (designated here):** s.d. [Jul 1839], *Casaretto Herb. No. 1353* (TO [1 sheet]; isoelectotype: G barcode G00446567).

*Accepted name.* – *Scutia arenicola* (Casar.) Reissek

Reissek (1861: 93) transferred *Rhamnus arenicola* Casar. to *Scutia*, making the new combination *S. arenicola* (Casar.) Reissek. Along with the new combination, he reported numerous specimens, but did not cite a Casaretto collection. Johnson (1974: 71) maintained *Rhamnus arenicola* in *Scutia*, and cited its type as “Brazil, in arenosis maritimis circa Rio de Janeiro, 1839–1840, J. Casaretto, not located; neotype here designated: Brazil, ‘in arenosis maritimis, Rio de Janeiro,’ Jan 1830, Riedel s.n., P!, apparent isotypes BM, C, GH, GOET, K, LE, M, NY, S, US, W, Z!”

At TO, there are two original gatherings of *Rhamnus arenicola*. Because original material is in Casaretto’s herbarium, Johnson’s neotypification is superseded. The first gathering at TO is mounted on two sheets consecutively numbered. Sheet No. 1 has the label “n. 1943. Rhamnus arenicola Casar. Nov. Stirp. Bras. Decad. N. 83. In arenosis Restinga da Copo-Cabana (prope Rio de Janeiro), legit Riedel. Casaretto.” The other gathering at TO is mounted on a single sheet on which is pinned the label “n. 1353. Rhamnus arenicola Casar. Nov. Stirp. Bras. Decad. N. 83. Legi in arenosis maritimis circa Rio de Janeiro, mense Jul. 1839. Casaretto.” The specimen *Casaretto Herb. No. 1353* at TO is here designated as the lectotype of *R. arenicola*.

At G is preserved a specimen (barcode G00446567) with the label “No. 1353. Rhamnus arenicola Casar. nov. stirp. Dec. No. 83. Copo-Cabana, Rio de Janeiro. Leg. Casaretto. hb. reg. Turin 1857.” This specimen is an isoelectotype.

At M there is a specimen (barcode M-0211842) with the handwritten annotation (author unknown) “Iso-neotypus, cf. Johnson in Bull. Torr. Bot. Cl. 101: 71 (1974)” and the label “Ex herbario horti Petropolitani, *Scutia arenicola* Reisk., Brasil, Riedel.” As Johnson’s typification is here superseded, this specimen is not a type.

At MO there is a specimen (No. 1921081) with two labels, one with the heading “Ex herbario horti Petropolitani”

and the handwriting “*Scutia arenicola* Reisk., Brasil, Riedel” and the other label with the handwriting “*Scutia arenicola* (Casaretto) Reiss., probably isoneotype (Riedel s.n.)” and the printed text “Determined by Ronald Liesner, 1998, Missouri Botanical Garden (MO)”. The same conclusion as for the M specimen also applies here: it is not a type.

## Rubiaceae

5. *Cinchona riedeliana* Casar. in Atti Riunione Sci. Ital. 3: 513. Jun 1842 (“1841”) ≡ *Ladenbergia riedeliana* (Casar.) Klotzsch in Repert. Bot. Syst. 6: 68. 1846 *Cascarilla riedeliana* (Casar.) Wedd. in Ann. Sci. Nat., Bot., sér. 3, 10: 12. 1848 ≡ *Buena riedeliana* (Casar.) Wedd. in J. Linn. Soc., Bot. 11: 186. 1869 – Type: Brazil: “Habitat in sylvis primaevae montis Tijuca, prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Nov 1837], *Casaretto Herb. No. 665 (Riedel s.n.)* (TO [2 sheets]; isoelectotype: BR barcode 000000552322).

*Accepted name.* – *Ladenbergia hexandra* (Pohl) Klotzsch

Casaretto (1842b: 513–514), along with the original description of *Cinchona riedeliana* Casar. in the *Atti*, indicated the collection locality as “Habitat in sylvis primaevae montis Tijuca prope Rio de Janeiro.” In his unpublished catalogue “Piante brasiliane” he assigned Riedel’s collection to *Casaretto Herbarium No. 665*. Andersson (1997: 289–290) treated *Cinchona riedeliana* as a synonym of *Ladenbergia hexandra* (Pohl) Klotzsch, and cited its type as “Riedel 1037; Brazil, Rio de Janeiro, Tijuca, Jan 1837 (P ex herb. Guillemain, isotype)” without citing the holotype or the herbarium. The P specimen cited as isotype by Andersson (barcode P01900395) has a label with the handwriting “Cinchona Riedeliana Casaretto [...] in sylvis Tijuca prope Rio de Janeiro, Cat. n. 1037, ex Riedel, Janvier 1837.” The same label also has the printed text: “Herb. Mus. Paris, Brésil Méridional, M. Guillemain 1839”, meaning that it was included in Guillemain’s herbarium in 1839. This specimen has another label in Andersson’s hand: “Ladenbergia hexandra (Poiret) Kl., Iso-type of Cinchona riedeliana Casaretto, det. Andersson, 1993.” However, because in the first label it is stated that the specimen was collected by Riedel in January 1837, this specimen cannot be original material, as the TO specimen of *Casaretto Herbarium No. 665* was collected in November 1837 instead (see below). Therefore, Andersson’s type citation is not valid, because is not based on original material.

The TO specimen of *Cinchona riedeliana* is mounted on two sheets consecutively numbered. On sheet No. 1 are pinned two labels, “N. 665, Cinchona sp., arbor 40-50 pedalis, flores albi marcescenti. In sylvis Tijuca. R. Jan. [Rio de Janeiro], 9bre [November] 1837” and “N. 665, Cinchona Riedeliana Casar., Habui ex sylvis primaevae montis Tijuca prope Rio de Janeiro, a Riedel. Casaretto.” The first label means that this specimen is *Casaretto Herbarium No. 665*, and the second label means that it was collected by Riedel in November 1837. This specimen is here designated as the lectotype of this name.



At BR there is a specimen of *Cinchona riedeliana* (barcode 000000552322) with the label “Cinchona Riedeliana Casaretto, in sylvis primaevae montis Tijuca prope Rio de Janeiro, legit et Casaretto dedit Riedel, ex Herbario R. Horti bot. taurinensis, Moris”. This label means that this specimen was sent by Giuseppe Moris from TO to BR. Therefore, this specimen is a duplicate of *Casaretto Herbarium No. 665*, and is the isolectotype of *C. riedeliana*.

After exhaustive searches at G and G-DC, no original material of *C. riedeliana* was found.

## Sapindaceae

45. *Cupania sylvatica* Casar., Nov. Stirp. Bras. 5: 46. Mar 1843 – Type: Brazil: “Habitat in sylvis circa Rio de Janeiro.” **Lectotype (designated here):** “Habui ex sylvis Corcovadensibus” [Corcovado], s.d. [before 1840], *Casaretto Herb. No. 558 (Riedel s.n.)* (TO [2 sheets]; isolectotypes: F No. 69509 [fragment ex G], G barcode G00007896).

*Accepted name.* – *Matayba sylvatica* (Casar.) Radlk.

Radlkofer (1879: 631) transferred *Cupania sylvatica* Casar. to *Matayba*, making the new combination *M. sylvatica* (Casar.) Radlk., and maintained it as such in his treatment for *Flora Brasiliensis* (Radlkofer, 1893: 618). In addition, among numerous other specimens listed, in the latter publication he cited “coll. Casaretto n. 558! (in sylvis montosis Corcovadensibus m. Oct.–Sept. 1838, flor.; Hb. Taurin. et ex hoc. comm. c. Hb. DC.” However, Radlkofer overlooked that the label of the TO specimen, *Casaretto Herb. No. 558*, reports that this specimen was collected by Riedel.

The original specimen at TO is mounted on two sheets consecutively numbered. Sheet No. 1 has the label “n. 558. Cupania sylvatica Casar. Nov. Stirp. Brasil. Decad. N. 45. Habui ex sylvis Corcovadensibus prope urbem Rio de Janeiro a Riedel. Casaretto.” This specimen is here designated the lectotype of this name.

At G there is a sheet (barcode G00007896) with the label “No. 558, Cupania sylvatica Casar. nov. Stirp. Decad. N. 45. Sylvis Corcovadensibus, Rio de Janeiro. leg. Casaretto, hb. reg. Turin. 1857.” This specimen is an isolectotype.

At F is kept a sheet, No. 69509, with a photograph of the specimen present in the Delessert Herbarium (now G) and a twig with two leaves. This is an isolectotype.

21. *Paullinia coriacea* Casar., Nov. Stirp. Bras. 3: 27. Jul 1842 (“Aug 1842”) – Type: Brazil: “Reperi in sylvis arenosis maritimis (vulgo restingas) prope Taipú, in provinciâ Rio de Janeiro.” **Lectotype (designated here):** [Oct 1839], *Casaretto Herb. No. 1824* (TO [1 sheet]; isolectotype: M barcode M-0212567 [fragment ex TO]).

*Accepted name.* – *Paullinia coriacea*

Radlkofer (1893: 405–406) recognized *Paullinia coriacea* Casar. as a distinct species, and among the specimens studied he cited “Rio de Janeiro: [...] Casaretto n. 1824! (in sylvis arenosis maritimis, vulgo Restingas, prope Taipú, prov. R. d. Jan., m. Oct. 1839, fruct.)”.

At TO there is a specimen with the label “n. 1824, *Paullinia coriacea* Casar., Nov. Stirp. Brasil. Decad. N. 21. Legi in sylvis arenosis maritimis (vulgo restingas) prope Taipú, in Brasilia provincia Rio de Janeiro, mense Oct. 1839. Casaretto.” This specimen is here designated as the lectotype for this name.

No original material of *Paullinia coriacea* was found at G or G-DC.

At M (where Radlkofer worked) is a sheet (barcode M-0212567) with a fragment of *Casaretto Herb. No. 1824* represented by a twig with two leaves, a loose leaf, and a small inflorescence, preserved in a small envelope bearing the handwriting “1824” (in pencil), and “P. coriac., fr. Turin Hb.” (in ink). This specimen is an isolectotype.

22. *Paullinia erythrocarpa* Casar., Nov. Stirp. Bras. 3: 27. Jul 1842 (“Aug 1842”) – Type: Brazil: “Habitat in sylvis arenosis maritimis (vulgo restingas) circa Copo-Cabana, prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Aug 1839], *Casaretto Herb. No. 1188* (TO [2 sheets]; isolectotype: G barcode G00446574).

*Accepted name.* – *Paullinia weinmanniifolia* Mart.

Radlkofer (1893: 408–409) treated *Paullinia erythrocarpa* Casar. as a synonym of *P. weinmanniifolia* Mart. (as “*weinmanniaefolia*”). In this treatment, among other collections, he cited “Rio de Janeiro: [...] Casaretto n. 1188! (in sylvis arenosis maritimis – ‘vulgo Restingas’ – circa Copo-Cabana, m. Aug. 1839, fruct.; Hb. Taurin., DC. etc.; ‘P. erythrocarpa Casar.’)”.

At TO there is an original gathering mounted on two sheets consecutively numbered. On sheet No. 1 is pinned a label showing “n. 1188, *Paullinia erythrocarpa* Casar., Nov. Stirp. Bras. Decad. N. 22. Legi in sylvis arenosis maritimis (vulgo restingas) circa Copo-Cabana prope urbem Rio de Janeiro, mense Aug. 1839. Casaretto.” This specimen is here designated as lectotype for this name.

At G there is a specimen (barcode G00446574) with the label “No. 1188, *Paullinia erythrocarpa* Casar. nov. Stirp. Decad. No. 22. Copo-Cabana. Rio de Janeiro. Leg. Casaretto. hb. reg. Turin. 1857”. It also has the printed label “*Paullinia weinmanniaefolia* Mart., Determ. L. Radlkofer.” This specimen is an isolectotype.

24. *Paullinia ferruginea* Casar., Nov. Stirp. Bras. 3: 28. Jul 1842 (“Aug 1842”) – Type: Brazil: “Reperi in sepibus juxta viam qua itur e Magé versus Serra dos Orgãos, in prov. Rio de Janeiro.” **Lectotype (designated here):** s.d. [May 1839], *Casaretto Herb. No. 1078* (TO [1 sheet]; isolectotypes: F No. 695095 [fragment ex G], G barcode G00446568).

*Accepted name.* – *Paullinia ferruginea*

Radlkofer (1893: 378–379) treated *Paullinia ferruginea* Casar. as a distinct species, and among the specimens studied he cited the gatherings “Casaretto n. 1078! 1893! (in sepibus juxta viam qua itur e Magé versus Serra dos Orgãos; Hb. Taurin., DC.)”.

At TO, there are the two original gatherings cited by Radlkofer. One of them, mounted on a single sheet, has the

label “n. 1893, *Paullinia ferruginea* Casar., Nov. Stirp. Bras. Decad. N. 24. In Brasilia circa urbem Rio de Janeiro, legit Riedel. Casaretto.” The other specimen, also mounted on a single sheet, has the label “n. 1078, *Paullinia ferruginea* Casar., Nov. Stirp. Bras. Decad. N. 24. Legi in sepibus juxta viam qua iter a pago Magé ad montes Serra dos Orgãos (in Brasiliae provincia Rio de Janeiro), mense Maio 1839. Casaretto.” This specimen is here designated as the lectotype of this name.

At G is preserved a specimen (barcode G00446568) with the label “No. 1078, *Paullinia ferruginea* Casar., Nov. Stirp. Decad. No. 24. Serra dos Orgãos. Rio de Janeiro. Leg. Casaretto. hb. reg. Turin. 1857.” This specimen is an islectotype.

At F there is a sheet (No. 695095) with a single loose leaf. The specimen label has the heading “Types of the Delessert Herbarium” and the handwriting “23645. *Paullinia ferruginea* Casar., Brazil, Casaretto 1078”. On the envelope is handwritten “Field Museum Botany Negative nr. 23,645, Casaretto 1078 (fragm. ex hb. G)”. This specimen is an islectotype.

At M there is a specimen (barcode M-0212548) with a label headed “Herbarium Regium Monacense, Ex herbario Horti botan. Imperialis Petropolitani” and handwritten “*Paullinia ferruginea* Casar., Rio de Janeiro (Riedel, 1832. N. 496)”. On the sheet are mounted a compound leaf and a loose inflorescence. Because *Casaretto Herb. No. 1078* was collected by Casaretto, the M specimen is not an original material.

23. *Paullinia marginata* Casar., Nov. Stirp. Bras. 3: 28. Jul 1842 (“Aug 1842”) – Type: Brazil: “Legi in sepibus juxta viam qua iter e Magé versus Serra dos Orgãos, in prov. Rio de Janeiro.” **Lectotype (designated here):** s.d. [May 1839], *Casaretto Herb. No. 1064* (TO [7 sheets]; islectotype: G barcode G00446569 [2 sheets]).

*Accepted name.* – *Paullinia marginata*

Radlkofer (1893: 380–381) treated *Paullinia marginata* Casar. as a distinct species, and among other collections he cited “Casaretto n. 1064! (Rio de Janeiro, in sepibus juxta viam qua iter e Magé versus Serra dos Orgãos, a. 1839–40, flor.; Hb. Taurin., DC.)”.

At TO there is a single gathering mounted on seven sheets consecutively numbered; therefore, these sheets constitute a single specimen (Art. 8.3). On sheet No. 1 is pinned the label “n. 1064, *Paullinia marginata* Casar., Nov. Stirp. Bras. Decad. N. 23. Legi in sepibus juxta viam qua iter a pago Magé ad montes Serra dos Orgãos (in Brasiliae provincia Rio de Janeiro), mense Maio 1839. Casaretto.” The other sheets have no label. This specimen of seven sheets is here designated as the lectotype of this name.

At G is preserved a specimen mounted on two sheets (barcode G00446569). Sheet No. 1 has the label “No. 1064. *Paullinia marginata* Casar., Nov. Stirp. Decad. N. 23. Rio de Janeiro. Leg. Casaretto. Hb. reg. Turin. 1857.” This specimen is an islectotype.

42. *Serjania marginata* Casar., Nov. Stirp. Bras. 5: 44. Mar 1843 – Type: Brazil: “Crescit in montibus vulgo Serra da

*Caraça* in provinciâ Minas Geraes (Claussen).” **Lectotype (designated here):** s.d. [before 1840], *Casaretto Herb. No. 2728* (Claussen s.n.) (TO [2 sheets]; islectotypes: F No. 695092 [fragment ex G], G barcode G00446570).

*Accepted name.* – *Serjania marginata*

Radlkofer (1893: 297–299) treated *Serjania marginata* Casar. as a distinct species in which he recognized three forms. For the typical form, among the collections studied, he cited “coll. Casaretto n. 2728! (in Hb. DC. et Hb. Taur.; legit Claussen in montibus vulgo Serra da Caraça in prov. Min. Ger., ex Casar. l. supra c.)”.

At TO there is an original specimen mounted on two sheets consecutively numbered. Sheet No. 1 has the label “n. 2728. *Serjania marginata* Casar., Nov. Stirp. Brasil. Decad. N. 42. Habui ex montibus Serra da Caraça (in Brasiliae provincia Minas Geraes) a Claussen. Casaretto.” This specimen is here designated as the lectotype of this name.

At G there is a specimen (barcode G00446570) with ample fruiting material and the label “No. 2728. *Serjania marginata* Casar., nov. Stirp. Decad. 42. M<sup>bus</sup> Serra da Caraça. P<sup>cia</sup> Minas Geraes. Leg. Casaretto. hb. reg. Turin. 1857” (Fig. 5). This specimen is an islectotype.

At F there is a sheet, No. 695092, with a loose leaf and one mericarp. The specimen label has the heading “Types of the Delessert Herbarium” and handwritten “23669. *Serjania marginata* Casar., Brazil, Casaretto 2728.” This specimen is also an islectotype.

43. *Thouinia macroptera* Casar., Nov. Stirp. Bras. 5: 45. Mar 1843 – Type: Brazil: “Habitat circa Rio de Janeiro (Riedel).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 2479* (Riedel s.n.) (TO [1 sheet]).

*Accepted name.* – *Thinouia scandens* Triana & Planch.

Radlkofer (1893: 460–462) treated *Thouinia macroptera* Casar. as a synonym of *Thinouia scandens* Triana & Planch. He recognized four forms in this species, and in forma *racemosa* Radlk., among the numerous collections studied, he cited “Casaretto n. 2479! (‘legit Riedel, circa Rio de Janeiro’; Hb. Taurin.)”.

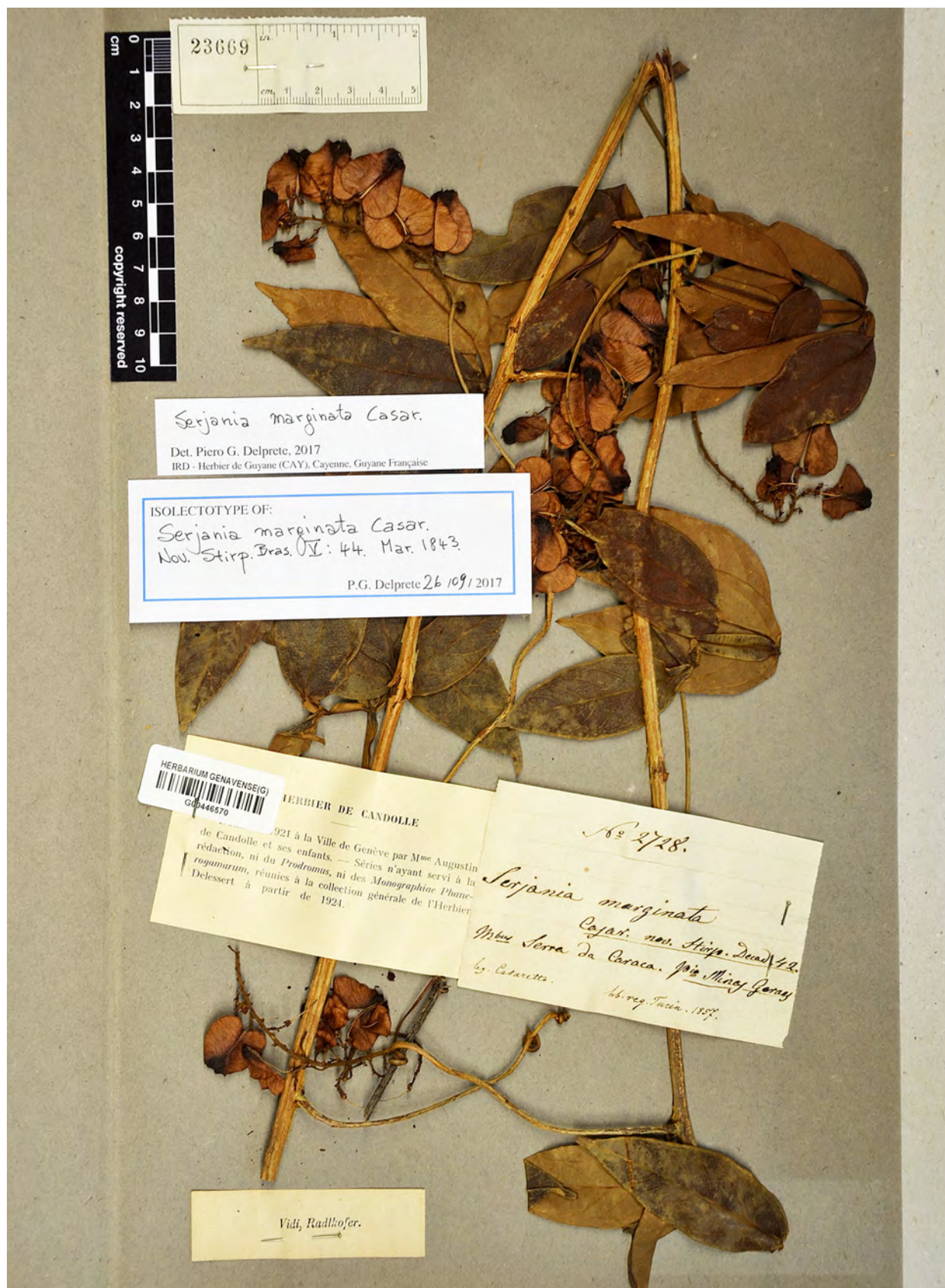
At TO there is a single sheet of the original gathering with the label “n. 2479. *Thouinia macroptera* Casar. Nov. Stirp. Brasil. Decad. N. 43. Habui ex Brasilia, circa urbem Rio de Janeiro, a Riedel. Casaretto.” This specimen is the holotype of this name.

After exhaustive searches at G and G-DC, no original material of *Thouinia macroptera* was found.

81. *Thouinia morisiana* Casar., Nov. Stirp. Bras. 9: 75. Aug 1845 – Type: Brazil: [Rio de Janeiro], “Habitat in sylvis primaevae provinciae Rio de Janeiro.” **Lectotype (designated here):** “In sylvis Serra da Estrella”, s.d. [Dec 1838], *Casaretto Herb. No. 695* (Riedel s.n.) (TO [2 sheets]; islectotypes: G [barcode G00441965], M barcode M-0241944 [fragment ex TO]).

*Accepted name.* – *Pausandra morisiana* (Casar.) Radlk. (Euphorbiaceae)





**Fig. 5.** Isolectotype of *Serjania marginata* (Sapindaceae) at G, barcode G00446570. Photograph by P.G. Delprete. Reproduced with permission. © Conservatoire et Jardin botaniques de la Ville de Genève.



Casaretto (1843a: 75) described *Thouinia morisiana* Casar. and positioned it in the Sapindaceae. Radlkofer (1870) described the monotypic genus *Pausandra* Radlk., a member of the Euphorbiaceae, based on *Thouinia morisiana*, making the new combination *P. morisiana* (Casar.) Radlk. He cited the original material of the basionym as “In Brasiliae provincia Rio de Janeiro, in sylvis primaevis: Casaretto (‘no. 695, Serra da Estrella’ in scheda specimini a me visto, in Hb. De Candolle asservato, adjecta)” (Radlkofer, 1870: 92–94). Since Radlkofer did not use the term “type”, his citation does not constitute an inadvertent act of lectotypification (Art. 7.11). Furthermore, this specimen is not in G-DC, but is housed in G.

At TO there is a gathering mounted on two sheets consecutively numbered, constituting a single specimen. Sheet No. 1 has two handwritten labels showing “Familia? N. 695, Genus? Arbor v. arbusculus, an dioicum? Flores rosei. In sylvis Serra da Estrella, Dbr. [Dec.] 1838”, and, in Casaretto’s hand, “n. 695. Thouinia morisiana Casar. Nov. Stirp. Bras. Decad. N. 81. Habui ex sylvis montium Serra da Estrella (in Brasiliae provincia Rio de Janeiro) a Riedel. Casaretto.” On the second label, an unknown author wrote: “Pausandra Morisiana Radlkofer in Regensburg Flora 1870. Tab. II.” This specimen is here designated as the lectotype of *T. morisiana*.

At G there is the specimen cited by Radlkofer (barcode G00441965), which has the handwritten label showing “No. 695, Thouinia Morisiana Casar. nov. Stirp. Decad. No. 81, M<sup>um</sup> Serra da Estrella. Rio de Janeiro. leg. Casaretto. hb. reg. Turin. 1857” to which was added in red ink (author unknown) “Euphorbiaceae, Pausandra Morisiana Radlkofer in Regensb. Flora 1870.” This specimen is the isoelectotype of this name.

At M is preserved a specimen (barcode M-0241944) with a single leaf and a few inflorescences that were removed from the TO specimen. This sheet has two labels. One label reports “Pausandra morisiana Radlk. (Thouinia morisiana Casar.), Riedel n. 695, Hb. Taurin.” The other label reads “Pausandra morisiana Radlk., Copia schedulae Herb. Taurin.: n. 695. Thouinia morisiana Casaretto, Habui ex sylvis Serra da Estrella (in prov. Rio de Janeiro) a Riedel. Scheda ad Hb. Taurin. Altera schedula a Riedel (?) scripta: Familia? Genus? N. 695. Arbor v. arbusculus; an dioicus? Flores rosei. In sylvis Serra da Estrella. Dbr. 1838. (comm. Hb. Taurin. X.71) (Radlk.).” From an assessment of these labels, it is obvious that Radlkofer misinterpreted Casaretto’s herbarium number and believed “695” to be Riedel’s collection number. Since Riedel was the original collector, and since his gathering was inserted in Casaretto’s herbarium, the specimen at M is an isoelectotype.

44. *Toulicia brasiliensis* Casar., Nov. Stirp. Bras. 5: 45. Mar 1843 (“*Tulicia*”) – Type: Brazil: “Crescit prope lacum vulgo Lagoa de Maricá in provinciâ Rio de Janeiro (Riedel).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 1875* (Riedel s.n.) (TO [2 sheets]).

Accepted name. – *Toulicia brasiliensis*

Casaretto (1843a: 75) modified the original spelling of the generic name as “*Tulicia*”, explaining that Aublet derived the name *Toulicia* from the Galibi indigenous language (however, the spelling with “ou” is of French style), and, according to his explanation, he corrected the original spelling to be in agreement with Latin orthography. However, according to the *Code*, Casaretto’s spelling *Tulicia* is an orthographic variation that should be corrected; therefore, the spelling *Toulicia brasiliensis* is the one to be used for this binomial.

Radlkofer (1874: 353) described *Toulicia stans* Radlk.; later, he (Radlkofer, 1893: 503–504) treated *Toulicia brasiliensis* as a synonym under *Toulicia stans*, and among the numerous collections cited he listed “Riedel! (prope lacum vulgo Lagoa de Maricá; comm. c. Casaretto et ab Hb. Taurin. sub n. 1875)”. However, *Toulicia stans* is a later synonym, and the name to be used for this species is *T. brasiliensis*.

At TO there is one original gathering mounted on two sheets consecutively numbered, constituting a single specimen. Sheet No. 1 has the label “n. 1875. Tulicia brasiliensis Casar., Nov. Stirp. Brasil. Decad. N. 44. Habui ex Brasilia, prope lacum Maricá in provincia Rio de Janeiro, a Riedel. Casaretto.” This specimen is the holotype of this name.

After exhaustive searches at G and G-DC, no original material of *Toulicia brasiliensis* was found.

## Sapotaceae

67. *Achras ferruginea* Casar., Nov. Stirp. Bras. 7: 63. Sep 1843 (“Jul 1843”) ≡ *Sapota ferruginea* (Casar.) Walp. in Repert. Bot. Syst. 6: 455. 1847 – Type: Brazil: “Habitat in sylvis arenosis maritimis (vulgo restingas) prope Rio de Janeiro.” Holotype: s.d. [before 1840], *Casaretto Herb. No. 1923* (Riedel s.n.) (TO [1 sheet]).

Accepted name. – *Pouteria psammophila* (Mart.) Radlk.

Pennington (1990: 441) synonymized *Achras ferruginea* Casar. with *Pouteria psammophila* (Mart.) Radlk. and for the former he cited the type as “Rio de Janeiro, (fl), Riedel s.n. (holotype, TO, Casaretto herb. No. 1923).” At TO is preserved a single sheet with the label “n. 1923. Achras ferruginea Casar. Nov. Stirp. Bras. Dec. n. 67. In sylvis arenosis maritimis (vulgo restingas) prope Rio de Janeiro legit Riedel. Casaretto.” This specimen is the holotype of *A. ferruginea*.

After exhaustive searches at G and G-DC, no original material of *Achras ferruginea* was found.

65. *Achras guapeba* Casar., Nov. Stirp. Bras. 7: 61. Sep 1843 (“Jul 1843”) – Type: Brazil: “Reperi in sylvis arenosis maritimis (vulgo restingas) prope Rio de Janeiro.” Lectotype (designated by Pennington in Fl. Neotrop. Monogr. 52: 477. 1990): s.d. [Aug 1839], *Casaretto Herb. No. 1204* (TO [7 sheets]; isoelectotypes: F No. 783304 [fragment ex G], G barcode G00439400; possible isoelectotype: F No. 781949 [fragment]).

Accepted name. – *Pouteria caimito* (Ruiz & Pav.) Radlk.

Casaretto (1843c: 61–62) stated that he collected the specimens in the *restingas* (coastal vegetation) near Rio de Janeiro. Pennington (1990: 475) treated *Achras guapeba* as a synonym of *Pouteria caimito*, and cited the type as “Brazil. Rio de Janeiro, Oct 1839 (fl), *Casaretto 1204* (holotype, TO; isotype, G).” Pennington’s citation constitutes an inadvertent act of lectotypification of this name (Art. 7.11, 9.10).

At TO there is a specimen mounted on seven sheets consecutively numbered (Art. 8.3). On sheet No. 1 is pinned a label showing “n. 1204. *Achras guapeba* Casar. Nov. Stirp. Bras. Decad. N. 65. Nom. Vulg. Bras. Guapeba. Legi in sylvulis arenosis maritimis (vulgo *restingas*) prope Rio de Janeiro, mense Aug. 1839. Casaretto” (Fig. 1A). This specimen is the lectotype of *A. guapeba*.

A specimen at G (barcode G00439400) has several labels. It has the original label made at the Turin Herbarium, showing “No. 1204, *Achras guapeba* Casar. nov. stirp. Decas No. 65. Rio de Janeiro. leg. Casaretto. hb. reg. Turin. 1857” (Fig. 1B). It also has the labels “*Pouteria laurifolia* Radlk. det. cl. L. Radlkofer”, “*Pouteria caimito* var. *laurifolia* (Gomes) Baehni, det. Charles Baehni, 1942” and “Isotype, *Achras guapeba* Casaretto = *Pouteria caimito*, T.D. Pennington, 1986”. This specimen is an isoelectotype.

At F there are two sheets with fragments of *Achras guapeba* collected by Casaretto. The first sheet (No. 783304) has the handwritten label (author unknown) “*Pouteria laurifolia* Radlk., Casaretto 1204, Rio Jan.” and the label “Isotype fragment of: *Achras guapeba* Casaretto, Nov. Stirp. bras. 7: 61. 1843.” This specimen is an isoelectotype. The second sheet at F (No. 781949) has an envelope containing a small twig with a few leaves and flowers. On the envelope is typewritten “*Pouteria laurifolia* Radlk. (*Achras guapeba* Casar.), Brazil: Rio de Janeiro, Casaretto.” This sheet has two labels stating “Type fragment of: *Achras guapeba* Casaretto, Nov. Stirp. Bras. 7: 61. 1843” and “Flora Neotropica, *Pouteria caimito* (R. & P.) Radlk., T.D. Pennington, 1986.” Because Casaretto’s herbarium number is not specified, this specimen is a possible isoelectotype.

66. *Achras laurifolia* Casar., Nov. Stirp. Bras. 7: 62. Sep 1843 (“Jul 1843”) ≡ *Lucuma casaretti* A.DC. in Candolle, Prodr. 8: 671. 1844 ≡ *Vitellaria casaretti* (A.DC.) Radlk. in Sitzungsber. Math.-Phys. Cl. Königl. Bayer Akad. Wiss. München 12: 326. 1882 – Type: Brazil: “Habitat in sylvis arenosis maritimis (vulgo *restingas*) prope Rio de Janeiro.” Holotype: “Restinga da Lagoa das Freitas”, s.d., *Casaretto Herb. No. 1921* (Riedel s.n.) (TO [1 sheet]).

Accepted name. – *Pouteria venosa* (Mart.) Baehni subsp. *venosa*

Casaretto (1843c: 62), along with original description of *Achras laurifolia* Casar., cited the collection locality as “Habitat in sylvis arenosis maritimis (vulgo *restingas*) prope Rio de Janeiro.” Pennington (1990: 398) synonymized *Achras laurifolia* Casar. with *Pouteria venosa* (Mart.) Baehni subsp. *venosa* and cited its type as “Rio de Janeiro, Lagoa das Freitas, Riedel s.n. (Casaretto herb. no. 1921) (holotype, TO).” In fact,

at TO there is a single sheet with the label “n. 1921. *Achras laurifolia* Casar. Nov. Stirp. Bras. Dec. n. 66. Habui ex sylvulis arenosis vulgo Restinga da Lagoa das Freitas prope Rio de Janeiro a Riedel. Casaretto.” Therefore, *Casaretto Herb. No. 1921* at TO, originally collected by Riedel, is the holotype of *A. laurifolia*.

After exhaustive searches at G and G-DC, no original material of *Achras laurifolia* was found.

70. *Bumelia rhamnoides* Casar., Nov. Stirp. Bras. 7: 64. Sep 1843 (“Jul 1843”) – Type: Brazil: “Reperi in maritimis circa sinum Fluminensem, atque ad ripas lacus *Taypú* in ipsâ provinciâ Rio de Janeiro.” Lectotype (designated by Pennington in Fl. Neotrop. Monogr. 52: 114. 1990): s.d. [Oct 1839], *Casaretto Herb. No. 1808* (TO [3 sheets]; isoelectotypes: F No. 911483 [fragments ex G], G barcode G00439613).

Accepted name. – *Sideroxylon obtusifolium* (Humb. ex Roem. & Schult.) T.D.Penn. subsp. *obtusifolium*

Pennington (1990: 114) treated *Bumelia rhamnoides* Casar. as a synonym of *Sideroxylon obtusifolium* (Humb. ex Roem. & Schult.) T.D.Penn. subsp. *obtusifolium* and cited the type as “Brazil. Rio de Janeiro: lake Taypu, Oct 1839 (fl), *Casaretto 1808* (holotype, TO, isotypes, G, F (frag)).” At TO there is a specimen, mounted on three sheets consecutively numbered, constituting a single specimen (Art. 8.3). On sheet No. 1 is pinned the label “n. 1808. *Bumelia rhamnoides* Casar. Nov. Stirp. Bras. Dec. n. 70. Frutex arborescens. Legi ad ripas lacus *Taypú* in Brasiliae provincia Rio de Janeiro, mense Oct. 1839. Casaretto.” Pennington’s citation of the term “holotype” is correctable to lectotype, and his citation is construed here as an inadvertent act of lectotypification of the name *B. rhamnoides* (Art. 7.11, 9.10).

The isoelectotype specimen at G (barcode G00439613) has a handwritten label showing “No. 1808, *Bumelia rhamnoides* Casar. nov. Stirp. Dec. No. 70. *Taypú*, P<sup>cia</sup> Rio de Janeiro. leg. Casaretto. hb. reg. Turin. 1857.” A second label shows “Isotype. *Bumelia rhamnoides* Casaretto = *Sideroxylon obtusifolium* subsp. *obtusifolium*, T.D. Pennington, 1986.”

A sheet at F (No. 911483) has a black and white photograph of the G specimen and an envelope containing several loose leaves and numerous loose flowers, which were removed from the G specimen. This specimen is an isoelectotype.

7. *Chrysophyllum glycyphloeum* Casar. in Atti Riunione Sci. Ital. 3: 514. Jun 1842 (“1841”) ≡ *Lucuma glycyphloeum* (Casar.) Mart. & Eichler in Martius & al., Fl. Bras. 7: 82, t. 25, fig. 2. 1863 ≡ *Pradosia glycyphloeum* (Casar.) Liais, Climat., Geol. Faune Brésil: 614. 1872 – Type: Brazil: “Hab. in sylvis primaevae circa Rio de Janeiro.” Neotype (designated here): Brazil: Rio de Janeiro, s.l., s.d., Peckolt 415 (BR barcode 0000013492885).

Accepted name. – *Pradosia lactescens* (Vell.) Radlk. (see comments by Pennington, 1990: 650, below)

Along with the original description of *Chrysophyllum glycyphloeum* in the *Atti*, Casaretto (1842b: 514) wrote:

“*Chrysophylli* sp. Riedel in Manual do Agricultor Brasileiro, segunda edição, Rio de Janeiro 1839, p. 318 (*sine nom. specific. et descriptione*). Nom. vulg. *Buranhem*, *Guranhem*. *Arbor Excelsa*. – *Hab. In sylvis primaevae circa* Rio de Janeiro.” In this first publication, he did not cite any synonym; therefore, *C. glycyphloeum* is a legitimate name. In the following publication of *Chrysophyllum glycyphloeum*, in *Decas I* (1842d: 12–14; published after the *Atti*), Casaretto wrote: “Ipse ego reperi hanc arborem in monte *Corcovado* apud *Rio de Janeiro*, speciminaque corticis, ut analysin postea curarem, legi: deinde vero a clar. ipso Riedelio qui eam ad *Chrysophyllum* genus pertinere jam pridem in opere superius allato nuntiaverat, exemplaria cum fructibus accepi, quorum ope speciei diagnosin sistere licuit.” In this later publication, among other informal names of several authors, he cited in synonymy “*Pometia lactescens* Vell. *Fl. Flum. icon. vol. II.* (1827) *tab. 87*”, but this citation does not cause illegitimacy to *C. glycyphloeum*.

Martius & Eichler (in Miquel 1863: 82–83) transferred *Chrysophyllum glycyphloeum* to *Lucuma*, proposing the new combination *L. glycyphloea* (Casar.) Mart. & Eichler, and cited the gatherings “Prov. Rio de Janeiro, e. gr. in monte Corcovado: Casaretto; et circa Canta Gallo: Peckolt.”

Pennington (1990: 650) treated *Chrysophyllum glycyphloeum* as a synonym of *Pradosia lactescens* (Vell.) Radlk., and cited its type as “Brazil. Rio de Janeiro: Corcovado (not traced at TO) (see note below).” In the following note of the same publication he wrote “It is clear from Casaretto’s very full description that *Chrysophyllum glycyphloeum* belongs in *Pradosia lactescens*. However, the only specimen under the name *Chrysophyllum glycyphloeum* in the Casaretto herbarium at Torino (*Riedel s.n.* (Casaretto herb. n. 1906) does not belong in *Pradosia*, but is an as yet unidentified species of *Pouteria*” (Pennington, 1990: 651). At TO there is a single original specimen attributed to *Chrysophyllum glycyphloeum*, with two labels. The first label, handwritten by Casaretto, says “N. 1906, *Chrysophyllum glycyphloeum* Casar., Nov. Stirp. Br. Dec. n. 7, habui ex sylvis primaevae montis Corcovado prope Rio de Janeiro a Riedel. Casaretto.” The other label, in Pennington’s hand, says “This may be a specimen of *Pouteria*, Pennington, 1987.” A composition of characters exclude this specimen from *Pradosia*. In *Pradosia*, the leaf midrib is deeply sunken on upper surface, tertiary venation is fine and oblique, and the fruits are slightly asymmetrical; none of these characters are present in this specimen. The fruit structure also excludes it from *Pradosia*, which has a well-defined cartilaginous endocarp, while the fruit of this specimen have a thin endocarp (T. Pennington, pers. comm.). Therefore, *Casaretto Herb. No. 1906* cannot be treated as original material of *C. glycyphloeum*.

No original specimen corresponding with Casaretto’s description of *Chrysophyllum glycyphloeum* has been found at TO, G or G-DC, and *Casaretto Herb. No. 1906* at TO is not original material because its morphological characters are considerably different from those of the description and is in serious conflict with the protologue. Therefore, it is asserted here that a neotype needs to be designated. The

specimen *Peckolt 415* at BR (barcode 0000013492885) is probably the one cited by Martius & Eichler (in Miquel 1863: 82–83) as “circa Canta Gallo: Peckolt”. It has several labels, one of them has the handwritten text “*Pometia lactescens* Vell. 2. 8. 87, Sapotaceae. *Chrysophyllum glycyphloeum*. Embr. exalbumin. rostello supero, cotyl. magnis craspis roseis. Raphe nunc a basi ad apicem. Endocarp. pergam. Mesocarp. Pulpos. edule. Communic. Peckolt 1860, n. 415. Bacupari amarello; Buranhem incol.” and the printed heading “HERBARIUM MARTII”. This specimen, which matches well with the protologue, is here designated as the neotype of *Chrysophyllum glycyphloeum*.

69. *Chrysophyllum lanceolatum* Casar., Nov. Stirp. Bras. 7: 64. Sep 1843 (“Jul 1843”), non (Blume) A.DC. 1844, nom. illeg. – Type: Brazil: “Crescit in sylvis primaevae circa *Rio de Janeiro*.” Holotype: s.d. [before 1840], *Casaretto Herb. No. 1905* (*Riedel s.n.*) (TO [2 sheets]). Accepted name. – *Chrysophyllum flexuosum* Mart.

Pennington (1990: 574) synonymized *Chrysophyllum lanceolatum* Casar. with *C. flexuosum* Mart., and for the former he cited: “Type: Brazil. Rio de Janeiro, (fl), *Riedel s.n.* (holotype, TO, Casaretto herb. no. 1905).” At TO there is an original specimen mounted on two sheets consecutively numbered, constituting a single specimen. Sheet No. 1 has the label “n. 1905. *Chrysophyllum lanceolatum* Casar. Nov. Stirp. Bras. Dec. n. 69. In sylvis primaevae circa Rio de Janeiro legit Riedel. Casaretto.” This specimen is the holotype of *C. lanceolatum*.

After exhaustive searches at G and G-DC, no original material of *Chrysophyllum lanceolatum* was found.

At US there are three specimens of *Riedel 563*, which are here evaluated as possible original material of *C. lanceolatum*. The first specimen (barcode 00323631) has a label with the header “Riedel: Flora Brasiliae”, and the handwriting “Sapotaeae, 563 *Chrysophyllum*, Arbor 30–40 ped. Foliis ovatis acutis subtus sericeo-nitidus integer. florib. arillarib. flavo-virentibus. In sylv. primaevae Macahé, Maio 1832.” The second specimen (barcode 00323632) also has a label with the header “Riedel: Florae Brasiliae”, and the handwritten text (author unknown) “563, Sapotaeae. *Chrysophyllum*. Arbor 30–40. Folis ovatis acutis subtus sericeo-nitidus integerr. florib. axillarib. flavo-virentibus. In sylv. primaevae Macahé, Maio 1832” and the stamp “Dupla ex herbario Horti Botan. Imper. Petropolitani”. The third specimen (barcode 00930759) has a handwritten label showing “Sapotaeae, No. 563, *Chrysophyllum*” and the stamp “DUPLA – Herbario Horti Petropolitani, Dupla, U.S.S.R.” Because it is impossible to establish a direct connection between *Riedel 563* and *Casaretto Herb. No. 1905*, these three specimens are not likely original material.

A specimen at BR (barcode 0000013462864) has the two handwritten labels: “Jan–Mart 1823, *Chrysophyllum*?” and “*Chrysophyllum flexuosum* Mart., Brasilia, Rio de Janeiro, Coll. Riedel.” Because it is impossible to establish a direct connection with *Casaretto Herb. No. 1905*, this specimen is also not likely original material for *C. lanceolatum*.



68. *Chrysophyllum parviflorum* Casar., Nov. Stirp. Bras. 7: 63. Sep 1843 (“Jul 1843”) – Type: Brazil: “Habitat in Brasiliae provinciâ Minas Geraes (Claussen).” Lectotype (designated by Pennington in Fl. Neotrop. Monogr. 52: 561. 1990): [Minas Gerais], s.d. [collection date unknown, before 1840], *Casaretto Herb. No. 2739 (Claussen s.n.)* (TO [2 sheets]; islectotype: G barcode G00434781; probable islectotype: P barcode P00649356).

*Accepted name.* – *Chrysophyllum marginatum* (Hook. & Arn.) Radlk. subsp. *marginatum*

Pennington (1990: 561) synonymized *Chrysophyllum parviflorum* Casar. with *Chrysophyllum marginatum* (Hook. & Arn.) Radlk. subsp. *marginatum* and cited its type as: “Brazil. Minas Gerais, (fl), *Claussen s.n.* (holotype, TO, *Casaretto herb. No. 2739*).” At TO there is a single original specimen, mounted on two sheets consecutively numbered. Sheet No. 1 has the label “n. 2739. *Chrysophyllum parviflorum* Casar. Nov. Stirp. Bras. Dec. n. 68. In Brasiliae provincia Minas Gerais legit Claussen. *Casaretto*” (Fig. 1C). According to the *Code*, Pennington’s citation should be corrected, and this specimen is the lectotype of *C. parviflorum*.

At G there is a single sheet (barcode G00434781) with the handwritten label showing “No. 2739, *Chrysophyllum parviflorum* Casar. nov. stirp. Dec. Nr. 68, P<sup>cia</sup> Minas Geraes. leg. *Casaretto*. hb. reg. Turin. 1857” (Fig. 1D). Although its label says “leg. *Casaretto*”, this specimen was originally collected by Clausen in Minas Gerais, and is an islectotype.

A specimen at BR (barcode 0000013462901) has a label with printed text “Aug.–Apr. P. Claussen, Minas Geraes, Coll. 1840, Brasilia” and handwriting (author unknown) “*Chrysophyllum parviflorum*”. Because *Casaretto* bought specimens from Clausen in 1839, this specimen cannot be original material of *C. parviflorum*.

A specimen at P (barcode P00649356) has a handwritten label showing “Herbarium Richard [in red ink]” and the printed text “BRÉSIL (Minas Geraes), P. Claussen, 3<sup>e</sup> envoi reçu en janvier 1840.” Another label reports: “Herbier E. Drake, Isotype, *Chrysophyllum parviflorum* *Casaretto*.” As this specimen was received in Paris in January 1840, it was collected before that year, and is here treated as a probable islectotype.

### Simaroubaceae

3. *Simaba laevis* Casar. in Atti Riunione Sci. Ital. 3: 513. Jun 1842 (“1841”) – Type: Brazil: “Habitat in sylvis maritimis dictis Restinga de Copo-Cabana, prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Oct 1838], *Casaretto Herb. No. 551 (Riedel s.n.)* (TO [2 sheets]; islectotype: G [without barcode, on loan to NY, with the stamp “Herbarium G, Prêt [i.e., Loan] No. 006202, [sheet No.] 000013”]).

*Accepted name.* – *Homalolepis cuneata* (A.St.-Hil. & Tul.) Devecchi & Pirani

In the original publication of *Simaba laevis* Casar. in the *Atti*, *Casaretto* (1842b: 513) cited the collection locality as

“Habitat in sylvis maritimis dictis Restinga de Copo-Cabana, prope Rio de Janeiro.” In *Decas I* (*Casaretto*, 1842d: 10, published after the *Atti*), he described the collection locality as “Reperi in sylvis maritimis (vulgo *Restingas*) inter *Copo-Cabana* et *Lagoa de Rodrigo de Freytas* prope *Rio de Janeiro*.”

Devecchi & al. (2018), in their extensive and beautifully illustrated monograph on the genus *Homalolepis* Turcz., treated *Simaba laevis* as a synonym of the new combination *Homalolepis cuneata* (A.St.-Hil. & Tul.) Devecchi & Pirani. They cited the type as “*Casaretto 551* (holotype: TO; isotypes: G! 006200013)”. However, as *Casaretto* did not cite any herbarium along with the original description, the TO specimen cannot be treated as the holotype. In addition, their citation cannot be interpreted as an inadvertent lectotypification because, according to Art. 7.11, a lectotypification published after 2001 should be accompanied by the phrase “here designated” or a similar expression.

At TO there are two original gatherings of *Simaba laevis* collected in Rio de Janeiro. One specimen has the label “N. 1197, *Simaba laevis* [sic!] Casar., legi in sylvis maritimis (vulgo *restingas*) inter *Copo-Cabana* et *Lagoa de Rodrigo de Freitas* prope *Rio de Janeiro*, mense Aug. 1839. *Casaretto*.” The other gathering is mounted on two sheets consecutively numbered. Sheet No. 1 has two labels, showing “N. 551, *Simaba laevis* [sic!] Casar., in sylvis vulgo *restingas* ad *Copo-Cabana* prope *Rio de Janeiro*, legit *Riedel*. *Casaretto*” and “N. 551, *Simaba n. sp.*, arbor 20-30 ped. flores flavescens. In sylvis *Restinga dictis Copo-Cabana*, 8ber 1838.” The specimen *Casaretto Herb. No. 551* at TO is here designated the lectotype of *Simaba laevis*.

A gathering at G is mounted on a single sheet (without barcode, on loan to NY, with the stamp “Herbarium G, Prêt No. 006202, 000013”) with a handwritten label “No. 551. *Simaba laevis* Casar. *Copo-Cabana*, *Rio de Janeiro*. Leg. *Casaretto*. Hb. reg. Turin. 1857.” This specimen is an islectotype of *Simaba laevis*.

2. *Simaba longifolia* Casar. in Atti Riunione Sci. Ital. 3: 513. Jun 1842 (“1841”) – Type: Brazil: “Habitat in Monte Corcovado prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Oct 1839], *Casaretto Herb. No. 1854* (TO [7 sheets]; islectotype: G [3 sheets, without barcode, on loan to NY, with the stamp “Herbarium G, Prêt [i.e., Loan] No. 006202, [sheets No] 000028–000030”]).

*Accepted name.* – *Homalolepis insignis* (A.St.-Hil. & Tul.) Devecchi & Pirani

In the original description of *Simaba longifolia* Casar. in the *Atti*, *Casaretto* (1842b: 513) indicated the collection locality as “Habitat in montem Corcovado prope Rio de Janeiro.” In *Decas I* (*Casaretto*, 1842d: [9], published after the *Atti*) he reported the same collection locality.

Devecchi & al. (2018) treated *Simaba longifolia* as a synonym of the new combination *Homalolepis insignis* (A.St.-Hil. & Tul.) Devecchi & Pirani. They cited the type of *S. longifolia* as “*Casaretto 1854* (holotype: TO; isotypes: G (two sheets)!).” However, as *Casaretto* along with the original

description did not cite any herbarium, the TO specimen cannot be the holotype. In addition, their citation cannot be treated as an inadvertent lectotypification because, according to Art. 7.11, a lectotypification published after 2001 should be accompanied by the phrase “here designated” or a similar expression.

At TO there is a single original specimen mounted on seven sheets consecutively numbered, constituting a single specimen (Art. 8.3). On sheet No. 1 is pinned a label in Casaretto’s hand, showing “N. 1854. *Simaba longifolia* Casar., legi in monte Corcovado prope Rio de Janeiro, mense Oct. 1839. Casaretto.” This TO specimen is here selected as the lectotype of this name.

At G there is a specimen mounted on three sheets consecutively numbered (without barcode, on loan to NY, with the stamp “Herbarium G, Prêt No. 006202, 000028–000030”). On sheet No. 1 is pinned a handwritten label showing “No. 1854. *Simaba longifolia* Casar. Monte Corcovado prope Rio de Janeiro. Leg. Casaretto. Hb. reg. Turin. 1857” and another label “*Simaba glandulifera* Gard. [Gardner], Impr. in Fl. Bras. Fan. (Ad Engler).” This G specimen is the isolectotype of *Simaba longifolia*.

4. *Simaba maiana* Casar. in Atti Riunione Sci. Ital. 3: 513. Jun 1842 (“1841”) – Type: Brazil: “*Habitat in sylvulis arenosis maritimis dictis* Restinga de Tijuca, prope Rio de Janeiro.” **Lectotype (designated here):** s.d. [Aug 1839], *Casaretto Herb. No. 1257* (TO [2 sheets]; isolectotypes: G barcode G00342785 [3 sheets], M [fragment ex TO; without barcode, on loan to NY]; photo-G at MO and NY).

*Accepted name.* – *Homalolepis maiana* (Casar.) Devecchi & Pirani

In the original publication of *Simaba maiana* Casar., Casaretto (1842b: 513) described the collection locality as “*Habitat in sylvulis arenosis maritimis dictis* Restinga de Tijuca, prope Rio de Janeiro.” In the following publication in *Decas I* (Casaretto, 1842d: 10–11, published after the *Atti*), he reported the same collection locality.

Devecchi & al. (2018), treated *Simaba maiana* as the basionym of the new combination *Homalolepis maiana* (Casar.) Devecchi & Pirani, and cited the type as “*Casaretto 1257* (holotype: TO; isotypes: G [G00342785], (three sheets), image!)”. However, as Casaretto along with the original description did not cite any collection or herbarium, the TO specimen cannot be treated as the holotype. Also, their citation cannot be treated as an inadvertent lectotypification because, according to Art. 7.11, a lectotypification published after 2001 should be accompanied by the phrase “here designated” or a similar expression.

At TO there are two original gatherings used by Casaretto to describe *Simaba maiana*. The first one is a fruiting specimen mounted on two sheets. On sheet No. 1 are pinned two labels in Casaretto’s hand, “N. 550, *Simaba maiana* Casar., in arenosis maritimis Restinga da Tijuca prope Rio de Janeiro, legit Riedel. Casaretto” and “N. 550, *Simaba* n. sp., ex fructificum, Restinga da Tijuca, 8br [Oct.] 1838.” The other specimen, *Casaretto Herb. No. 1257*, has branches abundantly flowering and is

mounted on two sheets. Sheet No. 1 has the label “N. 1257. *Simaba maiana* Casar., legi in sylvulis arenosis maritimis vulgo Restinga de Tijuca prope Rio de Janeiro, mense Aug. 1839. Casaretto.” The specimen *Casaretto Herb. No. 1257* is here designated as the lectotype of this name.

At G there is a specimen (barcode G00342785) mounted on three sheets consecutively numbered, constituting a single specimen (Art. 8.3). Sheet No. 1 has Casaretto’s label showing “No. 1257. *Simaba maiana* Casar. Tijuca prope Rio de Janeiro. leg. Casaretto, hb. reg. Turin 1857” and the label “Isotype of: *Simaba maiana* Casaretto, det. W. Thomas, 1984”. This G specimen is an isolectotype of *Simaba maiana*.

At M is preserved a sheet (without barcode, on loan to NY) with only two loose leaves. The label has the heading “Museum Botanicum R. Horti Taurinensis – Herbarium Generale” and the handwritten text “*Simaba maiana* Casar. In sylvulis arenosis maritimis vulgo ‘Restinga de Tijuca’ prope Rio de Janeiro – mense August. 1839. Legit Casaretto. M.O. Mattiolo.” This fragment, removed from the TO specimen, is an isolectotype.

At M there is another sheet (without barcode, on loan to NY) with the handwritten label “*Simaba maiana* Casar. Brasiliae. Restingas de Tijuca, Jan. 1833. Riedel 999.” Although the collection locality corresponds with *Casaretto Herb. No. 550*, it is impossible to establish a direct link between the two collections; therefore, *Riedel 999* is not likely an original material.

At NY is kept a sheet (without barcode) with the handwritten label showing “*Simaba maiana* Casar. (ex duplis) No. 999, *Simaba*. Restingas de Tijuca, Jan. 33 Riedel.” Following the above reasoning for *Riedel 999* at M, this specimen is also not an original material.

## Solanaceae

86. *Jaborosa montevidensis* Casar., Nov. Stirp. Bras. 9: 78. Aug 1845 – Type: Uruguay: “Reperi circa Montevideo.” Holotype: s.d. [Mar 1839], *Casaretto Herb. No. 432* (TO [1 sheet]).

*Accepted name.* – *Salpichroa origanifolia* (Lam.) Baill.

At TO there is a single sheet of original material with the label “n. 432. *Jaborosa montevidensis* Casar. Nov. Stirp. Bras. Decad. N. 86. Legi circa urbem Montevideo, mense Mart. 1839. Casaretto.” This specimen is the holotype of *Jaborosa montevidensis*.

After exhaustive searches, no original material of *Jaborosa montevidensis* was found at either G or G-DC.

25. *Schwenckia breviseta* Casar., Nov. Stirp. Bras. 3: 29. Jul 1842 (“Aug 1842”) (“*Schwenckia*”) – Type: Brazil: “Habitat in Brasiliae provinciâ S. Paulo (Riedel).” Holotype: s.d. [Dec 1838], *Casaretto Herb. No. 2676* (Riedel s.n.) (TO [1 sheet]).

*Accepted name.* – *Schwenckia breviseta*

In her revision of the genus *Schwenckia* for Brazil, Carvalho (1978: 511) treated *S. breviseta* Casar. as a distinct

species and positioned it in Section I – *Cestranthus*, and cited the type as “Typus: ‘Habitat in Brasiliae provincia S. Paulo (Riedel)’, até o presente não foi localizado [up to present not located].”

At TO there is a single sheet of *Schwenckia breviseta* with two labels, “n. 2676. Schwenkia [sic] n. sp. flor flavescens. In umbr. Prov. San Paulo. Dbr. [Dec] 1838” and “Schwenkia breviseta Casar. Nov. Stirp. Bras. Dec. n. 25. In Brasilia provincia S. Paulo legit Riedel. Casaretto.” This specimen is the holotype of this name.

After exhaustive searches at G and G-DC, no original material of *Schwenckia breviseta* was found.

26. *Schwenckia longiseta* Casar., Nov. Stirp. Bras. 3: 30. Jul 1842 (“Aug 1842”) (“*Schwenkia*”) – Type: Brazil: “Habitat in montibus Serra d’Estrella, in prov. Rio de Janeiro.” Holotype: s.d. [Jan 1839], *Casaretto Herb. No. 691 (Riedel s.n.)* (TO [2 sheets]).

*Accepted name.* – *Schwenckia longiseta*

Carvalho (1978) treated *S. longiseta* Casar. as a doubtful species, and cited the type as “Typus: Habitat in montibus Serra d’Estrella, in prov. Rio de Janeiro, até o presente não foi localizado [up to present not located].”

At TO there is a single original specimen of *Schwenckia longiseta* Casar., mounted on two sheets. On sheet No. 1 are pinned two labels, showing “n. 691, Schwenkia, caule erecto, annuus?, flor. flavo-viridis. In umbr. Serra Estrella, Jan 1839” and “n. 691, Schwenkia longiseta Casar. Nov. Stirp. Bras. Dec. n. 26. Habui ex montibus Serra d’Estrella (Brasiliae provincia Rio de Janeiro) a Riedel. Casaretto.” This specimen is the holotype of this name.

After exhaustive searches at G and G-DC, no original material of *Schwenckia longiseta* was found.

### Symplocaceae

27. *Symplocos arbutifolia* Casar., Nov. Stirp. Bras. 3: 30. Jul 1842 (“Aug 1842”) – Type: Brazil: “Habitat in montibus vulgo Serra da Caraça, in provinciâ Minas Geraes (Riedel).” **Lectotype (designated here):** s.d. [before 1840], *Casaretto Herb. No. 2727 (Riedel s.n. or Clausen s.n.)* (TO [3 sheets]; isoelectotype: G barcode G00016278). *Accepted name.* – *Symplocos arbutifolia*

At TO there is a single original specimen of *Symplocos arbutifolia*, mounted on three sheets consecutively numbered, constituting a single specimen (Art. 8.3). Sheet No. 1 has a label showing “n. 2727, Symplocos arbutifolia Casar., Nov. Stirp. Bras. Dec. n. 27, in montibus Serra da Caraça (in Brasiliae provincia Minas Geraes) legit Claussen. Casaretto.” On sheet No. 3 is pinned a label showing “n. 2727, Symplocos arbutifolia Casar., exemplar cum floribus masculis.” This TO specimen is here designated the lectotype of this name. In the original publication, Casaretto wrote that this gathering was originally collected by Riedel, but on the herbarium label, he wrote that it was collected by Clausen.

At G there is a sheet (barcode G00016278) with the label “No. 2727. Symplocos arbutifolia Casar., nov. Stirp. Dec. No. 27, M<sup>bus</sup> Serra da Caraça, P<sup>cia</sup> Minas Geraes. hb. reg. Turin. 1857. Leg. Casaretto.” This specimen is an isoelectotype.

30. *Symplocos estrellensis* Casar., Nov. Stirp. Bras. 3: 32. Jul 1842 (“Aug 1842”) – Type: Brazil: “Crescit in sylvis umbrosis montium Serra d’Estrella, in provinciâ Rio de Janeiro (Riedel).” **Lectotype (designated here):** s.d. [Dec 1838], *Casaretto Herb. No. 694 (Riedel s.n.)* (TO [2 sheets]; isoelectotype: G barcode G00016260).

*Accepted name.* – *Symplocos estrellensis*

At TO there is a single original specimen of *Symplocos estrellensis* Casar., mounted on two sheets consecutively numbered, constituting a single specimen (Art. 8.3). On sheet No. 1 are pinned two labels, showing “n. 694, Wolfia Sprengel, frutex 6-12 ped., polygami, mas. stam. 12, hermafroditi stam. 5, styl. 1. In sylv. Umbr. Serra Estrella, Dbr [Dec] 1838” and “n. 694. Symplocos estrellensis Casar. Nov. Stirp. Bras. Dec. n. 30. In sylvis umbrosis montium Serra d’Estrella (in Brasiliae provincia Rio de Janeiro) legit Riedel. Casaretto.” This TO specimen is here designated the lectotype of this name.

At G there is a sheet (barcode G00016260) with the TO original label showing “No. 694. Symplocos estrellensis Casar. Nov. Stirp. Dec. No. 30. M<sup>bus</sup> Serra d’Estrella, P<sup>cia</sup> Rio de Janeiro. hb. reg. Turin. 1857. leg. Casaretto.” This G specimen is an isoelectotype.

28. *Symplocos oblongifolia* Casar., Nov. Stirp. Bras. 3: 31. Jul 1842 (“Aug 1842”) – Type: Brazil: “Crescit apud Cachoeira do Campo, Serra do Quartel, in provinciâ Minas Geraes (Riedel).” **Lectotype (designated here):** s.d. [May 1839], *Casaretto Herb. No. 2781 (Riedel s.n. or Clausen s.n.)* (TO [4 sheets]; isoelectotype: G barcode G00016256). *Accepted name.* – *Symplocos oblongifolia*

At TO there is a single original specimen mounted on four sheets consecutively numbered, with two labels pinned on sheet No. 1, thus constituting a single specimen (Art. 8.3). One label (not written by Casaretto) shows “n. 2781, Wolfia Horkal., potius genus novum, arbor 10-15 ped., fl. Pellid. Heter. Serra do Quartel, Cach. do Campo. Maio 39 [May 1839]”, whereas the second label shows “n. 2781 Symplocos oblongifolia Casar., Nov. Stirp. Bras. Dec. n. 28. In Brasiliae provincia Minas Geraes legit Claussen. Schedulam opposuit Riedel. Casaretto” in Casaretto’s hand. It is not clear what Casaretto meant on the latter label; it seems that the specimen was collected by Clausen and that the other label was written by Riedel. In the original publication, Casaretto wrote that this gathering was made by Riedel; however, on the specimen label he stated that it was collected by Clausen. Independently of who the real original collector was, this TO specimen is here designated the lectotype of *Symplocos oblongifolia*.

At G there is a sheet (barcode G00016256) with the label “No. 2781 Symplocos oblongifolia Casar. nov. Stirp. Dec. No. 28. P<sup>cia</sup> Minas Geraes. Leg. Casaretto. hb. reg. Turin. 1857.” This G specimen is an isoelectotype.



29. *Symplocos revoluta* Casar., Nov. Stirp. Bras. 3: 31. Jul 1842 (“Aug 1842”) – Type: Brazil: “Habitat in provinciâ Minas Geraes (Riedel).” Holotype: s.d. [before 1840], *Casaretto Herb. No. 2701* (Clausen s.n. or Riedel s.n.) (TO [4 sheets]).

*Accepted name.* – *Symplocos revoluta*

At TO there is an original collection of *Symplocos revoluta* mounted on four sheets consecutively numbered, constituting a single specimen (Art. 8.3). On sheet No. 1 is pinned a label showing “n. 2701, *Symplocos revoluta* Casar., Nov. Stirp. Bras. Dec. n. 29. In Brasiliae provincia Minas Geraes legit Claussen. Casaretto.” This TO specimen is the holotype of this name. Also, in the original publication, Casaretto wrote that this gathering was collected by Riedel, but the label of the type specimen shows: “legit Claussen”; therefore, it is impossible to know who the original collector of this gathering was.

After exhaustive searches at G and G-DC, no specimen was found that could be connected with *Casaretto Herb. No. 2701*.

### Trigoniaceae

82. *Trigonia rytidocarpa* Casar., Nov. Stirp. Bras. 9: 76. Aug 1845 – Type: Brazil: [Rio de Janeiro], “Crescit in collibus apricis circa *Rio de Janeiro*.” Lectotype (designated by Lleras in Fl. Neotrop. Monogr. 19: 59. 1978): s.d. [before 1840], *Casaretto Herb. No. 1956* (Riedel s.n.) (TO [1 sheet]; isolectotype: G barcode G00357355).

*Accepted name.* – *Trigonia rytidocarpa*

Lleras (1978: 59) treated *Trigonia rytidocarpa* Casar. as a distinct species and cited the type as “*Casaretto 1956*, Brazil, Rio de Janeiro, fl fr (holotype TO; isotype G).” The TO specimen is a single sheet with the label “n. 1956. *Trigonia rytidocarpa* Casar. Nov. Stirp. Bras. Decad. N. 82. In collibus apices circa urbem Rio de Janeiro legit Riedel. Casaretto.” Lleras’s “holotype” citation is a correctable error and is treated as an inadvertent act of lectotypification of this name (see Art. 7.11, 9.10).

A specimen at G (barcode G00357355) has two labels, showing “No. 1956, *Trigonia rytidocarpa* Casar. nov. Stirp. Decad. No. 82. Rio de Janeiro. leg. Casaretto. hb. reg. Turin. 1857” and “Monograph of Trigoniaceae, *Trigonia rytidocarpa* Casaretto, Isotype, E. Lleras, 1974, The New York Botanical Garden”. This specimen is an isolectotype.

### Tropaeolaceae

1. *Tropaeolum brasiliense* Casar. in Atti Riunione Sci. Ital. 3: 512. Jun 1842 (“1841”) – Type: Brazil: “*Habitat circa montem Gavia prope Rio de Janeiro*.” Lectotype (designated by Sparre & Andersson in Opera Bot. 108: 115. 1991): s.d. [Aug 1839] (fl), *Casaretto Herb. No. 1297* (G barcode G00357335; isolectotype: TO [5 sheets]; photo-G at F).

*Accepted name.* – *Tropaeolum brasiliense*

Sparre & Andersson (1991: 115) cited the type of *Tropaeolum brasiliense* as “*Casaretto 1841*: 512. – Orig. coll.: Casaretto 1297; Brazil, Rio de Janeiro, Monte Gavia

(G lectotype, selected here; F fragments).” A specimen at G (barcode G00357335) has a label showing “No. 1297. *Tropaeolum Brasiliense* Casar. M<sup>te</sup> Gavia, Rio de Janeiro, hb. reg. Turin 1857, leg. Casaretto.” This specimen is the lectotype of this name. However, after an exhaustive search at F, no specimen of *Casaretto Herb. No. 1297* could be found; only a black and white photograph of the G specimen is present at F (Christine Niezgoda, pers. comm.).

At TO there is a specimen mounted on five sheets consecutively numbered, constituting a single specimen (see Art. 8.3). On sheet No. 1 is pinned the label “n. 1297. *Tropaeolum Brasiliense* Casar., legi circa Montem Gavia prope Rio de Janeiro, mense Aug. 1839. Casaretto”. The other sheets have no label. This specimen is an isolectotype.

## ■ AUTHOR CONTRIBUTIONS

PGD initiated the study, conceptualized the paper, and wrote most part of the manuscript. RMB, NF, and LG made important improvements on the manuscript, and all contributed equally to the work. PGD and NF searched and studied Casaretto’s specimens and studied the archives at G and G-DC; PGD and LG searched and studied Casaretto’s specimens and studied the archives at TO. PGD and RMB searched for Casaretto’s specimens at FI and FI-W. All authors commented on, contributed to, and approved the final version. — PG, <https://orcid.org/0000-0001-5844-3945>; RM, <https://orcid.org/0000-0003-2181-3441>

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