Typifications in *Passiflora* L. (Passifloraceae) described by Frei José Mariano da Conceição Vellozo

Michaële Alvim Milward-de-Azevedo

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ABSTRACT

This work presents 19 lectotypifications and one epitype for the genus *Passiflora* (Passifloraceae *sensu stricto*) described by Frei José Mariano da Conceição Vellozo in *Flora Fluminensis*. The original illustrations are designated as lectotypes. *Passiflora obtusa* is here proposed to be a synonym of *P. porophylla*.

Keywords: Brazil, Flora Fluminensis, epitype, lectotype, nomenclature, passionflower

Introduction

“Flora Fluminensis” is considered one of the first compilations of Brazilian flora (Knapp et al. 2015), and was the result of pioneering surveys of plants in the state of Rio de Janeiro and some parts of the state of São Paulo, when the state of Rio de Janeiro had not yet been defined (Damasceno 1977; Lima 1995; Knapp et al. 2015). Led by Frei José Mariano da Conceição Vellozo during the 18th century (1782–1790), *Flora Fluminensis* provided 1,639 succinct descriptions and botanical illustrations of diagnostic characters distributed among 11 volumes, which were effectively published 39 years later, leading to the loss of authorship of many genera and species (Cervi & Rodrigues 2010; Bedia & Lima 2015).

According to Borgmeier (1937) and Carauta (1973), *Flora Fluminensis* was published over three different time periods: the text was printed in 1825 and distributed in 1829; the illustrations were edited in 1827 and published in 1831; and the species descriptions were printed in 1881.

Vellozo’s morphological descriptions usually mentioned the place of collection and popular or indigenous names and uses, and followed the sexual classification system proposed by Linnaeus (Kury 2015), but without indicating vouchers (Lima 1995). These factors have made it difficult to identify these species, and many names have since been treated as problematic or altogether ignored by science (Knapp et al. 2015).

According to Kury (2015), the illustrations of *Flora Fluminensis*, especially of the reproductive parts of flowers, serve as valuable references because no information exists regarding herbarium or type material fixed to species names. Prior to the 20th century, modern rules of the International Code of Botanical Nomenclature were not in force, thus adding even more value to the illustrations. Braga (2005) points out that Vellozo does not mention the existence of watercolors or living or herbarium material, and that he only had access to monochromatic versions of the illustrations.

Binomials were included in *Flora Fluminensis* along with descriptions of new species, as examined by Cervi & Rodrigues (2010) in their study of the species names, diagnoses, and illustrations in Volume 9.

Due to the absence of type material, and according to Art. 9.11 of the International Nomenclature Code for algae, fungi

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1 Departamento de Ciências do Meio Ambiente, Instituto Três Rios, Universidade Federal Rural do Rio de Janeiro, Av. Prefeito Alberto da Silva Lavinhas 1847, Centro, 25802-100, Três Rios, RJ, Brazil, michaelemilward@gmail.com
and plants (McNeill et al. 2012), it is necessary to designate lectotypes for these species. Recently, lectotypifications for the species described and illustrated by Vellozo were undertaken by Lima (1995), Braga (2005), Lack (2012), Buzatto et al. (2013), Pastore (2013), Porter-Utley (2014), Knapp et al. (2015), Pellegrini (2015), Pellegrini et al. (2015) and Svoboda et al. (2016).

In the revisions of the Brazilian species of Passiflora L. (Passifloraceae sensu stricto) by Cervi (1997; 2000), and Milward-de-Azevedo et al. (2012), many names were evaluated, among which were those for species described by Vellozo, but these authors did not assign lectotypes. Porte-Utley (2014) performed a revision of the Passiflora subgenus Decaloba (DC.) Rchb. supersection Cieca (Medik.) J.M. MacDougal & Feuillet, and established lectotypes for P. globosa and P. oliviformis, both originally described by Vellozo (1831/1881), and both synonyms of P. suberosa L. subsp. litoralis (Kunth) Port.-Utl. ex M.A.Milward-de-Azevedo, J.F.Baumgratz & V.Gonçalves-Esteves. Svoboda et al. (2016) typified the species Passiflora subgenus Passiflora section Dysosmia DC., P. foetida, described by Vellozo, as synonymous with P. foetida var. fluminensis (M. Roem) Killip, and P. villosa.

In Flora Fluminensis, Vellozo (1831/1881) named 25 species of Passifloraceae, all belonging to the genus Passiflora. Cervi & Rodrigues (2010) reviewed these species based on prints and Latin diagnoses, but did not typify the names. They accepted six of the species as valid (P. mediterranea, P. ovalis, P. porophylla, P. silvestris, P. tetraden and P. villosa), considered sixteen species to be synonyms (P. arvensis, P. bilobata, P. dentata, P. diaden, P. foetida, P. globoa, P. lunata, P. maliformis, P. oliviformis, P. pallida, P. pertusa, P. polyaden, P. quadrangularis, P. rubra, P. sururca and P. violacea), recognized P. edulis Sims and P. racemosa Brot. as correctly identified; and considered the species Passiflora obtusa as incertae sedis.

Subsequent studies have involved analyses of protologues and illustrations of the species of Passifloraceae described by Vellozo, which has led to the detection of various nomenclatural problems, mainly regarding typification and synonymy, which are addressed here.

**Materials and methods**

The brief descriptions of this work were based on digital images of all original illustrations of Passiflora available through the website of the Biblioteca Nacional (http://bdigital.bn.br/acervodigital), and the published illustrations and descriptions from Flora Fluminensis (1831/1881) available through the Biodiversity Heritage Library (http://www.biodiversitylibrary.org/). Terminology followed Rizzini (1977) and Stearn (2004), and geographical references, when cited in species descriptions, were based on the interpretations of Lima (1995).

**Results and discussion**

Nineteen lectotypifications and one epitype for species described by Vellozo, which have not yet been typified, are provided in accordance with the guidelines established by the Melbourne Code (McNeill et al. 2012). The illustrations of these species are considered valid publications because the names are accompanied by analyses in accordance with articles 38.8 and 38.9 of Melbourne Code (McNeill et al. 2012).

The validations of P. pertusa and P. polyadena were performed together with the description of 1881, because only the vegetative parts were illustrated in 1831 and so did not meet the requirements for identification.

**Typifications and taxonomy**


Curtis (1790) describes and illustrates *P. alata* with a quadrangular-aleate stem; lanceolate to ovate stipules and bracts; leaves with petioles with two pairs of urceolate glands, ovate blades, acute apex and cordate base; and flowers with aristate sepal, red petals and white, red, and lilac banded external filaments of the corona.

The illustration of *P. maliformis* clearly shows a quadrangular stem; ovate stipules; leaves with petioles with one pair of glands, ovate blades, acute apex and cordate base; flower with coronal filaments banded, and ellipsoid fruit. *Passiflora quadrangularis*, exhibits quadrangular-aleate stem; ovate stipules; leaves with petioles with two pairs of glands, blades oblong-lanceolate, apex acuminate, base truncate, bracts ovate, flowers with aristate sepals, and fruits piriform. The illustrations and descriptions of both *P. maliformis* and *P. quadrangularis* are very similar, as confirmed by Cervi & Rodrigues (2010). They occur in coastal restangas and forest edges where *P. alata* is frequent (Cervi 1997).
Passiflora maliformis was synonymized by Killip (1938) and P. quadrangularis by Cervi & Rodrigues (2010).

   

Mikan (1820) describes and illustrates *P. amethystina* as a herbaceous vine, with falcate or semicordate stipules; leaves with petioles with 3–7 glands, blades trilobate, apex acute and base cordate; flower single, with aristate sepals and corona with 8 series of filiform filaments. The illustration of *P. violacea* clearly shows oblong-lanceolate asymmetrical stipules; leaves with petioles with 6 glands, trilobate leaf blades, lanceolate lobes, acute apex, cordate base and lanceolate bracts; flowers with aristate sepals, and oblong-lanceolate fruits with three carpels. Occurs in forest formations of the coastal plain. The illustration and description presented by Vellozo (1831/1881), are very similar to the illustration and description of *P. amethystina*, as already synonymized by Cervi (1997) and confirmed by Cervi & Rodrigues (2010).

   


Despite the brief description by Linnaeus (1753), *P. capsularis* was described as a species with petiolate leaves, bilobate and cordate leaf blade; and reddish fruit. The illustrations and descriptions by Vellozo (1831/1881) demonstrate that the species *P. bilobata* and *P. lunata* are synonymous with *P. capsularis*, as confirmed and synonymized by Milward-de-Azevedo et al. (2012), and not synonymous with *P. cervii* Milward-de-Azevedo or *P. rubra* L., species with great morphological affinity. *Passiflora cervii* is distinguished by leaf blades trilobate to the apex; flowers with ligulate corona filaments, and ovate fruits. *Passiflora rubra* is distinguished by having flowers with hirsute ovaries and ovate fruits; it also does not occur in the Southeast Region of Brazil.

The illustrations of *P. bilobata* and *P. lunata* show a pubescent indument, linear-subulate stipules; bilobate leaf blades, petiolar glands and ocelli absent; flowers without pedicels and uniseriate corona. *Passiflora bilobata* also exhibits fusiform capsular fruit. The taxa occur in coastal vegetation, including formations of the Paraíba do Sul river and the Mantiqueira Mountains (Serra da Mantiqueira).

   

Sims (1818), describes and illustrates *P. edulis* as a herbaceous vine with linear-subulate stipules; leaves with petioles with one pair of glands, trilobate leaf blades, acute apex, cordate base, serrate margin, ovate bracts, solitary flower with aristate sepal and fruit a globose berry. The illustration of *P. diaden* shows leaves with petioles with one pair of glands, trilobate leaf blades with glands between the sinus, acute to obtuse apex, cordate base and serrate margin, ovate bracts with denticulate margin; and solitary flowers. The illustration and description by Vellozo (1831/1881), are very similar to the illustration and description of *P. edulis*, as already synonymized by Cervi (1997) and confirmed by Cervi & Rodrigues (2010).

   

Despite the brief description by Linnaeus (1753), *P. foetida* was described as a species with trilobate leaf blades, cordate base, villous indument and pinnatisect bracts. *Passiflora foetida* is distinguished by pinnatisect stipules and bracts. The illustration of *P. polyadenae* shows a vine with villous indument, glandular pinnatisect stipules, leaf blade trilobate to the apex, acute apex, cordate base, and pinnatisect glandular bracts.
There is no illustration of the flower and fruit, however, in the
description published in 1881, Vellozo mentioned a terminal
racemose inflorescence, flowers with scarlet petals, and fruits
as ovate berries, which demonstrates the similarity with P.
foetida var. foetida, as already confirmed and synonymized
by Cervi & Rodrigues (2010).

Vereins zur Beförderung des Gartenbaues in den Königlich
Preussischen Staaten 2: 403, t. 15. 1826.

= *Passiflora dentata* Vell. Fl. Flumin. 9, fig. 94. 1831
Lectotype (designated here): Brazil. [Rio de Janeiro]:
"collibus maritimis prope urbem"; [illustration] Original
parchment plate of *Flora Fluminensis* in the Manuscript
Section of the Biblioteca Nacional, Rio de Janeiro [cat.
no.: mss1198658_098] and later published in Vellozo, Fl.
flumin. 9, fig. 94, 1831.

*Passiflora kermesina* presents reniform stipules; leaves
with petioles with 2-4 glands, trilobate leaf blades, acute
to obtuse apiculate apex, cordate to truncate base, dentate
margin, linear bracts; and reddish solitary flowers. *Passiflora
dentata* was considered synonymous with *P. kermesina*, as
already synonymized by Killip (1938) and confirmed by
Cervi & Rodrigues (2010), because the illustration and
description by Vellozo (1831/1881) presents semi-cordate
asymmetrical stipules, leaves with petioles with glands,
trilobate leaf blades, acute apex, cordate to rounded base,
dentate margin; and solitary flowers.

7. *Passiflora mediterranea* Vell., Fl. Flumin. 9, fig. 72.
Lectotype (designated here): Brazil. [Rio de Janeiro or São
Paulo]: "fruticetis mediterraneis transalpinis"; [illustration]
Original parchment plate of *Flora Fluminensis* in the Manuscript
Section of the Biblioteca Nacional, Rio de Janeiro [cat.
no.: mss1198658_079] and later published in Vellozo, Fl.
flumin. 9, fig. 72, 1831.

Frequently identified as *P. jilekii* Wawra, described in
1863, the name *P. mediterranea* has priority, as already
established by Cervi & Rodrigues (2010), in accordance
with articles 38.8 and 38.9 of Melbourne Code (McNeill
et al. 2012). *Passiflora mediterranea* has reniform stipules;
oblique leaves with petioles with 7 glands, ovate leaf blades,
acute apex, cordate base, entire margin, ovate bracts; and
reddish solitary flowers with scarlet petals. It occurs
in vegetation formations along the Paraíba do Sul river and
Mantiqueira Mountains (Serra da Mantiqueira).

8. *Passiflora mucronata* Lam., Encyclopédie Méthodique,
Botanique 3: 33. 1789.

= *Passiflora pallida* Vell., Fl. Flumin. 9, fig. 70. 1831
Lectotype (designated here): Brazil. [Rio de Janeiro or São
Paulo]: "fruticetis maritimis ad loca arenosa"; [illustration]
Original parchment plate of *Flora Fluminensis* in the Manuscript Section of the Biblioteca Nacional, Rio de Janeiro [cat.
no.: mss1198658_074] and later published in Vellozo, Fl. flumin. 9, fig. 70, 1831.

Lamarck (1789) described *P. mucronata* as a vine without
indumentum and with cordate leaf blades and ovate stipules.
The illustration of *P. pallida* shows ovate stipules, leaves
with petioles with one pair of glands, ovate leaf blades,
acute apex, rounded base and entire margin; and flowers
with aristate sepalas. The description adds information
about the white color of the petals and the popular name
"maracujás-dos-morecogos". *Passiflora pallida* was considered
synonymous with *P. mucronata*, as already synonymized
by Killip (1938) and confirmed by Cervi & Rodrigues (2010).
This species is very common in the restingas of the Northeast
and Southeast regions of Brazil.

9. *Passiflora ovalis* Vell., Fl. Flumin. 9, fig. 75. 1831
Lectotype (designated here): Brazil. [Rio de Janeiro]:
"fruticetis maritimis"; [illustration] Original parchment plate of *Flora Fluminensis* in the Manuscript
Section of the Biblioteca Nacional, Rio de Janeiro [cat.
no.: mss1198658_079] and later published in Vellozo, Fl. flumin.
9, fig. 75, 1831. Epitype (designated here): Brazil, Rio de
Janeiro, Paraty, Área de Proteção Ambiental do Cairuçu,
Laranjeiras, estrada para a Praia do Sono, C. Duarte 88/09/
VIII/1994 (RB 310926).

= *Passiflora arvensis* Vell., Fl. Flumin. 9, fig. 71. 1831
Lectotype (designated here): Brazil. [Rio de Janeiro or São
Paulo]: "silvis maritimis"; [illustration] Original parchment plate of *Flora Fluminensis* in the Manuscript
Section of the Biblioteca Nacional, Rio de Janeiro [cat.
no.: mss1198658_075] and later published in Vellozo, Fl.
flumin. 9, fig. 71, 1831.

Frequently identified as *Tetrastylis ovalis* (Vell.) Killip,
the name *P. ovalis* has priority because the genus *Tetrastylis*
Barb. Rodr. was subordinated to the section *Tetrastylis*
(Barb. Rodr.) Harms, subgenus *Deidamioides* (Harms) Killip
(MacDougal & Feuillet 2004).

*Passiflora ovalis* is characterized by elliptical to lanceolate
leaf blades, racemose inflorescence, and flowers with four
styles and ovary with four carpels. The illustration of *P. ovalis*
shows leaves with petioles with one pair of glands, elliptical
leaf blades, acute apex and base, entire margin and linear
bracts; and racemose inflorescence and fruits as ellipsoid
berries with four carpels. Three, not four, persistent styles
were observed in the fruit. The flowers were not illustrated
or described in Vellozo (1831/1881). Therefore, C. Duarte 88
(RB 310926) is designated as the epitype, considering that
this material is quite representative of the floral morphology,
thereby complementing the illustration of Vellozo, because
the original illustration of *P. ovalis* is very rudimentary
having only fruits.
Passiflora arvensis was considered synonymous with P. ovalis, as already confirmed and synonymized by Cervi & Rodrigues (2010), and exhibits lanceolate-ovate leaf blades, acute apex and base, entire margin; racemose inflorescence, and fruits as globose berries. The description and illustration show the petiole to lack glands, which were probably overlooked by Vellozo (1831/1881) because they are adpressed.


Frequently identified as P. organensis Gardner, described in 1845, the name P. porophylla has priority, as already established by Cervi & Rodrigues (2010), in accordance with articles 38.8 and 38.9 of Melbourne Code (McNeill et al. 2012). Passiflora porophylla has bilobate leaf blades with ocelli, as does P. rubra, which also has a flower with a corona with uniseriate filaments dialated at the apex. Both species are very similar to P. porophylla, as confirmed and synonymized by Cervi & Rodrigues (2010).


Conable (1828) described P. setacea based on a type material from Rio de Janeiro as having a velutine indumentum; leaves with petioles with two glands; trilobate leaf blades, acute apex, cordate base, serrate margin and ovate bracts. The illustration and description of P. sururuca shows a vine with a tomentose indumentums; leaves with petioles with one pair of glands, trilobate leaf blades, acuminate apex, cordate base, serrate margin and lanceolate-ovate bracts; and flowers with aristate sepals and fruit as globose berries. Passiflora sururuca was considered synonymous with P. setacea, as already synonymized by Killip (1938) and confirmed by Cervi & Rodrigues (2010), and according to Vellozo, the taxa occurs in vegetation formations along the Paraíba do Sul river and Mantiqueira Mountains (Serra da Mantiqueira).


Frequently identified as P. galbana Mast., the name P. silvestris has priority, as already established by Cervi & Rodrigues (2010), in accordance with articles 38.8 and 38.9 of Melbourne Code (McNeill et al. 2012). Passiflora silvestris has asymmetrical semicordate stipules; lanceolate-ovate
leaf blades, acute apex, obstone to rounded base and entire margin; and oblong ovary and fruits.


Frequently identified as *P. sidifolia* Moench, the name *P. tetraden* has priority, as already established by Cervi & Rodrigues (2010), in accordance with articles 38.8 and 38.9 of Melbourne Code (McNeill et al. 2012). *Passiflora tetraden* has asymmetrical semicordate stipules, leaf blades trilobate to the apex, obstone apex, rounded base and entire margin; and flowers with banded coronal filaments.

References


