Typification of Solanum species (Solanaceae) described
by Casimiro Gómez Ortega

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Abstract


Neotypes are designated for six names coined by Casimiro Gómez Ortega that were described as members of the large genus Solanum (Solanaceae), Solanum crassifolium, S. cymosum, S. ficifolium, S. leprosum, S. subbiflorum, and S. violaceum. A brief introduction describes the role of Gómez Ortega the botany of his time, and identifies difficulties in typifying names published by him. The currently accepted name for each taxon is given. Each typification is accompanied by a discussion of the reasoning behind the choice of specimen, and all neotypes are illustrated except that of S. crassifolium, which has been illustrated earlier.

Keywords: typification, historic collections, exploration, garden, Linnaean, Cavanilles.

Resumen


Se designan los neotipos de seis nombres acuñados por Casimiro Gómez Ortega que fueron descritos dentro del género Solanum (Solanaceae), Solanum crassifolium, S. cymosum, S. ficifolium, S. leprosum, S. subbiflorum y S. violaceum. Se incluye una breve introducción explicando el papel de Gómez Ortega en la botánica de su tiempo, así como las dificultades que entraña tipificar los nombres publicados por él. Se incluye el nombre aceptado para cada especie. Cada tipificación se acompaña de una discusión explicando las razones para la elección de los especímenes. Todos los neotipos están ilustrados salvo el de S. crassifolium.

Palabras clave: tipificación, colecciones históricas, exploraciones, jardín, linneano, Cavanilles.

INTRODUCTION

European botanical gardens in the 18th and 19th centuries were the first places most botanists saw the rich wealth of the flora of the New World, either as herbarium specimens or as plants brought into cultivation from seeds sent back by early explorers. Solanaceae featured prominently in these novels not only because the Americas are the centre of diversity at both the generic and specific ranks in the family, but also because many Solanaceae are relatively weedy and easy to cultivate. Solanum L., with ca. 1500 species, is the largest genus in the Solanaceae and one of the ten most species-rich genera of flowering plants (Frodin, 2004). As part of the collaborative project “PBI Solanum: a world-wide treatment” (see Knapp & al., 2004; http://www.solanaceasource.org), descriptions of all species of Solanum together with details of types and nomenclature are being provided via an on-line taxonomic resource, Solanaceae Source. One of the goals of the PBI Solanum project is to typify all Solanum names that lack precise types, helping to stabilise nomenclature and facilitate further taxonomic research. This paper is the third of a series (Knapp, 2007, 2008a,b) on the nomenclature of Solanum in which types for the names described by a particular author (rather than for a taxonomic section of Solanum) are designated.

Casimiro Gómez Ortega was the first professor of botany and director of the Real Jardín Botánico in Madrid, and in the late 18th century had the opportunity to grow in the garden plants from the great expeditions funded by the Spanish crown. He was an early proponent of the Linnaean system of binominal nomenclature (Jarvis, 2007), but published little in the way of descriptions of new taxa. He was fiercely opposed to the use of the garden by other contemporary botanists like Antonio José Cavanilles (González Bueno, 2004), who had returned to Madrid from Paris in 1798 and whose prodigious output dwarfed his own (and who succeeded Gómez Ortega as professor and director of the garden in 1801). Cavanilles published his series of Icones et descriptiones plantarum (1791-1801), in which he described many of the plants sent by expeditionary botanists and grown in the Real Jardín Botánico, something Gómez Ortega had failed to do during his tenure as director. Gómez Ortega did, however, publish a series of descriptions of some these new plants, apparently partly in competition with Cavanilles, as Novarum, aut rariorum plantarum Horti Reg. Botan. Matrit. descriptionum decades between 1797 and 1800 (Gómez Ortega, 1797, 1798a,b, 1800). Each “decade” described between 10 and 15 species, and very few of them were illustrated, those that were appear to have been drawn from live plants. No Solanum species were illustrated in these works.

In the materials Cavanilles used to teach botany in the garden in 1802 once he became professor and director (Cavanilles, 1802), he synonymised some of Gómez Ortega’s names with his that were published earlier (S. crassifolium Ortega, S. cymosum Ortega) but recognised others (e.g., S. ficifolium Ortega, S. leprosum Ortega). Still others (S. subbiflorum Ortega, S. violaceum Ortega), however, did not appear in the 1802 publication, suggesting they were no longer in cultivation in the garden and used for teaching (although see below under S. subbiflorum).

Like many botanists of the 18th century based in botanical gardens (see Jarvis, 2007), Gómez Ortega did not describe his new species from herbarium specimens, but rather from plants grown in the garden, often from seeds sent by others. This is clear from his descriptions (see below) and means that...
any types designated must be designated neotypes rather than lectotypes. In selecting the specimens I have designated as neotypes I have used the following specimen guidelines: 1) from plants cultivated at the Real Jardín Botánico in Madrid, 2) from the time Gómez Ortega was professor at the garden, 3) annotated by a staff member of the garden (often José Demetrio Rodriguez) with Ortega’s epithet, and 4) good match to Ortega’s protologue. Specific reasoning is described with each epithet neotypified below.

**TYPIFICATIONS**


Ind. loc.: “Habitat ... Floret in Hort. R. Matr. Mensibus Julio, Augusto, & Septembri è seminibus communicatus a D.D. praelaudato Pourret”.

Neotype, designated here: MA 308535; isoneotype (fragment) F.

Current accepted name: Solanum betaceum Cav.

In her monograph of *Cypophyllum* (now recognised as the Pachyphyllum clade of *Solanum*) Bohs (1994) suggested there was no type material extant for Gómez Ortega’s *S. crassifolium*, which is a later homonym of a name coined by Lamarcq now considered a synonym of *S. africanum* Mill. (an unrelated member of the African Non-Spiny clade of Bohs, 2005). Ortega describes the seeds as coming from Pierre André Pourret (1754-1818), a French botanist who was exiled to Spain during the French Revolution (1789). I found no material in the general herbarium at MA that satisfied any of my criteria; the lectotype specimen I previously chose (Knapp, 2007: 196) for *S. betaceum* is the only possible candidate too have come from plants Gómez Ortega would have seen (see Fig. 1A in Knapp, 2007). Cavanilles’ description of *S. betaceum* (Cavanilles, 1799) is not at all similar to Ortega’s, suggesting the two plants Gómez Ortega would have seen (see Fig. 1A in Knapp, 2007). Cavanilles’ description of *S. betaceum* (Cavanilles, 1799) is not at all similar to Ortega’s, suggesting the two botanists examined the living material at different times. Although Cavanilles does not mention the source of the material it is likely that the plant both men described was originally given to the Jardín by Pierre André Pourret, who worked in Madrid for a time during his exile from France.


Ind. loc.: “Habitat in Regno Mexicanensi. Floret mense Augusto, Septembri, et Octobri in Reg. Horto Matri. è seminibus missis per D. Sessé”.

Neotype, designated here: MA 476353.

Current accepted name: Solanum lanceolatum Cav.

I found no material in the MA general herbarium that was found with any connection to Ortega’s epithet and that met my criteria. The sheet is of a particularly narrow-leaved plant of *S. lanceolatum*, a species described by Cavanilles two years earlier (Cavanilles, 1795), also from Mexico (but not attributed to Sessé and Mocino). The protologue does not match this specimen particularly well as it describes a plant with prickly stems and oblong leaves, but the phrase “ramea nonnulla lanceolata” suggests Gómez Ortega was specifically differentiating his plant from Cavanilles’s *S. lanceolatum*. *Solanum lanceolatum* is extremely variable in leaf shape.


Ind. loc.: “Habitat in Insula Cuba. Floret in Horto R. Matri. Octobri, et Novembri, è seminibus missis per D. Espinoso”.

Neotype, designated here: MA 3354586.

Current accepted name: Solanum ferrugineum Jacq.

*Solanum ficifolium* has long been treated as a synonym of the widespread tropical weed *S. torvum* Sw. (e.g., Dunal, 1813, 1852; Whalen, 1984; Nee, 1999) but none of the material in MA identifiable with Ortega’s epithet corresponds to that species. It is possible that this synonymy was predicated on the type locality of Cuba cited by Gómez Ortega; seeds were said to have been sent by Mariano Espinosa, a Cuban resident and correspondent of Gómez Ortega’s who was in contact with but not part of the Sessé and Mocino expedition (McVaugh, 1977; Blanco & al., 2000). All of the material annotated as *S. ficifolium* I have found at MA (with a single exception see below) corresponds to *S. ferrugineum*, a species of western Mexico that does not occur on Cuba and that differs from *S. torvum* in its deflexed fruiting pedicels and glandular stellate trichomes. It is possible that Espinosa received seeds of *S. ferrugineum* from Sessé whilst the latter was in Cuba (1795-1798) and then sent them to Gómez Ortega without provenance, hence the assumption they were from a Cuban plant. Some support for this explanation can be found also in the case of *Malvella leprosa* (Ortega) Kraptorviczas (Malvaceae), a common Mexican species unknown from Cuba, that was originally described by Ortega based on plants grown from supposedly Cuban seeds sent by Espinosa (Fuerst & Fryxell, 1993).

Four sheets annotated as *S. ficifolium* were found in the general herbarium at MA, all appear to have been prepared from plants grown in the garden. MA 308539 bears a label “Solanum ficifolium Ortega, ex horto 1803” in the hand of José Demetrio Rodriguez and has sinuate leaves and two small inflorescences; it was collected after the publication of *S. ficifolium* and possibly could be from different plants to those seen by Ortega. MA 3354586/4 is a mixed collection with
Fig. 1. a, neotype of *Solanum cymosum* Ortega (= *Solanum lanceolatum* Cav.) (MA 476353); b, neotype of *Solanum ficifolium* Ortega (= *Solanum ferrugineum* Jacq.) (MA 334586); c, neotype of *Solanum leprosum* Ortega (= *Solanum elaeagnifolium* Cav.) (MA 334600); d, neotype of *Solanum subbiflorum* Ortega (= *Solanum capense* L.) (MA 308482).
three plant fragments and two labels “Solanum ficifolium Ortega” in hand of José Demetrio Rodriguez (?) and “Solanum ficifolium [Lagasca hand]/Ortega Decad [unknown hand]”/RL Jardín de Madrid [pale brown unknown hand, see above]”. Of the three fragments on sheet two are referable to *S. ferrugineum* Jacq., one with more or less sinuate leaves (in the upper L of the sheet) and the other with the characteristic deflexed fruiting pedicels of that species (lower right of the sheet); neither of these fragments have flowers. The third plant fragment is a tiny piece of what appears to be right of the sheet); neither of these fragments have flowers. These fragments are from older plants with angular (not sinuate) leaves, in *Solanum* juvenile leaves are often repand and sinuate (Roe, 1966). Also filed as *S. capense* L. A sheet (MA 334586/2) labelled “Solanum ficifolium Ortega” in unknown hand consists of three fragments that are clearly referable to *S. ferrugineum*, two have flowers and fruit on deflexed pedicels and the third only flowers. This sheet best matches Ortega’s protologue which mentions both sinuate leaves and branched inflorescences and so is here selected as the neotype (Fig. 1b). Although this juvenile plant lacks the diagnostic fruiting pedicels, the stems and inflorescences have the glandular stellate trichomes characteristic of *S. ferrugineum*.


Current accepted name: *Solanum eaeagnifolium* Cav.

I found several sheets filed as *S. leprosum* in MA (MA 334600, MA 334584, MA 334600/2, MA 334600/3); of these only MA 334600 (the 3 sheets) are potential neotype material, as MA 334584 does not match the protologue in being from Mexico (“Née iter, Nueva Espana”) and being non-prickly version (prickles are mentioned in the protologue). The three sheets of MA 334600 are probably from the same plant; their morphology is all very similar. All are labelled as *S. leprosum Ortega*; MA 334600/2, MA 334600/3, in hand of José Demetrio Rodriguez, MA 334600/3 as “Solanum leprosum Ortega decade” in an unknown hand, and MA 334600 as “Solanum leprosum Ortega” in what is probably the hand of Rodriguez, but without a date. MA 334600 is the best preserved sheet and has a bud and two flowers clearly showing the decline style mentioned in the protologue and is chosen here as the neotype (Fig. 1c). All of these specimens are clearly identifiable as *S. elaeagnifolium*, described by Cavanilles five years earlier, also from material collected in Chile by Luis Née, the botanist on the Malaspina Expedition (1789-1794; Muñoz Garmendia, 1992) that circumnavigated the globe and sent many novelties back to Spain for cultivation in the Jardín Botánico.


Ind. loc.: “La planta se cultiva en el jardín de esta Corte… Lo he visto en flor y fruto en dicho jardín”. Neotype, designated here: MA 308482.

Current accepted name: *Solanum capense* L.

No material filed as *S. subbiflorum* was found in the general herbarium, in the list of plants used by Cavanilles in teaching in the year 1801 (Cavanilles, 1802) *S. subbiflorum* was recognised as a synonym of *Solanum milleri* Jacq. (itself a synonym of *S. capense* L.).

Filed as *Solanum milleri* in the general herbarium are several sheets, two were not collected from plants cultivated “en el jardín de esta Corte”; MA 573873 is a specimen donated by a secondary school in San Isidro and MA 308506 was collected on an unknown date by a Sr. Pascal. Two additional sheets are from material cultivated at the Real Jardín Botánico; one is too late to have been collected from the same plant Gómez Ortega used for his description (MA 3084902, dated 1844), MA 308482 (Fig. 1d) is annotated as “Solanum milleri Jacq./Solanum subbiflorum Ortega/Ex Hort. Matr. 1803” in the hand of José Demetrio Rodriguez and is likely to be material from the same plants used by Gómez Ortega three years earlier to describe *S. subbiflorum* and I have selected this sheet as the neotype. All of these sheets are identifiable as *S. capense* L.

*Solanum violaceum* Ortega, Nov. Pl. Descr. Dec. 56. 1798


Current accepted name: *Solanum violaceum* Ortega.

*Solanum violaceum* is the currently accepted name for the species long known as *S. indicum* L. That name appears in Appendix II of the Code (McNeill & al., 2006) and was rejected based on inconsistency of its use and the confusion created by this (see Hepper, 1978). *Solanum violaceum* is a wide spread weedy species occurring throughout Asia and into the Mascarene Islands of the Indian Ocean; Hepper (1978a) quite incorrectly synonymised it with *S. anguivi* Lam., a very similar but different widespread species of Africa (see Vorontsova & Knapp, 2012).

Two specimens in MA, both from plants cultivated in the Real Jardín Botánico (“Hort. Reg. Matr.”), are identifiable as *S. violaceum*. One is a poor sheet with crumpled unusually small leaves and fruits only (MA 208082, Kew negative 1703 taken in Jan 1977), is labelled “Rl. Jard de Mad” in the unknown pale brown hand (see above) and bears no date; the other (MA 307449) is in flower and fruit and has a label “Solanum indicum Linn./Solanum violaceum Ortega/ Hort. Reg. Matr./ño 1801” in hand of José Demetrio Rodriguez. The late Richard N. Lester in appropriately annotated the fruiting specimen as “holotype” material. This sheet does not
correspond to the protologue, and in addition to being a poor specimen does not have the long straight fruiting pedicels of material currently identified as \textit{S. violaceum}. The flowering sheet (MA 307449, Fig. 2) corresponds better to the protologue description of sinuate leaves “cordatis sinuatis” with coriaceous bases, has a date consistent with it being cultivated when Gómez Ortega’s tenure as director and is thus the logical choice for a neotype. Although the sheet is dated 1801, this species does not appear in Cavanilles’s (1802) teaching list.

The protologue states seeds were originally collected “Bahia Botanica” (Botany Bay in New South Wales, Australia) and were obtained from the Marquess of Bute, John Stuart the 4th Earl of Bute who, like Gómez Ortega, was a Fellow of Royal Society in London. The seeds from which these plants were grown were possibly brought back by Joseph Banks, another member of the Royal Society and friend of Bute. There are no herbarium specimens of \textit{S. violaceum} definitely attributable to Banks in BM, but a sheet of a plant grown in the Chelsea Physic Garden in London (BM000942996) is dated 1778. I suspect the seeds received by Gómez Ortega were from the same source as this Chelsea plant, most likely India; \textit{S. violaceum} does not occur in Australia.

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