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## THE PORTRAIT OF *PINGUICULA INVOLUTA* RUIZ & PAVON IN THE “FLORA PERUVIANA”: A BOTANIC DETECTIVE STORY

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On March 31, 1788, the pharmacognost and botanist Hipólito Ruiz López (Hipólito Ruiz), the pharmacognost Antonio Pavón Jiménez, and the draftsman Isidro Gálvez Gallo returned to Spain after an approximately ten-year long expedition (1777-1788) to the Viceroyalty of Péru. The plant hunters of the team had been very successful: they collected about 3,000 specimens of plants and made about 3,000 life-sized colored botanical illustrations. Of these, 2,230 survived and are preserved in the Archives of the Royal Botanical Garden of Madrid. They described about 150 new genera and 500 new species. In 1798, the first volume of the “Flora Peruviana, et Chilensis... et icones...” together with their “Systema vegetabilium...” were published. These volumes were preceded by the 1794 edition of the “Florae peruvianae, et chilensis ...prodromus...”. The travel itself was described in detail by Hipólito Ruiz *et al.* (1940)<sup>1</sup>.

*Pinguicula involuta* (Front Cover), our subject of desire, was described in the “Flora Peruviana et Chilensis...” (Ruiz & Pavón 1798a, 1: 20) and in their “Systema vegetabilium...” (Ruiz & Pavón 1798b: 136). The diagnosis runs, identically in both publications, as follows: “P[inguicula]. nectario conico longitudine petali, scapo unifloro villosa, foliis ovatis, marginibus involutis.”

The feature “rosette leaves ovate with margins rolled inwards” was the crucial factor for naming and binding of the nomen specificum *involuta*. However, initially another epithet was preferred. From the “Travels...” (Ruiz *et al.* 1940: 42) we learn that, on May 26, 1779, the collectors began their excursions and journeys “...through the montañas of Huasahuasi [sic!] and Palca...” of the province Tarma, and continued them “...to the April 24<sup>th</sup>, 1780... During this time, we discovered a considerable number of trees, shrubs, grasses and herbs... all of which will be described extensively in the Flora of Peru, and I restrict myself here to indicating their generic and trivial names...” In the list of the plants, we read on page 45 “*Pinguicula stellata*” without any additional remark.

In chapter XLVIII (Ruiz *et al.* 1940: 229) it runs (with reference to the activities in 1787): “During our excursions through the montañas of Pillao and Chacahuasi I gathered and put in press a great number of plants, of which some were sketched, and I described the following.”

Finally, in their “Flora...” as well in their “Systema vegetabilium...” Ruiz & Pavón substituted the epithet “*stellata*” by “*involuta*” based on the feature “foliis ovatis marginibus involutis”. Apart from this feature, *P. involuta* is distinguished by the corolla upper-lip lobes much shorter than the lower-lip ones and by the relatively long (about as long as the corolla lobes), slender, and cylindric but slightly curved spur.

The new *Pinguicula* species is illustrated nearly life-sized in color on lamina XXXI, fig. c (see Fig. 1 left). Four taxa are illustrated on this plate: *a Calceolaria virgata*, *b Utricularia unifolia*, *c Pinguicula involuta*, *d Utricularia aphylla*. This fact alone indicates that the painting is a combina-

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<sup>1</sup> The report of the excursions by Ruiz entitled “Relación del viaje hecho a los reynos del Perú y Chile...” prepared from his journals and completed for publication in 1793, remained unpublished in his lifetime. In 1931 it was published in Madrid. We studied the edition of 1940 in Dahlgren’s English translation.



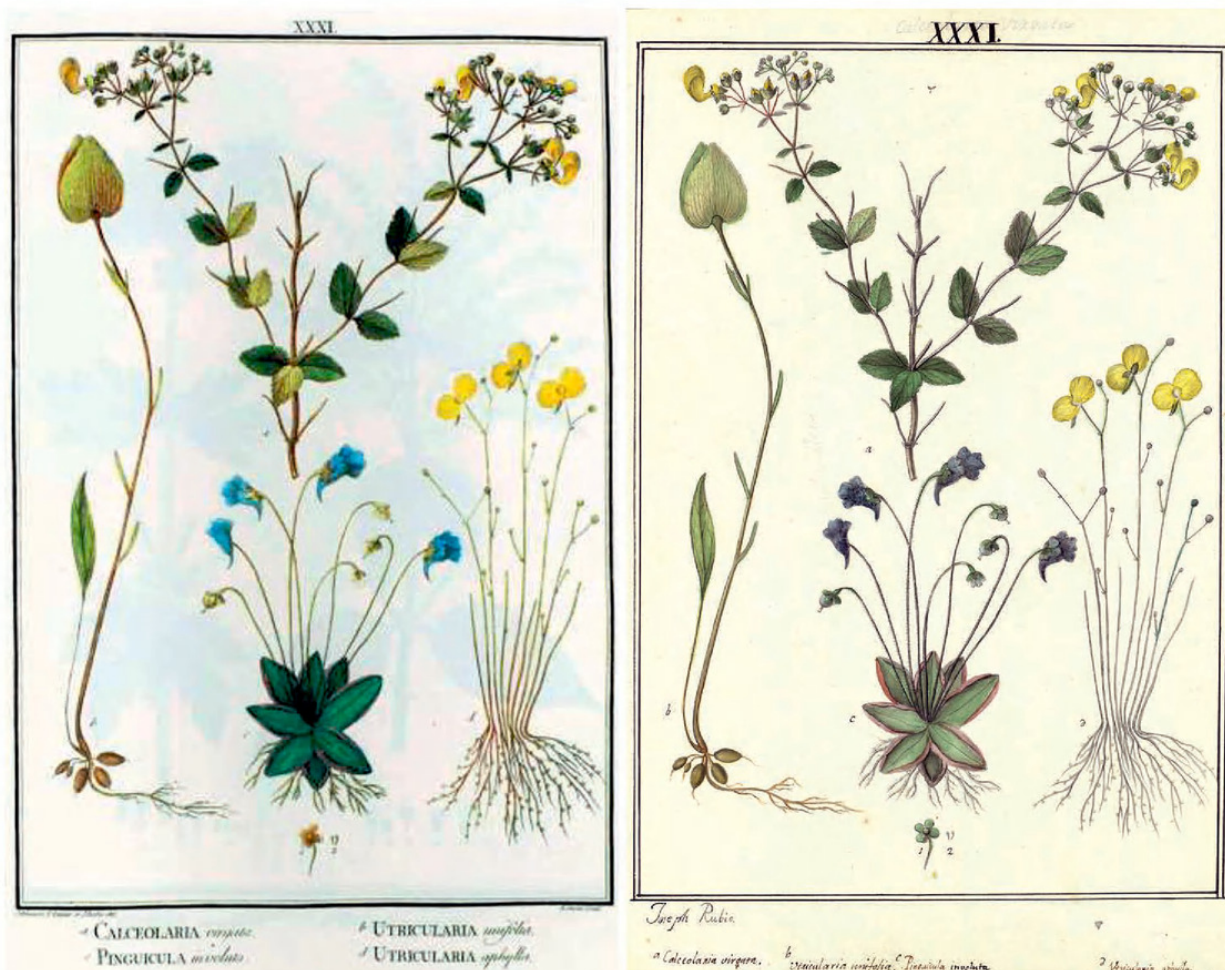


Figure 1: Left: Photocopy of the printed plate from Ruiz & Pavón (1798a) Flora Peruviana... 1: Lam. XXXI with the watercolor portrait of *Pinguicula involuta*. Right: Photocopy of the original drawing of Joseph Rubio (signature on the bottom left-hand outside the frame) from Archivo del Real Jardín Botánico (CSIC: AJB04-D-0066\_00), Madrid. Div. IV. Photocopy reproduced with permission.

tion based on various patterns.<sup>2</sup> The portrait is attributed to the draftsmen J. Brunete<sup>3</sup>, F. Pulgar<sup>4</sup>, and J. Rubio<sup>5</sup> as the signatures on the bottom left-hand outside the frame shows. The engraver of this illustration included their signature (“P. Suria”) at the bottom right corner, outside the frame.

Who of the named three artists painted our *Pinguicula*? Is the fine portrait a true-to-life illustration?

From the “original” drawing preserved in the Archivo del Real Jardín Botánico Madrid (CSIC: AJB04-D-0066\_00; see Fig. 1 right) it seems to be evident, that Joseph Rubio painted the entire plate XXXI. He added the names of the plants on the bottom outside the frame, too. (The engraver is not signed). J. Rubio had joined the Flora Peruviana team at Madrid in 1792. As he had never been in Peru, his drawings relied upon information given by the members of the expedition, the collected specimens, and the original drawings made on the spot, which are now housed at Madrid.

<sup>2</sup> José Brunete drew *Utricularia bifida* (= *Utricularia aphylla* (lam. XXXI, fig. d). Whether he also drew *Utricularia unifolia* (lam. XXXI, fig. b), we could not find out. Besides *Pinguicula involuta*, J. Rubio drew *Calceolaria virgate* (lam. XXXI, fig. a).

<sup>3</sup> José Brunete was the “first draftsman” of the expedition. He did not return to Spain. He died in Pasco in 1787 (Pupulin 2012).

<sup>4</sup> In May 1784, Francisco Pulgar (together with the botanist Juan José Tafalla Navascués, who replaced J. Dombey who had left the group four weeks before.) joined the expedition team in Peru and remained there until he died in 1815.

<sup>5</sup> In July 1792, Joseph Rubio was nominated director of engraving of the Flora Peruana by the “Junta de la Flora” and, in November 1793, as draftsman.





Figure 2: *Pinguicula involuta*, lectotype MA 815471. In the plate center the unusual specimen(s) with eight long stalks, some fruitless. This is presumably the source material for Rubio's drawing. Photocopy reproduced with permission

Following Dominguez *et al.* (2017:185) it is likely that as J. Rubio prepared the painting of *Pinguicula involuta* (Ruiz & Pavón 1798a: lam. XXXI, fig. c), he had in his hands the specimens of MA 815471. This specimen is unusual because of the large number of scapes developed on a presumably solitary *Pinguicula* rosette (see Fig. 2). This specimen bears eight leafless scapes curving upwards, none with flowers and fruits, but with seven retaining calyxes. J. Rubio's drawing shows also eight scapes, four flowering and four fruiting, the latter shorter than the flowering ones (see Fig. 1). Apparently during the making of the plate, the draftsman supplemented the specimen with flowers and fruits missing on the voucher. He might have used the single flower that is conserved on specimen MA 815471 as his model, however, did he do so? In spite of the apparent similarity of the drawing to the specimen on MA 815471 some problems remain. First, the flowers are drawn too beautifully, and do not correspond with preserved specimens. Second, the spurs are drawn sickle-shaped, unlike



the slender-cylindric ones in nature. Finally, the leaf rosette is drawn too schematically and does not compare well with the dried specimen. Apparently, it is unclear whether the illustration is based upon one or several specimens.

Does the Rubio-drawing reproduce the real character of the taxon in question? The generative parts (i.e. flowers and fruits) are the product of fantasy. A true-to-life illustration would have shown extremely short stalks with overhanging flowers overtopped by mature fruiting stalks. (As a rule, the fruiting scapes of *Pinguicula* are longer than the flowering ones and are not pendent.) The vegetative part, i.e. the leaf rosette, is drawn as a regular star with eight oblong (instead of ovate, as described in the protologue) leaves whose margins are hardly curled up. Rubio's portrayal (as seen in Fig. 1) is a diagram rather than a realistic illustration. Rubio's illustration is an idealization of a plant he never saw in life.

Surprisingly, such a true-to-life illustration of *Pinguicula involuta* exists!

The portrait, housed in the Archivo del Real Jardín Botánico (CSIC), Madrid, shows a dense cluster of green leaf rosettes forming a kind of cushion consisting of seven flowering and five budding plants (see Fig. 3). The very short (10-20 mm long) scapes bear blue flowers about 9-12 mm long. Fruiting specimens are not drawn. The leaf rosettes are star-like ("stellate"), the leaves are oblong with margins curled up. Below and to the left of the main picture is a single, isolated stalked open flower calyx. The plate is numbered XXXI, the portrait is signed by Fran.<sup>co</sup> Pulgar (inside the frame left-hand at the bottom), and is named "*Pinguicula stellata*", on the bottom outside the frame.

From the artist's name F. Pulgar and the epithet *stellata* it is evident that the portrait was made in Peru during the expeditions to Panao and Chucawasi, which occurred after May 1784<sup>6</sup>, after the devastating fire in Macora in 1785. Most probably it was made in 1787 (Ruiz *et al.* 1940: 229-230). Pulgar didn't draw "on-the spot" however; he probably worked with fresh flowering material brought to him by the botanists.<sup>7</sup> Together with their information, he designed a picture that is almost life-like as comparison with modern photographs of the taxon in question shows (see Figs. 4 & 5). The epithet "*stellata*", known to us otherwise but from Ruiz' journal of travels (1940: 45, 230),

<sup>6</sup> Cf. footnote 4.

<sup>7</sup> As noted in Puig-Samper (2012): "Our artists... work... without leaving to go to the field or forest and without the hikes the botanists do..."



Figure 3: *Pinguicula stellata*. Photocopy of Francisco Pulgar's drawing. Archivo del Real Jardín Botánico (CSIC), Madrid. Div. IV. Photocopy reproduced with permission.



is an additional argument for the assumption of the Peruvian origin of the Pulgar plate.

During the making of the first volume of the Flora Peruviana, the Pulgar portrait and the epithet *stellata* “disappeared”. After its return to Madrid in 1788, the expedition team immediately started its work in preparing Prodrumus, Systema vegetabilium, and Flora of Peru and Chile, which were produced 1798 and the following years. Ruiz examined the material collected—especially checking the vouchers and paintings—made detailed descriptions of the collected plants (and animals), and arranged the illustrations for printing. After November 1793, José Rubio was responsible for making a great part of the plates of vol. 1 of the Flora Peruviana – 77 plates were attributed to him. Apparently, Rubio was prompted by Ruiz(?)<sup>8</sup> to combine the available paintings, vouchers, and descriptions of *Pinguicula stellata* to draw a picture of a single specimen representing the new species. In the process, its name was changed into *Pinguicula involuta*<sup>9</sup>.

Many questions remain regarding the production of Rubio’s illustrations. We believe that Rubio had in his hands the painting of Pulgar—otherwise how does he know the shape and color of the flowers? But why did he present a specimen with both flowers and fruits, as he had never seen living or dried specimens? Had he been instructed by the botanists?

Rubio’s isolated single specimen of plate XXXI is not the product of true-to-life drawing, it is the result of combination of various sources available to him. But is it mainly the result of elaboration on his part? Or is it the result of the addition of elements (perhaps imagined) by a number of artists and botanists?<sup>10</sup> It may be that Ruiz favored the final single-specimen-version against the original cluster-version to bring the picture in line with the other plant portraits of the Flora Peruviana.



Figure 4: *Pinguicula involuta*. Inca Trail Peru. Cluster of star-like leaf rosettes. A single elongated and erect fruiting scape (center) is visible. Apart from the fruiting scape, such a living individual could have been the pattern of Pulgar’s portrait of *Pinguicula stellata*. Photograph: F. Rivadavia, with permission.



Figure 5: *Pinguicula involuta*. Inca trail Peru. Short-stalked flower in midst of a dense cluster of star-like leaves (its margins heavily curled up). Photograph: F. Rivadavia, with permission.

<sup>8</sup> In the first half of 1794, the “Prodrumus” was finished and the expedition members could prepare the descriptions and drawings for the first volumes of the Flora Peruana. Originally, I. Galvez, the first draftsman of the expedition, had to complete and perfect the drawings before handing them over to the engravers. We could not determine how deeply the real Jardín Botánico senior professor C. Gómez Ortega was involved in the preparation of the Flora Peruana. He ended his participation in his Flora Peruana activities at the end of May 1794. The description of the new species of the genera already known to science was performed between 1795 and 1804 (cf. Rodríguez Nozal 2007).

<sup>9</sup> This is not the only case where a field (working) *Pinguicula* name was changed—Bonpland replaced *Pinguicula loxensis* with *Pinguicula calyptrata* and *Pinguicula Mexicana* by *Pinguicula moranensis* (Casper 2003).

<sup>10</sup> This is a clear violation of the official “instructions to the artists” given to J. Brunete and I. Galvez at the beginning of the expedition, that was to strictly copy nature in their production without adding elements of imagination.



Our study has shown that the printed portrait of *Pinguicula involuta* in Ruiz-Pavón's Flora Peruviana (1798a, Vol. 1, lam. XXXI, fig. c), has been drawn by Joseph Rubio. The artist made the illustration in Madrid after 1793, based upon the descriptions from botanists (apparently Hippolito Ruiz), the preserved dried specimens of the plants (probably collected 1787 between Panao and Chacahuasi in Peru), and the original color drawing of a cluster of a blue flowering *Pinguicula* made by Francisco Pulgar in Peru (initially named *Pinguicula stellata* by Ruiz).

Rubio's portrait does not represent a true-to-life illustration of the specimen. It differs from reality by the following features:

1. The characteristic dense cluster-like growth has been given up in favor of an (allegedly) isolated growth of a single specimen.
2. The leaves of the rosette lack the heavily curled up margins.
3. Short overhanging fruiting stalks and overtopping flowering stalks rise from the leaf rosette. In reality, the relation of length between flowering and fruiting stalks is quite different; the fruiting flower stalks are erect (never overhanging), and distinctly overtop the flowering ones.

The Rubio portrait of *Pinguicula involuta*, and—to a certain degree—the original description in the Flora Peruviana can no longer be assessed as accurate. A modern concept of the taxon has to consider the Pulgar drawing and, naturally, the actual findings from recent collections.

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