

The genus *Pinguicula* (Lentibulariaceae) in Morocco

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In Morocco the genus *Pinguicula* L. (Lentibulariaceae) is represented by two species: *P. lusitanica* L. and *P. fontiqueriana* Romo, Peris & Stübing *sp. nov.* The previous reports of *P. vulgaris* L. and *P. corsica* Bernard & Gren. from Morocco were based on misidentified specimens. A key to all four species is provided and *P. fontiqueriana* is illustrated in line drawings.

Key words: Lentibulariaceae, Morocco, *Pinguicula*, taxonomy

INTRODUCTION

In the scope of the EU project “Floristic Biodiversity of Northern Morocco”, in which the authors of this paper are collaborating, we have found in the BC and MPU herbaria interesting specimens of the genus *Pinguicula* L. (Lentibulariaceae), some of which represent an undescribed species.

In Europe and North Africa, species of *Pinguicula* are restricted to bogs and other wet habitats. Some species from areas of moderate rainfall, such as *P. villosa* L. (Fennoscandia, Sweden and North-West Russia), *P. grandiflora* Lam. (Ireland and mountains of South-West Europe), *P. vulgaris* L. (North, West and Central Europe, extending eastwards to West Ukraine) and *P. lusitanica* L. (West Europe and North-West Morocco) have a wide distribution area. Other species from drier territories, such as *P. hirtiflora* Ten. and *P. balcanica* Casper (Balkan Peninsula), *P. longifolia* Ramond ex DC.

(Pyrenees and Apennines), *P. leptoceras* Reichenb. (Alps and Apennines) and *P. vallisneriifolia* Webb. (Mountains of South-East and Central-East Spain) have more restricted distributions. A third group of species are endemics of limited distribution area: *P. corsica* Bernard & Gren. (Corse) and *P. nevadensis* (Lindb.) Casper (Sierra Nevada and Sierra de Alfacar). Within this group, there are still some undescribed species, especially in poorly explored areas such as the Rif Mountains, where, in spite of the surrounding dry Mediterranean climate, the altitude and microclimate give rise to isolated bogs which serve as refugia for these hygrophilous plants.

THE GENUS *PINGUICULA* IN MOROCCO

The existing literature and the consulted herbarium materials suggest that the genus *Pinguicula* is represented in Morocco by three species: *P. lusitanica*,

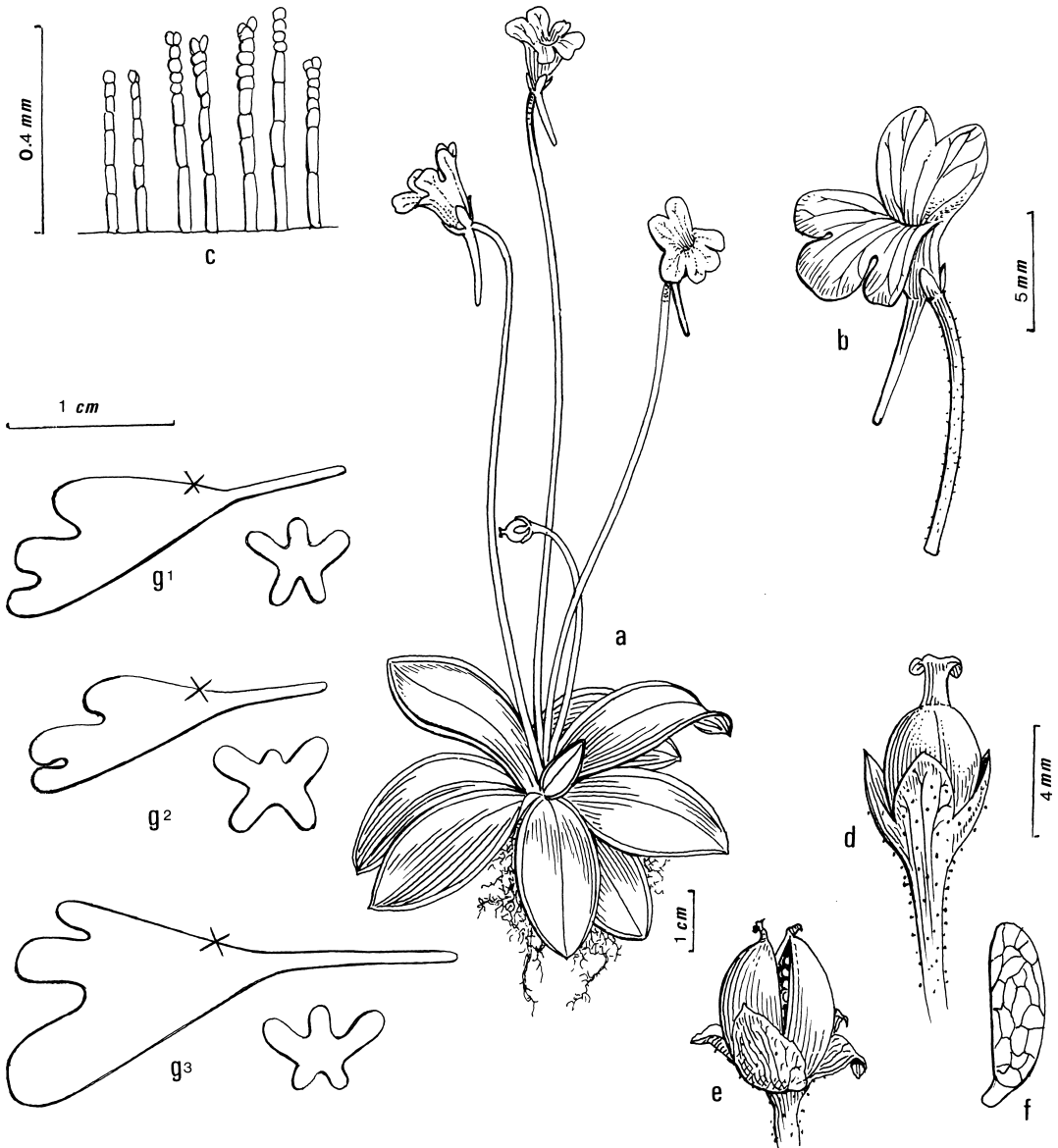


Fig. 1. *Pinguicula fontiqueriana* Romo, Peris & Stübing. — a: Habit. — b: Flower. — c: Corolla gorge hairs. — d: Immature capsule. — e: Mature capsule. — f: Seed. — g1–g3: Variability in the shape and size of corolla and calyx. — a–f drawn from holotype (BC 136365), g1 from isotype (MPU), g2 from *Maire s. n.* (Jbel Tidighine, MPU), g3 from *Font Quer s. n.* (Jbel Lerz)

P. vulgaris and *P. corsica*.

Pinguicula lusitanica presents no problems, because it is a taxon with a wide distribution area. Jahandiez and Maire (1934: 700) and Dahlgren and Larsen (1972: 460) cited it from several localities in Morocco (Jbel Kebir, Jbel Dahar Zhirou, Jbel Zem-Zem, Jbel Sidi Habib and Jbel Bou

Hassim). It is a plant of bogs and wet heaths of the more Atlantic part of the Rif mountains.

However, there is some confusion with the other two species. Casper (1962: 116) reports that only *Pinguicula vulgaris* is found in Morocco and he included in this species the plants considered by other authors to be *P. corsica* (Font Quer 1930, Sennen &

Mauricio 1933). The latter species is now considered endemic to Corsica (Guinochet & Vilmorin 1975, Pignatti 1982, Jeanmonod 1989).

The material collected by Font Quer and Maire in the central Rif and referred by some botanists to *Pinguicula corsica* must be studied carefully, because it cannot be considered either *P. corsica* or *P. vulgaris* (Casper 1962). It seems useful to retrace, using the existing herbarium folders, the different taxonomic treatments given to this *Pinguicula* material. The material was first collected by Font Quer in 1927 in Jbel Lers. Later, on June 4, 1929, Font Quer again collected similar plants from Jbel Tidighine, and on the 14th of the same month and year, Maire collected further material from the same locality. The same day Font Quer collected specimens from Beni Seddat.

On the basis of his collections, Font Quer (1928: 76) reported the existence of *Pinguicula vulgaris* in Morocco. Later (Font Quer 1930), in his "Iter Maroccanum", he distributed folders numbered 416, under the name *P. corsica* Bernard & Gren. After this, Maire (1931a: 59, 1931b: 17) examined this material and cited for the first time *P. vulgaris* in the Magreb, without reference to the previous work by Font Quer (1930). Two years later, Sennen and Mauricio (1933: 986) followed the criteria of Font Quer, and on the basis of the material collected by Font Quer in Aguersif (Beni Seddat) reported the presence of *P. corsica* in the central Rif.

We are convinced that these specimens, previously interpreted in the various ways just discussed, represent a hitherto undescribed species, which we name

Pinguicula fontiqueriana. Thus the genus *Pinguicula* is represented in Morocco by two species: *P. lusitanica* and *P. fontiqueriana*, and the presence of *P. vulgaris* and *P. corsica* can be ruled out.

Pinguicula fontiqueriana Romo, Peris & Stübing *sp. nov.* (Fig. 1)

Herbae humiles pingues mucosae nitidae, acaules. Foliis (5–10), 20–40 × 10–16 mm, omnibus basilaribus rosulatis, integris, ovatis ellipticisve margine involuto. Scapis nudis unifloris et glandularibus in vicinia calycis. Calycis lobi ovati, obtusi, 2.5–3 × 1.4–1.6 mm. Corolla bilabiata, vivide caerulea (12)–18–26 mm, labio superiore bilobo, inferiore longiore et multo latiore trilobo; labiis eius angulum 35–40° efformantibus, abrupte in calcar cylindricum 4–7(–9) × 0.5–0.9(–1.1) mm tertium eius longitudinis aequans aut superans angustata; lobis eius lateralibus et inferiore maioribus quam superiore. Capsula 3–4 mm, subspherica.

Dedicata Dr. Pius Font i Quer.

Type: Morocco. "In muscosis irrigatis pr. Aguersif (Beni Seddat) in 1 850 m altitudinem", 14.VI.1929, *Pius Font Quer s. n.* (holotype BC 136365; isotype MPU!).

Small herbaceous shiny viscid plant. Leaves (5–10), 20–40 × 10–16 mm, in a basal rosette, entire, ovate elliptical with involute margins. Pedicels naked with solitary flowers and glandular at the proximity of the calyx. Calyx lobes ovate, obtuse, 2.5–3 × 1.4–1.6 mm; lower lip of calyx divided nearly to base, lobes divergent. Corolla 2-

Table 1. Comparison between *Pinguicula fontiqueriana* Romo, Peris & Stübing, *P. corsica* Bernard & Gren. and *P. vulgaris* L.

	<i>P. fontiqueriana</i>	<i>P. corsica</i>	<i>P. vulgaris</i>
Biotype	hemicytophyte	hemicytophyte	hemicytophyte
Leaf number	5–10	5–9	5–11
Calyx			
lower lip	divided nearly to base	divided nearly to base	divided halfway to base
lobes	divergent	divergent	not divergent
Corolla			
length	16–25 mm	16–25(–30) mm	15–22(–30) mm
spur tube	4–6 × 0.5–1 mm	4–9 × 0.5–0.9 mm	3–6(10) × 11.3 mm
gorge hairs	< 0.5 mm	0.5–1 mm	> 0.6 mm
lobes of lower lip	not overlapping	overlapping	not overlapping
Capsule	3–4 mm	3–5 mm	> 4 mm

lipped, blue in a living state, (12)–18–26 mm, upper lip 2-lobed, lower lip 3-lobed, long and very wide with the lobes not overlapping; open in angle from 35–40°, conical, abruptly narrowed in a cylindrical spur, 4–7–(9) × 0.5–0.9–(1.1) mm, about 1/3 as long as the corolla or more, lateral and lower lobes greater than the upper lobes; gorge with short hairs, 0.35–0.40 mm, (6)–8–12 cellularis, the basal cells rectangular, the apical cells quadrate and subspherical. Stigma expanded in an appendix (1 × 1 mm). Capsule 3–4 mm, subspherical.

Pinguicola fontiqueriana is endemic in the central Rif mountains, growing on bogs and other wet places in the proximity of fountains and torrents, at altitudes over 1 700 m and up to 2 100 m.

Pinguicola fontiqueriana shows some relationship to *P. corsica* and *P. vulgaris*. It is therefore necessary to compare the three species, which is done in Table 1. The measurements of the corolla and spur that we obtained using herbarium materials of *P. corsica* and *P. vulgaris* have been extended in range according to Casper (1972).

The three species have different geographic ranges: *Pinguicola vulgaris* North, West and Central Europe, extending eastwards to West Ukraine, but not present in the Mediterranean Region (Willkomm & Lange 1870, Guinochet & Vilmorin 1975, Pignatti 1982). *Pinguicola corsica* is endemic to Corsica and *P. fontiqueriana* is endemic to the Rif Mountains of Morocco.

Considering the same characteristics used by Casper (1972) in his key for the Flora Europaea we have made a simplified key covering all the species cited by various botanists for Morocco:

1. Lobes of the lower lip of the corolla emarginate, plant overwintering as a rosette *P. lusitanica*
— Lobes of the lower lip of the corolla entire, plant overwintering as a bud 2
 2. Lobes of lower lip of corolla suborbicular, overlapping or contiguous *P. corsica*
— Lobes of lower lip of corolla oblong, divergent, not overlapping or contiguous 3
 3. Lower lip of calyx divided halfway to base; lobes not divergent, spur 6–8 × 1–1.3 mm, gorge hairs > 0.6 mm *P. vulgaris*
— Lower lip of calyx divided nearly to base, lobes divergent, spur 4–6 × 0.5–1 mm, gorge hairs < 0.5 mm *P. fontiqueriana*
- Additional specimens examined.* — *Pinguicola font-*

queriana (paratypes): Morocco. Jbel Lers, in uliginosis, 1 900 m, 12.VI.1927, *Font Quer s. n.* (BC 53060); Jbel Tidighine, 1 700 m, 6.VI.1929, *Font Quer s. n.* (BC 810524); in scaturiginosis montis Tidighine, 1 800–2 100 m, 14. VI. 1929, *Maire s. n.* (MPU); Aguersif (Beni Seddat), in muscosis irrigatis, 1 850 m, 14.VI.1929, *Font Quer s. n.* (MPU). Central Rif, Jbel Tighighine, 1 900–2 000 m, bosques de cedros (*Cedrus atlantica*) poco densos con abendules (*Betula fontqueri*), 13.VI.1995 Boratynski & Romo R-86/5/5, (BC). *Pinguicola lusitanica*: Morocco. Tanger, Cap Spartel, lieux humides, sur le grès, 1927, *Weiller s. n.* (MPU, det. Maire); habitat in humusculis, inter Tandja et El Araix, l. "Cuesta Colorada" dicto, ad 100 m alt., 1930, without collector (MPU, "Iter Maroccanum 611"). Central Rif, Jbel Tighine, 1 900–2 000 m, bosques claros de *Quercus canariensis*, 9.VI.1995 Boratynski & Romo R-8492/1, (BC).

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