A New Species of *Pinguicula* (Lentibulariaceae) from Nuevo León, México

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Abstract

A new species of *Pinguicula* from México is described and illustrated: *Pinguicula nivalis*, a gypsophilous endemic from the southern part of the state Nuevo León. According to Casper's monograph (1966) its taxonomic position matches the criteria of subgenus *Temnoceras* Barnh. em. Casper, but the species does not fit into any of the sections of this subgenus. A new section (*Microphyllum*) is proposed to include *Pinguicula nivalis*, together with two other related species (*Pinguicula immaculata* Zamudio & Lux and *P. gracilis* Zamudio).

Introduction

In February 1994, while exploring the region of Zaragoza, Nuevo León, we found a new *Pinguicula* species (see Figure 1) resembling *P. immaculata*. The flower, however, had larger and broader corolla lobes. Upon further examination of preserved and living specimens other interesting features came to light, and convinced us the plant represented a hitherto unknown species. The specific epithet, referring to snow, was chosen because the flowering plants, with their white petals, resemble snowdrops against the gypsum soil.

Results

Pinguicula nivalis Luhrs & Lampard, *spec. nov.*

Type: (MEXICO): Nuevo León: distr. Zaragoza, gypsum hills between Carpinteria and Zaragoza, 1350-1400 m alt., 14/Feb/1994, *H. Luhrs & S. Lampard s.n.* (Holotype: IEB! (spirit)).

Herba perennis. Folia radicalia rosulata, biformia; rosula "hiemis" numerosa 13-19, crassa, anguste oblonga, 4-6 mm longa, 1.0-1.5 mm lata, apicem versus ad ? longitudinis ciliata, pilis multicellularibus capitatis; rosula "aestatis" 8-10, petiolata, petiolo 4-7 mm longo, 1-2 mm lato, apicem versus ad plus minusve 1/2 longitudinis ciliato, pilis multicellularibus capitatis, lamina ovata, apice obtusa vel subrotundata, margine involuta, superne glandulis sessilibus et glandulis stipitatis vestita, 4-9 mm longa, 4-8 mm lata. Hibernacula nulla. Pedicelli 1-2 erecti, atro purpurei, glabri, 20-45(70) mm alti, uniflori. Flores 11-16 mm longi (calcari incluso). Calyx bilabiatus, atro purpureus, extus glandulis stipitatis sparse obsitus; labium superum trilobum, lobis oblongo-ovalis, obtusis, 1.0-2.5 mm longis, 0.8-2.0 mm latis; labium inferum bilobum, lobis oblongo-ovalis, obtusis, 1-2 mm longis, 1 mm latis. Corolla bilabiata, alba, labio infero ad basi macula luteo-virescenti ornato; labium superum bilobum, lobis late obovatis vel obovato-rotundatis, apice undulatis, 3-7 mm longis, 3-6 mm latis; labium inferum trilobum, basin versus pilosus, pilis longis multicellularibus, pilis brevis multicellularibus capitatis et pilis multicellularibus cylindrico-subulatis in macula luteo-virescenti vestitis, lobis lateralibus obovatis vel late obovatis, apice undulatis, 4-8 mm longis, 3-6 mm latis, lobo medio paulo major, late obovato, apice undulato, emarginato, 5.0-12 mm longo, 5.0-12 mm lato. Tubus brevissimus, infundibuliformis, 1-2 mm longus, 2-3 mm latus, intus pilosus, pilis multicellularibus cylindrico-subulatis retro conversis, basin calcari versus in lineis triabus ordinatis, sine palato. Calcar cylindricum,

apice conicum obtusum, pallide purpureum, 2.5-5.0 mm longum, 0.5-1.0 mm latum, cum tubo angulum obtusum (± 90°) formans. Stamina 2, geniculata. Antheris ellipsoidalibus, purpureis, 0.5 mm longis, 0.9 mm latis. Ovarium subglobosum, atro purpureum, 0.5-1.0 mm longum, 2 mm latum, glandulis stipitatis parvulis obsitum. Stigma bilabiatum, rubro-purpureum, labio infero superiorem superanti, suborbiculato, fimbriato. Capsula et semina ignota. Florescentia I-II.

Perennial herb. Leaves rosulate, dimorphic; those of the winter rosette numbering 13-19, thick, narrowly oblong, 4-6 mm long, 1.0-1.5 mm wide, covered from the apex to half its length with long multicellular capitate hairs; leaves of the summer rosette numbering 8-10, petiolate, petiole 4-7 mm long, 1-2 mm wide, covered from the apex to approximately half its length with long multicellular capitate hairs, leaf blade ovate, obtuse or somewhat rounded at the apex, the margin involute, the surface covered with sessile and stalked glands, 4-9 mm long, 4-8 mm wide. Hibernacula absent. Scapes 1-2, erect, dark purple, glabrous, 20-45(70) mm tall, 1-flowered. Flowers (including the spur) 11-16 mm long. Calyx 2-lipped, dark purple, sparsely covered with short stalked glands; superior lip 3-lobed, the lobes oblong-oval, obtuse, 1.0-2.5 mm long, 0.8-2.0 mm wide; inferior lip 2-lobed, the lobes oblong-oval, obtuse, 1-2 mm long, 1 mm wide. Corolla 2-lipped, white, the base of the inferior lip marked with a lime-green patch; superior lip 2-lobed, the lobes broadly obovate or obovate-rotundate, the apex undulate, 3-7 mm long, 3-6 mm wide; inferior lip 3-lobed, covered with three types of multicellular non-glandular hairs towards the base, slender long hairs forming a broad border across the width of the inferior lip, short and broader yellow pigmented capitate hairs clothing the central part of the lime-green patch, and slightly longer white cylindrical-subulate hairs are arranged in two lateral rows at the base, the two lateral lobes obovate or broadly obovate, the apex undulate, 4-8 mm long, 3-6 mm wide, the middle lobe larger and overlapping upon the lateral lobes, broadly obovate, the apex undulate, emarginate, 5.0-12 mm long, 5.0-12 mm wide. Tube extremely short, funnel-shaped, 1-2 mm long, 2-3 mm wide, the inside covered with multicellular cylindrical-subulate hairs, pointing backwards and arranged in three rows towards the spur, palate absent. Spur cylindrical ending in a blunt conical tip, pale purple, 2.5-5.0 mm long, 0.5-1.0 mm wide, forming an obtuse angle (± 90°) with the tube. Stamens 2, the filaments abruptly bent. Anthers ellipsoidal, purple, 0.5 mm long, 0.9 mm wide. Ovary subglobular, dark purple, 0.5-1.0 mm long, 2 mm wide, covered with tiny stalked glands. Stigma 2-lipped, red-purple, lower lip much larger than the upper lip, suborbicular, the margin fimbriate. Capsule and seed unknown. Flowering January-February.

Additional collection examined: MÉXICO. Nuevo León: W. of Zaragoza, gypsum hillside, 1445 m alt., 16/Oct/1993, *Hinton et al. 23650* (TEX); sub nomine *P. aff. immaculata* Zamudio & Lux. Det.: H. Luhrs 1996.

Discussion

Pinguicula nivalis is endemic to a small area of gypsum hills in the vicinity of Zaragoza, southern Nuevo León, where it grows in gypsum soil amongst colonies of *Selaginella* and accompanied by *Agave* and *Hechtia* sp. at 1350-1450 m a.s.l. It flowers from the winter rosette only during January and February.

It is very closely related to *P. immaculata*, another gypsophilous endemic from central Nuevo León. Apart from minor differences in both winter and summer rosettes, *P. nivalis* differs sufficiently from *P. immaculata* in the following characters noted in Table 1.

Pinguicula nivalis is also closely related to *P. gracilis*, a dweller of chalk rocks from northern Nuevo León, but from which it differs in the following characters noted in Table 2.

Although being different in many aspects, all three species show identical characteristic features that would place them in the same taxonomical position which conform more or less to the criteria of subgenus *Temnoceras* because of the following characteristics; the type of leaves and rosette, the two lipped corolla, the inferior corolla lip larger than the superior corolla lip, the middle inferior lobe emarginate and larger than the lateral inferior lobes, the funnel-shaped tube, and the cylindrical spur. However, they can not satisfactory be placed in any of the sections or subsections belonging to the mentioned subgenus (Zamudio, 1988, Zamudio & Lux, 1992). Therefore a new section (*Microphyllum*) is proposed to include *P. nivalis*, *P. immaculata* and *P.*

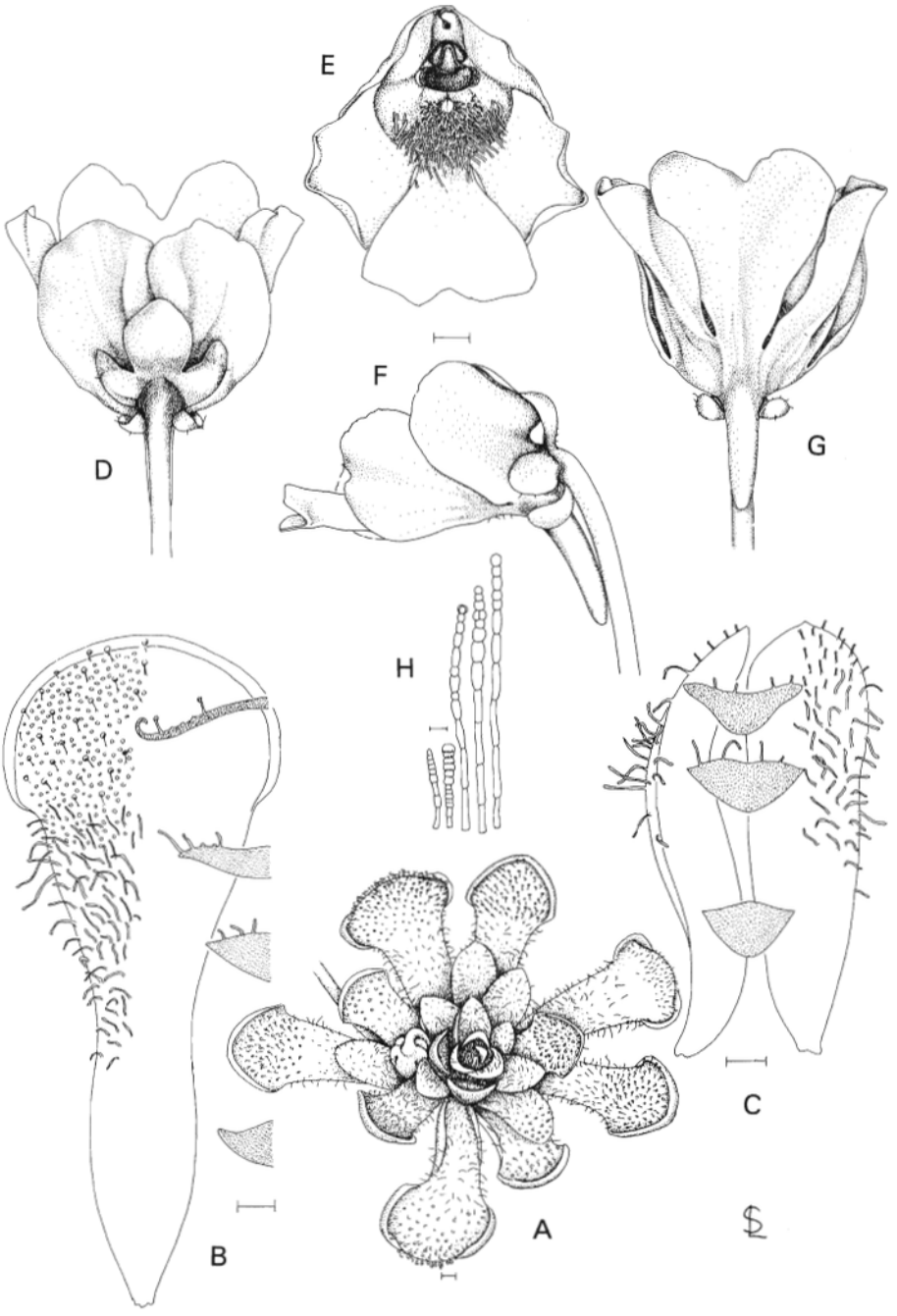


Figure 1: *Pinguicula nivalis*. A: habit, coming into winter rosette; B: summer leaf with transverse sections; C: winter leaf with transverse sections; D: calyx; E: corolla, not fully open; F: flower, lateral view; G: corolla tube and spur; H: hairs from right to left; 1-3 lower petal, 4 corolla tube entrance, 5 tube interior. Scale bars A-G 1 mm, H 0.1 mm. Illustration by Stan Lampard.

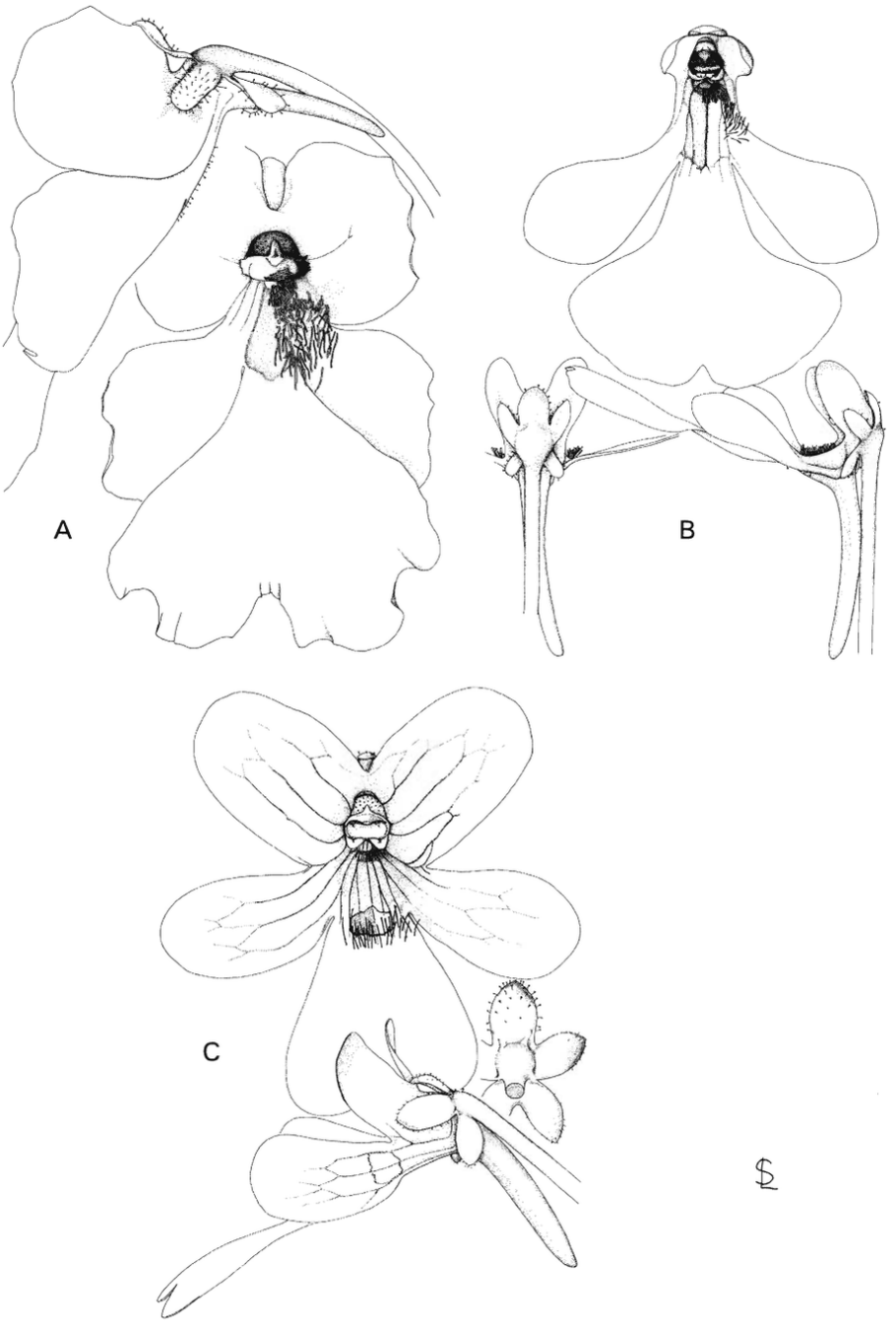


Figure 2: Corolla comparison of three related species of the new section *Microphyllum.* A: *Pinguicula nivalis*; frontal and lateral view; B: *P. immaculata*; frontal, lateral view and calyx; C: *P. gracilis*; frontal, lateral view and calyx. Illustration by Stan Lampard.

	P. nivalis	*P. immaculata*
Superior corolla lobes	Broadly obovate, 3-7 mm long/3-6 mm wide, margin undulate.	Oblong, 1-3 mm long/1.0-1.5 mm wide, margin entire.
Lateral inferior corolla lobes	Broadly obovate, 4-8 mm long/3-6 mm wide, margin undulate.	Obovate, 2.5-6.0 mm long/1.5-4.0 mm wide, margin entire.
Middle inferior corolla lobe	Larger and mostly overlapping upon the lateral lobes, broadly obovate, 5.0-12 mm long/5.0-12 mm wide, margin undulate, emarginate.	Larger than the lateral lobes, obovate, 5.0-10 mm long/4.0-10 mm wide, margin entire or undulate, emarginate.
Inferior corolla lip	The arrangement of three different types of multicellular non-glandular hairs covering the entire base.	The arrangement of two different types of multicellular non-glandular hairs covering the sides of the base, leaving a open space in the center.
Spur	Cylindrical, 2.5-5.0 mm long/0.5-1.0 mm wide, conical and blunt at the tip.	Cylindrical, 3.5-9.0 mm long/0.5-1.0 mm wide, blunt at the tip.

Table 1. Comparison of the floral features of *Pinguicula nivalis* and *P. immaculata*.

	P. nivalis	*P. gracilis*
Winter leaves	Narrowly oblong, 4-6 mm long/1.0-1.5 mm wide, covered from the apex to half its length with long multicellular capitate hairs.	Spatulate or oblanceolate, 3.0-12 mm long/1.5-4.0 mm wide, sparsely covered with long multicellular hairs.
Summer leaves	With a distinct petiole, 4-7 mm long/1-2 mm wide, the leaf blade ovate, 4-9 mm long/4-8 mm wide.	Obovate-spatulate, 8.0-16 mm long/4.0-10 mm wide.
Corolla	White.	White, radiated with purple veins in the throat.
Superior corolla lobes	Broadly obovate, 3-7 mm long/3-6 mm wide, margin undulate.	Oblong, 4-7 mm long/2.2-5.5 mm wide, margin entire.
Lateral inferior corolla lobes	Broadly obovate, 4-8 mm long/3-6 mm wide, margin undulate.	Obovate or oblong, 3.1-7.0 mm long/2.0-4.8 mm wide, margin entire.
Middle inferior corolla lobe	Larger and mostly overlapping upon the lateral lobes, broadly obovate, 5.0-12 mm long/5.0-12 mm wide, margin undulate, emarginate.	Larger than the lateral lobes, obovate-spatulate, 5.5-11.5 mm long/3.0-11 mm wide, margin entire, emarginate.
Inferior corolla lip	The arrangement of three different types of multicellular non-glandular hairs covering the entire base.	The arrangement of one type of multicellular non-glandular hairs covering the base of the middle inferior lobe.
Tube	Funnel-shaped, 1-2 mm long/2-3 mm wide.	Funnel-shaped, 2-4 mm long/3-6 mm wide.
Spur	Cylindrical, 2.5-5.0 mm long/0.5-1.0 mm wide, conical and blunt at the tip.	Cylindrical, 3.0-6.5 mm long/0.5-1.0 mm wide, blunt at the tip.

Table 2. Comparison of the main features of *Pinguicula nivalis* and *P. gracilis*.

gracilis (see Figure 2). The section's epithet refers to the small leaves of the three mentioned species.

Sectio ***Microphyllum*** Luhrs, *sect. nov.*

Folia biformia, rosulariter hibernantes. Corolla profunde bilabiata; labio infero supero plus minusve 2-3plo vel multo maiore; lobo intermedio labio infero lateralibus subduplo vel multo longiore, emarginato. Tubus brevissimus, palatum nullum. Calcar cylindricum, cum tubo angulum distinctum formans.

Leaves dimorphic, forming a winter rosette. Corolla deeply 2-lipped; the inferior corolla lip about 2-3 times the size or larger than the superior corolla lip; the middle inferior lobe emarginate and nearly twice the length or longer than the lateral lobes. Tube extremely short without a palate. Spur cylindrical, forming a distinct angle with the tube.

Type species: *P. immaculata* Zamudio & Lux.

Some elements in the criteria of subgenus *Temnoceras* do not exactly match with the three mentioned species, as well as the new section *Microphyllum*, e.g. the existence of a palate versus the lack of a palate, and the feature "distinctly broad conical" versus "funnel-shaped" in case of the tube. It might be questionable whether a more or less conformation rather than a exact one would be justified in the adding of a new member, while on the other hand is it hard to imagine that the proposal of a new subgenus for such minor characteristics would be a justifiable action. For that reason we believe some minor changes need to be made within the criteria of at least one subgenus (*Temnoceras*) and probably more than one section as well in a near future revision, in order to maintain their systematic value in the adding of a still growing number of newly described species.

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LOOKING BACK: CPN 25 YEARS AGO

Allen Lowrie announced the discovery of white-flowered *Byblis gigantea* with a front-cover illustration in Carnivorous Plant Newsletter. He also derided a fanciful tale which, 25 years later, still circulates as "fact": "I read with amusement a paperback book on CP when I was in America in June, 1980. The author stated that *Byblis gigantea* in Australia catch rabbits and squirrels as their everyday prey. I can assure your readers this is not so. For a start, we don't have squirrels and secondly, the biggest prey *Byblis gigantea* can catch is small insects—generally mosquitos."

John Watkins also provided a profile on The Carnivorous Plant Society, which is of course the British society of renown. The Carnivorous Plant Society is still alive and active, with an excellent on-line discussion forum. See their web site at:
http://www.thecps.org.uk/