

A NEW SPECIES OF *LOPEZIA* (ONAGRACEAE) FROM SINALOA, MEXICO¹

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ABSTRACT

Lopezia concinna Raven is described from Sinaloa, Mexico. It is unique in the genus in its elaborately marked petals and wide lower sepals. It appears to be closely related to *L. conjungens*. See p. 641.

Within the largely Mexican genus *Lopezia*, the evolution of distinctive annual taxa at the relatively arid margins of the range is a pronounced trend (Plitmann et al., 1973; Plitmann et al., 1975). Within sect. *Lopezia*, a group of nine species, three such annual derivatives—*L. cornuta* S. Wats., *L. ciliatula* Plitmann, Raven & Breedlove, and *L. conjungens* T. S. Brandege—occur within the state of Sinaloa, and the latter two are restricted to it. Nevertheless, the discovery of a distinctive and very handsome novelty within this group by James L. Reveal and Raymond M. Harley, to whom I am most grateful for the privilege of studying their material, is of considerable interest, and suggests the possibility of further additions to this genus, which now totals 22 species.

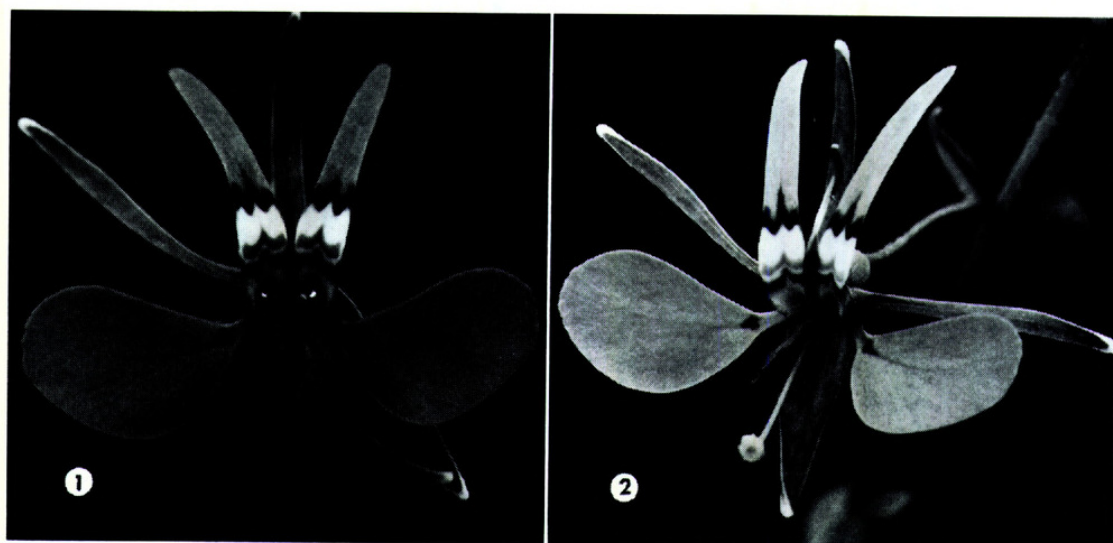
***Lopezia* (sect. *Lopezia*) *concinna* Raven, sp. nov.—FIGS. 1–2.**

Species sepalis dimorphis 10–13 mm longis, petalis superioribus 14–16 mm longis ornate notatis eglandulosis ab aliis sectionis *Lopeziae* diversa.

Erect *annual*. *Stems* 3–7 dm tall, well branched, terete, reddish, hirsute with white hairs. *Leaves* 2.5–5.7 cm long, 1.4–2.5 cm wide, ovate, truncate or rounded at the base, acute or acuminate at the apex, subentire or shallowly serrulate-crenulate, subglabrous or with a few scattered hairs along the midrib below and along the margins, with 5–8 veins on each side of the midrib, mostly subopposite; petioles 8–30 cm long, hirsute. *Pedicels* 10–14 mm long, spreading, glabrous. *Sepals* 10–13 mm long, the upper three 1–1.5 mm wide, linear and keeled at the apex, the single lower one 3–3.5 mm wide and lanceolate, keeled along its entire length. *Lower petals* 11–14 mm long, 6–7.5 mm wide, subovate, entire, clawed, the claw 2–3 mm long, the petals entirely fuchsia purple with a dark spot at junction of the claw; upper petals 14–16 mm long, 1.5–2 mm wide, linear, shortly clawed, subacute at the apex, slightly auriculate at the base, fuchsia purple with a narrow V-shaped dark stripe, a parallel white stripe, then a thick parallel orange stripe, a broad parallel white stripe, and a final ornate dark stripe in the third of the limb just about the auricles; glands absent, but the flower evidently nectariferous. *Fertile stamen* 8–9.3 mm long; filament com-

¹ Support from the U. S. National Science Foundation is gratefully acknowledged. Peter Hoch provided valuable technical assistance, Steven R. Seavey the chromosomal information, and Richard H. Eyde comments on the floral anatomy. The herbarium of the University of California, Berkeley (UC), kindly loaned the type and only known specimen of *Lopezia conjungens*.

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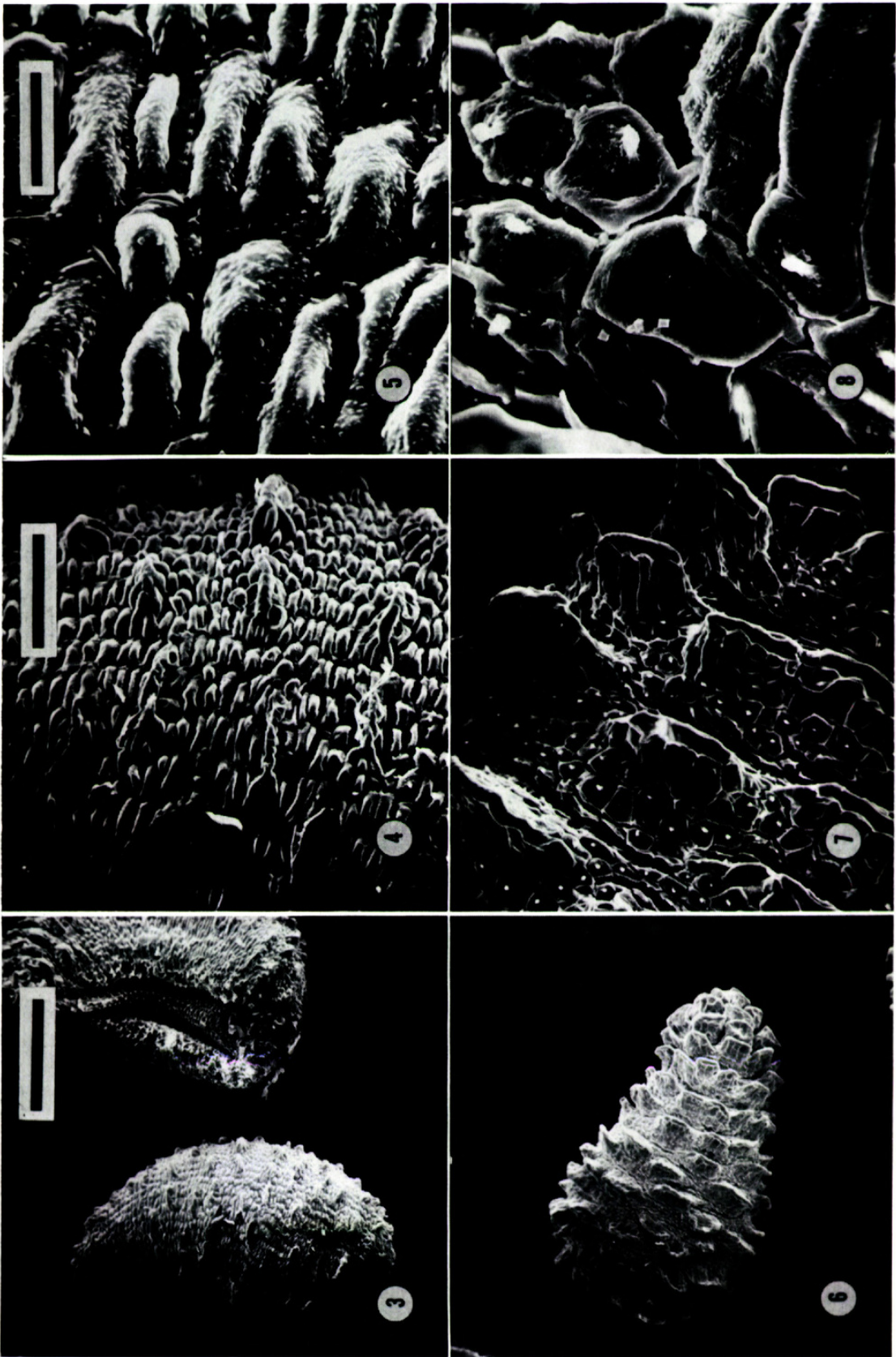
FIGURES 1-2. Flowers of *Lopezia concinna* Raven, $\times 2.7$; photographs by Robert Srenco. —1. Before explosive release of the fertile stamen by the staminode. Note drops of nectar at the base of the upper petals.—2. After release of the fertile stamen. The staminode has curved downward, the fertile stamen upward, and the style elongated, carrying the stigma into the position formerly occupied by the staminode holding the fertile stamen under tension.

pressed, 6-7 mm long, 0.8-1.2 mm wide, dark red at the base, shading to pink at the point of anther attachment; anther 2-2.5 mm long, 0.2-0.3 mm wide, ruby red. *Staminode* 8-9.5 mm long, suborbicular or obovate-spatulate, retuse at the apex, abruptly narrowed to a claw 4-4.5 mm long, ruby red, the claw pink. *Style* 8-10 mm long, pink; stigma 1.4-1.6 mm in diameter, white. *Ovary* broadly ellipsoid to rotund, 2.5-4 mm long, 2-3.2 mm wide, glabrous. *Capsule* 6-7 mm long, 3.5-4.5 mm thick, obovoid-elongate, fleshy. *Seeds* several in each locule, 1.3-1.6 mm long, oblong-ovoid, uncurved, with transverse protuberances over the entire surface, brown. Gametic chromosome number, $n = 10$ (10 bivalents at meiotic metaphase I).

TYPE: MEXICO. SINALOA: Along the dirt road from Rosario to Plomosas, about 3.5 km east of La Rastra and 3.2 km up the grade from a river crossing, this about 1.5 km south of Rosario, on a rocky road cut along the steep canyon wall, 8 Oct. 1975, *James L. Reveal & Raymond M. Harley* 4064 (MO-2412198, holotype; CAS, IPN, K, MEXU, MICH, US, isotypes).

Distribution: Known only from the type collection. See p. 641.

This elegant new species, with its beautiful flowers (Figs. 1-2), differs from all other members of its section, except *L. conjungens*, in its lack of glands on the upper petals. That species is also known only from its type collection, and we have been unable to examine living material. Its type and only known locality is some 270 km northwest of the locality in southernmost Sinaloa where *L. concinna* was discovered. The only known plants of *L. conjungens* are subglabrous, have much smaller and paler flowers, and lack the elaborate markings of the petals of *L. concinna*. Indeed, the markings in the petals of *L. concinna* and its conspicuously wider lower sepal are absolutely distinctive within the



genus. Its flowers are substantially larger than those of all other species of the section except for those of the very different *L. suffrutescens* Munz. The seeds of the two species (Figs. 3–8) both have transverse ridges, but those of *L. concinna* are much coarser and occupy the entire surface of the seed, whereas those of *L. conjungens* are fine and widely spaced. The epidermal cells on the seeds of *L. conjungens* are oblong, while those on the seeds of *L. concinna* more nearly square. Finally, the seeds of *L. conjungens* are more markedly incurved than those of *L. concinna*. More material of each species, and especially living material of *L. conjungens*, will be necessary to clarify their relationships, which appear close; further, the two species may well have been derived from a common ancestor, or *L. concinna* may have given rise to *L. conjungens*.

We have not observed nectar production, which is copious in *L. concinna* and apparently arises from the base of the petals, in any other species of sect. *Lopezia*. Richard H. Eyde sectioned floral material of *L. concinna*, from progeny of the type grown at the Missouri Botanical Garden, and found the order of divergence of the parts to be as reported for *L. hintonii* Foster [= *L. miniata* Lag. ex DC. subsp. *hintonii* (Foster) Plitmann, Raven & Breedlove] by Eyde & Morgan (1973), with nectaries in the usual position for *Lopezia*.

The chromosome number was determined in progeny of the type collection grown in the experimental greenhouse at the Missouri Botanical Garden. Details of the flowers have also been studied in this cultivated material.

At its type and only known locality, *L. concinna* was relatively common in protected, dripping wet recesses along a north-facing cliff-face in a forest dominated by trees of *Bursera* with *Hyptis*, *Salvia*, *Polymnia*, *Lasiacis*, *Malvaviscus*, and *Euphorbia* subg. *Poinsettia* common in the understory. Directly associated with the plants of the *Lopezia* were *Amemia affinis* Baker, *Cuphea llavea* Lex., *Peperomia* sp., *Pinguicula crenatiloba* DC., *Polypodium pumila* (Bonpl.) Cogn., *Pterolepis pumila* (Bonpl.) Cogn., and *Salvia misella* Kunth.

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NOTE ADDED IN PROOF

While this article was in press, D. E. Breedlove kindly sent a second collection of the new species from 80 km farther east: Durango, canyon of Río Mezquital near Nayarit, ca. 750 m, 1–6 Nov. 1977, G. H. Bolton 101 (CAS, MO).

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FIGURES 3–8. Scanning electron micrographs of seeds of two closely related species of *Lopezia* sect. *Lopezia*. All from the respective type specimens. The bars at the top of the plate indicate, respectively, 0.5 μ m, 125 μ m, and 25 μ m.—3–5. *L. conjungens*.—6–8. *L. concinna*.



Raven, Peter H. 1977. "A New Species of *Lopezia* (Onagraceae) from Sinaloa, Mexico." *Annals of the Missouri Botanical Garden* 64, 638–641.

<https://doi.org/10.2307/2395259>.

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