

## ECHEVERIA NEBULARUM(CRASSULACEAE), A NEW CLOUD-FOREST SPECIES FROM MEXICO

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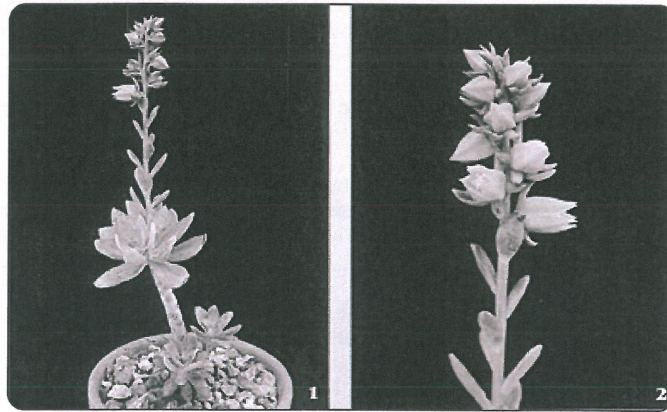
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**Abstract:** *Echeveria nebularum* Moran & Kimnach is described as a new species of series *Nudae*, differing from *E. gracilis* and *E. montana*—the species most closely resembling it—in its epiphytic habit, glaucous-green leaves and 26 pairs of chromosomes. It was first found by *Castillo, Iltis & Cortes* in Veracruz, Mexico, in 1951, but has since been found more commonly in Oaxaca.

**Key words:** *Echeveria nebularum* sp. nov., new species, Crassulaceae, Mexico, Veracruz, Oaxaca

### Introduction

In November 1959, we crossed the 10,000-foot Sierra Juarez from the mile-high city of Oaxaca to the steaming lowland town of Tuxtepec. North of Ixtepec de Juarez, birthplace of Mexican patriot and president *Benito Juarez*, the road follows the cloud-forested west slope of the Sierra not far below the summit. There we stopped at an interesting roadside colony of *Echeveria montana* *Rose* and *Sedum dendroideum* ssp. *parvifolium* *R. T. Clausen*, with an undercover of *Sedum cupressoides* *Hemsl.* *Myron* found a single seedling plant of another *echeveria* which we took to be *E. rosea* *Lindl.*, a rather widespread but scattered species of wet upland forests from the state of Oaxaca to the state of San Luis Potosi. We had collected *E. rosea* earlier that day some 30 miles to the south at nearly the same elevation, epiphytic on an oak, with scattered seedlings on the ground beneath. The single seedling found by *Myron* was quite similar in shape and coloring of the leaves to those seedlings of *E. rosea*.



Figures 1, 2. *Echeveria nebularum* (*Moran & Kimnach 777*), the type collection), June 1, 1961.



Figure 3. *Echeveria nebularum* (*Kimnach et al. 3217*), epiphytic, above San Gabriel Etna, Oaxaca, Jan. 14, 1993.

### Observations

In cultivation this plant continued to bear a general resemblance to *E. rosea*, but when it flowered in May of 1961 (Figs. 1, 2) it proved to be entirely different, bearing a lax raceme of orange-red flowers, with spreading sepals, angular corollas, and thick petals with well-developed nectar pits. Nevertheless, it did have at least one floral character strongly reminiscent of *E. rosea*, namely the relatively small number of elongate ovules, about twice as long as is usual in *Echeveria*.

It occurred to us that this plant might be a hybrid of *E. rosea*—which occurs at least in the same general area—with some other species such as *E. montana*, with which it grew. The apparent rarity of the plant first suggested this idea. However, the plant was not intermediate between *E. rosea* and *E. montana*, as might be expected in a hybrid, but rather had some characters of one and some of the other and was somewhat intermediate in some respects and somewhat different from both in other respects. However, the appearance of hybrids is not always predictable, especially that of second-generation hybrids. Therefore it was most interesting to hear a report from Dr. Charles Uhl after he had studied the cytogenetics—he found regular meiosis and a chromosome number having no obvious relation to those of the other two species. Thus the cytogenetic data give no suggestion that this plant was a hybrid, and we therefore treat it here as a new species.

Delays caused by many factors have postponed its publication for some 45 years since we first saw it in 1959. Its affinities, for example, were not easy to determine, and the type herbarium specimen was lost (or misplaced) for some years. During this time, we became gradually aware of other collections, not only in Oaxaca but also in Veracruz. *Myron* found two at MEXU and four at the herbarium in Jalapa (XAL), all cited below. One of them (*Castillo, Iltis & Cortes s.n.*, collected in 1951) is the earliest collection yet known. In mid-

January 1993, while botanizing with *Miguel Chazaro* and *Martin Negrete* of the University of Guadalajara, *Myron* found another collection in the city of Oaxaca at the herbarium of the Instituto Politecnico Nacional (OAX). It had been collected above San Gabriel Etna, northwest of the city of Oaxaca. The specimen label described the plant as epiphytic, and the dried remains in every way resembled the mysterious species.

On January 19, 1993, they (along with *Rudi Dorsch*, who had joined them) drove to San Gabriel Etna in an attempt to recollect the plant. The little town (one of several in the area with a name ending in "Etna") was reached by turning off the Pan American Highway at the crossroads to San Pedro y San Pablo, but proceeding northeasterly along a dirt road toward the mountains. Crassulaceae seen along the way were *Sedum dendroideum*, *S. oaxacanum* *Rose*, *Echeveria pinetorum* *Rose*, *E. gibbiflora* *D. C.*, *E. megacalyx* *E. Walther* and *Villadia guatemalensis* *Rose*. The road was seldom travelled; only one lumber truck was encountered on the way to the 2950 m summit.

At an altitude of 2865 m, as dusk fell and the night fogs began to form, our odometer registered the kilometers recorded on the OAX herbarium specimen. We spied a tufted succulent with brownish flower-clusters high in a pine tree near the road. The plant was identified later as the little-known *Sedum guatemalense*, typically found in high cloud forests in southern Mexico and Guatemala. (The succulent misidentified in the early 1930s as this species is now known as *S. rubrotinctum* *R. T. Clausen*, not known in the wild and possibly a spontaneous hybrid between *S. stahlii* *Solms* and *S. pachyphyllum* *Rose*). Growing with the sedum on the trunk of the same tree—rooted only in moss and pine needles—was a large mass of the new echeveria (Fig. 3). Evidence of heavy logging was apparent in this area. Several weeks later the same group (minus *Rudi Dorsch*, who had returned home) found the echeveria again where the trees had recently been mostly eradicated, leaving a few terrestrial plants of *Sedum guatemalense* exposed to the sun.

### Description

#### *Echeveria nebularum* *Moran & Kimnach* sp. nov.

Planta glabra fruticosa, caulibus ca. 15-20 cm altis 6-10 mm crassis. Folia ad apicem caulis rosulata, rosulis 6-10 cm latis, foliis oblanceolato-ellipticis obtusis subapiculatis glaucis 2.5-5 cm longis 12-18 mm latis 3-3-5 mm crassis. Inflorescentia racemosa equilateralis 3-12 cm longa, pedicellis 3-8 mm longis, sepalis expansis deltoideo-lanceolatis 5-13 mm longis, corolla 12-15 mm longa extus aurantiaco-rubra intus lutea.

**Type locality:** Mexico, Oaxaca, Ixtlan, Sierra de Juarez, along Highway 175, 12.5 miles N of Ixtlan de Juarez (near 17°30'N, 96°28'W), ca. 2750 m, Nov. 24, 1959.

**Holotype:** *Moran & Kimnach* 7771 (SD).

**Paratypes:** **Veracruz:** slopes of Cofre de Perote, 1700 m, epiphytic, flowers reddish-orange, 1951, *G. Castillo*. *H. Iltis* & *G. Cortes* s.n. (XAL); Mun. Calchahualco, San Miguel Tlacotiopa on road to Nueva Vaqueria in the barranca of Cuapa, 2600 m, epiphytic, *J. Martinez* & *F. Vasquez* 5241 (XAL); 35 km by road N of Vaqueria, epiphytic, flowers orange, 1981, *M. Nee* 2315S (XAL). **Oaxaca:** Sierra de Juarez: Municipio San Pablo Macuiltianguis, 2550 m, May 21, 1980, *G. Castillo* 1028 (MEXU, XAL); Llano de las Flores, 2800 m, Aug. 5, 1981, *R. Cedillo* 948, *D. Lorence* & *A. Garcia* (MEXU); above San Gabriel Etna, ca. 17°15'N, 96°38'W, 2865 m, epiphytic with *Sedum guatemalense*, Jan. 14, 1993, *M. Kimnach* 3217, *M. Cházaro*, *R. Dorsch* & *M. Negrete* (HNT, MEXU); along Highway 175, on road bank at km 125, ca. 2 km before turnoff to San Juan Lovina, 2745 m, Feb. 8, 1993, *M. Kimnach* 3347, *M. Cházaro* & *M. Negrete* (HNT) (Figs. 4, 5).

**Etymology:** *nebularum* = of the clouds, in reference to the cloud-forest habitat of this species.



Figures 4, 5. Plant and inflorescence of *Kimnach* et al. 3.147, a paratype collection. Photos: Figs. 1,2 by *Reid Moran*; Figs. 3-5 by *Myron Kimnach*.

**Plant** glabrous. **Stems** erect, branching from near the base, to 2 dm or more tall, 6-10 mm thick, elongating ca. 4-6 cm per year, smooth and terete, pale green and somewhat glaucous between the leaf bases, becoming tan and later somewhat silvery, the leaf base sites rounded-elliptical, 3-4 mm high, 5-6 mm wide, the attachment scars tan, elliptical, 1.5-2 mm wide, 0.5-1.5 mm high, each with a single bundle scar, often with aerial roots. **Rosettes** 6-10 cm wide, of 20-25 leaves in 3 and 5 para-stichies, the younger leaves crowded, the older leaves often separated by about their own thickness. Rosette **leaves** elliptical-oblanceolate, obtuse and subapiculate, glaucous, often somewhat reddish towards the margins, 2.5-5 cm long, 12-18 mm wide, 3-3-5 mm thick, flattish or slightly concave ventrally, convex and faintly keeled dorsally, the margins rather obtuse, the base subterete, ca. 4 mm thick. **Floral stems** erect, 1.5-3 dm tall including the raceme, 3.5-4.5 mm thick at the base, with 13-20 ascending leaves rather evenly distributed from the base to the inflorescence, the stem leaves, bracts, pedicels and calyx glaucous and ± tinged with purplish-red. Stem leaves elliptical, acute to obtuse and subapiculate, scarcely spurred, decreasing upward, 12-27 mm long, 5-9 mm wide, 2-3 mm thick, flattish



