



Fig. 1. *Echeveria nayaritensis* Kimn., holotype collection. 1. Leaf,  $\times 1$ . 2. Cincinnus,  $\times 1$ . 3. Flower, side view,  $\times 2$ . 4. Flower, apical view,  $\times 2$ . 5. Petals and stamens,  $\times 2$ . 6. Gynoecium,  $\times 2$ . 7. Nectary, greatly enlarged. Drawing by Marilyn A. Ward, 1978.

## A NEW ECHEVERIA FROM NAYARIT, MEXICO

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Midway between Guadalajara and Tepic in Mexico is the impressively massive cone of Volcán Ceboruco. One has a fine view of it to the north while motoring along the highway between those two cities, and at one point the road traverses the most recent lava flow of 1870—a desolate, other-worldly landscape of jumbled blocks of bare black lava. Here and there islands of vegetation are gaining a foothold—fat-trunked burseras, *Hylocereus purpusii*, *Cephalocereus purpusii*, plumeria, orchids and bromeliads.

In 1970 Fred Boutin and I were exploring one of the older lava-flows several miles farther on toward Guadalajara and a mile west of Ahuacatlán. The steep mass of lava was thickly covered with large succulent trees of *Bursera*, *Bombax palmeri*, and *Ceiba*, as well as smaller plants like *Mammillaria pseudoscrippiana* Backeberg. Suddenly I came across a red-leaved species of *Echeveria*, a genus not recorded in the literature for the state of Nayarit. Another hour's search failed to reveal another plant. In 1976 I revisited the site alone



and, after an hour of precarious climbing over the sharp-edged lava, found another small plant.

It is possible that this species was first discovered some twenty years ago by Hernando Sánchez-Mejorada and Dudley Gold. Hernando informs me that they found an *echeveria* with bluish obtuse leaves on a lava hill near Ixtlán del Rio, Nayarit, which is only eight miles east of Ahuacatlán. The plant did not survive for long and unfortunately its identity is uncertain.

Though the two plants collected at Ahuacatlán were less than three inches tall, they have behaved quite differently in cultivation under glass. The older plant is now much-branched and over three feet in height, not including the inflorescence, while the younger already has a two-foot stem. Rooted cuttings elongate rapidly and the species seems to be the most vigorous and tallest-growing *echeveria* yet described, excepting only *E. procera* Moran, which may form stems to six feet high. Perhaps the usual habitat for our new species is not lava beds, where its growth and branching appear to be suppressed. Further exploration of the area may discover larger shrubby plants growing on a more fertile substratum.

This interesting species is named for its native state, small but beautiful Nayarit.

***Echeveria nayaritensis* Kimn., sp. nov.**

Planta alta fruticosa ramosa glabra; caulis principalis ad 135cm altus 2-3 cm crassus; rami laterales 10-30cm longi; folia diffuse rosulata obovata subobtusa (4-) 7-16cm longa 2-7cm lata rubello-brunnea; ramus florifer 35-75cm longus, bracteis linearo-obovatis 2-8cm longis 1-2cm latis; inflorescentia paniculata 20-35 cm longa, ramis 2-12 adscendentibus 9-15cm longis omnis 1-3 cincinnos ferentibus, bracteis linearibus 7-10 (-20)mm longis; cincinni floribus 5-10; pedicelli 7-11mm longi 2mm crassi, bractea 1; sepala recurva inaequalia deltoideo-ovata acuta 3-8mm longa 2-3mm lata rubello-viridia; corolla campanulata 10 mm crassa prope basin, limbo 13mm lato; petala oblonga-ovata acuta 12-15mm longa 5-6mm lata subroseo-aurantiaca, apicibus recurvis; filamenta 6-7mm longa; gynoeceum ca. 10mm longum, stylis ca. 5-mm longis.

*Plants* entirely glabrous; cultivated plants shrubby, the main stem to 135mm tall or more, emitting numerous branches 10-30cm long; *stems* 2-3cm thick, smooth except for leaf scars, pinkish cream; *leaves* in diffuse rosettes, ascending when young, later rotate to recurving, attached ca. 1-1.5cm apart, obovate, subobtuse, with a mucro less than 2mm long, 4-7cm long and 2-4cm wide on old branched plants, to 16cm long and 7cm wide on young plants less than 30cm tall; petiolar portion

canaliculate, ca. 1cm wide and 4mm thick on old plants, ca. 1.5cm wide and 1cm thick on young plants; upper surface flat to concave, the lower surface convex, the entire leaf purplish when young, later purplish brown, the margin of young leaves white for a width of less than 1mm, later reddish, the older leaves with several obtuse longitudinal ridges indicating major veins. *Floral stems* in cultivated plants appearing in November-December, one to several, 35-75cm long, 10-11mm thick near base, 8-9mm thick just below inflorescence;



Fig. 2 (above). *Echeveria nayaritensis* inflorescence and (fig. 3, below) rosette.







Fig. 4. Type plant of *Echeveria nayaritensis*, H.B.G. 25089. Fig. 5 (right). Volcan Ceboruco looms over its lava flow of 1870. In the foreground are Dolores Boutin and a Huntington expedition vehicle.

*bracts* ascending, 2–3cm apart, linear-obovate, subobtusate, mucronate, 2–8cm long, 1–2cm wide, colored as the leaves, spurred at base, the spur appressed to stem, subobtusate, 3–5mm long; *inflorescence* paniculate, 20–35cm long, the branches ascending, 10–12 on a young plant, 2–5 on older plants, 9–15cm long, the lower ones lacking flowers for 5–8cm, the upper ones lacking flowers for 1–3cm, the branches with 1–3 cincinni, the bracts linear, 7–10(–20)mm long; *flowers* 5–10 on each cincinnus; *pedicels* 7–11mm long, ca. 2mm thick, lacking bracts except for the terminal one on each cincinnus; *sepals* strongly recurving-reflexed on newly opened flowers, ascending on dry flowers, unequal, deltoid-ovate, acute, the lower surface flat, the upper strongly convex, 3–8mm long, 2–3mm wide at base, 1.5–2mm thick at middle, reddish green; *corolla* campanulate, 10mm thick near base, 9mm thick at middle, the limb ca. 13mm wide; *petals* oblong-ovate, acute, the apices recurving, connate at base for less than 2mm, 12–15mm long and 5–6mm wide at widest part, the exterior pinkish cream on basal third, the apical two-thirds orange and with or without faint red dots, the keel pronounced, subacute, reddish, the interior yellow with apices reddish along margin, the petals turning purplish pink after closing; nectar pit present at base of interior side of each petal; *filaments* ca. 0.5mm thick, light yellow, those of antesealous stamens ca.

7mm long, those of the epipetalous ca. 1mm shorter, the latter inserted 3mm above base of petal, the anthers 1.5mm long, 0.75mm wide when dehiscent; *nectaries* lunate-oblong, flattened or slightly concave on outer face, yellow, often with a buttress-like projection less than 0.5mm wide at apex and connate with base of each pistil; *gynoeceum* ca. 10mm long, the *pistils* closely appressed along lower half, 2.5–3mm wide near base, light yellow, grading into the styles, which are ca. 5mm long and brownish red, the terminal 2–3mm straight to variously curved. *Gametic chromosome number*:  $n = 27$ .<sup>o</sup>

Mexico: Nayarit: ca. 1 mile NW of Ahuacatlán, on lava hill along Highway 15, 3,500' alt., Huntington Botanical Gardens 36317, Jan. 27, 1976, M. Kimmach 1912 (HNT, holotype); same locality, Huntington Botanical Gardens 25089, Feb. 13, 1970, F. Boutin & M. Kimmach 3249 (HNT, MEXU, SD, US, paratypes).

*Echeveria nayaritensis* is a well-distinguished species of series *Gibbiflorae*, most similar to *E. longiflora*, *E. violescens*, *E. gibbiflora* and *E. grandifolia*. It differs from *E. longiflora* in its branching, its longer, redder-colored leaves and its shorter flowers; from *E. violescens* in its brownish red leaves, recurving sepals and orange corolla; and from *E. gibbiflora* and *E. grandifolia* in its taller, branching habit, thinner stems and orange corolla. *E. nayaritensis* is a diploid, its gametic chromosome number of 27 being the basic number in series *Gibbiflorae* (Uhl, unpubl.).

Though it lacks the compact growth that makes the stemless echeverias popular with growers, the brownish red leaves of *E. nayaritensis* and its easier culture should encourage its cultivation. It will be distributed by the International Succulent Institute and the Huntington Botanical Gardens.

<sup>o</sup> Counts of both the holotype and paratype collections were made by Charles Uhl, Cornell University.