

Echeveria coppii Moran ex Gideon F.Sm. & Bischofberger (Crassulaceae), a new species from Sinaloa, Mexico

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Summary: We formally describe *Echeveria coppii* Moran ex Gideon F.Sm. & Bischofberger (Crassulaceae), from Sinaloa, Mexico, a species that was known to both Reid V. Moran and Charles H. Uhl, two students of the Crassulaceae. Already 50 years ago Moran prepared a specimen and produced a description of this plant but never published it. *Echeveria coppii* has its elliptic-lanceolate to oblong leaves arranged in rosettes carried at the apex of stems that can reach a length of 60cm. The species has red flowers and the leaves are reddish brown. Along with only two other species, *E. affinis* E.Walther and *E. craigiana* E.Walther, *E. coppii* belongs in *E. ser. Occidentales* Moran.

Zusammenfassung: Wir beschreiben mit *Echeveria coppii* Moran ex Gideon F. Sm. & Bischofberger (Crassulaceae) formell eine Art aus Sinaloa, Mexiko, die sowohl Reid V. Moran als auch Charles H. Uhl, zwei Bearbeitern der Crassulaceae, bereits bekannt war. Bereits vor 50 Jahren fertigte Moran einen Herbarbeleg an und erstellte eine Beschreibung dieser Pflanze, veröffentlichte diese aber nie. Bei *E. coppii* sind die elliptisch-lanzettlichen bis länglichen Blätter in Rosetten angeordnet, die an der Spitze von bis zu 60cm langen Triebeln stehen. Die Art hat rote Blüten und die Blätter sind rötlich braun. Zusammen mit nur zwei anderen Arten, *E. affinis* E.Walther und *E. craigiana* E.Walther, gehört *E. coppii* zur *E. ser. Occidentales* Moran.

Introduction

Both Reid V. Moran (30 June 1916–21 January 2010) (Kimmach, 2008, 2010) (Figure 1) and Charles H. Uhl (28 May 1918–29 August 2010) (Stephenson, 2011: 26, 42–43) (Figure 2), two USA-based Crassulaceae researchers, were familiar with material here described and published as *Echeveria coppii* Moran ex Gideon F.Sm. & Bischofberger (Crassulaceae). Specimens were originally collected by Dennis E. Breedlove (1939–4 June 2012) (Figure 3) in 1968 in Sinaloa, Mexico, and variously referred to by Uhl as *Echeveria cf. affinis* E.Walther (Uhl, 1995: 25) and *Echeveria sp. nov.* (Uhl, 1995: 26, last row in Table 1). Breedlove apparently gave

material to Moran and also to Joe Copp (see ‘Eponymy’, below) of San Diego. Copp cultivated it and in 1971 passed it anew to Moran. Moran’s *Echeveria* database indicates that between 1968 and 1972 six specimens were prepared, the one dated 21 August 1968 being the holotype, which is deposited in Herb. SD, the Herbarium of the San Diego Museum of Natural History, where Moran worked for many years.

We here describe this species, hitherto referred to as “*Echeveria cf. affinis*” or “*Echeveria sp. nov.*”, as *Echeveria coppii* Moran ex Gideon F.Sm. & Bischofberger.

Herbarium codes follow Thiers (2019).

A new species of *Echeveria*, *E. coppii*

An intergeneric hybrid in ×*Sedeveria* E.Walther (Walther, 1953: 20) that was undoubtedly artificially produced by Uhl during the early-1960s for cytogenetics research purposes had what was referred to by Uhl (1995: 25) as *Echeveria cf. affinis* as one parent and *Sedum craigii* R.T.Clausen as the other one (Smith & Bischofberger, 2019). However, as comprehensively discussed by Smith & Bischofberger (2019), the parentage of the commonly cultivated cultivar ×*Sedeveria* ‘Blue Mist’ most likely is *E. affinis* (Figures 4 & 5) × *S. craigii* and much less likely *E. cf. affinis* × *S. craigii*. It is the latter *Echeveria* DC. entity, i.e., *E. cf. affinis*, that concerns us here and that we describe as *E. coppii*.

Entry no. 14823 in Moran’s field book reads: “Received from Dennis Breedlove 2 March 1968. Collected 18 Feb. at 7800 feet [2275m] 6 miles SE of Los Hornos, NE face of Sierra Surutato, Sinaloa. ?Near 25°50’ N, 107°30’ W”. This information is repeated on the collecting label attached to the holotype (Figure 6), which was prepared some six months later. Dennis Breedlove is mentioned several times in Moran’s *Echeveria* database for the years 1964–1965, when Breedlove was collecting plants in Chiapas, Mexico, and in Guatemala.

The description of *Echeveria coppii* provided by Moran in his notes is extremely accurate and comprehensive and he additionally outlines differences



Figure 1. Dr Reid V. Moran, Crassulaceae systematist based at the San Diego Museum of Natural History, USA, had material of the species here published as *Echeveria coppii* in cultivation. Photograph of Reid Moran taken by Dr George E. Lindsay in ca. 1950 and published in Kimnach (2008). Image created and supplied by Roy Mottram. Reproduced with the permission of the Cactus & Succulent Society of America (CSSA). © of the CSSA.

between it and *E. affinis* E.Walther and *E. craigiana* E.Walther, the only two hitherto known species included in *E. ser. Occidentales* Moran (Moran, 1968: 37; see also Kimnach, 2003: 105, 110 and Pilbeam, 2008: 14). Moran also notes that “The open aestivation of the petals [of *E. coppii*] is of interest; and both species [*E. affinis* and *E. craigiana*] should be checked again for this”.

***Echeveria coppii* Moran ex Gideon F.Sm. & Bischofberger sp. nov.** Type: MEXICO. SINALOA. 6 miles [~9.7km] southeast of Los Hornos, northeastern face of Sierra Surutato, possibly [“?”] near 25° 50' N, 107° 30' W., elevation ca. 2370m [7775.6 feet], collected at this location on 18 February 1968 by D.E. Breedlove without a number, received from Breedlove by Moran on 2 March 1968, specimen prepared on 21 August 1968 from material that flowered in cultivation in San Diego on 18 August 1968, *Moran 14823*, SD (holo-) (Figure 6).

Diagnosis: The rosette morphology and red flowers of *Echeveria coppii* are similar to those of *E. affinis*. However, the leaves of *E. coppii* are reddish brown, unlike those of *E. affinis* that are

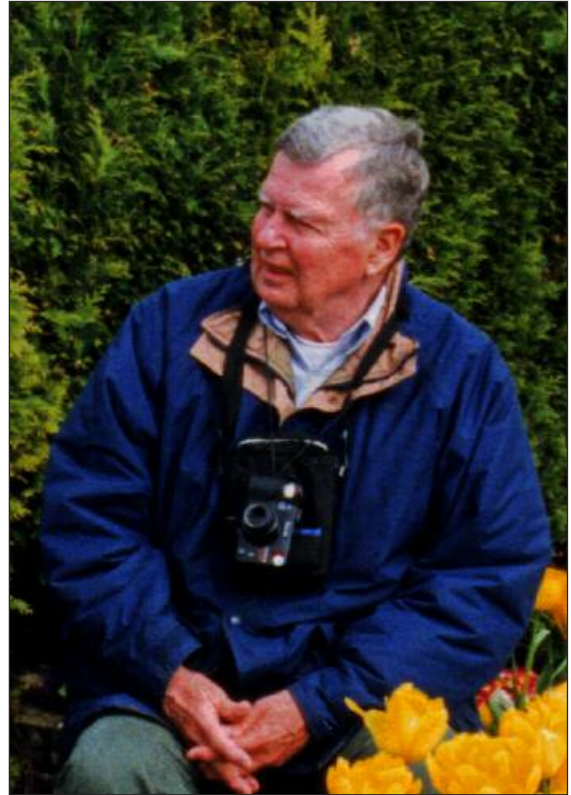


Figure 2. Dr Charles H. Uhl, who studied the cytogenetics, evolution, and systematics of the Crassulaceae at Cornell University, Ithaca, USA, was aware of material of *Echeveria coppii* and used it in some of the intergeneric hybrids he created in the Crassulaceae.

Photograph taken in the mid-1990s at the home of Uhl’s daughter, Mary, in Bishop Burton, East Yorkshire, United Kingdom, by Ray Stephenson.

greenish black. *Echeveria coppii* differs from *E. craigiana* in that the leaves of the latter are linear-oblong, 8–11cm long, to 2cm broad, and not elliptic-lanceolate to oblong as in *E. coppii*. The inflorescences and flowers of *Echeveria coppii* are more like those of *E. craigiana* in that inflorescences branch further down, some almost to the base.

The description provided below is a harmonised compilation of three separate descriptive type-scripts from the notes that Moran affixed to the holotype. Moran based the three descriptive texts on:

sterile material received from Dennis Breedlove on 2 March 1968. The plant was not in flower and only vegetative characters (for example of the stem, rosette, and leaves) were recorded; the same plant cultivated and flowering in San Diego on 18 August 1968; and an inflorescence received from Dennis Breedlove one year later, on 12 August 1969. Breedlove



Figure 3. Dr Dennis E. Breedlove, California Academy of Sciences, San Francisco, USA, collected the material that was eventually preserved and deposited at Herb. SD, as *Moran 14823*, the holotype of the name *Echeveria coppii*.
Photographer unknown. Image © and supplied by Thomas F. Daniel.

had obviously also been cultivating material of this species, likely in San Francisco, where he was curator of botany at the California Academy of Sciences from 1969 to 1994 (Daniel & Almeda, 2012).

Drawing up these three comprehensive descriptions on separate occasions based on fresh material was typical of Moran's meticulous working procedures when studying plants first-hand (Kimmach, 2010: 138; Mitich, 1996: 363; and Lindsay, 1996: 368 acknowledged Moran as an indefatigable collector of preserved specimens and specialist on *Dudleya* Britton & Rose).

Description: *Caudex* 17mm thick, whitish or pale green, ± flattened at leaf base sites (in old plants decumbent to *ca.* 6dm long × 4cm). *Rosette* to 12cm wide, consisting of 20–24 ascending leaves, all crowded at apex of caudex. *Leaves* elliptic-lanceolate to oblong, broadly acute to broadly subacuminate, apiculate, to 5.5cm long, 20–24mm wide, 7–8mm thick, *ca.* 12mm wide at the base, light yellowish green below, reddish brown above, shiny, obscurely keeled dorsally, slightly concave ventrally, the margins narrowly rounded. *Floral stem* 32cm tall including inflorescence, *ca.* 9mm thick (wide) at base, 5mm thick at 3cm above base, pale green below to bright red in inflorescence, bare in lower 13cm, with 11 leaves or scars higher up (below inflorescence). *Bracts* (12–)22–25mm long,



Figure 4. *Echeveria affinis* is a rosetate species with dark green to black leaves.
Photograph: Gideon F. Smith.



Figure 5. Close-up of the bright, crimson red flowers of *Echeveria affinis*.
Photograph: Gideon F. Smith.

(4–)5–7mm wide, 2.5–3.5mm thick, elliptic-lanceolate, subadpressed, acute and apiculate, spurred, the spurs shortly and irregularly 1–2-toothed. *Inflorescence* 6–16 × 3.5–8.0cm, 16–30 branches plus terminal flower, the branches 1–2(–3) flowered, the lower clearly showing aborted remnants; true *pedicels* to 5mm long and pseudopedicels to 10mm long, ± 1mm thick; lower *pedicels* 10–15 × 1.5–2mm, upper *pedicels* 5 × 1mm. *Calyx* reddish to dark red, disk 3.0–3.5mm wide, the segments erect and adpressed in bud and late anthesis but for a time upcurved with tips *ca.* 1mm from corolla, nearly equal to slightly unequal in width, (4–)5–8 × 1.0–1.5mm mm long, (1–)2–3mm wide, triangular-lanceolate, acute. *Corolla* red, 6–8(–9)mm long when closed, 6–7mm long when open,



Figure 6. Image of the holotype of the name *Echeveria coppii*. Photograph credit: San Diego Society of Natural History.

4mm wide at base, 9–12 mm wide at the outcurved tips, pentagonal with slightly convex to flattened sides, *petals* connate *ca.* 0.5mm, imbricate in bud but open at anthesis, with edges parallel and *ca.* 0.3mm apart, triangular-lanceolate to oblong, acute, apiculate, 8.5–9.0mm long, 2.5–3.0mm wide, with tip outcurved, slightly cupped at base but scarcely excavate. *Filaments* white to pink below, red above, the antesealous 6.0mm long and 0.5mm wide at the base (*ca.* 0.6mm thick), the epipetalous 5.5mm long and 0.5mm wide at the base (both antesealous and epipetalous 5–6 mm high from corolla base), the epipetalous adnate for *ca.* 1.0mm. *Anthems* yellow, oblong, apiculate, 1.8–2.5 × 0.6–0.8mm. *Nectar glands (scales)* whitish, 1.2mm wide, the secretory face oval, obliquely upward, ± perpendicular to axis. *Gynoeceium* 6–7mm high, 3mm thick, the ovaries whitish at base to pink above, the *pistils* erect, adpressed, connate *ca.* 1.25mm, tapering to slender *styles* 2–3 mm long, red with green tips. *Ovules ca.* 150, *ca.* 0.50 × 0.15mm. *Chromosome number:* recorded as having a gametophytic chromosome number of $n = 30$ (Uhl, 1978: 497, 508, 1995: 25).

Distribution: Sierra Surutato, Sinaloa, Mexico.

Etymology: The specific epithet “*coppii*” commemorates Joe Copp of La Jolla, a coastal community *ca.* 20km north of the city centre of San Diego, California, USA. Joe Copp was mentioned in Reid Moran’s field books as early as 1965. Copp had material of *Echeveria coppii* that he obtained from Dennis Breedlove in cultivation and passed it on to Moran. Earlier, Copp had also received plants of *Sedum hemsleyanum* Rose and *Thompsonella minutiflora* (Rose) Britton & Rose from Breedlove, and this material too was passed to Moran by Copp. Interestingly, one of the photographs of Dennis Breedlove that appeared in his [Breedlove’s] obituary was accredited to “C. Kopp, C.A.S. [California Academy of Sciences] Special Collections” (Daniel & Almeda, 2012: 1137).

All our efforts to gain more information about Joe Copp were unsuccessful. We nevertheless honour Moran’s express wishes to commemorate Copp in the name *Echeveria coppii*.

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