Echeveria uxorium Jimeno-Sevilla & Cházaro **sp. nov**. (Figs. 1, 2, 3).

Planta perennis, glabra, caulescens, caulibus ad 15–45 cm longis, folia oblanceolata ad oblanceolata-obovata, viridis valde, margo pallide lutea; inflorescentia racemosae, thyrsiformis vel subracemosae, usque ad 48 ramus; bracteis oblanceolata ad oblanceolata-obovata; pedicellis 4–12(–20) cm longis, bracteolatis; sepala ad basem connata, lanceolata, acuminata, inaequalia, 4.0–13.5 mm longis, corolla conoideis 9–15 mm longis, 9 mm diametro basi, pentagonalibus, petalis lanceolata 9–15 mm longis, 3.8 mm latis, apice acuminata, rubens-armeniacus, pruinosa, intus lutea. Nectaria 1.8 mm latis pallide lutea.

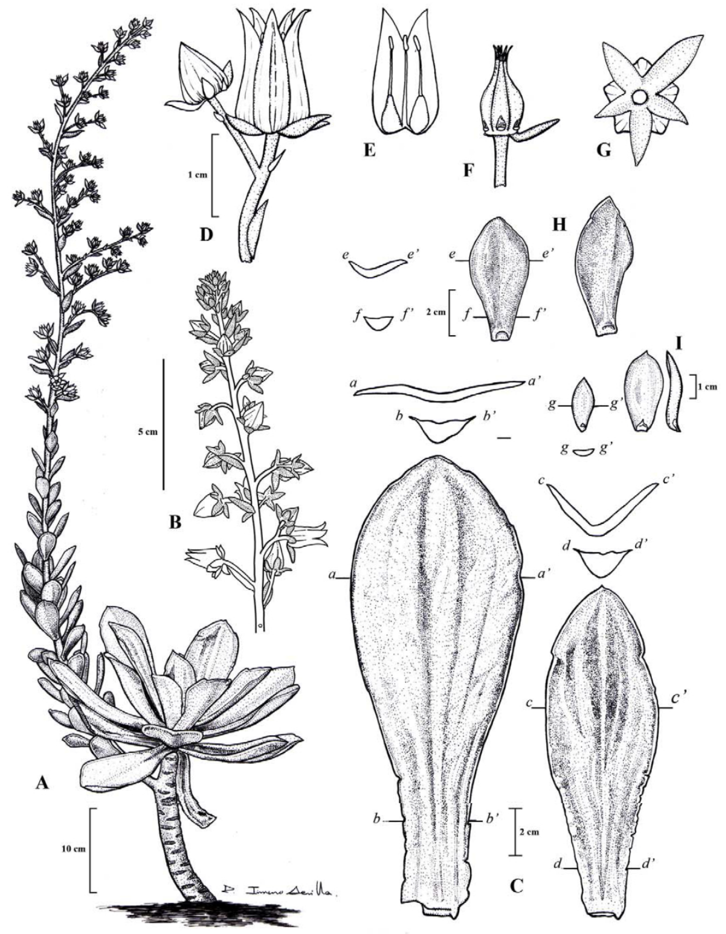

Figure 1. *Echeveria uxorium*; A. Plant with inflorescence; B. Details of the inflorescence apex; C. Leaves, upper side and transversal cuttings; D. Flower: E. Corolla lobes with stamens; F. Carpels; G. Flower, inferior side. Based on D. Jimeno-Sevilla, M. Cházaro & A. Albalat 245 (IEB).

Type: MEXICO. **Veracruz**, Municipality of Amatlán de los Reyes. Summit of the hill Rostro Divino 2 km NE of the bus Terminal of Cordoba city. Limestone rocks with East exposure. 18°52'42"N, 96°54'18"W, 843 m, 1 Aug 2006. *D. Jimeno-Sevilla, M. Cházaro & A. Albalat 245.* (Holotype: IEB. Isotypes: IBUG, MEXU, XAL.)

Paratypes: MEXICO. **Veracruz**, Mun. Zongolica, along the road between Acontla towards Apanga, on rocky talus, at roadside 18°38'56.54"N, 96°59'25.1"W, 1280 m, 9 Mar 2009, *D. Jimeno-Sevilla, J. Viccon, T. Krömer & G. Sánchez 1082* (IEB, MEXU, XAL); Street Ignacio Zaragoza at Zongolica village, on roof tiles, 10 Mar 2009, *D. Jimeno-Sevilla, J. Viccon, T. Krömer & G. Sánchez 1083* (IEB, MEXU, XAL).

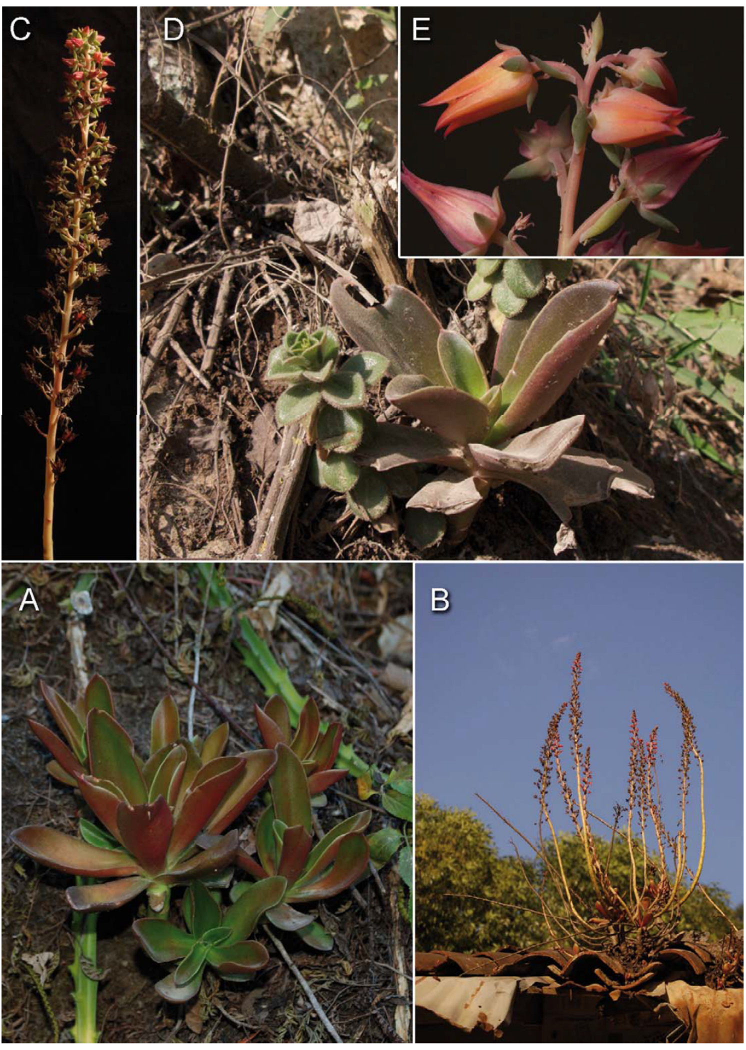

Figure 2. *Echeveria uxorium*. A., B., and D. Habit; C. Inflorescence; E. Details of the inflorescence. All photos by D. Jimeno-Sevilla.

Perennial herbaceous plant, glabrous, caulescent; solitary or forming individual clumps; fibrous roots; **stem** 15–45 cm long or more, 4 cm diameter; rosette 8–20(–30) cm in diameter, with 13–18 leaves, some-

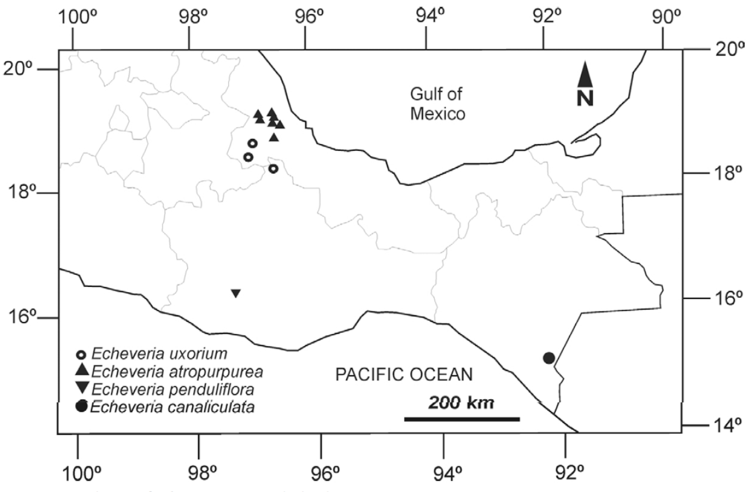

Figure 3. Distribution of *Echeveria uxorium* and related species.

what lax; **leaves** oblanceolate to oblanceolate-obovate, with entire margin, and lacerate to undulate toward the base, 13–19 cm long by 5.7–7.2 cm wide, 4 mm thick, with the upper side flattened to cuneate, channeled, with the underside convex, with a somewhat rounded keel, intense green color fading to yellow at the rims, apex acuminate with a small notch, 1.5 mm, reddish; **inflorescences** in racemes usually in a thyrsiform arrangement, with several branches (up to 48); floral stem 1, lateral, length of the peduncle up to the first branching 41–65 cm, total length of peduncle up to 97 cm, diameter of the base 1.7 cm, brilliant green, number of flowers per cincinnus 1–8, total number of flowers to 60; leaves of the floral stem to 59, alternate, ascendant, oblanceolate to oblanceolate-obovate, shattering, convex and keeled underside, and concave upper surface, to 8 cm long and 3.4 cm wide, 5 mm thick, deep green, fading to yellow at the margin, apex oblique acuminate to round, mucronate; bracteoles lanceolate to oblanceolate-obovate, spurred, shattering, convex on the underside and concave on the upper side, to 3.5 cm long and 16 mm wide, acuminate apex, mucronate, pedicels 4–12(–20) mm long and 2.5 mm in diameter, green color, usually with 2 bracteoles; calyx of 5 sepals slightly united at base, lanceolate, acuminate, unequal, erect, convex on both sides, the largest 13.5 mm long and 6 mm wide, the smallest 4 mm long and 3 mm wide, green color; corolla conoid, 9–15 mm long and 9 mm wide in the base, forming a tube 2.3 mm long, pentagonal; petals 5, lanceolate, to 9–15 mm long and 3.8 mm wide, keeled, somewhat pruinose, apex acuminate, external color reddish-orange, internal color yellow with the margin and apex reddish, with nectarial cavity conspicuous; stamens 10, of which the 5 epipetalous stamens are 8 mm long, and the 5 antesepalous stamens 10 mm long, cream color, with anthers yellow; nectaries inconspicuous, reniform, 1.8 mm wide, pale yellow; ovary superior, 5 free carpels, each 6 mm high and 2.3 mm wide; style 3 mm long, reddish; **follicles** ascendant, reddish brown, with numerous seeds.

Distribution and habitat. This species is so far known only from the states of Oaxaca and Veracruz, in the latter from the region of Córdoba, where it has been located growing at the summit of three small limestone (karstic) hills, on rocky outcrops, at an elevation of 850 m. The climate in the region it is semi-hot and humid, with rainfall in summer, influenced by trade winds (ca. 2000 mm annual precipitation) (Soto 1986), the vegetation being tropical subdeciduous forest (sensu Rzedowski 1978) or medium-sized subperennial forest (sensu Miranda & Hernández 1963). This type of vegetation is unusual for the genus. Some floristic elements of this locality are: *Plumeria rubra* L, *Cnidoscolus multilobus* (Pax) I.M. Johnston, *Protium copal* (Schl. & Cham.) Engl., *Agave gomezpompae* Cházaro & Jimeno-Sevilla, *Villasenoria orcuttii* (Greenm.) B.L. Clark, *Hechtia purpusii* Brandegee, and *Yucca elephantipes* Regel. In the Zongolica region it grows on the tiles of the roofs of houses in the village of Zongolica, as well on rocky talus at the roadside ca. 2 km SSE of Zongolica, at an altitude of 1300 m, in the cloud forest, the regional climate being temperate-humid, with summer rains (Soto 1986) thriving with *Quercus* spp., *Agave obscura* Schiede, *Bocconia frutescens* L., and *Talauma mexicana* (DC.) Don.

Although no herbarium specimens were examined from the state of Oaxaca, Pilbeam (2008) presents a photograph of a plant from La Margarita, north of the dam Miguel Alemán, misidentified as *Echeveria canaliculata* Hook. f. Due the similar ecological conditions, *E. uxorium* likely also occurs in the state of Puebla. Expeditions should be carried it out to the SE corner of that state (Fig. 3).

		Echeveria uxorium	*Echeveria canaliculata**	*Echeveria penduliflora***	*Echeveria atropurpurea****
Rosette	diameter (cm)	30	–	28	40
	no. of leaves	18	13	–	19
Stem length (cm)		45	short	30	More than 25
Leaves	Outline	oblanceolate, oblanceolate-obovate	oblong	oblong-oblanceolate	oblong-oblanceolate
	Hairiness	glabrous	glabrous	glabrous	pilose
	Length (cm)	19	10–15	14	7–21
	Width (cm)	7.2	–	4	1.5–4
	Color	Green intense Fading to yellow	glaucous, tinged with purple	Green	Green to purple
Bracts	shape	oblanceolate, oblanceolate-obovate	oblong	obovate-oblong	oblong-oblanceolate spurred
	length (cm)	8	–	5	7.3
	width (cm)	3.4	–	1.5	1.7
	apex	oblique acuminate to roundish, mucronate	acute	acute	acute
Floral stem length (cm)		97	35–50	30	77
Flower arrangement		erect	erect	pendulous	erect
Inflorescence	type	racemose to thyrsiform	racemose	racemose, unilateral	racemose
	No. of branches	Up to 48	no branches	no branches	no branches
	No. total of flowers	60	22	60	14
Corolla	Diameter (mm)	9	–	9	8
	Length (mm)	13	25	13	14
Calyx	Sepal position	erect		erect	flattened
	symmetry	unequal	flattened-reflex, subequal	unequal	subequal
	shape	lanceolate, acuminate	linear-lanceolate	linear-deltoid	oblanceolate
	length (mm)	4–13.5	–	6	5–7.5
	width (mm)	3–6	–	–	3–4
Type of vegetation		tropical subperennial forest and cloud forest	–	xerophytic scrub (Pérez Calix & Franco 2004)	tropical deciduous forest
Flowering time		June–March	April	–	July–January
Distribution		central Veracruz and northeast Oaxaca	Motozintla, Chiapas?	Ejutla, Oaxaca	central Veracruz
Altitude (m)		843–1300	1200	1200–500	437–642

*The measurements of *Echeveria canaliculata* were taken from Walther (1972).
**The measurements of *Echeveria penduliflora* were taken from Walther (1958).
***The measurements for *Echeveria atropurpurea* were obtained from Jimeno-Sevilla & Albalat-Botana (2011).

Table 1. Comparison of distinctive morphological characters, phenology and distribution of *Echeveria uxorium*, *E. penduliflora* E. Walther, *E. canaliculata* Hoof. f. and *E. atropurpurea*. (Baker) E. Morren.

Phenology: *Echeveria uxorium* blooms and sets fruit from June to March.

Etymology: The species name *uxorium* (the Latin word meaning "of a wife") acknowledges and recognizes the unconditional help of Mrs. María Patricia Hernández de Cházaro, wife of the second author, who for many years was a companion and assistant in the task of collection and pressing plants, and who photographed them throughout the state of Veracruz, and likewise acknowledges Biologist Amparo Albalat Botana, wife of the first author, who works with great enthusiasm and dedication in the field of applied botany.

Walther (1972) places the robust species with inflorescences in equilateral racemes, with long bracteolate pedicels and with a conspicuous stem, in the series *Elatae* E. Walther, which contains the species *Echeveria atropurpurea* (Baker) Ed. Morren, *E. bicolor* (Kunth) E. Walther, *E. canaliculata* Hook. f., *E. cuencaensis* Poelln., *E. penduliflora* E. Walther, and *E. venezuelensis* Rose. On the other hand, Kimnach (2003) placed them in the series *Nudae* E. Walther. Moran (1974) and Meyrán & López (2003) consider a more ample criterion for the series *Racemosae* (Baker) Berger, including also the species of the series *Elatae*. However in phylogenetic studies based on DNA sequences (Carrillo et al. 2009), series *Racemosae* and *Nudae* are not shown as natural groups, although it must be pointed out that the majority of species placed in these series have yet to be tested in this kind of analysis.

Until future phylogenetics studies on *Echeveria uxorium* are carried out, in the meantime we placed it in the series *Racemosae* (Baker) Berger, following the criteria of Moran (1978) and of Meyrán & López (2003). Since *E. uxorium* presents an equilateral racemose inflorescence with long and bracteolate pedicels, it has affinities with *E. penduliflora*, *E. atropurpurea* and *E. canaliculata*, due to the caulescent habit and a somewhat lax rosette. However, it differs in the form of the rosette leaves and the floral bracts, as well in the vegetation type (see Table 1). A unique character within the series *Racemosae* is an inflorescence generally thyrsiform with numerous branches; this trait could cause confusion with members of the series *Gibbiflorae* (Baker) Berger, however the branches do not form cincinni and the superior portion shows an equilateral raceme, a fact that does not occur with other members of the series.

It is very likely that the illustration of *E. canaliculata* shown by Pilbeam (2008, figures 48 and 49), from material collected at La Margarita north of the dam Miguel Alemán, in the state of Oaxaca, in fact could be *E. uxorium*. The inflorescence can be clearly distinguished as thyrsiform with branches at the base, as well oblanceolate leaves with yellow margins. Unfortunately we did not have a chance to go there and verify this possible identity in living material, nor did herbarium material exist from this locality to confirm our suspicion.