

SEDUM BRACHETII (CRASSULACEAE), A NEW SPECIES FROM GUERRERO, MEXICO

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Abstract: A new species, *Sedum brachetii* Reyes, Islas et González-Zorzano, is described from Guerrero, Mexico. Placed within the section *Pachysedum*, *S. brachetii* differs from its closest comparable relatives *S. clavatum*, *S. orbatum*, *S. cuspidatum* and *S. oculense* in stem size, leaf structure, inflorescence size and nectary color. Figures of the holotype are provided.

Fieldwork and identification of Mexican Crassulaceae have revealed the following novelty:

Sedum brachetii Reyes, Islas & González-Zorzano sp. nov. Figs. 1–5. All photos by Jerónimo Reyes Santiago.

Sedum brachetii Reyes, Islas & González-Zorzano a suis congenericis *S. clavato*, *S. orbato*, *S. cuspidato* et *S. oculensi sed caulibus longioribus cum maculis brunneo rubentibus, foliis spathulatis longioribus apice truncato, inflorescentibus longioribus, nectaris ochraceis maculis rubris differt.*

Perennial herb, lithophyte, branched from the base. **Stems** erect to decumbent, up to 40 cm long, 9–11 mm thick, with reddish brown spots, few lenticels and adventitious roots evident. **Leaves** arranged in terminal rosette, sessile, spatulate, to 5.5 cm long, 1.8–2.4 cm wide, 4–5 mm thick, glabrous, yellowish green with reddish spots and general dark reddish tint on the apical margin, margin entire and apex truncated. **Inflorescences** 1–2 per branch, 20–42 cm long, paniculate, with 10–16 bracts on the flowering stem, these 2.0–3.5 cm long, 1.5–2.0 cm wide; 7–15 racemes with 8 flowers each, pedicels 1–2 mm long, ca. 1 mm thick. **Sepals** unequal, ascending, 3–5 mm long, 1.5–2.0 mm wide, linear lanceolate, green with red macules. **Petals** white, reflexed, slightly extended at anthesis, free, 5–7 mm long, 2–3 mm wide, ribbed, lanceolate, apiculate. **Gynoecium**: 5 carpels, 4–6 mm long including style, erect, white, with white style, recurved. **Androecium**: 5 epipetalous stamens, 4–6 mm long, and 5 antesealous stamens, 3–4 mm long; purple thecae prior to opening, black at opening; yellow pollen. **Nectaries** yellowish ocher with red macules.

Type: México, Guerrero: 1.3 Km. NE from Puerto del Gallo, dirt road to Atoyac de Álvarez, Municipality of General Heliodoro Castillo, 2536 m, December 18th, 2011. *J. Reyes, C. Brachet, & Ma. Ángeles Islas Luna 7519*. (Holotype: MEXU.)

Phenology: Plants bloom November to December.

Distribution and habitat: This species is known only from the type locality in the highlands of the state of Guerrero, where it grows in a xerophytic enclave, consisting of a granitic outcrop, surrounded by mountain cloud forest and *Pinus-Quercus* forest with *Abies guatemalensis* Rehder and *Agave* aff. *atrovirens* Karw. ex Salm-Dyck.

Etymology: The specific epithet honors Mr. Christian Brachet Ize, an active member of the Sociedad Mexicana de Cactología and volunteer collaborator of the Jardín Botánico, Instituto de Biología, UNAM, since 1992. During these last 20 years he has dedicated his time and resources to the search for Mexican succulent plants, especially for the living plant collection of the Jardín Botánico, UNAM.



Figure 1. *Sedum brachetii* in habitat.

DISCUSSION

The characters that most clearly distinguish the new species are the larger stems with reddish brown spots, as well as larger leaves with truncate apices. The features they share are the red anthers and white flowers in cymose inflorescence. This species belongs to section *Pachyseudum* A. Berger (an artificial and paraphyletic section) because of its shrubby habit, its lateral inflorescence, vegetative axis that is not modified by the inflorescence, and its flat leaves.

The new species shares morphological characteristics with *Sedum orbatum* Moran & J. Meyrán, *S. clavatum* R.T. Clausen, *S. oculense* J. Meyrán, and *S. cuspidatum* E.J. Alexander, but they differ mainly in the size of the stems and inflorescence, nectary color, and shape and size of leaves (Table 1).

In relation to geographical distribution and altitude, *Sedum brachetii* grows in the Sierra Madre del Sur at an altitude of over 2500 m (8200 ft) in cloud forest, while *S. orbatum* grows below 2000 m (6600 ft) in pine forest, *S. clavatum* in tropical deciduous forest, and *S. oculense* in pine-oak forest at less than 2000 m (6600 ft). These three species are located in the Mexican Volcanic Belt. *S. cuspidatum* grows at less than 800 m (2600 ft) in tropical deciduous forest in the dry mountains of Chiapas.

The position of some species with similar characters to this genus is still a topic for discussion, because of their wide variation in morphology and cytology. The genus *Sedum* is a paraphyletic group and its taxonomic limits are not at all well defined (Hart & Bleij, 2003). The worldwide distribution of the genus makes characterization difficult, and past molecular studies have shed only limited light on a limited number of groups. Therefore further research

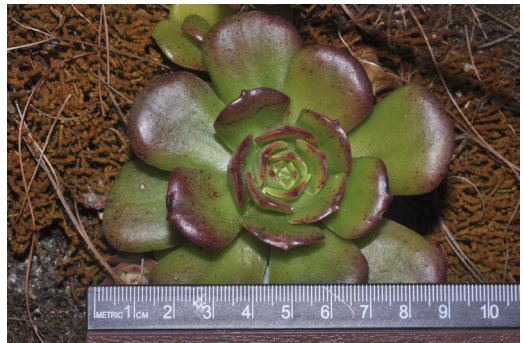


Figure 2. *Sedum brachetii* in rosette.



Figure 3. Detail of flowers of *Sedum brachetii*.

	<i>Sedum brachetii</i>	<i>Sedum orbatum</i>	<i>Sedum clavatum</i>	<i>Sedum cuspidatum</i>	<i>Sedum oculense</i>	
Stem	with reddish brown spots	without spots	without spots	without spots	without spots	
Stem length	up to 40 cm	up to 25 cm	up to 20 cm	up to 25 cm	up to 18 cm	
Leaf	Shape	spatulate	cuneate-ovovate	clavate-oblongate	obovate	long spatulate-obovate
	Length (cm)	5–5.5	3.5–6.0	1.3–4.0	2	1.8–3.0
	Width (cm)	1.8–2.4	1.5–3.5	1.0–2.0	1	0.7–1.1
	Apex	truncated	mucronate	obtuse	cuspidate	obtuse
	Indumentum	glabrous	glabrous	glaucous	glabrous	glabrous
Flowering stem length (cm)	20–42	12–20	14–19	7	2–4	
Pediceal length (mm)	1–2	1	4–6	1	2–3	
Sepal length (mm)	3–5	2–3	5–7	3.5–5.0	3–4	
Petal color	white	white	white	white	white with reddish spots near the apex	
Nectary color	yellow ocher with red spots	orange	white	white and red	dark red	

Table 1. Morphological differences among *Sedum brachetii*, *S. orbatum*, *S. clavatum*, *S. cuspidatum*, and *S. oculense*.

is of high importance (Carrillo-Reyes et al., 2009).

Until now specialist taxonomic knowledge has prevailed when it comes to defining the limits between genera and species, studying morphological differences, and taking the biogeographical history into account, which can partially explain the distribution of species.

As a final observation, *Sedum brachetii* is a caespitose species with polished leaves with high ornamental potential. It should grow well in temperate regions at higher altitudes.

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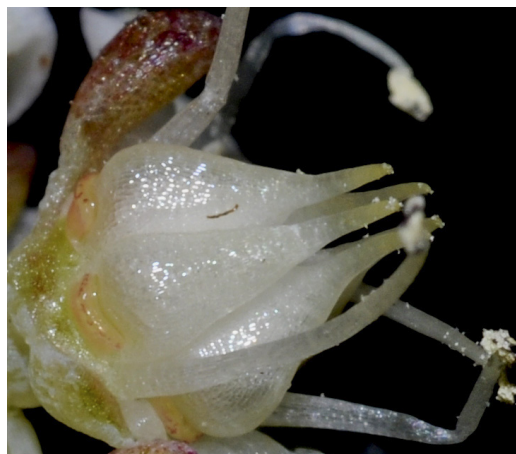


Figure 4. Detail of nectary scales of *Sedum brachetii*.



Figure 5. Detail of stem of *Sedum brachetii* with reddish-brown spots.