



2a. *Echeveria intiwayta* in habitat at the type locality. (I.P.).

2. *Echeveria intiwayta* Pino & Payano sp. nova

Holotype: PERU Dept. Junín, Prov. Concepción, Dist. Cochas. Road from Concepción to Satipo, detour to the North from Cochas to Comas, Parco community, on cliffs, growing with *Peperomia galioides*, *Epidendrum calanthum*, *Sauroglossum* aff. *corymbosum*, other orchids and bromeliads, 3,271 m, S 11° 41'29.9", W 75°04'58.5", Apr 14 2021, G. Pino, I. Payano 3297. (USM 324185) (Fig. 2a)

This plant was discovered by Iván Payano Casachahua in 2016, on one of his many trips to photograph orchids across the elevated Amazon jungle of Peru, east of the department of Junín. He is a tireless adventurer with a trained eye to discover new species. He returned to the locality in 2019 but failed to bring back plants with intact inflorescences. However, in view of his photographs, we



2b. Plant ex situ in anthesis showing branching at the base.



2c. Young plants of *Echeveria intiwayta* showing erect leaves.

thought he had found a small variety of *E. incaica* outside the department of Huancavelica, but after visiting the habitat again this year and making a close comparison of morphological features of both taxa it was clear that this is a different species.

Description: A succulent glabrous herb, with a conspicuous thick, erect aerial stem, sometimes branching at base, with a single rosette at the apex. **Roots** only at base; primary roots 4–9 cm long, 2.5–4 mm diam., gradually tapering; **secondary roots** in young plants fibrous, 1.5–3.5 cm long, 0.1–1.2 mm diam. **Stems** simple, sometimes up to 4, greenish-gray to brownish, 1.5–5 cm long, 0.8–1.2 cm diam., terete or slightly irregular due to oval, somewhat projected 0.2×0.5 leaf scars every 0.3–0.4 cm. (Fig. 2b).

Rosettes 4.5–8.5 cm diam. **Leaves** in young plants 8–11, obovate, almost erect, mucronate (Fig. 2c); in mature plants 14–27, arranged spirally in 45° at the last 1–1.5 cm of distal stem, sessile, central leaves obovate, peripheral ones very narrowly obovate, 3–5 cm long, 0.7–0.9 cm wide at base, 0.9–1.2 cm wide at proximal third, 1.4–2.3 cm wide at middle, 1.7–2.4 wide at distal third, 0.4–0.5 cm thick, upper side slightly concave to canaliculate, glaucous, dark reddish to purplish near margins or distal third, central leaves completely glaucous; lower side very convex, subcarinate near apex, dark to bright reddish or the whole surface glaucous, margins smooth, apex subobtusate with a 1×1 mm recurved mucro, base subcuneate, hyaline, lighter in color (Fig. 2d).

Flowering stem 1(–2) erect, a slightly incurved raceme, **rachis** 12–18 cm long, 3.8–5 mm diam. at base, tapering to 2–3 mm diam. at apex, light green to dark red, glaucous (Fig. 2e). **Peduncular bracts** 10–18, larger at the proximal half, spaced evenly 0.4–1.2 cm all along the stem, crowded at the beginning of anthesis near apex and more or less appressed to the peduncle, sometimes pseudo-opposite at the base,



2d. Comparison of the leaves of *Echeveria incaica* (above) and *E. intiwayta* (below), in the dry season.

oblong to very narrowly obovate, 2.2–3 cm long, 0.8–1.5 cm wide, 3–4 mm thick, upper side flat to convex or subcanaliculate, lower side subcarinate, both sides same color as leaves, reddish green near apex and lighter near base, tips obtuse with a 0.5 mm recurved reddish mucro, base hyaline (Fig. 2f). **Flowers** 8–14, appearing from May to June, present only at distal third or half of the scape, 1–1.2 cm long and 7–11 mm diam., each closely subtended by a small 1–1.5 cm long, 0.35–0.45 cm wide, 2–3 mm thick lanceolate bract, strongly incurved, adaxially concave, abaxially convex, generally surpassing slightly flower length. **Pedicels** in right angle or recurved, 1–6 mm long, 1.8–2 mm diam., same color as flowering stem. **Calyx** lobes united at base, sepals unequal, oblong to narrowly ovate, acute, ascending or spreading in 30° , both sides convex, 7–9 mm long, 2.5–4.5 mm wide, intense red. **Flower buds** ovoid, 0.7–0.8 cm long, 0.6–0.8 cm diam., bright red. **Corolla** subpentagonal, 0.8–0.9 cm diam. at base, 0.5–0.6 cm diam. at apex, 1–1.2 cm long, petals oblong to lanceolate, acute, 1–1.3 cm long, 4.5–6 mm wide, outer surface keeled, dark red, pruinose, proximal half sometimes orangish, apex slightly recurving, redder, inner surface light red, orangish in proximal half. **Stamens** 10, the 5 epipetalous 6–7 mm



2e. *Echeveria intiwayta* in habitat at the beginning of anthesis, showing bract details. (I.P.)



2f. Detail of the bracts of *Echeveria intiwayta*.

long, the antesealous 8–9 mm long, filaments cream, 0.6–0.8 mm thick at base, gradually tapering to 0.2 mm. **Anthers** ovate, yellow, 1.5–2 mm long and 0.8–1 mm wide. **Gynoecium** turbinate, 7–8 mm long, 5–6 mm thick. **Carpels** 5, white. Styles 2–3 mm long, parallel, almost touching each other, greenish, stigma reddish (Fig. 2g). **Nectaries** lunate, greenish white, 1 × 2 mm. **Fruit** a dehiscent capsule consisting of five follicles, 1.1–1.2 cm long, 1.4–1.5 cm diam. (spreading dry sepals), dark brown (Fig. 2g).

Other localities: PERU Dept. Junín, Prov. Concepción, Dist. Cochabambas. Road from Cochabambas to Comas, Parco community, 2,828 m, S 11° 41' 38.5" W 75° 05' 0.9", May 21, 2021, G. Pino & I. Payano 3303. (USM 324186). Same road, Parco Community, 2,840 m, S 11° 41' 42.8" W 75° 04' 55.5", May 21, 2021, G. Pino & I. Payano 3304. (Observed). **Dist. Comas.** Road from Cochabambas to Comas, 3,000 m, S 11° 41' 41.9" W 75° 04' 52.2", May 21, 2021, G. Pino & I. Payano 3305. (USM 324187). Same road, 3,100 m, S 11° 41' 41.6" W 75° 04' 52.1", May 21, 2021, G. Pino & I. Payano 3306. (Observed). Same road, 3,200 m, S 11° 41' 36.2" W 75° 04' 48.6", May 21, 2021, G. Pino & I. Payano 3307 (USM 324188).

Differential diagnosis: The stems are thinner than in *E. incaica*, the rosettes are about half the size, the scapes are shorter, the bracts more narrowly obovate, the flowers smaller and less numerous and of course the petals are also smaller. However, the stems of *E. intiwayta* are frequently many branching from the



2g. From left to right: Flower bud, bract, bud with bract, sepals (4), complete flower with bract, sectioned flower showing gynoecium, petals (3), gynoecium, dry fruit.

base, especially after the first blossom, a feature seldom seen in *E. incaica*. The leaves are more constantly elongated, narrowly obovate and acute, seldom spatulate or suborbicular as seen in *E. incaica*, with an overall glaucous color and covered with pruinose. The sepals are redder, relatively more elongated and spreading in 45° compared to the erect, more glaucous sepals of *E. incaica*, and the petals of *E. intiwayta* are more homogenously dark red, stockier and pruinose, while those of *E. incaica* a more yellowish hue and reddish only on keels, borders, and apex.

Etymology: When Iván discovered this plant, he right away called it “Inti”, which is the Quechua name of the Sun God of the Incas. “Wayta”, the second part of the epithet, means “flower” in the local Junín dialects. So “intiwayta” means flower of the Sun God. The beautiful round glaucous rosettes look like succulent flowers, and as they are growing on inaccessible east facing cliffs, they are the first plants to reflect the sunrays of the King Star at the early dawn.

Distribution: *Echeveria intiwayta* has only been collected in six adjacent localities in province Concepción, department Junín, on the eastern slopes of the Andes facing the Amazon Jungle. The closest species are *E. incaica* some 80 km to the southeast and *E. andicola* in valleys 100 km to the northwest.