



3a. *Echeveria chilclensis* var. *cantaensis* at the type locality.

3. *Echeveria chilclensis* (Ball) Berger var. *cantaensis* Pino & Vilcapoma, var. nov.

**Holotype:** PERU: Dept. Lima, Prov. Canta, Dist. San Buenaventura, road to San Miguel de Pumacoto, slopes of La Viuda mountain range. 2650 m, Apr. 9, 1998, G. Vilcapoma 4722 (MOL 00009721) (Fig. 3a)

This taxon was collected for the first time by the second author in 1998 near Pumacoto in Canta and she correctly determined it as *Echeveria chilclensis* in the MOL herbarium. She is an expert of the Flora of Canta and the Chillón Valley, but she was not aware of the distinctive features of the type variety of the Rimac Valley by that time. I found this plant later at Obrajillo Waterfall near Canta Town and mentioned it in the publication of the varieties of *E. chilclensis* (Pino, 2002), determining it as var. *chilclensis*. I noticed some differences in flower size and shape with the



3b. Plant in-situ of *Echeveria chilclensis* var. *cantaensis* from the road to Churín with yellowish flowers.



3d. *Echeveria chilcensis* var. *cantaensis* in habitat, the Chancay River Valley with very red flowers. Photo A.S.

3c. Plant in situ of *Echeveria chilcensis* var. *cantaensis* from Caujul. Note the redder flowers.



3e. Plant ex-situ of *Echeveria chilcensis* var. *cantaensis*.

Rímac River variety but not enough data was available then to enable describing a new variety. In year 2003 Graciela found it again growing at a higher altitude above the town of Santa Rosa de Acochaca, some km walking eastward from Obrajillo waterfall, at the same Chillón River bank. In year 2004, an expedition of the Peruvian Society of Cactus and Succulents (SPECS) found this variety in the Huaura River basin, the next river North of Chillón River, in a detour from the road from Sayán to Churín towards Paccho, growing with *Espositoa melanostele*, very low, at 1720 m. They thought it was *E. chilcensis* var. *backebergii* but the photo is not very clear and the color of the flowers did not match the yellow color of this variety of *E. chilcensis* (Ostolaza et al. 2005).

In 2008 I visited the Huaura River basin heading to Churín Hotsprings. I found *Echeveria chilcensis* already at 2000 m on the road from Sayán to Churín, growing in very dry places (Fig. 3b) and later on the road to Caujul and to Oyón in different altitudes from 1900 to 3100 m (Fig. 3c). Plants have some variation, but their flowers resemble the Chillón River Valley plants very much in color and in the right angle insertion of sepals, although they may have longer pedicels in basal flowers. Recently, Alfredo Seminario has also found this variety growing in the Chancay River

Valley with very red flowers at 2100 m (Fig. 3d).

**Description:** A succulent glabrous, solitary or rarely proliferous herb (Fig. 3e). **Roots** 2–6, tuberous, tapering, 0.3–1.2 cm diam., 4–9 cm long, light gray-whitish. **Stem** subterranean, only in very old plants, 1–2 cm diam., 2–8 cm long, rarely branched from base, erect, with constrictions caused by annual growth, dark brown. **Rosettes** one at the end of stem, 12–20 cm diam. **Leaves** 10–14, lanceolate and spreading when young (Fig. 3f), later narrowly oblong, slightly incurving at tips, sessile, 6–13 cm long, 0.6–1.4 cm wide at base, 1–1.6 cm wide at proximal third, 1.0–2 cm wide at middle, 0.8–2 cm wide at distal third, 3–6 mm thick, upper side concave to flat or canaliculate,



3f. Young plant of *Echeveria chilclensis* var. *cantaensis*. at the Obrajillo waterfall.



3g. Leaves of *Echeveria chilclensis* var. *cantaensis*.

sometimes keeled, light glossy green, lower side convex, light green or reddish, obscurely keeled, margins smooth with an narrow acute mucro 1 mm long at apex, base hyaline (Fig. 3g).

**Flowering stem** an erect raceme, rarely up to 3, rachis 25–60 cm long, 7–10 mm diam. at base, 2–3 mm diam. at apex, whitish-green near base, reddish towards apex (Fig. 3h). **Peduncular bracts** 18–22, ascending or at 45°, spaced evenly 1–1.5 cm apart, narrowly oblong to lanceolate, tips acute to acuminate, recurved, 2–5 cm long, 8–13 mm wide, 2–4 mm thick, upper side flat or convex, bright green, lower side convex, light green, base hyaline (Fig. 3i). **Flowers** (4–) 6–12, appearing from October to May, present at the distal fourth or fifth of the scape, 1.2–1.3 cm long and 8–12 mm diam. **Pedicels** 1.5–2 mm long, 1.8–2 mm wide, orange, with 1 or 2 minute linear bracteoles 2.5–3.5 mm long and 1 mm wide (Fig. 3j). **Calyx lobes** united at base, spreading at right angle or up to 45°, ovoid, subacute, 5–10 mm long, 2.5–4 mm wide, green. **Corolla** pyramidal to prismatic, subpentagonal, 8–12 mm thick near base, 3–4 mm thick near apex, 1.2–1.3 cm long, petals oblong, acute, 1.2–1.4 cm



3h. Detail of scape and flowers of *Echeveria chilclensis*.



3i. Bracts of *Echeveria chilclensis* var. *cantaensis*.



3j. Detail of the flowers of *Echeveria chilclensis* var. *cantaensis*.



3k. From left to right: *Echeveria chilensis* var. *cantaensis* sepals (4), petals (2), sectioned flower showing gynoecium, mature fruit and dry fruit.

long, 2–4 mm wide, outer surface subcarinate, evenly reddish-orange to yellowish, apex slightly recurving and more yellowish, inner surface yellow. **Stamens** 10, the 5 epipetalous 5–6 mm long, the antesepalous 10–12 mm long, **filaments** cream, 1 mm thick at base, gradually tapering to 0.2 mm. **Anthers** ovate, yellow, 1.2–1.4 mm long and 1 mm wide. **Gynoecium** turbinate, 8–9 mm long, 4–5 mm thick. **Carpels** 5, greenish-white. **Styles** 2–3 mm long, parallel, almost touching each other, stigma reddish. **Nectaries** lunate, light greenish-yellow 1.5 × 0.5 mm. **Fruit** a dehiscent capsule 0.7–0.9 cm long, 1.3–1.7 cm diam. (spreading dry sepals), brown (Fig. 3k).

**Other localities:** PERU: Dept. Lima, Prov. Canta, Dist. Huaros, Santa Rosa de Acochaca, above the town, on rocky slope, 3000 m, Apr. 12, 2003, *G. Vilcapoma* 5993 (MOL 00010872) Dist. Canta, Obrajillo, on walls of the path to the waterfall with moss and grass, together with *Peperomia galioides* and *Oxalis peduncularis*, 2750 m, S 11°26'51", W 76°36'57", Aug. 16, 2001, *G. Pino* 749 (USM 162963) Dist. San Buenaventura, road from Canta to Obrajillo, north margin of Río Chillón, on rocks with moss and grass, together with *Peperomia galioides*, *P. nivalis* var. *lepadiphylla*, *Cleistocactus acanthurus* ssp. *acanthurus*, *Trichocereus peruvianus* and *Tecoma sambucifolia*, 2570 m, S 11°27'34", W 76°37'45", Feb. 16, 2002, *G. Pino* 781, *G. Pino* 1598 (USM 162967). Prov. Huaral, Dist. Pacaraos, at the entrance of the town. 3,360 m. S 11°11'07", W 76°38'46" Dec. 5, 2007, *G. Pino* 1816. Dist. Atavillos Bajo, Road to the town of La Florida and the Ruins of Rupac. 2100m. *Alfredo Seminario* s/n. Prov. Huaura, Dist. Paccho. Detour from the road from Sayán to Churín towards Paccho, growing with *Espositoa melanostele*, 1720 m. *Ostolaza* s.n., 2004. Dist.

Checras, Road from Sayán to Churín, together with *Peperomia galioides*, *P. nivalis* var. *lepadiphylla*, *Mila nealeana*, *Trichocereus peruvianus* and *Opuntia pubescens*, 2060 m, S 10°51'20", W 76°55'18" Mar. 20, 2008, *G. Pino* 1922. Prov. Oyón, Dist. Caujul, Just before the town of Caujul, with *Trichocereus peruvianus*, *Weberbauerocereus churinensis* and *Matucana haynei*, 3128 m, S 10°48'40", W 76°58'56" Mar. 21, 2008, *G. Pino* 1932 (USM 304297). Road from Caujul to Aguár, Caujul River banks, 1900 m, S 10°52'03", W 76°58'37" Mar. 21, 2008, *G. Pino* 1939. Dist. Oyón, 2 km before town of Viroc, with *Trichocereus peruvianus*, *Peperomia galioides*, *Sedum incarum* and *Pilea serpyllacea*, 3050 m, S 10°41'32", W 76°48'56" Mar. 21, 2008, *G. Pino* 1943 (USM 304299).

The three varieties of *Echeveria chilensis* have very similar leaves in shape: linear to narrow oblong. Variety *chilensis* and *cantaensis* have smooth, glossy leaves but the first has redder or more purplish leaves and bracts when exposed, mainly in the lower surface (Fig. 3l). On the other hand, leaves of var. *backebergii* are slightly smaller and the whole plant is constantly covered by minute transparent papillae that gives it the palest color of all three varieties (Fig. 3m).

The most striking differences between the three varieties are the flowers. They are much shorter in var. *cantaensis* than in the other two varieties, not so narrowly pyramidal in shape. Its pedicels are short, sepals are wide, spreading at a right angle and light green, very convex at both sides. Petals are redder than in the other two varieties, and redder in the northern range of this variety. A comparison of the flowers of the three varieties of *E. chilensis* is made (Fig. 3n). Variety *cantaensis* could easily be mistaken for *E. andicola*, a species occurring in the Departments of the



**3l.** Plant ex-situ of *Echeveria chilclensis* var. *chilclensis* from the type locality.

**3m.** *Echeveria chilclensis* var. *backebergii* at the Chillón River Valley, near Puente Chaperito.



**3n.** Comparison of the flowers of all three varieties of *Echeveria chilclensis*. Above: var. *cantaensis*; Center: var. *backebergii*; Below: var. *chilclensis*. From left to right: Complete flower, sepals (4), petals (4), sectioned flower showing gynoecium, mature fruit and dry fruit.



30. Detail of the flowers of *Echeveria andicola*.

eastern boundaries of Lima, (Huánuco, Junin, Pasco, Pino, 2005) but this species has slightly smaller flowers, evenly orange red in color and prismatic in shape, not pyramidal (Fig. 30), also its leaves are wide oblong to obovate and not linear oblong. However, plants from the northeastern range of this new variety (Cajul and Oyon) show some characters like redder and more prismatic flowers, oblong or subobovate leaves, that approach *E. andicola* suggesting there could be intermediate forms between these two or even established hybrids between them but this needs to be confirmed in the future by molecular analysis.

**Distribution:** This variety occurs in the three valleys North of the city of Lima, always at lower places (1,700–3,100 m) than the variety for which it has always been determined: *E. chilensis* var. *chilensis* (3300–3800 m). In the case of the Huaura and Chancay Valleys, it grows at even lower altitudes than variety *backebergii* (2000–2600 m).

**Etymology:** The name of the variety recalls the province of Canta, in the Chillón River Valley, where it was first discovered.