

Villadia decipiens (BAKER) H. JACOBSEN. *National Cact. Succ. J.* 13: 76. 1958.

Echeveria decipiens (BAKER) MORREN. *Belgique Hort.* 24: 159. 1874.

Cotyledon decipiens BAKER. *Saunders' Refugium Botanicum* 3 tab. 200. 1870.

Sedum plicatum THIEDE & 'T HART. *Novon* 9: 124. 1999.

Villadia dielsii BAEHNI & J. F. MACBRIDE, *Candollea* VII: 285, 1937. Macbride. *Flora of Peru*. Vol. XIII, Part. II. No. 3: 1011. 1938.

Altamiranoa stricta (DIELS) A. BERGER in *Engl. und Prantl, Pflanzenfam.* ed 2, 18a: 470. 1930.

Cotyledon stricta DIELS in *Englers. Botan. Jahrbuch* 37: 410. 1906.

Type: *Sine loco, Farris s.n.* (Ref. Bot. 3 tab. 200, Lectotype). *Sedum plicatum*: Dept. Ancash. Pr. Caraz, in *rupestribus camporum herbas, gramina plerumque annua, frutices, bromeliaceas cactaceas gigantium 2200-2500 m, May 1903* (Weberbauer 3000, B).

A succulent glabrous herb, branched from the base, (9-) 12-15 (-20) cm tall. Stem 3-5.5 (-10) mm diam., 10-15 cm long, light gray, erect or slightly decumbent at the base. Branches 3-5, erect to slightly decumbent, 10-20 cm long, stem 2-2.5 (-3) mm diam., light green to reddish. Leaves succulent, spirally attached to stem, denser along distal half, sessile, narrowly ovate to subtriangular or terete, lanceolate when young, (6-) 8-17 mm long, 2-4 mm wide, 2-2.5 mm thick, subacute, upper and lower sides convex, green, margins entire (Fig 20).

Inflorescence terminal in a loose monochasium with 3-4 cincinnoid branches 1-1.2 mm diam. at base, 1-3 cm long. Flowers 4-6 per cincinnus, sessile, appearing from April to June. Flower buds 3.5-5.5 × 2.5-3.5 mm, light green. Bracteoles lanceolate, 5-6 mm long, 2.5-3 mm wide. Sepals narrowly ovoid, 3.5-5 mm long, 1.5-2 mm wide. Petals oblong-rectangular, acute-triangular at tip, united at the base, bending outward at the middle, 6-8 mm long, 2-3 mm wide, induplicate, outer surface white with greenish keel recurving outwards at apex, inner surface white, margins subundulate. Stamens 10, the 5 epipetalous 3-4 mm long, the antesepalous 4-5 mm long, filaments white. Anthers ovoid, yellow, 0.3 × 0.5 mm. Gynoecium ovoid, 1.5 × 2.5 mm. Carpels 5, greenish-olive to brownish. Style 1 mm diam., white (Fig 21).

PERU. Dept. Ancash, Prov. Huaylas, Dist. Caraz, "Pukapacha," road from Caraz to Yungay, 1 km past Caraz, on southwest-facing, 60° slopes of rock and clay, 100 m north of waterfall, growing with *Puya* sp., *Opuntia* sp., "Alalaq kasha," *Armatocereus* sp., "Pitahaya," and *Portulaca* sp., on rocks among grasses and low bushes, 2380 m, 09°03'42" S, 77°46'37" W, Apr 15, 2006, *G. Pino 1670* (USM 210900). Prov. Huaraz, Dist. Huaraz, San Jerónimo Bridge (formerly Calicanto) at Santa

River, on west-facing rocky banks of the river 60° slope, growing with *Peperomia nivalis* MIQ., *Peperomia* cf *verruculosa* DAHL., *Sedum* sp cf *reniforme*, *Portulaca* sp 3080 m, 09°31'37" S, 77°32'09" W, Apr 17, 2006, *G. Pino 1673*.

Diels described this plant as *Cotyledon stricta* from plants collected by Weberbauer in 1903 (W 3000, B) near the town of Caraz on rocky soil, among annual grasses and shrubs, near giant cacti and bromeliads. In 1937 Baehni changed the name to *Villadia dielsii* because of the already existing *Villadia stricta* (Rose 1906), and so it was known until Thiede and 't Hart transferred the species to *Sedum* because of its cymose inflorescence. Neither of the names *Sedum strictum* (Koch 1847) and *Sedum dielsii* (Hamet 1913) could be used, so they changed the name to *Sedum plicatum* in 1999. The name "plicatum" is well-chosen because of the plicate petals that are so distinctive in this species. However, the description of *Sedum decipiens* (as *Cotyledon decipiens*) matches perfectly *Sedum plicatum*, and the plate chosen as lectotype (Baker 1870) looks exactly like the plants we collected from Huaraz. Since this description is older, we must conserve the name *Sedum decipiens* and place *Sedum plicatum* as a synonym.

Since Weberbauer no other collections of this species have been recorded, although this name has been applied to various sedums from other localities that may or may not be *S. decipiens*. During our stay at Caraz we looked for this species in the nearby hills but could not find it. Later our friend and guide, Ever Melgarejo, showed us the fields of his family at Pukapacha, only 1 km away from the city. His land is surrounded by beautiful west-facing mountains on which many cacti and bromeliads could be seen from below. He claimed to have seen plants of our description at the top of the mountains. As we began to climb, a heavy rain commenced. We found only a few plants, which were very elongated, but the leaves and inflorescence matched the description (Fig 22). Later we found the same species growing at 3000 m in the city of Huaraz. These were in better condition, perhaps due to the higher altitude with more rain (Fig 23). The overall distribution seems to be from 2300-3000 m, with the best growth at the highest altitudes. Its medicinal properties were already mentioned by Diels, who stated that an infusion of the plant was good for eye-pain. The inflorescence is distinctive in this Peruvian species: a monochasium with loose cincinnoid branches and small buds that take very long to open; but then flowers are white and conspicuous (Fig 24).

5. *Sedum renzopalmae* PINO

Sedum renzopalmae PINO sp. nov. *Planta succulenta caespitosa e basi ramosa 6-10 cm alta. Caulis decumbens ad basim 1.8-2.2 mm diam. Rami florigeri 6-9 suberecti 2.5-3.5 cm longi, 4-6 mm*

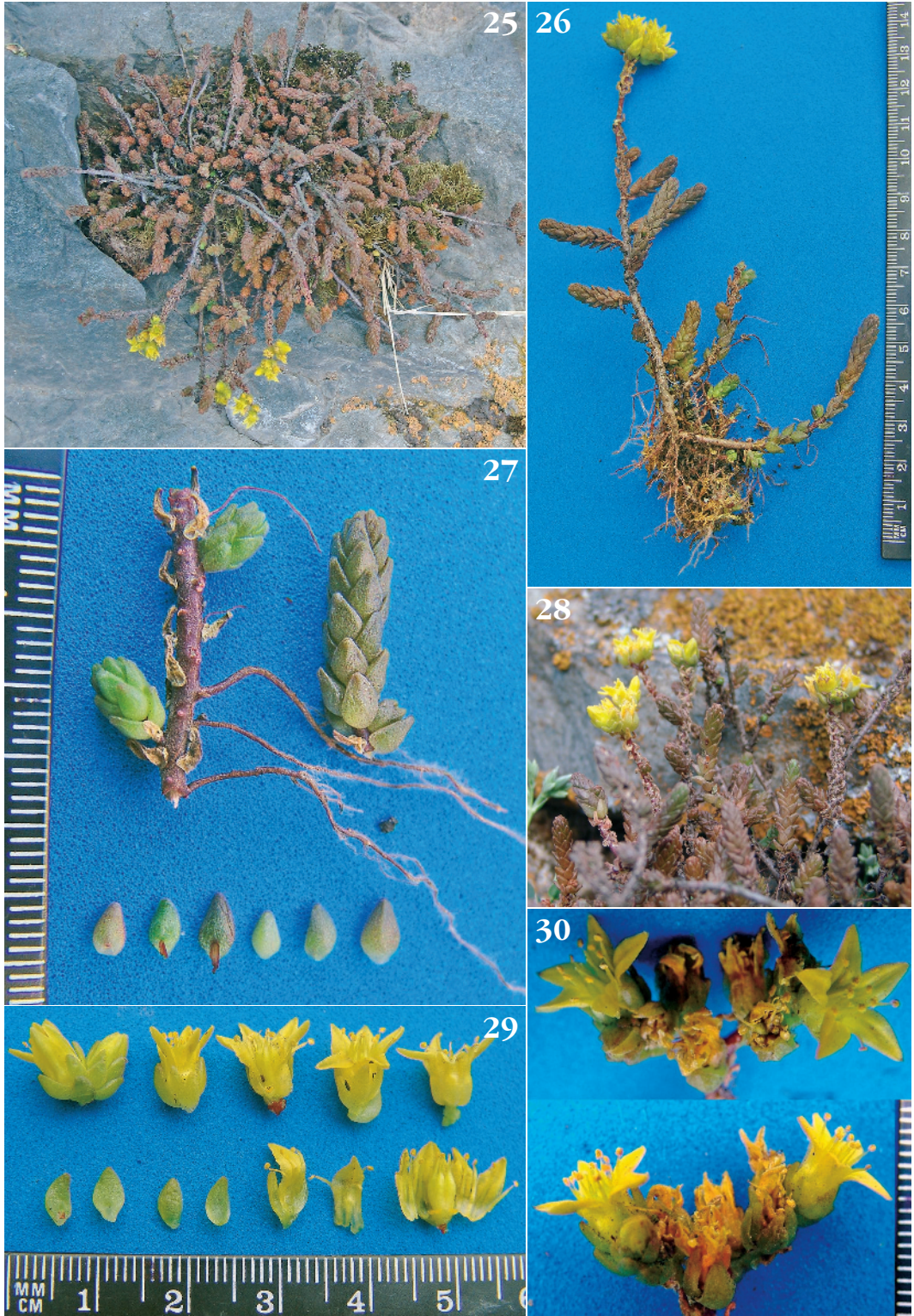


Figure 25. *Sedum renzopalmae* in habitat. **Figure 26.** *Sedum renzopalmae* ex situ. **Figure 27.** Detail of (above, left to right) flower buds, leafless branch and buds, young branch; (beneath) leaves. **Figure 28.** *Sedum renzopalmae* flowering in habitat. **Figure 29.** Detail of (above, left to right) flower buds, young flower, cross section, open flower, corolla showing bulging of the base; (beneath) bractlets, sepals, petals, carpels surrounded by open corolla. **Figure 30.** Details of the flowers.

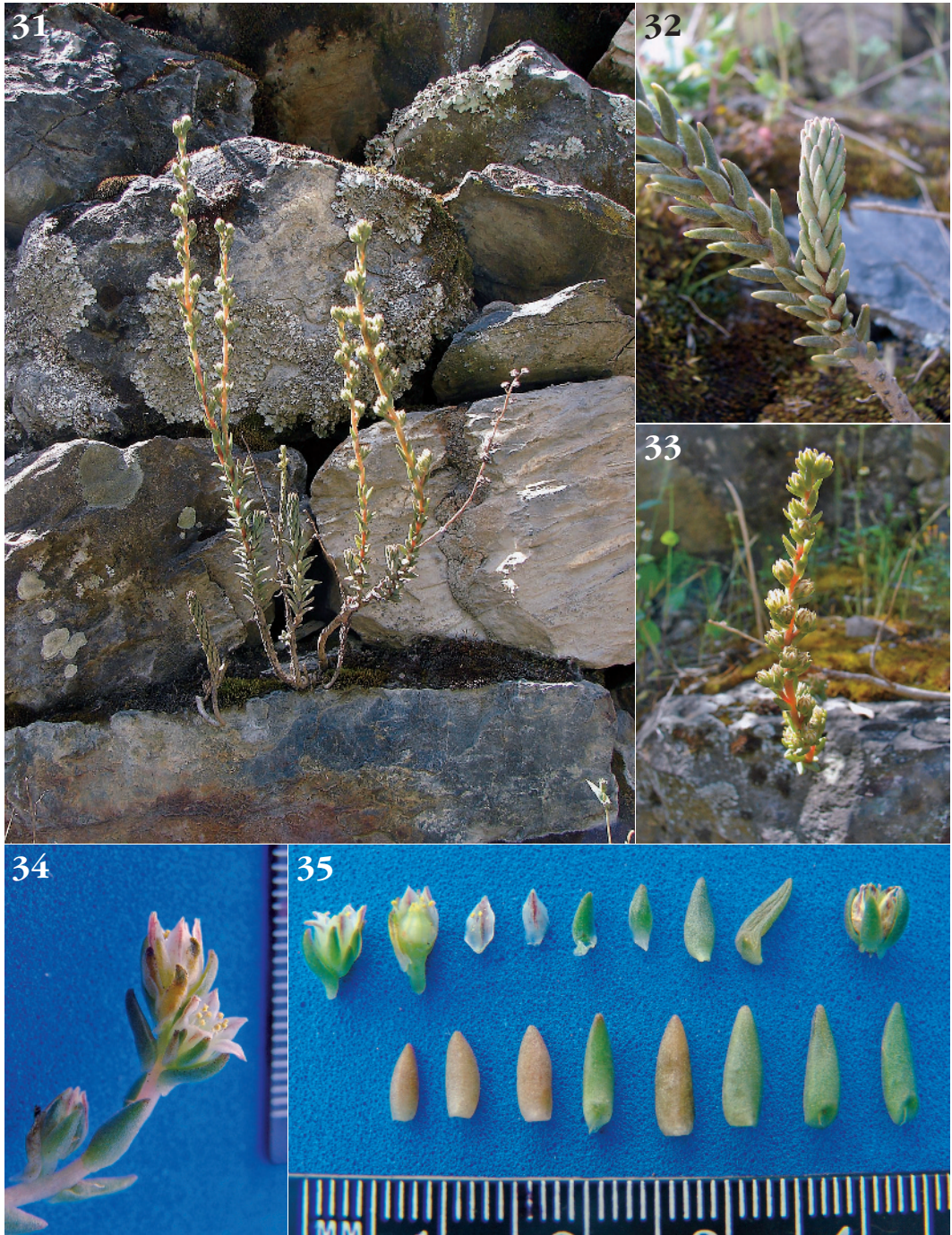


Figure 31. *Villadia virgata* plant in habitat on rock wall. **Figure 32.** *Villadia virgata*, detail of leaves. **Figure 33.** *Villadia virgata*, huge inflorescence in habitat. **Figure 34.** *Villadia virgata*, detail of flowers. **Figure 35.** Detail of (above, left to right) open flower, flower section, petals, sepals, bractlet, immature fruit; (beneath, left to right) leaves.

diam., caule 1-1.6 mm diam. rubro purpureo. Folia succulenta confertim imbricata spiraliter disposita sessilia ovoidea vel subtriangularia 3-4 mm longa, 2.5 mm lata, subacuta, e viridi rubentia in apricis, infra insertionem in calcar

hyalinum instructa, insertione ad caulem in centro conspicue rubra. Inflorescentia terminalis dichasium 6-8 floribus, apicalibus sessilibus, lateralibus breviter pedicellatis, bracteolis late ovatis acutibus 4-6 mm longibus 3-4 mm latis.

Sepala lanceolato-ovoidea 4.5–5 mm longa 2.5–3 mm lata. *Petala oblonga acuta flavo-sulphurea* 8–9 mm longa, 2.5–3 mm lata, *extus subcarinata*, a basi usque ad dimidiam partem coalita. *Stamina filamentis flavis*. *Carpela 5 fusiformia flavovirentia*. *Squamae flavae*, 1 × 0.4 mm. *Floret a Majo ad Junium*.

Type: Dept. Lima, Prov. Huarochiri, Dist. Casta, "Casha," Road from Santa Eulalia to San Pedro de Casta, 0.5 km before the town, on pathway to the right before road turns left, on rocky walls, 3170 m, 11°45'19" S, 76°35'51" W, June 11, 2006, G. Pino 1697 (USM 210905).

A succulent glabrous herb, caespitose, much-branched from the base, 6–10 cm tall, tufts 15–20 (–35) cm diam. Roots filiform, forming dense mats, 0.2–0.3 mm diam., 1.5–3 cm long, pink. Stem 1.8–2.2 mm diam. at base, 9–14 cm long, gray reddish, decumbent. Branches 6–9 (–14), subdecumbent to erect, (0.7–) 2.5–3.5 mm long, 4–6 mm diam., stem 1–1.6 mm diam., dark red. Leaves succulent, spirally attached to stem, densely imbricate, sessile, ovoidal to subtriangular, 3–4 mm long, 2.2–2.5 mm wide, 1.3–1.5 mm thick, subacute, both sides convex, outer side obscurely carinate, margins obtusely angulate, reddish on all exposed surfaces, base obtuse, spur hyaline, the place of attachment of leaf to stem reddened (Figs 25, 26).

Inflorescence terminal, a small dichasium. Flowers 6–8, appearing from May to June. Pedicels almost absent in upper flowers, 2–3 mm long in lower flowers, 0.8–1 mm diam., dark red. Flower buds 6–7 mm long × 4–5 mm diam., light green. Bracteole broadly ovate, acute, 4–6 mm long, 3–4 mm wide, outer side convex, inner side concave, light green-yellow. Sepals lanceolate-ovate, outer side convex, inner side concave, light green-yellow, 4.5–5 mm long, 2.5–3 mm wide. Petals oblong, acute, united from the base to the middle, 8–9 mm long, 2.5–3 mm wide, bright yellow, outer surface subcarinate, the apical half expanded, the basal third bullate. Stamens 10, the 5 epipetalous 4.5 mm long, the antesealous 5.5 mm long, filaments yellow, anthers ovoid, dark yellow, 0.6 × 0.3 mm. Gynoecium ovoid, 6 × 3 mm. Carpels 5, fusiform, yellowish green, 4 × 1.3 mm. Styles cream, filiform 1.5–2 mm long, 0.25 mm diam, stigma white. Nectary scales yellow, 1 × 0.4 mm (Fig 27, 28).

PERU. Dept. Lima, Prov. Huarochiri, Dist. Casta, "Casha," road from Santa Eulalia to San Pedro de Casta, 0.5 km before the town, on pathway to the right before road turns left, on rocky walls, 3170 m, 11°45'19" S, 76°35'51" W, June 11, 2006, G. Pino 1697 (USM 210905, **holotype**). Dist. Langa, road from Langa to Matarachi, bridge over river Matahuara, on rocks ca. 300 m below the cliff, growing with *Peperomia* sp, *Echeveria chicleensis* (BALL) BERGER var *chicleensis*, *Austrocylindropuntia exaltata* and *Matucana baynei*, 3320 m,

12°09'17" S, 76°23'40" W, May 28, 2006, G. Pino 1681.

Sedum renzopalmae is the latest sedum to be discovered in central Peru. Plants seen or collected previously were probably believed to be *S. andinum*, which it resembles in its growth and leaf-color. However, the latter species is smaller and has a totally different inflorescence, with a few, small red flowers instead of the bright yellow ones of *S. renzopalmae* (Fig 29, 30). The name honors Renzo Palma, who passed away only two days before the plant's discovery. He was a superb horticulturist and amateur botanist, as well as the owner of perhaps the finest succulent collection in Peru. His curiosity led him to travel all around the world to observe and collect plants. His death is a great loss to the Peruvian Cactus Society (SPECS) and the other international societies to which he belonged. Renzo was also the great grandson of the best-known Peruvian writer, Ricardo Palma.

People from the town of San Pedro de Casta know this plant as "kushka." Its branches are boiled and used for stomach aches. Casta is the nearest point (after a breathtaking two hour walk) to Markawasi, an out-of-this-world mesa—its giant rock sculptures shaped by erosion are well known to tourists. It is interesting that this new species grows only in valleys at right angles to the Equator, but never in those parallel to it, such as the Rimac valley. The vegetation in these east-west valleys is different from that of the north-south valleys, not only in succulents but also in cacti, which may be due to solar exposure and different patterns of rainfall.

6. *Villadia virgata* (DIELS) BAEHNI & J. F. MACBRIDE

Villadia virgata (DIELS) BAEHNI & J. F. MACBRIDE.

Candollea 7: 286. 1937. Macbride. *Flora of Peru*. Vol. XIII, Part. II, No. 3: 1012. 1938.

Cotyledon virgata DIELS in *Englers Botan Jahrbuch* 37: 410. 1906

Altamiranoa virgata (DIELS) BERGER in *Engl und Prantl, Pflanzenfam*, ed 2, 18a: 470. 1930.

Type: Dept. Ancash inter Chiquián et Tallenga in *muris rupibusque* 3300–3600 m, April 1903 (Weberbauer 2853, B).

A succulent glabrous herb 20–25 cm tall. Roots 3–5 cm long, 2–2.5 mm diam., whitish. Stem strictly erect, 4–8 mm diam. at base, light gray, bark later peeling, branching at 6–10 cm. Branches 1–3, erect, 2–15 cm long, stem 1.5–1.8 mm diam., light green to reddish (Fig 31). Leaves succulent, spirally attached to stem at an acute angle, densely imbricate in the distal 6–10 cm and on young shoots, more widely spaced towards flowering tip, sessile, narrowly ovate to narrowly oblong, 6–9 mm long, 2–2.5 mm wide, 1–1.5 mm thick, blunt-subacute, upper and lower sides convex, spurred, dull green-glaucous, margins entire (Fig 32).