

Tylecodon petrophilus (Crassulaceae), a new cliff-dwelling species from the Skaaprivier, Namaqualand, South Africa

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Introduction

About 46 species of *Tylecodon* are endemic to South Africa and Namibia (Van Jaarsveld & Koutnik 2004). Most species are concentrated in the winter-rainfall region of the western and southern parts of South Africa. *T. petrophilus* is a new distinctive obligate cliff-dwelling species hitherto only known from a riverine gorge north of Spektakelpas, Northern Cape. It was discovered on cliffs of the Skaaprivier Poort during a succulent plant expedition undertaken by Adam Harrower, Greg Nicolson, Phakamani Xaba, Dale Parker and one of us (EJvJ).

The new find belongs to a group of *Tylecodon* species with extended phyllopodia. Members of this group are found mainly in winter-rainfall Succulent Karoo in northern Namaqualand, Northern Cape. The other members of the group are *Tylecodon bayeri*, *T. cordiformis*, *T. ellaphieae*, *T. hirtifolius*, *T. rubrovenosus*, *T. scandens*, *T. sulphureus* and *T. wallichii*. The best known is probably the widespread *T. wallichii*. The new species is at once distinguished by its habit of rounded clusters up to 400 mm in diameter, a canopy of large, soft, green (purplish below), broadly obovate to subrotund leaves completely covering the stems, distinctive grey-green truncate phyllopodia, 4–5 mm long, elongated inflorescences, up to 350 mm long and yellowish green tubular flowers, 12–15 mm long, with the stigmas protruding 12 mm beyond the corolla throat (Table 1).

Tylecodon petrophilus Van Jaarsv. & A.E.van Wyk, sp. nov., a *T. hirtifolius* (W.F.Barker) Toelken phyllopodiiis viride-cinereis, 4–5 mm longis, foliis mollibus, viridibus, magnis, late obovatis vel prope rotundis, 50–100 × 35–70 mm, inflorescentiis ad 350 mm longis, floribus flavo-viridibus, tubularibus, 11–12 mm longis, stigmatibus a fauce corollae per 12 mm protrudentibus satis differt.



Figure 1. *Tylecodon petrophilus*. Artist: Vicki Thomas.

Type: Northern Cape, 2917 (Springbok): Farm Plaatjiesfontein, sheer south-facing quartzitic sandstone rock-face of the Skaaprivier Poort, (–DA), Van Jaarsveld, Nicolson & Xaba 21117 (NBG, holo.).

Cluster-forming, much-branched, summer-deciduous shrublets becoming subpendent and up to 400 mm in diameter. **Roots** fibrous. **Branches** 10–17 mm in diameter, succulent, densely covered

in short, slightly tapering, grey-green, woody phyllopodia, 4–5 mm long and 4–10 mm in diameter at base. **Leaves** softly succulent, in apical rosettes, spreading and covering stem and base; blade broadly obovate to subrotund, 50–100 × 35–70 mm, ± 2–3 mm thick, faintly striate, apex obtuse to rounded, adaxial surface flat to slightly concave, green to dull green, abaxial surface flat, dull green and purplish, bearing a faint mid-

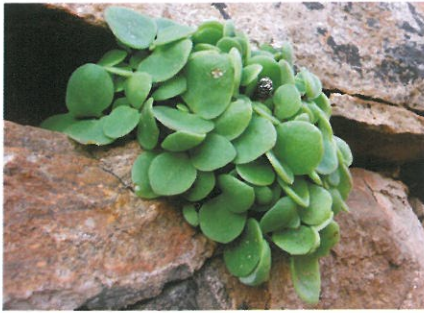


Figure 2. *Tylecodon petrophilus* in its cliff face habitat.

rib, both surfaces covered in short, up to 0.5 mm long, translucent glandular hairs; margin entire; petiole short, indistinct. **Inflorescence** a sparsely branched ascending thyrses up to 350 mm long, bearing 1 or 2 apical monochasia (each bearing 2 or 3 flowers), lower down with spirally arranged leaf-like bracts; basal bracts 20 × 5 mm becoming smaller upwards (same colour and texture as leaves); peduncle reddish brown, glandular pubescent, 3 mm in diameter at base. **Flowers** 1–3 per monochasium, ascending spreading, yellowish green; pedicels 8–10 mm long, green. **Calyx** 6–7 mm long, glandular tomentose, purplish green; lobes 6–7 × 2 mm. **Corolla** glandular pubescent, tube cylindrical, 11–12 × 5–6 mm, lobes 12 × 5 mm, distinctly recurved, yellowish green, margins white, apices acute. **Stamens** up to 10 mm long, attached to throat and protruding for 5 mm; anthers 1 mm long. **Squamae** slightly tapering, 1 × 0.6 mm, emarginate, pale green, translucent. **Gynoecium** 22 mm long; carpels 5, free ± 10 mm long, tapering into styles 12 mm long and protruding for 12 mm from corolla apex. **Follicles** 8 × 1.7 mm. **Seeds** not seen. **Flowering time**: December.

Distribution and habitat

Tylecodon petrophilus is known only from south-facing quartzitic sandstone cliffs in the Namaqualand Blomveld (Namaqualand Hardeveld Bioregion) of

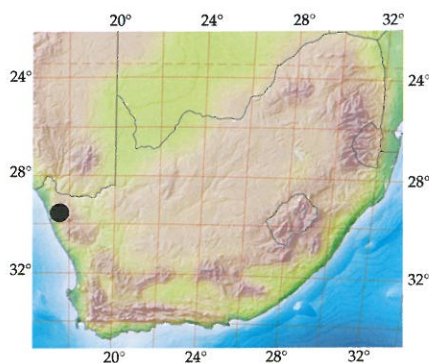


Figure 5. Known distribution of *Tylecodon petrophilus*.

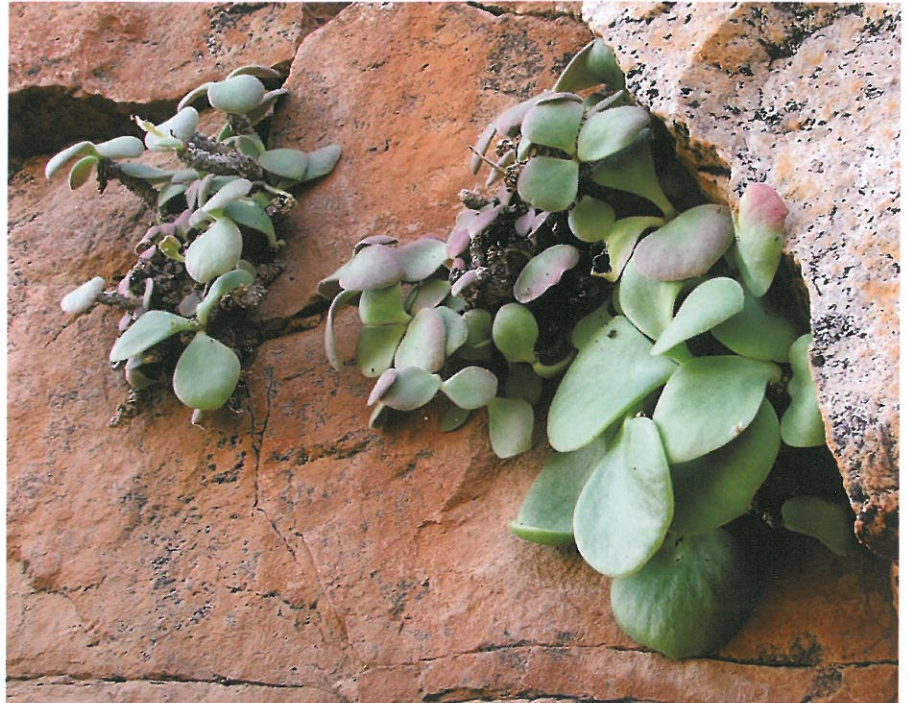


Figure 3. *Tylecodon petrophilus* in habitat.



Figure 4. Cliff-face habitat of *Tylecodon petrophilus*.

the Succulent Karoo Biome (Mucina & Rutherford 2006), on the farm Plaatjiesfontein between Spektakelpas and Bulletrap. It occurs in Skaaprivier Poort, the latter a river (drainage line) of ± 35 km which cuts a deep gorge parallel (north-south) to the coast. The Skaaprivier and its Doringrivier tributary drain the Steinkopf and Okiep region. The plants are locally abundant, sharing their habitat with cremnophilous species such as *Bulbine pendens* (southernmost record),

Rhadamanthus montanus, *Colpasia molle* and *Adromischus alstonii*. The south-facing cliffs are cooler, with shady conditions throughout most of the winter. It grows at 300–500 m altitude, in acidic mineral-poor soil, scattered among rocks and fissures. The mainly winter rainfall ranges from ± 200–300 mm per annum. Summer temperatures are high during the day, with a mean of ± 30°C. Winters are cooler but frost is absent. Flowers are pollinated mainly by insects.

Discussion

Tylecodon petrophilus is clearly related to *T. hirtifolius* from Eselfontein to the east of the top of Spektakelpas. Both species have branches with distinctive phyllopodia, relatively large leaves, elongated inflorescences and yellowish green flowers. However, here the resemblance ends. *T. petrophilus* has a dense canopy of broadly obovate to subrotund leaves completely covering the stems, short (4–5 mm) phyllopodia and a smaller (11–12 × 5–6 mm) tubular corolla with the styles exposed for about 12 mm. *T. hirtifolius* is a sprawling species with distinctive black stems, longer (12–18 mm) phyllopodia, obovate to oblanceolate leaves grooved above, a much longer (14–16 mm) and funnel-shaped corolla tube with the styles not protruding beyond the throat. It grows in the shade of small shrubs on shale-derived soils.

Cultivation

Tylecodon petrophilus is a fairly rapid-growing species easily propagated from stem cuttings and does well in cultivation. Cuttings root easily in a sandy, well-drained soil mixture in autumn or winter and will thrive as pot plants outside the natural habitat of the species. *T. petrophilus* is best grown in dappled shade, and in regions experiencing summer-rainfall it is best kept in a greenhouse or on a window sill. Plants should be kept dry in summer when they become deciduous and in winter should be protected from frost or snow.

Table 1. Comparison between *Tylecodon petrophilus* and *T. hirtifolius*

	<i>T. petrophilus</i>	<i>T. hirtifolius</i>
Branch dimensions	66–110 mm long, 10–17 mm in diameter	Up to 200 mm long, 10–20 mm in diameter
Phyllopodia	4–5 mm long	12–18 mm long
Leaf shape and size	Broadly obovate to subrotund, 50–100 × 35–70	Obovate to oblanceolate, 40–60 × 15–36
Inflorescence	Up to 350 mm long; monochasia 2- or 3-flowered	300–650 mm long; monochasia 4–10-flowered
Perianth	Tube cylindrical, 11–12 mm long	Tube funnel-shaped, 15–17 mm long
Stamens and style	Stamens protruding for 5 mm; styles protruding for 12 mm	Stamens and style not protruding
Flowering time	December	December

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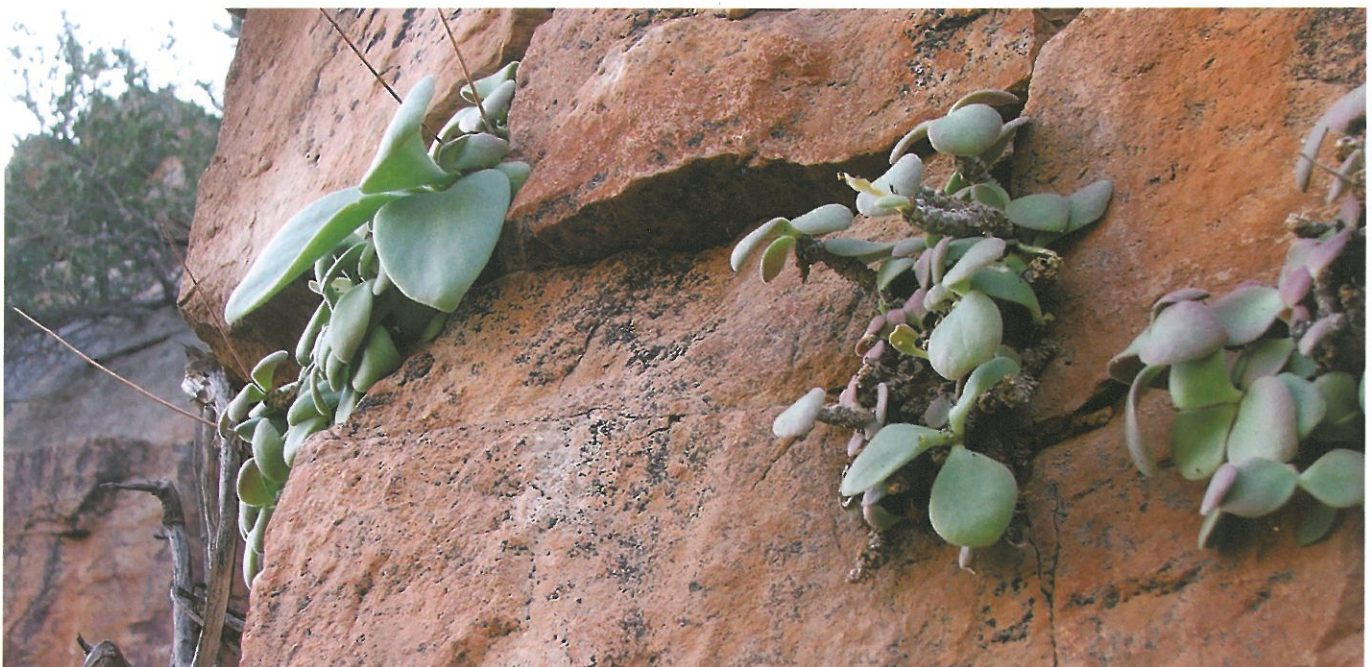


Figure 6. Plant of *Tylecodon petrophilus* of which the leafy canopy has been partially removed to expose the phyllopodia. Note purplish undersurface of leaves.