
Baynesia, a New Genus of Stapeliad from the Northwestern-most Corner of Namibia (Apocynaceae)

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ABSTRACT. A new genus of stapeliad, *Baynesia* (Apocynaceae–Asclepiadoideae–Ceropegieae), is described with a single species, *B. lophophora* Bruyns. This is known from the mountainous area in the northwestern-most corner of Namibia, where it was relatively plentiful but very local. Its relationships to *Caralluma* R. Brown and *Pseudolithos* P. R. O. Bally are discussed.

At present the group of highly succulent plants known as the stapeliads is considered to form a monophyletic group within the Ceropegieae, and it consists of 25 genera (Bruyns, 2000). The present new species does not fit comfortably into any of these genera, and consequently it is placed in a new genus, *Baynesia*. Its closest relationships appear to lie with *Caralluma* and *Pseudolithos*; the differences between them are discussed in detail.

Baynesia Bruyns, gen. nov. TYPE: *Baynesia lophophora* Bruyns, sp. nov.

A *Caralluma* caulis rugulosis et papillatis differt; a *Pseudolithos* pagina caulium sine polygonis elevatis, praesentia interdum denticulorum stipularium et pollinario multum dissimili distinguenda est.

Dwarf spineless clump-forming succulent 30–80(–150) mm diam. *Stems* erect, not rhizomatous, fleshy and fairly soft, glabrous, somewhat transversally rugulose and finely papillate, 30–80 × 6–12 mm, green to suffused with brown; *tubercles* obscurely conical, slightly spreading, fused into 4 obtuse and obscure angles along stem with concave area between them; *leaf-rudiment* spreading, caducous, cordate-acute, 1.0–1.5 mm long, inserted just below base of next tubercle, with very occasional stipular denticles. *Inflorescences* glabrous, usually 3–10 per stem, arising toward apex, each bearing 1–3(–5) flowers developing in gradual succession, without peduncle, with minute linear bracts < 1 mm long without lateral teeth; *pedicel* 1.5–2.5 × < 1.0 mm, descending and holding flower facing partly downward, usually somewhat longitudinally ridged, suffused with red; *sepals* lanceolate, acuminate, ca. 1.5 × 0.5 mm. *Corolla* campanulate, 3–4 × 6–8 mm; outside smooth and

glabrous, pale green suffused with red; inside deep maroon becoming cream in lower half of tube, glabrous, papillate only in two lines along edges of fold in lobes (± around mouth of tube); *tube* ± hemispherical, ca. 1.5 × 3–4 mm; *lobes* erect, ca. 2 × 2 mm, ovate-acute, folded along midrib so that inside crested toward apex, apex recurved, without marginal cilia. *Corona* ca. 1 × 2 mm, consisting of 2 series of lobes arising from staminal tube and close together on it, glabrous, with very short basal stipe; *outer lobes* deltoid, acute, ca. 0.5 mm long and broad, spreading, dark maroon in patch beneath guide-rail, otherwise transparent; *inner lobes* adpressed to backs of anthers and mostly equaling them, dorsiventrally flattened and slightly convex above, obtuse, ca. 0.5 mm long, with obtuse swollen dorsal projection between outer lobes, cream. *Anthers* horizontal on top of style-head, margins shrinking back to expose pollinia, rectangular. *Pollinium* ellipsoidal, much broader than long, insertion crest exactly along outer edge, caudicle minute. *Follicle* 25–35 × 2.5–3.5 mm, glabrous, smooth, faintly streaked with brown on cream-green. *Seeds* 5 × 1.5–2.0 mm, uniformly pale brown, with margins folded upward.

Baynesia lophophora Bruyns, sp. nov. TYPE: Namibia. Kaokoveld, Baynes Mtns. near the Cunene River, Dec. 1999, P. V. Bruyns 8000 (holotype, BOL; isotypes, K, MO, PRE, WIND). Figures 1, 2.

Species unica, a speciebus *Caralluma* lobis corollae porcatas cristatisque et pollinario polliniis insolenter latis corpusculoque alis lateralis minutis differt.

Distribution and habitat. This new species is, at present, known only from the north-facing aspects of the higher parts of the Baynes Mountains overlooking the Cunene River in the northwestern corner of Namibia. Here it occurs at an altitude of 1500–1600 m just above the large, sandstone cliffs that dominate the landscape in this area.

The vegetation of these cliffs is quite different from that of the surroundings and consists mainly of succulents. Species such as *Aloe corallina* Ver-

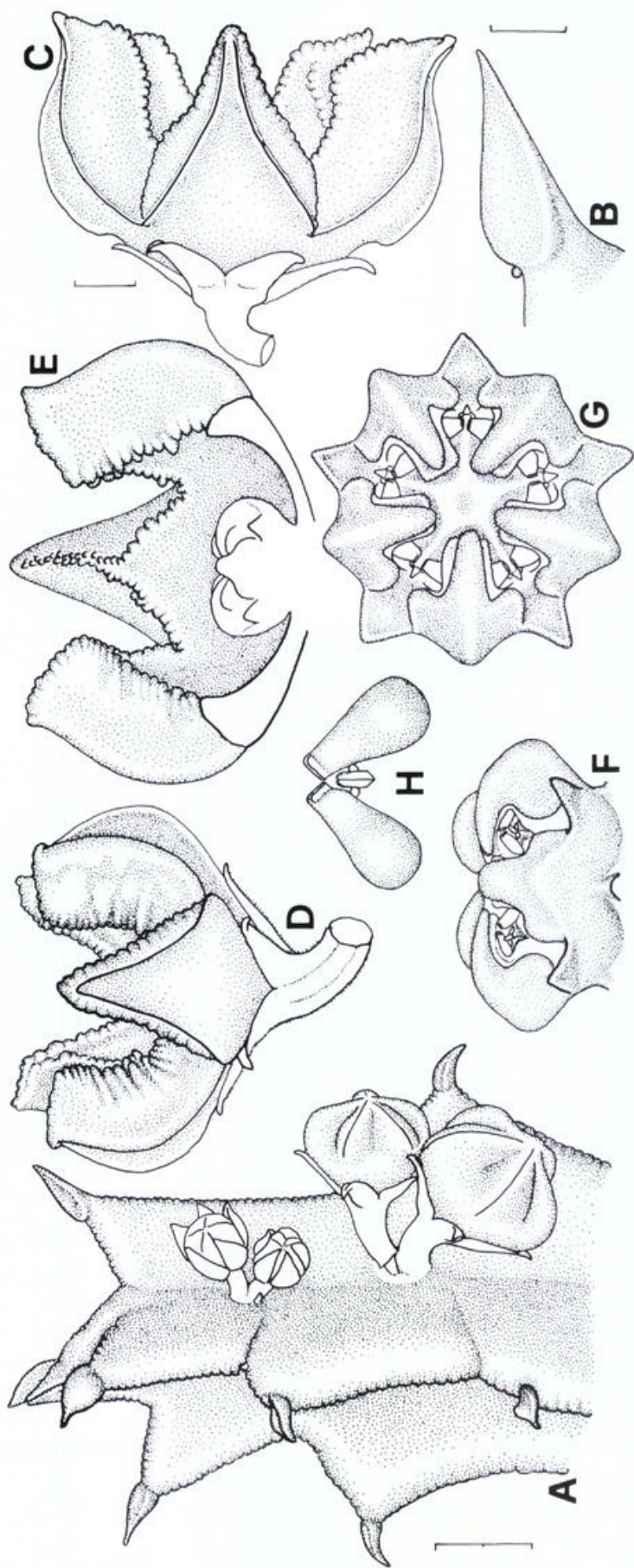


Figure 1. *Baynesia lophophora* Bruyns. —A. Upper part of stem. —B. Side view of leaf-rudiment. —C, D. Side views of flower. —E. Side view of dissected flower. —F. Side view of gynostegium. —G. Face view of gynostegium. —H. Pollinarium. Scale bars: A, 2 mm; B, F, G, 0.5 mm (at B); C, D, 1 mm (at C); E, 1 mm (at B); H, 0.25 mm (at A). Drawn from Bruyns 8000.

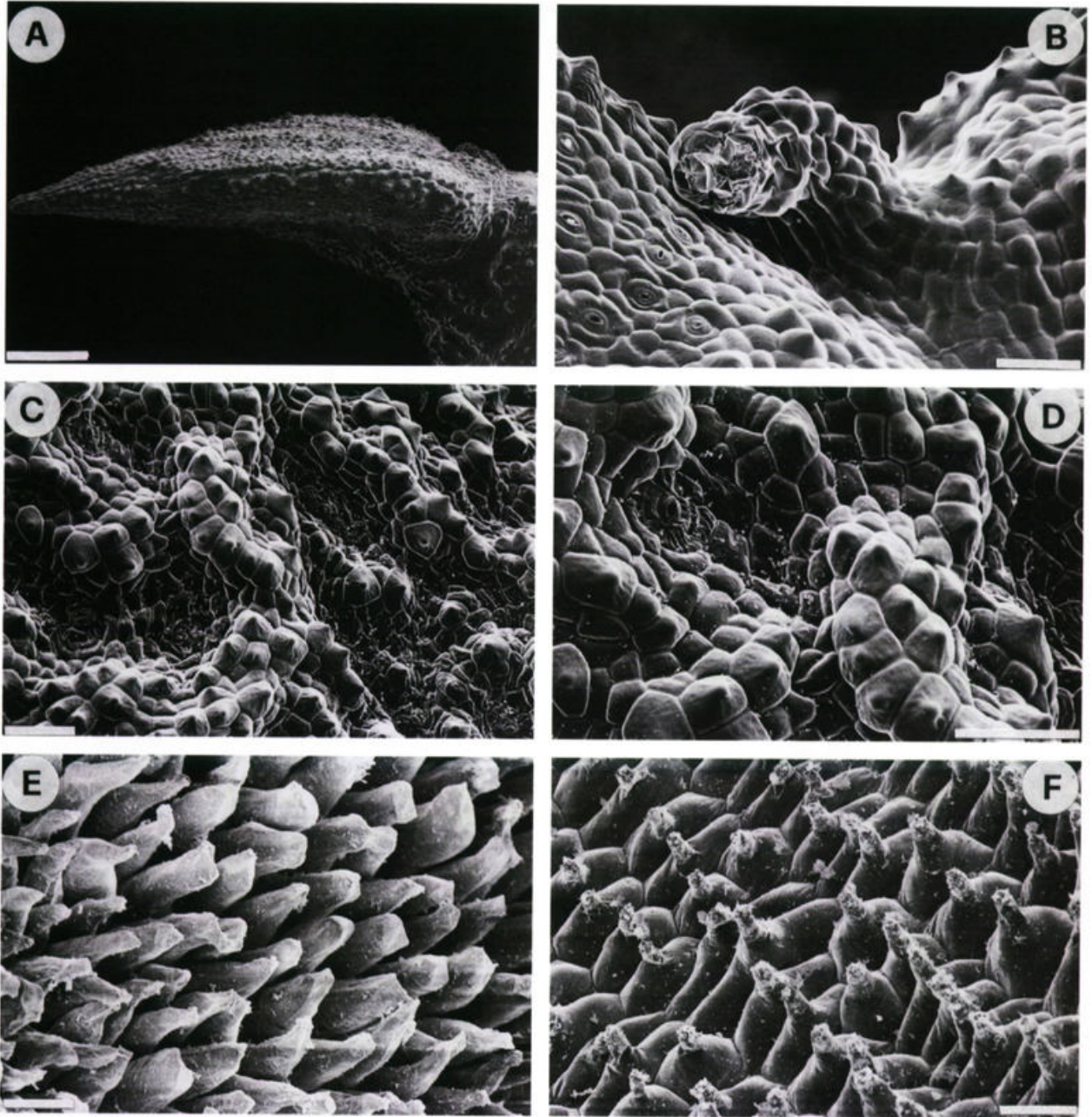


Figure 2. SEM views of surface of stem, stipular denticle, and inner surface of corolla in *Baynesia lophophora* (Bruyns 8000). —A. Leaf-rudiment. —B. Stipular denticle. —C, D. Rugulose surface of stem with stomata in dips between ridges. E, F. Basal epidermal cells inside corolla:—E. On dark, crested part of lobe. —F. In corolla tube. Scale bars: A, 250 μm ; B, 50 μm ; C, D, 100 μm ; E, F, 25 μm .

doorn, *Cotyledon orbiculata* L., *Euphorbia otjipembana* L. C. Leach, and *Sarcostemma viminale* (L.) R. Brown are common, and *Adenium obesum* (Forsskål) Roemer & Schultes, *Crassula tabularis* Dinter, and *Stapelia schinzii* var. *angolensis* Kers also occur, though more sporadically. On the relatively flat summits of these mountains the vegetation is practically devoid of succulents, being dominated by short trees and a thick cover of grass in years of reasonable rainfall. Immediately above the cliffs there is an apparently quite dry, rocky, transitional fringe with very shallow soils. This is covered by short tufts of grass and shrublets of *Petal-*

idium Nees, and there are occasional specimens of *Euphorbia otjipembana*, *E. mauritanica* L., *E. monteiroi* Hooker f., and *Stapelia schinzii* var. *angolensis*. It is in this transitional fringe that *B. lophophora* occurs, and here it is quite common, with the plants usually well concealed inside tufts of grass.

Diagnostic features and relationships. Plants of *Baynesia* are mostly small, consisting of a cluster of erect, greenish stems. The 4-angled stems are comparatively soft and have a rugulose surface, which is covered with fine papillae. Each of the obscure tubercles bears a leaf-rudiment, which soon falls off. Stipular denticles are very intermit-

tently present with often only one per tubercle, while most tubercles have none at all.

Flowers are borne in small clusters around the tips of the stems on new growth, and they are small, nodding, and apparently without any scent. Inside they are a deep maroon on the lobes changing to cream in the tube. The tube is more or less hemispherical, and the lobes are erect around its mouth. Each lobe has its margins quite well folded back, and there is a peculiar ridge of papillae running along either side of its innermost surface from the mouth of the tube toward its apex. This makes the lobe appear crested on the inside. This crest is somewhat emphasized by the strongly recurved apices of the lobes.

The particularly small corona lies at the bottom of the tube and is very slightly raised above the base. The minute outer lobes are transparent except for a dark maroon patch under the guide-rails, and the inner corona is cream but slightly more intense than the cream of the tube.

The generic position of this new species is problematic. The rugulose surface of the stems is particularly unusual and is unlike anything else known in southern Africa. Rugulose stem-surfaces are found in *Echidnopsis leachii* Lavranos from Tanzania (Bruyns, 1988), and stem surfaces are longitudinally bullate in most species of *Stapelianthus* Choux (unpublished data) from Madagascar and in *Rhytidocaulon* P. R. O. Bally from northeast Africa and Arabia (Bruyns, 1999). The surface is raised into low "hills" also in the southern African genus *Lavrana* Plowes (Bruyns, 1993). It is more regularly divided into raised polygons in *Pseudolithos* (Bruyns & Meve, 1995), a small genus of five species occurring in northeast Africa and Oman in southern Arabia. This new species bears a considerable likeness to *P. dodsonianus* (Lavranos) Bruyns & Meve. This likeness continues into the epidermal cells on the stems, which also have their outer walls raised into papillae in *Baynesia*. The leaf-rudiments in *Baynesia* are larger than those of any *Pseudolithos*, and occasionally they have small stipular denticles, which are never found in *Pseudolithos*. *Baynesia* also bears some similarity to *Rhytidocaulon*. Here the surface of the stem is rugulose, but quite long, hair-like papillae project from it at intervals while the surface between them is smooth. The leaf-rudiments in *Rhytidocaulon* are rather differently shaped, with a narrow base and some evidence of a midrib and blade (Bruyns, 1999).

The 4-angled stems with many small inflorescences near their apices and the small flowers all suggest a relationship with *Caralluma*. *Caralluma*

is not well represented in southern Africa (with only 1 species in Namibia); the majority of the roughly 56 species (Gilbert, 1990) is found north of the equator. While there is a wide variety of corolla forms and coronal structures in *Caralluma*, the curiously ridged and papillate, crested corolla lobes in *B. lophophora* are unique, and the stems in *Caralluma* are neither rugulose nor papillate. Leaf-rudiments are always present in *Caralluma*, stipular denticles are nearly always present, and marginal hairs on the leaf-rudiments and around the stipular denticles are common. Apart from the marginal hairs, these features are shared with *Baynesia*.

Characters of the pollinaria have often proved helpful to delimit genera of stapeliads (Gilbert, 1990; Meve, 1994, Bruyns & Meve, 1995, Bruyns, 1995, 1999). Those of *B. lophophora* are particularly unusual. While the pollinia in *Caralluma* may be broader than long (relative to the anther that has produced them), they are exceptionally broad in *B. lophophora* and have also remarkably minute caudicles and wings on the corpuscles. This is unmatched anywhere in *Caralluma* or in *Pseudolithos*. In *Pseudolithos* the pollinia are longer than broad, the corpuscle is disproportionately large, and the insertion-crest is twisted onto the upper surface of the pollinium (Bruyns & Meve, 1995). None of these features is present in *Baynesia*. In *Baynesia* the shape of the pollinium is similar to that in *Rhytidocaulon* (broader than long), and in both genera the insertion-crest lies exactly along the edge of the pollinium.

There are so many unusual features both in the vegetative parts and in the flowers of this new species that placing it in any of the known genera is impossible, and it is considered that a separate genus is justified for it. I have been unable to locate any other specimens in herbaria of this new species.

The generic name is derived from the Baynes Mountains where the plants were found. These were, in turn, named after the English explorer Maudsley Baynes, who first investigated the area in 1911.

To summarize, the various genera that could be related to *Baynesia* may be distinguished as follows. Only genera in which the inflorescences are numerous and usually toward the apex of the stems are included (consequently *Stapelianthus*, which is mentioned above, is not dealt with in the key). *Quaqua* N. E. Brown, which is not mentioned above, is also included.

- 1. Stems with 6 or more angles *Echidnopsis*
- 1'. Stems 4-angled 2
- 2(1). Stems covered with convex polygons, pollinar-

- ia with large corpuscle almost equaling length of pollinium *Pseudolithos*
- 2'. Stems not covered with convex polygons, corpuscle much shorter than length of pollinium 3
- 3(2). Each tubercle tipped (when young) with a minute and slightly expanded leaf-rudiment 4
- 3'. Each tubercle tipped with a sharply conical and rapidly hardening tooth *Quaqua*
- 4(3). Stems neither rugulose nor papillate *Caralluma*
- 4'. Stems rugulose and papillate 5
- 5(4). Stems tapering toward tips, with hair-like papillae projecting at intervals from otherwise smooth surface, leaf-rudiments erect *Rhytidocaulon*
- 5'. Stems not tapering toward tips, with only low papillae on surface, leaf-rudiments spreading *Baynesia*

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ymous reviewer are thanked for their efforts to improve the manuscript.

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