A new species of *Trachyandra* section *Liriothamnus* (Asphodelaceae) from the Richtersveld

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*Trachyandra aridimontana* J.C. Manning is a new species allied to *T. involucrata* (Bak.) Oberm. The two species are alike in their shrubby habit and narrow leaves but *T. aridimontana* differs in its morning anthesis, maculate inner perianth segments and erect fruit. It is restricted to the Richtersveld.

*Trachyandra aridimontana* J.C. Manning is 'n nuut-beskrewe spesie wat aan *T. involucrata* (Bak.) Oberm verwant is. Die twee spesies stem ooreen in hul struikagtige groeivorm en smal blare, maar *T. aridimontana* verskil van die ander genoemde spesie deurdat by eersgenoemde, antese gedurende die oggend is, die binneste periantsegmente gemakuleer is en die vrugte regop gedra word. Dit is in verspreiding beperk tot die Richtersveld.

**Keywords:** Africa, Asphodelaceae, taxonomy, *Trachyandra*

**Introduction**

The genus *Trachyandra* Kunth (ca. 50 spp.) was divided into three sections, *Liriothamnus, Trachyandra* and *Glandulifera* by Obermeyer (1962). Section *Liriothamnus* (ca. 15 spp.) comprises those species without glands and in which the outer leaves do not form membranous tubular sheaths or squamae, although the outer leaves may have a reduced lamina. This section contains, amongst others, the four species which produce persistent, aerial stems and all of these occupy arid habitats along the west coast of the Cape Province.

Two of these species have the aerial stems woody and at length naked and devoid of sheathing leaf bases. They are *T. adamsonii* (Compton) Oberm., known only from one or two collections each from the Vanrhynsdorp area and from the Richtersveld, and *T. involucrata* (Bak.) Oberm., which is endemic to Namaqualand. *T. adamsonii* is immediately distinguished by the erect woody stems up to nearly 2 m high, branched near the apex and bearing tufts of leaves at the apices, and by the lanceolate leaves, 160–300 mm long and 15–35 mm wide with the margin minutely denticate. *T. involucrata* has the stems branched from near the base, and the plants are thus shrubby and not much more than 0.5 m tall, and the leaves are semi-terete, *ca.* 200 mm long and *ca.* 6 mm wide. The flowers of *T. adamsonii* have paired spots at the base of all the tepals and the capsules are erect, but *T. involucrata* is characterized by the immaculate flowers and pendulous capsules borne on recurved pedicels. Specimens from the Richtersveld to the north of Namaqualand, placed by Obermeyer (1962) in this species on account of the shrubby habit and narrow leaves, however, have the capsules erect. When plants from the Richtersveld flowered in cultivation at the National Botanic Gardens, Kirstenbosch, the flowers were found to have maculate inner tepals and it became clear that they constituted a distinctive species, here described as *T. aridimontana*.

**Description**

*Trachyandra aridimontana* J.C. Manning, sp. nov. (Figure 1)

Habitu *T. involucrata* (Bak.) Oberm., sed differt segmentis interioris perianthiiis maculatis et fructibus erectis. In matutinum floret.

**TYPUS.**—Cape: Richtersveld: Kodaspiek, 2.9.1977, Oliver, Toelken & Venter 478 (PRE, holotypus).

Small, gnarled woody shrubs to 450 mm high. *Roots* many, slightly thickened, lanate. *Stems* caudiciform, woody, branched, branches 5–15 mm in diameter. *Leaves* in apical tufts, usually on short young shoots, lasting for a single growing season, the plants leafless during summer; leaf bases forming a conspicuous membranous amplexicaul sheath, often with a fimbriate or laciniate margin; lamina linear, attenuate, canaliculate and succulent, smooth, 30–120 mm × 3–7 mm, glaucous with paler yellowish bases, the lowest sometimes reduced to a denticulate point. *Pedicule* to 220 mm long, terete, glaucous, inflorescence usually a simple raceme but sometimes with a lateral branch from the lowest bract instead of a flower, many-flowered from near the base, fairly lax. *Bracts* ovate to lanceolate, acuminate, 3–8 mm long, scarious with brown keel, margins usually minutely fimbriate. *Pedicels* patent, 1–5 mm long in flower. *Perianth* held vertically, rotate, 15–20 mm in diameter, faintly and pleasantly scented, opening at *ca.* 10h00 and closing at *ca.* 17h00; outer tepals elliptic to linear, somewhat clawed in the basal 2 mm, subacute, 11–13 × 2–3.5 mm, white with green midrib, immaculate; inner tepals ovate to narrowly elliptic, somewhat clawed in the basal 1.5 mm, obtuse, 11–13 × 3–5.5 mm, white with green midrib and paired yellow maculae immediately above the claw. *Filaments* somewhat spreading, filiform and tapering to the base, scabrid with short retrorse trichomes but glabrescent basally, inner narrower and a little longer than the outer, 8–9 mm long; *anthers* versatile, *ca.* 1.5 mm long, yellow;
Figure 1  *Trachyandra aridimontana*. A. Flowering branch, ×1; B. rootstock, ×1; C. flower, ×2; D. outer tepal, ×4; E. inner tepal, ×4; F. outer stamen, ×4; G. inner stamen, ×4; H. gynoecium, ×4; I. fruit, ×1; J. seed, outer and inner surfaces, ×10. All from Williamson 3702 (NBG).
Figure 2 *Trachyandra involucrata*. A. Flowering branch, ×1; B. rootstock, ×1; C. flower, ×2; D. outer tepal, ×4; E. inner tepal, ×4; F. outer stamen, ×4; G. inner stamen, ×4; H. gynoecium, ×4; I. fruit, ×1; J. seed, outer and inner surfaces, ×10. All from *van Jaarsveld s.n.* (ex hort NBG).
pollen yellow. **Ovary** ovoid, ca. 1.5 mm long, green, ovules 8-9 per loculus; **style** filiform, 7-8 mm long, white; **stigma** minute, penicillate. **Fruit** a capsule, narrowly ovoid, 8-12 × 4 mm, borne erect on a stout, erect pedicel 5-9 mm long. **Seeds** elliptic, outer surface keeled and with a median glossy macula, inner surface with a prominent ridge, black with pale brown verrucae, 3 × 1.5 mm.

**Flowering time:** (August –) September.

**Distribution:** The species occurs in the small area from Koeboesberg northwards to Kodaspiek, a distance of some 20 km (Figure 3), in the Richtersveld. This largely mountainous region in the extreme northwest of the Cape Province just south of Namibia, is partially enclosed and bounded to the north and east by a bend in the Orange River and extends south to about the 29th parallel. The area is arid and has a very low rainfall, concentrated mostly in the winter months. Precipitation in the summer is enhanced by fog condensation, particularly on the higher, western (seaward) slopes. The unusual ecology of the area has fostered a rich complement of endemic species. *T. aridimontana* grows on the western slopes of mountains some 70 km inland at about 600 m, where it presumably benefits from precipitation from the prevailing Atlantic fogs that are important to the vegetation of this area. The plants form small bushes on stony slopes or among rocks, often in widespread colonies.

**Relationships:** Apart from its characteristic habit in the genus, *T. involucrata* is also distinguished by its pendulous capsules borne on recurved, slightly sigmoid pedicels (Figure 2). The genus is largely devoid of notable floral characters and those of habit and fruit are valuable for distinguishing the species. It was therefore intriguing to encounter specimens identical in habit to *T. involucrata* but having erect capsules borne on short, upright pedicels (Figure 1). All the plants with erect fruits were collected in a small region in the Richtersveld. Typical *T. involucrata* occurs to the south in Namaqualand. This suggested some level of genetic differentiation between the two forms. When plants from both regions flowered in cultivation, they revealed further differences in floral morphology and phenology. *T. aridimontana*, as the Richtersveld species has been called in allusion to its habitat, was recognized as distinct when it became apparent that the flowers opened at mid-morning and that the inner tepals were maculate (Figure 1). In contrast, flowers of *T. involucrata* opened in mid-afternoon in cultivation and were clearly without markings (Figure 2). In addition *T. involucrata* flowers mainly between May and June, some months before *T. aridimontana*. These differences in the breeding system, coupled with the difference in the attitude of the fruit warrant recognizing these northern populations as a distinct species. Otherwise the species are indistinguishable, and share the woody, shrubby habit, lanate roots unusual in the section, and flattened, ovate seeds which are black with pale brown verrucae. The maculate inner tepals are evident in all collections of *T. aridimontana*, although it may be necessary to hydrate flowers that have shrivelled. Although it is clear that *T. involucrata* and *T. aridimontana* are very closely related, at present it is not clear which is the derivative species. The erect capsules and maculate perianth are features which are shared with *T. adamsonii* and with many other species in the genus, and may indicate that *T. involucrata* is derived from southern populations of *T. aridimontana*. However, in other species of *Trachyandra* with a maculate perianth, all tepals are marked and *T. aridimontana* is apparently the only one in which only the inner series is maculate. This may indicate an independent acquisition of this character, and support an alternative thesis that it is the derived taxon. The apparent similarity in the vegetative form of the two species suggests that climatic differences are not...
responsible for the divergence, which may be the result of the isolation of small marginal populations and ensuing genetic drift. The adaptive significance of erect versus pendent fruits is obscure. The infructescences of both species remain erect, unlike those of other species in the genus which become prostrate, and it is often these which have pendent fruits.

Obermeyer (1962) included in her exsiccatae for T. involucrata the collection Dyer & Verdoorn 1814, placed here in T. aridimontana. This is not surprising since the material is in flower and no fruits are present to aid identification, but examination of rehydrated flowers reveals the characteristic maculae on the inner tepals. Although the specimens cited by Obermeyer therefore include elements of two species, her description applies only to T. involucrata.

Specimens examined

Trachyandra aridimontana Manning
—2816 (Oranjemund): Kodaspiek (—BB), Oliver, Toelken & Venter 478 (PRE), Venter 8185 (PRE), van Jaarsveld 6243 (NBG); Numeeesberg (—BD), Wisura 1517 (NBG); Numees Camping Site (—BD), Hugo 2794 (PRE); Hells Kloof (—BD), Hall 790 (NBG), Thompson & Le Roux 97 (K, PRE), Williamson 3702 (NBG); Kubus Mt (—BD), Dyer & Verdoorn 1814 (PRE).

Trachyandra involucrata (Bak.) Oberm.
—2917 (Springbok): Twee-rivieren (—AA), Marloth 12268 (PRE); 4 km NE of Nigramoep (—DA), Acocks 19355 (NBG, PRE).
—3118 (Vanrhynsdorp): Karee Bergen (—AB), Schlechter 8190 (PRE); Bitterfontein (—AB), Swanepoel s.n. (NBG).

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Reference