

ASTERACEAE

BERKHEYA JARDINEANA (ARCTOTIDEAE—GORTERIINAE), A NEW DWARF PERENNIAL FROM THE SWARTRUGGENS, WESTERN CAPE

Berkheya Ehrh., a genus of ± 80 species centred in southern Africa, was last revised by Roessler (1959) but many species remain poorly known; to some extent at least because of the challenges posed to collectors by these often viciously spinescent plants. *Berkheya* is distinguished by its shrubby or perennial habit, spinescent involucre bracts, mostly radiate (rarely discoid) capitula, \pm deeply alveolate receptacle with uniformly thin-walled cavities, and pappus of ± 20 denticulate scales in one or two rows (Roessler 1959; Bremer 1994). The genus is polyphyletic as currently defined (Funk & Chan 2008; Funk *et al.* 2008; Karis *et al.* 2009), with a preliminary molecular analysis of the subtribe nesting the genera *Cullumia* R.Br. ex Aiton, *Cuspidia* Gaertn., *Didelta* L'Hér. and *Heterorachis* Sch.Bip. ex Walp. in various parts of *Berkheya*. Substantial revision of generic circumscription is required to render it monophyletic.

Of 23 species of *Berkheya* recorded from the core Cape Floristic Region, 16 are endemic (Goldblatt & Manning 2000; Manning *et al.* 2010), including the recently described *B. chrysanthemoides* J.C.Manning & Goldblatt from the Bokkeveld Mountains (Manning *et al.* 2010). Here we describe another novelty discovered in 2009 on the Swarttruggens northeast of Ceres.

***Berkheya jardineana* J.C.Manning & Goldblatt**, sp. nov.

TYPE.—Western Cape, 3219 (Wuppertal): Knolfontein, Swarttruggens, 60 km NE of Ceres, (–DC), 26 Oct. 2011, *I. Jardine 1738* (NBG, holo.; MO, S, iso.).

Dwarf, tufted perennial to 10 cm high at flowering, forming small clumps from branching, woody rhizome; stems erect, cobwebby or thinly felted, flushed purple. Leaves crowded at base of stems, basal foliage leaves spatulate in outline, softly leathery, blade suborbicular, 15–35 mm diam., weakly folded along midline and coarsely 7- or 9-dentate, primary teeth excurrent in pale, relatively soft spine ± 3 mm long, with smaller secondary and tertiary antrorse spines 1–2 mm long between primary spines, cobwebbed or thinly felted on both surfaces and with scattered minute, gland-tipped hairs, glabrescent above, veins raised beneath, narrowed into petiole-like base 15–25 mm long, more densely cobwebbed than blade; cauline leaves smaller, lanceolate, 10–20 \times 3–6 mm, sessile and weakly amplexicaul, weakly 3- or 4-jugate, teeth excurrent into soft spines ± 3 mm long and with 1 or 2 smaller antrorse spines along margins between primary spines, thinly felted on both surfaces and with scattered minute, gland-tipped hairs. Capitula 1–3 in shortly pedunculate racemes, discoid, 25–40 mm across involucre and 15–20 mm across disc; involucre bracts 4- or 5-seriate, bracts basally connate for ± 5 mm, patent-reflexed, narrowly lanceolate, flat, apex excurrent in a yellowish spine 2–3 mm long, outer and median series with 3–5 pairs of patent spines similar to apical spine, outer surface thinly cobwebbed and with minute, gland-tipped hairs, innermost bracts with 1–3

pairs of spines in distal half grading into several antrorse spinules in basal half, glabrous except towards apex, outer one or two series mostly 6–8 \times 2–3 mm, median two series 10–12 \times 3 mm, inner series oblong-lanceolate, 5–6 \times 1.5 mm; receptacle deeply alveolate, margins irregularly fimbriate with straw-like spinules 0.5–1.0 mm long. Corolla funnel-shaped, yellow, densely glandular-pubescent on tube and more sparsely along lobe margins, ± 7 mm long, tube ± 3.5 mm long, lobes erect, narrowly lanceolate, ± 3.5 mm long, penicillate. Stamens: anthers tailed, with lanceolate apical appendage, ± 4 mm long; endothelial cells with inner periclinal wall thickenings not evidently displaced. Achenes turbinate, ± 2.5 mm long, 10-ribbed, those of outer florets densely antrorsely pubescent with short, twin hairs but inner achenes progressively more glabrous. Pappus scales sub-biseriate, ± 20 , oblong-obovate, denticulate, outer series slightly shorter than inner, 1.0–1.5 \times 0.5 mm. Pollen lophate. Flowering time: Oct.–Dec. Figure 1.

Distribution and ecology: known so far only from the Farm Knolfontein on the Swarttruggens, a semi-arid mountain range 60 km east of Ceres at the eastern margin of the Cape Floristic Region (Figure 2). The species is locally common on sandy flats in areas of dry, rocky sandstone soils, mostly in full sun. It appears to be highly localized; although several subpopulations are known, they are all within approximately 1 km of one another.

Diagnosis and relationships: this petite species is distinguished in the genus by its diminutive size and curious growth form, developing into small, multi-stemmed clumps or low cushions through branching of the woody underground stem. The leaves are clustered at the base of the aerial stems, which reach only to 10 cm high at flowering, later elongating to 15 cm in fruit. The basal foliage leaves are highly distinctive, being softly leathery and spatulate in outline with a coarsely toothed, suborbicular blade only weakly armed with pale, relatively soft-textured spines. Both surfaces are thinly cobwebby-felted. The species is not pyrophytic and the low growth form is likely an adaptation to its exposed habitat.

The rosulate habit, relatively small, discoid capitula, and sub-biseriate pappus of small obtuse scales place *Berkheya jardineana* in ser. *Rigidae* (Roessler 1959). Other members of the series are larger perennial herbs or shrubs with pinnatifid or lobed leaves.

Etymology: the species is named for Ivor and Cora Jardine, who first collected specimens in 2009. They have devoted many years to documenting the flora of the Swarttruggens (Jardine & Jardine 2010), in the course of which they have discovered several novelties, including *Hesperantha lithicola* Goldblatt & J.C.Manning (Iridaceae) and *Trieenea occulta* J.C.Manning & Goldblatt (Scrophulariaceae).

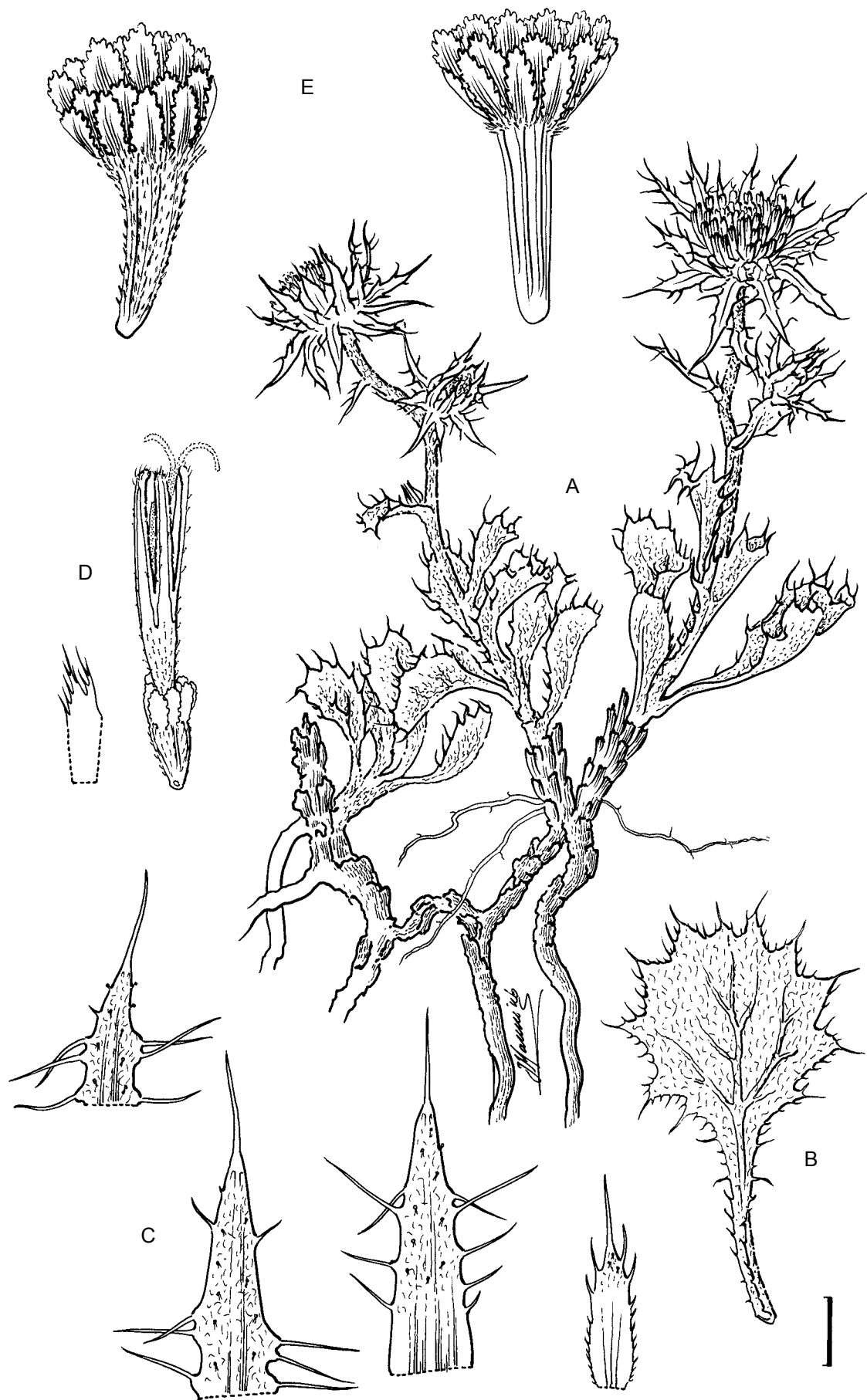


FIGURE 1.—*Berkheya jardineana*, Jardine 1738 (NBG). A, Plant; B, foliage leaf; C, involucre bracts (outermost on left, innermost on right); D, outer floret showing puberulous ovary and pappus of small, obtuse scales, plus portion of alveole margin; E, achenes (outer on left, inner on right) (Jardine 1747). Scale bar: A, B, 10 mm; C, 8 mm; D, E, 2 mm. Artist: John Manning.

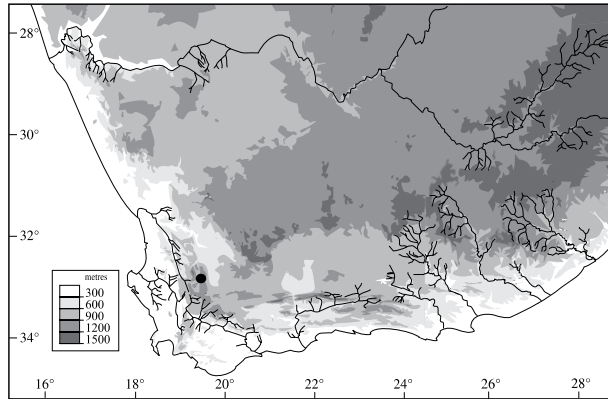


FIGURE 2.—Distribution of *Berkheya jardineana*, ●.

Additional specimens seen

WESTERN CAPE.—3219 (Wuppertal): Knolfontein, Swartrug-gens, 60 km NE of Ceres, 1 201 m, (–DC), 26 Oct. 2009, *Jardine & Jardine* 570 (NBG); 21 Nov. 2011, *Jardine* 1747 (NBG); 12 Dec. 2011, *Jardine* 1761 (NBG); 14 Dec. 2011, *Jardine* 1766 (NBG).

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