

ASTERACEAE

A NEW SPECIES OF *EMILIA* (SENECIONEAE) FROM SOUTH AFRICA

INTRODUCTION

Emilia Cass. is a genus of tribe Senecioneae comprising almost 100 species distributed through tropical Africa and Asia (Jeffrey 1986; Bremer 1994). It is distinguished by its annual or perennial herbaceous habit, scanty indumentum, ecalyculate involucre and a basic chromosome number $n = 5$ (Nordenstam 1978; Jeffrey 1986). Although about 60 species are currently recognized from mainland Africa, especially Tanzania, only six are known from southern Africa. The species described here was collected as part of a botanical survey of the flora of the Nieuwoudtville area and was identified as an unnamed species of *Emilia* by Prof. B. Nordenstam of the Swedish Museum of Natural History, an expert in the genera of the tribe. It represents the first record of the genus from the winter rainfall region of South Africa and an unusual disjunction in the distribution of this essentially tropical genus.

***Emilia hantamensis* J.C.Manning & Goldblatt**, sp. nov., a speciebus alteribus *Emiliae* differt capitulis floribus radiatis, foliis dentatis vel pinnatisectis et capitulis magnis solitariisque, involucris 6–10 mm diam.

TYPE.—Northern Cape: 3119 (Calvinia), Nieuwoudtville Dist., Farm Glenlyon, along trekpath, on doleritic clay, (–AC), 5-10-2000, Goldblatt 11619 (NBG, holo.; K, MO, PRE, S, iso.). Figure 14.

Annual herb 150–300 mm high, branching mainly near base; stems sparsely leafy, very thinly cobwebbed at first, later glabrescent. Leaves mainly basal but lower soon withering, alternate, oblanceolate, 30–70 × 6–30 mm, narrowed to petiole-like base, leathery, thinly cobwebbed at first, especially in axils, later glabrous or nearly so, margins and adaxial surface minutely papillate-scabridulous, lower leaves especially with midrib more conspicuously papillate-scabridulous abaxially and decurrent on stems as softly scabridulous ridges; lower leaves with expanded part oblanceolate to elliptic, coarsely and sharply dentate, becoming more deeply divided to pinnatifid upwards; upper leaves pinnatisect with lobes oblong and coarsely serrate. Capitula heterogamous, radiate, solitary on long peduncles with few, scattered, subulate bracts. Involucre broadly cup-shaped, ecalyculate, 6–10 mm diam.; involucre bracts uniseriate, 10–13, narrowly oblong-ovate, acute, leathery and mostly with one or both margins distinctly subscarios, ciliate-puberulous at tips, 3–5-veined, 7–8 × 2–3 mm. Receptacle flat, punctate, glabrous. Ray florets female, 5–8; tube cylindrical, abaxial (outer) side densely adpressed-hairy, 2.5–3.0 mm long; lamina deflexed-spreading, elliptic-oblong, ± 5-veined, 10–12 × 2.5–3.0 mm, yellow. Ovary narrowly obovoid, triangular in transverse section, abaxial (outer) face largest, convex, densely adpressed-hairy with apical hairs longest, inner faces narrower, glabrous but separated by an adpressed-hairy ridge; style terete with slightly swollen base on a distinct

stylopodium, branches narrowly oblong, 0.8 mm long, lateral margins stigmatic, apices truncate and shortly papillate. Cypselas heteromorphic, those of ray florets narrowly ellipsoid, reddish brown, arcuate, triangular in transverse section with outer face largest, convex and densely covered with adpressed, acute, white, myxogenic hairs, inner faces narrower, flat or concave, glabrous but intervening ridge also densely hairy, ± 5 mm long. Pappus bristles pluriserial, numerous, white, barbellate, connate at base into short collar, persistent, 4–5 mm long. Disc florets bisexual, numerous, ± 6 mm long, glabrous, yellow; tube cylindrical, 3.5–4.0 mm long, limb obconical, 2.5 mm long, 5-lobed; lobes narrowly triangular, 2.0 × 0.8 mm, with submarginal veins and median resin duct. Anthers 2.5 mm long including ovate, somewhat keeled apical appendage; anther base obtuse, ecaudate; filament collar somewhat swollen towards base. Ovary narrowly obovoid, densely adpressed-hairy; ovary wall crystals rhomboidal; style terete with swollen base on distinct stylopodium, style branches with margins stigmatic, apices shortly conical with central tuft of longer papillae, outer surface with fringe of papillae at apex. Cypselas narrowly oblong, 4- or 5-angled, black, densely covered with adpressed, acute, white, myxogenic hairs, ± 5 mm long. Pappus bristles pluriserial, numerous, white, barbellate, connate at base into short collar, persistent, 4–5 mm long. Flowering time: September to November or early December. Figure 15.

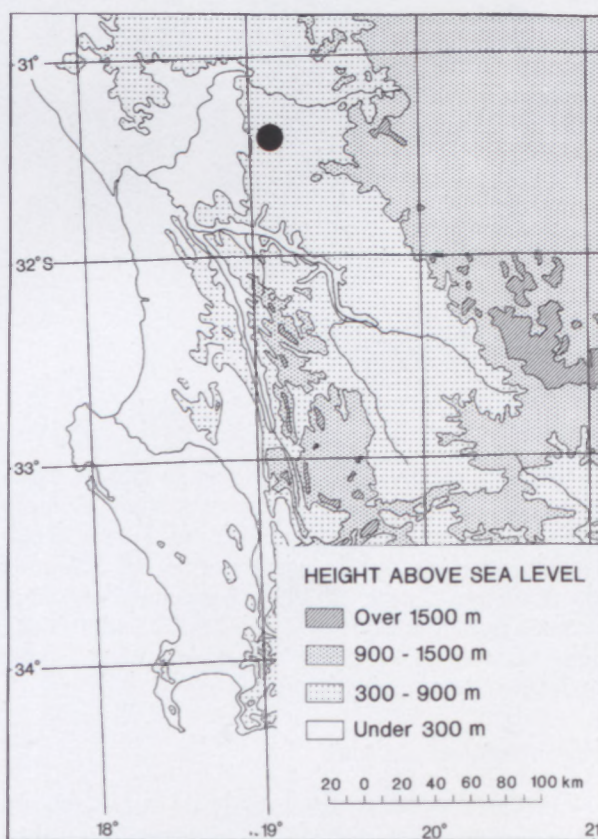


FIGURE 14.—Distribution of *Emilia hantamensis* in Northern Cape.

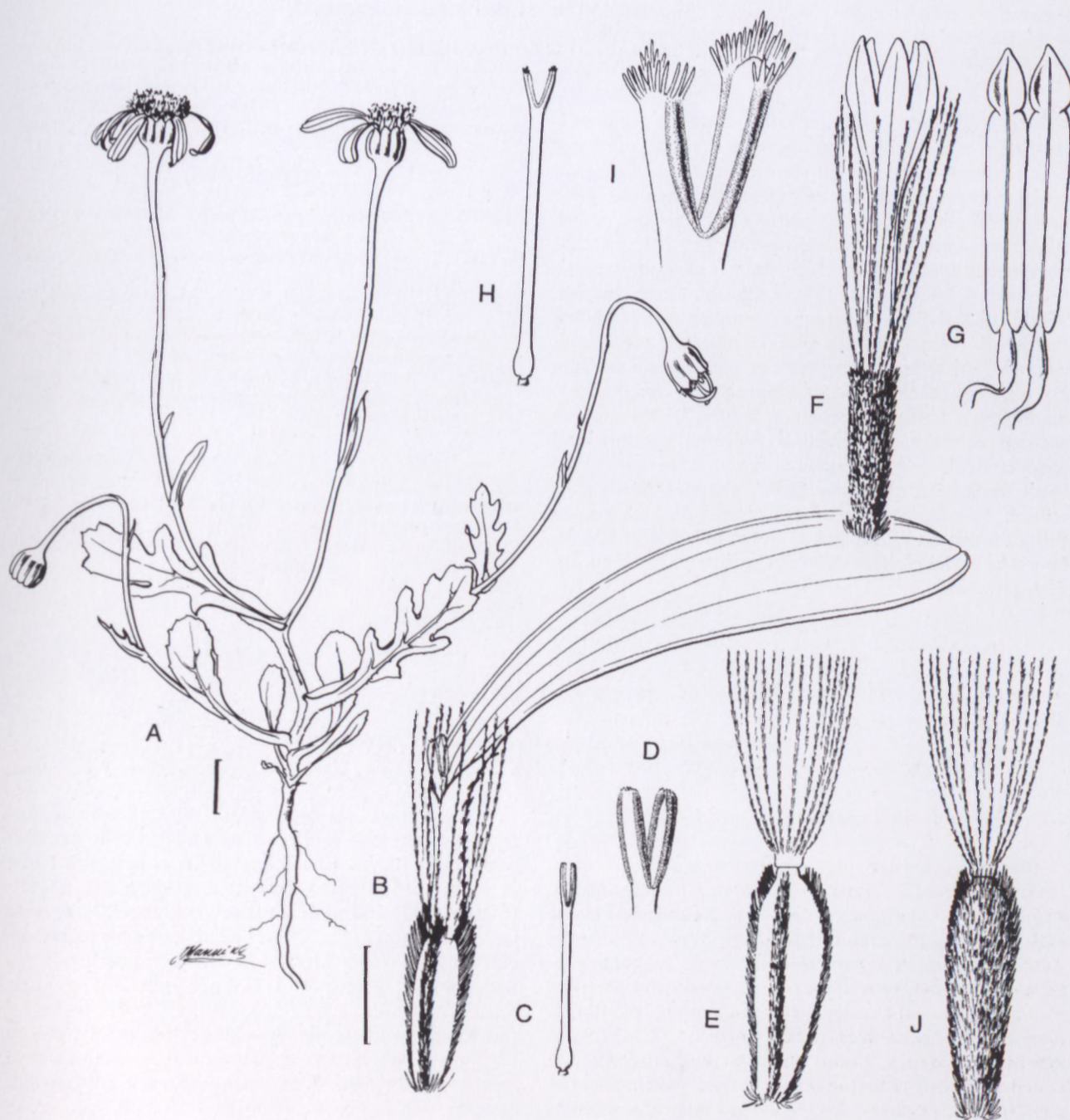


FIGURE 15.—*Emilia hantamensis*. A, whole plant. B–E, ray floret: B, floret; C, style; D, stigmatic branches; E, cypsela (inner face). F–J, disc floret: F, floret; G, two stamens; H, style; I, stigmatic branches; J, cypsela. Scale bars: A, 10 mm; B, C, E–G, I, J, 2 mm; D, H, 1 mm. Artist: John Manning.

Distribution and biology: the species is restricted to clay soils derived from dolerite and is at present known only from the dolerite outcrops just east of Nieuwoudtville in the Northern Cape (Figure 14). This region, which marks the westernmost limit of the dolerite sill, is known locally as the Hantam (Manning & Goldblatt 1997) and its doleritic soils become very glutinous and spongy in the wet season, drying out in the summer. This habitat supports several other local edaphic endemics, especially geophytes and annuals. Among the annuals which are restricted to doleritic clay soils along the Bokkeveld and Roggeveld escarpment are *Heliophila collina* (Brassicaceae), *Diascia cardiose-*

pala, *Alonsoa unilabiata* and *Cromodon varicalyx* (Scrophulariaceae).

History: first collected by botanists Dee Snijman and Pauline Perry as part of their botanical survey of the Nieuwoudtville Wildflower Reserve, *E. hantamensis* was initially thought to be an undescribed species of *Othonna* (Snijman & Perry 1987). This opinion was revised when material that was sent to Bertil Nordenstam of the Swedish Museum of Natural History, an expert in the genera of the tribe Senecioneae, was returned as a new species of *Emilia*. The species was again collected in 1996, when it was photographed for inclusion in a

regional wildflower guide (Manning & Goldblatt 1997), at which time its status was once again confirmed by Nordenstam.

Diagnosis and relationships: this distinctive species is the first record of *Emilia* in the winter rainfall region of South Africa, but it has all the essential morphological features of the genus (Bremer 1994) and there seems to be little doubt that it is correctly placed in that genus. *Emilia hantamensis* is distinguished from all other southern African species by its large, radiate capitula with the involucre 6–10 mm diam. The southern African species, which are distributed across the continent from Namibia, through Botswana and into KwaZulu-Natal, have discoid capitula. The other African species with radiate capitula typically have the involucre no more than 5 mm diam. *E. hantamensis* appears to belong in section *Spathulatae* on account of its radiate, yellow-flowered capitula and exappendiculate style branches, although the rather narrow corolla lobes of the disc florets are not typical of the section. No other species of sect. *Spathulatae* are known further south than Zimbabwe and the location of *E. hantamensis* in the Northern Cape represents a most unusual disjunction.

Other material examined

NORTHERN CAPE.—3119 (Calvinia): Nieuwoudtville Dist., Nieuwoudtville Reserve, flats in spongy red clay soil, 8-09-1983, (–AC), Perry & Snijman 2354 (NBG); Farm Charles Hoek, abundant in red, spongy doleritic soil, (–AC), 13-10-1996, Snijman 1564 (NBG); dolerite outcrops just east of town, (–AC), 2-12-1996, Manning s.n. (NBG).

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J.C. MANNING* and P. GOLDBLATT**

* Compton Herbarium, National Botanical Institute, Private Bag X7, 7735 Claremont, Cape Town.

** B.A. Krukoff Curator of African Botany, Missouri Botanical Garden, PO Box 299, St. Louis, Missouri 63166, USA.

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FOSSOMBRONACEAE

FOSSOMBRONIA NYIKAENSIS, A NEW SPECIES FROM MALAWI

Fossombronia nyikaensis Perold, sp. nov.

Plantae aggregatae, plerumque smaragdinae, mediocres vel robustulae, dioicae. *Folia* supra subrotundata, saepe plicata, plerumque breviora quam lata. Plantae masculae rarissimae, plerumque quam feminae minores. *Antheridia* a bracteis perigonialibus forma irregulari protecta. *Archegonia* raro etiam bractea versiformi protecta. *Pseudoperianthium* irregulariter 4-lobatum, substipitatum, folios proximos fere aequans. *Sporae* 27.5–37.5 µm diametro, superficie distali cum 16 vel 17 papillis vel cristis papillosis transversis; superficie proximali cum papillis multis grossis irregularibus, inter eas tenuiter granulata, ± 60 papillis brevibus e superficie distali circum margines procurrentibus. *Elateres* 107.5–150.0 µm longi, 7.5–10.0 µm lati medio, apices versus angustati, omnino bispirales vel partim bispirales, partimque trispirales.

TYPE.—Malawi, 1033: Nyika National Park, southern circular route at Chelinda Bridge, (–DB), on soil under rock overhang, at altitude 2 227 m, *Koekemoer* 1792 (PRE, holo.), with *Calycularia crispula* Mitt. and *Fissidens* sp.

Plants in close stands, clear green, some leaves with yellowed margins, others tinged with red, medium-sized to fairly robust; male plants very rare; shoots smaller, up to 5 mm long, ± 1.5 mm high, 1.8–2.0 mm wide; female plants larger, 9.5–14.0 mm long, 1.6 mm high, 2.8–3.0 mm wide; mostly simple, occasionally apically furcate. *Stems* prostrate, old stems giving rise to new growth

from their apices, chlorophyllose, with globose nodules near base, or with short, ± 1 mm long, fleshy branches with young leaves arising laterally near apices or bases; in cross section plano-convex, in male plants apically (Figure 16M) 260 µm (8 cell rows) high, 400 µm wide, basally 300 µm high, 300 µm wide; in female plants apically (Figure 16N) 240 µm (9 cell rows) high, 350 µm wide, at base (Figure 16O) 270 µm high, 240 µm wide. *Rhizoids* purple, 12.5–17.5 µm wide. *Leaves* suberect to spreading, overlapping, undulating, frequently plicate, somewhat rounded above, succubously inserted on stem, mostly shorter than wide, young apical leaves smaller, margins with 3–8 sessile papillae, ± 15 × 22.5 µm, sometimes broken, basally brownish, wedged between 2 marginal cells (Figure 16L); in male plants (Figure 16A–D) leaves smaller, 875–1250 × 1075–1325 µm; in female plants (Figure 16E–K) leaves larger, 1175–1750 µm long, 1150–2250 µm wide above, narrowing below to 1150–1500 µm. *Leaf cells* thin-walled, in male plants rather smaller than in female plants, where at upper margins rectangular across or 5- or 6-sided, rarely isodiametric, 20–50 × 35.0–57.5 µm, at lower lateral margins long-rectangular, 105–150 × 20–25 µm, upper laminal cells 5- or 6-sided, 50.0–67.5 × 35.0–42.5 µm, middle laminal cells 4–7-sided, 62.5–100.0 × 37.5–50.0 µm, basal cells 67.5–125.0 × 30.0–42.5 µm. *Oil bodies* no longer present; chloroplasts numerous, round or oval, ± 3 µm diam.

Dioicous. *Antheridia* dorsal on stem, in 1 or 2 row(s), short-stalked, globose, 200–210 µm diam., shielded by irregularly shaped perigonial bracts (Figure 17A, B),