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***PTILOTUS BARKERI*, A NEW SPECIES OF AMARANTHACEAE FROM LAKE EYRE REGION, SOUTH AUSTRALIA**

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Abstract

A new *Ptilotus*, *P. barkeri* Benl sp. nov. from Lake Eyre Region, South Australia, is described and discussed. The taxon is illustrated by a photograph of the holotype sheet and by analytical drawings.

***Ptilotus barkeri* Benl, sp. nov. (Fig. 1 & 2).**

Fruticulus rigidus foliosus plurispicatus usque ad 15 cm altus, ad 20 cm diam. Rami valde ramulosi, ramuli plus minusve intricati, juniores pilis brevibus crassiusculis crispis nodulosis dense, vetustiores sparsius induti, tandem corticati. Folia permulta minuta atroviridia coriacea haud mucronata, juvenilia utrimque modice puberula dein glabrescentia. Spicae solitariae multiflorae ramos ramulosque terminantes, albidi-pilosae, primo subhemisphaericae c. 1.5 cm diam., dein ad c. 3.5 cm elongatae. Rhachis densissime villosa; flores pedicellati ad 30 et ultra conferti. Bractea et bracteolae maiores scariosae partim pilosae, persistentes; bractea subcordati-ovata, bracteolae ovati-lanceolatae concavae aristatae. Perianthium basi indurata tepalorum tubum brevem formans. Tepala elongati-linearia trinervia extus plumosa, pilis strictis obscure articulatis apicem truncatum nudum roseum haud attingentibus, intus glabra, inaequalia: 2 exteriora c. 0.8 cm longa, apice vix contracto eroso-denticulato insignia, 3 interiora angustiora superne plus minusve involuta visu acuta, inferne pilis marginalibus longioribus modice obsessa. Stamina 4 fertilia c. 3-4.5 mm longa, staminodium ad 6 mm et ultra elongatum; filamenta glabra basi valde dilatata in cupulam humilem (c. 1 mm) integram tubo perianthii arcte adnatam coalita; pseudostaminodiis nullis. Gynoecium 6-6.5 mm longum; ovarium subclavatum breviter stipitatum primo densissime pilosum; stylus centralis glaber, ad 3 mm longus.

Differt a *P. parvifolio* (F. Muell.) F. Muell. (var. *laeto* Benl incluso) praecipue indumento permanente ramulorum.

Type: E.M. James s.n., 7.2 km E of Copper Hills by road, South Australia, Region 2: Lake Eyre 27° 56' 46"S, 134° 23' 18"E, 13.v.1988 (Holotype: AD, isotype: M). Fig. 1A, 2.

A much-branched rigid shrublet 10-15 cm tall, spreading 10-20 cm across (in type specimen) when fully grown. *Branches* and more or less intricate short branchlets (c. 2-4 cm) with a homogeneous long-persistent whitish cover of thickish crispy nodulose minute (0.2-0.35 mm long) accumbent hairs; leafy throughout on upper, darkly-barked on lower stems. *Leaves* (0.3-) 0.5-1.0 (-1.2) cm apart, alternate, rarely 2 or 3 together, near-sessile, slightly decurrent, to 0.9 x 0.3 cm at most, narrow-elliptic to almost linear-lanceolate, subobtuse or bluntly acute, never mucronate, dark green, thickly coriaceous, entire, loosely pilose on both surfaces with hairs as for branchlets, then turning glabrescent, brownish and rugose when withering; uppermost leaves often subtending inflorescences. *Spikes* numerous, solitary, terminating branches and branchlets, usually sessile, compact, subhemispheric to broadly ovoid by 1.2-1.7 cm diam., later elongating to 3.2-3.6 cm long, appearing whitish from pubescence. *Rachis* with a very dense indumentum of faintly articulate silky hairs 1.2-1.5 mm long, surrounding the very short (c. 0.3 mm) flower pedicels; these distinctly jointed above the bracteoles. *Flowers* tightly arranged all along, up to c. 30-35 (-40) a spike. *Bract* and *bracteoles* membranous-scarious, often varying in size and dorsal pubescence consisting of suberect hairs similar to those of the rachis, persistent. Bract (2.6-3.2 x 1.4-1.8 mm) subcordately ovate, subacute, initially white-villous except for the apex, with 3 (4) veins dark reddish-brown inside in about the basal half. Larger bracteoles (3.8-4.2 x 1.8-2 mm) ovate-lanceolate, concavely appressed to perianth; hairs arising in a median area, leaving the wings transparent shining; the prominent inside brownish keel-like midrib produced into an arista-like point ca. 0.5 mm long, not reached by hairs. *Perianth* elongate-erect in anthesis, later subcampanulately diverging in about distal half, the thickened bases of its segments constricted and connected to a callose cup-shaped tube (concave below due to the sunken pedicel attachment) hardly exceeding

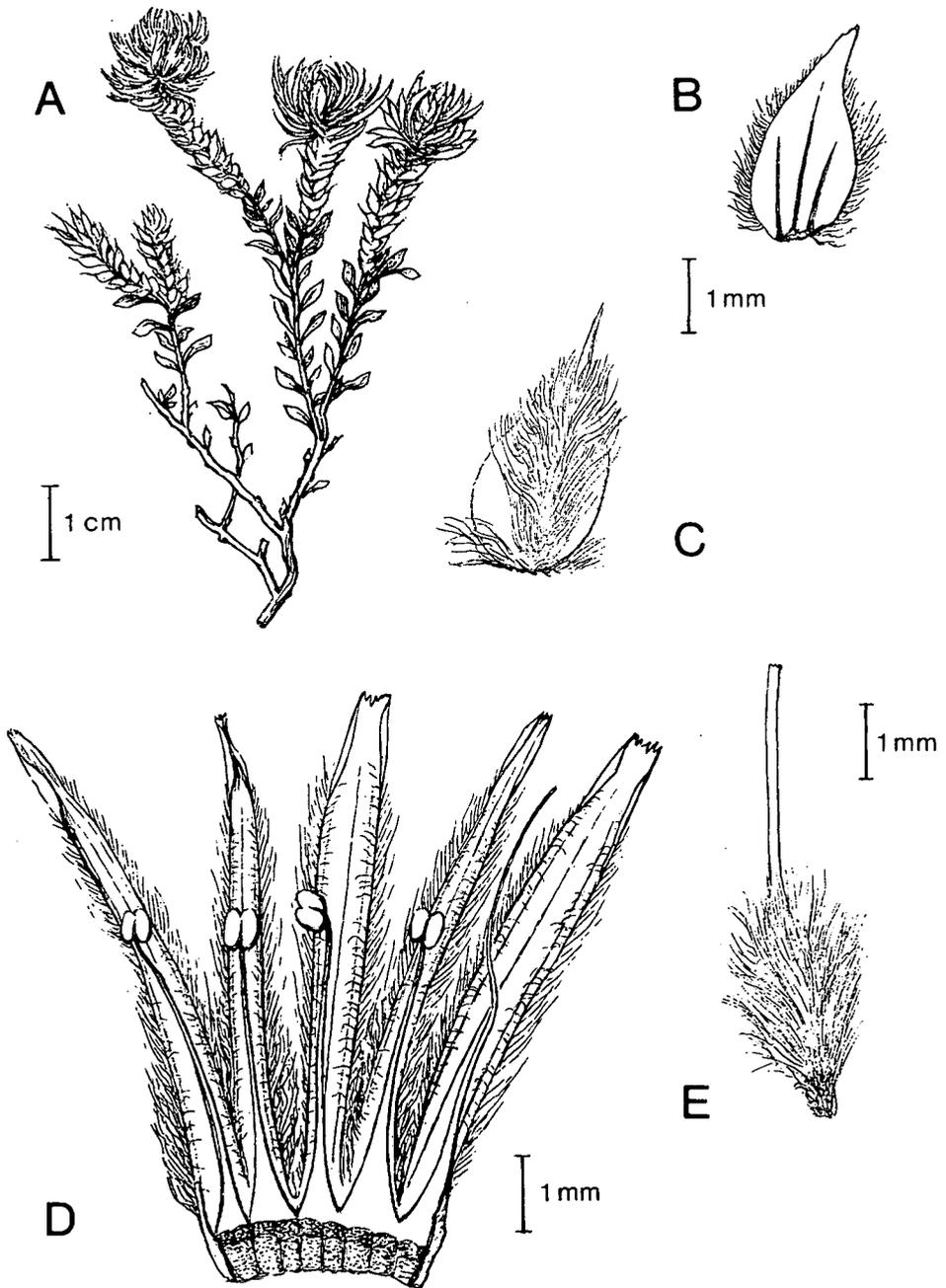


Fig. 1. *Ptilous barkeri*. A, part of shrublet; B, bract, inner face; C, bracteole, outer face; D, perianth with androecium spread open, inner view; E, gynoecium. (Drawn by A. Böhm from isotype sheet, M).

1.0 mm high, hirsute outside with narrow glabrous marks continued up to lower parts of tepal midribs. *Perianth segments* almost linear, without a scarious margin, glabrous within, copiously invested outside in fine straight obscurely septate hairs spreading c. 0.6-1.5 mm long, arising all along but never reaching the exposed glabrous tepal ends (pinkish-tinged in fresh material); some shorter marginal hairs turned in against inner surface. Inner view showing three bold ribs in lower third; median vein broadened and prominent externally to form a glabrous ridge in its lower part of c. 1.2 mm, especially obvious in outer segments; fainter lateral veins running near margins. *Outer tepals* from under 7.5 mm to over 8 mm long and 0.8-1.0 (-1.1) mm broad near middle, the truncate-obtuse to truncate, minutely erose-serrate to dentate apex 1.3-1.5 mm long by 0.8-0.9 mm wide. *Inner tepals* slightly shorter but distinctly narrower (c. 6.1-7.8 x 0.5-0.6 mm), the more or less serrulate apex mostly inrolled; an inconspicuous cluster of marginal somewhat wavy (not crisp nor woolly!) hairs to c. 1.8 mm long arising on one or both edges above the tube. *Stamens* five, constantly four perfect, the antherless staminode longer, filiform, somewhat curved; free part of the upright filaments of fertile stamens from c. 3 to 4 (4.5) mm in length, slightly ligulate and c. 0.15 mm wide in the middle, markedly (and sometimes abruptly) broadening near base to 0.6-0.7 mm; the capillary flexuose staminode averaging 5-6 mm long occasionally even overtopping the perianth. *Stamens* and staminode fused below with acute angles to form a cupule 0.8-1 mm high, strongly adnate to the perianth tube, without a free staminal ring and without staminodial teeth or lobes. *Anthers* pale yellow becoming brownish, broad-ellipsoid c. 0.6 x 0.4 mm. *Pistil* short-stipitate when young, not reaching length of perianth. *Ovary* initially club-shaped, up to 3 mm long including the c. 0.6 mm long stipe, then obovoid to complanate-globose of c. 1.8 mm in lateral diam.; a dense pubescence of stiffly erect to c. 1.2 mm long hairs completely occupying the whole juvenile ovary, later limited towards top. *Style* central, stout, glabrous, to 3 mm long and 0.15 mm across near middle, hardly thickened towards ovary, never curved nor bent. *Stigma* papillose, inconspicuous when dry. (Fig. 2).

Specimens examined

SOUTH AUSTRALIA: *E.M. James s.n.*, 7.2 km E Copper Hills by road, Lake Eyre Region, 27° 56'46"S, 134° 23'18"E, 13.v.1988 (AD98824022, M); *E.H. Ising s.n.*, Evelyn Downs, c. 120 km SW Oodnadatta, 25.viii.1954 (AD96929716).

Discussion

In four *Ptilotus* taxa of a shrubby growth, the stems and the usually non-orbicular leaves are more or less persistently pubescent with curved or crisp hairs, i.e. *P. arthrolasius* F. Muell., *P. eriotrichus* W. Fitzg., *P. helichrysoides* F. Muell., *P. maconochiei* Benl. All of them have longer branches and larger leaves than has our plant in question. Furthermore *P. arthrolasius* is characterised by yellowish thin scabrid stem hairs and by tufts of perianth hairs widely projecting beyond the tepals; in *P. eriotrichus* from WA the leaves are discolourous; *P. helichrysoides* from WA is remarkable for its thick prickly tipped leaves; in the greyish tomentose *P. maconochiei* from Qld, the outer tepals exhibit an apical appendage. None of the four species is closely allied to the new taxon.

No doubt, the latter bears some outward resemblance to the twiggy *P. parvifolius* F. Muell. in its two varieties, var. *parvifolius* and var. *laetus* Benl; but in addition to stem pubescence vanishing very soon and to acuminate leaves (with yellowish-cartilaginous margins when fresh) well-pronounced differences concerning floral details came to light upon closer examination. In *P. parvifolius* the tepals are bordered, (very) acute and almost free down to base; only 2 rarely 3 stamens are consistently fertile, the anthers finally drooping, a staminal cup with a free ring is densely hairy or fimbriate, the ovary hairless, the style eccentric and curved; bract and bracteoles are yellowish and shining. Thus the difference between *P. parvifolius* and our taxon is enough to warrant specific recognition.



Ptilotus barkeri Benl

det. - rev. - G BENL

HOLOTYPE

München 1989

STATE HERBARIUM OF SOUTH AUSTRALIA
ADELAIDE (AD)

Ptilotus sp. incogn. aff. *P. barkeri* Benl
 Differs from *P. barkeri* Benl in the following characters:
 - Petioles: broader, bases persistent
 - Leaves: more linear-lanceolate, bases persistent
 - Inflorescence: more branched, not paniculate
 D.M. James 29.vi.1988

Amaranthaceae: *Ptilotus* sp.
 growing on stone rubble hillock at edge of amphitheatre
 at 7.2 km E of Copper Hills by road - Small shrubs 10-20
 diam + 10-15 cms high (hillock of geologically disintegrating roc.
 Coll. E. M. James 13/8/88

South Australia, Region 2: Lake Eyre.
 Growing on stone rubble hillock at edge of amphitheatre
 at 7.2 km east of Copper Hills by road.

134°23'18"E 27°56'46"S
 Small shrubs 10 - 20 cms in diameter and 10 - 15 cms
 high. (Hillock of geologically disintegrating rock).

E. M. James

13.v.1988

Duplicates sent to: M

Fig. 2. *Ptilotus barkeri*. Holotype sheet (AD 98824022). (Photograph by K. Liedl).

Etymology

The newly established species is named in honour of Dr W.R. Barker, Senior Botanist in the State Herbarium of South Australia. Dr Barker had recognised the plant as different from *P. parvifolius* and from any other previously described species.

Habitat

Ptilotus barkeri is recorded from "hillock of geologically disintegrating rock" in the label of the holotype collection.

Key to similar species of *Ptilotus*

The new species may easily be inserted into the Key to *Ptilotus* in the "Flora of South Australia", Part 1 (1986), on p. 321, as follows:

1. Shrubs and undershrubs.
 2. Stems and small leaves glabrous except when young *P. parvifolius*
 2. Stems and leaves hirsute or pubescent.
 3. Indumentum of curved or crispy hairs.
 - 3a. Hairs yellowish, curved, rough-walled *P. arthrolasius*
 - 3a. Hairs whitish, crispy, short-nodose *P. barkeri*
 3. Indumentum of straight whitish hairs.

Acknowledgements

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Reference

Benl, G. (1986). *Ptilotus*. In Jessop, J.P. & Toelken, H.R. (eds.) "Flora of South Australia" 4th edn. 1:321-332. (Govt Printer: Adelaide).