



## *Ptilotus ostentans* (Amaranthaceae), a new species from Western Australia segregated from *Ptilotus seminudus*

Timothy A. Hammer<sup>a,b</sup> & Robert W. Davis<sup>c</sup>

<sup>a</sup>The University of Adelaide, School of Biological Sciences, Adelaide, South Australia 5005  
Email: timothy.hammer@adelaide.edu.au

<sup>b</sup>State Herbarium of South Australia, Botanic Gardens and State Herbarium, Hackney Road, Adelaide, South Australia 5000

<sup>c</sup>Western Australian Herbarium, Biodiversity and Conservation Science, Department of Biodiversity, Conservation and Attractions, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

**Abstract:** Critical evaluation of specimens of *Ptilotus seminudus* (J.M.Black) J.M.Black and specimens previously known as *Ptilotus* sp. Sunrise Hill (*M.A. Burgman 4484*) from Western Australia support the distinction of a new species. The new species is described as *Ptilotus ostentans* T.Hammer & R.W.Davis.

**Keywords:** Amaranthaceae, new species, *Ptilotus*, taxonomy, Western Australia

### Introduction

*Ptilotus* R.Br. (Amaranthaceae) encompasses approximately 125 species with most of the taxonomic diversity in the genus occurring in arid or semi-arid Australia, particularly in Western Australia (Hammer *et al.* 2018, 2019). Among these species is *P. seminudus* (J.M.Black) J.M.Black, a small perennial herb found in semi-arid woodlands of southern Australia. The species was initially described as *Trichinium seminudum* J.M.Black based on a collection from Minnipa, South Australia (Black 1916), and was subsequently included in *Ptilotus* by Black (1948).

The phrase name *Ptilotus* sp. Sunrise Hill (*M.A. Burgmann 4484*) was erected in 1997 based on a specimen that was collected in 1984 from east of Salmon Gums, Western Australia. A subsequent comparison of this specimen to the description and illustration of *P. seminudus* led to the synonymization of *Ptilotus* sp. Sunrise Hill (*M.A.Burgmann 4484*) under *P. seminudus* in 2000. Since then, seven other specimens have been recognised as being consistent with the current concept of *P. seminudus* in Western Australia. In this study, we have critically re-examined *P. seminudus* based on available specimens from PERTH and AD and present evidence here to support the recognition the new species *Ptilotus ostentans* T.Hammer & R.W.Davis from Western Australia.

### Methods

This study was based on examination of dried specimens at AD and PERTH. Images of type specimens were viewed through JSTOR Global Plants (<https://plants.jstor.org>) unless otherwise stated. Specimens viewed online are indicated with an asterisk.

### Taxonomy

*Ptilotus ostentans* T.Hammer & R.W.Davis, *sp. nov.*

**Holotypus:** [precise location withheld for conservation reasons] S of Sunrise Hill road, Western Australia, Oct. 1984, *M.A. Burgman 4484* (PERTH00274410).

*Ptilotus* sp. Sunrise Hill (*M.A. Burgmann 4484*) Western Australian Herbarium, *FloraBase* [<https://florabase.dbca.wa.gov.au>] (2006).

Prostrate *perennial herbs*, 12–20 cm wide, the taproot to c. 8 cm long. *Stems* ribbed, to c. 20 cm long, with moderately dense verticillate hairs. *Basal leaves* petiolate, ± erect; petiole 10–25 (30) mm long; lamina oblanceolate to narrowly obovate, 45–100 mm long, 10–15 mm wide, glabrous or with sparse to very sparse verticillate hairs; base gradually tapering to petiole; margin entire; apex rounded, often mucronate with a point to c. 0.3 mm long. *Cauline leaves* sessile; lamina obovate to elliptic, to rarely ovate, 5–10 mm long, 3–5 mm wide, with sparse verticillate hairs; base gradually tapering; margin entire; apex acute, mucronate with a point to c. 0.5 mm long. *Inflorescences* terminal, spiciform, hemispherical to broadly ovoid, (20–) 25–32 mm long, (30–) 32–35 mm wide, cream-coloured and often with a tinge of pink. *Bracts* narrowly lanceolate, 7–7.5 mm long, 2–2.8 mm wide, brown to straw-coloured, ± opaque, with sparse scattered verticillate hairs to c. 2 mm long; midrib indistinct; apex acuminate. *Bracteoles* ovate to oblong, 6.2–7.5 mm long,





**Fig. 1.** Morphology of *Ptilotus seminudus* (A, B) and *P. ostentans* (C, D): A, C Inflorescence with open flowers; B, D whole plant. Photos: T.A. Hammer (A, B), G. Krygsman (C, D).

3–3.5 mm wide, semi-translucent, with sparse verticillate hairs to c. 3 mm long, along the central portion, margin glabrous; midrib prominent, becoming brownish near the apex; apex obtuse, mucronate, the point to 1 mm long. *Sepals* linear-lanceolate, adaxially cream-green or pinkish, abaxial surface with cream-coloured verticillate hairs very short near the base and in the distal half, hairs up to c. 8 mm long and exceeding the sepal apex by 0.5–1 mm; outer sepals 2, 14.5–16 mm long, 1.1–1.2 mm wide, adaxial surface glabrous, apex truncate, margin irregularly serrate; inner sepals 3, 13.5–15.5 mm long, 0.7–0.9 mm wide, adaxial surface glabrous except for hairs on the margin, apex acute. *Fertile stamens* 2, ± pinkish; filaments uneven in length, 4–4.5 mm long, gradually broadening to the staminal cup; anthers 0.7–1 mm long, 0.5–0.7 mm wide. *Staminodes* 3, 1.5–3 mm long. *Staminal cup* 0.4–0.7 mm long, ± symmetrical, lacking appendages, ± glabrous. *Ovary* obovoid, 1.8–1.9 mm long, 1.3–1.5 mm wide, glabrous or with some apical hairs; stipe 1–1.2 mm long. *Style* curved, (3.8–) 4–4.4 mm long, excentric on the ovary apex. *Stigma* unlobed, capitate. *Seeds* not seen. **Fig. 1C, D.**

**Diagnostic features.** Distinguished by being a prostrate perennial herb and having cream-coloured

inflorescences (often tinged pink), bracts 7–7.5 mm long, bracteoles 6.2–7.5 mm long, sepals 13.5–16 mm long, 2 fertile stamens and anthers 0.7–1 mm long.

**Phenology.** Flowers Sep.–Nov.

**Distribution and habitat.** Occurs in Western Australia (Fig. 2) from south of Norseman to Scaddan and from Balladonia to Cape Arid National Park (N.P.), in the Coolgardie and Mallee IBRA regions (DAWE 2023). Occurs mostly on plains in open mallee woodlands on pale brown, grey or red sandy or loamy soils.

**Conservation status.** Recently listed as Priority Three under Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–), as *Ptilotus seminudus*.

**Proposed vernacular name.** Western Rabbit Tails.

**Etymology.** From the Latin *ostentans* (exhibiting, showing), in reference to the new species having longer and showier floral parts than *P. seminudus*.

**Table 1.** Comparison of morphological characters between *Ptilotus ostentans* and *P. seminudus*. All measurements are in millimetres.

	Basal leaf orientation	Bract size	Bracteole size	Outer sepal size	Inner sepal size	Anther size	Ovary size	Style length	Stipe length
<i>P. ostentans</i>	± Erect	7–7.5 × 2–2.8	6.2–7.5 × 3–3.5	14.5–16 × 1.1–1.2	13.5–15.5 × 0.7–0.9	0.7–1 × 0.5–0.7	1.8–1.9 × 1.3–1.5	(3.8) 4–4.4	1–1.2
<i>P. seminudus</i>	Horizontally spreading	8–11 × 1.7–2.5	7.5–8.8 × 2.5–3	11–15 × 0.9–1.1	10–12 × 0.6–0.8	0.5–0.6 × 0.4–0.5	1–1.5 × 1–1.5	3–4	0.4–0.6

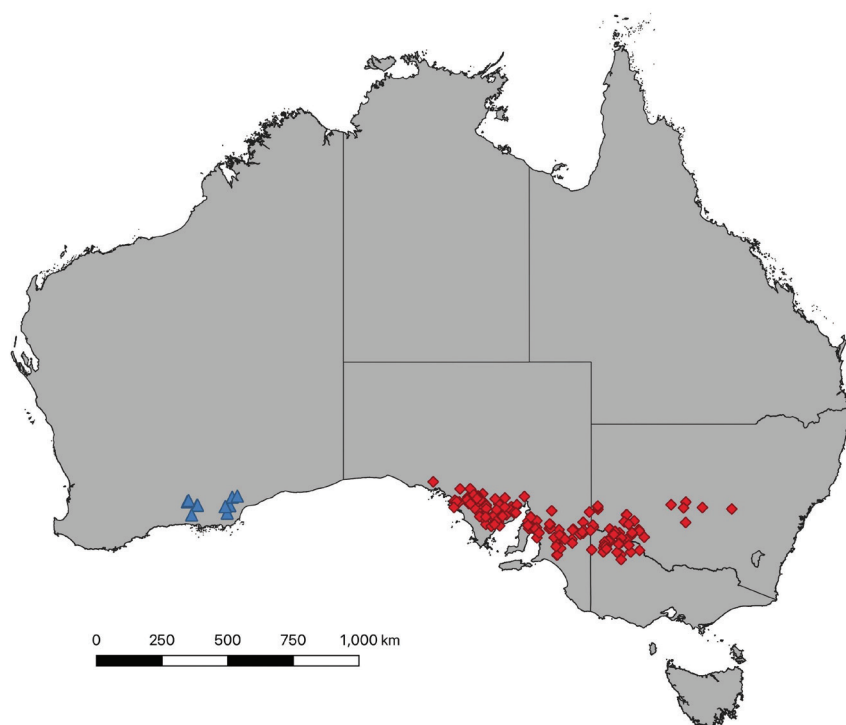
**Notes.** *Ptilotus ostentans* and *P. seminudus* can be distinguished by several important characters (Table 1). The flowers of *P. ostentans* are larger and showier than those of *P. seminudus* with typically many wide-gaping, often pinkish, flowers (Fig. 1C, D), while those of *P. seminudus* are smaller, less conspicuous, and typically greener (Fig. 1A, B). The outer and inner sepals of *P. ostentans* are typically longer (14.5–16 and 13.5–15.5 mm long, respectively) than those of *P. seminudus* (11–15 and 10–12 mm long, respectively). The anthers, ovary, style and stipe of *P. ostentans* are also longer than those of *P. seminudus* (see Table 1). Despite these floral parts being larger in *P. ostentans*, the bracts and bracteoles of *P. ostentans* are consistently shorter (7–7.5 and 6.2–7.5 mm long, respectively) than those of *P. seminudus* (8–11 and 7.5–8.8 mm long, respectively). As well as the differences in the flowers, the two species can be distinguished in the field by the basal leaves, which tend to be ± erect in *P. ostentans* and spreading horizontally and more rosette-like in *P. seminudus* (Fig. 1), though this orientation is difficult to discern on most pressed specimens.

Apart from *P. seminudus*, *P. ostentans* may potentially be confused with *P. spathulatus* (R.Br.) Poir. and *P. holosericeus* (Moq.) F.Muell., which are also prostrate

perennial herbs that overlap in distribution with *P. ostentans*. *Ptilotus ostentans* can be distinguished from *P. spathulatus* and *P. holosericeus* by having 2 fertile stamens (vs. 3) and larger, more showy flowers with perianth segments 13.5–16 mm long, as compared to 8–13 and 5–8.5 mm long in *P. spathulatus* and *P. holosericeus*, respectively. *Ptilotus spathulatus* can be additionally distinguished from *P. ostentans* by the inflorescence typically becoming cylindrical in shape (vs. hemispherical to broadly ovoid) and its basal leaves that are distinctly spatulate with a abruptly dilated lamina and very narrowly tapering leaf base. The basal leaves in *P. ostentans* are oblanceolate or obovate but not distinctly spatulate.

#### *Specimens examined.*

WESTERN AUSTRALIA [precise locations withheld for conservation reasons]: NW of Salmon Gums, 6 Nov. 2007, *G. Cockerton & N. McQuoid LCH 15892* (PERTH); W of Parmango, 21 Sep. 2003, *R. Davis 10580* (PERTH); S of Balladonia, 20 Sep. 2003, *R. Davis 10574* (PERTH); W of Coolgardie–Esperance Highway, 12 Oct. 2000, *G.J. Keighery & N. Gibson 4858* (PERTH); Cape Arid N.P., 27 Oct. 1989, *G.J. Keighery 11183* (PERTH); E of Salmon Gums, 21 Oct. 1998, *M.N. Lyons & S.D. Lyons 4409* (PERTH, ODU); S of Balladonia, 18 Oct. 1980, *K.R. Newbey 7461*



**Fig. 2.** Distribution map of *Ptilotus seminudus* (red diamonds) and *P. ostentans* (blue triangles), based on occurrences from the Australasian Virtual Herbarium (<https://avh.chah.org.au/>).



(PERTH); S of Balladonia, 24 Oct. 1968, *A.E. Orchard 1737* (AD97109142B).

***Ptilotus seminudus*** (J.M.Black) J.M.Black

*Fl. S. Austral. Ed. 2*, 2: 328 (1948). — *Trichinium seminudum* J.M.Black, *Trans. & Proc. Roy. Soc. South Australia* 40: 61, t. VI (1916). — **Type citation:** “Minnipa”. **Lectotype (here designated):** Minnipa, South Australia, 11 Nov. 1915, *J.M. Black s.n.* [Herb. J.M. Black] (AD97749541). **Isolectotypes:** AD97749542; K000357016\*; NSW676968, *n.v.*

Prostrate *perennial herbs*, (5–) 10–30 (–50) cm wide, the taproot to c. 20 cm long. *Stems* ribbed, to c. 30 cm long, with moderately dense to sparse verticillate hairs. *Basal leaves* petiolate, usually spreading horizontally; petiole 10–20 mm long; lamina oblanceolate to narrowly obovate or nearly spatulate, (25–) 30–80 (–90) mm long, (5–) 8–20 mm wide, glabrous or with sparse to very sparse verticillate hairs; base gradually tapering to petiole; margin entire; apex acute or obtuse, often mucronate with a point to c. 0.3 mm long. *Cauline leaves* subsessile; lamina ovate to elliptic or narrowly so, 7–20 (–35) mm long, 2–8 (–10) mm wide, with sparse verticillate hairs; base gradually tapering; margin entire; apex acute, mucronate with a point to c. 0.6 mm long. *Inflorescences* terminal, spiciform, hemispherical to cylindrical, 18–50 mm long, 22–28 mm wide, greenish cream in colour. *Bracts* narrowly lanceolate, 8–11 mm long, 1.7–2.5 mm wide, brown to straw-coloured, ± opaque, with sparse scattered verticillate hairs to c. 4 mm long; midrib indistinct; apex acuminate. *Bracteoles* ovate to oblong, 7.5–8.8 mm long, 2.5–3 mm wide, white, semi-translucent, with sparse verticillate hairs along the central portion to c. 4 mm long, the margin glabrous; midrib prominent, becoming brownish near the apex; apex obtuse, mucronate, the point to 1.5 mm long. *Sepals* linear-lanceolate, abaxial surface with cream-coloured verticillate hairs very short near the base and in the distal half, hairs up to c. 10 mm long and exceeding the sepal apex by 0.5–1 mm, adaxially light green apart from whitish margins; outer sepals 2, 11–15 mm long, 0.9–1.1 mm wide, adaxial surface glabrous, apex truncate, margin irregularly serrate; inner sepals 3, 10–12 mm long, 0.6–0.8 mm wide, adaxial surface glabrous except for hairs on the margin, apex acute. *Fertile stamens* 2; filaments uneven in length, 3–4.5 mm long, gradually broadening to the staminal cup; anthers 0.5–0.6 mm long, 0.4–0.5 mm wide. *Staminodes* 3, 1.5–2 mm long. *Staminal cup* 0.4–0.6 mm long, ± symmetrical, lacking appendages, glabrous or with some apical hairs. *Ovary* obovoid, 1–1.5 mm long, 1–1.5 mm wide, with some apical hairs; stipe 0.4–0.6 mm long. *Style* slightly to distinctly curved, 3–4 mm long, excentric on the ovary apex. *Stigma* unlobed, capitate. *Seeds* nearly reniform, c. 2.1 mm long, c. 1.5 mm wide, dark brown, glossy. **Fig. 1A, B.**

**Diagnostic features.** Distinguished by being a prostrate perennial herb and having cream-green inflorescences, bracts 8–11 mm long, bracteoles 7.5–8.8 mm long,

sepals 10–15 mm long, 2 fertile stamens and anthers 0.5–0.6 mm long.

**Phenology.** Flowers mostly Sep.–Nov., with a peak in Oct.

**Distribution and habitat.** Occurs from the northern Eyre Peninsula and Gawler Ranges to east of the Mount Lofty Ranges in South Australia, in north-western Victoria, and south-western and central New South Wales (Fig. 2). Recorded from plains or shallow slopes in mallee woodlands on brown or grey sandy or loamy soils.

**Conservation status.** Not of conservation concern.

**Vernacular name.** Rabbit Tails.

**Typification.** The protologue of *Trichinium seminudum* does not specify a holotype and only mentions the location of the specimens viewed as being “Minnipa” (Black 1916), which is a town in northern Eyre Peninsula, South Australia, and within the current distribution of *P. seminudus* (Fig. 2). Therefore, all material collected from Minnipa and available to Black before the publication of this species are considered syntypes (see McNeill 2014). Of these syntypes, we have chosen to lectotypify AD97749541. The exsiccatum consists of a few flowering stems with leaves and ten inflorescences. Mounted with the specimen are also several dissected flowers and cut-outs of notes and illustrations by Black.

A specimen of *P. seminudus* at MEL (MEL2281654) is labelled as a syntype of *T. seminudum* and includes a label indicating that it was collected by Miss Staer in November 1914 near Oodnadatta, South Australia. This is problematic for three reasons. Firstly, the locality information on this label contradicts the protologue and the other type specimens, which specify Minnipa. Secondly, the year of collection of the lectotype AD97749541 is specified as 11 Nov. 1915 on the specimen in Black’s own hand. Thirdly, Oodnadatta lies c. 500 km north of the distribution of *P. seminudus* in South Australia, and there is no suitable habitat for *P. seminudus* due to the more arid climate. The protologue of *T. alopecuroideum* var. *rubriflorum* J.M.Black in Black (1916) does however mention that the type of that taxon was collected at Oodnadatta by Miss Staer in November 1914. *Trichinium alopecuroideum* var. *rubriflorum* is now included within the concept of *P. polystachyus* (Gaudich.) F.Muell., which is distributed throughout arid Australia, including around Oodnadatta. We therefore find it likely that the labels between these two taxa have been mixed up and the collection information of *T. alopecuroideum* var. *rubriflorum* was erroneously included on the specimen of *T. seminudum* attributed to Miss Staer (MEL2281654). However, it is not possible to be confident that MEL2281654 was collected at Minnipa with the other type specimens of *T. seminudum*, and we therefore have excluded it from the typification here.

**Selected specimens examined.**

NEW SOUTH WALES. Drive Tour, Mungo N.P., 4 Sep. 1989, *A. Denham 24* (NSW\*); 16 km SE of Gol Gol, 11 Oct. 1979, *M.D. Fox 7910111* (NSW\*); Nagaela Station (Stn), 29 Sep. 1984, *T. Hall 125* (AD); “Murrumbong” Stn, 45 km E of Ivanhoe, 26 Oct. 1983, *R.J. Harland 508* (NSW\*); Bogan Gate, 11 Oct. 1979, *D. Johnston s.n.* (NSW834449\*); Euston, 3 Dec. 1964, *J.C. Newman 7* (NSW\*); “Avalon”, Merriwagga, 15 Sep. 1982, *W.S. Semple 1410* (NSW\*).

SOUTH AUSTRALIA. 7.2 km direct WSW of Moola, Shirrocoe Stn, 14 Oct. 1998, *K.L. Graham & M.J. Sherrah BS103-5330* (AD); 5.2 km direct NNW of Whitwarta, 12 Nov. 1996, *K.L. Graham & B.A. Hille BS88-1921* (AD); Scrubby Peak Campground, Gawler Ranges N.P., 15 Sep. 2021, *T.A. Hammer 184 & A.E. McDougall* (AD); Mount Wudinna Recreation Reserve, c. 300 m NE of carpark, c. 12 km NE of Wudinna, 3 Dec. 2021, *T.A. Hammer 222 & J. Kellermann* (AD); Lake Giles Conservation Park (C.P.), E side of Lake Giles Rd, c. 400 m S of Lake Giles Campground, 9 km N of Eyre Hwy, 13 Sep. 2022, *T.A. Hammer 315 & A.E. McDougall* (AD); Brookfield C.P., c. 40 m N of East-West track, 1.3 km W of gate on Park Rd, c. 7.45 km WNW of Blanchetown, 16 Oct. 2022, *T.A. Hammer 330 & A. Žerdoner Čalasan* (AD); Ettrick, on the side of Jackson Rd, 2.57 km W of Bowhill Rd, 28 km NE of Murray Bridge, 11 Dec. 2022, *T.A. Hammer 370* (AD); Cooltong C.P., 24 Oct. 1993, *A.G. Spooner 14537* (AD).

VICTORIA. Koorlong, near Millewa Rd, Benetook, 13 Oct. 1949, *H.E. Ramsay 307* (MEL\*).

**Acknowledgements**

The authors acknowledge the assistance of directors and staff of AD and PERTH. Thanks to Greg Krygsman for allowing the use of his photographs from iNaturalist (<https://www.inaturalist.org/observations/140924309>).

**References**

- Black, J.M. (1916). Additions to the Flora of South Australia. No 9. *Transactions and proceedings of the Royal Society of South Australia* 40: 56–77.
- Black, J.M. (1948). Amaranthaceae. In: *Flora of South Australia* 2<sup>nd</sup> edn, 2: 323–332. (Government Printer: Adelaide).
- Department of Agriculture, Water and the Environment [DAWE] (2023). *Australia's bioregions (IBRA), IBRA7*. (Commonwealth of Australia). <https://www.awe.gov.au/agriculture-land/land/nrs/science/ibra> [accessed: 1 May 2023].
- Hammer, T.A., Davis, R.W. & Thiele, K.R. (2018). A key to *Ptilotus* (Amaranthaceae) in Western Australia. *Nuytsia* 29: 217–227.
- Hammer, T.A., Zhong, X., Colas des Francs–Small, C., Nevill, P.G., Small, I.D. & Thiele, K.R. (2019). Resolving intergeneric relationships in the aevroid clade and the backbone of *Ptilotus* (Amaranthaceae): evidence from whole plastid genomes and morphology. *Taxon* 68(2): 297–314.
- McNeill, J. (2014). Holotype specimens and type citations: General issues. *Taxon* 63(5): 1112–1113.
- Western Australian Herbarium (1998–). *Florabase—the Western Australian Flora*. (Department of Biodiversity, Conservation and Attractions: Perth). <https://florabase.dbca.wa.gov.au/> [accessed: 8 Dec. 2023].



With the exception of images and other material protected by a trademark and subject to review by the Government of South Australia at all times, the content of this publications is licensed under the *Creative Commons Attribution 4.0 Licence* (<https://creativecommons.org/licenses/by/4.0/>). All other rights are reserved.  
© 2024 Board of the Botanic Gardens and State Herbarium (Adelaide, South Australia)