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Further taxonomic studies in Australian Amaranthaceae

Abstract

Dipteranthemum F. Muell. is included in Ptilotus R.Br. as a subgenus and its only species D. crosslandil, endemic to Western Australia, is transferred accordingly and described in detail. Ptilotus trichocephalus, a related Western Australian species, is described as new. Trichinium sessilifolium Lindley was found to have been published before T. atriplicifolium Cunn. ex Mog., hence Ptilotus sessilifolius has priority over its synonym P. striplicifolius.

1. Ptilotus grosslandii

F. Mueller's interpretation of the shiny wing-like tepals of his Dipteranthemum crosslandii as "the two inner" perigon segstate ("the three outer short and very narrow") would have fully justified his decision to place the new taxon in a distinct genus of Amaranthaceae, for its obviously closest ally, Ptilotus, has two outer and three inner tepals. Muellers error scon became evident (see D. Oliver 1886), and it was then clear that the difference consists only in the relative tizes of inner to outer tepals and their qualities. The Striking differences in size, shape and colour between the oter and inner tepals in D. crosslandii, which greatly exceed the respective conditions in any other Ptilotus species, make it and the respective conditions in any other Ptilotus species, make it advisable to maintain Dipteranthemum with the rank of a subgenus in Ptilotus:

Prijotau subgen. Dipteranthemum (F. Huell.) Benl, comb. et stat.nov. Basionyn: Dipteranthemum F. Huell., S. Sci. Rec. 3 : 201 (1884). Typus: P. crosslandii (F. Huell.) Benl (Dipteranthemu crosslandii F. Huell.).

Ephemeral or perennial herb, small- to medium-sized, usually growing in colonies; a slender fusiform tap-root producing TOsulate leaves and mostly an initially upright central stel dividing near base to form several main branches arcuately ascendent, decumbent, semi-prostrate or trailing, 10-70 cm long rarely longer, spreading in a rosette to 1.5 m rarely up to 2 m across. Stems weakly wiry, terete in lower, angular-striate in upper portion, 1.5-2 mm diam, near ground level, C. 1 mm diam. towards the middle, brownish to purplish red, small-leaved up to the inflorescences; simple or few-branched towards apex with lateral branches 1-15 cm long, arising from upper leaf-axils; stems and branches giving rise to very slender flexuous peduncles and trachises of flower-heads. New shoots and foliage densely clothed with patent straight of slightly curved hairs c. 1-2 mm long, more often denticulate nodose than subdendroid, ultimately restricted to a sparse pubescence immediately below the spikes and to small tufts in axils of (fallen) leaves. Radical leaves crowded to c. 10 in young flowering plants, subspathulate, obovate-oblong or cuneate, shortly apiculate, 1.5-4 cm long (including a velidefined or somewhat winged petiole to 1.2 cm long) by 0.5-1 on broad; cauline leaves c. 1-3 cm apart on stems and lower branches, alternate, turned upwards from trailing stems, lanceolate to elliptic, 1-1.5 cm long (including a petiole c. 0.3 cm long) by 0.2-0.7 cm wide, with an apiculum to 1 m long. Adult leaves becoming completely glabrous except for axils, rugulose on both surfaces, with cartilaginous marging midrib immersed on both surfaces, with cartilaginous marging usually solitary, terminating each horizontal branch, uptar ned, rarely lateral and subsessile in a leaf-axil below a terminal spike, subglobose maturing to broad-ovoid, (2.5) 3.5 4.5 (5.4) cm long with diameter of 3-4 cm. Rachis elongets. 1.5 (5.4) cm long with diameter of 3-4 cm. Rachis elongdit, c 1.5-2 cm long, 0.2-0.4 mm in diameter, densely clothed with a pubescence of thin patent hairs minutely denticated jointed, c. 2-3.5 mm long, obscuring the tightly arranged pedicals (c 0.3 mm.) pedicels (c. 0.3 mm long, obscuring the tightly dibada parts of about the bada Parts of about 50-100 and more strikingly opalescent shear flowers. Bracts and bracteoles membranaceous, with an evident

midrib, persisting, unequal. Bract lanceolate, 1.2-1.5 cm long, to 0.4 cm broad, becoming brownish with age, the midrib excurrent in a fine awn-like point c. 0.2 cm long, densely white villous throughout with straight denticulate-nodose hairs 0.3-0.4 cm long, attaining the apex. Bracteoles minor, distinctly cymbiform, 0.9-1.0 cm long (including a point of 0.05 cm), c. 0.2 cm wide, translucent-shining, appressed to the perianth, sparsely pilose only along the keel with hairs to 2.8 mm long, never reaching the apex. Perianth elongated up to about 3 cm merely by the outer lustrous tepals, thickened at the base to a short narrow hardening tube finally 2.5-3.3 mm rarely 4 mm long and 0.5-1 mm in diameter. Free parts of the concealed inner tepals closely connecting after anthesis with the basal free parts of the outer tepals to a 5-ribbed, somewhat indurated pseudotube, short-hirsu externally, c. 3-5 mm long and 1-1.5 mm in diameter immediat ly above the perianth tube, a dilatation below the middle the length indicating the expanding overy within. Outer and inner tepals extremely different from one another. Outer segments linear in lower, spathulately broadening in upper balves, 2.5-3.2 cm long, 0.5-0.8 mm wide at the pseudotube, 3-5 mm broad below the rounded, minutely servate apices, conspicuous for their nacrous white colour shading into orange-yellow towards the lower third, 3-nerved, midrib not reaching the top, fainter lateral nerves restricted to the lower third; sparse dorsal pubescence comprising erect denticulate-nodose hairs up to 4 mm long confined to a portion of 3-6 mm above the pseudotube and finally evanescent; inner surface glabrous. The two wing-like outer tepals of one flower almost identical in length and shape, fitting with, and closely appressed to, each other when fully developed, thus looking at first glance like a single tepal. Free parts of the three inner segments linear, 5-6.5 (7.5) mm long, 0.4-0.6 mm broad above the tube, narrowed more or less abruptly near the apex to form an acute tip, bearing dorsal jointed hairs 0.7-1.0 mm long, erect, appressed to the surface, hardly exceeding spex; glabrous internally, 3-ribbed towards base, the reddishbrown midrib evident up to apex in juvenile state. 3 stamens consistently found perfect, their filaments to 3.5 mm long; taminodes somewhat shorter, all broadened to c. 0.3 mm at base, fused to form a membranous turbinate cup firmly adnate to the perianth tube; free ring to 0.4 mm high, somewhat oblique, surrounded by short hairs from edge of the perianth tuber anthers broad-ellipsoid, c. 0.4 mm long. Pistil entirely glabrous; ovary gibboselv club-shaped, markedly stipitate, .8.4.3 mm long (including stipe of 2.5-3.3 mm) by 1-1.2 mm across; style very eccentric, filiform almost to base, at first arched but straightening to 2.5 mm at maturity; stigmathe tip papillate, becoming dark, more or less levelling with the anthers.

Additional collections examined. MESTERN AUSTRALIA: 25° 30' S, 116° 5' E, 25.4 miles S of Delayers Delgety Downs Homestead, 239.6 miles N of Mullews, 1 Sept. 197-, S. de la Hunty s.n. (AD, ADW, BRI, CANB, K, NSW, NT, NY,

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PERTH, phot. M); idem, 2 Sept.1975 (PERTH); idem, 1 Oct.1975 (PERTH); 4.6 km NE of Division well, Mt James Stn via Meaktharra, 15 Sept.1973, T.L. Setter 346 (ADW, PERTH); 23-25 miles S of Dalgety Downs, 240 miles N of Mullewa, 4 Sept.1975, S. Strickland S 3555 (PERTH, obt. M).

Distribution in subtropical Western Australia between 116' and 118° longitude; infrequent but locally gregarious on this colluvial soil, on rocky plains, creeping in sandy soil. Map ear-marked for vol. 5 of "FLORM LAF".

The as yet incompletely described plant may be regarded as "Rare" (coded 3RW78) within the meaning of BRIGGS & LEIGH, 1988.

2. Ptilotus trichocephalus Benl, sp. nov.

Planta annua (vel perennis?) prostrata. Caules complures tenues ad 25 cm et ultra longi, parce vel modice ramosi et foliati; iuveniles pilis rectis denticulati-articulatis dense induti, tanden pubescentia in partes superiores et in axillat restricta. Folia petiolata laminis rotundati-subovatis apiculatis, iuvenilia puberula pilis sicut in caulibus. Spicae (roseo-)albidae spectabiles solitariae, erectae, late penicil liformes, demum cum tepalis laxis ad 7 : 8.5 cm longer lataeque, rhachide breviusculo dense villoso. Bractese bracteolaeque scariosae acuminatae uninerviae, inaequales-Bractea ovati-lanceolata fuscescens, extus omnino villoss; bracteolae distincte maiores, lineari-lanceolatae, subulatae, carinatae, in carina basim versus pilosulae. Periasthim pentaphyllum tepalis visu piliformibus usque ad c. 5 cm longer aperiens. Tepala in dorso capillosa, primo erecta dana divergentia, elongati-linearia gradatim in apicem acuminator pubescentia absconditum excurrentia, basi in tubum turbinatum extus hirsutum c. 2 mm longum coalita, supra tubo pseudotubum latiorem, annulo pilorum longiorum munitum formantia; tepalo rum partes liberae exteriorum ad 4.5 cm, interiorum ad c.3 cm longae. Stamieter etteriorum ad 4.5 cm, interiorum ad elis cm longae. Stamina fertilia 3, staminodia 2, cupula staminalis tubo perianthii arcte insidens, annulo libero integro, pseudostaminodiis nullis. Filamenta ligulata superne subulate, inferne dilatata; antherae ellipsoideae. Ovarium clavatum der obconicum, conspicue stipitatum, in parte superiore pilis brevibus esticatum brevibus strictis vestitum; stylus rectus plus minusve excentricus, glaberrimus.

Taxon novum manifeste differt ab speciebus adhuc cognitis do habitum florum cum tepalis angustissime linearibus, ob spices visu penicillatas.

Typus: 3 km S of Peak Bore, Mt James Stn, via Meekatharra, W.A., 16 Sept. 1973, T.L. Setter 354 (PERTH, phot. M, holoty pus; ADW no 54062, phot. M, isotypus).

Prostrate herb spreading to 0.5 m across, forming patches with upturned whitish inflorescences to c. 7 cm tail. Small

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plants producing, from a very thin tap-root, a central almost sessile flower head and c. 6 pedunculate spikes terminating wiry stems which radiate from below the central spike and rarely branch towards apex. Larger specimens with obtuseangled, rather irregular dividing stems to 25 cm and more long, c. 2 mm in diameter, sometimes reddish in part. Young shoots and foliage densely coated with straight denticulateand verticillate-jointed to almost dendroid hairs 1.5-3 mm long, vanishing with age except in apical parts and in leafaxils. Leaves ascending all along stems and branches, broadly ovate to suborbicular; larger ones to 4 cm long by 2.5 cm vide, the lamina gradually attenuate to a petiole of 0.3-0.5 cn; smaller ones on branches and very slender branchlets, 1-1.5 cm long (including a petiole of 0.2-0.5 cm, abruptly set off against the blade) by 0.5-0.8 cm wide, the upper ones sometimes grading into bracts; all with excurrent point; midrib mostly inconspicuous. Spikes terminating stems, sidebranches and -branchlets (except for the central spike in small plants), at first elongate-ovate, c. 3-5 x 1.5 -2 cm, then turning to openly brush-shaped, c. 5-7 x 3.5-8.5 cm; flowers about 15 to 20 per spike, conspicuous for the almost hair-like tepals. Rachis comparatively short, up to c. 1 cm long and 0.3 cm in diameter, densely clothed with straight patent denticulate- to verticillate-nodose hairs, c. 0.2 cm long, obscuring the very short pedicels and basal parts of flowers. Bracts and bracteoles membranous, with a prominent midrib, unequal. Bract ovate-lanceolate, 0.7-0.9 cm long, to 0.25 cm wide, becoming brownish with age, the broad midrib excurrent in an acumen to 0.12 cm long; densely white villous with short-jointed hairs to 0.3 cm long, never attaining the apex. Bracteoles larger, linear-lanceolate to subulate ipwards, keeled, 1.3-1.4 cm long including a point of 0.08-0.1 cm, to 0.3 cm wide towards base, very thinly scarioustransparent, sparsely pilose with 0.25 cm long hairs originating from about lower half of the broad midrib. Perianth consisting of 5 extremely narrow tepals joined at the base to a turbinate tube 1.8-2.2 mm long and 0.8 mm across at the edge, shortly hirsute externally. Tepals somewhat broadened bove the tube to form an indurated pseudotube 2-2.7 mm long and 1.5 mm across, surrounded by a ring of tufted spreading, faintly articulate hairs up to 3-4 mm long; free parts of tepais above the pseudotube initially upright, then loosely diverging, most narrowly linear-subulate, regularly tapering into a straight point, pale green fading to straw-colour and whitish, bordered by incurving margins especially toward the apex, turning red with age; midrib and shorter lateral nerves only visible in lowest section of the glabrous inner surface; outer surface feathery pilose throughout, bearing very fine white hairs variable in length (1.5 to 4.5 mm), oblique erect and delicately (denticulate-) jointed, increasing in number and length toward the apex which is usually invisible amidst a tuft of projecting trichomes to 3 mm long. Outer and inner tapals differing merely somewhat in size: free parts of the outer ones (3.5) 4-4.5 cm long and 0.3-0.4 mm wide at base, c. 0.25 mm near middle; free parts of inner segments 2.3-2.8

(3.2) cm long, c. 0.3 mm wide at base and 0.15 mm near middle. 3 stamens perfect, their filaments ligulate, up to 2.5 mm long by 0.08 mm wide in the middle, strongly subulate above; staminodes mostly filiform, varying in length; all greatly broadened up to 0.25 mm at the base and fused to form a narrowly turbinate hyaline cup c. 2 mm long, firmly adnate to the perianth tube; free ring glabrous, 0.3 mm high; anthers ellipsoid, c. 0.4 mm long; no pseudostaminodes. Ovary almost symmetrically club-shaped to obconical, conspicuously stipitste, 2-3 mm long (including stipes of c. 1.5 mm) by 1.0-1.2 mm diam., densely pilose in upper part with straight septate hairlets 0.2 mm long; style glabrous throughout, more or less eccentric, 1.0-1.2 mm long and c. 0.1 mm diam. in the middle, slightly dilated to 0.15 mm at the base; stigmatic tip inconspicuous.

Additional collections examined.

WESTERN AUSTRALIA: Paraburdoo Mine area, Paraburdoo, 23º 15' S, 117° 39' E, 17 Sept. 1979, K.T. Atkins s.n. (CANB, PERTH); 15 km E of Bulloo Downs Homestead, on southern access track to Great Northern Highway, 26 July 1988, A.A. Mitchell 1653 (KARRATHA, M).

Distribution:

The new taxon is known from only 3 localities in the central west area of Western Australia; one collection from sandy colluvial plain, where the plant is frequently associated with eroding surfaces, the other from red sandy loam on flats, whilst A. Mitchell's collection came from bare black uplands where it was found growing in small depressions together with "wind grass". It may be regarded as "Rare" and coded 3KM7 according to BRIGGS & LEIGH, 1988.

A distribution map as well as a figure of the holotype will be given in vol. 5 of "FLORA OF AUSTRALIA".

Affinity:

This attractive species is clearly separated from all known others. It is well-defined by having exceedingly narrow, almost hair-like tepals forming a hairy flower head (hence its name, derived from the Greek trichos, hair, and kephale, head) and is thus unique within the subgen. Ptilotus. Some of its features indicate closer relationship to P. crosslandi. However, P. trichocephalus does not exhibit the marked difference in tepal size, inner tepals being minute in comparison with outer ones, which characterizes the monotypic subgen. Dipteranthemum.

3. Ptilotus sessilifolius (Lindley) Benl comb. nov.

Basionym: Trichinium sessilifolium Lindley in T.L. Mitchell, Three Exped. East Austral. 2: 12 (1838). Typus: Interior of New Holland, [N.S.W.], 24 March 1836, T.L. Mitchell 23 (Constant) Mitchell 23 (CGE, phot. M, holotypus). Synonymy:

Wichinium atriplicifolium Cunn. ex Mog., in DC., Prod. 13(2): 286 (1849), excl. T. obovatum Gaudich.

T. obovatum var. atriplicifolium (Cunn. ex Moq.) Domin, Biblioth. Bot. 89: 634 (1921).

Ptilotus atriplicifolius (Cunn. ex Mog.) Benl, Mitt. Bot. Minchen 2: 404 (1958); 1.c. 9: 141 (1971).

Typus: Interior of Eastern New Holland, [N.S.W.], Swampy-plains, 1817, A. Cunningham s.n. (G-DC holotypus; P isotypus).

The holotype of Trichinium sessilifolium, published in 1838 has proved to be identical with that of T. atriplicifolium, published in 1849.

Turther synonyms:

Trichinium obovatum var. grandiflorum Benth., Fl. Austral. 5: 221 (1870).

R. incanum var. grandiflorum Benth. ex J.M. Black, Trans. & Froc. Roy. Soc. S. Austral. 41: 380 (1917).

Ptilotus obovatus var. grandiflorus (Benth.) Ewart & O.B. Davies, Fl. Northern Territory 100 (1917).

Typus: Harrington plains, N.S.W.; BM lectotypus (here chosen): Oct.1817, A. Cunningham s.n.

Trichinium (Ptilotus) incanum var. intermedium Ewart in Ewart 4 J. White, Proc. Roy. Soc. Victoria 22: 97 (1909).

Dypas: Marrina, S.A., May 1891, R. Helms s.n., Elder Explor. Artina, S.A., May Loyi, K. Heims of the source of the second s

Typus: not seen.

There are two varieties:

a) Ptilotus sessilifolius (Lindley) Benl var. sessilifolius. Hlustrations in A.J. Ewart, Pl. Indig. Victoria 2: fig. 78 (1910), sub Trichinium atriplicifolium Cunn. ex Mog.; G.M. Construction of the statement of the s Canningham et al., Pl. W. New South Wales 285 (1981), sub Ptilotus atriplicifolius (Cunn. ex Mog.) Benl var. atriplicifolius. Known from all main states of the continent.

b) Ptilotus sessilifolius var. elderi (Farmar) Benl comb. nov.

Basionym: Trichinium elderi Farmar, Bull. Herb. Boissier, tér. 2, 5: 1089 (1905).

Symonym: Ptilotus atriplicifolius var. elderi (Farmar) Benl, Mitt. Bot. München 2: 404 (1958); G.M. Cunningham et al., l.c.: 285 (1981).

Trus: Cavenagh Range, E. Division, W.A., 31 July 1891, R. Simon Structure and State and Structure Moins s.n., Elder Explor. Exped. (K, phot. M, holotypus; AD, MEL, NSW isotypi). Confined to N.T. and N.S.W.

Transitional forms between the two varieties are rather frequent.

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