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A new species of *Euphorbia* subgenus *Chamaesyce* Raf. (Euphorbiaceae) from the Flinders Ranges, South Australia

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Abstract

Euphorbia flindersica Halford & W.K.Harris, endemic to the Flinders Ranges, South Australia, is described, illustrated and diagnosed. It was previously recognised as *Chamaesyce sp. Papillose plants (D.E.Symon 14628)*. The taxon known by the phrase name *Chamaesyce sp. Marree (F.J.Badman 776)* is conspecific with *Euphorbia inappendiculata* var. *queenslandica* Domin.

Keywords: Euphorbiaceae, *Euphorbia* subgenus *Chamaesyce*, nomenclature, taxonomy, new species.

Introduction

The authors are nearing the completion of a review of the taxonomy and nomenclature of *Euphorbia* subgenus *Chamaesyce* Raf.[1] in Australia prior to the finalization of the treatment of the Australian species for the *Flora of Australia*. We were recently asked by the author preparing the treatment of *Euphorbia* for the forthcoming new edition of *Flora of South Australia* for our evaluation of the taxa recognized in South Australia under the phrase names *Chamaesyce sp. Marree (F.J. Badman 776)* R.M.Barker and *Chamaesyce sp. Papillose plants (D.E.Symon 14628)* W.R.Barker (Barker et al. 2005).

Chamaesyce sp. Papillose plants (D.E.Symon 14628) herein named *Euphorbia flindersica*, is confined to the Flinders Ranges, South Australia. The first collection of this species was by Robert Brown from the Spencer Gulf region in 1802. Bentham (1873) in his treatment of *Euphorbia* in *Flora Australiensis* cites this specimen ("Spencer's Gulf, *R. Brown*") under *E. drummondii* Boiss.

Chamaesyce sp. Marree (F.J.Badman 776), first recognised in South Australia as *Euphorbia "Marree" (F.J.Badman 776)* W.R.Barker (Jessop 1993), is representative of a species which is widespread through central Australia. The species has also been informally recognized under other phrase names in other States and regional floras (*Chamaesyce sp. B.*: James & Harden 1990; *Euphorbia sp. Clay soil (C.Materne 04/07/2000)*: Albrecht et al. 2007; Northern Territory Government 2007). Our studies have shown it to be conspecific with *Euphorbia inappendiculata* var. *queenslandica* Domin, a name not used since its publication by Domin in 1927. Domin's name for this taxon should be adopted.

The new species, *Euphorbia flindersica*, is compared to *E. drummondii* in the diagnosis because this is the species that the majority of specimens have been identified as prior to the application of the phrase name. The name *E. drummondii* has been applied in a very broad sense in the past and has included what we believe to be a number of undescribed distinct taxa. These will be described in the forthcoming review and their similarities and differences to *Euphorbia flindersica* will be discussed.

Unless otherwise stated ('n.v.' after the Herbarium acronym), all specimens cited in this paper have been seen by at least one of the authors. Leaf and fruit surfaces need to be examined at 20 to 40 times magnification to assess whether the surfaces are smooth or papillose.

Taxonomy

Euphorbia flindersica* Halford & W.K.Harris, *sp. nov.

Cum E. drummondii *Boiss. quondam confusa, autem foliis fructibusque papillosis (vice laevis in* E. drummondii*), glandibus involucralibus planis vel leviter concavis (vice profunde concavis in* E. drummondii*), appendicibus glandis grandioribus conspicuisque dentatis vel lobatis irregulariter (0.3–0.4 mm longis vice usque 0.1 mm longis in* E. drummondii*), stylis divisis, bifidis per 1/4–1/3 longitudinis (vice integris vel vix bifidis in* E. drummondii*), foliis comparate brevioribus, 1.5–1.8-plo longioribus quam latitudine (vice 1.7–5-plo longioribus quam latitudine in* E. drummondii*) distinguenda.*

Typus: South Australia, Flinders Ranges region. Mt Gee, 15 Sept. 1973, *R.H.Kuchel 3169*; holo: AD 97346142.

Euphorbia drummondii auct. non Boiss.: Bentham, Fl. Austral. 6: 49 (1873), pro parte; J.Z.Weber in Jessop & Toelken, Fl. S. Austral. 2: 748 (1986), pro parte.

[1] Editorial note: This paper follows the recent adoption of *Euphorbia* L. rather than *Chamaesyce* Gray by the Australian Plant Census, based on molecular evidence (Park & Elisens 2000; Steinmann & Porter 2002; Bruyns et al. 2006). See also http://www.euphorbiaceae.org/ [accessed: 6 Sep 2010].

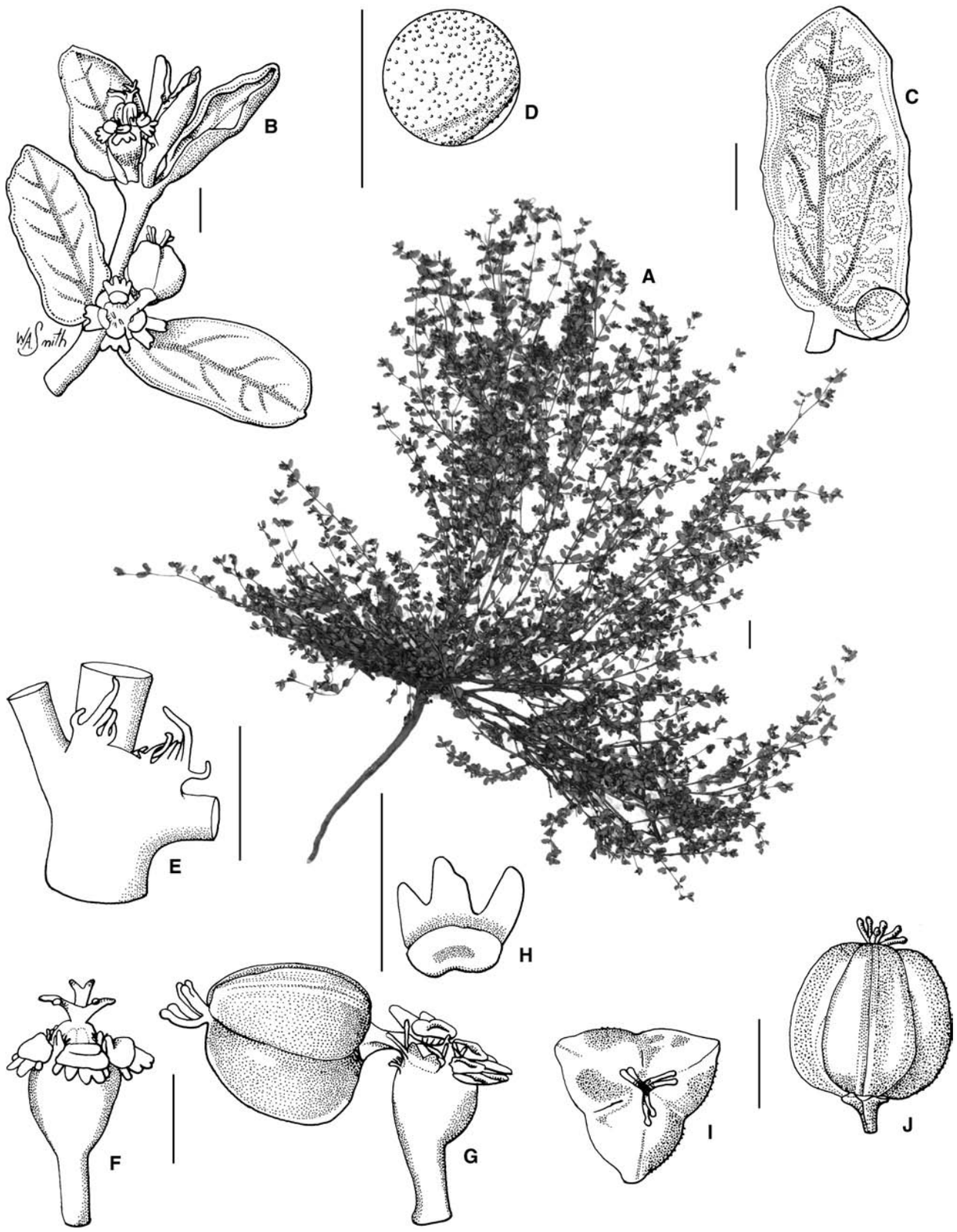

Fig. 1. ***Euphorbia flindersica***. A habit; B branchlet with flowers and fruit; C leaf; D papillose lower leaf surface; E stipules; F cyathia; G cyathia with fruit; H involucral gland with appendage; I fruit (top view) , with minute papillae; J fruit (side view), with minute papillae. Scale bars: A 1 cm; B–J 1 mm. — A–E, H–J *R.H.Kuchel 3169*; F, G *D.J.E.Whibley 3922.*

Euphorbia inappendiculata auct. non Domin: J.Z.Weber in Jessop & Toelken, Fl. S. Austral. 2: 750 (1986), pro parte.

Chamaesyce sp. Papillose plants (D.E.Symon 14628) R.M.Barker, J. Adelaide Bot. Gard. Suppl. 1: 84 (2005). — *Euphorbia sp. Papillose plants (D.E.Symon 1428)* R.M.Barker, Austral. Pl. Cens. http://www.anbg.gov.au/chah/apc/ [accessed 6 Sep. 2010].

Herbaceous perennial to 10 cm high, much branched from the base with short-lived stems produced from thick somewhat woody rootstock. Stems prostrate to erect, mostly red or pinkish in colour, smooth or faintly papillose, glabrous. Interpetiolar stipules deeply bipartite, 0.4–0.6 mm long, glabrous; lobes triangular, margins entire or laciniate. Leaves discolorous; petiole 0.2–1.2 mm long, smooth, glabrous; blade oblong or obovate, 1.3–6.7 mm long, 1.0–3.8 mm wide, 1.5–1.8 times longer than wide, minutely papillose (viewed at 40× mag.), glabrous, mostly green above sometimes with reddish colour on margin, paler below, base strongly asymmetric with a cordate to rounded side and a cuneate to rounded side, margins entire or sparsely minutely toothed distally, apex rounded. Cyathia axillary, solitary; peduncles 0.3–0.7 mm long, smooth, glabrous. Involucres campanulate or cupuliform, 0.8–1 mm long, 0.6–1.2 mm across, glabrous outside, hairy inside below glands; lobes 5, triangular, 0.3–0.4 mm long, ciliate on margins; glands 4, red or yellowish green, patelliform, transverse-oblong to transverse-elliptic, 0.1–0.3 mm long, 0.3–0.5 mm wide, appendages conspicuous, pink or red, spreading, obdeltoid, 0.3–0.4 mm long, 0.6–0.8 mm wide, dentate or irregularly lobed. Male flowers 10–15 per cyathium; pedicel 0.7–1.0 mm long; staminal filaments c. 0.1 mm long. Female flowers: pedicel c. 0.3 mm long in flower, 1.5–2.7 mm long in fruit, smooth, glabrous; ovary papillose, glabrous; styles 3, c. 0.5 mm long, spreading, smooth, glabrous, bifid to 1/4–1/3 of their length. Capsules shallowly 3-lobate, ovate or broad-ovate in lateral view, 1.5–1.8 mm long, 1.7–2.2 mm across, papillose, glabrous. Seeds obovate in outline, 1.1–1.3 mm long, 0.7–0.8 mm wide, 0.6–0.8 mm thick, 4-angled in cross section, cream or pale brown, smooth or obscurely irregularly rugulose. Fig. 1.

Phenology. Flowers and fruits have been collected from April to October.

Distribution and habitat. Euphorbia flindersica is endemic in South Australia, where it is restricted to the northern Flinders Ranges, occurring from near Leigh Creek to Hawker. The species grows in sandy clay soils among rocky outcrops and on gravelly hill slopes.

Affinities. Euphorbia flindersica has been confused with *E. drummondii* Boiss. in the past but can be distinguished by its papillose leaves and fruit (smooth in *E. drummondii*), flat or shallowly concave involucral glands (deeply concave in *E. drummondii*), larger and conspicuous gland appendages 0.3–0.4 mm long which are dentate or irregularly lobed (0.1 mm long and entire in *E. drummondii*), divided styles (bifid to 1/4–1/3 of their length versus entire or scarcely bifid in *E. drummondii*) and relatively wider leaves (1.5 to 1.8 times as long as wide versus 1.7 to 5 times as long as wide in *E. drummondii*).

Euphorbia flindersica will key to *E. inappendiculata* Domin in Weber's (1986) key to *Euphorbia* in the *Flora of South Australia*. The name *E. inappendiculata* has been misapplied in Weber's treatment. His concept includes the species here referred to *E. flindersica* as well as a species correctly referred to *Euphorbia ferdinandi* Baill. *Euphorbia ferdinandi* is widespread in arid Australia extending from near Wiluna and Laverton, Western Australia, east through the Northern Territory and South Australia to western Queensland and north-western New South Wales. *Euphorbia flindersica* can be distinguished from *E. inappendiculata* by its flat or shallowly concave involucral glands (deeply concave in *E. ferdinandi*), larger and conspicuous gland appendages 0.3–0.4 mm long which are dentate or irregularly lobed (0.1 mm long and entire or absent in *E. ferdinandi*) and divided styles (bifid to 1/4–1/3 of their length versus entire or scarcely bifid in *E. ferdinandi*).

Etymology. The specific epithet *flindersica* refers to the Flinders Ranges, South Australia, to which this species is confined.

Representative specimens (22 examined)

South Australia. Nepouie Springs, 26 Apr. 1994, *R.Bates 37341* (AD); Mawson Plateau, Flinders Ranges, 24 Apr. 1996, *R.Bates 43040* (AD); hill on N side of Nent Oura Research Unit, Mount Freeling Station, 17 Sep. 1987, *G.H.Bell 1325* (AD); Inlet XII [Spencers Gulf], [10 Mar. 1802], *R.Brown* (K); Paralana Springs, 125 km NE of Blinman, 24 Aug. 1968, *J.Carrick 2059* (AD, COLO n.v.); Italowie Creek, Aug. 1979, *P.E.Conrick AD100* (AD); Chambers Gorge, near Mt Chambers, c. 60 km ENE of Blinman, 12 Sep. 1956, *Hj.Eichler 12559* (AD, K n.v., L n.v.); The Bunkers, foothills and slopes of the Bunkers Range, 18 Apr. 1989, *E.M.James 16* (AD); upper Bunyeroo Gorge, c. 50 km NNE of Hawker, 4 Oct. 1958, *D.Kraehenbuehl 14* (AD); Arkaroola Sanctuary, Ridge Top road, 20 Oct. 1971, *R.H.Kuchel 3039* (AD); Gorge creek of Myrtle Springs, c. 24 km NW of Leigh Creek, 29 Sep. 1962, *T.R.N.Lothian 1077* (AD); Parachilna Gorge, 31 Aug. 1963, *M.C.R.Sharrad 1404* (AD); Moralana Station, road & rail-crossing Bunyeroo Creek, 10 Jul 1987, *D.E.Symon 14628* (AD); Brachina Gorge, 7 Sep. 1961, *D.E.Symon 1400* (AD); Oraparinna National Park, western portion, 20 Sep. 1971, *J.Z.Weber 2710* (AD); Chambers Gorge, c. 80 km ENE of Parachilna, 12 Sep. 1973, *D.J.E.Whibley 3922* (AD); Balcanoona Station, Grindell Hut, 19 Jul. 1980, *L.D.Williams 11205* (AD).

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