

New taxa and a new infrageneric classification in *Dryandra* R. Br. (Proteaceae: Grevilleoideae)

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Abstract

A.S. George. New taxa and a new infrageneric classification in *Dryandra* R. Br. (Proteaceae: Grevilleoideae). Nuytsia 10 (3): 313-408 (1996). In preparation for an account in Volume 17 of the "Flora of Australia", new taxa (10 series, 29 species, 24 subspecies, 10 varieties) and a new infrageneric classification are presented. Twelve new combinations are made. A number of previously-published names are lecto- or neotypified. The work is based on classical taxonomic methods. The genus now consists of three subgenera, 24 series, 92 species and 36 infrageneric taxa. Keys to all taxa are given. The conservation status is given for each taxon treated; some are very restricted and two almost extinct in the wild.

Introduction

The genus *Dryandra*, described in 1810 by Robert Brown, is endemic in Western Australia. Most of the taxa previously named were published last century by Brown (1810, 1830) and Meisner (1856), and a generic treatment was published by Bentham (1870). Various taxa have been described since, particularly by Gardner (1927, 1964). For many years a revision has been sorely needed, but one by the current author, begun more than 20 years ago, is only now reaching completion for the "Flora of Australia". As part of the preparation for that work, a new infrageneric classification, concise descriptions of all new taxa and, where necessary, typifications of published names are presented here. The paper also gives keys to all taxa and a complete list of taxa in possible systematic sequence.

Methods

This work is based on a morphological study of herbarium material combined with field work. Almost all taxa have been seen in the field. Representatives of most types have been studied. Measurements are taken from herbarium material, but because of the sclerophyllous nature of dryandras there is virtually no change in dimensions from the fresh state. The width of the leaf lamina is taken at the greatest width including the lobes or teeth. Since the genus is endemic in south-western Western Australia, the State has been omitted from the notes on distribution of each taxon described.

Previous infrageneric classifications were published by Brown (1830), Meisner (1856) and Bentham (1870). Meisner proposed a classification with two ranks, one of section based on the fruit and seed, the other of informal rank designated by the symbol § based mainly on foliage. Bentham also had two ranks, section based on seed and to a less extent the involucre, and series based primarily on flowers, inflorescence and leaves. Virtually all these infrageneric taxa are now considered heterogeneous, hence considerable rationalization is needed. As far as possible, existing infrageneric names have been retained and, where necessary, lectotypified. Two infrageneric ranks are used - subgenus and series. Although within subg. *Dryandra* the number of series with one or few species is remarkable, it reflects the morphology of the subgenus, for many species are very distinctive, yet an overall unity remains.

The concepts adopted for the ranks of species, subspecies and variety are the same as those used in *Verticordia* (George 1991), i.e. species where morphological characters and states are considered significant in the overall context of the genus, subspecies where the difference(s) are less significant and there is a geographical and/or ecological discontinuity, and variety where the difference(s) likewise are less significant than at specific rank but there is no geographical or ecological separation.

The suggested systematic sequence, required for the "Flora of Australia" treatment, is based very much on a subjective assessment of morphology in the genus. Relationships are quite evident within particular groups of species, mostly represented here by the series. There are, however, many distinctive species, e.g. *D. subulata*, *D. fraseri* and *D. idiogenes*, whose relationships are unclear, hence the large number of monotypic series. *Dryandra* is wide open for more detailed research, not only into its systematics but also into its biology, for little is known about pollinators and other fauna associated with it.

Key to infrageneric taxa

- 1 Separator absent; seed wing annular, and with a large supplementary wing each side and attached at the base subg. 3 **Diplophragma**
- 1: Separator present between seeds (often only 1 seed fertile); seed wing terminal or absent
- 2 Seed not winged
- 3 Follicle ± cartilaginous subg. 2 **Hemiclidia**
- 3: Follicle woody ser. 15 **Ionthocarpae**
- 2: Follicle woody subg. 1 **Dryandra**
- 4 Pistil longer than perianth
- 5 Perianth straight or the limb inflexed centripetally before anthesis; pistil similarly straight or bowed centripetally, rarely centrifugally
- 6 Pollen presenter markedly swollen; perianth lobes flared widely at apex of basal tube; flowers fewer than 20 per head ser. 22 **Pectinatae**
- 6: Pollen presenter not or scarcely enlarged; perianth not flared but in some species succulent near base; flowers 30-220 per head
- 7 Perianth swollen and succulent above base (appears thick but irregularly shrivelled in dried specimens) ser. 12 **Runcinatae**
- 7: Perianth not swollen or succulent
- 8 At least some leaves bipinnatifid; hairs of perianth claws sticky ser. 23 **Acuminatae**

- 8: No leaves bipinnatifid; hairs of perianth claws not sticky
- 9 Receptacle markedly convex; flowers at anthesis arising around a central hole ser. 24 **Niveae**
- 9: Receptacle flat or gently convex or concave; flowers at anthesis \pm evenly spaced in head
- 10 Leaves pinnatisect with large triangular lobes ser. 13 **Triangulares**
- 10: Leaves otherwise
- 11 Follicle 5-6 mm long; seed wing small ser. 6 **Capitellatae**
- 11: Follicle 6-24 mm long; seed wing prominent
- 12 Floral bracts apparently absent; pistil straight; leaves sessile or petiole less than 5 mm long, the margins flat or very slightly recurved ser. 1 **Floribundae**
- 12: Floral bracts present; pistil usually curved; leaves with petiole usually more than 5 mm long and margins recurved to revolute
- 13 Longest involucre bracts as long as flowers
- 14 Leaves very large, pinnatipartite (lamina usually 20-45 cm long and 5-14 cm wide with linear lobes); pistil 58-74 mm long ser. 14 **Aphragma**
- 14: Leaves cuneate, dentate or serrate, or narrowly linear with widely spaced short recurved teeth; pistil 27-52 mm long
- 15 Leaves cuneate, less than 12 cm long; involucre bracts tomentose and plumose; pistil 30-52 mm long ser. 7 **Ilicinae**
- 15: Leaves linear, up to 35 cm long; involucre bracts sparsely pubescent to glabrous except ciliate margins; pistil 27-28 mm long ser. 10 **Decurrentes**
- 13: Longest involucre bracts shorter than flowers
- 16 Leaves white-tomentose all over below ser. 7 **Ilicinae**
- 16: Leaves not tomentose below except in pits
- 17 Follicle 15-21 mm long
- 18 Leaves pinnatifid with 25-110 small triangular lobes each side; receptacle flat; follicles curved-obovate ser. 9 **Foliosae**
- 18: Leaves pinnatisect with fewer than 20 linear lobes each side; receptacle very convex; follicles cuneate ser. 4 **Folliculosae**
- 17: Follicle less than 14.5 mm long
- 19 Follicle ovate, longer than wide; seed wing markedly decurrent on one side only
- 20 Pistil exerted but not prominently looped before anthesis; pollen presenter narrow
- 21 Leaves relatively soft; involucre bracts broad, obtuse, closely tomentose outside; pistil usually more than 35 mm long, stout ser. 8 **Dryandra**
- 21: Leaves sclerophyllous; involucre bracts usually narrow, acute to acuminate, glabrous to pubescent or hirsute outside; pistil usually less than 35 mm long, slender ser. 2 **Armatae**

- 20: Pistil looped out prominently before anthesis; pollen presenter ovoid ser. 3 **Marginatae**
- 19: Follicle transversely elliptic to obovate; seed wing decurrent almost to base on each side ser. 5 **Acrodonatae**
- 5: All perianths and pistils in head markedly curved downwards or upwards
- 22: Involucral bracts prominently hirsute with the longest hairs up to 3-5 mm long ser. 19 **Plumosae**
- 22: Involucral bracts tomentose, velvety or shortly hirsute, the longest hairs less than 2 mm long
- 23: Leaf lamina (excluding teeth or lobes) elliptic, oblong or broadly linear; follicles oblique, ovate, elliptic or oblong; pollen presenter 0.3-0.8 mm long ser. 20 **Concinnae**
- 23: Leaf lamina (excluding teeth or lobes) narrowly linear; follicles erect, ovate, obovate, cuneate or transversely elliptic; pollen presenter 1-1.5 mm long ser. 21 **Obvallatae**
- 4: Pistil shorter than or as long as perianth
- 24: Follicle with a prominent terminal tuft of long rusty hairs ser. 15 **Ionthocarpae**
- 24: Follicle hairy all over or \pm glabrous
- 25: Inflorescence subtended by reduced rigid, entire, pungent, scabrous leaves ser. 17 **Subulatae**
- 25: Leaves subtending inflorescence lobed, or if entire then not rigid or scabrous
- 26: Involucre of broad brown bracts, usually shining
- 27: Involucral bracts cartilaginous, pubescent, hirsute or almost glabrous; flowers gold, orange or pinkish; seed wing entire
- 28: At least some leaves 20 mm or more wide, with large triangular to linear lobes; involucral bracts villous, hirsute or pubescent all over ser. 14 **Aphragma**
- 28: Leaves less than 6 mm wide, shortly pinnatifid, serrate or entire; involucral bracts appressed-pubescent to glabrous except shortly pubescent margins ser. 11 **Tenuifoliae**
- 27: Involucral bracts papery, cobwebby; flowers red and white; seed wing notched ser. 16 **Inusitatae**
- 26: Involucre of narrow, hairy bracts, usually dull ser. 18 **Gymnocephalae**

Key to species

- 1 Pistil longer than perianth, the style bowed and exerted laterally between 2 tepals before anthesis
- 2 Involucral bracts shorter than perianth/pistil
- 3 Pistil crook-shaped, 68-79 mm long; pollen presenter prominent, ovoid; tepals flared widely at apex of basal tube; flowers 12-17 per head (Badgingarra district) **D. nana**
- 3: Pistil straight to gently curved, usually less than 60 mm long; pollen presenter narrow; flowers 20-250 per head

- 4 Receptacle prominently convex; flowers arising in a circle around a central hole at anthesis
- 5 Leaves pinnatipartite, usually with at least some lobes also pinnatipartite; involucre bracts subulate; perianth loosely hirsute with sticky hairs (between Woodanilling, Cranbrook & Collie)..... **D. preissii**
- 5: Leaves simply pinnatipartite; involucre bracts obtuse to shortly acute; perianth villous to pubescent with non-sticky hairs
- 6 Leaf lobes essentially subulate, linear or oblong
- 7 Leaf lobes subulate
- 8 Leaf lobes not twisted, held vertically (Kojonup to Ongerup, Stirling Range & Albany) **D. arctotidis**
- 8: Leaf lobes twisted so that upper half of lamina is \pm horizontal (Eneabba to Cataby) **D. tortifolia**
- 7: Leaf lobes oblong or linear
- 9 Plant with underground stems; fire-tolerant; leaf lobes 15-35 each side (Geraldton to Cape Naturaliste & E to Corrigin & Traysurin) **D. lindleyana**
- 9: Plant with stems above ground, fire-sensitive; leaf lobes 40-70 each side (Albany to Stirling Range & E to Cape le Grand) **D. brownii**
- 6: Leaf lobes essentially triangular
- 10 Plant with underground stems, fire-tolerant
- 11 Leaf lobes 1-3 mm wide at base, the lower (basal) margin more revolute than the upper, slightly overlapping (near Badgingarra) **D. stenoprion**
- 11: Leaf lobes 2-8 mm wide at base, both margins slightly and \pm equally revolute, not overlapping; widespread
- 12 Leaves 10-15 mm wide; lobes with tips usually recurved (W of Arrino to Alexander Morrison National Park)..... **D. cypholoba**
- 12: Leaves 5-8 mm wide; lobes \pm flat (Geraldton to Cape Naturaliste & E to Corrigin & Traysurin)..... **D. lindleyana**
- 10: Plant with above-ground stems, fire-sensitive (Lake Indoon to Nyabing & E to Cape Arid, on the Scott River plain & E of Busselton)..... **D. nivea**
- 4: Receptacle gently concave, or flat, or gently convex; flowers arising \pm equally-spaced from the receptacle at anthesis
- 13 At least some leaves more than 20 cm long; mostly low shrubs with short stems
- 14 Leaves entire or almost so in upper two thirds, the lowest third pinnatipartite with subulate lobes (Pingelly to Tambellup) **D. subpinnatifida**
- 14: Leaves prominently pinnatipartite throughout
- 15 Leaves 4-18 mm wide
- 16 Leaf lobes 6-21 each side (Esperance to Mt Ragged) **D. longifolia**
- 16: Leaf lobes 25-110 each side
- 17 Pistil 42-56 mm long (Eneabba to Katanning)..... **D. nobilis**
- 17: Pistil 18-40 mm long

- 18 Perianth 17-19 mm long; pistil 18-21 mm long (Stirling Range) **D. montana**
- 18: Perianth 25-30 mm long; pistil 28-40 mm long
- 19 Leaves with 25-45 lobes each side (near Busselton, Stirling Range to Albany) **D. baxteri**
- 19: Leaves with 60-110 lobes each side (Tarin Rock, Ravensthorpe) **D. foliosissima**
- 15: Most leaves more than 20 mm wide
- 20 Leaf lobes linear; pistil 58-74 mm long; perianth limb 9-10 mm long (Cadoux to Hyden) **D. shanklandiorum**
- 20: Leaf lobes triangular, usually broadly so
- 21 Pistil pilose in lower half; follicles 5-6 mm long, with prominent terminal tuft of hairs (Kamballup) **D. ionthocarpa**
- 21: Pistil glabrous; follicles 13-19 mm long, sparsely hairy, glabrescent
- 22 Leaves less than 25 mm wide (Eneabba to Katanning) **D. nobilis**
- 22: Leaves 25-70 mm wide
- 23 Leaf lobes prominently curved in to apex (Mogumber to Bremer Bay) **D. drummondii**
- 23: Leaf lobes with \pm straight edges
- 24 Stems with \pm straight lanceolate villous prophylls; perianth 35-43 mm long, the limb 8-11 mm long; flowers 50-85 per head (Nyabing to Hyden) **D. octotriginta**
- 24: Stems with recurved, ovate-oblong tomentose prophylls; perianth 44-56 mm long, the limb 12-14 mm long; flowers c. 110 per head (near Badgingarra) **D. catoglypta**
- 13: Leaves usually less than 20 cm long, in several species some longer
- 25 Leaves with at least some lobes again pinnatipartite; perianth claws loosely hirsute with sticky hairs (Woodanilling to Cranbrook & Collie) **D. preissii**
- 25: Leaves simply pinnatipartite or pinnatisect; perianth hairs not sticky
- 26 Pistil c. 15 mm longer than perianth; leaves 3-4 mm wide (Wongan Hills) **D. pulchella**
- 26: Pistil usually no more than 10 mm longer than perianth, if longer than 15 mm then leaves at least 6 mm wide
- 27 Leaf lamina excluding lobes cuneate to obovate
- 28 Leaves white-tomentose below
- 29 Leaves sessile or almost so, 22-50 mm wide; longest involucre bracts to 12-15 mm long; floral bracts 2 mm long (Clackline to Dwellingup) **D. praemorsa**
- 29: Leaves petiolate, 12-22 mm wide; longest involucre bracts to 20-25 mm long; floral bracts 15-17 mm long (Stirling Range) **D. anatona**
- 28: Leaves glabrous below except pits
- 30 Floral bracts absent; leaf margins flat (Kalbarri to Albany) **D. sessilis**
- 30: Floral bracts present; leaf margins recurved to revolute
- 31 Follicles 6-7 mm long, not indurated; perianth limb glabrous or sparsely hairy

- 32 Leaves bright green; flowers \pm bright yellow (Stirling Range to Israelite Bay) **D. falcata**
- 32: Leaves glaucous; flowers pale yellow (Eneabba to Mogumber) **D. glauca**
- 31: Follicles 10-14 mm long, indurated; perianth limb hairy
- 33 Involucral bracts pale; pistil 24-40 mm long; pollen presenter 1-1.3 mm long, pale; flowers 35-100 per head (Narrogin to Albany & Israelite Bay) **D. cuneata**
- 33: Involucral bracts dark brown; pistil 22-26 mm long; pollen presenter 1 mm long, dark brown; flowers 180-190 per head (Gillingarra) **D. fuscobractea**
- 27: Leaf lamina excluding lobes linear, oblong, elliptic or narrowly obovate
- 34 Leaf lamina narrowly obovate with no or 1-3 teeth each side
- 35 Heads terminal, conspicuous; pistil 16-23 mm long; perianth creamy-white, often pink-tinged; shrub without lignotuber (Geraldton to Gingin) **D. carlinoides**
- 35: Heads on short branchlet near base of stem, inconspicuous; pistil 30-40 mm long; perianth yellow; many-stemmed shrub with lignotuber (Arrowsmith to Hill River) **D. tridentata**
- 34: Leaf lamina linear, oblong or elliptic, usually with several to many lobes each side
- 36 Pistils within head straight or bowed towards centre
- 37 Perianth 43-60 mm long
- 38 Stems with \pm straight lanceolate villous prophylls; perianth limb 8-11 mm long; flowers 50-85 per head; (Nyabing to Hyden) **D. octotriginta**
- 38: Stems with recurved, ovate-oblong tomentose prophylls; perianth limb 12-14 mm long; flowers 110 per head (near Badgingarra) **D. catoglypta**
- 37: Perianth 38 mm or less long
- 39 Leaves pinnatisect (Kalbarri to Cranbrook) **D. fraseri**
- 39: Leaves pinnatipartite or serrate
- 40 Leaf lobes linear
- 41 Perianth 29-34 mm long; pistil 32-43 mm long; shrub without lignotuber; leaves 25-35 mm wide, sinuses between lobes 5-15 mm across (Gnowangerup to Munglinup) **D. cirsioides**
- 41: Perianth 20-27 mm long; pistil 22-33 mm long; shrub with lignotuber
- 42 Flowers c. 80-100 per head; shrub usually suckering; leaves 40-45 mm wide; sinuses 10-25 mm across (Newdegate to Hyden & Frank Hann National Park) **D. xylothemelia**
- 42: Flowers c. 35 per head; leaves 10-25 mm wide; sinuses 3-7 mm across (Kulin to Nyabing) **D. meganotia**
- 40: Leaf lobes or teeth triangular

- 43 Flowers golden orange, sometimes pink-tinged;
heads 5-7 cm diam.
- 44 Leaves soft; floral bracts glabrous (Busselton to
Two Peoples Bay & Stirling Range) **D. formosa**
- 44: Leaves rather leathery; floral bracts hirsute or villous
- 45 Leaves divided more than half way to midrib, usually
dark green above; at least some leaves 15-20 cm long;
follicles 16-19 mm long (Eneabba to Katanning) **D. nobilis**
- 45: Leaves divided less than half way to midrib, usually
bluish green above; leaves never more than 15 cm long;
follicles 9-11 mm long (York to Broomehill) **D. stuposa**
- 43: Flowers pale to medium yellow; heads less than 4 cm diam.
- 46 Leaves 3-9 mm wide
- 47 Pistil loosely hirsute
- 48 Pollen presenter 2.5-4 mm long; involucre bracts
mainly glabrous outside except margins, shining
brown (Badgingarra, Mogumber) **D. serratuloides**
- 48: Pollen presenter 0.9-1.3 mm long; involucre bracts
hirsute and tomentose
- 49 Pollen presenter 0.9-1.2 mm long, noticeably thicker
than apex of style; perianth 12-20 mm long; pistil
markedly looped before anthesis
(Eneabba to Armadale) **D. kippistiana**
- 49: Pollen presenter 1-1.3 mm long, scarcely thicker than
apex of style; perianth 19-22 mm long; pistil gently
bowed before anthesis (Eneabba to Badgingarra) **D. sclerophylla**
- 47: Pistil glabrous except a few hairs on ovary
- 50 Pistil 16-19 mm long (New Norcia to Bindoon) **D. polycephala**
- 50: Pistil 22-31 mm long
- 51 Pistil 27-31 mm long; perianth limb hirsute
(Three Springs to Badgingarra) **D. stricta**
- 51: Pistil 22-26 mm long; perianth limb glabrous or
with a few hairs near base (New Norcia to Regans
Ford & Gingin) **D. echinata**
- 46: Leaves 10-35 mm wide
- 52 At least some leaves 15 cm or more long
- 53 Flowers 150-250 per head; involucre bracts
14-30 mm long; perianth limb hairy at least in
lower half (Esperance to Mt Ragged) **D. longifolia**
- 53: Flowers 35-65 per head; involucre bracts c. 10 mm
long; perianth limb glabrous
- 54 Pistil 32-33 mm long (Wongan Hills) **D. wonganensis**
- 54: Pistil 23-27 mm long

- 55 Perianth limb c. 2.5 mm long; involucre bracts pubescent with densely ciliate margins; pollen presenter 1-1.5 mm long (Moora to New Norcia & Cataby) **D. hewardiana**
- 55: Perianth limb 3-4 mm long; involucre bracts glabrous or with shortly ciliate margins; pollen presenter 1.8-2 mm long (Three Springs)..... **D. trifontinalis**
- 52: Leaves less than 13 cm long (juvenile leaves may be longer)
- 56 Leaves with subulate teeth on petiole and base (Woodanilling to Katanning) **D. acanthopoda**
- 56: Leaves without teeth on petiole and base
- 57 Pistil 40-48 mm long
- 58 Involucre bracts mainly glabrous; stems closely pubescent (Kalbarri to Three Springs) **D. borealis**
- 58: Involucre bracts hirsute; stems hirsute and tomentose (Stirling Range)..... **D. hirsuta**
- 57: Pistil 20-39 mm long
- 59 Pistil glabrous (Kulin to Nyabing & Frank Hann National Park) **D. pallida**
- 59: Pistil hirsute in lower third to half
- 60 Pollen presenter 0.8-1.5 mm long
- 61 Pistil 20-26 mm long; involucre bracts usually recurved; leaf lobes up to 10 each side (Bindoon to Albany; Whicher Range) **D. squarrosa**
- 61: Pistil 28-32 mm long; involucre bracts all erect; leaf lobes 1-6 each side (N of Southern Cross)..... **D. arborea**
- 60: Pollen presenter 3-4.5 mm long
- 62 Perianth 25-32 mm long; limb 4-4.5 mm long; floral bracts glabrous (Mt Lesueur to Albany & E to Israelite Bay) **D. armata**
- 62: Perianth 22-24 mm long; limb 4.5-6.5 mm long; floral bracts hirsute at base (Tathra National Park to Bendering) **D. purdieana**
- 36: Pistils within head curved downwards or downwards and with the apex upturned
- 63 Pistils curved downwards then up
- 64 Leaf lamina except lobes elliptic; involucre bracts silky-villous; floral bracts hirsute both sides (Stirling Range, Albany) **D. concinna**
- 64: Leaf lamina except lobes linear; involucre bracts appressed-pubescent; floral bracts hirsute one side, glabrous the other (Bow River to Mt Manypeak) **D. serra**
- 63: Pistil curved \pm evenly downwards
- 65 Leaves except lobes oblong; lobes obliquely ovate; involucre bracts ovate to lanceolate (Stirling Range) **D. foliolata**

- 65: Leaves except lobes narrowly linear; lobes linear to narrowly triangular; involucre bracts linear to subulate
- 66 Leaf lobes strongly twisted (Stirling Range) **D. montana**
- 66: Leaf lobes not twisted
- 67 Floral bracts 5-6 mm long; pollen presenter 1.5-1.8 mm long; follicles obliquely obovate or elliptic (Miling to South Stirling)..... **D. conferta**
- 67: Floral bracts 3.5-4 mm long; pollen presenter 1 mm long
- 68 Leaf lobes 10-25 each side; follicles transversely ovate (Eneabba to Mogumber) **D. platycarpa**
- 68: Leaf lobes 2-5 each side; follicles narrowly ovate (Stirling Range) **D. seneciifolia**
- 2: Involucre bracts as long as or exceeding perianth/pistil
- 69 Pistil straight or gently curved outwards or inwards
- 70 Involucre bracts broad, obtuse, dark red-brown, often shining
- 71 Involucre bracts 80-90 mm long (near Kulin) **D. epimicta**
- 71: Involucre bracts 30-75 mm long
- 72 Perianth not swollen at apex of basal tube; limb usually 5-7 mm long, occasionally to 7.5 mm
- 73 Pollen presenter 5-5.5 mm long; pistil 35-38 mm long (Fitzgerald River to Israelite Bay) **D. obtusa**
- 73 Pollen presenter 2.8-3.5 mm long; pistil 23-31 mm long
- 74 Leaves entire or pinnatifid with obtuse to acute lobes; petiole very slender, to 5 cm long; flowers c. 80-100 per head; floral bracts c. 4 mm long; prostrate or sprawling shrub to 3 m across or bushy and up to 1.5 m tall (Darkan to Esperance)..... **D. tenuifolia**
- 74: Leaves distantly pinnatifid with recurved pungent lobes; petiole robust, to 2 cm long; flowers c. 150 per head; floral bracts 10-11 mm long; dense, erect shrub to 3 m tall (Wongan Hills) **D. comosa**
- 72: Perianth swollen and succulent at apex of basal tube; limb 7-8.5 mm long
- 75 Leaves serrate; erect shrubs
- 76 Involucre bracts 40-50 mm long (Ravensthorpe) **D. corvijuga**
- 76: Involucre bracts 50-75 mm long (Toodyay to Narrogin) **D. proteoides**
- 75: Leaves pinnatifid, rarely almost entire; low or prostrate shrubs (Pingelly to Stirling Range & E to Forrestania) **D. ferruginea**
- 70: Involucre bracts acuminate, usually plumose, pale to dark brown
- 77 Leaves broadly cuneate, serrate (Gairdner River to Ravensthorpe) **D. quercifolia**
- 77: Leaves linear, pinnatifid
- 78 Perianth 15-20 mm long (Stirling Range area)..... **D. mucronulata**
- 78: Perianth 25-30 mm long
- 79 Involucre bracts silky-villous; leaf teeth 60-110 each side of leaf (Busselton; Stirling Range to Albany) **D. baxteri**

- 79: Involucral bracts tomentose; leaf teeth 25-45 each side of leaf
(Tarin Rock, Ravensthorpe) **D. foliosissima**
- 69: Pistil curved down
- 80 Involucral bracts softly plumose (Stirling Range to Bremer Bay) **D. plumosa**
- 81 Longest involucral bracts to 30 mm long, filiform towards apex;
flowers 45-80 per head; follicle 11-15 mm long
(Stirling Range to West Mt Barren) **D. plumosa**
- 81: Longest involucral bracts to 20 mm long, narrow but not filiform
towards apex; flowers c. 90-100 per head; follicle 17-18 mm long
(Stirling Range) **D. pseudoplumosa**
- 80: Involucral bracts tomentose or hirsute
- 82 Leaves serrate to dentate; involucral bracts silky-villous
(Corrigin to Kukerin) **D. fasciculata**
- 82: Leaves pinnatifid; involucral bracts hirsute or pubescent
- 83 Leaf lobes 5-18 each side of leaf, triangular-falcate; involucral
bracts with glandular hairs (Pingelly) **D. columnaris**
- 83: Leaf lobes 2-5 each side of leaf; involucral bracts without
glandular hairs
- 84 Pistil 23-31 mm long, yellow; involucral bracts 25-33 mm long
(Corrigin to Kukerin) **D. fasciculata**
- 84: Pistil 18-22 mm long, red; involucral bracts to 20 mm long
(Woodanilling to Nyabing & Tarin Rock) **D. rufistylis**
- 1: Pistil c. as long as or slightly shorter than perianth, the style not laterally
exserted before anthesis
- 85 Leaves bipinnatifid (Eneabba to Manjimup) **D. bipinnatifida**
- 85: Leaves serrate, pinnatifid or pinnatipartite, sometimes entire
- 86 Leaves entire; heads nodding or horizontal
- 87 Leaves subtending inflorescence not or little reduced, pliable;
involucral bracts 40-50 mm long, plumose; leaves 5-10 cm long;
perianth 24-30 mm long; erect, bushy shrub with flowers on
upper branches (Tathra National Park to Badgingarra; Tammin) **D. speciosa**
- 87: Leaves subtending inflorescence reduced, rigid, pungent;
involucral bracts 10-12 mm long, loosely hirsute; leaves
15-35 cm long; perianth 22-24 mm long; low shrub with flowers
almost at ground level (Eneabba to Badgingarra) **D. subulata**
- 86: Leaves dentate, serrate or pinnatifid
- 88 Leaves more than 15 mm wide
- 89 Involucral bracts papery with cobwebby indumentum; flowers red
and white (Newdegate) **D. idiogenes**
- 89: Involucral bracts firm, tomentose; flowers yellow or golden orange
- 90 Pistil 34-45 mm long
- 91 Longest involucral bracts 9-15 mm long
- 92 Leaf lobes triangular; stems with scattered prophylls (Tenterden
to Albany and Wellstead) **D. calophylla**

- 92: Leaf lobes linear; stems covered with prophylls (Woodanilling) **D. lepidorhiza**
- 91: Longest involucre bracts 20-42 mm long
- 93 Bushy shrub with erect stems; perianth limb 13-15 mm long
(Stirling Range to Lort River) **D. nervosa**
- 93: Shrub with prostrate, usually underground stems; perianth limb 8-13 mm long
- 94 Leaves 50-120 mm wide
- 95 Involucre bracts broadly ovate, obtuse, the innermost to 20 mm long; margins of leaf lobes strongly revolute, usually obscuring lower surface (Fitzgerald River to Israelite Bay; Badgingarra to Eneabba) **D. pteridifolia**
- 95: Involucre bracts lanceolate, acute, the innermost to 35-40 mm long; margins of leaf lobes recurved, the lower surface exposed, 3-nerved (Stirling Range) **D. blechnifolia**
- 94: Leaves 20-45 mm wide
- 96 Flowers 20-30 per head; perianth villous above base, orange-pink; pistil 37-40 mm long; leaf lobes 30-40 each side (Woodanilling to Ongerup & Mount Barker) **D. porrecta**
- 96: Flowers c. 80 per head; perianth tomentose above base, golden; pistil 33-36 mm long; leaf lobes 18-28 each side (E of Mundaring Weir) **D. aurantia**
- 90: Pistil 49-74 mm long (Dumbleyung to Lake Grace & Harrismith) **D. fililoba**
- 88: Leaves less than 15 mm wide; branchlets often covered with prophylls
- 97 Leaves with 25-75 teeth each side
- 98 Involucre bracts to 60 mm long, viscid; flowers 60-70 per head; pistil 54-55 mm long (Ironcaps) **D. viscida**
- 98: Involucre bracts 20-40 mm long, not viscid; flowers 20-45 per head; pistil 24-35 mm long
- 99 Shrub with above-ground stems to 70 cm tall; involucre bracts 30-40 mm long; flowers 30-45 per head; perianth brown (Geraldton to Gingin) **D. shuttleworthiana**
- 99: Shrub with underground stems; involucre bracts to 22 mm long; flowers 20 per head; perianth yellow (Mogumber, Perth, Whicher Range) **D. mimica**
- 97: Leaves with 2-12 teeth each side
- 100 Pistil 37-49 mm long; pollen presenter 6-7 mm long (Pingelly to Woodanilling) **D. cynaroides**
- 100: Pistil 23-36 mm long; pollen presenter 3-4 mm long
- 101 Flowers 15-25 per head (Kulin to Nyabing & E to Forrestania) ... **D. erythrocephala**
- 101: Flowers 35-50 per head
- 102 Leaves narrowly linear with revolute margins; branchlets hirsute (Tammin to Corrigin & Narembeen) **D. horrida**
- 102: Leaves broadly linear with recurved margins; branchlets tomentose (Eneabba to Lake Grace) **D. vestita**

Infrageneric classification

The following list of infrageneric taxa, species and infraspecific taxa in a possible systematic sequence is highly speculative, being based on an intellectual and intuitive assessment of the taxa as absorbed from a morphological study and knowledge of taxa in the field. A great deal more research is needed to confirm this scheme or determine a more robust one.

Dryandra R. Br. subg. 1. **Dryandra**

ser. 1. **Floribundae** Benth. *D. sessilis* (Knight) Domin var. *sessilis*, *D. sessilis* var. *cordata* (Meisn.) A.S. George, *D. sessilis* var. *flabellifolia* A.S. George, *D. sessilis* var. *cygnorum* (Gand.) A.S. George

ser. 2. **Armatae** Benth. *D. cuneata* R. Br., *D. fuscobracteata* A.S. George, *D. armata* R. Br. var. *armata*, *D. armata* var. *ignicida* A.S. George, *D. arborea* C.A. Gardner, *D. hirsuta* A.S. George, *D. pallida* A.S. George, *D. purdieana* Diels, *D. xylothemelia* A.S. George, *D. cirsioides* Meisn., *D. acanthopoda* A.S. George, *D. squarrosa* R. Br. subsp. *squarrosa*, *D. squarrosa* subsp. *argillacea* A.S. George, *D. hewardiana* Meisn., *D. wonganensis* A.S. George, *D. trifontinalis* A.S. George, *D. stricta* A.S. George, *D. echinata* A.S. George, *D. polycephala* Benth., *D. subpinnatifida* C.A. Gardner var. *subpinnatifida*, *D. subpinnatifida* var. *imberbis* A.S. George, *D. longifolia* R. Br. subsp. *longifolia*, *D. longifolia* subsp. *calcicola* A.S. George, *D. longifolia* subsp. *archeos* A.S. George, *D. borealis* A.S. George subsp. *borealis*, *D. borealis* subsp. *elatior* A.S. George

ser. 3. **Marginatae** (Meisn.) A.S. George *D. pulchella* Meisn.

ser. 4. **Folliculosae** A.S. George *D. fraseri* R. Br. var. *fraseri*, *D. fraseri* var. *ashbyi* (B.L. Burtt) A.S. George, *D. fraseri* var. *oxycedra* A.S. George

ser. 5. **Acrodontae** (Meisn.) A.S. George *D. sclerophylla* Meisn., *D. kippistiana* Meisn. var. *kippistiana*, *D. kippistiana* var. *paenepeccata* A.S. George, *D. carlinoides* Meisn., *D. tridentata* Meisn.

ser. 6. **Capitellatae** A.S. George *D. serratuloides* Meisn. subsp. *serratuloides*, *D. serratuloides* subsp. *perissa* A.S. George, *D. meganotia* A.S. George

ser. 7. **Ilicinae** (Meisn.) A.S. George *D. praemorsa* Meisn. var. *praemorsa*, *D. praemorsa* var. *splendens* A.S. George, *D. quercifolia* Meisn., *D. anatona* A.S. George

ser. 8. **Dryandra** *D. formosa* R. Br., *D. nobilis* Lindl. subsp. *nobilis*, *D. nobilis* subsp. *fragrans* A.S. George, *D. stuposa* Lindl.

ser. 9. **Foliosae** A.S. George *D. mucronulata* R. Br. subsp. *mucronulata*, *D. mucronulata* subsp. *retrorsa* A.S. George, *D. baxteri* R. Br., *D. foliosissima* C.A. Gardner

ser. 10. **Decurrentes** (Meisn.) A.S. George *D. comosa* Meisn.

ser. 11. **Tenuifoliae** A.S. George *D. tenuifolia* R. Br. var. *tenuifolia*, *D. tenuifolia* var. *reptans* A.S. George, *D. obtusa* R. Br.

ser. 12. **Runcinatae** (Meisn.) A.S. George *D. ferruginea* Kippist ex Meisn. subsp. *ferruginea*, *D. ferruginea* subsp. *tutanningensis* A.S. George, *D. ferruginea* subsp. *pumila* A.S. George, *D. ferruginea* subsp. *obliquiloba* A.S. George, *D. ferruginea* subsp. *chelomacarpa* A.S. George, *D. ferruginea* subsp. *flavescens* A.S. George, *D. corvijuga* A.S. George, *D. epimicta* A.S. George, *D. proteoides* Lindl.

ser. 13. **Triangulares** A.S. George *D. drummondii* Meisn. subsp. *drummondii*, *D. drummondii* subsp. *hiemalis* A.S. George, *D. drummondii* subsp. *macrorufa* A.S. George, *D. octotriginta* A.S. George, *D. catoglypta* A.S. George

ser. 14. **Aphragma** (R. Br.) A.S. George *D. pteridifolia* R. Br. subsp. *pteridifolia*, *D. pteridifolia* subsp. *vernalis* A.S. George, *D. fililoba* A.S. George, *D. shanklandiorum* Randall, *D. nervosa* R. Br., *D. blechnifolia* R. Br., *D. porrecta* A.S. George, *D. aurantia* A.S. George, *D. calophylla* R. Br., *D. lepidorhiza* A.S. George

ser. 15. **Ionthocarpae** A.S. George *D. ionthocarpa* A.S. George

ser. 16. **Inusitatae** A.S. George *D. idiogenes* A.S. George

ser. 17. **Subulatae** A.S. George *D. subulata* C.A. Gardner

ser. 18. **Gymnocephalae** Benth. *D. cynaroides* C.A. Gardner, *D. erythrocephala* C.A. Gardner var. *erythrocephala*, *D. erythrocephala* var. *inopinata* A.S. George, *D. horrida* Meisn., *D. vestita* Meisn., *D. viscida* A.S. George, *D. mimica* A.S. George, *D. speciosa* Meisn. subsp. *speciosa*, *D. speciosa* subsp. *macrocarpa* A.S. George, *D. shuttleworthiana* Meisn.

ser. 19. **Plumosae** A.S. George *D. plumosa* R. Br. subsp. *plumosa*, *D. plumosa* subsp. *denticulata* A.S. George, *D. pseudoplumosa* A.S. George, *D. montana* C.A. Gardner ex A.S. George

ser. 20. **Concinnae** Benth. *D. concinna* R. Br., *D. serra* R. Br., *D. foliolata* Meisn.

ser. 21. **Obvallatae** Benth. *D. fasciculata* A.S. George, *D. conferta* Benth. var. *conferta*, *D. conferta* var. *parva* A.S. George, *D. columnaris* A.S. George, *D. platycarpa* A.S. George, *D. seneciifolia* R. Br., *D. rufistylis* A.S. George

ser. 22. **Pectinatae** (Meisn.) A.S. George *D. nana* Meisn.

ser. 23. **Acuminatae** A.S. George *D. preissii* Meisn.

ser. 24. **Niveae** Benth. *D. arctotidis* R. Br., *D. tortifolia* Meisn., *D. stenoprion* Meisn., *D. cypholoba* A.S. George, *D. lindleyana* Meisn. subsp. *lindleyana* var. *lindleyana*, *D. lindleyana* subsp. *lindleyana* var. *mellicula* A.S. George, *D. lindleyana* subsp. *media* A.S. George, *D. lindleyana* subsp. *pollostata* A.S. George, *D. lindleyana* subsp. *sylvestris* A.S. George, *D. lindleyana* subsp. *agricola* A.S. George, *D. brownii* Meisn., *D. nivea* (Labill.) R. Br. subsp. *nivea*, *D. nivea* subsp. *uliginosa* A.S. George

Dryandra subg. 2. **Hemiclidia** (R. Br.) A.S. George *D. falcata* R. Br., *D. glauca* A.S. George

Dryandra subg. 3. **Diplophragma** (R. Br.) A.S. George *D. bipinnatifida* R. Br. subsp. *bipinnatifida*, *D. bipinnatifida* subsp. *multifida* A.S. George

DRYANDRA

Dryandra R. Br., Trans. Linn. Soc. London 10: 211 (1810), *nomen conservandum*, non Thunberg (1783) (Euphorbiaceae). Type: *D. formosa* R. Br. (*typus conservandus*)

Josephia R. Br. ex Knight, Cult. Prot. 110 (1809). Type: *J. sessilis* Knight, *lecto* (here chosen).

Hemiciidia R. Br., Suppl. Prodr. Fl. Nov. Holl. 40 (1830). Type: *H. baxteri* R. Br.

Typification. Knight described two species in *Josephia* but one of his names, *J. rachidifolia*, is an illegitimate name being a replacement for *Banksia nivea* Labill., the base name for *Dryandra nivea* (Labill.) R. Br. His other species is therefore selected as lectotype of *Josephia*.

Subg. 1 *Dryandra*

Dryandra R. Br. subg. *Dryandra*

Follicles woody. Separator present between seeds (often only 1 seed fertile). Seed black; wing terminal.

By far the largest subgenus, containing 24 series and 89 species.

Ser. 1 *Floribundae*

Dryandra ser. *Floribundae* Benth., Fl. Austral. 5: 564, 568 (1870). Type: *D. floribunda* R. Br. = *D. sessilis* (Knight) Domin

Erect *shrubs* or small *trees* without lignotuber. *Leaves* cuneate to flabelliform, serrate, sessile or almost so; margins flat or almost so. *Inflorescence* terminal, ± conspicuous; involucre bracts shorter than flowers; floral bracts apparently absent. *Perianth* straight, slender. *Pistil* straight, slightly shorter than perianth; pollen presenter cylindrical to ellipsoidal above neck, smooth. *Faded flowers* soon falling, as a tuft. *Follicles* ovoid, firmly attached, usually opening as soon as mature. *Seed wing* terminal.

A single, widespread, variable species. The apparent absence of floral bracts is unique in the genus.

Dryandra sessilis (Knight) Domin, Vestn. Kral. Ceske Spolecn. Nauk. Tr. Mat. Prir. 2: 19 (1923) - *Josephia sessilis* Knight, Cult. Prot. 110 (1809). Type: King George Sound, [Western Australia], October 1791, A. Menzies (*lecto* (here chosen): BM; *isolecto*: BM).

Typification. There are specimens on two sheets at BM. That chosen as lectotype is a flowering specimen on a sheet with the following collection details written on the reverse: 'New Holland, King Georges Sound, Mr. Arch. Menzies'. The other specimen on the sheet is in leaf only.

A variable species here divided into 4 varieties.

- 1 Stems pubescent; leaves usually no more than 3 cm long, less than 20 mm wide var. **cygnorum**
- 1: Stems hirsute, soon glabrescent, rarely pubescent; at least some leaves more than 3 cm long
- 2 Leaves flabelliform, not auriculate var. **flabellifolia**
- 2: Leaves cuneate to oblong, often auriculate
- 3 Pistil 23-29 mm long; leaves usually 2-3 cm long and up to 25 mm wide, occasionally to 5 cm long var. **sessilis**
- 3: Pistil 30-34 mm long; leaves up to 6 cm long and 40 mm wide var. **cordata**

Dryandra sessilis (Knight) Domin var. **sessilis**

D. floribunda R.Br., Trans. Linn. Soc. London 10: 212 (1810). *Type:* King George Sound, [Western Australia], December 1801, *R. Brown Iter Australiense* 3418 (*holo:* BM; *iso:* K).

Distribution. Widespread from Regans Ford and Moora to Collie and south-east to Bremer Bay, extending inland to near Wongan Hills, Pingelly and Kulin, and in the Stirling Range.

Habitat. Common in the drier Jarrah forest. Grows in lateritic soil and in sand, in open forest, woodland and tall shrubland, often locally dominant.

Flowering period. Late May-November.

Discussion. The most widespread variety. Plants near the south coast tend to be of more spreading habit and have more robust foliage. Those from the most inland localities have smaller leaves.

Dryandra sessilis var. **flabellifolia** A.S. George, var. nov.

Frutex ad 5 m altus. Caules glabri, raro parce pubescentes. Folia flabelliformia, plerumque 2-4 cm longa, 17-35 mm lata, ad basin arcte angustata, petiolo plerumque ad 5 mm longo. Flores c. 90 per capitulum. Perianthium 26-28 mm longum. Pistillum 28-29 mm longum; praebitor pollinis 1-1.2 mm longus. Folliculi 10-11 mm longi.

Typus: West Binu Rd, 4.4 km E of junction with Yeringa South Rd, NNW of Northampton, Western Australia, 11 August 1993, A.S. George 17026 (*holo:* PERTH 04228650; *iso:* CANB).

Shrub to 5 m. *Stems* glabrous, rarely sparsely pubescent. *Leaves* flabelliform, mostly 2-4 cm long, 17-35 mm wide, markedly narrowed to base, usually on petiole to 5 mm long. *Flowers* c. 90 per head. *Perianth* 26-28 mm long. *Pistil* 28-29 mm long; pollen presenter 1-1.2 mm long. *Follicles* 10-11 mm long.

Selected collections examined. Hydraulic Rd, 8 km E of Bunney Rd, A. Carr 37 (PERTH); Marchagee Track, 1 km E of Dewar Rd, E.A. Griffin 3470 (PERTH); 32 km N of Geraldton, R.A. Saffrey 1540 (PERTH).

Distribution. Occurs between Geraldton and Kalbarri and inland to Northampton, and with scattered records south almost to Moora.

Habitat. Grows in deep sand and in lateritic soil, in tall shrubland.

Flowering period. June–October.

Conservation status. Not endangered.

Etymology. From the Latin *flabellum* (a fan) and *folium* (a leaf), in reference to the leaf shape.

Discussion. Similar to var. *sessilis* but the leaves are not auriculate. They are usually somewhat glaucous.

Dryandra sessilis* var. *cordata (Meisn.) A.S. George, comb. nov.

D. floribunda var. *cordata* Meisn., in J.G.C. Lehmann (ed.), *Pl. Preiss.* 2: 265 (1848). *Type:* southwestern Western Australia, 184-, *J. Drummond* 2: 344 (*holo:* NY; *iso:* BM, K, MEL).

D. floribunda var. *major* Benth., *Fl. Austral.* 5: 569 (1870). *Type:* Cape Naturaliste, Western Australia, A. Oldfield (*holo:* K; *iso:* MEL).

Conservation status. Not endangered.

Discussion. This taxon has larger leaves and flowers than the other varieties.

Dryandra sessilis* var. *cygnorum (Gand.) A.S. George, stat. et comb. nov.

D. cygnorum Gand., *Bull. Soc. Bot. France* 66: 230 (1919). *Type:* Melville (Park) [suburb of Perth, Western Australia], 31 July 1897, A. Morrison (*holo:* LY, photo seen).

D. quinquentata Gand., *Bull. Soc. Bot. France* 66: 230 (1919). *Type:* Swan River, Western Australia, 1902, A. Lea (*holo:* LY, photo seen).

Conservation status. Not endangered.

Discussion. Gandoger's names are synonymous, the characters used to distinguish them (width of leaves, number of leaf teeth, length of flower head) being somewhat variable over the geographic range of the taxon. It is readily distinguished from the other varieties by the usually smaller leaves and pubescent stems.

Ser. 2 *Armatae*

Dryandra ser. *Armatae* Benth., Fl. Austral. 5: 563, 566 (1870). Type: *D. armata* R. Br.

Mostly erect *shrubs* or small *trees*. *Leaves* sclerophyllous, linear to cuneate, serrate to pinnatifid; margins flat to recurved. *Inflorescence* terminal or on short branchlet, conspicuous; receptacle flat to gently convex; involucral bracts shorter than flowers, narrow, acute to acuminate, glabrous to pubescent or hirsute outside. *Perianth* straight, slender; limb inflexed before anthesis. *Pistil* straight or curved, longer than perianth; pollen presenter not or slightly thickened, smooth or finely ribbed. *Old flowers* usually persisting for some years. *Follicles* ovate to obovate, often notched on one side near base, usually opening as soon as mature, firmly or loosely attached. *Seed* with terminal notched wing.

A series of 20 species widespread throughout south-western Western Australia.

Dryandra cuneata R. Br., Trans. Linn. Soc. London 10: 212 (1810) - *Josephia cuneata* (R. Br.) Poir., Dict. Sci. Nat. 24: 246 (1822). Type: Lucky Bay, [Western Australia], January 1802, *R. Brown Iter Australiense* 3417 (*lecto* (here chosen): BM; *isolecto*: K, MEL).

Typification. Brown's specimens, some in flower, some not, include two variants. The non-flowering specimens are referred to as a second form in his manuscript notes at BM. The flowering specimens are those covered in his published description, and the sheet at BM bearing these is selected as lectotype.

Dryandra fuscobracteata A.S. George, sp. nov.

Ab *D. cuneata* R. Br. bracteis involucralis fusco-brunneis, capitulis floribus pluribus (180-190) minoribus (perianthio 20-23 mm longo, pistillo 22-26 mm longo), limbo cinereo, et praebitore pollinis minore (1 mm longo) fusco, praecipue differt.

Typus: Boundary Rd, N of junction with Gillingarra W Rd, Western Australia, 25 July 1994, *M. Pieroni* 94/5 (*holo:* PERTH 04228685; *iso:* CANB, NSW).

Shrub to 1 m without lignotuber. *Stems* closely tomentose. *Leaves* cuneate, those about the involucre narrower, obtuse but prominently mucronate, pungently serrate; teeth 4-9 each side; lamina 4-7 cm long, 1-3 cm wide, glabrous above and below except pits; margins flat to slightly recurved; petiole 5-10 mm long. *Inflorescence* terminal or on short lateral branchlet; involucral bracts linear, obtuse to almost acute, the outer ones squarrose, innermost 8-11 mm long, all villous, the outer ones grey, the inner dark rusty brown towards apex; flowers 180-190 per head. *Perianth* 20-23 mm long, villous above base, then hirsute, pale yellow; limb 2.5 mm long, hirsute, dark grey, the apical hairs white. *Pistil* 22-26 mm long, glabrous, cream; pollen presenter narrow, 1 mm long, rusty brown. *Follicles* 3 or 4 per head, obliquely obovate, 9-12 mm long, loosely hirsute.

Selected collection examined. S of Gillingarra Rd, SE of Dandaragan, *E.A. Griffin* 5371 (PERTH).

Distribution. Occurs south-east of Gillingarra, Western Australia.

Habitat. Grows in sand over laterite in kwongan.

Flowering period. Flowers July-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. Known from two populations, one on a narrow road verge, the other on private property.

Etymology. Named from the Latin *fuscus* (dark) and *bractea* (a bract), in reference to the involucre bracts.

Discussion. Related most closely to *D. cuneata*, differing in the dark brown involucre bracts (the outermost squarrose) and the heads with more flowers that are smaller, with a grey perianth limb and small, dark pollen presenter. Flowers not scented. Follicles loosely attached.

Dryandra armata R. Br., Trans. Linn. Soc. London 10: 213 (1810) - *Josephia armata* (R. Br.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* King George Sound, [Western Australia], December 1801, R. Brown Iter Australiense 3416 (*holo:* BM; *iso:* K, MEL).

Distribution. A widespread, variable species occurring from Mt Lesueur to Albany and east to Israelite Bay.

There are two varieties.

- 1 Shrub to 1.5 m (usually below 1 m) with lignotuber; leaf lamina 8-20 mm wide; lobes 6-13 each side; involucre bracts tomentose to hirsute in upper half, glabrous or almost so below; perianth 25-32 mm long; limb 4-4.5 mm long; pistil 28-39 mm long var. **armata**
- 1: Shrub to 3 m without lignotuber; leaf lamina 20-25 mm wide; lobes 5-8 each side; outer involucre bracts hirsute, inner ones pubescent; perianth 30-39 mm long; limb c. 5 mm long; pistil 35-42 mm long var. **ignicida**

Dryandra armata R. Br. var. **armata**

D. favosa Lindl., Sketch Veg. Swan R. xxxiii (1840). *Type:* south-western Western Australia, per Toward (*holo:* CGE).

D. gilbertii S. Moore, J. Linn. Soc., Bot. 45: 211 (1920). *Type:* south-western Western Australia, J. Gilbert s.n. (*holo:* BM).

Dryandra armata var. **ignicida** A.S. George, var. nov.

Frutex rectus ad 3 m altus, sine lignotubero. Folia lamina 6-8 cm longa, 20-25 mm lata; lobi 5-8 in quoque margine, ad angulum c. 90°. Bractae involucrales ad 20 mm longae, exteriores hirsutae, interiores pubescentes. Perianthium 30-39 mm longum; limbus c. 5 mm longus. Pistillum 35-42 mm longum; praebitor pollinis 3-3.5 mm longus.

Typus: Paterson Rd, W of Junction with Balls Rd, E of Woodanilling, Western Australia, c. 33°29'S, 117°33'E, A.S. George 16636 (*holo:* PERTH 04110358; *iso:* CANB, K).

Erect *shrub* to 3 m without lignotuber. *Leaf* lamina 6-8 cm long, 20-25 mm wide; lobes 5-8 each side, at c. 90°. *Involucral bracts* to 20 mm long, the outer hirsute, inner pubescent. *Perianth* 30-39 mm long; limb c. 5 mm long. *Pistil* 35-42 mm long; pollen presenter 3-3.5 mm long.

Selected collections examined. c. 3 km E of Wagin, *H. Demarz* 1531 (PERTH); Boyatup Hill, *A.S. George* 16158 (PERTH); Tutanning Nature Reserve, ESE of Pingelly, *G. Heinsohn* 23 (PERTH).

Distribution. Widespread from Pingelly to Katanning and east to Mt Ragged.

Habitat. Grows in sandy loam, granitic, quartzitic or lateritic soil in tall shrubland, often with emergent eucalypts.

Flowering period. July-September.

Conservation status. Not endangered.

Etymology. Specific epithet from the Latin *ignis* (fire) and the suffix *-cidus* (pertaining to killing), in reference to the plant being non-lignotuberous and killed by fire.

Discussion. Distinguished from var. *armata* especially in having no lignotuber, and usually in its larger leaves and flowers. At several localities the two are sympatric.

Dryandra hirsuta A.S. George, sp. nov.

D. armatae var. *ignicidae* A.S. George similis, sed plerumque hirsutiore, foliis majoribus grosse lobatis, et inflorescentia et folliculis majoribus, distinguitur. Folia lamina 5-13 cm longa, 15-35 mm lata; lobis 5-10 in quoque margine, oblique triangularibus, acuminatis, pungentibus; marginibus recurvis; petiolo 5-12 mm longo, hirsuto. Bractee involucrales lanceolatae ad lineares, 22-32 mm longae. Perianthium 40-41 mm longum, limbo 5.5-6.5 mm longo. Pistillum 45-48 mm longum; praebitor pollinis 4-5 mm longus. Folliculi 9-11 mm longi, parce hirsuti.

Typus: Red Gum Pass Rd, just S of junction with Salt River Rd, Stirling Range National Park, Western Australia, 34°19'S, 117°47'E, 27 July 1986, *A.S. George* 16657 (*holo:* PERTH 04225805; *iso:* CANB, K).

Shrub to 2 m, without lignotuber. *Stems* tomentose and hirsute with spreading hairs. *Leaves* ± lanceolate to narrowly obovate, acute, pungent, deeply serrate to pinnatipartite, loosely hirsute and glabrescent except pits in lower surface; lamina 5-13 cm long, 15-35 mm wide; lobes 5-10 each side, obliquely triangular, acuminate, pungent; margins recurved; petiole 5-12 mm long, hirsute. *Inflorescence* terminal or on short lateral branchlet; involucral bracts lanceolate to linear, obtuse to acute, erect, tomentose, the outer ones with hirsute margins in upper half, the innermost 22-32 mm long; flowers c. 90-110 per head. *Perianth* 40-41 mm long, curled-pubescent above base, hirsute above, pale yellow-gold; limb 5.5-6.5 mm long, hirsute at base, otherwise glabrous. *Pistil* 45-48 mm long, curved, hirsute just above ovary, then glabrous; pollen presenter narrow, 4-5 mm long, ribbed. *Follicles* somewhat angular-ovate to obovate, 9-11 mm long, sparsely hirsute, shining.

Selected collections examined. Talyuberlup, *J.S. Beard* 7601 (PERTH); E side of Mt Toolbrunup, *A.S. George* 10874 (PERTH); Mt Warrungup, *K. Newbey* 1793 (PERTH).

Distribution. Restricted to the central and western parts of the Stirling Range.

Habitat. Grows in rocky sandy loam in tall shrubland and low open woodland.

Flowering period. May-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. Named from the Latin *hirsutus* (having long, rather coarse hairs), in reference to the hairy stems, young leaves and involucre bracts.

Discussion. Resembles *D. armata* var. *ignicida* but has larger, more coarsely lobed leaves, larger inflorescence and fruit, and is generally more hairy, especially when young.

Dryandra pallida A.S. George, sp. nov.

Ad *D. cirsioides* Meisn. affinis, a qua foliis lobis paucioribus (3-5 in quoque margine), marginibus planis, viridibus pallidis; floribus cremeis; et pistillo glabro, praecipue differt.

Typus: 20 miles (32 km) E of Pingaring, Western Australia, c. 32°45'S, 118°56'E, 29 May 1969, A.S. George 9346 (*holo:* PERTH 04228472; *iso:* CANB, K, MEL).

Columnar *shrub* to 2 m, without lignotuber. *Stems* densely tomentose, at length glabrescent. *Leaves* broadly linear, serrate, acuminate; lamina usually 5-8 cm long, 2-3 cm wide, white-tomentose below with glabrous venation; margins flat to slightly recurved; lobes 3-5 each side, obliquely triangular, to 15 mm long; petiole 5-10 mm long, tomentose. *Inflorescence* sessile along branches; involucre bracts narrowly lanceolate, ± acute, 10-12 mm long, densely silky, glabrous inside; flowers 65-80 per head. *Perianth* 25-27 mm long, pale yellow, densely hirsute including limb; limb 4 mm long. *Pistil* 29-31 mm long, strongly outcurved, glabrous; pollen presenter narrow, 1.5 mm long, smooth. *Follicles* obovate to transversely elliptic, 8-10 mm long, loosely hirsute.

Selected collections examined. Mt Short, N of Ravensthorpe, A.S. George 4439 (PERTH); c. 3 km N of Nyabing, K. Newbey 768 (PERTH); 10 km S of Lake Grace, R.D. Royce 6686 (PERTH).

Distribution. Locally common in the southern central wheatbelt from Nyabing to Frank Hann National Park and north to Kulin and Holt Rock.

Habitat. Grows in lateritic soil, sometimes somewhat sandy, in kwongan.

Flowering period. May-July.

Conservation status. Not endangered.

Etymology. The epithet, from the Latin *pallidus* (pale), refers to the pale yellow flowers and the characteristic pale colour of dried specimens.

Discussion. May be recognized by the few-lobed leaves with flat margins, pale yellow flowers, hirsute perianth (including limb) and glabrous pistil.

Dryandra purdieana Diels, Bot. Jahrb. Syst. 35: 174 (1904). *Type*: Victoria Plains [Toodyay district], Western Australia, 29 August 1901, L. Diels 3972 (*lecto* (here chosen): B; *isolecto*: MEL).

Typification. There are two specimens on the type sheet at B, clearly from different plants. That chosen as lectotype agrees better with the protologue in its dimensions; the second specimen has more crowded, smaller leaves and smaller flowers. There is a single label in Diels' hand on the sheet. The specimen at MEL agrees with the lectotype.

Dryandra xylothemelia A.S. George, sp. nov.

Ad *D. cirsioides* Meisn. affinis, a qua habitu lignotubero, interdum surculis, et foliorum lobis angustis late dispositis, praecipue differt. Lobi foliorum 5-9 in quoque latere, marginibus arcte revolutis. Flores 80-100 per capitulum. Perianthium 20-27 mm longum, limbo 5-6.5 mm longo. Pistillum 22-33 mm longum, hirsutum supra basin, aliter glabrum; praebitor pollinis angustus, costatus, 2.5-4 mm longus.

Typus: 14 km N of Newdegate-Lake King road on Holt Rock South Rd, Western Australia, 32°58'S, 119°23'E, 11 October 1994, A.S. George 17238 (*holo*: PERTH 04228731; *iso*: AD, CANB, K, MEL, NSW).

Shrub to 1 m, often sprawling, with lignotuber, often suckering. *Stems* obscured by leaf bases, tomentose. *Leaves* crowded, pinnatipartite, 7-12 cm long, 4-5.5 cm wide, glabrous above, tomentose below; lamina along midrib linear; lobes 5-9 each side, linear, pungent, widely divergent to somewhat recurved; margins revolute; petiole 5-10 mm long. *Inflorescence* sessile or on short lateral branchlet, on older stems; involucre bracts lanceolate, acute to obtuse, not spreading, glabrous with pubescent apex, the innermost to 15-22 mm long; flowers 80-100 per head. *Perianth* 20-27 mm long, villous above base, then hirsute, pale yellow; limb 5-6.5 mm long, sparsely hirsute to almost glabrous. *Pistil* 22-33 mm long, straight then strongly curving outwards, hirsute above base, then glabrous, cream; pollen presenter narrow, ribbed, 2.5-4 mm long. *Follicles* oblong but contracted near base, 9 mm long, loosely hirsute, glabrescent, striate.

Selected collections examined. Dragon Rocks Nature Reserve, 9 Dec. 1993, R. Buehrig (PERTH); 16 km W of Lake King township, P.G. Wilson 5762 (PERTH).

Distribution. Occurs between Newdegate and Frank Hann National Park and north towards Hyden.

Habitat. Grows in sandy loam, usually over laterite, in kwongan and mallee-kwongan.

Flowering period. September-October.

Conservation status. Not endangered.

Etymology. The specific epithet is derived from the Greek *xylon* (wood) and *themelios* (of a foundation or base), this species having a lignotuber in contrast to its close relative *D. cirsioides*.

Discussion. Very similar to *D. cirsioides* but may be distinguished by the low, often suckering habit and narrow, widely spaced leaf lobes. Superficially resembles *D. serratuloides* subsp. *meganotia* but distinguished especially by the larger, less hairy fruit.

Dryandra acanthopoda A.S. George, sp. nov.

Ad *D. polycephalam* Benth. affinis, a qua habitu densiore foliis latioribus (10-15 mm latis) lobis paucioribus (5-10 in quoque margine) et in petiolum lobis subulatis, et floribus majoribus (perianthium 26-30 mm longum, pistillum 30-33 mm longum), differt.

Typus: Wingedine Nature Reserve, W of Woodanilling, Western Australia, 33°36'S, 117°14'E, 26 July 1986, A.S. George 16647 (*holo*: PERTH 03262847, *iso*: CANB, MEL, NSW, PERTH 03262855, 03262863).

Shrub to 2 m with many spreading branches. *Stems* appressed-pubescent, soon glabrous. *Leaves* linear, curved, serrate, acuminate; lamina 5-13 cm long, 10-15 mm wide, white-tomentose below; margins recurved, with 5-10 teeth each side and 3-6 spine-like lobes on petiole; petiole to 15 mm long. *Inflorescences* on short lateral branchlets, crowded; involucre bracts lanceolate, the outer subulate and squarrose, the inner acute, to 15 mm long, appressed-pubescent outside; flowers 50-65 per head. *Perianth* straight, 26-30 mm long, pale yellow, curled-tomentose above base, silky on claws; limb 3-3.5 mm long, glabrous. *Pistil* straight, 30-33 mm long, glabrous except ovary; pollen presenter 1 mm long. *Follicles* up to 6, obliquely ovate, 9-13 mm long, sparsely hairy.

Selected collections examined. N of Woodanilling, 7 Oct. 1986, R. Garstone (PERTH); between Katanning and Kwobrup, 21 Dec. 1964, F.W. Humphreys (PERTH)

Distribution. Restricted to the Woodanilling-Katanning area.

Habitat. Grows in lateritic soil in tall closed shrubland, sometimes with emergent *Eucalyptus drummondii* or *E. wandoo*.

Flowering period. July-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three.

Etymology. Named from the Greek *acantha* (a thorn or prickle) and *podos* (a foot), in reference to the prickly leaf base and petiole.

Discussion. Closely related to *D. polycephala* but more bushy in habit, the leaves broader with fewer main lobes but many subulate lobes on the petiole, and the flowers larger. Follicles firmly attached; opening when dried. A collection from near Woodanilling (7 Oct. 1986, R. Garstone, PERTH) has small flowers, with the involucre bracts 9-10 mm long, perianth c. 18 mm long and pistil 22-23 mm long.

Dryandra squarrosa R. Br., Suppl. Prodr. Fl. Nov. Holl. 38 (1830) - *Josephia squarrosa* (R. Br.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type*: near King George Sound, [Western Australia], 1829, W. Baxter (*holo*: BM; *iso*: K).

Distribution. Occurs widely in south-western Western Australia from Bindoon south to the Whicher Range and east almost to Albany.

Habitat. Grows in lateritic soil, rarely in sand or clay-loam, in eucalypt forest and woodland.

There are two subspecies.

- 1 Perianth limb hirsute; perianth 19-24 mm long subsp. **squarrosa**
 1: Perianth limb glabrous; perianth 18-19 mm long subsp. **argillacea**

Dryandra squarrosa R. Br. subsp. **squarrosa**

D. carduacea Lindl., Sketch Veg. Swan R. xxxiii (1840) - *Josephia carduacea* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 278 (1891). *Type:* south-western Western Australia, 183-, J. Drummond s.n. (*holo:* CGE).

D. carduacea var. *angustifolia* Hook., Bot. Mag. 73: t. 4317 (1847). *Type:* cultivated at Royal Botanic Gardens, Kew, from seed collected in south-western Western Australia by J. Drummond (*holo:* K).

Most leaves 8-12 mm wide; teeth 5-10 each side. *Perianth* 21-24 mm long; limb 2.5-3.5 mm long, hirsute. *Pistil* 22-26 mm long; pollen presenter 0.7-1.5 mm long.

Distribution. Occurs throughout the range of the species except near the Whicher Range.

Dryandra squarrosa subsp. **argillacea** A.S. George, subsp. nov.

Folia plerumque 5-9 mm lata lobis 3-6 in quoque margine. Perianthium 18-19 mm longum, limbo 2 mm longo glabro. Pistillum 22-24 mm longum; praebitor pollinis 0.8-1 mm longus.

Typus: near Tutunup, Western Australia, 26 June 1973, A.S. George 11657 (*holo:* PERTH 04110609; *iso:* CANB, K).

Most leaves 5-9 mm wide; teeth 3-6 each side. *Perianth* 18-19 mm long; limb 2 mm long, glabrous. *Pistil* 22-24 mm long; pollen presenter 0.8-1 mm long.

Selected collections examined. Smith Rd, Whicher Range, A. Cochrane 261 (PERTH); Ruabon Rd, L. Nunn 535 (PERTH).

Distribution. Occurs on the coastal plain close to the western base of the Whicher Range.

Habitat. Grows in winter-wet clay over ironstone in open to tall shrubland.

Flowering period. June-November.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The subspecific epithet, from the Latin *argillaceus* (growing in clay), refers to the soil of the natural habitat which contrasts with the lateritic gravel usually inhabited by subsp. *squarrosa*.

Discussion. Differs consistently from the other subspecies in the smaller perianth with a glabrous limb. The leaves are usually smaller and more slender than those of subsp. *squarrosa*.

Dryandra wonganensis A.S. George, sp. nov.

Ad *D. hewardianam* Meisn. et *D. trifontinalem* A.S. George affinis, a quibus foliorum lobis angustioribus, petiolo prominente flavo, et floribus majoribus (perianthio 32-33 mm longo, pistillo 32-33 mm longo), differt.

Typus: NW of Wongan Hills on Piawaning road, Western Australia, 30°51'S, 116°40'E, 4 August 1986, A.S. George 16763 (*holo*: PERTH 03322807; *iso*: AD, CANB, K, MEL, NSW, PERTH 03322815).

Sprawling to erect *shrub* to 3 m, without lignotuber. *Stems* with a few appressed hairs, soon glabrous. *Leaves* linear, acuminate, often strongly curved, pinnatifid; lamina 4-16 cm long, 9-18 mm wide, closely tomentose below; margins revolute; lobes 4-9 each side, narrowly triangular, often slightly falcate; petiole to 15 mm long, broad and prominent on floral leaves. *Inflorescence* on lateral branchlet to 10 mm long; involucre bracts lanceolate, acute, to 12 mm long, the outer ones glabrous with shortly ciliate margins, the inner ones pubescent towards apex; flowers 45-50 per head. *Perianth* 32-33 mm long, pale yellow, curled-hirsute above base, silky above; limb 3-5 mm long, glabrous. *Pistil* straight, 32-33 mm long, glabrous except a few hairs on ovary; pollen presenter 1.8-2 mm long. *Follicles* ovate-oblong, 7-8 mm long, sparsely hairy, prominently veined.

Selected collections examined. NW of Wongan Hills, F. Lullfitz 1665 (PERTH); Wongan Hills, K. Newbey 2000 (PERTH).

Distribution. Restricted to the Wongan Hills and nearby low rises.

Habitat. Grows in lateritic soil in open woodland and dense scrub.

Flowering period. August-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. Named from the town and range of hills near its natural habitat, together with the Latin suffix *-ensis* indicating origin or place.

Discussion. Similar to *D. trifontinalis* and *D. hewardiana* but differs in the narrow leaf lobes, prominent yellowish petiole and larger flowers without scent.

Dryandra trifontinalis A.S. George, sp. nov.

Ab *D. wonganense* A.S. George lobis foliorum majoribus latioribusque et floribus minoribus (perianthio 24-25 mm longo, pistillo 25-26 mm longo) differt; ab *D. hewardiana* Meisn. ramulis floralibus brevioribus, bracteis involucrelibus ± glabris praeter marginibus ciliatis, et perianthii limbo et praebitore pollinis brevioris, differt.

Typus: W of Three Springs on Nebru Rd, Western Australia, c. 29°32'S, 115°42'E, 6 August 1986, A.S. George 16789 (*holo*: PERTH 03322742; *iso*: CANB, K, MEL, NSW, PERTH 03322750).

Openly branched *shrub* to 2 m, without lignotuber. *Stems* sparsely hirsute, soon glabrous. *Leaves* broadly linear, acute, pungent, coarsely serrate; lamina 3-16 cm long, 10-18 mm wide, closely tomentose below; margins recurved; teeth 5-10 each side, broadly obliquely triangular, pungent; petiole to 10 mm long, often absent. *Inflorescence* on lateral branchlet to 1 cm long, occasionally terminal; involucre bracts ovate to lanceolate, acute, to 10 mm long, glabrous or scurfy, with shortly ciliate margins; flowers 55-65 per head. *Perianth* 24-25 mm long, pale yellow, curled-tomentose above base, hirsute above; limb 3-4 mm long, glabrous. *Pistil* ± straight, 25-26 mm long, glabrous except silky apex of ovary; pollen presenter 1.8-2 mm long. *Follicles* oblong to ovate, 6-9 mm long, sparsely hairy, prominently veined.

Selected collections examined. W of Three Springs, *J.S. Beard* 7251 (PERTH); near Three Springs, *W.E. Blackall* 4878 (PERTH).

Distribution. Restricted to a few populations near Three Springs.

Habitat. Grows in lateritic soil in low woodland.

Flowering period. August-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The specific epithet is a Latin version of the name of the nearby town of Three Springs (*tri-*, three-, and *fontinalis*, of a spring).

Discussion. Most closely related to *D. wonganensis*, differing in the coarsely-lobed leaves and smaller flowers. Also similar to *D. hewardiana* which has the inflorescences on longer branchlets, pubescent involucre bracts with densely ciliate margins, a smaller perianth limb and smaller pollen presenter.

Dryandra stricta A.S. George, sp. nov.

Ab *D. hewardiana* Meisn. foliis confertis strictis angustis (4-9 mm latis dentibus in quoque latere 8-18) breviter dentatis, inflorescentia sessili, et limbo perianthii hirsuto, differt.

Typus: Bunny Rd, N of junction with Skipper Rd (NE of Eneabba), Western Australia, c. 29°35'S, 115°27'E, 6 August 1986, *A.S. George* 16793 (*holo:* PERTH 03322769; *iso:* CANB., K).

Bushy *shrub* to 3 m, without lignotuber. *Stems* glabrous. *Leaves* linear, ± straight, acute, pungent, serrate; lamina 5-20 cm long, 4-9 mm wide, white-tomentose below; margins revolute; teeth 8-18 each side, obliquely triangular, pungent; petiole to 5 mm long. *Inflorescence* sessile, rarely on branchlet to 5 mm long; involucre bracts lanceolate to narrowly triangular, acute to obtuse, to 13 mm long, appressed-pubescent, with densely ciliate margins; flowers 45-85 per head. *Perianth* 23-25 mm long, pale yellow, curled-tomentose above base, hirsute above; limb 2.5-3 mm long, hirsute. *Pistil* straight, 27-31 mm long, glabrous except ovary; pollen presenter 1.2-1.5 mm long, finely ribbed. *Follicles* obovate to orbicular, 6-8 mm long, sparsely hairy, prominently veined.

Selected collections examined. 14.5 km N of Badgingarra on Brand Hwy, *A.S. George* 16823 (PERTH); Alexander Morrison National Park, *E.A. Griffin* 1507 (PERTH); Coorow-Greenhead Rd, W of Brand Hwy, *S. Patrick* 1351 (PERTH).

Distribution. Occurs between Three Springs and Badgingarra.

Habitat. Grows on lateritic hills in kwongan, occasionally in sand over gravel or clay.

Flowering period. August-October.

Conservation status. Not endangered.

Etymology. The epithet, from the Latin *strictus* (straight), refers to the leaves which are usually straighter than those of related species.

Discussion. Related to *D. hewardiana* but recognized by the densely leaved branches, \pm straight, narrow, shortly toothed leaves, sessile inflorescence and hirsute perianth limb.

Dryandra echinata A.S. George, sp. nov.

Ad *D. polycephalam* Benth. affinis, a qua habitu minore densiore, foliis latioribus (6-15 mm latis) lobis majoribus, et floribus majoribus (perianthio 17-23 mm longo, pistillo 22-26 mm longo), differt.

Typus: near Red Gully Rd turnoff, Brand Hwy, Western Australia, c. 31°06'S, 115°46'E, 7 August 1986, A.S. George 16829 (*holo:* PERTH 03261492; *iso:* CANB, K, MEL, PERTH 03262839).

Shrub to 3 m, without lignotuber. *Stems* erect to spreading, sparsely glandular-tomentose, glabrescent. *Leaves* linear, recurved, acuminate; lamina 3-15 cm long, 6-15 mm wide, sparsely glandular-pubescent above and on midrib below but soon glabrous there, closely tomentose below; margins recurved, with 9-25 triangular teeth each side to 7 mm long; petiole 8-10 mm long, almost glabrous. *Inflorescence* sessile or on short branchlet, crowded towards branch apex; involucre bracts narrowly lanceolate, acuminate, to 10 mm long, appressed-tomentose outside with ciliate margins, glabrous towards apex; flowers 45-55 per head. *Perianth* 17-23 mm long, yellow with deep yellow limb, crisped-hirsute above base becoming silky above; limb 2-2.5 mm long, glabrous or with a few hairs near base. *Pistil* straight, 22-26 mm long, glabrous except ovary; pollen presenter c. 0.8 mm long, slightly swollen at base. *Follicles* obovate to rounded-oblong, 6-9 mm long, sparsely hairy, striate.

Selected collections examined. Boonanarring Brook, J.J. Alford 294 (PERTH); New Norcia, C.A. Gardner 614 (PERTH); Moore River National Park, R.D. Royce 9449 (PERTH).

Distribution. Occurs between Regans Ford, New Norcia and Gingin.

Habitat. Grows in lateritic or sandy soil in kwongan or low open woodland.

Flowering period. July-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three.

Etymology. The Latin *echinatus* (armed with many prickles or spines) refers to the very prickly habit of the plant due to the crowded leaves with pungent lobes.

Discussion. Related to *D. polycephala* but differs in the smaller, compact habit, broader leaves with larger lobes, and larger flowers. The glandular indumentum of the new growth is unusual. Variable in size of leaves and their lobes and the flowers. *Newbey* 2317 has larger flowers (perianth 25 mm long, pistil 29 mm). Referred to as *Dryandra* sp. A in N.G. Marchant *et al.*, "Fl. Perth Region" 1: 327 (1987)

Dryandra polycephala Benth., Fl. Austral. 5: 570 (1870) - *Josephia polycephala* (Benth.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* south-western Western Australia, 184-, *J. Drummond* 2: 342 (*lecto* (here chosen): K; *isolecto*: BM, NY, PERTH).

Typification. Bentham cited two collections by Drummond, viz. '1st coll., 2nd coll. n. 342'. At K there are seven sheets of the taxon collected by Drummond, all except one with the annotation 'named by Mr Bentham' and all agreeing well with the protologue. One has Drummond's original tag 342 attached, and it is labelled, in error, *Dryandra carlinoides* (a Meisner name). One has the number '42', a number referred to by Drummond in a letter to Hooker of 7 September 1842 but not cited by Bentham. Another sheet has the number 342 pencilled in. All the others have no number. I have selected as lectotype the sheet with the number 342 pencilled in. The *isolectotypes* at BM, NY and PERTH are numbered 342. A sheet at NSW has the remains of a Drummond tag attached and may also be an *isolectotype*.

Dryandra subpinnatifida C.A. Gardner, J. Roy. Soc. W. Australia 47: 58 (1964). *Type:* W of Popanyinning, Western Australia, Oct. 1962, *F. Lullfitz s.n.* (*holo*: PERTH; *iso*: PERTH).

This species has two varieties.

- 1 Flowers 40-50 per head; involucre bracts to 20 mm long; limb 3.2-3.3 mm long, densely hirsute with longer hairs towards apex; pistil 37-39 mm long; pollen presenter noticeably thickened at base var. **subpinnatifida**
- 1: Flowers c. 60 per head; involucre bracts to 12 mm long; limb c. 2.5 mm long, glabrous except a few hairs at base; pistil 34-36 mm long; pollen presenter scarcely thickened var. **imberbis**

Dryandra subpinnatifida C.A. Gardner var. **subpinnatifida**

Involucre bracts to 20 mm long; flowers c. 40 per head; floral bracts linear, obtuse, 1 mm long, hirsute. *Perianth* 27-28 mm long; limb 3.2-3.7 mm long, hirsute, more densely towards apex. *Pistil* 37-42 mm long; pollen presenter 1-1.2 mm long, cylindrical to narrowly ovoid.

Distribution. Occurs between Pingelly and Narrogin.

Dryandra subpinnatifida var. **imberbis** A.S. George, var. nov.

Bractea involucreales marginibus ciliatis apicibus subulatis pubescentibus, longissimis 10-12 mm longis; flores c. 60 per capitulum; bractea florales lineares, obtusae, 3.5 mm longae, apice et marginibus ad apicem hirsutis. *Perianthium* 25-26 mm longum, supra basin crispo-lanatum, supra hirsutum; limbus c. 2.5 mm longus, glaber praeter pilos paucos ad basin. *Pistillum* 32-36 mm longum; praebitor pollinis cylindricus basi parum tumidus, quam stylus vix crassior, vix costatus, 1-1.4 mm longus.

Typus: W of Peringillup, Western Australia, 30 September 1971, A.S. George 11068 (*holo*: PERTH 04110560; *iso*: CANB, K, MEL, PERTH 04110579).

Involucral bracts with ciliate margins and subulate, pubescent tips, the longest 11-12 mm long; flowers *c.* 60 per head; floral bracts linear, obtuse, 3.5 mm long, hirsute on upper margins and apex. *Perianth* 25-26 mm long, curled-woolly above base, hirsute above; limb *c.* 2.5 mm long, glabrous except a few hairs at base. *Pistil* 32-36 mm long; pollen presenter cylindrical with slightly swollen base, hardly thicker than style, scarcely ribbed, 1-1.4 mm long.

Selected collections examined. Near Boddington, 14 Aug. 1982, D. Backshall (PERTH); Mt Saddleback, 15 Nov. 1904, A. Morrison (PERTH); E of Bowelling, M. Pieroni 95/4 (PERTH); *c.* 12 km W of Broomehill, R.D. Royce 4804 (PERTH).

Distribution. Occurs between Boddington and Broomehill.

Habitat. Grows in gravelly loam over laterite in thick scrub, sometimes with emergent *Eucalyptus drummondii*.

Flowering period. September-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three.

Etymology. Named from the Latin *imberbis* (not bearded), in reference to the glabrous or almost glabrous perianth limb.

Discussion. The varieties overlap in distribution but have not been recorded growing together. The glabrous perianth limb readily distinguishes var. *imberbis*. Collections from Bowelling, Boddington and Mt Saddleback are from low (*c.* 50 cm high), mounded plants and may represent another variety. In the Bowelling population the involucral bracts are red, and hybridization has occurred with an adjacent population of *D. squarrosa* subsp. *squarrosa* (M. Pieroni, pers. comm.).

Dryandra longifolia R. Br., Trans. Linn. Soc. London 10: 215 (1810) - *Josephia longifolia* (R. Br.) Poir., Dict. Sci. Nat. 24: 245 (1822). *Type*: Lucky Bay [E of Esperance, Western Australia], January 1802, R. Brown Iter Australiense 3424 (*holo*: BM; *iso*: K, MEL (2 sheets), PERTH).

Dryandra longifolia has three subspecies.

- 1 Perianth 37-40 mm long; limb 4.6-5.5 mm long; pistil 38-48 mm long;
pollen presenter 2.8-3.5 mm long; involucral bracts 25-30 mm long subsp. **longifolia**
- 1: Perianth 23-29 mm long; limb 2.5-4 mm long; pistil 28-35 mm long;
pollen presenter 1.2-2 mm long; involucral bracts to 20 mm long
- 2 Perianth limb 2.5-3 mm long; pollen presenter 1.2-1.6 mm long;
involucral bracts straight subsp. **callicola**
- 2: Perianth limb 3.5-4 mm long; pollen presenter *c.* 2 mm long;
involucral bracts recurved subsp. **archeos**

Dryandra longifolia R. Br. subsp. **longifolia**

Shrub to 1.5 m. *Involucral bracts* acute, straight or slightly recurved, hirsute and \pm viscid outside, the innermost ones 25-30 mm long. *Perianth* 37-40 mm long; limb 4.6-5.5 mm long. *Pistil* 38-48 mm long; pollen presenter 2.8-3.5 mm long.

Distribution. Occurs from Cape le Grand to Cape Paisley and on Mondrain Island of the Recherche Archipelago.

Habitat. Grows in coarse sandy loam by granitic slopes, in scrub.

Flowering period. June-October.

Dryandra longifolia subsp. **archeos** A.S. George, subsp. nov.

Ab subspeciebus aliis perianthio minus hirsuto pilis \pm appressis, bracteis involucralibus hirsutioribus apice recurvo differt. Ab subsp. *longifolia* praebitore pollinis minore et ab subsp. *callicola* A.S. George majore differt.

Typus: S end, Mt Ragged, Western Australia, c. 33°28'S, 123°28'E, 1 July 1976, A.S. George 14308 (*holo:* PERTH 01108204; *iso:* CANB, K).

Shrub to 1.5 m. *Involucral bracts* acuminate, recurved, appressed-hirsute, ?not viscid, the innermost ones c. 20 mm long. *Perianth* 27-29 mm long; limb 3.5-4 mm long. *Pistil* 33-34 mm long; pollen presenter 2 mm long.

Selected collections examined. Summit of Tower Peak, Mt Ragged, A.S. George 16127 (PERTH); SW slope of Mt Ragged, P.G. Wilson 5853 (PERTH).

Distribution. Confined to Mt Ragged.

Habitat. Grows among quartzite boulders on steep slopes, in dense scrub.

Flowering period. April-June.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two. Mt Ragged is within a Nature Reserve but the plants are vulnerable to *Phytophthora*.

Etymology. The epithet is from the Greek *arche* (first) and *eos* (dawn). Growing on Mt Ragged near Israelite Bay, at the eastern limit of dryandras in the wild, this is one of the first to receive sunlight each day.

Discussion. Differs from the other subspecies in having the perianth with sparser, more appressed hairs, and in the involucral bracts being more hairy, with a more acuminate, recurved tip, and probably not viscid. The pollen presenter is smaller than that of subsp. *longifolia* but larger than that of subsp. *callicola*. The new leaves are sparsely appressed-hirsute but very soon glabrous above.

Dryandra longifolia* subsp. *calcicola A.S. George, subsp. nov.

Ab subspeciebus aliis limbo perianthii et praebitore pollinis, etiam plerumque involucro, minore, differt. Frutex ad 3 m altus. Bractee involucrales ± acutae, rectae, extus appresso-hirsutae, ?viscidae, intimae 14-20 mm longae. Perianthium 23-27 mm longum, patente-hirsutum; limbus 2.5-3 mm longus. Pistillus 28-35 mm longus; pollinis praebitor 1.2-1.6 mm longus.

Typus: W of Twilight Beach, W of Esperance, Western Australia, 33°54'S, 121°49'E, 13 October 1994, A.S. George 17243 (*holo:* PERTH 04228812; *iso:* AD, CANB, K, MEL, NSW, PERTH 04228820, 04228839).

Shrub to 3 m. *Involucral bracts* ± acute, straight, appressed-hirsute outside, ?viscid, the innermost 14-20 mm long. *Perianth* 23-27 mm long, spreading-hirsute; limb 2.5-3 mm long. *Pistil* 28-35 mm long; pollen presenter 1.2-1.6 mm long.

Selected collection examined. Near Esperance, K. Newbey 2468 (PERTH).

Distribution. Occurs to the west of Esperance Bay.

Habitat. Grows in sand over limestone, in low kwongan.

Flowering period. July-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. The known populations are close to roads. One is on the outskirts of Esperance townsite, the others are regenerating from a recent fire and have not yet set many seed.

Etymology. Named from the Latin *calx* (lime) with the indeclinable suffix *-cola*, in reference to the soil of the natural habitat. This is one of few dryandras to grow in calcareous soil.

Discussion. The small perianth limb and pollen presenter and the non-recurved involucral bracts are the main characters distinguishing this from the other subspecies.

Dryandra borealis A.S. George, sp. nov.

Ad *Dryandram armatam* R. Br. similis, a qua bracteis involucralibus majoribus (30-35 mm longis) exterioris glabris interioris appresso-pubescentibus marginibus ciliatis, limbo perianthii longiore (7-8.5 mm longo) et praebitore pollinis longiore (4.5-6 mm longo), praecipue differt.

Typus: 27 miles [c. 35 km] E of Kalbarri on road to Ajana, Western Australia, 8 September 1966, A.S. George 7930 (*holo:* PERTH 03260208; *iso:* CANB, MEL).

Sprawling *shrub* to 1 m with lignotuber, or erect to 2.5 m without lignotuber. *Stems* closely pubescent. *Leaves* broadly linear, pinnatifid, acute, pungent; lamina 4-9 cm long, 12-30 mm wide, glabrous below except fine pits; margins flat to slightly recurved; lobes 5-12 each side, slightly falcate, pungent; petiole 0-2 mm long. *Inflorescence* on short lateral branchlet or terminal; involucral bracts ovate to linear, obtuse, 30-35 mm long, the outer ones ± glabrous, the inner ones appressed-pubescent and with ciliate margins; flowers 30-50 per head. *Perianth* 32-35 mm long, golden, hirsute, the limb

glabrescent towards apex; limb 7-8.5 mm long. *Pistil* straight to gently bowed, 39-47 mm long, hirsute in lower third; pollen presenter 4.5-6 mm long, finely ribbed. *Follicles* ovate to obovate, 8-13 mm long, loosely hirsute.

Distribution. Occurs in two disjunct areas and represented by a subspecies in each, one centred on the lower Murchison River, the other in the Three Springs area.

Etymology. Named from the Latin *borealis* (northern), in reference to the distribution, this being one of the northernmost species in the genus.

Discussion. Differs from *D. armata* in the narrower leaf lobes, larger, less hairy involucre bracts and larger flowers. There are two subspecies.

- 1 Shrub with lignotuber; perianth limb 7.5-8.5 mm long subsp. **borealis**
 1: Shrub without lignotuber; perianth limb 7-7.5 mm long subsp. **elatior**

Dryandra borealis* A.S. George subsp. *borealis

Sprawling *shrub* to 1 m, with lignotuber. *Perianth* limb 7.5-8.5 mm long.

Selected collections examined. Between Northampton and Lynton, *W.E. Blackall* 2685 (PERTH); *Ajana, C.A. Gardner* 8597 (PERTH); *Yuna, W. Rogerson* 348 (PERTH).

Distribution. Relatively common between Kalbarri, Northampton and Yuna.

Habitat. Grows in pale yellow sand and in sand over laterite or sandstone, in kwongan.

Flowering period. August-September.

Conservation status. Not endangered.

Discussion. The collection *Blackall* 2685 from between Northampton and Lynton (PERTH) has unusually small flowers (*pistil* 31 mm long) and may have been collected in a dry season. One by *J. Long* 38 (PERTH) has leaves to 11 cm long and 35 mm wide and the *perianth* limb 9.5-10 mm long.

***Dryandra borealis* subsp. *elatior* A.S. George, subsp. nov.**

Frutex ramosissimus ad 2.5 m altus, sine lignotubere. *Perianthii* limbus 7-7.5 mm longus.

Typus: SW of Three Springs, Western Australia, 29°35'S, 115°41'E, 6 August 1986, *A.S. George* 16787 (*holo:* PERTH 03322793; *iso:* CANB, K, MEL).

Bushy *shrub* to 2.5 m, without lignotuber. *Perianth* limb 7-7.5 mm long.

Selected collections examined. Between Three Springs and Mingenew, *J.S. Beard* 1680 (PERTH); S of Mingenew, *A.S. George* 11680 (CANB, MEL, NSW, PERTH).

Distribution. Restricted to several small populations west and north of Three Springs.

Habitat. Grows on lateritic rises in tall scrub and low open woodland.

Flowering period. August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. Subspecific epithet is the comparative of the Latin adjective *elatus* (tall), this subspecies growing much taller than subsp. *borealis*.

Discussion. Distinguished from subsp. *borealis* mainly by the larger, non-lignotuberos habit but also usually has fewer leaf lobes, fewer flowers per head and the pistil hirsute for a shorter distance.

Ser. 3 *Marginatae*

Dryandra ser. *Marginatae* (Meisn.) A.S. George, stat. nov.

Dryandra § *Marginatae* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 473 (1856). *Type:* *D. pulchella* Meisn., *lecto* (here chosen).

Bushy shrubs without lignotuber. *Leaves* linear, closely pinnatifid. *Inflorescence* ± sessile, on old stems, not conspicuous; involucre bracts shorter than flowers. *Perianth* straight with limb incurved in bud. *Pistil* incurved, much longer than perianth, looped out prominently before anthesis; pollen presenter ovoid. *Old flowers* persistent. *Follicles* obovate, usually remaining closed until burnt. *Seed* body basal; wing notched.

A single species restricted to the Wongan Hills area. In proposing an infrageneric classification for the genus, Meisner (1856) chose not to give a rank to his groups below the level of subgenus. Here they are formally given the rank of series.

Typification. Meisner included seven species in § *Marginatae*; in the present treatment these are distributed among six series. His description of the leaves is quite appropriate for them all. *Dryandra pulchella* is selected as lectotype, since the others can all, except *D. elegans* Meisn., be placed in series named prior to the present work. *D. elegans* is a synonym of *D. tenuifolia* which has fewer, less crowded leaf lobes with wider sinuses than *D. pulchella*, hence Meisner's name is retained for the latter.

Ser. 4 *Folliculosae*

Dryandra ser. *Folliculosae* A.S. George, ser. nov.

Frutices cum vel sine lignotubere. Folia pinnatisecta, marginibus revolutis. Receptaculum prominenter convexum. Inflorescentia terminalis, conspicua; bractee involucrales quam floribus breviores. Perianthium rectum; limbus antea anthesin ?incurvus. Pistillum incurvum, perianthium excedens; praebitor pollinis incrassatus, costatus. Flores veteres persistentes. Folliculi numerosi, valde affixi, cuneati.

Typus: D. fraseri R. Br.

Shrubs with or without lignotuber. *Leaves* pinnatisect; margins revolute. *Inflorescence* terminal, conspicuous; involucre bracts shorter than flowers; receptacle very convex. *Perianth* straight; limb incurved before anthesis. *Pistil* incurved, exceeding perianth; pollen presenter slightly thickened, ribbed. *Old flowers* persistent. *Follicles* many, firmly attached, cuneate.

Monotypic. Follicles usually prominent.

Etymology. Named from the Latin *folliculus* (a follicle) with the suffix *-osus* (indicating abundance), in reference to the follicles usually being quite numerous in the confructescence.

Dryandra fraseri R. Br., Suppl. Prodr. Fl. Nov. Holl. 39 (1830) - *Josephia fraseri* (R. Br.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* Swan River, [Western Australia], March 1827, C. Fraser (*holo:* BM; *iso:* K).

A variable species, here divided into 3 varieties.

- 1 Perianth claws pubescent to hirsute; shrub to 1 m with lignotuber var. **fraseri**
- 1: Perianth claws glabrous or sparsely pubescent
- 2 Pistil 30-35 mm long; shrub to 1 m with lignotuber var. **ashbyi**
- 2: Pistil 38-42 mm long; shrub to 6 m without lignotuber var. **oxycedra**

Dryandra fraseri R. Br. var. **fraseri**

Shrub to 1 m, with lignotuber. *Involucral bracts* pubescent at least in upper half to one-third. *Perianth* claws pubescent to hirsute. *Pistil* 30-37 mm long.

Distribution. Widespread from near Geraldton to Cranbrook and inland to Manmanning, Kellerberrin and Corrigin.

Habitat. Grows in gravelly clay, sandy loam and granitic soil, in kwongan and woodland.

Flowering period. July-September.

Dryandra fraseri var. **ashbyi** (B.L. Burt) A.S. George, stat. et comb. nov.

Dryandra ashbyi B.L. Burt, Kew Bull. 1939, 183 (1939). *Type:* cultivated at Blackwood, S.A., from seed collected at Yuna, 30-40 miles [48-62 km] NE of Geraldton, Western Australia, 193-, E. Ashby 39 (*holo:* K; possible *iso:* NSW).

Shrub to 1 m, with lignotuber. *Involucral bracts* glabrous to prominently pubescent. *Perianth* claws glabrous or sparsely pubescent. *Pistil* 30-35 mm long.

Distribution. Occurs from the Geraldton area north to Kalbarri and inland to Yuna.

Habitat. Grows in sandy loam or rocky loam in open shrubland and kwongan.

Flowering period. May-July.

Conservation status. Not endangered.

Discussion. Differs from var. *fraseri* in the glabrous or almost glabrous perianth claws. The leaf lobes are fewer (4-8 each side) than in southern, typical populations of var. *fraseri* but similar to populations of the latter from the Yandanooka-Arrowsmith area. The involucre bracts tend to be wider and vary from almost glabrous to prominently pubescent, the hairs usually very dark. There is far too much variation in the indumentum of the involucre bracts for this taxon to be recognized at specific rank.

Dryandra fraseri* var. *oxycedra A.S. George, var. nov.

Ab subspeciebus aliis frutice elatiore (ad 6 m alto) sine lignotubero, foliis 25-40 mm latis, bracteis involucrelibus glabris praeter pilis atris appressis ad apicibus, perianthii unguibus glabris vel parce pubescentibus, et pistillo 38-42 mm longo, differt.

Typus: SW of Three Springs, c. 29°34'S, 115°43'E, Western Australia, 1986, A.S. George 16788 (*holo:* PERTH 04228901; *iso:* CANB, K, NSW).

Shrub to 6 m without lignotuber. *Leaves* 25-40 mm wide. *Involucre bracts* glabrous except short appressed dark hairs on tips. *Perianth claws* glabrous or sparsely pubescent. *Pistil* 38-42 mm long.

Selected collection examined. W of Three Springs, H. Demarz 8561 (PERTH).

Distribution. Restricted to a few populations near Three Springs.

Habitat. Grows in gravelly loam in thick scrub.

Flowering period. July-August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One.

Etymology. Named from the Greek *oxys* (sharp) and the Latin *cedrus* (a cedar), this plant having pungent leaf lobes and a tall dense habit resembling a cedar.

Discussion. The tall, non-lignotuberous habit is very different from the low form of the two other varieties but the morphology otherwise is very similar except for having fewer, longer leaf lobes and slightly larger flowers. It is sometimes sympatric with var. *fraseri*.

Ser. 5 *Acrodontae*

Dryandra ser. *Acrodontae* (Meisn.) A.S. George, stat. nov.

Dryandra § *Acrodontae* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 479 (1856). Type: *D. carlinoides* Meisn., *lecto* (here chosen).

Small erect *shrubs*, with or without lignotuber. *Leaves* narrowly obovate-cuneate and sparsely serrate, or linear and pinnatifid; margins recurved or revolute. *Inflorescence* terminal or on short lateral branchet; involucre bracts shorter than flowers. *Perianth* straight; limb incurved before anthesis. *Pistil* curved, longer than perianth; pollen presenter small, narrow. *Old flowers* persistent. *Follicles* transversely elliptic to obovate, usually remaining closed until burnt. *Seed body* basal; wing notched.

A series of three species in the kwongan and shrublands north of Perth.

Typification. Meisner included two species in this taxon, both retained here. His diagnosis is appropriate to both, and *D. carlinoides* is selected as the first of the two in his treatment.

Dryandra kippistiana Meisn., in A.L.P.P. de Candolle, Prodr. 14: 473 (1856) - *Josephia kippistiana* (Meisn.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* south-western Western Australia, 184-, *J. Drummond* 4: 343 (*holo:* NY; *iso:* BM, CGE, K, MEL, PERTH).

There are two varieties.

- 1 Perianth 12-17 mm long; pistil 19-22 mm long; involucre bracts to 6-9 mm long; lignotuber absent..... var. ***kippistiana***
 1: Perianth 18-20 mm long; pistil 24-25 mm long; involucre bracts to 10 mm long; lignotuber present var. ***paenepeccata***

Dryandra kippistiana Meisn. var. ***kippistiana***

Shrub without lignotuber. Inner *involucre bracts* 6-9 mm long. *Perianth* 12-17 mm long. *Pistil* 19-22 mm long.

Distribution. Occurs from Eneabba south to Mogumber and New Norcia.

Habitat. Grows in sand, sand over laterite and in laterite, and near Mogumber on schistose hills, in kwongan.

Flowering period. August-October.

Dryandra kippistiana Meisn. var. ***paenepeccata*** A.S. George, var. nov.

Frutex lignotubero. Bractae involucrales interiores ad 10 mm longae. Perianthium 18-20 mm longum. Pistillum 24-26 mm longum.

Typus: N of Coorow-Greenhead Rd along Willis Rd, Western Australia, 30°07'S, 115°30'E, 31 October 1986, A.S. George 16866 (*holo:* PERTH 04228898; *iso:* CANB, NSW).

Shrub with lignotuber. Inner *involucre bracts* to 10 mm long. *Perianth* 18-20 mm long. *Pistil* 24-26 mm long.

Selected collections examined. Mt Peron, E.A. Griffin 2451 (PERTH); Wongong, Oct. 1901, Miss Lambert (PERTH).

Distribution. Occurs in localities scattered over the range of the species, including Armadale and Wungong, south-east of Perth but now rare in that area.

Habitat. Grows in gravelly loam or sand over gravel in kwongan.

Flowering period. October–November.

Conservation status. Not endangered.

Etymology. Named from the Latin *paene* (almost) and *pecco, peccare* (to make a mistake). For some time during this research this taxon was thought to be related most closely to *D. sclerophylla*, and it was late in the revision before I realized that it should be placed with *D. kippistiana*.

Discussion. The leaves are usually straighter, more erect and more coarsely lobed than in var. *kippistiana*. Flowers later.

Ser. 6 *Capitellatae*

Dryandra ser. *Capitellatae* A.S. George, ser. nov.

Frutices effusae cum lignotubere. Folia pinnatifida marginibus revolutis. Inflorescentia in ramulo brevi ex ramo veteriore, interdum terminalis; bractae involucales quam flores breviores. Perianthium rectum; limbus antea anthesin incurvus. Pistillum rectum, incurvum vel recurvum; praebitor pollinis parce incrassatus, costatus. Flores veteres persistentes. Folliculi ellipsoidales, parvi, hirsuti. Semina ala parvissima.

Typus: *D. serratuloides* Meisn.

Sprawling *shrubs* with lignotuber. *Leaves* pinnatifid; margins revolute. *Inflorescence* on short branchlet from older stems, sometimes terminal; involucre bracts shorter than flowers. *Perianth* straight; limb incurved before anthesis. *Pistil* straight, incurved or outcurved; pollen presenter slightly thickened, ribbed. *Old flowers* persistent. *Follicles* ellipsoidal, small, hirsute. *Seed body* basal; wing very small.

A series of two species between Eneabba and Nyabing.

Etymology. Series name from the Latin *capitulum* (a head) with the diminutive suffix *-ella*, in reference to the small flower heads of the included species.

Dryandra serratuloides Meisn., Hooker's J. Bot. Kew Gard. Misc. 7: 123 (1855) - *Josephia serratuloides* (Meisn.) Kuntze, Revis. Gen. Pl. 2: 578 (1891) as *serratulodes*. *Type:* south-western Western Australia, 1850–51, *J. Drummond* 6: 213 (*iso:* B, BM, CGE, K (2 sheets), MEL, NSW, PERTH).

Occurs between Eneabba and Mogumber, represented by two subspecies.

- 1 Leaves with 6-12 lobes each side; innermost involucre bracts
11-20 mm long..... subsp. **serratuloides**
- 1: Leaves with 20-33 lobes each side; innermost involucre bracts
22-25 mm long..... subsp. **perissa**

Dryandra serratuloides Meisn. subsp. **serratuloides**

Leaves with 6-12 lobes each side, the lobes narrowly triangular-lanceolate. *Innermost involucre bracts* 11-12 mm long; floral bracts 3.5 mm long. *Perianth* 19-20 mm long; limb 4.5-5 mm long. *Pistil* 25-27 mm long, curved upwards and inwards; pollen presenter 3 mm long.

Selected collections examined. N of Mogumber, 21 September 1984, C. Chapman (PERTH); Gillingarra Nature Reserve, S. Patrick 675 (PERTH).

Distribution. Occurs around Gillingarra and Mogumber.

Habitat. Grows in loam over laterite, in clay-loam over laterite and in sandy gravel, in low kwongan or open scrub, sometimes with emergent *Eucalyptus wandoo*.

Flowering period. July-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Declared Rare.

Discussion. After anthesis the pistil is exerted centrifugally but then curves upwards and straightens below the pollen presenter, in contrast to *D. meganotia* in which it curves evenly outwards.

Dryandra serratuloides subsp. **perissa** A.S. George, subsp. nov.

Ab subsp. *serratuloides* foliis lobis 20-33 in quoque margine; bracteis involucrelibus interioribus 22-25 mm longis, differt.

Typus: 11 km E of Brand Hwy on Tootbardi Road, Western Australia, 30°08'S, 115°29'E, 7 August 1986, A.S. George 16820 (*holo:* PERTH 04110587; *iso:* CANB, K, MEL).

Leaves to 19 cm long, 7-12 mm wide, with 20-33 narrowly triangular lobes each side, the sinuses 1.5-6 mm across. *Involucre bracts* ovate (outer) to lanceolate-oblong (inner), the margins and upper lamina silky-hirsute, the innermost 22-25 mm long; floral bracts oblong, slightly hairy, 2.8-3 mm long. *Perianth* 20-23 mm long, silky-hirsute but tip of limb glabrous; limb 5-6 mm long. *Pistil* 22-25 mm long; pollen presenter 3-3.8 mm long. *Follicles* obovate, thick, densely hirsute, 6 mm long.

Selected collections examined. Marchagee Track, E.A. Griffin 3464 (NSW, PERTH); Alexander Morrison National Park, S.J. Patrick 901B (PERTH); Boothendarra Hill, S.J. Patrick 1025 (PERTH).

Distribution. Occurs from Alexander Morrison National Park south to Badgingarra and Boothendarra Hill.

Habitat. Grows in lateritic gravelly loam, in mallee-kwongan with *Eucalyptus drummondii*.

Flowering period. August-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three.

Etymology. Epithet from the Greek *perissos* (having more than the regular number), the subspecies having many more leaf lobes than subsp. *serratuloides*.

Discussion. Easily distinguished from subsp. *serratuloides* by the greater number of lobes to the leaves. The involucre bracts are longer and tend to be more hairy. The perianth is usually slightly longer than in subsp. *serratuloides* but the pistil is usually shorter.

Dryandra meganotia A.S. George, sp. nov.

Ab *D. serratuloide* Meisn. subsp. *serratuloide* lobis foliorum linearibus et bracteis involucrealibus longioribus (17-20 mm longis) praecipue differt; et ab subsp. *perissa* A.S. George lobis foliorum paucioris (6-10 in quoque margine) pungentibus et bracteis involucrealibus brevioribus, differt.

Typus: Dongolocking Nature Reserve, Western Australia, c. 33°03'S, 117°42'E, 14 October 1994, A.S. George 17247 (*holo:* PERTH 04228693; *iso:* CANB, K, MEL, NSW).

Shrub to 1 m. *Leaves* 3-7 cm long, 10-25 mm wide, the midrib usually curved; lobes 6-10 each side, at c. 80°-90°, linear, acute, pungent, the margins revolute. *Involucreal bracts* ovate to lanceolate, obtuse, silky on margins, otherwise glabrous except a few short hairs towards apex outside, the innermost 17-20 mm long; floral bracts linear, 2.5 mm long, loosely hirsute. *Perianth* 22-23 mm long, densely silky; limb 5-6.2 mm long. *Pistil* 26-30 mm long, curved evenly outwards; pollen presenter 3-4 mm long. *Follicles* 5 mm long.

Selected collections examined. Reserve 16479, NW of Jitarning, J.M. Browne 003 (PERTH); c. 5 km NW of Nyabing, K. Newbey 3014 (PERTH); 7 km N of Harris Smith, E. Wittwer 2039 (PERTH).

Distribution. Occurs in the Great Southern, from Kulin to Nyabing.

Habitat. Grows in clay-loam or sandy loam over gravel, in kwongan, sometimes with Wandoo.

Flowering period. October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three.

Etymology. Named from the Greek *me-gas* (large) and *notios* (southern), this species occurring in the region of south-western Western Australia known as the Great Southern.

Discussion. The flowers are a brighter yellow than those of *D. serratuloides* subsp. *perissa* (subsp. *serratuloides* has pinkish flowers). Sometimes resembles *D. cirsioides* and *D. xylothemelia* but may be distinguished especially by the smaller flowers and fruit.

Ser. 7 *Ilicinae*

Dryandra ser. *Ilicinae* (Meisn.) A.S. George, stat. nov.

Dryandra § *Ilicinae* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 467 (1856). Type: *D. praemorsa* Meisn., lecto (here chosen).

Mostly erect *shrubs* or small *trees*, without lignotuber. *Leaves* cuneate, serrate. *Inflorescence* terminal or on short lateral branchlet, large, conspicuous; involucre bracts shorter than flowers. *Perianth* straight. *Pistil* curved, prominently exerted adaxially before anthesis, longer than perianth; pollen presenter narrow, ribbed. *Old flowers* soon falling. *Follicles* obovate, loosely attached, usually opening when mature. *Seed body* basal; wing large, notched.

A series of 3 species occurring between Perth and Hopetoun.

Typification. Meisner included four species in § *Ilicinae*. Of these, *D. cuneata* is here placed in ser. *Armatae* and *D. floribunda* (= *D. sessilis*) in ser. *Floribundae*. His brief diagnosis applies equally well to the other two - *D. praemorsa* and *D. quercifolia* - and the former is selected as lectotype as the first listed by Meisner.

Dryandra praemorsa Meisn., in J.G.C. Lehmann, Pl. Preiss. 2: 265 (1848) - *Josephia praemorsa* (Meisn.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). Type: south-western Western Australia, 184-, *J. Drummond* 2: 339 (iso: K).

There are two varieties.

- 1 Pistil 30-38 mm long; leaves usually 2.5-6 cm long, 1-4 cm wide var. **praemorsa**
 1: Pistil 47-52 mm long; leaves usually 4-11 cm long, 2.5-6 cm wide var. **splendens**

Dryandra praemorsa Meisn. var. **praemorsa**

Dryandra praemorsa var. *elongata* Meisn., in A.L.P.P. de Candolle, Prodr. 14: 467 (1856). Type: south-western Western Australia, 184-, *J. Drummond* 5: 422 (iso: BM, K (2 sheets), MEL, NY).

Leaves 2.5-6 cm long, 1-4 cm wide. *Pistil* 30-38 mm long; pollen presenter 2-2.5 mm long.

Distribution. Occurs between Clackline and Dwellingup.

Habitat. Grows in lateritic in Jarrah-Marri forest and by granitic slopes.

Flowering period. September-October.

Selected collections examined. Mt Randall, 31 July 1932, *C.A. Gardner s.n.* (PERTH); Serpentine Falls, 25 Aug. 1941, *C.A. Gardner s.n.* (PERTH); NW of Dwellingup, *A.S. George* 17181 (PERTH); Clackline, Nov. 1939, *B.T. Goadby* (PERTH).

Conservation status. Currently not endangered but vulnerable to *Phytophthora* and to frequent burning (most populations are in State forest which is control-burned).

Discussion. Some collections are intermediate between the two subspecies (see below).

Dryandra praemorsa* var. *splendens A.S. George, var. nov.

Ab var. *praemorsa* foliis et pistillo majore differt. Folia 4-11 cm longa, 2.5-6 cm lata. Pistillum 47-52 mm longum; praebitor pollinis 4-5 mm longus.

Typus: c. 10 km E of Albany Hwy on road from North Bannister to Wandering, Western Australia, c. 32°35'S, 116°31'E, 14 October 1994, A.S. George 17251 (*holo:* PERTH 04228863; *iso:* CANB, K, NSW, PERTH 04228871).

Leaves 4-11 cm long, 2.5-6 cm wide. *Pistil* 47-52 mm long; pollen presenter 4-5 mm long.

Selected collections examined. c. 60 km SSE of Perth on Albany Hwy, Sept. 1925, C.A. Gardner s.n. (PERTH); Bannister River, Nov. 1962, F. Lullfitz (PERTH).

Distribution. Occurs from the Brookton Hwy south to Bannister.

Habitat. Grows in lateritic gravel, in Jarrah-Marri open forest.

Flowering period. September-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three. The populations are vulnerable to *Phytophthora*.

Etymology. The Latin epithet refers to the large conflorescence.

Discussion. The leaf teeth are usually coarser than in var. *praemorsa*. There are two intermediate collections: Beraking, 1934, *coll. unknown* (PERTH) has leaves 4-9.5 cm long and 2.5-4 cm wide; pistil 37-40 mm long; Bannister River, Nov. 1962, F. Lullfitz (PERTH), has pistils 44-45 mm long.

Dryandra anatona A.S. George, sp. nov.

Frutex angustus ad 5 m altus, caule principali uno et ramulis lateralibus brevibus, sine lignotubero. Caulis tomentosus hirsutusque. Folia cuneata, obtusa ad acuta, marginibus recurvis irregulariter serratis; lamina 3-7 cm longa, 12-22 mm lata, supra hirsuta sed glabrescens, infra albo-tomentosa. Inflorescentia terminalis vel in ramulo laterali; bracteae involucales lineari-lanceolatae, acutae ad acuminatae, pubescentes marginibus hirsutis, exteriores squarrosae, interiores 20-25 mm longae; flores c. 170 per capitulum. Perianthium 39-40 mm longum, supra basin hirsutum, deinde pubescens, limbo 5.5-6 mm longo hirsuto. Pistillum 49-50 mm longum, glabrum; praebitor pollinis angustus, costatus, 2-3 mm longus. Folliculi obovoidei, pubescentes, 23-24 mm longi.

Typus: SSE of Mt Magog, Stirling Range National Park, Western Australia, 34°26'S, 117°57'E, 5 November 1986, A.S. George 16886 (*holo:* PERTH 04228707; *iso:* CANB).

Shrub to 5 m with 1 main stem and short laterals, without lignotuber. *Stems* tomentose and hirsute. *Leaves* cuneate, obtuse to acute, irregularly serrate, mucronate, undulate; lamina 3-7 cm long, 12-22 mm wide, hirsute and glabrescent above, white-tomentose below; margins recurved; teeth

10-12 each side; petiole 3-7 mm long, hirsute. *Inflorescence* terminal or on short lateral branchlet; receptacle T-shaped; involucre bracts linear-lanceolate, acute to acuminate, the outer ones squarrose, pubescent with hirsute margins, the innermost 20-25 mm long; flowers *c.* 170 per head. *Perianth* 39-40 mm long, hirsute above base, then pubescent; limb 5.5-6 mm long, acute, hirsute, the apical hairs coarser. *Pistil* 49-50 mm long, glabrous; ovary long-hirsute; pollen presenter narrow above slender neck, ribbed, 2-3 mm long. *Follicles* obovoid, pubescent, 23-24 mm long, hirsute.

Selected collections examined. Moongoongoonderup Hill, Stirling Range, B. Barnsley 735 (CANB, PERTH); Stirling Range Drive, A. Cochrane 368 (PERTH).

Distribution. Known from a single locality in the Stirling Range National Park.

Habitat. Grows on slopes in sandy soil over gravelly shale, in thick kwongan.

Flowering period. January.

Conservation status. Dept of Conservation & Land Management Conservation Code: Declared Rare. The only known population is infected by *Phytophthora* and has been reduced to a few plants. Unless urgent conservation action is taken it will be extinct within one or two years.

Etymology. Epithet from the Greek *tonos* (a drawing out or stretching) with the prefix *ana-* (upwards), in reference to the tall, spindly habit.

Discussion. This species is remarkable for the tall, spindly habit and large follicles. It is placed in ser. *Ilicinae* in which it is allied to *D. praemorsa* but has a very spindly habit, narrower leaves with smaller lobing and much larger follicles. Superficially it also resembles *D. falcata* but is more hairy, with long (15-17 mm) floral bracts and a very different fruit. The juvenile leaves are obovate to cuneate and shortly serrate.

Ser. 8 *Dryandra*

Dryandra R. Br. ser. *Dryandra* - *Dryandra* ser. *Formosae* Benth., Fl. Austral. 5: 564, 572 (1870).
Type: *D. formosa* R. Br.

?*Josephia* § *Dryandra* Kuntze, in T.E. von Post & C.E.O. Kuntze, Lex. Gen. Phan. 299 (1903) as *Dryandera*. *Type:* none cited.

Erect *shrubs* without lignotuber. *Leaves* broadly linear, pinnatifid. *Inflorescence* terminal or on short lateral branchlet, conspicuous; involucre bracts broad, shorter than flowers. *Perianth* straight, the limb inflexed before anthesis. *Pistil* stout, curved, longer than perianth; pollen presenter narrow, finely ribbed. *Old flowers* soon falling. *Follicles* several, obovate, often opening when mature, usually firmly attached. *Seed* wing terminal, notched.

A series of 3 species occurring between Eneabba and Albany.

Dryandra nobilis Lindl., Sketch Veg. Swan R. xxxiii (1840) - *Josephia nobilis* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* south-western Western Australia, 183-, J. Drummond s.n. (neo (here nominated): K).

Typification. Unusually for the many species described by Lindley in this work, there is no type at CGE. The neotype is from one of Drummond's early, unnumbered collections and may well be a duplicate of material seen by Lindley.

There are two subspecies.

- 1 Leaf lobes usually 14-24 each side; lamina 8-25 mm wide; sinuses 6-15 mm across; flowers not scented; perianth golden including limb subsp. **nobilis**
- 1: Leaf lobes usually 20-30 each side; lamina 5-9 mm wide; sinuses 3-7 mm across; flowers strongly and sweetly scented; perianth red-pink with greenish limb subsp. **fragrans**

Dryandra nobilis* Lindl. subsp. *nobilis

Leaf lobes mostly 14-24 each side; lamina 8-25 mm wide; sinuses 6-15 mm across. *Flowers* not scented. *Perianth* golden including limb.

Distribution. Occurs between Walebing and Katanning.

Habitat. Grows on lateritic rises in eucalypt woodland and tall shrubland.

Flowering period. July-October.

***Dryandra nobilis* subsp. *fragrans* A.S. George, subsp. nov.**

Foliorum lobi plerumque 20-30 in quoque margine; lamina 5-9 mm lata, sinus 3-7 mm latis. Flores iucunde odorati; perianthium roseum limbo virenti.

Typus: Willis Rd, N of Coorow-Greenhead Rd, Western Australia, 29°59'S, 115°32'E, 5 August 1986, A.S. George 16786 (*holo:* PERTH 04228421; *iso:* CANB, K, NSW).

Leaf lobes mostly 20-30 each side; lamina 5-9 mm wide; sinuses 3-7 mm across. *Flowers* strongly and sweetly scented. *Perianth* red-pink with greenish limb.

Selected collections examined. c. 24 km NW of Badgingarra, A.S. George 6769 (PERTH); 14.5 km N of Badgingarra, on Brand Hwy, A.S. George 16824 (PERTH).

Distribution. Occurs between Eneabba and Badgingarra.

Habitat. Grows on lateritic rises, in thick kwongan.

Flowering period. July-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three.

Etymology. The Latin epithet *fragrans* (pleasantly scented) refers to the flowers.

Discussion. Differs from subsp. *nobilis* in having narrower leaves with usually smaller lobes, in the scented flowers and in the perianth being reddish pink with a green limb.

Ser. 9 *Foliosae*

Dryandra ser. *Foliosae* A.S. George, ser. nov.

Frutices plerumque rectae, sine lignotubero. Folia conferta, linearia, pinnatifida. Inflorescentia plerumque in ramulo brevi laterali, occulta, raro terminalis; bracteae involucrales flores c. aequilongae vel parum breviores; receptaculum planum. Perianthium rectum ad leniter curvatum, limbo ante anthesin inflexo. Pistillum curvatum, perianthio longiore; praebitor pollinis angustus, costatus. Flores veteres persistentes. Folliculi magni, curvato-obovati, valde affixi.

Typus: *D. mucronulata* R. Br.

Mostly erect *shrubs*, without lignotuber. *Leaves* crowded, linear, pinnatifid. *Inflorescence* usually on short lateral branchlet from old stem, concealed, occasionally terminal; involucral bracts c. as long as or slightly shorter than flowers; receptacle flat. *Perianth* straight to gently curved, the limb inflexed before anthesis. *Pistil* curved, longer than perianth; pollen presenter narrow, ribbed. *Old flowers* persistent. *Follicles* large, curved-obovate, usually remaining closed until burnt, firmly attached.

A series of 3 species of shrublands and kwongan between Busselton and Ravensthorpe.

Etymology. The epithet, from the Latin *folium* (a leaf) and the suffix *-osus* (indicating abundance), refers to the densely leafy habit of the 3 species in the series.

Dryandra mucronulata R. Br., Trans. Linn. Soc. London 10: 213 (1810) - *Josephia mucronulata* (R. Br.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* between Princess Royal Harbour and [West] Cape Howe, [Western Australia], December 1801, R. Brown Iter Australiense 3420 (*holo:* BM; *iso:* K, MEL, PERTH).

Discussion. Distinguished from the closely related *D. baxteri* by the broad, abruptly acuminate silky involucral bracts, the smaller flowers and the slightly thickened, ribbed pollen presenter.

There are 2 subspecies.

- 1 Leaves 5-12 mm wide; sinuses V-shaped; teeth of leaves subtending inflorescence straight; perianth 15-20 mm long; pistil 20-25 mm long subsp. **mucronulata**
- 1: Leaves 4-7 mm wide; sinuses \pm U-shaped; teeth of leaves subtending inflorescence often retrorse; perianth 27-30 mm long; pistil 34-38 mm long ... subsp. **retrorsa**

Dryandra mucronulata R. Br. subsp. **mucronulata**

Leaves 5-12 mm wide; teeth of leaves subtending inflorescence straight; sinuses V-shaped, 3-6 mm across. *Perianth* 15-20 mm long; limb 3 mm long. *Pistil* 20-25 mm long; pollen presenter 1.5 mm long.

Selected collections examined. Mt Toolbrunup, A.S. George 10873 (PERTH); near junction of Salt River Rd and Red Gum Pass Rd, A.S. George 16656 (PERTH); North Point, Two Peoples Bay, A.S. George 6281 (PERTH); 60 km NE of Albany on Hassell Hwy, D.J.E. Whibley 5233 (PERTH).

Distribution. Occurs in the western and central parts of the Stirling Range National Park and south to Albany and Cheyne Beach.

Habitat. In the Stirling Range grows in gravelly loam in mallee kwongan and in rocky shale in tall shrubland, elsewhere in sand in kwongan.

Flowering period. May-July.

Dryandra mucronulata R. Br. subsp. **retrorsa** A.S. George, subsp. nov.

Ab subsp. *mucronulata* foliis 4-7 mm latis; dentibus foliorum inflorescentiae cingentium plerumque retrorsis; sinibus U-formis, 2-5 mm latis; perianthio 27-30 mm longo, limbo 3.5-4 mm longo; pistillo 34-38 mm longo, et praebitore pollinis 2 mm longo, differt.

Typus: SW of Cranbrook, Western Australia, 34°16'S, 116°59'E, 20 May, 1995, A.S. George 17254 (*holo:* PERTH 04228499; *iso:* CANB, K, MEL, NSW, PERTH 04228502).

Leaves 4-7 mm wide; teeth of leaves subtending inflorescence often retrorse; sinuses ± U-shaped, 2-5 mm across. *Perianth* 27-30 mm long; limb 3.5-4 mm long. *Pistil* 34-38 mm long; pollen presenter 2 mm long.

Selected collections examined. NW of Cranbrook, A.S. George 9492 (PERTH); SW of Broomehill, 25 July 1963, K. Newbey 709D (PERTH).

Distribution. Near Cranbrook and Broomehill.

Habitat. Grows in clay in *Eucalyptus wandoo* woodland and in laterite in tall scrub.

Flowering period. July-August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. The only known extant population (of about ten plants) is on a narrow road verge. The species appears to have died out at the other locality near Cranbrook, and that near Broomehill is probably now cleared.

Etymology. The epithet is from the Latin *retrorsus* (turned backwards), in reference to the teeth and lobes of the floral leaves.

Discussion. Flowers larger than those of subsp. *mucronulata*, leaves narrower with scalloped margins.

Ser. 10 *Decurrentes*

Dryandra ser. *Decurrentes* (Meisn.) A.S. George, stat. nov.

Dryandra § *Decurrentes* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 476 (1856). Type: *D. comosa* Meisn., lecto (here chosen).

Bushy shrubs without lignotuber. Leaves linear, sparsely serrate. Inflorescence sessile or on short branchlet, on older stem; involucre bracts as long as or exceeding flowers. Perianth straight, the limb often inflexed before anthesis. Pistil curved, longer than perianth; pollen presenter small, narrow. Old flowers persistent. Follicles obovate, usually remaining closed until burnt, fairly firmly attached.

A single species confined to the Wongan Hills district.

Typification. Meisner included eleven species in this group, here considered to belong to seven series. All except *D. tenuifolia* and *D. comosa* can be placed in previously named series. Of these two species, the latter has a slight edge in matching the protologue in having leaves always with widely spaced lobes that are more prominently decurrent than in *D. tenuifolia* (Meisner described them as 'lobis plus minus remotis brevibus . . . decurrenti-confluentibus').

Ser. 11 *Tenuifoliae*

Dryandra ser. *Tenuifoliae* A.S. George, ser. nov.

Frutices recti vel prostrati sine lignotubero. Folia linearia, breviter pinnatifida, serrata vel integra; petiolus gracillimus. Inflorescentia in ramulo brevi laterali inter folia veteria. Perianthium rectum limbo recto. Pistillum rectum vel leviter curvatum, perianthio brevior; praebitor pollinis non incrassatus, costatus. Flores veteres persistentes. Folliculi obovati, glabri, leniter affixi.

Typus: *D. tenuifolia* R. Br.

Erect or prostrate shrubs without lignotuber. Leaves linear, shortly pinnatifid, serrate or entire; petiole very slender. Inflorescence on short lateral branchlet among older foliage. Perianth straight, the limb erect. Pistil straight or gently curved, shorter than perianth; pollen presenter not thickened, ribbed. Old flowers persistent. Follicles obovate, glabrous, loosely attached.

Two species widespread between Arthur River and Israelite Bay. Differs from ser. *Decurrentes* in having the pistil shorter than the perianth, and from ser. *Runcinatae* in the non-succulent perianth. The petiole of *D. tenuifolia* is remarkably slender, 0.1-0.2 mm wide.

Dryandra tenuifolia R. Br., Trans. Linn. Soc. London 10: 215 (1810) - *Josephia tenuifolia* (R. Br.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). Type: Bay I [Lucky Bay, E of Esperance, Western Australia], January 1802, R. Brown Iter Australiense 3425 (holo: BM; iso: K (2 sheets), MEL).

Distribution. Widespread in southern Western Australia from near Darkan and the Beaufort River (south of Williams) to Cape Arid, east of Esperance.

There are two varieties.

- 1 Plant bushy, ± erect; leaves pinnatifid to serrate for all or most of their length var. **tenuifolia**
- 1: Plant prostrate or procumbent; leaves entire or serrate only in upper part var. **reptans**

Dryandra tenuifolia* R. Br. var. *tenuifolia

D. elegans Meisn., in A.L.P.P. de Candolle, Prodr. 14: 473 (1856) - *D. tenuifolia* var. *elegans* (Meisn.) Benth., Fl. Austral. 5: 582 (1870). Type: south-western Western Australia, 184-, *J. Drummond* 4: 317 (holo: NY; iso: BM, CGE, K (2 sheets), MEL).

Shrub bushy, the branches erect or spreading, to 1 m tall. *Leaves* pinnatifid or serrate for most of their length.

Distribution. Occurs from Kamballup to Cape Arid, including parts of the Stirling Range.

Habitat. Grows in sand over gravel, clay-loam and gravel, in kwongan, often with emergent mallees.

Flowering period. March-June.

Conservation status. Not endangered.

Discussion. Some collections are intermediate between the varieties.

***Dryandra tenuifolia* R. Br. var. *reptans* A.S. George, var. nov.**

Frutex prostratus vel procumbens. Folia integra vel non nisi ad apicem serrata.

Typus: c. 54 km S of Williams, Western Australia, 28 July 1953, *R. Melville* 4359 & *R. D. Royce* (holo: PERTH 01791567; iso: HO, K, MEL).

Shrub prostrate or procumbent. *Leaves* entire, or serrate only in upper part.

Selected collections examined. Toompup Rd, 6.1 km S of Gnowangerup-Ongerup rd, Western Australia, 34°03'S, 118°27'E, 29 July 1986, *A.S. George* 16676 (PERTH); c. 16 km E of Ongerup, *K. Newbey* 881 (PERTH); c. 28 km W of Ravensthorpe and 12 km N of the Ravensthorpe-Ongerup road, *P.G. Wilson* 7130 (PERTH).

Distribution. Occurs from near Darkan and the Beaufort River to Jerramungup, with an outlier farther east towards Ravensthorpe.

Habitat. Grows in sand over clay or laterite, in kwongan with emergent mallees.

Flowering period. July.

Conservation status. Not endangered.

Etymology. The Latin epithet *reptans* (creeping) refers to the habit.

Discussion. Illustrated in R.M. Sainsbury, Field Guide *Dryandra* 107 (1985) as *D. tenuifolia*.

Dryandra obtusa R. Br., Trans. Linn. Soc. London 10: 214 (1810) - *Josephia obtusa* (R. Br.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type*: Lucky Bay, [E of Esperance, Western Australia], January 1802, R. Brown Iter Australiense 3422 (*holo*: BM; *iso*: K).

Dryandra multiserialis F. Muell., Fragm. 5: 185 (1866). *Type*: near Cape le Grand, Western Australia, G. Maxwell; *lecto* (here chosen): MEL.

Typification. I have found no sheet annotated by Mueller as *D. multiserialis*. The above collection agrees with the protologue and is probably the specimen seen by him.

Discussion. *Dryandra obtusa* is placed tentatively in ser. *Tenuifoliae* but requires further research to determine if this is the appropriate series. It resembles species of ser. *Runcinatae* but the perianth is not succulent at the base.

Ser. 12 *Runcinatae*

Dryandra ser. *Runcinatae* (Meisn.) A.S. George, stat. nov.

Dryandra § *Runcinatae* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 468 (1856). *Type*: *D. runcinata* Meisn. = *D. ferruginea* Kippist ex Meisn.

Small erect or prostrate *shrubs*, with or without lignotuber. *Leaves* large, pinnatifid to serrate. *Inflorescence* terminal or axillary, often on older stem, sessile or on short branchlet; involucre bracts as long as or longer than flowers, usually broadly linear, red-brown and often shining; receptacle flat or gently concave or very convex. *Perianth* straight, swollen and succulent for a short distance above base; limb large, erect. *Pistil* curved, longer than perianth; pollen presenter narrow, ribbed. *Old flowers* persistent. *Follicles* obovate with notch above base, shining, usually remaining closed until burnt.

A series of 4 species in southern Western Australia. The large leaves, large heads with prominent brown bracts and perianth with succulent, swollen lower claws characterize this series.

Dryandra ferruginea Kippist ex Meisn., Hooker's J. Bot. Kew Gard. Misc. 7: 123 (1855) - *D. proteoides* Lindl. var. *ferruginea* (Kippist ex Meisn.) Benth., Fl. Austral. 5: 582 (1870). *Type*: south-western Western Australia, 184-, J. Drummond 5: 416 (*iso*: BM, CGE, K (2 sheets)).

A variable species here divided into 6 subspecies.

- 1 Stems erect
- 2 Leaf lobes at 80°-90°
- 3 Pistil 50-66 mm long; involucre bracts 50-60 mm long (SE of Pingelly) subsp. **tutanningensis**
- 3: Pistil 30-45, rarely to 50 mm long; involucre bracts 30-50 mm long, rarely longer
- 4 Leaf lamina 15-35 cm long, 10-28 (rarely to 40 mm) mm wide; margins revolute (Wickepin to Nyabing & Lake Grace) subsp. **ferruginea**

- 4: Leaf lamina 8-15 cm long, 18-35 mm wide; margins almost flat
(Stirling Range) subsp. **pumila**
- 2: Leaf lobes ascending at 60°-70° (Corrigin area) subsp. **obliquiloba**
- 1: Stems prostrate
- 5: Leaves 20-45 mm wide, the lobes usually falcate to somewhat reflexed
(Newdegate-Ravensthorpe) subsp. **chelomacarpa**
- 5: Leaves 7-15 mm wide, the lobes triangular, at c. 90° (E of Lake King) subsp. **flavescens**

Dryandra ferruginea* Kippist ex Meisn. subsp. *ferruginea

D. runcinata Meisn., in A.L.P. de Candolle, Prodr. 14: 469 (1856) - *Josephia runcinata* (Meisn.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). Type: south-western Western Australia, 184-, J. Drummond 4: 318 (iso: BM, K (2 sheets), MEL, PERTH).

Erect bushy *shrub* to 70 cm without lignotuber. Leaf lamina 15-35 cm long, 10-28 (rarely to 40) mm wide; lobes 5-10 each side, at 80°-90°, triangular, acute, the margins moderately recurved; petiole 5-15 cm long. Involucral bracts 38-50 mm long; floral bracts 8-11 mm long. Perianth 35-40 (rarely to 50) mm long. Pistil 38-43 (rarely to 48) mm long.

Distribution. Occurs from Wickepin and Kulin to Nyabing and east to Lake Grace.

Habitat. Grows in sandy loam over lateritic gravel in kwongan.

Flowering period. September-October.

Conservation status. Not endangered.

Discussion. Very variable in size of heads and flowers and in indumentum of involucral bracts, some specimens being quite hairy, others almost glabrous except tips and margins. Newbey 3044, 1 km west of Tarin Rock (PERTH), has leaves with few or no leaf lobes but is otherwise typical.

***Dryandra ferruginea* subsp. *tutanningensis* A.S. George, subsp. nov.**

Ab subspeciebus aliis foliis magnis (lamina 15-35 cm longa) serratis et capitulis magnis (bractea involucrales 50-66 mm longae; pistillum 50-66 mm longum), praecipue differt.

Typus: Tutanning Nature Reserve, SE of Pingelly, Western Australia, 7 October 1973, A.S. George 11713 (*holo:* PERTH 03462439; *iso:* CANB, K, NSW).

Bushy erect *shrub* to 1 m. Leaf lamina 15-35 cm long, 15-27 mm wide; lobes 15-20 each side, triangular to broadly so, acute, at 80°-90° but lower margin at more acute angle than upper; sinuses obliquely U-shaped, 5-20 mm across; margins shortly recurved; petiole 3-10 cm long. Involucral bracts 50-66 mm long; floral bracts 9-10 mm long. Perianth 45-50 mm long; limb 14-15 mm long. Pistil 50-66 mm long; pollen presenter 8-9 mm long.

Selected collections examined. Tutanning Reserve, G. Heinsohn 25 (PERTH); Tutanning Reserve, B.G. Muir 37 (PERTH).

Distribution. Restricted to Tutanning Nature Reserve, south-east of Pingelly.

Habitat. Grows in massive laterite with *Eucalyptus accedens* and thick scrub.

Flowering period. October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. Named after the Tutanning Nature Reserve to which the subspecies is confined, the suffix *-ensis* indicating place.

Discussion. Distinguished by the large leaves and inflorescence. Leaf lobes more numerous and wider and with less recurved margins than in subsp. *ferruginea*. Three collections (e.g. A.S. George 16699, north of Nyabing, PERTH) have large heads and flowers as in subsp. *tutanningensis* but leaves of subsp. *ferruginea*; these populations require further study.

Dryandra ferruginea* subsp. *pumila A.S. George, subsp. nov.

Ab subspeciebus aliis habitu minore (ad 30 cm alto) et foliis brevioribus (lamina 8-15 cm longa) praecipue differt.

Typus: scenic lookout between Mt Talyuberlup and Mt Magog picnic sites, Stirling Range Scenic Drive, Western Australia, 28 September 1986, K. Alcock 472 (*holo:* PERTH 04110595; *iso:* CANB).

Erect *shrub* to 30 cm tall without lignotuber. *Leaf* lamina 8-15 cm long, 18-35 mm wide, 12-30 mm wide; lobes 8-12 each side, at c. 70°-80°, triangular, acute; margins almost flat; sinuses 5-15 mm across; petiole 3-5 cm long. *Follicles* broadly obovate with slight basal notch, 15 mm long.

Selected collections examined. North-west slope of Little Mondurup, G.J. Keighery 9190 (PERTH).

Distribution. Endemic in the Stirling Range National Park, known from two populations.

Habitat. Grows on rocky shale slopes in low open kwongan and mallee kwongan.

Flowering period. September-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. Known from two populations susceptible to infection by *Phytophthora*.

Etymology. Named from the Latin *pumilus* (small, diminutive), this subspecies being of much smaller habit than the others.

Discussion. Essentially smaller in habit than subsp. *ferruginea*, the leaves shorter, usually with narrower sinuses and the margins less recurved.

***Dryandra ferruginea* subsp. *obliquiloba* A.S. George, subsp. nov.**

Ab subspeciebus aliis foliis lobis obliquis longioribus angustioribus differt.

Typus: reserve by Scenic Lookout, c. 2 km W of Corrigin, Western Australia, c. 32°50'S, 117°51'E, 8 October 1994, A.S. George 17224 (*holo*: PERTH 04228715; *iso*: AD, BRI, CANB, K, MEL, NSW, PERTH 04228723).

Bushy *shrub* to 1 m without lignotuber. *Leaf* lamina pinnatipartite, 10-30 cm long, 20-40 mm wide; lobes 10-17 each side, at 60°-70°, linear-narrowly triangular, acute; margins scarcely recurved; sinuses obliquely U-shaped, 10-30 mm across; petiole 10-15 cm long. *Involucral bracts* 40-45 mm long; flowers c. 90-115 per head; floral bracts 4-5 mm long. *Perianth* 30-34 mm long; limb 8-9.5 mm long. *Pistil* 35-42 mm long; pollen presenter 5-7 mm long. *Follicles* broadly obovate, 13-14 mm long.

Selected collections examined. 1.5 km E of Dudinin on Kulin Rd, K. Alcock 484 (MEL); c. 4 km W of Corrigin, R. Spjut *et al.* 7362 (PERTH); Middleton Rd, S of Corrigin, A.S. George 17228 (AD, BRI, PERTH).

Distribution. Occurs in the Corrigin area.

Habitat. Grows in lateritic gravel in dense kwongan.

Flowering period. September-October.

Conservation status. Not endangered.

Etymology. Named from the Latin *obliquus* (oblique, slanting) and *lobus* (a lobe), in reference to the leaf lobes.

Discussion. Typically has longer, narrower leaf lobes than the other subspecies.

***Dryandra ferruginea* subsp. *chelomacarpa* A.S. George, subsp. nov.**

Ab subsp. *ferruginea*, *tutanningense* A.S. George et *pumila* A.S. George caulibus prostratis praecipue differt; ab subsp. *flavescenti* lobis foliorum longiore (lamina folii 20-45 mm lata), marginibus breviter recurvis, differt.

Typus: Creek Rd, off Old Ravensthorpe [-Newdegate] Rd, Western Australia, 31 July 1986, A.S. George 16714 (*holo*: PERTH 03462544; *iso*: CANB, NSW).

Shrub with underground prostrate stems, to 1 m diam., with ?lignotuber. *Leaves* pinnatipartite; lamina 15-20 cm long, 20-45 mm wide; margins shortly recurved; lobes 10-15 each side, narrowly triangular-falcate, at 80°-90°, acute, pungent; sinuses U-shaped 8-25 mm across; petiole 3-6 cm long. *Involucral bracts* 30-40 mm long; flowers 40-65 per head; floral bracts 7 mm long. *Perianth* 32-35 mm long, yellow; limb 9-11 mm long. *Pistil* 35-45 mm long; pollen presenter 4-8 mm long. *Follicles* obovate with prominent basal notch, 15 mm long.

Selected collections examined. c. 16 km W of Lake King, K. Newbey 1839 (PERTH); S of Newdegate, M. Pieroni 11 (MEL, PERTH).

Distribution. Occurs between Newdegate and Ravensthorpe.

Habitat. Grows in sandy loam over gravel in low kwongan.

Flowering period. July-September.

Conservation status. Not endangered.

Etymology. Named from the Greek *cheloma* (a notch) and *carpos* (a fruit), in reference to the notch at the base of the follicle.

Discussion. Distinguished by the prostrate stems; leaf lobes much longer than in subsp. *flavescens*.

Dryandra ferruginea subsp. *flavescens* A.S. George, sp. nov.

Ab subsp. *chelomacarpa* A.S. George foliorum lobis brevioribus (lamina folii 7-15 mm lata) marginibus arcte revolutis, differt. Folia in sicco flavescunt.

Typus: E of Lake King crossroads, Western Australia, 31 July 1986, A.S. George 16727 (*holo:* PERTH 03462498; *iso:* CANB, PERTH 03462501, 03462528).

Shrub with prostrate stems, sometimes underground, to 1 m diam., with ?lignotuber. *Leaves* pinnatifid; lamina 12-30 cm long, 7-15 mm wide, sometimes to 25 mm; teeth 5-20 each side, triangular, acute, pungent, at c. 90°; margins strongly revolute; sinuses 8-15 mm across; petiole 3-6 mm long. *Involucral bracts* 4.5-5.5 cm long; flowers c. 75 per head; floral bracts 5-9 mm long. *Perianth* 31-40 mm long, pale yellow, cream at base; limb 7-8.5 mm long, sparsely hirsute to almost glabrous, greenish. *Pistil* 43-50 mm long; pollen presenter 4.5-6 mm long. *Follicles* obovate with prominent basal notch, 15 mm long.

Selected collection examined. Frank Hann National Park, D. Monk 309 (PERTH).

Distribution. Occurs to the east of Lake King, including the western part of Frank Hann National Park, and north to Forrestania.

Habitat. Grows in sandy loam with some gravel, in low kwongan.

Flowering period. August.

Conservation status. Not endangered.

Etymology. The Latin *flavescens* (becoming yellow) refers to the leaves which dry a yellowish colour.

Discussion. Leaves drying yellowish, with much smaller lobes than in subsp. *chelomacarpa*.

***Dryandra corvijuga* A.S. George, sp. nov.**

Ad *D. ferrugineam* Meisn. affinis, a qua habitu recto altiore (ad 1.3 m alto), et foliis confertis breviter serratis (lamina folii 5-13 mm lata), differt.

Typus: Mt Short, N of Ravensthorpe, Western Australia, 2 October 1986, K. Alcock 494 (*holo*: PERTH 04225791; *iso*: CANB).

Shrub to 1.3 m, without lignotuber, densely leaved. *Leaves* broadly linear, acute, serrate; lamina 10-20 cm long, 5-13 mm wide; teeth 10-25 each side, triangular, oblique, acute, pungent; margins revolute; petiole slender, 2-6 cm long. *Inflorescence* on short lateral branchlet; involucre bracts 4-6 cm long, obtuse, appressed-pubescent, shining brown; flowers c. 60 per head. *Perianth* 38-41 mm long, shortly hirsute above base, then glabrous; limb 7-9 mm long, loosely hirsute. *Pistil* 44-46 mm long, glabrous; pollen presenter narrow, 5-6 mm long, ribbed. *Follicles* elliptic-obovate, 15 mm long, glabrous.

Selected collections examined. Mt Short, Sept. 1980, E.M. Bennett (PERTH); Elverdton, SE of Ravensthorpe, A.S. George 1641 (PERTH).

Distribution. Occurs in the Ravensthorpe Range.

Habitat. Grows in rocky, lateritic soil in dense shrubland.

Flowering period. September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The epithet is from the Latin *corvus* (a crow or raven) and *jugus* (paired or yoked together and hence *jugum*, a range of hills), in reference to the Ravensthorpe Range.

Discussion. Distinguished by the erect, densely leaved habit and shortly serrate leaves.

***Dryandra epimicta* A.S. George, sp. nov.**

Species bene distincta. Frutex cum lignotubero caulibus prostratis. Folia conferta, linearia, pinnatifida, lamina 11-33 cm longa, 7-14 mm lata; margines revoluti; lobi 10-35 in quoque margine, falcati. Inflorescentia terminalis, ascendens; bractae involucrales ovatae ad late lineares, acutae, appresso-pubescentes, tenues, ad 8-9 cm longae; flores c. 45-70 per capitulum, foetidi. Perianthium 43-52 mm longum, supra basin villosum. deinde glabrum, limbo 7-8 mm longo, parce hirsuto vel glabro. Pistillum leniter curvatum, 45-58 mm longum, supra basin pubescens, deinde glabrum; praebitor pollinis angustus, costatus, 4-5 mm longus. Folliculi obovati basi constricto, 18-19 mm longi, fere glabri.

Typus: Hopkins Reserve, SE of Kulin, Western Australia, 32°44'S, 118°17'E, 4 September 1986, M. Pieroni s.n. (*holo*: PERTH 03347869).

Shrub with prostrate stems, with lignotuber. *Stems* ± on surface, tomentose, with broadly linear prophylls at base of annual growth. *Leaves* crowded, erect, linear, pinnatifid, acute, pungent,

11-33 cm long, 7-14 mm wide, white-tomentose below; margins revolute; lobes 10-35 each side, broadly falcate, pungent, to 6 mm long, the upper margin less prominent than lower; petiole to 3 cm long. *Inflorescence* terminal, ascending; involucre bracts ovate to broadly linear, acute, appressed-pubescent, to 8-9 cm long; flowers c. 45-70 per head. *Perianth* 43-52 mm long, curled-villous above base, glabrous above; limb 7-8 mm long, swollen at base, sparsely hirsute to glabrous. *Pistil* gently curved, 45-58 mm long, pubescent above base; pollen presenter narrow, ribbed, 4-5 mm long. *Follicles* several, \pm unilaterally obovate with constricted base, 18-19 mm long, almost glabrous, striate.

Selected collections examined. N side of Hopkins Reserve, A.S. George 17232 (PERTH); c. 14 km SE of Kulin, R.J. Hnatiuk 770134 (PERTH).

Distribution. Restricted to a small area south-east of Kulin.

Habitat. Grows in sandy loam in low kwongan and tall open shrubland.

Flowering period. August-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. Known from only three sites in a nature reserve, between them containing fewer than 100 plants.

Etymology. Named from the Greek *mykter* (a nose, nostril) with the prefix *epi-* (upon); the flowers have a strong, unpleasant scent.

Discussion. A distinctive species in its prostrate habit, large conflorescence with acuminate, \pm soft, mid-brown involucre bracts and unpleasantly scented flowers.

Dryandra proteoides Lindl., Sketch Veg. Swan R. xxxiii (1840) - *Josephia proteoides* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 578 (1891) as *proteodes*. *Type:* south-western Western Australia, 183-, J. Drummond s.n. (*neo* (here nominated): K; *isoneo*: K (2 sheets)).

Typification. As with *D. nobilis*, there is no sheet at CGE. That selected as neotype is one of three sheets at Kew; it is from the Hookerian Herbarium and has the annotation 'Dryandra proteoides Lindl. Sw. riv. [i.e. Swan River] Drummond'.

Ser. 13 *Triangulares*

Dryandra ser. *Triangulares* A.S. George, ser. nov.

Frutices parvae rectae, plerumque dense foliatae, sine lignotubero. Folia magna, pinnatisecta lobis grandibus \pm triangularibus. Inflorescentia in ramulo brevi laterali vel terminalis; bracteae involucrales quam flores breviores, angustae sed basi angusto, tomentosae. Perianthium rectum limbo grande recto. Pistillum curvatum, quam perianthio longiori; praebitor pollinis angustus, costatus. Folliculi elliptici ad late obovati vel orbiculares.

Typus: *D. drummondii* Meisn.

Small erect *shrubs*, usually densely leaved, without lignotuber. *Leaves* large, pinnatisect with large \pm triangular lobes. *Inflorescence* on short lateral branchlet or terminal; involucre bracts shorter than flowers, usually narrow on thick base, hairy. *Perianth* straight with large erect limb. *Pistil* curved, longer than perianth or that of central flowers about as long; pollen presenter narrow, ribbed. *Faded flowers* soon falling. *Follicles* elliptic to broadly obovate or almost orbicular, usually remaining closed until burnt.

A series of 3 species. Although the heads are large as in ser. *Runcinatae*, the involucre bracts are much smaller and more hairy and the perianth is not succulent above the base.

Etymology. The epithet is from the Latin *triangularis* (triangular in shape) and refers to the large, triangular leaf lobes of species in the series.

Dryandra drummondii Meisn., in J.G.C. Lehmann (ed.), Pl. Preiss. 2: 267 (1848). *Type:* south-western Western Australia, 184-, *J. Drummond* 3: 299 (*iso:* BM (2 sheets), K (3 sheets), MEL).

Three subspecies are recognized.

- 1 Pistil 60-69 mm long, red subsp. **macrorufa**
 1: Pistil 43-60 mm long, yellow
 2 Perianth limb 11-13 mm long; pollen presenter 7.5-10 mm long;
 flowers in summer subsp. **drummondii**
 2: Perianth limb 9 mm long; pollen presenter 6.5 mm long; flowers
 in winter subsp. **hiemalis**

Dryandra drummondii Meisn. subsp. **drummondii**

D. calophylla var. *acaulis* Meisn., in A.L.P.P. de Candolle, Prodr. 14: 481 (1856). *Type:* south-western Western Australia, 184-, *J. Drummond* 2: 300 (*iso:* BM, K (2 sheets), MEL).

Shrub to 1 m. *Leaf lamina* 20-90 cm long; *petiole* 5-15 cm long. *Perianth* 40-42 mm long; *limb* 11-13 mm long. *Pistil* 47-53 mm long; *pollen presenter* 7.5-10 mm long. *Follicles* 16-18 mm long.

Distribution. Occurs in the Stirling Range, south to Kendenup and South Stirling and north-east towards Ongerup.

Habitat. Grows in sandy loam over gravel in mallee kwongan.

Flowering period. November-January.

Dryandra drummondii subsp. **hiemalis** A.S. George, subsp. nov.

Ab subspeciebus aliis limbo perianthii brevior (c. 9 mm longo), praebitore pollinis brevior (c. 6.5 mm longo) et florescentia hiemali differt.

Typus: 5 km N of Calingiri turnoff, Great Northern Hwy, Western Australia, 1 June 1984, A.S. George 16300 & P. Nikulinsky (*holo:* PERTH 03462552; *iso:* AD, BRI, CANB, K, MEL, NSW, PERTH 03462560, 03462579).

Shrub to 50 cm tall. *Leaf* lamina 17-30 cm long; petiole 6-9 cm long. *Perianth* 37-42 mm long; limb *c.* 9 mm long. *Pistil* 43-54 mm long; pollen presenter *c.* 6.5 mm long. *Follicles* 17-20 mm long, glabrous.

Selected collections examined. Coffin Rock [SW of York], *H. Demarz* 1297 (PERTH); S of North Rd, near Bindoon, Great Northern Hwy, *M. Pieroni* 93/5 (PERTH); S of Wickepin, 16 May 1979, *K. Wallace* (PERTH).

Distribution. Occurs between New Norcia and Wickepin.

Habitat. Grows in lateritic gravel in Jarrah-Marri open forest and Wandoo woodland.

Flowering period. May-June.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The Latin *hiemalis* (of winter) refers to the flowering period which contrasts with the summer flowering of the two other subspecies.

Discussion. Flowers faintly scented.

Dryandra drummondii* subsp. *macrorufa A.S. George, subsp. nov.

Ab subspeciebus aliis foliis majoribus (lamina 15-36 cm longa), floribus majoribus (perianthium 55-56 mm longum; pistillum 60-69 mm longum), et pistillo rufo, differt.

Typus: 3.3 km E on South Fence Rd from Kuringup Rd, SE of Nyabing, Western Australia, 5 January 1992, *M. Pieroni* 92/1 (*holo:* PERTH 02003813; *iso:* CBG, K).

Shrub to 1.5 m tall and 2 m wide. *Leaf* lamina 15-36 cm long; petiole 4-15 cm long. *Perianth* 55-56 mm long; limb *c.* 14 mm long. *Pistil* 60-69 mm long, crimson; pollen presenter *c.* 9.5 mm long. *Follicles* not seen.

Distribution. Known only from the type.

Habitat. Grows in sand over gravel, in low kwongan.

Flowering period. January.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One.

Etymology. Epithet from the Greek *macro-* (large) and the Latin *rufus* (red), in reference to the large flowers with red styles. It is known as 'Big Red'.

Discussion. The single collection of this taxon is distinguished from all other collections of the species by its larger size and red style.

Dryandra octotriginta A.S. George, sp. nov.

Ab *D. drummondii* Meisn. caulibus longioribus (frutex ad 1 m altus), foliorum lobis \pm planis marginibus rectis, et inflorescentiis numerosioris, praecipue differt.

Typus: Manuel Rd, S of Nyabing, Western Australia, 33°27'S, 118°10'E, 30 July 1986, A.S. George 16695 (*holo*: PERTH 04110617; *iso*: CANB, K, MEL, NSW).

Shrub to 1 m, without lignotuber. *Stems* erect, with thick, \pm lanceolate, villous prophylls. *Leaves* deeply pinnatifid to almost pinnatisect, bluish green; lamina 10-25 cm long, 3-6 cm wide; lobes 10-18 each side, triangular, usually narrow and \pm straight-sided, decurrent, at 70°-80°, the pits on undersurface indistinct, shallow; margins almost flat to shortly recurved; petiole 3-6 cm long. *Inflorescence* with linear, leaf-like bracts around involucre; involucral bracts ovate-lanceolate, to 10-20 mm long, rusty-villous; flowers 50-85 per head. *Perianth* 35-43 mm long, pale gold; claws curled-villous to tomentose; limb 8-11 mm long, appressed-silky with long terminal tuft. *Pistil* 40-48 mm long, bowed, very thick towards base, glabrous, cream; pollen presenter narrowly fusiform, 5-7.5 mm long, ribbed, green. *Follicles* obovate, 13 mm long, 12 mm wide, sparsely hairy, striate, shining, \pm viscid.

Selected collections examined. c. 21 km S of Hyden, A.S. George 9888 (PERTH); Wingedine Reserve, W of Woodanilling, A.S. George 16649 (PERTH); 15 km S of Kulin, R.J. Hnatiuk 770427 (PERTH).

Distribution. Occurs from Woodanilling to Nyabing and east to Newdegate and Dragon Rocks.

Habitat. Grows in gravelly loam in kwongan, often with mallee eucalypts.

Flowering period. July-August.

Conservation status. Not endangered.

Etymology. Name adapted from the Latin for 38, this being the number given to the taxon in a preliminary list of new taxa and used to refer to it by members of the *Dryandra* Study Group of the Society for Growing Australian Plants.

Discussion. Closely related to *D. drummondii*, differing in the longer stems, more floriferous habit and the more acute leaf lobes with straighter sides. Usually the leaf lobes are narrower than those of *D. drummondii* and there are more small leaves below the inflorescence. Variable in flower size.

Dryandra catoglypta A.S. George, sp. nov.

Ab *D. drummondii* Meisn. et *D. octotriginta* A.S. George bracteis caulorum late ovato-oblongis recurvis, perianthii limbo longiore (12-15 mm longo), et praebitore pollinis longiore (8-9 mm longo) angustiore, differt.

Typus: N of Badgingarra, Western Australia, 22 July 1993, M. Pieroni 93/7 (*holo*: PERTH 04083792; *iso*: AD, BRI, CANB, K, MEL, NSW, PERTH).

Shrub to 1 m tall and 1 m wide, without lignotuber. *Stems* with broadly ovate-oblong bracts at base of annual increment, tomentose outside, glabrous inside, usually recurved. *Leaves* pinnatisect; lamina 15-30 cm long, 2.5-7 cm wide; lobes 10-15 each side, triangular, acute, pungent, at 80°-90°, the upper margin \pm straight to gently curved, the lower more convex; pits in lower surface indistinct, shallow; margins flat; petiole 1.5-8 cm long. *Inflorescence* terminal to short branchlet, with several linear, leaf-like bracts around involucre; involucre bracts broadly ovate-oblong, silky-villous, to 25 mm long; flowers 85-110 per head. *Perianth* 44-56 mm long, villous with pale hairs becoming silky towards limb; limb very narrow, 12-15 mm long, appressed-silky with pale hairs and a terminal rusty-red tuft. *Pistil* 46-64 mm long, bowed, glabrous; pollen presenter narrow, ribbed, 8-9 mm long, dull reddish pink. *Follicles* broadly obovate, 15-17 mm long, 17-20 mm wide, loosely hirsute, glabrescent, striate, shining.

Selected collections examined. Near Tootbardi Road, N of Badgingarra, K. Alcock 507 (PERTH); Gardner Range, July 1980, D. Lievense (PERTH).

Distribution. Occurs in the Gardner Range and north of Badgingarra.

Habitat. Grows on lateritic breakaways in kwongan.

Flowering period. June-July.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One.

Etymology. Named from the Greek *glyptos* (carved) with the prefix *cato-* (downwards), in reference to the bracts on the stem which appear as though cut back and curled downwards.

Discussion. Closely related to *D. drummondii* and especially *D. octotriginta*, differing mainly in the prominent recurved bracts on the stems, the longer perianth limb and longer, very narrow pollen presenter. Old flowers caducous. Follicles loosely attached.

Ser. 14 *Aphragma*

Dryandra ser. *Aphragma* (R. Br.) A.S. George, stat. nov.

Dryandra sect. *Aphragma*, R. Br., Suppl. Prodr. Fl. Nov. Holl. 37 (1830) - *Josephia* sect. *Aphragma* (R. Br.) Kuntze, in T.E. von Post & C.E.O. Kuntze, Lex. Gen. Phan. 299 (1903). *Type:* *D. nervosa* R. Br.

Prostrate or erect *shrubs*, with or without lignotuber. *Leaves* large, pinnatipartite to pinnatifid. *Inflorescence* terminal, usually subtended by long leaves; receptacle \pm flat; involucre bracts shorter than flowers, villous, hirsute or pubescent all over. *Perianth* straight, with long limb. *Pistil* curved, shorter or in 1 species longer than perianth; pollen presenter elongated, narrow, striate. *Faded flowers* soon falling. *Follicles* rather large, obovate, usually remaining closed until burnt, rather loosely attached.

A series of 9 species. Similar to ser. *Triangulares* but with much narrower leaf lobes and the pistil usually shorter than the perianth.

Dryandra pteridifolia R. Br., Trans. Linn. Soc. London 10: 215 (1810) - *Josephia pteridifolia* (R. Br.) Poir., Dict. Sci. Nat. 245 (1822). *Type*: Bay I [Lucky Bay, E of Esperance, Western Australia], January 1802, R. Brown Iter Australiense 3426 (*holo*: BM; *iso*: K (2 sheets)).

There are 2 subspecies.

- 1 Leaf lobes usually twisted; autumn-flowering (south coast) subsp. **pteridifolia**
 1: Leaf lobes not twisted; spring-flowering (north of Perth) subsp. **vernalis**

Dryandra pteridifolia R. Br. subsp. **pteridifolia**

Leaf lobes usually twisted. *Perianth* 36-39 mm long. *Pistil* 38-53 mm long; pollen presenter 4.5-5 mm long.

Distribution. Occurs from the Gairdner River to Cape le Grand National Park and inland to Newdegate.

Habitat. Grows in sandy loam, sometimes over clay or laterite, in kwongan.

Flowering period. March-May.

Dryandra pteridifolia subsp. **vernalis** A.S. George, subsp. nov.

Ab subsp. *pteridifolia* lobis foliorum non vel parum contortis, praebitore pollinis longiore (8 mm longo) et florescentia vernali, differt.

Typus: Alexander Morrison National Park, Western Australia, 30°04'S, 115°31'E, 25 September 1994, A.S. George 17215 (*holo*: PERTH 04228782; *iso*: AD, BRI, CANB, K, MEL, NSW, PERTH 04228790, 04228804).

Leaf lobes not or little twisted. *Perianth* c. 39 mm long. *Pistil* 40-45 mm long; pollen presenter c. 8 mm long.

Selected collections examined. Marchagee Track, E.A. Griffin 3475 (PERTH); Bundarra Nature Reserve, S of Dandaragan, E.A. Griffin 5425 (PERTH).

Distribution. Occurs between Eneabba and Mogumber.

Habitat. Grows in sandy loam over gravel in low kwongan.

Flowering period. September-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The Latin epithet *vernalis* (of springtime) refers to the flowering time of the subspecies; subsp. *pteridifolia* flowers in autumn.

Dryandra fililoba A.S. George, sp. nov.

Ad *D. nervosam* R. Br. arcte affinis, a qua lobis inferis foliorum filiformibus et floribus longioribus (perianthio 50-53 mm longo limbo 15-18 mm longo, pistillo 49-52 mm longo), praecipue differt.

Typus: 29 km W of Lake Grace, Western Australia, 33°07'S 118°10'E, 30 July 1986, A.S. George 16709 (*holo*: PERTH 04110366; *iso*: CANB, NSW, PERTH 04110374, 04110382).

Tangled *shrub* to 1 m, without lignotuber. *Stems* tomentose and hirsute. *Leaves* deeply pinnatipartite; lamina 15-30 cm long, 7-14 cm wide; lobes 10-17 each side at 70°-90°, linear, acute, pungent; margins recurved to revolute; petiole 5-15 cm long; several to many small leaves 5-15 cm long with filiform lobes subtending inflorescence. *Inflorescence* terminal, surrounded by leaves; involucre bracts ovate to oblong, obtuse, rusty-silky-villous and densely ciliate, the innermost bracts 25-42 mm long; flowers 55-80 per head. *Perianth* 50-53 mm long, densely curled-villous above base, then curled-tomentose, the limb silky with long apical tuft; limb 15-18 mm long, acute. *Pistil* 49-52 mm long, glabrous; pollen presenter narrowed, ribbed, 12-15 mm long. *Follicles* obovate, somewhat oblique across upper margin, 17 mm long, somewhat villous but hairs wearing off.

Selected collections examined. 1.5 km E of Dudinin, K. Alcock 484 (PERTH); E of Harrismith, R.J. Hnatiuk 780023 (PERTH).

Distribution. Occurs from south of Lake Dumbleyung to Lake Grace and north to Harrismith.

Habitat. Grows in sandy loam over gravel or in gravel, in kwongan, occasionally in *Eucalyptus wandoo* woodland.

Flowering period. Mainly May-July.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. Named from the Latin *filum* (a thread) and *lobus* (a lobe), in reference to the fine lower lobes of the leaves.

Discussion. May usually be distinguished by the bushy, non-lignotuberous habit, leaves with many fine lower lobes and large flowers with very long perianth limb. Larger leaf lobes generally fewer and flatter than those of *D. pteridifolia*; stem below inflorescence usually longer, up to 5 cm.

Dryandra nervosa R. Br., in Sweet, Fl. Australasica t. 22 (1827). *Type*: raised at the nursery of Mr Mackay at Clapton, England, from seed collected probably near King George Sound by W. Baxter; *neo* (here nominated): BM.

Typification. There is one specimen on a sheet at BM with these details but not annotated by Brown. It agrees with the protologue.

Dryandra blechnifolia R. Br, Trans. Linn. Soc. London 10: 215 (1810) - *Josephia blechnifolia* (R. Br.) Poir., Dict. Sci. Nat. 24: 246 (1822) - *Dryandra pteridifolia* var. *blechnifolia* (R. Br.) R. Br., Suppl. Prodr. Fl. Nov. Holl. 38 (1830). *Type*: near King George Sound, [Western Australia], September 1791, A. Menzies (*lecto* (here chosen): BM; *isolecto*: BM, K).

Typification. There are two sheets at BM with specimens of this species collected by Menzies. The specimens are in leaf only. The lectotype is specimen 'a' on a sheet annotated by Brown.

Dryandra porrecta A.S. George, sp. nov.

Ad *D. blechnifoliam* R. Br. affinis, a qua omnino minore: lamina foliorum 15-30 cm longa, 2-3 cm lata; bracteae involucrales ad 25 mm longae; flores 20-30 per capitulum; perianthium et pistillum 37-40 mm longum.

Typus: Bibiking Reserve, ENE of Woodanilling, Western Australia, c. 33°32'S, 117°44'E, 26 July 1986, A.S. George 16629 (*holo:* PERTH 04228847; *iso:* CANB, K, MEL, NSW, PERTH 04228855).

A sprawling *shrub* to 3 m across. *Stems* prostrate, underground, tomentose; prophylls imbricate on leafy branchlets, sparse elsewhere. *Leaves* immediately below but not surrounding flowers, pinnatipartite, 15-30 cm long, 2-3 cm wide; margins slightly recurved; lobes 30-40 each side, narrowly triangular, acute, somewhat twisted at base, to 16 mm long, tomentose and with evident nerves below; petiole 2-3.5 cm long, tomentose. *Inflorescence* terminal; involucral bracts ovate to oblong, obtuse, to 25 mm long, rusty-villous outside; flowers 20-30 per head. *Perianth* 37-40 mm long, curled-tomentose above base, pubescent above; limb 9-10 mm long, appressed-hirsute. *Pistil* straight or gently curved, 37-40 mm long, glabrous; pollen presenter narrow, 5-6 mm long, ribbed. *Follicles* 1 or 2, obovate, 11-15 mm long, almost glabrous, striate, shining.

Selected collections examined. SSE of Pingrup, K. Alcock 341 (PERTH); Mt Barker, Dec. 1898, R. Helms (PERTH); N of Kojonup, K. Newbey 3054 (PERTH).

Distribution. Occurs at scattered localities between Woodanilling, Ongerup and Mount Barker and a short distance westward.

Habitat. Grows on sandy and sandy loam flats in low kwongan, often with Cyperaceae, Restionaceae and mallee eucalypts, occasionally in open woodland.

Flowering period. July.

Conservation status. Not endangered.

Etymology. Named from the Latin *porrectus* (from *porrigo*, to spread out, extend), in reference to the habit.

Discussion. Closely related to *D. blechnifolia* but smaller in all parts and with fewer flowers per head. Also related to *D. calophylla* but has more numerous, narrower, often twisted leaf lobes, larger involucral bracts and a much shorter perianth limb and pollen presenter.

Dryandra aurantia A.S. George, sp. nov.

Ad *D. porrectam* A.S. George affinis, a qua foliorum lobis paucioribus (18-28 in quoque margine), floribus per capitulum c. 80, perianthio aurantio, et pistillo brevioribus (33-36 mm longo) praecipue differt. Ab *D. blechnifolia* R. Br. foliis angustioribus (2.5-4.5 cm latis), floribus aurantiis et florescentia autumnali praecipue differt.

Typus: Little Darkin Swamp, Western Australia, 32°03'17"S, 116°31'39"E, 26 April 1994, A.S. George 17206 & M. Pieroni (*holo*: PERTH 04228510; *iso*: AD, CANB, K, MEL, NSW, PERTH 04228529, 04228537, 04228545).

Stems underground, rusty-villous, with triangular to ovate villous bracts. *Leaves* deeply pinnatipartite, acute, mucronate; lamina 12-25 cm long, 2.5-4.5 cm wide, decurrent almost to base; lobes 18-28 each side, linear, tapering, acute, straight to curved, at *c.* 90°, rusty-villous, glabrescent except pits in lower surface; reticulation prominent below. *Inflorescence* terminal; involucre bracts ovate to lanceolate, obtuse, red-rusty villous, the longest ones 20-23 mm long; receptacle flat; flowers *c.* 80 per head. *Perianth* 34-37 mm long, rusty curled-villous above base, the claws curled-tomentose, pale orange-pink; limb 8-10 mm long, tomentose with straight hairs and an apical rusty tuft. *Pistil* 33-36 mm long, glabrous; pollen presenter narrowed, ribbed, 5-8 mm long. *Follicles* broadly obovate, 15-16 mm long, 10-14 mm wide, sparsely hairy on margin, striate, somewhat shining.

Distribution. Known only from the type locality.

Habitat. Grows in deep white sand in low kwongan with scattered *Hakea prostrata* and *Banksia attenuata*.

Flowering period. April.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. There are 20-30 plants at the type locality.

Etymology. Named from the Latin *aurantius* (orange-coloured with a reddish tinge), in reference to the perianth.

Discussion. Distinguished by the underground stems with pale brown bracts, broadly triangular leaf lobes (smaller than in *D. blechnifolia*) and small flowers. Receptacle gently convex. Floral bracts appear to be few. Close to *D. porrecta* but differs in the more numerous flowers per head, the orange perianth that is very woolly above the base and the autumn flowering period.

Dryandra lepidorhiza A.S. George, sp. nov.

Species bene distincta. Frutex cum lignotubero. Caules subterranei, bracteis ovatis obtusis villosis vestiti. Folia pinnatipartita, lobis in quoque margine 15-25 linearibus pungentibus marginibus revolutis; lamina 15-30 cm longa, 2-7 cm lata, primum rufo-villosa, supra glabrescens. Inflorescentia terminalis, primum foliis non circumnixa; bracteae involucreales lanceolatae, acutae, villosae, interiores 9-10 mm longae; flores 25-30 per capitulum. Perianthium rectum, 32-34 mm longum, supra basin villosum, deinde pubescens; limbus 10 mm longus, hirsutus. Pistillum 31-33 mm longum, glabrum; praebitor pollinis angustus, costatus, 6 mm longus. Folliculi late obovati, 10-15 mm longi, glabri.

Typus: Reserve 15801, W of Woodanilling, Western Australia, 33°35'S, 117°22'E, 4 November 1986, A.S. George 16879 (*holo*: PERTH 03322777; *iso*: CANB, K, MEL, NSW, PERTH 03222785).

Shrub with underground prostrate stems, to 1.5 m diam., with lignotuber. *Stems* covered with ovate, obtuse villous bracts 4-6 mm long. *Leaves* pinnatipartite, dull green; lamina 15-30 cm long,

2-7 cm wide; lobes 15-25 each side, linear, acute, pungent, 2-3 mm wide, rusty-tomentose below; margins revolute; petiole 3-4 cm long. *Inflorescence* terminal, at first not subtended by leaves; involucre bracts narrowly lanceolate, acute, rusty-villous, glabrous inside, the innermost ones 9-10 mm long; flowers 25-30 per head. *Perianth* 32-34 mm long, villous above base, the claws pubescent, dull red-pink, almost white at base; limb 10 mm long, hirsute, the apical hairs longer. *Pistil* 31-33 mm long, glabrous, cream at base, dull yellow above; pollen presenter narrow, 6 mm long, ribbed. *Follicles* broadly obovate, 10-15 mm long, glabrous, moderately shining.

Selected collection examined. W of Woodanilling, K. Newbey 2771 (PERTH).

Distribution. Restricted to the type locality. At PERTH there is a 1963 collection by K. Newbey, no. 916, from the 'Ongerup area' but this may not be correct since his field book gives '10 miles NW of Cranbrook' as the locality.

Habitat. Grows in sandy loam over laterite, in low kwongan.

Flowering period. October-November.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. The population is at the edge of a small reserve but next to a gravel pit.

Etymology. Epithet from the Greek *lepis* (a scale) and *rhiza* (a root), in reference to the stems being covered in scale-like 'bracts'.

Discussion. New growth rusty-red. Flowers \pm scentless. A distinctive species characterized by the underground stems covered with bracts, the narrowly lobed pinnatisect leaves, the heads with a short involucre. Probably related to *D. calophylla* which also has underground stems but has triangular-lobed leaves, few bracts on the stems and dull yellow flowers.

Ser. 15 *Ionthocarpae*

Dryandra ser. *Ionthocarpae* A.S. George, ser. nov.

Frutices recti ramosissimi sine lignotubero. Folia pinnatifida. Inflorescentiae terminales, arctae successivae. Perianthium rectum, limbo longo. Pistillum ante anthesin valde curvatum, demum recurvum, perianthio longius; praebitor pollinis elongatus, costatus. Flores mox cadentes. Folliculi obovoidei, caespite prominenti terminali pilorum ferrugineorum.

Typus: *D. ionthocarpa* A.S. George

Small erect bushy *shrubs* without lignotuber. *Leaves* pinnatifid. *Inflorescences* terminal, crowded. *Perianth* straight; limb large. *Pistil* curved, longer than perianth; pollen presenter elongate, ribbed. *Faded flowers* soon falling. *Follicles* obovoid, with a prominent terminal tuft of long, rusty hairs, usually remaining closed until burnt. *Seed* obovate, without wing.

A monotypic series confined to one population north of Albany. Flowers similar to ser. *Triangulares* but the fruit is distinctive.

Etymology. Named for the type (and only) species of the series.

Dryandra ionthocarpa A.S. George, sp. nov.

Frutex ad 60 cm latus. Caules prostrati, villosi, prophyllis multis linearibus tomentosus. Folia 8-25 cm longa, 5-20 mm lata, lobis 15-35 in quoque margine, triangularibus, obtusis, marginibus planis. Inflorescentiae terminales, confertae; bractae involucales lineares-subulatae, interiores lanceolatae, ad 2 cm longae, tomentosae; flores 40-60 per capitulum. Perianthium 39-43 mm longum, lilacino-salmoneum, ad basin crispo-tomentosum, supra pubescens, limbo 7-8 mm longo, flavo, appresso-puberulo. Pistillum 43-44(57) mm longum, in dimidio infero pilosum, supra glabrum; praebitor pollinis 3.5-4.8 mm longus. Folliculi 5-6 mm longi.

Typus: near Kamballup, Western Australia, 34°34'S 117°59'E, 11 October 1988, P. Luscombe (holo: PERTH 03462099; iso: AD, CANB, K, MEL, NSW, PERTH 03462102).

Shrub to 60 cm wide. *Stems* prostrate, short, ± underground, villous; prophylls many, linear, tomentose. *Leaves* pinnatifid, 8-25 cm long, 5-20 mm wide; margins flat; lobes 15-35 each side, triangular, obtuse, ± flat, rusty-villous when young, later glabrous except pits; petiole 4-6 cm long, ± glabrous. *Inflorescence* terminal, subtended by leaves, closely successive; involucre bracts linear-subulate, the inner ones narrowly lanceolate, to 2 cm long, dark rusty-tomentose; flowers 40-60. *Perianth* 39-43 mm long, curled-tomentose in lower third, pubescent above, pink-mauve with yellow limb; limb 7-8 mm long, keeled, appressed-puberulous. *Pistil* 43-44(57) mm long, curved, pilose in lower half, cream; pollen presenter 3.5-4.8 mm long, ribbed, green. *Follicles* ± obovate, 5-6 mm long, with an apical tuft of long rusty hairs, glabrous below.

Selected collections examined. W of Kamballup, M. McDonald 1551-60 (PERTH); Kamballup, 20 September 1988, M. Pieroni (PERTH).

Distribution. Known only from the type locality.

Habitat. Grows in spongolitic gravel in low kwongan.

Flowering period. September-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Declared Rare. There are c. 200 plants at the type locality.

Etymology. The specific epithet is taken from the Greek *ionthas* (shaggy) and *carpos* (a fruit), in reference to the prominent tuft of hairs on the follicle.

Discussion. This very distinctive, rare species was discovered by Peter Luscombe in 1987. It is easily recognized by the fruit and is unusual in having floral bracts that do not elongate as the fruit develop. The robust pistils are prominently bowed before anthesis, then recurved very strongly afterwards.

Ser. 16 *Inusitatae*

Dryandra ser. *Inusitatae* A.S. George, ser. nov.

Frutices ramosissimi sine lignotubero. Folia pinnatifida, magna. Inflorescentia ad apice caulis conferta; bractae involucrales flores excedentes, \pm papyraceae, arachnoideae. Perianthium rectum limbo recto. Pistillum rectum, perianthio brevior; praebitor pollinis elongatus, angustus. Flores veteres ?persistentes. Folliculi obovati, glabri, leniter affixi.

Typus: *D. idiogenes* A.S. George

Small bushy *shrubs* without lignotuber. *Leaves* large, pinnatifid. *Inflorescences* crowded at stem apex; involucre bracts exceeding flowers, \pm papery, with cobwebby indumentum. *Perianth* straight including limb. *Pistil* straight, shorter than perianth; pollen presenter elongated, not thickened. *Old flowers* ?persistent. *Follicles* obovate, glabrous, easily detached. *Seed* winged.

Monotypic, restricted to the Newdegate area. The involucre bracts are unusual in their texture and indumentum. Foliage similar to that of series *Triangulares* and *Ionthocarpae*, flowers similar to those of series *Gymnocephalae*.

Etymology. Named from the Latin *inusitatus* (rare, unusual), the only species of the series being of restricted occurrence and having some unusual morphological characteristics.

Dryandra idiogenes A.S. George, sp. nov.

Frutex ad 70 cm altus. Caules hirsuti, prophyllis tenuibus tecti. Folia 15-37 cm longa, 12-38 mm lata, lobis 20-35 in quoque latera, triangularibus acutis, marginibus planis, illis ad basin folii recurvis. Inflorescentiae terminales, confertae; bractae involucrales lineares ad lanceolatae, acutae, ad 45 mm longae, exteriores fere glabrae, interiores in costa pubescentes, marginibus superis arachnoideis; flores c. 80 per capitulum. Perianthium 36-44 mm longum limbo 10-11 mm, ad basin album, supra rubra, tomentosum praeter limbum glabrum. Pistillum 35-39 mm longum, ad basin hirsutum, supra glabrum; praebitor pollinis 6-7 mm longus. Folliculi 12-13 mm longi, glabri.

Typus: South Burngup Rd, SW of Newdegate, Western Australia, 33°12'S, 118°49'E, 30 August 1986, A.S. George 16713 (*holo*: PERTH 04225813; *iso*: CANB, K, MEL, NSW, PERTH 04225821, 04225848).

Tufted *shrub* to 70 cm diam. without lignotuber. *Stems* hirsute, covered with thin brown prophylls to 3 cm long. *Leaves* deeply pinnatifid, acute or truncate; lamina 15-37 cm long, 12-38 mm wide, tomentose in pits below; margins flat or slightly recurved; lobes 20-25 each side, triangular, to 19 mm long, acute, smaller and \pm recurved towards base, prominently nerved and reticulate below; petiole to 9 cm long. *Inflorescences* terminal, closely successive; involucre bracts linear to narrowly lanceolate, acute, to 45 mm long, the outer ones almost glabrous, inner ones rusty-pubescent along midrib with the upper margins cobwebby; flowers c. 80 per head. *Perianth* 36-44 mm long, white in lower 1/2, deep red above, curled-tomentose above base, appressed-tomentose above, the limb glabrous except long apical hairs; limb 10-11 mm long. *Pistil* straight, 35-39 mm long, hirsute at base, glabrous above; pollen presenter 6-7 mm long, not thickened. *Follicles* several, obovate, unequally constricted towards base, 12-13 mm long, glabrous.

Selected collection examined. South Burngup Rd, SW of Newdegate, A.S. George 16732 (AD, CANB, PERTH).

Distribution. Restricted to a small area south-west of Newdegate.

Habitat. Grows in sandy loam over gravel in kwongan and mallee kwongan.

Flowering period. August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. The populations appear to be small. One is in a nature reserve.

Etymology. The species is named from the Greek *idiogenes* (distinctive, peculiar), in reference to the unusual features, especially the papery involucral bracts with cobwebby indumentum and the striking red and white flowers.

Discussion. A distinctive species with striking red and white flowers surrounded by papery involucral bracts that are cobwebby on the upper margins. The flowers are strongly scented.

Ser. 17 *Subulatae*

Dryandra ser. *Subulatae* A.S. George, ser. nov.

Frutices parvae sine lignotubero. Folia linearia, integra. Inflorescentia terminalia in ramulo brevi ad basin fruticis, foliis parvis rigidis subulatis scabridis subtenta; bracteae involucrales floribus breviores. Perianthium rectum. Pistillum rectum, perianthio parum brevius; praebitor pollinis vix incrassatus. Flores veteres persistentes. Folliculi orbiculares.

Typus: *D. subulata* C.A. Gardner

Small *shrubs* without lignotuber. *Leaves* linear, entire. *Inflorescence* terminal on short branchlet arising immediately below that of previous season, surrounded by small rigid scabrid subulate leaves passing into involucre; involucral bracts shorter than flowers. *Perianth* straight, including limb. *Pistil* straight, slightly shorter than perianth; pollen presenter scarcely thickened. *Old flowers* persistent. *Follicles* orbicular with basal notch, usually remaining closed until burnt.

Monotypic, in the kwongan north of Perth. The linear, entire leaves, subulate floral leaves and orbicular follicles are distinctive. The flowers have a similar form to those of ser. *Gymnocephalae*, i.e. they are straight, and apart from some loose, caducous hairs on the limb apex, are clearly distinct from each other just before anthesis.

Etymology. Named after the type (and only) species in the series.

Ser. 18 *Gymnocephalae*

Dryandra ser. *Gymnocephalae* Benth., Fl. Austral. 5: 565, 579 (1870). Type: *D. shuttleworthiana* Meisn., lecto (here chosen).

Dryandra § *Haplophyllae* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 479 (1856). Type: *D. speciosa* Meisn.

Mostly erect or spreading *shrubs*, with or without lignotuber. *Leaves* linear, serrate, pinnatifid, pinnatisect or in 1 species entire. *Inflorescence* terminal or axillary, sometimes on old stems; involucre bracts shorter or longer than flowers, usually narrow and very hairy. *Perianth* straight including limb, not relaxed at anthesis. *Pistil* straight, shorter than perianth; pollen presenter narrow, smooth or ribbed. *Old flowers* persistent or soon falling: *Follicles* obovate-oblong or semi-elliptic, sometimes oblique, usually hairy, usually remaining closed until burnt. *Seed* body basal with markedly narrowed base; wing with or without notch.

A series of 8 species, mostly in the kwongan between Eneabba and Lake King. Just before anthesis the flowers are spaced rather openly in the head. The perianth is quite rigid and at anthesis does not relax, the limb remaining loosely around the pollen presenter.

Typification. Bentham included three species in this series, of which one (*D. tridentata*) is here placed in ser. *Acrodoniae* Meisn., the two other retained here. Of these, *D. shuttleworthiana* is considered to be more appropriate as lectotype since it has no floral leaves as described in the diagnosis, whereas *D. speciosa* usually has some.

Dryandra erythrocephala C.A. Gardner, J. Roy. Soc. W. Australia 13: 63, fig. 35 A-H (1927). Type: E of Pingrup and S of Newdegate, Western Australia, 15 December 1926, C.A. Gardner s.n. (iso: MEL, PERTH (3 sheets)).

There are two varieties.

- 1 Perianth 32-40 mm long, red-black in upper third var. **erythrocephala**
 1: Perianth 26-28 mm long, yellow in upper third var. **inopinata**

Dryandra erythrocephala C.A. Gardner var. **erythrocephala**

Perianth 32-40 mm long, red-black in upper third. *Pistil* 31-36 mm long.

Distribution. As for the species.

Habitat. Grows in sandy loam over laterite, in open mallee kwongan.

Flowering period. Mainly January-June.

Dryandra erythrocephala var. **inopinata** A.S. George, var. nov.

Ab *Dryandra erythrocephala* var. *erythrocephala* perianthio 26-28 mm longo, ad apicem flavo, et pistillo 25-27 mm longo, differt.

Typus: Hopkins Reserve, SE of Kulin, Western Australia, 32°44'S, 118°17'E, 1 August 1986, A.S. George 16743 (*holo*: PERTH 04228758; *iso*: CANB, K, MEL, NSW).

Perianth 26-28 mm long, yellow in upper third. *Pistil* 25-27 mm long.

Selected collections examined. North Kukerin-Tarin Rock Rd, 10 km SE of intersection with Muller and Springhurst/Boundary and unnamed road, K. Alcock 345 (MEL); S of Nyabing, c. 33° 37'S, 118° 10'E, A.S. George 16697 (PERTH).

Distribution. Recorded near Kulin and Nyabing.

Habitat. Grows in sand over laterite in kwongan.

Flowering period. Late flowers have been recorded in August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two. Because of its similarity to var. *erythrocephala*, this has been little collected, hence distributional data are few.

Etymology. Named from the Latin *inopinatus* (unexpected), in reference to the flower colour which is quite unlike that of var. *erythrocephala*.

Discussion. Although readily separable from typical *D. erythrocephala* by the smaller, yellow flowers, this has exactly its habit, foliage and indumentum and hence is retained in that species.

Dryandra viscida A.S. George, sp. nov.

Ab speciebus aliis ser. *Gymnocephalae* bracteis involucralibus, basi perianthii et folliculis viscidis, praecipue differt.

Typus: Hatter Hill, Western Australia, 32°50'S, 119°59'E, 30 July 1969, A.S. George 9446 (*holo*: PERTH 03262316; *iso*: CANB, K, MEL, NSW, PERTH 03262324, 03262332).

Dense, rounded *shrub* to 1 m, without lignotuber. *Stems* hirsute, densely leaved and with many prophylls. *Leaves* linear, pinnatifid, acute, pungent, 15-35 cm long, 5-10 mm wide, rusty-tomentose in pits below; margins revolute, with 25-75 triangular pungent lobes to 4 mm long each side; petiole to 5 mm long. *Inflorescences* terminal, closely successive; involucral bracts linear, acuminate, rather soft, to 6 cm long, the outer viscid-hirsute, inner hirsute on upper margin; flowers c. 55 per head. *Perianth* 55-56 mm long, hirsute above base, then glabrous except for coarse hairs on limb until anthesis, golden yellow; limb 14-15 mm long. *Pistil* straight or gently bowed, 54-55 mm long, sparsely hirsute above ovary, glabrous above, yellow; pollen presenter gradually narrowed, c. 10 mm long, obscurely ribbed. *Follicles* several, ± oblong with narrowed base, 15-16 mm long, sparsely hairy, viscid.

Selected collections examined. South Ironcap, J.S. Beard 3735 (PERTH); W of Digger Rocks, c. 25 km E of Varley, S.D. Hopper 5300 (PERTH).

Distribution. Restricted to Digger Rocks, Middle and South Ironcap and Hatter Hill.

Habitat. Grows in laterite in thick scrub.

Flowering period. August-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The epithet, from the Latin *viscidus* (sticky), refers to the involucre bracts, the sticky nature being unusual in the genus.

Discussion. A distinctive species with viscid involucre and floral bracts and perianth bases, the follicles large and also somewhat viscid. Tepals very slender with long limb. Pollen presenter not clearly demarcated at base.

Dryandra speciosa Meisn., in A.L.P.P. de Candolle, Prodr. 14: 479 (1856) - *Josephia speciosa* (Meisn.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* south-western Western Australia, 184-, *J. Drummond* 5, suppl.: 19 (*iso:* BM, CGE, K (3 sheets), MEL, NSW (2 sheets), PERTH).

There are 2 subspecies, one occurring from Tathra National Park south to Badgingarra, the other around Tammin.

1 Flowers 85-115 per head; follicles 18-21 mm long (Tammin) subsp. ***speciosa***

1: Flowers 65-75 per head; follicles 24-25 mm long (Tathra-Badgingarra) ... subsp. ***macrocarpa***

Dryandra speciosa Meisn. subsp. ***speciosa***

Flowers 85-115 per head. *Follicles* 18-21 mm long.

Distribution. Occurs near Tammin.

Habitat. Grows in sand in kwongan.

Flowering period. July-August.

Dryandra speciosa subsp. ***macrocarpa*** A.S. George, subsp. nov.

Ab subsp. *speciosa* capitulis 65-75-floribus et folliculis 24-25 mm longis differt.

Typus: N of Coorow-Greenhead Rd on Willis Rd, Western Australia, 30°00'S, 115°32'E, 5 August 1986, A.S. George 16784 (*holo:* PERTH 04228480; *iso:* CANB, K, MEL, NSW).

Flowers 65-75 per head. *Follicles* 24-25 mm long.

Selected collections examined. Tathra National Park, *J. Coleby-Williams* 292 (PERTH); 21 km E of Eneabba on road to Three Springs, *R.J. Hnatiuk* 780133 (PERTH); NW of Dinner Hill, 26 June 1965, *A. Popplewell* (PERTH).

Distribution. Occurs from Tathra National Park to Badgingarra.

Habitat. Grows in sandy loam in kwongan.

Flowering period. July-August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Four.

Etymology. Epithet from the Greek *macros* (large) and *carpos* (a fruit), the follicles being larger than those of subsp. *speciosa*.

Discussion. This subspecies has the same colour variation as subsp. *speciosa*, from pale gold through pink to red.

Ser. 19 *Plumosae*

Dryandra ser. *Plumosae* A.S. George, ser. nov.

Frutices sine lignotubero. Folia pinnatipartita, multilobata. Inflorescentiae axillares, plerumque celatae, inconspicuae; bractee involucrales tenues, hirsutae vel villosae. Perianthium et pistillum breve, plerumque decurvum.

Typus: *D. plumosa* R. Br.

Shrubs without lignotuber. *Leaves* pinnatipartite with 20-60 lobes each side. *Inflorescence* axillary, sessile or on short branchlet, usually below current season's foliage and hidden; involucral bracts fine, about as long as or shorter than flowers, long-hirsute or villos with hairs up to 5 mm long. *Perianth* short, usually curved, the limb turned downwards before anthesis. *Pistil* curved downwards; pollen presenter not or slightly thickened, ribbed. *Old flowers* ?falling. *Follicles* obliquely ovoid, hairy or almost glabrous, firmly attached. *Seed* obovate; wing not decurrent, not notched.

A series of three species in the Stirling Range-Fitzgerald River region.

Etymology. Named for the type species of the series.

Dryandra plumosa R. Br., Trans. Linn. Soc. London 10: 214 (1810) - *Josephia plumosa* (R. Br.) Poir., Dict. Sci. Nat. 24: 247 (1822). *Type:* Lucky Bay, [E of Esperance, Western Australia], January 1802, R. Brown Iter Australiense 3421 (*iso:* BM (2 sheets), K (2 sheets), MEL).

There are two subspecies.

- 1 Leaves pinnatifid to pinnatipartite; lobe margins (at least the lower margin) concave, prominently recurved; lamina relatively thick subsp. **plumosa**
- 1: Leaves almost pinnatisect; lobe margins gently convex, slightly recurved; lamina relatively thin subsp. **denticulata**

Dryandra plumosa* R. Br. subsp. *plumosa

Leaves pinnatifid to pinnatipartite; lobe margins (at least the lower margin) concave, prominently recurved; lamina relatively thick. *Follicles* 11-15 mm long, 14-15 mm wide.

Distribution. Occurs from Cape Riche to West Mt Barren and inland to Chillinup and, according to the type, at Lucky Bay but not recorded there again.

Habitat. Grows in sandy loam or clay-loam over gravel and gravelly loam, in kwongan, often also with mallees.

Flowering period. Flowers recorded in most months.

***Dryandra plumosa* R. Br. subsp. *denticulata* A.S. George, subsp. nov.**

Ab *D. plumosa* R. Br. subsp. *plumosa* foliis fere pinnatisectis, lobis fere acutis, marginibus plerumque sinubus late U-formibus, parum recurvis, illis inflorescentiam subtentis minimis denticulatis, et folliculis obovatis 10-12 mm longis 7-8 mm latis, differt.

Typus: NW slope of Bluff Knoll, Western Australia, 12 December 1982, *K.H. Rechinger* 60427 (*holo:* PERTH 01799142).

Leaves thinner in texture than subsp. *plumosa*, almost pinnatisect; lobes almost acute; margins usually gently convex, slightly recurved; leaves subtending inflorescence very small, denticulate. *Follicles* obovate, 10-12 mm long, 7-8 mm wide.

Selected collections examined. Base of Coyanarup, Stirling Range, December 1933, *H. Steedman* (PERTH); Kojaneerup Spring, Stirling Range, *G.J. Keighery* 4921 (PERTH).

Distribution. Endemic in the Stirling Range National Park.

Habitat. Grows in rocky or gravelly sand, in Jarrah-Marri woodland, and in lower montane shrubland.

Flowering period. December.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two. Four collections are known, one of which has a collector's name but no other details.

Etymology. The epithet is from the Latin *denticulatus* (having small teeth), in reference to the minutely denticulate outer involucre bracts.

Discussion. Outermost involucre bracts usually minutely denticulate.

***Dryandra pseudoplumosa* A.S. George, sp. nov.**

Ad *D. plumosam* R. Br. affinis, a qua bracteis involucrelibus brevioribus (ad 20 mm longis) crassioribus non filiformibus, floribus per capitulum numerosioris (c. 90-100), et folliculis majoribus (17-18 mm longis), praecipue differt.

Typus: 17 km E of Red Gum Pass turnoff on Salt River Rd, Stirling Range National Park, Western Australia, 25 November 1986, *M. Pieroni* 26 (*holo*: PERTH 04225856; *iso*: CANB, NSW, PERTH 04225864).

Shrub to 1.8 m, without lignotuber. *Stems* villous. *Leaves* broadly linear, pinnatipartite; lamina 8-17 cm long, 6-15 mm wide; margins revolute; lobes 15-31 per side, triangular, acute, pungent, the lower edge concave, upper edge convex; petiole 1-2 cm long. *Inflorescence* sessile, axillary, subtended by small 'involucral' leaves; involucral bracts broadly linear, tapering, acute, the longest to 20 mm long, villous, the outermost denticulate; flowers *c.* 90-100 per head. *Perianth* 16-18 mm long, villous-hirsute; limb *c.* 3 mm long, sparsely pubescent and with terminal, long, twisted caducous hairs. *Pistil* 23-25 mm long, strongly incurved, glabrous except for long hairs on ovary; pollen presenter narrowly ellipsoidal, ribbed, 1-1.1 mm long, brown. *Follicles* 1-3 per head, broadly oblong-ovate, gently curved, 17-18 mm long, densely tomentose.

Selected collections examined. Between Yetemerup and Warrungup, 15 Oct. 1902, *A. Morrison* (PERTH); Red Gum Pass, Stirling Range, 7 October 1900, *A. Morrison* (PERTH).

Distribution. Occurs in the Stirling Range National Park and south-east of Ongerup.

Habitat. Grows in sandy gravel in open mallee shrubland and Jarrah-Marri woodland.

Flowering period. November-December.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The epithet is derived from the name of the nearest relative *D. plumosa* with the suffix *pseudo-* to indicate its close resemblance without being the same.

Discussion. Differs from *D. plumosa* in having shorter, thicker involucral bracts without filiform tips, more flowers per head, the pistils bowed \pm equally around head, and larger, densely tomentose follicles that are firmly attached.

Dryandra montana C.A. Gardner ex A.S. George, sp. nov.

Ab *D. plumosa* R. Br. et *D. pseudoplumosa* A.S. George foliis coriaceis pinnatisectis lobis tortis marginibus revolutis, et bracteis involucralibus obtusis vel acutis ad 15 mm longis, praecipue differt.

Typus: Bluff Knoll, Stirling Range, Western Australia, 16 Jan. 1966, *K. Newbey* 2226 (*holo*: PERTH 03322726; *iso*: CANB).

Shrub to 2.5 m, without lignotuber. *Stems* rusty-villous. *Leaves* pinnatisect; lamina 8-25 cm long, 6-11 mm wide, hirsute, glabrescent above, closely tomentose below but reticulum evident and midrib prominent; lobes 35-60 each side, obliquely triangular, slightly overlapping at base, strongly curved adaxially and twisted so that underside faces apex of leaf; margins revolute; petiole 10-30 mm long. *Inflorescence* sessile on branchlet 1 or 2 years old; involucral bracts linear to lanceolate, obtuse to acute, villous outside, glabrous inside, the innermost *c.* 15 mm long; flowers 50-60 per head. *Perianth* 17-19 mm long, villous grading to hirsute on claws, yellow; limb 3 mm long, closely pubescent and with a few long hairs towards apex. *Pistil* 18-21 mm long, gently bowed, glabrous except long hairs

at apex of ovary, pale yellow; pollen presenter scarcely thickened, ribbed, 0.8-1 mm long. *Follicles* obliquely obovoid, 9-11 mm long, sculptured, sparsely hairy, dark red-brown.

Selected collection examined. Summit of Bluff Knoll, F. Lullfitz 3267 (PERTH).

Distribution. Confined to the higher slopes of Bluff Knoll, Stirling Range National Park.

Habitat. Grows in rocky soil in kwongan.

Flowering period. January.

Conservation status. Dept of Conservation & Land Management Conservation Code: Declared Rare. Almost extinct in the wild. The only known population is infected with *Phytophthora* and may be eliminated within a few years.

Etymology. Named from the Latin *montanus* (of mountains), in reference to the habitat. The epithet was chosen but not published by the late Charles Gardner, Government Botanist of Western Australia 1929-1960.

Discussion. The twisted leaf lobes are distinctive. The leaves are much more coriaceous than those of *D. plumosa* and *D. pseudoplumosa*.

Ser. 20 *Concinnae*

Dryandra ser. *Concinnae* Benth., Fl. Austral. 5: 564, 570 (1870). Type: *D. concinna* R. Br.

Dryandra § *Serratae* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 470 (1856). Type: *D. serra* R. Br., lecto (here chosen).

Tall *shrubs* without lignotuber. *Leaves* serrate or pinnatifid. *Inflorescences* small, on short lateral branchlets or axillary; involucre bracts much shorter than flowers. *Perianth* curved upwards in 1 species, the limb inflexed in 1 and turned downwards in the third. *Pistil* longer than perianth, curved; pollen presenter short, ovoid, cylindrical or conical, smooth or obscurely ribbed. *Old flowers* ?falling. *Follicles* 1 or few, ovoid to elliptic or oblong, oblique. *Seed* with terminal wing.

A series of 3 species near the south coast from Walpole to Albany and in the Stirling Range.

Typification. Meisner included eleven species in his § *Serratae* but they are a heterogeneous group when characters other than foliage are considered. Two are here placed in ser. *Dryandra*, three in ser. *Niveae*, two in the new series *Foliosae*, one in the new series *Tenuifoliae* and the remaining three are retained in ser. *Concinnae*. Since Meisner's diagnosis applies well to all three, *D. serra* is selected as lectotype as the species on which his name was probably based.

Ser. 21 *Obvallatae*

Dryandra ser. *Obvallatae* Benth., Fl. Austral. 5: 564, 576 (1870). Type: *D. conferta* Benth., lecto (here chosen)

Erect *shrubs*, often columnar, without lignotuber. *Leaves* crowded, linear, pinnatifid, serrate or dentate. *Inflorescence* small, on short lateral branchlet or sessile, hidden or partly so within foliage. *Perianth* straight or downcurved, the limb prominently downcurved before anthesis. *Pistil* prominently downcurved, longer than perianth; pollen presenter small, not thickened. *Old flowers* ?falling or persistent. *Follicles* few, ovoid, obovoid, cuneate or transversely elliptic, hairy. *Seed* with terminal wing.

A series of 5 species.

Typification. Bentham included twelve heterogeneous species in this series; in this treatment these are distributed among eight series, mostly those named by Meisner. Two species included by him - *D. seneciifolia* and *D. conferta* - are retained, and the latter is selected as lectotype since its longer, more pungently-lobed leaves fit the description slightly better.

Dryandra fasciculata A.S. George, sp. nov.

Ab *D. rufistylis* A.S. George stylo flavo, praebitore pollinis rufo, perianthio longiore (18-22 mm longo) in dimidio inferiore sericeo-villoso, et folliculis obovatis, differt. Folia confertissima, dentata.

Typus: 23 miles [c. 37 km] E of Harrismith, Western Australia, c. 32°57'S, 118°11'E, 28 May 1969, A.S. George 9330 (*holo:* PERTH 04228626; *iso:* AD, BRI, CANB, K, MEL, NSW, PERTH 04228634).

Shrub to 1.5 m without lignotuber, columnar. *Stems* villous. *Leaves* crowded with overlapping petioles, linear, decurved, dentate or serrate, acute, pungent, 6-18 cm long, 7-10 mm wide, closely tomentose below; margins recurved; teeth 5-15 each side, to 4 mm long; petiole 1-4 cm long, rusty hirsute. *Inflorescence* sessile or on short branchlet; involucre bracts many, narrow, 25-33 mm long, rusty-villous; flowers 40-60 per head. *Perianth* ± straight with downturned limb, 18-22 mm long, curled-villous in lower half, silky above, creamy yellow; limb 2.5-3 mm long, sparsely hirsute. *Pistil* recurved, 23-31 mm long, glabrous except hirsute ovary, yellow; pollen presenter not thickened, 1.5 mm long, red. *Follicles* obovate, 6-9 mm long, hirsute.

Selected collections examined. 31 km W of Lake Grace, A.S. George 16707A, B (CANB, PERTH); 2 km W of Corrigin, A.S. George 16750 (CANB, K, MEL, NSW, PERTH), c. 13 km SE of Yealering, A.S. George 9403 (PERTH).

Distribution. Occurs between Corrigin and Kukerin.

Habitat. Grows in gravel and sand over gravel, in mallee kwongan.

Flowering period. Late May-August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The epithet, from the Latin *fasciculatus* (clustered, in bundles), refers to the crowded leaves and conflorescences.

Discussion. Differs from *D. rufistylis* in the yellow style and red pollen presenter, the larger flowers, the silky-villous lower half of the perianth claws and the obovate follicles. The species may be recognized especially by the numerous, narrow involucral bracts, the crowded overlapping petioles, and the usually dentate leaves.

Dryandra conferta Benth., Fl. Austral. 5: 578 (1870) - *Josephia conferta* (Benth.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* south-western Western Australia, 184-, J. Drummond 3: 295 (*lecto* (here chosen): K; *isolecto:* BM, CGE, K, MEL, PERTH).

Typification. There are four sheets of this collection at K, all annotated by Bentham. That selected as lectotype is the best specimen. The species is variable over its wide geographical range. Of all other collections assigned to the species, that which matches the type most closely is A.S. George 16754 collected between Quairading and Corrigin (PERTH).

Widespread in inland south-western Western Australia from Miling and Cadoux to the Porongurup Range and east to Bodallin and Mt Holland. Differs from other species of ser. *Obvallatae* in the larger, all-yellow flowers and obliquely obovoid fruit.

There are 2 varieties.

- 1 Perianth 21-25 mm long; pistil 25-30 mm long; involucral bracts villous var. **conferta**
 1: Perianth 15-18 mm long; pistil 16-26 mm long; involucral bracts velvety var. **parva**

Dryandra conferta Benth. var. **conferta**

Shrub to 2.5 m. Involucral bracts villous. *Perianth* 21-25 mm long. *Pistil* 25-30 mm long.

Selected collections examined. 26 km SW of Bodallin, R. J. Cranfield 2315 (PERTH); c. 22 km SE of Nyabing, A.S. George 14289 (CANB, MEL, PERTH); 4 km E of Cadoux, A.S. George 16762 (AD, CANB, K, MEL, NSW, PERTH); 9 km SW of Lake Cronin, K. Newbey 5810 (MEL, PERTH).

Distribution. Occurs from Miling and Cadoux south to Ongerup and east to Bodallin and Mt Holland.

Habitat. Grows in lateritic loam and sandy loam in kwongan and low open-woodland.

Flowering period. Late June-September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Four.

Discussion. Flowers with mouse- or honey-like scent. A variable taxon. Typical var. *conferta* has linear leaf teeth and is of spreading habit. The more common form has broad teeth and is columnar. George 14289 has a somewhat cuneate follicle. Newbey 912 from near Neeralin Pool (PERTH) has narrow leaves mostly less than 9 mm wide. Miling, August 1972, Seymour (PERTH) has coarsely lobed leaves.

Dryandra conferta var. *parva* A.S. George, var. nov.

Ab *D. conferta* Benth. var. *conferta* floribus minoribus, bracteis involucribus velutinioribus, et folliculis obliquioribus (fere transversim obovatis), differt. Perianthium 15-18 mm longum. Pistillum 16-26 mm longum.

Typus: South Fence Rd, 7 km NW of Albany-Lake Grace Rd, SE of Nyabing, Western Australia, c. 33°40'S, 118°18'E, 30 July 1986, A.S. George 16694 (*holo*: PERTH 03462595; *iso*: CANB, PERTH 03462609).

Perianth 15-18 mm long. *Pistil* 1-26 mm long.

Selected collections examined. N end of Red Gum Pass, Stirling Range National Park, A.S. George 16655 (PERTH); S of Ongerup, *M. Pieroni* 33 (PERTH); E end, Porongurup Range, *K. Newbey* 3414 (CANB, NSW, PERTH).

Distribution. Occurs from the Nyabing area to the western Stirling Range and south of Ongerup, with a record at the east end of the Porongurup Range.

Habitat. Grows in gravelly clay, clay loam and sandy loam, in kwongan and tall shrubland.

Flowering period. June-August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The varietal epithet is from the Latin *parvus* (small) and refers to the flowers being smaller than those of var. *conferta*.

Discussion. Differs from var. *conferta* in the smaller flowers, more velvety involucrial bracts, and more oblique (almost transversely obovate) follicles. Although *D. conferta* is very variable, some southern populations appear to have consistently smaller flowers.

Dryandra columnaris A.S. George, sp. nov.

Ab *D. seneciifolia* R. Br. habitu elatiore (ad 2 m alto), foliorum lobis brevioribus numerosioris (5-18 in quoque margine), bractearum involucrium pilis glandularibus, perianthii pilis crispis, et folliculis majoribus (10-12 mm longis), differt.

Typus: Boyagin Nature Reserve, SW of Brookton, Western Australia, 29 May 1969, A.S. George 9354 (*holo*: PERTH 04228669; *iso*: CANB, MEL, NSW, PERTH 04228677).

Illustration. R.M. Sainsbury, Field Guide *Dryandra* 87 (1985), as *D. seneciifolia*.

Columnar *shrub* to 2 m, without lignotuber. *Stems* tomentose and hirsute. *Leaves* linear, pinnatifid, mucronate; lamina 5-15 cm long, 3-15 mm wide, white-tomentose below and with long sparse hairs on midrib, sparsely hirsute and pubescent above; margins revolute, with 5-18 triangular-falcate teeth each side to 8 mm long; petiole to 4 cm long, hirsute and tomentose. *Inflorescence* almost

sessile, surrounded by leaves; involucre bracts linear-subulate, to 2 cm long, glandular-pubescent, the lower margins hirsute; flowers 25-35 per head. *Perianth* curved downwards, 11-14 mm long (lower flowers), 16 mm long (upper flowers), pale yellow to purple with grey brown limb, villous with curled hairs above base, sparser above; limb 2-2.5 mm long, sparsely hirsute. *Pistil* curved up then down, 13-16 mm or 19-20 mm long, glabrous except ovary; pollen presenter 1.2 mm long. *Follicles* 1 or 2, broadly obovate-cuneate, 10-12 mm long, pubescent.

Selected collections examined. *Dryandra*, A.S. George 16623 (CBG, PERTH); Tutanning Nature Reserve, A.S. George 7786 (PERTH).

Distribution. Localized in a few areas between Brookton and Narrogin.

Habitat. Grows in lateritic soil in low woodland and kwongan.

Flowering period. May-June.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The epithet is Latin for columnar or column-like, in reference to the habit.

Discussion. Seedling leaves are linear and entire. Differs from *D. seneciifolia* in the taller habit, in having shorter, more numerous leaf lobes, in the glandular hairs of the involucre bracts, the curled hairs of the perianth and the larger fruit.

***Dryandra platycarpa* A.S. George, sp. nov.**

Ab speciebus aliis ser. *Obvallatae* foliis pinnatipartitis, bracteis involucrelibus brevibus (ad 12 mm longis), floribus parvis (perianthio 13-16 mm longo) cremeis et brunneis, et folliculis transverse ovatis 11-13 mm latis, differt.

Typus: junction of Coorow-Greenhead Rd and Tootbardi Rd, Alexander Morrison National Park, Western Australia, 30°04'S, 115°31'E, 5 August 1986, A.S. George 16781 (*holo:* PERTH 04110404; *iso:* CANB, MEL, PERTH 04110412).

Shrub to 80 cm with 1-several columnar branches, without lignotuber. *Stems* villous and tomentose. *Leaves* broadly linear, pinnatipartite, spreading, acute to obtuse, pungent, 4-12 cm long, 6-17 mm wide, closely tomentose below; margins revolute; lobes 10-25 each side, subulate to triangular, to 8 mm long, pungent; petiole usually 2-6 mm long, villous, glabrescent. *Inflorescence* on short branchlet or sessile; involucre bracts many, linear, mostly to 12 mm long, silky-villous with white hairs; flowers 60-75 per head. *Perianth* straight to curved with downturned limb, 13-16 mm long, curled-tomentose in lower half, silky-villous above, cream; limb 2.5 mm long, pilose, gold or brown. *Pistil* recurved, 16-19 mm long, glabrous except silky ovary, cream; pollen presenter not thickened, 1 mm long, green or cream. *Follicles* transversely ovate, 9 mm long, 11-13 mm wide, sparsely pilose.

Selected collections examined. c. 37 km NNE of Eneabba on First North Rd, A.S. George 16798 (CANB, PERTH); 10 km W of Mogumber township, A.S. George 7766 (CANB, MEL, NSW, PERTH); Dinner Hill, Aug. 1962, F.W. Humphreys (PERTH); c. 16 km W of Winchester, A.C. Beauglehole 12090 (PERTH).

Distribution. Occurs from north of Eneabba to Mogumber.

Habitat. Grows in deep sand or gravelly sand in low or tall kwongan.

Flowering period. May-July.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. Epithet from the Greek *platys* (wide, flat) and *carpos* (a fruit), in reference to the follicles.

Discussion. The only species of ser. *Obvallatae* in the kwongan north of Perth. May be recognized by the pinnatipartite leaves, short involucral bracts, small cream and brown flowers and broad follicles. Plants from the Mogumber area have broader leaf lobes than those further north. There is some variation in size of flowers.

Dryandra rufistylis A.S. George, sp. nov.

Ad *D. confertam* Benth. affinis, a qua perianthio villosa, stylo rufo et folliculis parvis (7-9 mm longis), differt; ab *D. seneciifolia* R. Br. foliis serratis, perianthio cremeo-flavo et stylo rufo differt.

Typus: c. 8 miles [c. 13 km] SW of Woodanilling, Western Australia, 33°37'S, 117°20'E, 3 August 1969, A.S. George 9498 (*holo:* PERTH 03262294; *iso:* CANB, K, MEL, NSW, PERTH 03262308).

Shrub to 1.5 m, columnar, without lignotuber. *Leaves* linear, serrate, recurved, acute, pungent, 5-15 cm long, 4-10 mm wide, closely tomentose below; margins slightly recurved; teeth 5-10 each side, to 5 mm long; petiole to 15 mm long, hirsute. *Inflorescence* sessile; leaves passing into involucral bracts; bracts subulate, numerous, to 20 mm long, rusty-villous; flowers 35-40 per head. *Perianth* ± straight with limb downturned before anthesis, 14-18 mm long, woolly, creamy yellow with yellow or pink-brown limb; limb 2.5 mm long, sparsely hirsute. *Pistil* downcurved, 18-22 mm long, glabrous except hirsute ovary, red with green pollen presenter; pollen presenter not or slightly enlarged, c. 1 mm long, obscurely ribbed. *Follicles* ovoid with flattened apex, erect, 7-9 mm long, sparsely hirsute.

Selected collections examined. 47 km N of Nyabing, A.S. George 16701 (PERTH); River Rd, NE of Woodanilling, A.S. George 16631 (CANB, MEL, PERTH).

Distribution. Occurs from the Woodanilling district east to Nyabing and north towards Tarin Rock.

Habitat. Grows in gravelly loam, in kwongan and eucalypt low open woodland.

Flowering period. July-August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. Named from the Latin *rufus* (reddish) and *stylus* (style), the red style being a distinctive feature of the species.

Discussion. The red style is distinctive. Distinguished from *D. seneciifolia* by the serrate leaves and different flower colours. Resembles *D. conferta* but differs especially in the woolly perianth, red style and small ovoid fruit, and *D. columnaris* from which it is separated by the serrate leaves. A population near Corrigin (A.S. George 16750) has slightly larger flowers (perianth 19-20 mm long, pistil 23-24 mm long), a cream style and more spreading leaf teeth than typical plants. It is placed tentatively with this species.

Ser. 22 *Pectinatae*

Dryandra ser. *Pectinatae* (Meisn.) A.S. George, stat. nov.

Dryandra § *Pectinatae* Meisn. in A.L.P.P. de Candolle, Prodr. 14: 475 (1856). *Type:* *D. nana* Meisn., lecto (here chosen).

Dwarf *shrubs* with small lignotuber. *Leaves* deeply pinnatifid. *Inflorescence* terminal; involucre bracts much shorter than flowers. *Perianth* straight except limb reflexing before anthesis, flared widely at apex of basal tube. *Pistil* curved, much longer than perianth; pollen presenter markedly swollen, not ribbed. *Old flowers* persistent. *Follicles* broadly obovate, sparsely hairy, usually remaining closed until burnt. *Seed* body basal; wing not decurrent, shortly notched.

A monotypic series of the kwongan north of Perth, characterized by the very long pistil, clavate pollen presenter and perianth flaring widely above the basal tube.

Typification. Meisner included six species in this series. As with most of his series, which are based only on the leaves, these are now considered heterogeneous and in this treatment are placed in five series, three in other previously named ones, the others in new ones described here. The description of the leaf lobes as linear, parallel, several times longer than wide, is slightly more fitting to *D. nana* and *D. fraseri* than to *D. serratuloides*, and *D. nana* is selected as Meisner placed it before *D. fraseri* in his arrangement.

Ser. 23 *Acuminatae*

Dryandra ser. *Acuminatae* A.S. George, ser. nov.

Frutices prostrati cum lignotubere vel caulibus subterraneis. Folia pinnatipartita, interdum lobis etiam pinnatipartitis. Inflorescentia terminalis; receptaculum prominenter conicum; bractae involucrales multae, lanceolatae, longe acuminatae. Perianthium rectum, sparsim hirsutum pilis patentibus viscidis; limbus antea anthesin inflexus. Pistillum incurvum; praebitor pollinis ad basin parum tumidus, costatus. Flores veteres persistentes. Folliculi pauci, valde affixi, oblique obovati.

Typus: *D. preissii* Meisn.

Prostrate *shrubs*, with lignotuber or underground stems. *Leaves* pinnatipartite, some lobes again pinnatipartite; margins revolute. *Inflorescence* terminal; receptacle prominently conical; involucre bracts many, lanceolate, long-acuminate. *Perianth* straight, sparsely hirsute with spreading sticky

hairs; limb inflexed before anthesis. *Pistil* incurved; pollen presenter slightly swollen at base, ribbed. *Old flowers* persistent. *Follicles* several, firmly attached, obliquely obovate. *Seed* wing ?terminal.

A monotypic series, characterized by the bipinnatipartite leaves, many acuminate involucre bracts and sticky perianth hairs.

Etymology. Series name from the Latin *acuminatus* (drawn to a fine point), in reference to the involucre bracts.

Ser. 24 *Niveae*

Dryandra ser. *Niveae* Benth., Fl. Austral. 5: 564, 574 (1870). *Type:* *D. nivea* (Labill.) R. Br.

Shrubs with prostrate or short, erect divaricately branched stems, with or without lignotuber. *Leaves* linear, pinnatifid, pinnatipartite or pinnatisect. *Inflorescence* terminal, sometimes subtended by new branchlets; involucre bracts shorter than flowers, flat; receptacle markedly convex; flowers arranged so that at anthesis the styles curve inwards leaving a prominent central hole; floral bracts linear, obtuse, variously hairy and with apical papillae or curled hairs. *Perianth* straight, the limb inflexed before anthesis. *Pistil* of outer flowers much longer than inner, strongly incurved. *Old flowers* persistent. *Follicles* obovate, sometimes markedly narrowed towards base, loosely attached. *Seed* with terminal wing.

A closely knit series of 6 species widespread between Geraldton, Cape Leeuwin and Israelite Bay and inland to Corrigin. One of the most difficult series taxonomically: the floral and fruit morphology are remarkably uniform, species being separated largely on the basis of habit and leaf morphology. For many years the name *D. nivea* has been used in a broad sense for the whole group, but it has become evident that several taxa should be recognized. Recently the early names *D. arctotidis* R. Br., *D. brownii* Meisn., *D. stenoprion* Meisn. and *D. tortifolia* Meisn. have been brought back into use. *Dryandra lindleyana* Meisn. is now resurrected for a widespread, variable species in which five subspecies are recognized, and one new species is described. The series deserves a great deal more study.

Dryandra cypholoba A.S. George, sp. nov.

Ab *D. lindleyana* Meisn. lobis foliorum majoribus ad apicem arcte recurvis differt. Lamina folii 12-20 cm longa, 8-20 mm lata, lobis 25-40 in quoque margine.

Typus: junction of Coorow-Greenhead Rd and Tootbardi Rd, Western Australia, 30°04'S, 115°31'E, 5 August 1986, A.S. George 16777 (*holo:* PERTH 04110641; *iso:* AD, CANB, K, MEL, NSW, PERTH 04110668).

Shrub with short underground fire-tolerant stems. *Leaves* pinnatipartite, the lobes usually markedly recurved; lamina 12-20 cm long, 8-20 mm wide; lobes 25-40 each side, broadly triangular, obtuse to acute, the upper margin usually incurved to apex; petiole 1-4 cm long, pubescent, glabrescent. *Inflorescence* terminal, often subtended by hirsute dwarf leaf-bracts; involucre bracts narrowly ovate-lanceolate, acute, passing to broadly linear and obtuse, rusty-pubescent all over, green and orange-brown; flowers 55-60 per head. *Perianth* 27-37 mm long, shortly appressed-hirsute above

base, passing to appressed-pubescent claws, pale pinkish brown; limb 3–4 mm long, hirsute with shaggy apex. *Pistil* 41–47 mm long, lemon yellow; pollen presenter narrow, 1.3–1.5 mm long. *Follicles* obovate, 13–16 mm long, glabrous except apical and marginal hairs.

Selected collections examined. Corner of Beekeeper Rd and First North Rd, A.S. George 16796 (PERTH); 14 km W of Arrino on Richardson Rd, A.S. George 17010 (PERTH); 8 km W of Willis Rd on Eneabba-Carnamah Rd, E.A. Griffin 3494 (PERTH).

Distribution. Occurs from west of Arrino south to Alexander Morrison National Park.

Habitat. Grows in sand and gravelly loam, in kwongan with scattered *Eucalyptus todtiana* or in thick scrub.

Flowering period. August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The epithet is from the Greek *kyphos* (bent, humped) and *lobos* (a lobe), the leaf lobes being prominently recurved and hump-like.

Discussion. Differs from *D. lindleyana* especially in the leaves having large, coarse lobes that are usually recurved towards the apex giving the leaf a rolled appearance. The collection A.C. Beauglehole 12135 from c. 33 km W of Winchester (PERTH) has broad sinuses and fewer leaf lobes.

Dryandra lindleyana Meisn., in J.G.C. Lehmann (ed.), Pl. Preiss. 1: 598 (1845). *Type:* near 'Pointwater' [probably Point Walter], Swan River, Perth, [Western Australia], 17 July 1839, L. Preiss 511 (*holo:* NY, *iso:* BM, Fl, G, MEL, P).

Discussion. This species, which has fire-tolerant underground stems, includes taxa that for many years have been included within a broadly circumscribed *D. nivea*. The type of the latter is from near Esperance Bay and is non-lignotuberous. *Dryandra lindleyana* is a highly variable species with 5 subspecies here recognized (one with two varieties).

- 1 Leaf lobes oblong or linear (central and southern forests) subsp. **sylvestris**
- 1: Leaf lobes essentially triangular
 - 2 Leaves divided almost or quite to midrib
 - 3 Leaf lobes \pm regularly triangular, although upper margin usually shorter than lower margin
 - 4 Leaves 3–10 mm wide; lobes 30–60 each side of leaf (Mt Adams to Cape Naturaliste) subsp. **lindleyana**
 - 4: Leaves 2–3 mm wide; lobes 60–80 each side of leaf (Watheroo National Park to Moora) subsp. **pollostia**
 - 3: Leaf lobes with lower (basal) margin shallowly S-shaped or concave, the apex often slightly twisted so that lower margin is more recurved than upper (Arrowsmith River to Badgingarra) subsp. **media**
 - 2: Leaves divided $\frac{1}{2}$ to $\frac{3}{4}$ to midrib (central wheatbelt) subsp. **agricola**

Dryandra lindleyana Meisn. subsp. **lindleyana**

Stems prostrate to erect, to 45 cm long. *Leaf* lamina 10-20 cm long, 3-10 mm wide; margins recurved to revolute; lobes 30-60 each side, triangular with the upper side shorter, obtuse; sinuses V-shaped, 2-5 mm across; petiole 1-3 cm long. *Inflorescence* subtended by normal leaves; involucral bracts to 15-23 mm long, glabrous to densely pubescent, densely ciliate; flowers 50-70 per head. *Perianth* 22-35 mm long. *Pistil* 24-53 mm long; pollen presenter scarcely thickened at base, 1-1.3 mm long.

A very variable subspecies in habit and leaf form. Two varieties are recognized.

1 Plant with most stems procumbent, the aerial part less than 10 cm long var. **lindleyana**

1: Plant with aerial stems to 45 cm tall; Darling Plateau var. **mellicula**

Dryandra lindleyana Meisn. subsp. **lindleyana** var. **lindleyana** - *D. nivea* var. *subevenia* Meisn., in A.L.P.P. de Candolle, Prodr. 14: 472 (1856). *Type*: locality not cited, south-western Western Australia, date not cited, *L. Preiss* 508 (*lecto* (here chosen): NY).

Typification. Of the four collections cited in the protologue, *L. Preiss* 508 and *J. Drummond* 1: 640 (BM, K, MEL) are *D. lindleyana* subsp. *lindleyana* var. *lindleyana*, *J. Drummond* 4: 313 (BM, K (2 sheets), MEL) is *D. nivea* subsp. *nivea*, and *J. Drummond* 5: 419 (BM, K, MEL) is *D. brownii*. The Preiss collection is selected as the first listed by Meisner, and because most types of his other new taxa in Proteaceae are at NY; no specimen annotated by him has been found.

Stems prostrate, mostly underground. *Leaf* lamina 10-20 cm long, 3-8 mm wide.

Distribution. Occurs between Geraldton and Cape Naturaliste.

Habitat. Grows in sand, often over limestone, sometimes over laterite in kwongan and low woodland, and on the Darling Scarp and Plateau in lateritic or granitic soil in shrubland and open forest.

Flowering period. July-August.

Discussion. Variable in leaf length and width and in the size of the lobes. A collection 'between Moora and Jurien', *T.G. Hartley* 13924 (PERTH) has a large inflorescence (involucral bracts to 30 mm long, perianth 35 mm, pistil 53 mm).

Dryandra lindleyana subsp. **lindleyana** var. **mellicula** A.S. George, var. nov.

Ab *D. lindleyana* Meisn. var. *lindleyana* caulibus aereis ad 45 cm altis et foliorum lobis majoribus (lamina ad 10 mm lata) differt.

Typus: Lower Chittering, Western Australia, 3 September 1994, A.S. George 17210 (*holo*: PERTH 04228766; *iso*: CANB, K, NSW, PERTH 04228774).

Stems usually erect, to 45 cm long. *Leaf* lamina 10-15 cm long, 5-10 mm wide.

Selected collections examined. Barrington Quarry, H. Demarz 7487 (PERTH); Red Hill, Toodyay Rd, R.A. Saffrey 121 (PERTH); Helena Valley, J. Seabrook 75 (PERTH).

Distribution. Common on the Darling Plateau and along the Darling Scarp east of Perth, extending south to Cape Naturaliste.

Habitat. Grows in lateritic gravel in Jarrah-Marri forest, occasionally in sand in woodland.

Flowering period. July-September.

Conservation status. Not endangered.

Etymology. Epithet from the Latin *melliculus* (a little honey), the inflorescences of this group of dryandras being popularly referred to as 'honeypots' on account of their shape and nectar production.

Discussion. Differs from var. *lindleyana* mainly in the erect stems and more coarsely lobed leaves; sometimes occurs close to var. *lindleyana* but flowers earlier.

Dryandra lindleyana* subsp. *media A.S. George, subsp. nov.

Ad *D. lindleyanam* Meisn. subsp. *lindleyanam* affinis, a qua lobis foliorum grossioribus differt. Folia lamina 15-20 cm longa, 7-10 mm lata, lobis 25-40 in quoque margine

Typus: 5.6 km S of Eneabba on Brand Hwy, Western Australia, 29°52'S, 115°15'E, 6 August 1993, A.S. George 16808 (*holo:* PERTH 04110625; *iso:* CANB, MEL, NSW, PERTH 04110633).

Stems short, mostly underground. *Leaves* broadly linear, pinnatipartite; lamina 15-20 cm long, 7-10 mm wide; lobes 25-40 each side, broadly triangular, obtuse, the lower margin usually shallowly S-shaped with its apical part strongly recurved and thus appearing twisted; sinuses 3-10 mm across; petiole 1-3 cm long. *Inflorescence* terminal; involucre bracts to 20-25 mm long, rusty; flowers 50-65 per head. *Perianth* 26-30 mm long, cream-pink. *Pistil* 35-40 mm long, cream at base, pink above; pollen presenter swollen at base, 1.3 mm long, green.

Selected collections examined. c. 40 km W of Three Springs, C.A. Gardner 9142 (PERTH); 7 km S of Eneabba, E.A. Griffin 954 (PERTH); Brand Hwy, N of Arrowsmith River, E.A. Griffin 3500 (PERTH).

Distribution. Occurs between the Arrowsmith River, Badgingarra and Mt Lesueur.

Habitat. Grows in deep sand or sandstone-gravel in kwongan.

Flowering period. August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Three.

Etymology. The Latin epithet refers to the intermediate morphology of the subspecies.

Discussion. This is similar to typical *D. lindleyana* but the leaf lobes are larger giving the plant a coarser aspect. There is a resemblance to *D. cypholoba* but that taxon has a very distinctive appearance from the strongly recurved character of the leaf lobes.

Dryandra lindleyana* subsp. *pollostata A.S. George, subsp. nov.

Ab subspeciebus aliis foliis tenuibus differt. Folia lamina 13-20 cm longa, 2-3 mm lata, lobis 60-80 in quoque margine.

Typus: just W of cemetery, Moora, Western Australia, 30°38'S, 115°59'E, 9 August 1993, A.S. George 17002 (*holo:* PERTH 04228642; *iso:* CANB, K, NSW).

Stems mostly underground, forming clumps to 1 m across. *Leaves* pinnatipartite, ± flat; lamina 13-20 cm long, 2-3 mm wide; lobes 60-80 each side, obliquely triangular, obtuse, white-tomentose below; sinuses oblique, V-U-shaped, 1-3 mm across; petiole 1-4 cm long, tomentose, glabrescent. *Inflorescence* terminal; involucre bracts lanceolate (outer) to broadly linear and obtuse (inner), appressed-pubescent to glabrous except ciliate margins, the innermost 15-22 mm long; flowers 35-45 per head. *Perianth* 25 (inner) to 30 (outer) mm long. *Pistil* 32-37 mm long, pale maroon; pollen presenter slightly thickened, 1 mm long.

Selected collections examined. Reserve 12276, between Dandaragan and Moora, E.A. Griffin 4881 (PERTH); Brand Hwy, N of Red Gully Rd, B.J. Keighery 243B (PERTH); Mortlock Flora Reserve, W of Wongan Hills, K.F. Kenneally 5371 (PERTH).

Distribution. Occurs from Moore River National Park to Moora and Watheroo National Park, with a record west of Wongan Hills.

Habitat. Grows in sand, in banksia woodland and open shrubland.

Flowering period. August.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Two.

Etymology. The varietal epithet is from the Greek *pollostos* (smallest, least), this having the smallest leaf lobes of any *Dryandra*.

Discussion. Distinguished from other subspecies by the very fine leaves but grades into subsp. *lindleyana*.

Dryandra lindleyana* subsp. *sylvestris A.S. George, subsp. nov.

Ab subspeciebus aliis foliis brevioribus lobis paucioribus longioribus oblongis, praecipue differt. Lamina folii 6-16 cm longa, 10-20 mm lata; lobi 10-35 in quoque margine.

Typus: E of Mayanup, SE of Boyup Brook, Western Australia, 22 September 1972, A.S. George 11621 (*holo:* PERTH 04228952; *iso:* CANB).

Shrub with short underground fire-tolerant stems. *Leaves* broadly linear, almost pinnatisect; lamina 6-16 cm long, 10-20 mm wide; lobes 10-35 each side, obliquely oblong to narrowly triangular, acute, pungent, the margins convex towards apex, almost flat; sinuses obliquely V-shaped to narrowly U-shaped; petiole 5-12 mm long. *Inflorescence* subtended by a few normal leaves; involucre bracts to 20-24 mm long; flowers 30-40 per head. *Perianth* 22-25 mm long. *Pistil* 30-37 mm long, glabrous; pollen presenter slightly swollen at base, 1 mm long.

Selected collections examined. Yornup, E.J. Croxford 4471 (PERTH); near North Bannister, K. Newbey 2465 (PERTH); Quindanning-Harvey road, S. Paust 952 (PERTH).

Distribution. Widespread on the Darling Plateau of the lower South-West.

Habitat. Grows in lateritic soil in Jarrah-Marri forest.

Flowering period. September-October.

Conservation status. Not endangered.

Etymology. The Latin *sylvestris* (of woods or forests) refers to the typical habitat of the subspecies.

Discussion. Differs from the other subspecies mainly in the short leaves with fewer, longer, oblong lobes, and from *D. brownii* in the fire-tolerant habit and short leaves. Some collections have larger flowers, e.g. N Dinninup Reserve, E.M. Bennett 2037 and North Bannister, K. Newbey 2465 (both at PERTH), with the perianth 35 mm long and pistil 43 mm.

***Dryandra lindleyana* subsp. *agricola* A.S. George, subsp. nov.**

Ab subspeciebus aliis foliis pinnatipartitis ad dimidium laminae divisio, glaucis, et folliculis minoribus (7-10 mm longis), differt. Flores flavi.

Typus: near Jubuk, 60 km E of Brookton, Western Australia, 32°21'S, 117°45'E, 8 October 1994, A.S. George 17219 (*holo:* PERTH 04228456; *iso:* AD, CANB, K, MEL, NSW, PERTH 04228464).

Stems mostly underground, short. *Leaves* broadly linear, pinnatipartite, glaucous, densely hirsute when young; lamina 10-17 cm long, 8-13 mm wide, white below; lobes 15-30 each side, ± triangular, ± flat; margins ± equally recurved to revolute; sinuses obliquely curved-V-shaped, 3-8 mm across; petiole 2-4 cm long. *Inflorescence* with subtending dwarf hirsute leaf-bracts; involucre bracts oblong to broadly linear, appressed-pubescent and densely ciliate, the innermost 18-20 mm long. *Perianth* c. 20 mm long, pale yellow. *Pistil* 33-35 mm long, pale yellow; pollen presenter not enlarged, 0.8 mm long.

Selected collections examined. SSE of Corrigin, A.S. George 14363 (PERTH); between Jurakine Pool and Yenyenning Lake, NE of Brookton, R.J. Hnatiuk 791040 (PERTH); NE of Traysurin, K. Newbey 2487 (PERTH).

Distribution. Occurs between Corrigin and Traysurin in the central wheatbelt.

Habitat. Grows in sandy loam in kwongan.

Flowering period. September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. Only a few small populations are known.

Etymology. The epithet is from the Latin *ager* (a field) and the suffix *-cola* (growing in), in reference to the occurrence in central agricultural region of the South-West.

Discussion. The broad leaves divided c. half-way to midrib, always-yellow flowers and small fruit are distinctive.

Dryandra nivea (Labill.) R. Br., Trans. Linn. Soc. London 10: 214 (1810) - *Banksia nivea* Labill., Voy. 411, t. 24 (1800) - *Josephia rachidifolia* Knight, Cult. Prot. 111 (1809), *nom. illeg.* - *D. nivea* var. *adscendens* Endl., Gen. Pl. 4(2): 89 (1848), *nom. illeg.* - *Josephia nivea* (Labill.) Kuntze, Revis. Gen. Pl. 2: 578 (1891) - *D. nivea* var. *venosa* Meisn., in A.L.P.P. de Candolle, Prodr. 14: 472 (1856), *nom. illeg.* *Type:* le Grand Bay [Esperance Bay, Western Australia], 11–18 December 1792, J.J.H. de Labillardière (*lecto* (here chosen): FI).

Rounded *shrub* to 1.3 m high and wide, without lignotuber, dichotomously much-branched. *Leaves* linear, pinnatipartite, silky-tomentose above but glabrescent, the lobes white-tomentose below; lamina 20–45 cm long, 3–10 mm wide; lobes 45–80 each side, ± triangular, rounded-obtuse; margins shortly revolute; petiole 1–3 cm long. *Inflorescence* terminal but usually subtended by new branches; involucral bracts oblong, broadened upwards, to 18–22 mm long, appressed-hirsute or almost glabrous except ciliate margins; flowers c. 70–90 per head. *Perianth* 25–38 mm long, hirsute in lower half, then appressed-pubescent; limb 2–3 mm long, hirsute. *Pistil* 32–45 mm long, glabrous, cream or red; pollen presenter slightly thickened at base, 0.7–1.5 mm long. *Follicles* obovate, ± acute at base, 9–13 mm long, almost glabrous.

Typification. There is one sheet at FI, ex Herbarium Webbianum, with two Webbian labels - one 'ex Herb. Desfontaines', the other 'ex Herb. Labillardière' - and it is not possible to match the labels to the specimens. The largest specimen is selected as lectotype, being the major part of a whole plant including part of the root system showing that it is non-lignotuberous.

Distribution. Widespread through south-western Western Australia from Lake Indoon to Ongerup and east almost to Israelite Bay, with outliers in the extreme south-west.

Discussion. Distinguished from most species of ser. *Niveae* in the non-lignotuberous, much-branched habit, and from the non-lignotuberous *D. brownii* by the narrower leaves with triangular lobes. The leaves are typically longer than those of related species.

There are 2 subspecies.

- 1 Pistil 32–40 mm long; leaf lamina up to 35 cm long, 3–8 mm wide (Eneabba to Cape Arid, in dry soil) subsp. **nivea**
- 1: Pistil 41–45 mm long; leaf lamina up to 45 cm long, 7–10 mm wide (winter-wet flats near Busselton and the Scott River) subsp. **uliginosa**

Dryandra nivea* (Labill.) R. Br. subsp. *nivea

Shrub less than 1 m tall. *Leaf* lamina usually 20-35 cm long, 3-8 mm wide. *Pistil* 32-40 mm long.

Distribution. Widespread from Lake Indoon to Ongerup and east almost to Israelite Bay.

Habitat. Grows in lateritic gravel or sandy-loam, in woodland and kwongan.

Flowering period. Usually August-September.

Discussion. *Pieroni* 94/2 from Morangup Nature Reserve (PERTH) has almost glabrous involucre bracts, c. 55 flowers per head, red styles, and is unusual in flowering in April. Illustrated by R.M. Sainsbury, *Field Guide Dryandra* 5 (1985) as *D. arctotidis*.

***Dryandra nivea* subsp. *uliginosa* A.S. George, subsp. nov.**

Ab subsp. *nivea* habitu majore (ad 1.5 m alto), foliis grossius lobatis, et pistillo longiore, differt. Foliorum lamina ad 45 cm longa, 7-10 mm lata. Pistillum 41-45 mm longum. In paludibus hiemalibus habitat.

Typus: Governor Broome Rd, Scott River plain, Western Australia, 34°15'S 115°17'E, 21 October 1993, A.S. George 17117 (*holo:* PERTH 04228936; *iso:* CANB, K, NSW, PERTH 04228944).

Dense *shrub* to 1.5 m tall. *Leaves* deeply pinnatipartite; lamina 20-45 cm long, 7-10 mm wide; lobes 60-80 each side, obliquely triangular, obtuse, the upper margin convex, lower convex or shallowly S-shaped; sinuses curved-V-shaped, 2-5 mm across, the margins contiguous in lower half; petiole 1-3 cm long. *Inflorescence* terminal; involucre bracts ovate to oblong, sparsely pubescent to glabrous except ciliate margins, the innermost ones to 20 mm long; receptacle rounded; flowers c. 70 per head; floral bracts linear, obtuse, 4-5 mm long, white-hirsute, the apex papillose. *Perianth* 29-38 mm long, hirsute; limb 3 mm long, coarsely hirsute. *Pistil* 41-45 mm long, glabrous; pollen presenter not thickened, 0.7-0.9 mm long.

Selected collections examined. c. 20 km SSE of Busselton, G.J. Keighery 6622 (PERTH); Tutunup, R.D. Royce 5751 (PERTH).

Distribution. Occurs to the east of Busselton and on the Scott River plain.

Habitat. Grows on winter-wet flats, in clay over laterite in thick scrub.

Flowering period. September.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority One. The areas are subject to clearing.

Etymology. Named from the Latin *uliginosus* (full of moisture, hence marshy), in reference to the winter-wet habitat.

Discussion. Generally a larger plant with more coarsely lobed leaves, and occurring in a winter-wet habitat.

Subg. 2. *Hemiclidia*

Dryandra subg. *Hemiclidia* (R. Br.) A.S. George, comb. et stat. nov.

Hemiclidia R. Br., Suppl. Prodr. Fl. Nov. Holl. 40 (1830). *Type:* *H. baxteri* R. Br. = *Dryandra falcata* R. Br.

Erect *shrubs* without lignotuber. *Leaves* cuneate, serrate. *Inflorescence* terminal or on short lateral branchlet, conspicuous. *Perianth* straight. *Pistil* curved, longer than perianth; pollen presenter narrow, not ribbed. *Old flowers* ?persistent. *Follicles* ± cartilaginous, ovoid, hairy, usually remaining closed until burnt. *Seed* elliptic, not winged.

A subgenus of 2 species, one in the kwongan north of Perth, the other in southern districts from the Stirling Range to Israelite Bay. The very small, rather soft fruit is distinctive.

Dryandra glauca A.S. George, sp. nov.

Ab *D. falcata* R. Br. foliis glaucis, floribus pallidis et folliculis majoribus (c. 7 mm longis), praecipue differt.

Typus: Watheroo Rd, Watheroo National Park, Western Australia, 30°19'S, 115°47'E, 5 August 1986, A.S. George 16773 (*holo:* PERTH 03324885; *iso:* CANB, K).

Shrub to 1.5 m, without lignotuber. *Stems* tomentose and hirsute. *Leaves* cuneate, truncate, shortly mucronate, ± glaucous; lamina 4.5-7.5 cm long, 2-3.5 cm wide; margins thickened but flat, deeply dentate with narrowly triangular lobes with subulate pungent tips, the apical ones directed forwards; petiole 5-10 mm long, flat, tomentose. *Inflorescence* on short leafy branchlet; involucre bracts broadly linear, tapering, acute, silky, the outermost ones recurved and ± glabrescent, pale rusty, inner ones 12-18 mm long; flowers c. 80-110 per head. *Perianth* 28-34 mm long, hirsute, pale yellow; limb 2.5-3.2 mm long, keeled, glabrous. *Pistil* 30-35 mm long, glabrous; pollen presenter slightly thickened, smooth, 1.2-1.7 mm long, cream. *Follicles* ovoid, 7 mm long, shortly pubescent, the margins densely long-hirsute.

Selected collections examined. First North Road, 5.6 km N of Three Springs-Eneabba road, A.S. George 16802 (PERTH); 27 km S of Eneabba, K.H. Rechinger 58279 (PERTH); Chatfield Clarke Rd, Alexander Morrison National Park, E.D. Kabay 53 (PERTH).

Distribution. Occurs from north-east of Eneabba and Tathra National Park south to Badgingarra.

Habitat. Grows on lateritic rises in kwongan.

Flowering period. July-October.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Four.

Etymology. Named from the Latin *glaucus* (having a bluish grey bloom), in reference to the leaves.

Discussion. Closely related to *D. falcata* but differs in the usually glaucous leaves, paler flowers and slightly larger follicles. The two are quite disjunct geographically.

Subg. 3. *Diplophragma*

Dryandra subg. *Diplophragma* (R. Br.) A.S. George, stat. nov.

Dryandra sect. *Diplophragma* R. Br., Suppl. Prodr. Fl. Nov. Holl. 37 (1830). *Type:* *D. bipinnatifida* R. Br.

Dwarf shrubs with underground stems. *Leaves* bipinnatifid. *Inflorescence* terminal, often beyond leaves and 'erupting' from soil, large; involucral bracts as long as or exceeding flowers. *Perianth* straight to gently curved. *Pistil* straight, shorter than perianth; pollen presenter narrow, ribbed. *Old flowers* ?falling. *Follicles* woody, large, easily detached, usually opening when mature. *Seed* brown, elliptic with annular wing, attached each side at base to a wing of similar shape; separator absent.

Monotypic. The seed is very unusual and the floral bracts enlarge more than in any other species, but the flowers are similar to those of *Dryandra* ser. *Gymnocephalae*. Bipinnatifid leaves also occur in *D. preissii*.

Dryandra bipinnatifida R. Br., Suppl. Prodr. Fl. Nov. Holl. 39 (1830) - *Josephia bipinnatifida* (R. Br.) Kuntze, Revis. Gen. Pl. 2: 578 (1891). *Type:* Swan River, [Western Australia], March 1827, C. Fraser (*holo:* BM).

Distribution. Ranges from Eneabba and Mt Lesueur south to Busselton and Manjimup and inland to Chidlow and *Dryandra*.

Discussion. A distinctive species in its foliage, large flowers and fruit. Perianth almost succulent at base, the tepals broadened above, then very narrow, with a very long limb. The floral bracts enlarge greatly in fruiting heads.

There are two varieties based mainly on flower size and leaf form.

- 1 Perianth 48-57 mm long, with a few long apical hairs; involucral bracts 6-8 cm long; leaf lobes 1.2-3 mm wide; Perth southwards subsp. **bipinnatifida**
- 1: Perianth 42-45 mm long, the apex glabrous or rarely 1 or 2 long hairs; involucral bracts 5-6 cm long; leaf lobes usually 0.6-0.8 mm wide; Eneabba to Muchea subsp. **multifida**

Dryandra bipinnatifida R. Br. subsp. **bipinnatifida**

Leaf lamina usually 25-33 cm long; lobes 1.2-3 mm wide. *Involucral bracts* 6-8 cm long. *Perianth* 48-57 mm long; limb with a few long, apical hairs. *Floral bracts* elongating to 28-35 mm in fruit.

Distribution. Occurs on the Darling Plateau east of Perth and south to Manjimup.

Habitat. Grows in lateritic soil in Jarrah forest and woodland.

Flowering period. October-November.

Dryandra bipinnatifida R. Br. subsp. ***multifida*** A.S. George, subsp. nov.

Ab subsp. *bipinnatifida* lamina foliis plerumque 15-20 cm longa, lobis plerumque 0.7-0.8 mm latis; bracteis involucralibus 5-6 cm longis; perianthio 42-45 mm longo, limbo glabro pilis longis 1 vel 2 apicalibus; et bracteis floralibus in fructu ad 20-23 mm elongatis, differt.

Typus: 5 km S of Cataby, Brand Hwy, Western Australia, 30°46'S, 115°34'E, 11 October 1983, A.S. George 16276 & P. Nikulinsky (*holo:* PERTH 04228928; *iso:* CANB, NSW).

Leaf lamina usually 15-20 cm long, lobes usually 0.7-0.8 mm wide. *Involucral bracts* 5-6 cm long. *Perianth* 42-45 mm long; limb glabrous or with 1 or 2 long, apical hairs. *Floral bracts* elongating to 20-23 mm in fruit.

Selected collections examined. Cockleshell Gully, C.A. Gardner 8428 (PERTH); N of Mt Benia, NE of Mt Lesueur, E.A. Griffin 2415 (PERTH); Marchagee Track, E of Dewar Rd, E.A. Griffin 3474 (PERTH).

Distribution. Occurs between Eneabba and Muchea.

Habitat. Grows in sand over laterite in kwongan.

Flowering period. October-November.

Conservation status. Dept of Conservation & Land Management Conservation Code: Priority Four.

Etymology. Epithet from the Latin *multus* (many) and *-fidus* (-divided), in reference to the finely divided leaves.

Discussion. Although one or two collections are intermediate, these subspecies are usually easily recognized on the basis of their leaf division.

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Index

New names and combinations in **bold roman**, other accepted names in light roman, and synonyms in *italics*.

- Banksia
 nivea Labill. 327, 398
- Dryandra* 327
 subg. *Dryandra* 327
 sect. *Aphragma* R. Br. 370
 subg. **Diplophragma** (R. Br.) A.S. George 401
 sect. *Diplophragma* R. Br. 401
 subg. **Hemiclidia** (R. Br.) A.S. George 400
 ser. **Acrodontae** (Meisn.) A.S. George 347, 379
 ser. **Acuminatae** A.S. George 391
 ser. **Aphragma** (R. Br.) A.S. George 370
 ser. *Armatae* Benth. 330
 ser. **Capitellatae** A.S. George 349
 ser. *Concinnae* Benth. 385
 ser. **Decurrentes** (Meisn.) A.S. George 357
 ser. *Dryandra* 354
 ser. *Floribundae* Benth. 327
 ser. **Foliosae** A.S. George 356
 ser. **Folliculosae** A.S. George 345
 ser. *Formosae* Benth. 354

- ser. *Gymnocephalae* Benth. 377, 379
 ser. ***Ilicinae*** (Meisn.) A.S. George 352
 ser. ***Inusitatae*** A.S. George 377
 ser. ***Ionthocarpae*** A.S. George 375, 377
 ser. ***Marginatae*** (Meisn.) A.S. George 345
 ser. *Niveae* Benth. 392
 ser. ***Obvallatae*** Benth. 386
 ser. ***Pectinatae*** (Meisn.) A.S. George 391
 ser. ***Plumosae*** A.S. George 382
 ser. ***Runcinatae*** (Meisn.) A.S. George 360
 ser. ***Subulatae*** A.S. George 378
 ser. ***Tenuifoliae*** A.S. George 358
 ser. ***Triangulares*** A.S. George 366
- acanthopoda*** A.S. George 335
anatona A.S. George 353
arctotidis R. Br. 392
armata R. Br. 330, 331, 344
armata R. Br. var. *armata* 331
armata var. ***ignicida*** A.S. George 331
ashbyi B.L. Burtt 346
aurantia A.S. George 373
- baxteri* R. Br. 356
bipinnatifida R. Br. 401
bipinnatifida R. Br. subsp. *bipinnatifida* 401
bipinnatifida R. Br. subsp. ***multifida*** A.S. George 402
blechnifolia R. Br. 372, 373
borealis A.S. George 343
borealis A.S. George subsp. ***borealis*** 344
borealis subsp. ***elatior*** A.S. George 344
brownii Meisn. 392, 398
- calophylla* R. Br. 375
calophylla var. *acaulis* Meisn. 367
carduacea Lindl. 336
carduacea var. *angustifolia* Hook. 336
carlinoides Meisn. 340, 347
catoglypta A.S. George 369
cirsiooides Meisn. 333, 334, 351
columnaris A.S. George 388, 391
comosa Meisn. 358
concinna R. Br. 385
conferta Benth. 386, 387
conferta Benth. var. *conferta* 387
conferta var. ***parva*** A.S. George 388
corvijuga A.S. George 365
cuneata R. Br. 330, 352
cygnorum Gand. 329
cypholoba A.S. George 392

- drummondii* Meisn. 367, 369, 370
drummondii Meisn. subsp. *drummondii* 367
drummondii subsp. ***hiemalis*** A.S. George 367
drummondii subsp. ***macrorufa*** A.S. George 368
- echinata*** A.S. George 339
elegans Meisn. 345
epimicta A.S. George 365
erythrocephala C.A. Gardner 379
erythrocephala C.A. Gardner var. *erythrocephala* 379
erythrocephala var. ***inopinata*** A.S. George 379
- falcata* R. Br. 354, 400
fasciculata A.S. George 386
favosa Lindl. 331
ferruginea Kippist ex Meisn. 360, 365
ferruginea Kippist ex Meisn. subsp. *ferruginea* 361
ferruginea subsp. ***chelomacarpa*** A.S. George 363
ferruginea subsp. ***flavescens*** A.S. George 364
ferruginea subsp. ***obliquiloba*** A.S. George 363
ferruginea subsp. ***pumila*** A.S. George 362
ferruginea subsp. ***tutanningensis*** A.S. George 361
fililoba A.S. George 372
floribunda R. Br. 327, 328, 352
floribunda R. Br. var. *cordata* Meisn. 329
floribunda R. Br. var. *major* 329
formosa R. Br. 327, 354
fraseri R. Br. 346, 391
fraseri R. Br. var. *fraseri* 346
fraseri var. ***ashbyi*** (B.L. Burt) A.S. George 346
fraseri var. ***oxycedra*** A.S. George 347
fuscobracteata A.S. George 330
- gilbertii* S. Moore 331
glauca A.S. George 400
- hewardiana* Meisn. 337, 339
hirsuta A.S. George 332
- idiogenes*** A.S. George 377
ionthocarpa A.S. George 376
- kippistiana* Meisn. 348
kippistiana Meisn. var. *kippistiana* 348
kippistiana Meisn. var. ***paenepeccata*** A.S. George 348
- lepidorhiza*** A.S. George 374
lindleyana Meisn. 393
lindleyana Meisn. subsp. *lindleyana* 394
lindleyana Meisn. subsp. *lindleyana* var. *lindleyana* 394
lindleyana subsp. ***agricola*** A.S. George 397
lindleyana subsp. ***lindleyana*** var. ***mellicula*** A.S. George 394
lindleyana subsp. ***media*** A.S. George 395

- lindleyana** subsp. **pollostia** A.S. George 396
lindleyana subsp. **sylvestris** A.S. George 396
longifolia R. Br. 341
longifolia R. Br. subsp. *longifolia* 342
longifolia subsp. **archeos** A.S. George 342
longifolia subsp. **calcicola** A.S. George 343

meganotia A.S. George 351
montana C.A. Gardner ex A.S. George 384
mucronulata R. Br. 356
mucronulata R. Br. subsp. *mucronulata* 356
mucronulata R. Br. subsp. **retrorsa** A.S. George 357
multiserialis F. Muell. 360

nana Meisn. 391
nervosa R. Br. 372
nivea (Labill.) R. Br. 327, 392, 398
nivea var. *adscendens* Endl. 398
nivea (Labill.) R. Br. subsp. *nivea* 399
nivea var. *subevenia* Meisn. 394
nivea subsp. **uliginosa** A.S. George 399
nivea var. *venosa* Meisn. 398
nobilis Lindl. 354, 366
nobilis Lindl. subsp. *nobilis* 355
nobilis subsp. **fragrans** A.S. George 355

obtusa R. Br. 360
octotriginta A.S. George 369, 370

pallida A.S. George 333
platycarpa A.S. George 389
plumosa R. Br. 382, 384
plumosa R. Br. subsp. **denticulata** A.S. George 383
plumosa R. Br. subsp. *plumosa* 383
polycephala Benth. 340
porrecta A.S. George 373
praemorsa Meisn. 352, 354
praemorsa var. *elongata* Meisn. 352
praemorsa Meisn. var. *praemorsa* 352
praemorsa var. **splendens** A.S. George 353
preissii Meisn. 391
proteoides Lindl. 366
proteoides Lindl. var. *ferruginea* (Kippist ex Meisn.) Benth. 360
pseudoplumosa A.S. George 383, 384
pteridifolia R. Br. 371, 372
pteridifolia var. *blechnifolia* (R. Br.) R. Br. 372
pteridifolia R. Br. subsp. *pteridifolia* 371
pteridifolia subsp. **vernalis** A.S. George 371
pulchella Meisn. 345
purdieana Diels 334

quinquedentata Gand. 329

- rufistylis** A.S. George 387, 390
runcinata Meisn. 360, 361
seneciifolia Meisn. 386, 389, 391
serra R. Br. 385
serratuloides Meisn. 349, 391
serratuloides Meisn. subsp. *serratuloides* 350, 351
serratuloides subsp. **perissa** A.S. George 350, 351
sessilis (Knight) Domin 327
sessilis (Knight) Domin var. *sessilis* 328
sessilis var. **cordata** (Meisn.) A.S. George 329
sessilis var. **cygnorum** (Gand.) A.S. George 329
sessilis var. **flabellifolia** A.S. George 328
shuttleworthiana Meisn. 379
speciosa Meisn. 379, 381
speciosa Meisn. subsp. *speciosa* 381
speciosa subsp. **macrocarpa** A.S. George 381
squarrosa R. Br. 335
squarrosa R. Br. subsp. *squarrosa* 336, 341
squarrosa subsp. **argillacea** A.S. George 336
stenoprion Meisn. 392
stricta A.S. George 338
subpinnatifida C.A. Gardner 340
subpinnatifida C.A. Gardner var. *subpinnatifida* 340, 341
subpinnatifida var. **imberbis** A.S. George 340, 341
tenuifolia R. Br. 345, 358
tenuifolia var. *elegans* (Meisn.) Benth. 359
tenuifolia R. Br. var. **reptans** A.S. George 359
tenuifolia R. Br. var. *tenuifolia* 359
tortifolia Meisn. 392
tridentata Benth. 379
trifontinalis A.S. George 337
viscida A.S. George 380
wonganensis A.S. George 337
xylothemelia A.S. George 334
- Hemiclidia* R. Br. 327, 400
baxteri R. Br. 327, 400
- Josephia* R. Br. ex Knight 327
 sect. *Aphragma* (R. Br.) Kuntze 370
armata (R. Br.) Kuntze 331
bipinnatifida (R. Br.) Kuntze 401
blechnifolia (R. Br.) Poir. 372
carduacea (Lindl.) Kuntze 336
conferta (Benth.) Kuntze 387
cuneata (R. Br.) Poir. 330
fraseri (R. Br.) Kuntze 346
kippistiana (Meisn.) Kuntze 348

- longifolia* (R. Br.) Poir. 341
mucronulata (R. Br.) Kuntze 356
nivea (Labill.) Kuntze 398
nobilis (Lindl.) Kuntze 354
obtusa (R. Br.) Kuntze 360
plumosa (R. Br.) Poir. 382
polycephala (Benth.) Kuntze 340
praemorsa (Meisn.) Kuntze 352
proteoides (Lindl.) Kuntze 366
pteridifolia (R. Br.) Poir. 371
rachidifolia Knight 327, 398
runcinata (Meisn.) Kuntze 361
serratuloides (Meisn.) Kuntze 349
sessilis Knight 327
speciosa (Meisn.) Kuntze, 381
squarrosa (R. Br.) Kuntze 335
tenuifolia (R. Br.) Kuntze 358