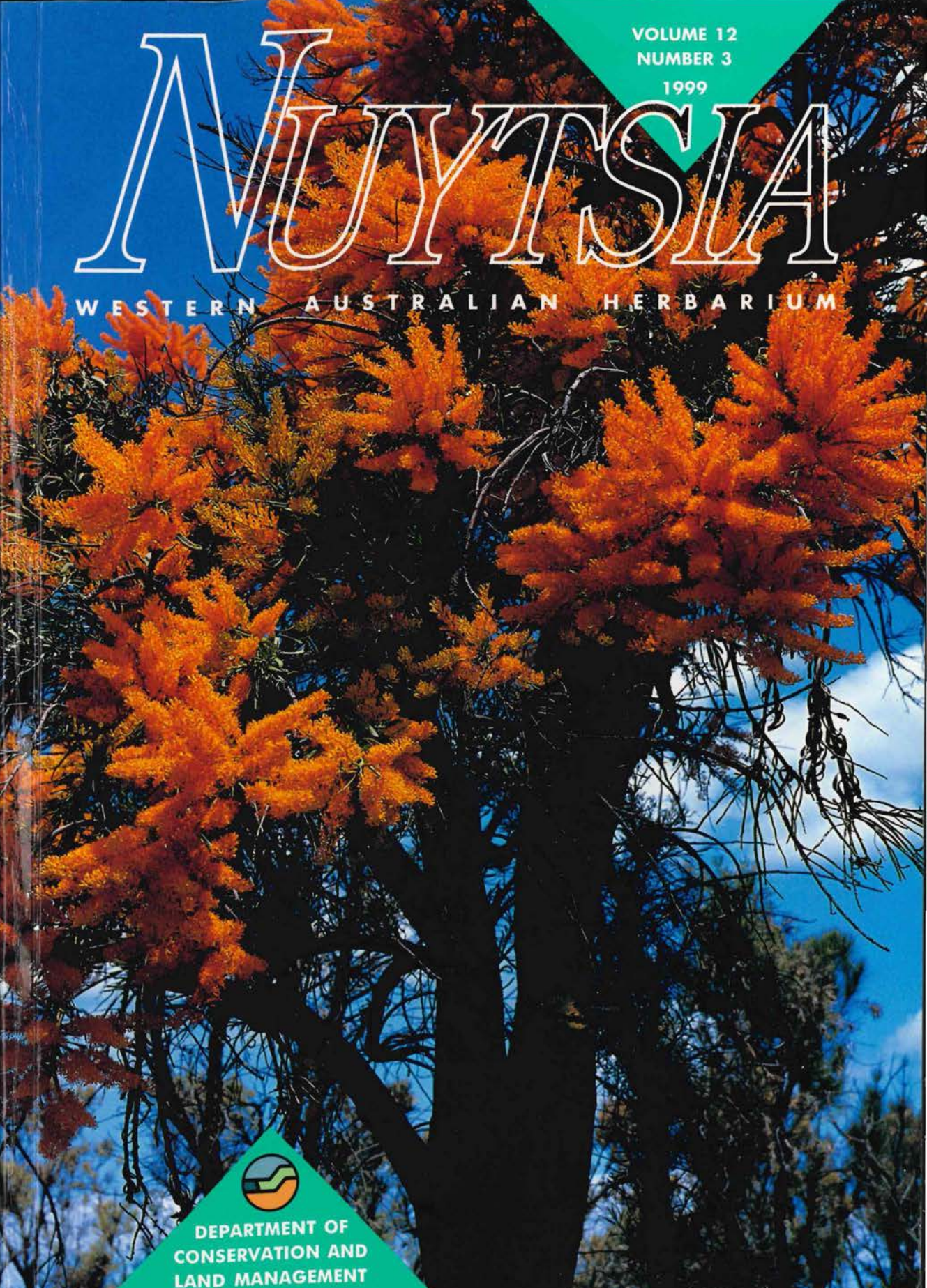
VOLUME 12
NUMBER 3
1999

NUYTSIA

WESTERN AUSTRALIAN HERBARIUM



DEPARTMENT OF
CONSERVATION AND
LAND MANAGEMENT

CONTENTS

DEDICATED TO RICHARD S. COWAN

ISSN 0085-4417

Print Post Approved PP665002/00003

NUYTSIA

VOLUME 12 NUMBER 3 1999

DEDICATED TO RICHARD S. COWAN

Western Australian Herbarium
Department of Conservation and Land Management
Western Australia

NUYTSIA

Published by the Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983.

All papers should be submitted to Dr Barbara Rye, Editor, *Nuytsia*.
Email: Barbarar@calm.wa.gov.au

The journals *Nuytsia* and *CALMScience* are products of the Science Publications Unit which links the work of two CALM divisions: CALM**Science** and Corporate Relations. They form part of the latter's Programs and Publications section. Their purpose is to present the scientific work of CALM to a professional readership on a regular basis.

ENQUIRIES

Enquiries regarding distribution and subscriptions should be addressed to the Marketing Manager, Corporate Relations Division, Department of Conservation and Land Management, Locked Bag 29, Bentley Delivery Centre, Western Australia 6983.
Phone: (08) 9334 0296 Fax: (08) 9334 0498

 ISSN 0085-4417

Department of Conservation and Land Management, Western Australia

CONTENTS

Western Australian Herbarium,
Department of Conservation and Land Management,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Cover

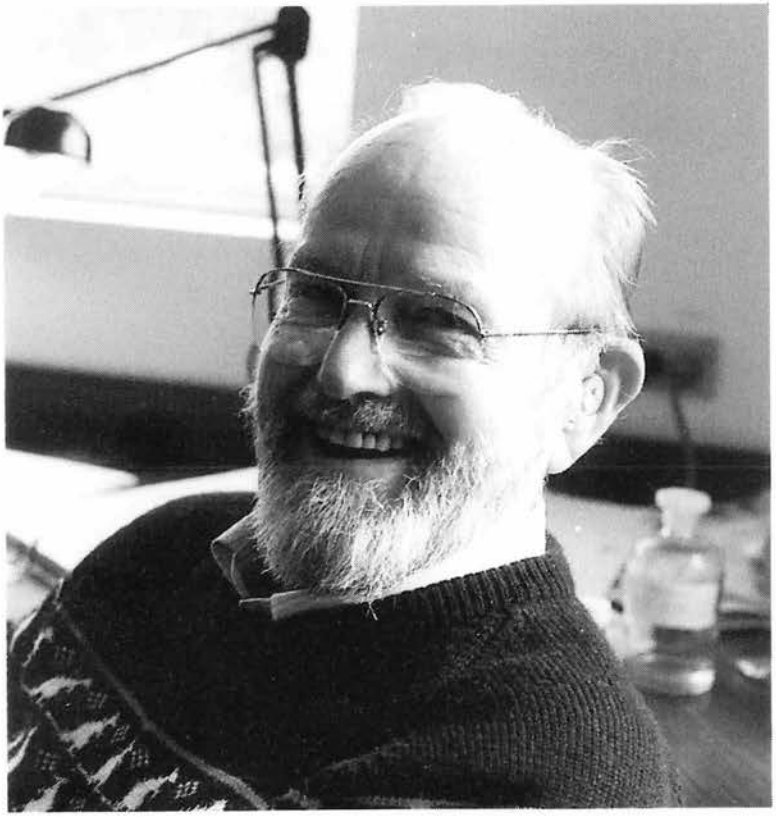
Nuytsia floribunda (Labill.) R. Br. ex Fenzl (Loranthaceae) – the Western Australian Christmas Tree is one of the few arborescent mistletoes in the world. This endemic tree is a semi-parasite common in sandy soil from the Murchison River to Israelite Bay. The journal is named after the plant, which in turn commemorates Pieter Nuijts, an ambassador of the Dutch East India Company, who in 1627 accompanied the "Gulde Zeepard" on one of the first explorations along the south coast of Australia.

Cover design by Sue Marais

Photograph A.S. George

DEDICATION TO RICHARD SOMNER COWAN

23 January 1921 – 17 November 1997



It is appropriate that this issue of *Nuytsia*, which is devoted entirely to *Acacia*, be dedicated to the memory of Richard Somner Cowan.

Richard commenced work on *Acacia* at the Western Australian Herbarium (PERTH) in 1986, at a time in life when many other people would have considered retirement. He arrived in Australia after ending an illustrious career in the United States of America where, among other things, he had become a distinguished student of neotropical caesalpinoid legumes, had co-authored with Frans Staffleu the second edition of the monumental seven volume *magnum opus* "Taxonomic Literature", and had assumed the Directorship of the Natural History Museum of the Smithsonian Institute in Washington. During his 11 years at PERTH Richard worked tirelessly and diligently to complete twenty publications dealing with the taxonomy, typification and nomenclature of Australian Acacias. The majority of these papers were published in *Nuytsia*; his final two papers, *Acacia* miscellany 17 and 18, are included in the present issue. These studies were directed primarily towards providing a sound scientific base for the "Flora of Australia" treatment of *Acacia*. The Flora manuscript was completed in 1995 and the two Flora volumes containing the *Acacia* account are scheduled for publication in late 1999. These volumes will include around 200 species descriptions and 70 new taxa for which Richard is the author or co-author.

Apart from his work on *Acacia*, Richard published a "Flora of Australia" treatment dealing with other genera of Mimosaceae in 1998. He also prepared Flora treatments for a number of the so-called "orphan genera" of Fabaceae (as yet unpublished).

Richard Cowan has made a significant and lasting contribution to Australian botany. Our learned, highly disciplined and good-natured friend and colleague is commemorated in the granite rock wheatbelt species, *Acacia cowaniana*.

Bruce Maslin, Principal Research Scientist, Western Australian Herbarium

Acacia miscellany 16. The taxonomy of fifty-five species of *Acacia*, primarily Western Australian, in section *Phyllodineae* (Leguminosae: Mimosoideae)

B.R. Maslin

Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Abstract

Maslin, B.R. *Acacia* miscellany 16. The taxonomy of fifty-five species of *Acacia*, primarily Western Australian, in section *Phyllodineae* (Leguminosae: Mimosoideae). *Nuytsia* 12(3): 311–411 (1999). The paper describes 43 new species, 14 new subspecies and two new varieties of *Acacia* Mill. in sect. *Phyllodineae* DC., and discusses their affinities. New names are proposed for two taxa previously recognized at varietal rank. Lectotypes are selected for *A. acanthoclada* F. Muell., *A. ataxiphylla* Benth., *A. auronitens* Lindley, *A. gonophylla* var. *crassifolia* Benth., and *A. iteaphylla* var. *latifolia* F. Muell. (here placed in synonymy under *A. halliana* Maslin).

The following new taxa are described: *A. acanthaster* Maslin, *A. acanthoclada* subsp. *glaucescens*, *A. acoma*, *A. aculeiformis*, *A. adinophylla*, *A. aristulata*, *A. asepala*, *A. ataxiphylla* subsp. *magna*, *A. barbinervis* subsp. *borealis*, *A. blaxellii*, *A. bracteolata*, *A. carnosula*, *A. castanostegia*, *A. concolorans*, *A. congesta* subsp. *wonganensis*, *A. cuneifolia*, *A. deficiens*, *A. diminuta*, *A. ericksoniae*, *A. errabunda*, *A. euthyphylla*, *A. evenulosa*, *A. glaucissima*, *A. graniticola*, *A. hystrix* including subsp. *continua*, *A. imitans*, *A. imparilis*, *A. improcera*, *A. insolita* subsp. *efoliolata*, *A. insolita* subsp. *recurva*, *A. lanceolata*, *A. laricina* var. *crassifolia*, *A. leptalea*, *A. lullfitziorum*, *A. mutabilis* including subsp. *angustifolia*, subsp. *incurva*, subsp. *rhynchophylla* and subsp. *stipulifera*, *A. nigripilosa* subsp. *latifolia*, A. *plautella*, *A. profusa*, *A. puncticulata*, *A. pusilla*, *A. quinquenervia*, *A. rhamphophylla*, *A. rigida*, *A. rostellata*, *A. sabulosa*, *A. scalena*, *A. sedifolia* subsp. *pulvinata*, *A. sphacelata* subsp. *recurva* and subsp. *verticillata*, *A. sphenophylla*, *A. tetraptera*, *A. truculenta*, *A. tuberculata*, and *A. xerophila* var. *brevior*. *Acacia pachyphylla* is described, based on *A. gonophylla* var. *crassifolia* Benth. The new combination *A. congesta* subsp. *cliftoniana* is made, based on *A. cliftoniana* W. Fitzg.

Introduction

This paper continues the series of '*Acacia* miscellany' to validate new taxa and record lectotypifications in advance of their inclusion in "Flora of Australia" (Maslin in press). All of the taxa included here are referable to section *Phyllodineae* DC. of *Acacia* Mill. (Leguminosae: Mimosoideae). A number of the new names appear in Grieve (1998).

Methods

Most measurements are from dried herbarium specimens which are also the prime source of data on habitat, distribution, phenology, bark morphology and flower colour. Head diameter is measured, as indicated in the descriptions, from fresh, dried or reconstituted material; it includes the stamens. As I use the term 'pungent' it refers to a phyllode apex that is drawn-out into a hard, spine-like tip; 'sharply pungent' refers to one that readily pierces the skin when touched and 'coarsely pungent' to one that is less sharp.

My approach to typification is discussed elsewhere (Maslin & Cowan 1994b). The taxa are arranged in alphabetical order.

Taxonomy

Acacia acanthaster Maslin, *sp. nov.*

Frutex densus, intricatus, 0.2–0.5 m altus. Ramuli spinescentes, glabri vel parce strigulosi, cinereo-albicantes. Stipulae c. 0.5 mm longae, plerumque caducae. Phyllodia linearia, 3–8 mm longa, 0.5–1 mm lata, glabra vel parce strigulosa; costa obscura; glans obscura, versus medium marginis inserta. Inflorescentia simplex. Pedunculi 1 vel 2 (3) per nodum, glabri; capitula globosa, floribus 18–27. Flores 5-meri, raro 4-meri. Sepala libera, pilosa. Petala glabra vel subglabra, enervia. Legumen arcuatum ad spirale, ± moniliforme, ad 35 mm longum, 2 mm latum, glabrum. Semina in legumine longitudinalia, ellipsoidea, 2 mm longa; arillus rectus, albus.

Typus: 20 km south-east of Sinclair Soak, *c.* 63 km north-east of Norseman, Western Australia, 9 August 1980, *K. Newbey* 6986 (*holo:* PERTH 00734950; *iso:* K, PERTH 00734942).

Harsh, rigid, dense, intricate, domed *shrub* 0.2–0.5 m tall, 1–2.5 m across, commonly ± circular in plan view. *Bark* light grey. *Branchlets* dividing near tips into a few short, straight, ± patent, rigid, naked spines that are light brown and somewhat shiny when young but age grey-white; main axis of branchlet terete, not ribbed, glabrous or very sparsely antrorsely strigulose, usually scurfy-white below spines. *Stipules* triangular, *c.* 0.5 mm long, brittle with age, glabrous, dark brown, subpersistent or caducous. *Phyllodes* linear, narrowed at base, 3–8 mm long, 0.5–1 mm wide, l:w 4–15, absent from old branches and branchlets, ascending to erect, straight to shallowly incurved but commonly slightly recurved at the abruptly rounded, excentrically rostellate *apex*, flat, glabrous or sparsely antrorsely strigulose, green, slightly shiny (fresh); *midrib* not prominent, slightly raised (dry), concolorous with lamina; *lateral nerves* absent or few and obscure; *marginal nerves* obscure; *pulvinus* terete, 0.2–0.3 mm long, yellowish. *Gland* insignificant, on upper margin near or above middle of phyllode, commonly absent, circular, *c.* 0.1 mm diam. *Inflorescence* simple; *peduncles* 1 or 2 (3) per node, 6–11 mm long, slender, glabrous; a new shoot sometimes initiated in axil of peduncle at anthesis; *basal bract* solitary, persistent, *c.* 1 mm long, ± widely ovate, concave, sessile, dark brown, glabrous but margins fimbriolate (hairs often sparse). *Heads* globular, bright mid-golden, 3–3.5 mm diam., 18–27-flowered; *bracteoles* spathulate, *c.* 0.8 mm long; claw linear; lamina dark brown. *Flowers* mostly 5-merous, a few 4-merous in some heads; *sepals* 2/5–1/2 length of petals, free, narrowly spathulate, sparsely to moderately hairy, brown; *petals* 1.3–1.5 mm long, glabrous or subglabrous, nerveless. *Pods* strongly arcuate to rather loosely and somewhat irregularly coiled, ± moniliform, to 35 mm long, 2 mm wide, thinly coriaceous, finely rugose over seeds, glabrous, mid-brown; marginal nerves not thickened, yellow. *Seeds*

longitudinal, ellipsoid, narrowed at hilar end, obliquely truncate adjacent to aril, 2 mm long, *c.* 1 mm wide, turgid (*c.* 1 mm thick), periphery slightly ridged, dark brown to black except centre, slightly shiny; *pleurogram* obscure, U-shaped, open at hilar end; *areole* minute, *c.* 0.2 mm long and wide, dull yellowish, the lighter-coloured tissue extending slightly beyond the pleurogram; *funicle* straight, filiform, 0.5–1 mm long, reflexed below and abruptly expanded into a straight, ± clavate, white aril.

Selected specimens examined. WESTERN AUSTRALIA: Tarin Rock, opposite siding, *T.E.H. Aplin* 6009 (CANB, K, MEL, PERTH); 1 km W of Newdegate, 8 Oct. 1983, *E.M. Bennett s.n.* (PERTH 00146900); 9.8 miles [15.7 km] E of Dumbleyung towards Lake Grace, *R. Cumming* 2609 (PERTH); Woodline, *c.* 95 km ENE of Norseman, *G.J. Keighery* 3054 (PERTH); 45 km W of Lake King on road to Perth, *F. Lullfitz* 5578 (PERTH); *c.* 5 km N of Nyabing on road to Kukerin, *B.R. Maslin* 5841 (MEL, PERTH); 51 km due ESE of Narembeen, intersection of Anderson Rocks Rd and The Humps Rd, *B.R. Maslin* 6149 (PERTH); 59 km due S of Hyden, Biddy–Buniche road, 4.5 km E of Aylemore Rd, *B.R. Maslin* 6358 (PERTH, Z).

Distribution. Discontinuous in south-west Western Australia, most commonly collected in the southern part of the wheatbelt region bordered by Dumbleyung, Lake King and Narembeen, but also occurring north-east of Norseman near Sinclair Soak.

Habitat. Grows in sand, clay and granitic loam in eucalypt woodland or mallee shrubland with *Melaleuca* or *Allocasuarina* scrub.

Phenology. Flowering recorded from August to October; mature pods collected in December.

Conservation status. Not under threat.

Etymology. The specific epithet, from the Greek *akantha* (a thorn) and Latin *aster* (a star), refers to the radiating spines at the ends of the branchlets.

Affinities. Superficially similar to *A. pulviniformis* Maiden & Blakely in its low growth habit, spinescent branchlets, small phyllodes and rather small, globular heads. *Acacia pulviniformis* is readily distinguished from the new species in the following ways: branchlet apices undivided, phyllodes commonly subterete with midrib superficially not visible (less commonly ± flat with obscure midrib), gland (when present) situated near pulvinus, stipules 1–2 mm long, inflorescence a 1-headed raceme, a single peduncle (2–6 mm long) situated on an extremely reduced axis (peduncles have a solitary basal bract, the axis is subtended by two small bracts), heads 6- or 7-flowered, flowers 4- or 5-merous, sepals united, pods somewhat tightly and irregularly coiled.

Acacia acanthoclada F. Muell., Fragm. 3: 127 (1863). *Type:* sand ridges near Kulkyne, Victoria, August 1858, *J. Dallachy* (*lecto:* MEL 26132, here designated); in the Murray desert especially near Kulkoyne [sphalm. Kulkyne, near Hattah, Victoria, December 1853, *F. Mueller s.n.*] (*paralecto:* MEL 26130, PERTH 04340310 – fragment ex MEL); Australia felix ['almost certainly the Kulkyne area, far N.W.Vic., leg. F.v. Mueller, Dec. 1853' – J.H.Willis in sched.] (probable *paralecto:* MEL 26134, ex herb. Sonder); Kulkyn[e] and Moornpool [Mournpall], [*F. Mueller s.n.*] (probable *paralecto:* MEL 26133); Murray Desert, *F. Mueller s.n.* (*paralecto:* K); Murray River [*F. Mueller*] (probable *paralecto:* K).

Typification. I am indebted to the late J.H. Willis for his assistance in unravelling the typification problems involved. I have concluded that Mueller had in hand all the materials listed above when he described the species and, even though they all represent the same taxon and apparently were all collected in the same general area, lectotypification is advisable to fix the application of the name. I have selected the Dallachy specimen as the lectotype because it is the best of the syntypes.

Key to subspecies of *Acacia acanthoclada*

Phyllodes green or if glaucous then not wider than 1 mm, the phyllodes and branchlets glabrous or hairy; seeds 2–2.5 mm long (widespread) ..... subsp. **acanthoclada**

Phyllodes glaucous to subglaucous (new shoots green), 2–4 mm wide, the phyllodes and branchlets glabrous; seeds 3.5-4 mm long (Western Australia) ..... subsp. **glaucescens**

Acacia acanthoclada subsp. **glaucescens** Maslin, *subsp. nov.*

Ab *Acacia acanthoclada* subsp. *acanthoclada* ramulis glabris, phyllodiis 2–4(5) mm latis, glaucis vel subglaucis, et seminibus majoribus (3.5–4 mm longis) differt. In Australiam Occidentalem reperta.

Typus: Mt Gibson Station (between Wubin and Paynes Find), Western Australia, 29 August 1976, *B.R. Maslin* 4232 (*holo:* PERTH 00183768; *iso:* CANB, K, NY).

Shrub 0.8–1.5(2) m tall. *Branches* terete, obscurely ribbed, glabrous, dividing into many, rather short, straight, patent to erect, faintly pruinose, spinescent branchlets. *Stipules* partially or ± wholly united on young new shoots, caducous. *Phyllodes* cuneate to obtriangular with the upper apical angle obtuse and the lower angle mucronulate, 5–10(12) mm long, 2–4(5) mm wide, l:w 1.2–3, thin, erect, smooth, glabrous, glaucous to subglaucous (light green on new shoots); *principal longitudinal nerve* situated rather near lower margin and often obscure; minor nerves few, obscure and subparallel to main longitudinal nerve. *Inflorescence* an extremely reduced 1(2 or 3)-headed raceme, the axis 0.2 (0.5) mm long, subtended by 1 or 2 minute, sessile, depressed-ovate, persistent bracts 0.2–0.5 mm long; *peduncles* (5)7–14 mm long, glabrous, subtended at base by a soon-caducous, cleft, scarious brown bract *c.* 1 mm long. *Heads* globular, bright mid-golden, 17–25-flowered. *Flowers* 5-merous; *bracteoles* spathulate, 1 mm long, fimbriolate; *calyx* 1/3–1/2 length of corolla, gamosepalous, divided for 1/3–2/3 its length into ± oblong, obtuse, ciliolate lobes; tube glabrous, nerveless; *petals* 1.5–2.5 mm long, glabrous, finely 1-nerved. *Pods* coiled, to *c.* 20 mm long (unexpanded length), 3–4 mm wide, thinly coriaceous, glabrous, black (old dehisced valves). *Seeds* longitudinal, widely ellipsoid to ± ovoid, 3.5–4 mm long, 2 mm wide, dull, mottled with shades of brown; aril thick, subterminal.

Selected specimens examined. WESTERN AUSTRALIA: 16.5 miles [26.5 km] from Three Springs on road to Perenjori, *I.B. Armitage* 368 (PERTH); Evanston, *J.S. Beard* 4760 (PERTH); 80 km S of Paynes Find, *W.E. Blackall* 3849 (PERTH); 96.5 km from Wubin towards Mount Magnet, *B.R. Maslin* 3547 (AD, BM, BRI, G, MEL, MO, NSW, PERTH); Mount Gibson Station, *B.R. Maslin* 4222 (PERTH); 5 km NNE of Mt Jackson, *K. Newbey* 9109 (PERTH); NE of Koolanooka Hills on Mungada Rd, *S. Patrick* SP 2256 (PERTH); N of Mt Jackson on road to Diemals Station, *M.H. Simmons* 1237 (PERTH).

Distribution. Infrequent in the south-west of Western Australia from the Koolanooka Hills (about 20 km east of Morawa) east to Evanston (about 110 km north of Koolyanobbing) and near Mt Correll (about 60 km west-north-west of Koolyanobbing).

Habitat. Grows in red to red-brown, sometimes stony, clay or loam in woodland or scrub.

Phenology. Flowering recorded from July to September; mature pods collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. Subspecific epithet from the Latin *glaucus* (glaucous, covered with a fine bloom) with the suffix *-escens* (becoming), in reference to the phyllodes.

Discussion. The combination of broad, glaucous to subglaucous phyllodes and glabrous branchlets serves to distinguish this new subspecies. Although each of these characters may occur in individuals of the typical subspecies, they do not occur in combination. In subsp. *acanthoclada* glaucous phyllodes are rare, and in these specimens the phyllodes do not exceed 1 mm wide. In Western Australia the phyllodes of subsp. *acanthoclada* seldom reach 2 mm wide, but in Victoria they are reported to reach 3 mm (*fide* Costermans 1981: 309) and in South Australia 4 mm (*fide* Whibley rev. Symon 1992: 48). The typical subspecies is widespread in southern Australia from Victoria and New South Wales west through South Australia to the semi-arid areas of south-west Western Australia, whereas subsp. *glaucescens* is restricted to the northern end of the species' range in Western Australia. The two subspecies are not known to be sympatric, although their ranges abut in the Wubin area.

The new subspecies resembles *A. sphenophylla* (see below) which is distinguished most readily by its green, clearly 2- or 3-veined phyllodes.

Acacia acoma Maslin, *sp. nov.*

Frutex 0.5–2.5 m altus. Cortex laevis, vel ad basin asper. Ramuli angulati, demum teretes, glabri. Stipulae 0.5–1 mm longae, caducae. Phyllodia anguste oblongo-elliptica ad oblongo-lanceolata, vel elliptica, vel obovata, acuta vel mucronata, plerumque 15–30 mm longa, 7–12 mm lata, glabra, saepe glauca; costa obscura; glans c. 1–5 mm supra pulvinam inserta. Inflorescentia racemus reductus, (1)2-capitatus. Pedunculi 8–21 mm longi, glabri; capitulum floribus 30–37. Flores 5-meri. Sepala libera. Petala glabra, enervia. Legumen arcuatum vel spirale, ad 15 mm longum, 2–3 mm latum, teres ad semi-teres, glabrum. Semina in legumine longitudinalia, oblongoidea vel ellipsoidea, 2.5–3 mm longa, nitentia; arillus conicus, crassus, albus.

Typus: near Mt Glasse, Bremer Range, Western Australia, 23 September 1983, *B.R. Maslin* 5428 (*holo:* PERTH 00174750; *iso:* CANB, K, MEL).

Open, somewhat gangling *shrub* 0.5–2.5 m tall, sparingly branched at base, or in open sites (e.g. road verges) rounded to obconic, subdense and much-branched at base. *Bark* smooth, sometimes roughened at base of stems, grey. *New shoots* pale purplish. *Young branchlets* angled, at length terete, obscurely ribbed, glabrous, salmon-pink to orange, orange-pink or dark red, faintly to moderately pruinose; older branchlets roughened by scars of raised leaf bases after phyllodes have fallen. *Stipules* narrowly oblong to triangular, 0.5–1 mm long, caducous. *Phyllodes* variable in shape and size, commonly narrowly oblong-elliptic to narrowly oblong-oblanceolate or elliptic to obovate, rarely lanceolate, (10)15–30(40) mm long, (5)7–12(15) mm wide, l:w 1.5–3(4.5), infrequently continuous with branchlet but not forming cauline wings (Yorkrakine variant), often slightly twisted from base, flat to shallowly concave or slightly undulate, sometimes recurved and widely spreading, thickly coriaceous, smooth, glabrous, grey-green to glaucous, brown, sometimes pruinose; *midrib* not

prominent; lateral nerves submerged and not evident on surface or occasionally very few and obscure; marginal nerves rather prominent, yellow; adaxial nerve bifurcating near base of phyllode; *apex* acute to obtusely mucronate, sometimes shortly acuminate, the mucro indurate, coarsely pungent, 0.5–1 mm long, straight to slightly incurved and dark brown; *pulvinus* 1–2 mm long (Yorkrakine variant), otherwise to 0.5 mm long, drying smooth or transversely to obliquely wrinkled, or absent. *Gland* on adaxial margin of phyllode 1–5 mm above pulvinus, commonly in a slight indentation, oblong–elliptic, 0.4–0.8 mm long, drying brown. *Inflorescence* an extremely reduced (1)2-headed raceme; axis 0.5–1(3) mm long, commonly with an apical dormant bud at anthesis; *peduncles* 8–21 mm long, usually ± patent, greenish yellow to pale red, brownish to almost black when dry; *basal bract* solitary, soon falling, cucullate, 2 mm long, glabrous, dark brown, sometimes pruinose. *Heads* globular, bright mid-golden, 5–6 mm diam. at anthesis, 30–37-flowered; *bracteoles* resembling sepals, seemingly not subtending all flowers. *Flowers* 5-merous; *sepals* 1/2 (or slightly more) length of petals, free, linear or narrowly spathulate, glabrous or subglabrous; *petals* 1.8–2.5 mm long, glabrous, nerveless. *Pods* strongly arcuate to spirally or irregularly coiled, to *c.* 15 mm long (unexpanded), 2–3 mm wide, thinly coriaceous, terete to semiterete, not or scarcely constricted between seeds, glabrous, green turning purple and faintly to moderately pruinose when young, ageing dark brown to black and not or slightly pruinose, marginal nerve not thickened. *Seeds* longitudinal, obloid to widely ellipsoid, 2.5–3 mm long, 1.5–2 mm wide, shiny, mottled black and yellow-brown; *pleurogram* with a wide opening at hilar end; *areole* 0.3–0.8 x 0.5–0.6 mm; *funicle* filiform, *c.* 1 mm long, abruptly expanded into a thick, conical, terminal, white aril *c.* 1 mm long.

Selected specimens examined. WESTERN AUSTRALIA: 26 km due SW of Bodallin, *R.J. Cranfield* 2358 (PERTH); 24 km S of Mt Hampton, *c.* 84 km SSW of Southern Cross, *M.D. Crisp* 1101 (PERTH); Bendering Reserve, *G.J. Keighery* 6268 (PERTH); Bremer Range near Mt Glasse, *B.R. Maslin* 5523 (PERTH); 1 km S of Yorkrakine, *B.R. Maslin* 6133 (PERTH); 2 km W of Kellerberrin–Yelbeni road on Yorkrakine West Rd to Yorkrakine, *B.R. Maslin* 6134 (CANB, PERTH); 45 km due SE of Merredin, 0.5 km E of Della Rd on Antonio Rd, *B.R. Maslin* 6137 (PERTH); *c.* 52 km due ESE of Narembeen, 10 km S of Anderson Rocks Rd on The Humps Rd, *B.R. Maslin* 6150 (CANB, K, MEL, PERTH); 1 mile [1.6 km] N of King Rocks, *K. Newbey* 3230 (K, PERTH); 30 km SE of Mt Glasse, Bremer Range, *K.R. Newbey* 5398 (PERTH); 33 km ESE of Sinclair Soak, *K. Newbey* 7011 (PERTH); just S of Yorkrakine, *M. Simmons* 366 (PERTH); *c.* 24 km SSE of Carrabin, *A. Strid* 20359 (AD, K, MEL, PERTH, Z).

Distribution. Occurs in the south-west of Western Australia in scattered populations extending from Yorkrakine and Bodallin in the north, south to near Hyden and east to the Bremer Range with collections from Sinclair Soak (north-east of Norseman) and near Salmon Gums.

Habitat. Grows in red sand, gritty red, grey or brown loam or grey clay on roadsides, low hills, ridges or flats in Whipstick Mallee or Gimlet woodland.

Phenology. Flowering recorded from July to October; mature pods collected in December.

Conservation status. Not under threat.

Etymology. From the Latin *coma* (a mane, crest) with the prefix *a-* (without), in reference to the lack of indumentum.

Affinities. Similar to *A. merrallii* F. Muell. which has a denser habit, usually minutely puberulous and non-pruinose branchlets, appressed-puberulous phyllodes (at least when young) and seeds with a

bright yellow to orange aril. Also similar to *A. glaucissima* (see below) which has terete, ± ribbed, non-pruinose branchlets, phyllodes with a conspicuous midrib and marginal veins, persistent stipules, longer pods and a yellow aril.

Variation. Under natural conditions the normal habit of this species is a spindly, open, somewhat gangling plant which is sparingly divided (usually into 2 main stems) near ground level. In open, disturbed sites such as road verges the species becomes a denser shrub which is rounded or obconic in outline and is much-branched near ground level. Such changes in growth habit are not uncommon in Australian species of *Acacia*. Plants from near Yorkrakine at the north-west extremity of the species' geographic range differ from those elsewhere in that their phyllodes (at least when young) are continuous with the branchlets. With age a septum usually develops at the base of the pulvinus which is reduced to *c.* 0.5 mm long.

Acacia aculeiformis Maslin, *sp. nov.*

Frutex diffusus prostratus, tegetem ad 2 m latum formans. Ramuli glabrescentes. Surculi juveniles obscure rubri. Stipulae 2.5–4 mm longae, recurvae, pungentes, persistentes. Phyllodia valde asymmetrice elliptica usque anguste elliptica vel interdum valde assymetrice obovata ad oblanceolata, margine superiore quam inferiore semper magis convexo, 10–25 mm longa, 5–10 mm lata, subdistantia, glabra ad antrorse puberula, viridia vel subglauca, cuspidata; costa mediana excentrica. Inflorescentiae eis *A. semicircinali* Maiden et Blakely similes, e racemis valde reductis monocephalis axe 0.5–1 mm longo apice ecrescenti compositae; inflorescentiae ceterae simplices secus surculum juvenilem evolutae. Pedunculi 6–17 mm longi. Florum capitula globularia, (20)27–39-flora. Flores 5-meri; gemmae juveniles obscure rubrae. Sepala libera, spathulata. Petala 1.5–2 mm longa, glabra. Legumen et semina non visa.

Typus: 10.5 km north of Three Springs on The Midlands Rd to Mingenew, Western Australia, 22 November 1983, *B.R. Maslin* 5491 (*holo:* PERTH 00739367; *iso:* CANB, K, MEL, NY, PERTH 00739375).

Diffuse, prostrate *shrub*, intricately branched, usually multistemmed, forming mats to 2 m across; main stems to *c.* 10 mm diam. *Bark* smooth, grey. *New shoots* arising from distal end of the minute raceme axis, red. *Branchlets* terete, rather wiry, finely but distinctly ribbed (ribs yellow to light brown, muriculate–scabridulous), slightly flexuose, scabridulous, glabrescent (hairs to *c.* 0.1 mm long, patent to slightly antrorse, arising from excrescences), normally green on under surface and brownish on upper surface. *Stipules* persistent (at least the indurate basal portions remaining on mature branchlets where phyllodes have fallen), 2.5–4 mm long, spreading, slightly to obviously recurved, rigid, pungent but with maturity the apices rather delicate and brittle and often readily breaking, glabrous to sparsely puberulous. *Phyllodes* very asymmetrically elliptic to narrowly elliptic or sometimes very asymmetrically obovate to oblanceolate, the upper margin distinctly more convex than the lower margin which is straight to shallowly convex, 10–25 mm long (including the apical cusp), 5–10 mm wide, l:w 2–3, thinly coriaceous, frequently (at least when dry) absent from some nodes, subdistant, patent to ascending, straight, slightly undulate, glabrous to antrorsely puberulous (hairs normally confined to the variably muriculate margins), pale to medium dull green or subglaucous; *midrib* evident on each face, situated near lower margin, somewhat raised when dry; *lateral nerves* few, obscure, sometimes sparsely anastomosing, mostly arising from adaxial side of principal nerve and sometimes intersecting the upper margin; *marginal nerves* slightly thickened, variably muriculate–scabridulous, indumentum as on branchlets, yellow to reddish brown; *apex* gradually or rather abruptly narrowed at into a straight, subulate, delicate (distal portion readily breaking when dry), rather pungent

cusp 1–2.5 mm long; *pulvinus* to 0.5 mm long, smooth to slightly wrinkled and yellowish to brown when dry. *Gland* obscure, on upper margin of phyllode 1–2 mm above base, circular, *c.* 0.2 mm diam. *Inflorescence* similar to that of *A. semicircinalis*, not particularly showy, 1(2) per node, an extremely reduced 1-headed raceme; axis 0.5–1 mm long, growing out at apex; further inflorescences normally arise along the new shoot but these are simple (not racemose); *peduncles* 6–17 mm long, slender (*c.* 0.6 mm diam.), glabrous to moderately antrorsely or patently hirsutellous (hairs minute, fine and white), green or red; bract on distal 1/2 of peduncle, or absent, narrowly triangular, *c.* 0.5 mm long; *basal peduncular bracts* 2, acuminate, *c.* 1 mm long, absent from simple inflorescences which develop on actively growing new shoots. *Heads* globular or slightly obloid, light to medium golden, 6–7 mm diam. when fresh, 27–39-flowered (one head 20-flowered); young buds red. *Flowers* 5-merous; *bracteoles* spathulate, *c.* 1 mm long, glabrous to glabrescent, lamina abruptly and minutely acuminate; *sepals* free, *c.* 1/2 length of corolla, narrowly oblong to spathulate, glabrous to glabrescent, light brown (when dry), apex not thickened; *petals* 1.5–2 mm long, connate for *c.* 1/2 their length, glabrous, scarlet at apex when young, seemingly nerveless. *Gynoecium* glabrous. *Pods* and *seeds* not seen.

Selected specimens examined. WESTERN AUSTRALIA: 5 miles [8 km] E of Three Springs, Oct. 1972, *C. Chapman s.n.* (AD, NSW, PERTH 00104159); W of Koorda, Jan. 1940, *C.A. Gardner s.n.* (PERTH 00104183); *c.* 37 km S of Moora towards Perth [on Great Northern Highway], *B.R. Maslin* 3271 (PERTH); about 5 km due NNE of Mogumber, *B.R. Maslin* 5476 (BM, BRI, CANB, MO, PERTH); about 17 km N of New Norcia towards Moora, *B.R. Maslin* 4349 (PERTH); 10.5 km N of Three Springs on The Midlands Rd, *B.R. Maslin* 7013 (PERTH).

Distribution. Scattered in the south-west of Western Australia, from Mogumber north to near Three Springs. The collection by C.A. Gardner from west of Koorda (Koorda is *c.* 125 km east-north-east of New Norcia) is the most easterly known locality for the species.

Habitat. Grows in loam or yellow sands on laterite hills in Wandoo (*Eucalyptus wandoo*) woodland.

Flowering period. Flowering recorded from August to January.

Conservation status. Not under threat.

Etymology. The specific epithet, from the Latin *aculeus* (a prickle) and the suffix *-formis* (-shaped or -formed), refers to the spinescent, recurved stipules.

Affinities. Acacia aculeiformis has often been confounded with the more easterly distributed *A. semicircinalis* Maiden & Blakely which is now known to be restricted to the Wongan Hills area. Although these two species share the same flowering period, have somewhat similar phyllodes and very similar inflorescence and calyx structures, *A. aculeiformis* is readily recognized by its persistent, recurved stipules and its phyllodes which are very obviously asymmetric with the principal nerve situated near the lower margin. A description of *A. semicircinalis* is given in Maslin (1982).

Acacia aculeiformis is probably related to *A. congesta* which has a more erect habit, and does not have red flower buds, new shoots and peduncles.

Acacia adinophylla Maslin, *sp. nov.*

Frutex intricatus, diffusus, ad 50 cm altus, vel rectus, ad 1.5 m altus. Ramuli teretes, pubescentes vel glabri. Stipulae 0.5–1 mm longae, caducae praeter bases. Phyllodia fasciculata, anguste cuneata

ad oblanceolata, obtusa sed oblique mucronulata, 3–7 mm longa, 1–2 mm lata, crassa, hirtella, raro glabra, costa non prominenti; glans 0.5–1.5 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi 6–15 mm longi, hirtelli; capitulum floribus 20–30. Flores 5-meri. Sepala libera, glabra. Petala glabra, enervia. Legumen anguste oblongum, ad 20 mm longum, 5–7 mm latum, minute hirtellum, raro glabrum. Semina sphaerica, c. 3 mm diam., hebeta; arillus convolutus.

Typus: Helena and Aurora Ranges [precise locality withheld for conservation reasons], Western Australia, 3 September 1984, *A.P. Brown* 112 (*holo:* PERTH 00731250; *iso:* CANB, G, K, MEL, NY, PERTH 00731242).

Dense to moderately dense *shrub*, intricate, multi-stemmed, sprawling and to 50 cm tall, or erect and to 1.5 m tall, to 1.7 m across. *Branchlets* terete, not spinescent, pubescent to hirtellous (hairs short, soft, patent, ± straight, arising from minute tubercles) but glabrous to subglabrous with age, the erect variant glabrous throughout; ribs scarcely evident. *Stipules* triangular, 0.5–1 mm long, united at their slightly thickened persistent bases, erect, scarious, brittle, brown. *Phyllodes* mostly fasciculate and crowded at mature nodes on short nodose branchlets, narrowly cuneate to oblanceolate, 3–7 mm long, 1–2 mm wide, l:w 3–7, thick but flat, hirtellous (hairs commonly shorter than on branchlets), infrequently glabrous, bright mid-green; solitary on new shoots, straight to shallowly incurved; *midrib* not prominent, submerged, when dry position indicated by a longitudinal ridge along midline; lateral nerves and adaxial marginal nerve absent; nerve on abaxial margin thin, yellowish; *apex* ± obtuse, obliquely mucronulate, the mucro excentric, minute, thickish; *pulvinus c.* 0.5 mm long, yellow-brown, smooth. *Gland* on adaxial margin of phyllode 0.5–1.5 mm above pulvinus, minute (*c.* 0.1 mm diam), slightly raised, circular. *Inflorescence* simple, axillary; *peduncles*, 1–4 per nodal cluster, 6–15 mm long, hirtellous, infrequently glabrous, ebracteate at base. *Heads* globular to slightly obloid, dull golden, 5–6 mm diam., 20–30-flowered, infrequently a few heads to 12-flowered; *bracteoles* spathulate, 1 mm long, minutely ciliate or glabrous, brown (dry); claw linear; lamina erect. *Flowers* 5-merous; *sepals c.* 3/4 length of petals, free, linear to narrowly spathulate, glabrous to subglabrous; *petals* 1.6 mm long, glabrous, nerveless. *Pods* (most of those seen are dehisced) narrowly oblong, to 20 mm long, 5–7 mm wide, firmly chartaceous, undulate or twisted upon dehiscence, not or scarcely constricted between seeds although occasional deep constrictions may occur, slightly rounded over seeds, minutely hirtellous, infrequently glabrous, purplish brown. *Seeds* (few seen) ± spheroid, *c.* 3 mm diam., 2 mm thick, dark brown, dull; *pleurogram* very obscure, open at hilar end; *areole c.* 0.4 mm long, 0.3 mm wide; *funicle* soon expanded into a large, fleshy, convoluted, cream (dry) aril which curves *c.* half way around periphery of seed.

Selected specimens examined. WESTERN AUSTRALIA, near Bungalbin Hill [precise localities withheld for conservation reasons]: *R.J. Cranfield* 8130 (PERTH); *R.J. Cranfield* 7770 & *P.J. Spencer* (CANB, PERTH); *G.J. Keighery* 4432 (PERTH); *B.J. Lepschi* 2005 (BRI, CANB, MEL, PERTH); *B.J. Lepschi* 2040 (BRI, CANB, MEL, PERTH); *F.H. & M.P. Mollemans* 2893 (PERTH); *F.H. & M.P. Mollemans* 2908 (CANB, PERTH); *K. Newbey* 5919 (PERTH); *K. Newbey* 9204 (NSW, PERTH); *B.H. Smith* 1433 (PERTH).

Distribution. Known from several populations in the south-west of Western Australia, within 10 km of Bungalbin Hill and south-east of Mt Jackson. Future studies in this rather poorly collected area may well show the species to be more common than currently indicated.

Habitat. Grows in well-drained rocky loam and loamy sand or clay, commonly over jasperlite (banded ironstone) in open *Eucalyptus ebbanoensis* and *E. griffithsii* mallee shrubland with *Eremophila*, *Dodonaea*, *Scaevola* and *Triodia* low scrub.

Phenology. It would appear that this species flowers sporadically throughout the second half of the year. Flowering recorded in June and September to December, the main flush occurring in September. Specimens with mature pods are rare with one collection (*Lepschi* 2005, PERTH) made in September, this specimen also with mature buds and flowers.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The specific epithet, from the Greek *adinos* (close, crowded) and *phyllon* (a leaf), refers to the crowded phyllodes on short lateral branchlets.

Affinities. Similar to *A. nodiflora* Benth. in its fascicled phyllodes with the peduncles arising from the fascicles, but that species has longer, linear phyllodes, spinescent stipules, sometimes bracts on the peduncles, much longer pods and oblong seeds.

Variation. Typically of sprawling habit and pubescent to hirtellous on most parts. A variant, represented by *Mollemans* 2893, *Lepschi* 2042 and *Cranfield* 7770, differs in the erect habit and the lack of indumentum except the minutely ciliate bracteoles. The collection *Cranfield* 8130, described as a compact shrub 50 cm high, has hirtellous stems that become glabrous within a few years, but all other parts are glabrous except the bracteoles.

Acacia aristulata Maslin, *sp. nov.*

Frutex ad 1 m altus et latus. Ramuli teretes, obscure costata, pilosi vel pubescentes. Stipulae 2–3 mm longae, glabrae praeter margines ciliatos. Phyllodia oblique anguste oblonga-oblanceolata vel cuneata, uncinata, 7–10 mm longa, 2–3.5 mm lata, pubescentia vel glabra; costa non prominens; glans obscura, versus medium marginis inserta. Inflorescentia racemus reductus (1)2-capitatus. Pedunculi 10–20 mm longi, pilosi vel pubescentes; capitulum floribus 13–17. Flores 5-meri. Sepala in dimidio inferiore unita, glabra praeter lobis ciliolatis. Petala pubescentia vel hirsutella, obscure nervosa. Legumen lineare, 1-spirale vel tortile, ad 6 cm longum, 4–5 mm latum, moniliforme, glabrum vel parce hirsutellum. Semina longitudinalia, ellipsoidea, 3.5–4 mm longa; arillus plicatus vel extensus.

Typus: 14 km north of Moora, then 1 km east of The Midlands Rd, Western Australia, 1 December 1986, *B.R. Maslin* 6122 (*holo:* PERTH 00799661; *iso:* AD, CANB, G, K, MEL, NSW, NY).

Shrub to 1 m tall and wide, erect, scrambling or diffusely spreading, domed in exposed, disturbed sites. *Branches* slender, terete, very obscurely ribbed, scurfy white, ageing orange-brown, shortly pilose to antrorsely pubescent. *Stipules* prominent, 2–3 mm long, acuminate, united at base, scarious, light brown, sparsely ciliolate, otherwise glabrous, obscurely 1-nerved. *Phyllodes* obliquely narrowly oblong-oblanceolate to cuneate, (5)7–10 mm long, 2–3.5 mm wide, l:w 2.5–4.5, thin, erect, sparsely to moderately pubescent (hairs commonly antrorse) or glabrous, green; *apex* abruptly narrowed to an excentrically rostriform point, ± uncinate; *midrib* central, not overly prominent; *lateral nerves* few, obscure; *pulvinus* 0.5–1 mm long. *Gland* insignificant, commonly absent, situated *c.* half way along upper margin of phyllode, circular, 0.1–0.2 mm diam. *Inflorescence* 1 per node, an extremely reduced 1(2)-headed raceme, sometimes non-racemose and then peduncle ebracteate at base; raceme axis to 0.5 mm long, subtended at base by 2 small bracts; *peduncles* 10–20 mm long, slender, shortly pilose to pubescent (hairs antrorsely curved), recurved from base and sometimes glabrous when in fruit. *Heads* globular, creamy white, 9–10 mm diam. (fresh), 5–6 mm diam. (dry), 13–17-flowered; *bracteoles* long-exserted in bud, 2–3 mm long, 0.2–0.3 mm wide, narrowly lanceolate to almost linear, acuminate,

scarious, light brown, sparsely ciliolate, otherwise glabrous. *Flowers* 5-merous; *calyx* 1/2–3/4 length of corolla, divided for 1/2–3/4 its length into narrowly triangular, sparsely ciliolate lobes, the 2 lobes adjacent to the bracteoles sometimes shorter than the other 3; *petals* 1.5 mm long, pubescent or sparsely hirsutellous, very obscurely penninerved; midrib obscure or rather obvious (when dry). *Pod* linear, moniliform, loosely once-coiled to irregularly twisted, to 6 cm long, 4–5 mm wide, one margin ± inrolled, coriaceous to thinly crustaceous, glabrous or sparsely hirsutellous, tan, ageing dark brown. *Seeds* longitudinal with hilum facing apex of pod, ellipsoid, 3.5–4 mm long, 2.5–3 mm wide, turgid (2.5 mm thick), mid-grey except blackish areole and peripheral nerve; *pleurogram* open at hilar end; *areole* 2–2.5 mm long, 1.3–1.5 mm wide; *funicle* minute, *c.* 0.5 mm long, expanded into a very pale yellow aril (greenish or brown near hilum) which is once or twice folded on top of seed or unfolded and extending 1/4–1/2 way down one side of seed.

Selected specimens examined. WESTERN AUSTRALIA: Watheroo National Park, Jingemia Hill, 3 km from entrance, *R. Cranfield* 8119 & *P. Spencer* (PERTH); 11 km N of Moora along The Midlands Rd, *R. Cranfield* 8175 & *P. Spencer* (PERTH); Jingemia Hill, Watheroo National Park, *P. Hussey* 81 (PERTH); 11 km N of Moora on The Midlands Rd, then 0.5 km E, *B.R. Maslin* 6215 (BM, PERTH); 15 km N of Moora, *D.J.E. Whibley* 4875 (AD, PERTH).

Distribution. Occurs in the south-west of Western Australia in the Moora area and also Jingemia Hill in the Watheroo National Park, *c.* 25 km to the north.

Habitat. Restricted to low, chert hills, growing in loamy or clayey sand in low open shrubland.

Phenology. The few specimens to hand have been collected in September, November and December. In September the plants were in bud (few heads at anthesis) and sometimes with immature pods. In November and December both buds and heads at anthesis were present, as well as pods with mature seeds. From this it seems that the main flowering period begins in October and probably extends to about January or February. It is probable that the fruits present during flowering resulted from the previous year's fertilization events.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. From the Latin *arista* (a drawn-out point or awn) with the adjectival suffix *-atus* (indicating possession or likeness), in reference to the bracteoles.

Affinities. Similar in several respects to *A. bidentata* Benth. which is most readily distinguished by its obovate to obtriangular-obdeltate phyllodes, caducous or inconspicuous stipules and non-acuminate bracteoles. Superficially similar to *A. rostellata* (see below) which commonly has ± pungent branchlets, obtriangular to obdeltate, ± pungently mucronate phyllodes, shorter peduncles, smaller heads lacking bracteoles and black, rugulose seeds.

Acacia asepala Maslin, *sp. nov.*

Frutex diffusus 0.5–1.5 m altus. Ramuli teretes, obscure costati, glabri. Stipulae c. 0.2 mm longae, caducae. Phyllodia acicularia, crassa, patentia, 10–25 mm longa, c. 1 mm lata, glabra, 5-nervia; glans obscura, 2–4 mm supra pulvinam inserta. Inflorescentia racemus reductus 2-capitatus. Pedunculi 2 mm longi, glabri; capitulum floribus 10. Flores 5-meri, glabri. Sepala absentia. Petala obscure 1-nervia. Legumen anguste oblongum, 1–4 cm longum, 4.5–5.5 mm latum, vadose sigmoideum vel arcuatum ad circinatum, glabrum. Semina obliqua, obovoid, 3 mm longa, 1.5 mm lata; arillus clavatus.

Typus: Frank Hann National Park, 70 km by road east of Lake King store towards Peak Charles, Western Australia, 13 August 1985, *B.R. Maslin* 5784 (*holo:* PERTH 00939110; *iso:* CANB, K, MEL, NY).

Diffuse *shrub*, much-branched, mid-dense, single- or multi-stemmed, 0.5–1.5 m tall, 1–1.7 m across. *Bark* light grey. *Branches* terete, very obscurely ribbed, glabrous, red-brown at extremities, soon light grey, with prominent projections where phyllodes have fallen. *Stipules* minute, *c.* 0.2 mm long, ± scarious, caducous. *Phyllodes* thickly acicular, terete–pentagonal but commonly slightly compressed at base, 10–25 mm long, *c.* 1 mm wide, rigid, patent, mostly straight, some slightly recurved, smooth, glabrous, subglaucous except nerves; *nerves* 5, yellow, 0.6 mm apart; lamina shallowly concave between nerves upon drying; *apex* narrowed to a straight, brown cusp 1.5–2 mm long; *pulvinus* ± absent, reduced to a narrow rim of yellow tissue < 0.5 mm wide. *Gland* inconspicuous, 0.3 mm long, on upper surface of phyllode 2–4 mm above base. *Inflorescence* an extremely reduced raceme with 2 heads; axis *c.* 0.1 mm long; *peduncles* 2 mm long, glabrous, patent or recurved from base in fruit; *basal peduncular bracts* caducous, prominent and enclosing heads in bud, 2–3 mm long, scarious, concave, dark brown, glabrous, rounded-obtuse or acute, sometimes cleft with age. *Heads* globular, 4 mm diam. when fresh (3 mm diam. when dry), *c.* 10-flowered, bright mid-golden; *bracteoles* absent. *Flowers* 5-merous, glabrous; *calyx* absent; *petals* free, 1.2 mm long, membranous, obscurely 1-nerved. *Pods* (slightly immature) narrowly oblong, 1–4 cm long, 5–8 mm wide, flat, shallowly sigmoid or shallowly curved to circinate (i.e. curved within the plane of the suture into a full, open circle), thinly coriaceous–crustaceous, glabrous, greyish, abruptly contracted at both ends; margins thickened, not or only slightly constricted between seeds, yellowish. *Seeds* (slightly immature) oblique, obovoid, 3 mm long, 1.5 mm wide, brown; *pleurogram* U-shaped, open; *areole c.* 0.5 mm long, 0.25 mm wide; *funicle* filiform and reflexed below the long-clavate aril that extends from 1/2 to wholly down one side of the seed.

Selected specimens examined. WESTERN AUSTRALIA: 5 km N of Hyden–Norseman crossroad with Forrestania–Southern Cross road, *R. Buehrig* 3 (PERTH); uncertain locality, *A.J. Hart* 3 (PERTH); 2 km SW of Lake Cronin, *K.R. Newbey* 5816 (PERTH); 6 km SE of Marvel Loch, *K. Newbey* 5817 (PERTH); South Tetley, Forrestania, *A. O'Connor* 453 (PERTH).

Distribution. Occurs in the south-west of Western Australia in three disjunct populations – south-east of Marvel Loch, near Forrestania, and east of Lake King in the Frank Hann National Park.

Habitat. Grows in well-drained loam or sandy loam in eucalypt low woodland. The type was collected near a salt lake.

Phenology. Flowering commences around early August but because of the few collections it is not known when it ends. Specimens with mature pods have been collected in early December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The specific epithet, from the Greek prefix *a-* (without) and the Latin *sepalum* (a sepal), refers to the absence of sepals.

Affinities. The new species is superficially very similar to *A. calcarata* Maiden & Blakely in so far as both possess thickly acicular, 5-nerved phyllodes and globular heads. *Acacia calcarata* can be readily distinguished by its spinescent stipules 1.5–3 mm long, peduncles 3.5–7 mm long, heads 16–22-flowered, bracteoles and calyx present and pods blackish and about 1 cm wide. In phyllode form *A. asepala* also superficially resembles *A. colletioides* A. Cunn. ex Benth., but in that species the

phyllodes are 8-nerved, the sepals are present and free, the pods coiled and the seeds have a conspicuous orange aril.

Notes. The new species is highly unusual in that the flowers lack a calyx and are not subtended by a bracteole. Asepalous flowers are very rare in *Acacia*. Besides *A. asepala* I know of only *A. huegelii* Benth. and *A. forrestiana* E. Pritz. (closely related to each other but not to *A. asepala*), although in *A. blaxellii* Maslin (see below) the calyx is sometimes absent and in *A. intricata* S. Moore it is either absent or reduced to a single linear sepal. Normally in *Acacia* the bracteoles protect the developing flower buds. In *A. asepala*, however, this role is assumed by the rather large basal peduncular bract. Other species of sect. *Phyllodineae* in which bracts functionally replace bracteoles include *A. castanostegia*, *A. flagelliformis* A.B. Court, *A. pachypoda* Maslin and *A. squamata* Lindley.

Acacia ataxiphylla Benth., *Linnaea* 26: 605 (1855). *Type:* Swan River, Western Australia, *J. Drummond* 4:6 (*lecto:* K – left hand specimen on sheet stamped Herbarium Benthamianum, here selected); *isolecto:* BM, FI, G, K, MEL, NSW, OXF, P, PERTH 00741493, TCD).

Spreading, intricate, semi-prostrate, open *shrub* to 0.3 m tall and 0.5 m wide. *Branches* slightly flexuose, terete but apically slightly to prominently flattened and acutely angled, hairy or glabrous. *Stipules* narrowly triangular, 2–3 mm long, not pungent although sometimes rigid. *Phyllodes* continuous with branch but not produced into a cauline wing, narrowly linear, 15–60 mm long, 1–2 mm wide, predominently shallowly curved to shallowly sigmoid, occasionally straight or serpentinous, the apices pungent (sharply or coarsely) and slightly to prominently hooked or sometimes almost circinate, compressed; *nerves* 5; midrib obvious on each face, lower margin 1-nerved, upper margin thick, 2-nerved and 0.5–0.6 mm wide. *Peduncles* solitary, 4–12 mm long (rarely to 18 mm). *Heads* globular to slightly obloid, 15–20-flowered; *bracteoles* 1–2.5 mm long, acuminate, sessile, brown. *Flowers* 5-merous; *sepals* joined on their lower 1/3–1/2, brown, acuminate; *petals* 2–3 mm long, with or without a pronounced midrib, variably striate. *Pods* immature (seen only for subsp. *ataxiphylla*), narrowly oblong, to 20 mm long and 4 mm wide, curved, longitudinally striate, reddish brown.

Distribution. Occurs in the south-west of Western Australia from north of Kojonup south to Albany (subsp. *ataxiphylla*) and near Tammin (subsp. *magna*).

Typification. There are two sheets of *A. ataxiphylla* at Herb. Kew, one stamped Herbarium Benthamianum (and labelled: 'Acacia 6 (4th. colln.) Swan River. Drummond') and the other stamped Herbarium Hookerianum (and labelled: '6 Drummond' and 'Sw. riv. to K.G.S. Drummond ann. 1848.'). Although Bentham annotated both sheets as *A. ataxiphylla*, the specimens show some variation in indumentum density which leads me to believe that they may have been gathered from different plants. The lectotype here selected is the left hand specimen on the Herb. Bentham. sheet. The remaining Kew specimens are regarded as isotypes, as are the specimens of Drummond no. 6 which I have seen at BM, FI, G, K, MEL, NSW, OXF, P, PERTH and TCD.

Discussion. Two subspecies are recognized but future studies may show that these would be better treated as distinct species.

Key to subspecies of *Acacia ataxiphylla*

Heads *c.* 5 mm diam. (when dry); peduncles *c.* 0.4 mm diam., commonly 8–12 mm long; branchlets puberulous or glabrous (summer flowering) ..... subsp. **ataxiphylla**

Heads 7–9 mm diam. (when dry); peduncles 0.7–0.8 mm diam., 4–7 mm long; branchlets apically tomentose (winter flowering) ..... subsp. **magna**

Acacia ataxiphylla Benth. subsp. **ataxiphylla**

Branchlets glabrous or sparsely antrorsely puberulous (hairs sparser, straighter and coarser than in subsp. *magna*). *Phyllodes* rather slender, mostly 20–35 mm long but ranging from 15–50 mm, 1–1.7 mm wide. *Peduncles* commonly 8–12 mm long but ranging from 6.5–18 mm, slender, *c.* 0.4 mm diam. (when dry), antrorsely puberulous. *Heads c.* 5 mm diam. (when dry), 15–20-flowered; *bracteoles* 1–1.5 mm long, acute, rusty brown. *Calyx* 1/3–1/2 length of corolla; *petals c.* 2 mm long; midrib normally thick and prominent at petal apices; lateral veins (when present) few, slightly thickened.

Selected specimens examined. WESTERN AUSTRALIA: near King George Sound [Albany], *W.E. Blackall* 1451 (PERTH); S side of Jingalup township, *A.S. George* 14988 (MEL, PERTH); 150 mile peg, Albany Highway [*c.* 10 km N of Kojonup], *B.R. Maslin* 2614 (CANB, PERTH).

Distribution. Occurs in south-west Western Australia with collections from an area within 30 km north and west of Kojonup. The record from the Albany area may not be precise.

Habitat. Grows in clay-loam with some gravel in *Eucalyptus wandoo* woodland, and in white sand in *Eucalyptus marginata* woodland.

Phenology. Flowering recorded from December, January and perhaps February. Immature pods have been collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Acacia ataxiphylla subsp. **magna** Maslin, *subsp. nov.*

Ab *Acacia* subsp. *ataxiphylla* ramulis angulatis crassioribus tomentosis; phyllodiis crassioribus, longioribus (plerumque 40–60 mm longis); pedunculis brevioribus (4–5 mm longis), crassis, tomentosis; calyce corollam aequanti vel parum breviore; petalis majoribus (2.5–3 mm longis), subtiliter striatis; differt.

Typus: Tammin area [precise locality withheld for conservation reasons], Western Australia, 20 July 1980, *R.J. Cranfield* 1522a (*holo:* PERTH 00721638).

Differs from the typical subspecies principally in the following ways. *Branchlets* coarser, more obviously acutely angled, apically moderately to densely tomentose (hairs soft, curled, somewhat matted and appressed). *Phyllodes* rather coarse, mostly 40–60 mm long but interspersed with a few that are shorter (25–30 mm), 1.6–2 mm wide. *Peduncles* 4–7 mm long, ± obscured by stamens at anthesis, stout, 0.7–0.8 mm diam. (when dry), tomentose. *Heads* 7–9 mm diam. (when dry), *c.* 20-flowered; *bracteoles* 2–2.5 mm long, dark brown, long-acuminate. *Calyx* 3/4 to fully the length of

corolla, dark brown, long-acuminate; *petals* 2.5–3 mm long, extremely finely striate, lacking a central nerve.

Other specimens examined. WESTERN AUSTRALIA, near Tammin [precise localities withheld for conservation reasons]: *M.D. Crisp* 6595 (CANB, PERTH, NSW); 1889, *Miss [A.] Eaton s.n.* (MEL, PERTH 00721654). *P. Hussey* 12 (PERTH); *D. Papenfus* DP 666 (PERTH); *R.D. Royce* 8350 (PERTH).

Distribution. Occurs in the south-west of Western Australia, apparently restricted to the Tammin area. The only collection of subsp. *magna* possibly from outside this area is Alice Eaton's locality, which is vaguely given as 'between York and Southern Cross' and encompasses the collection area for the other specimens. In the 1890s, Alice Eaton resided at Youndegin (Erickson 1979) which is close to the collection area.

Habitat. Grows in laterite, or sand over laterite, in low heath.

Flowering period. Flowering recorded from June to August. Pods have not been collected.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The subspecific epithet refers to the characteristically large flower heads.

Affinities. This subspecies may resemble some variants of *A. stenoptera* Benth. which is distinguished by its 4-merous flowers and non-acuminate bracteoles and calyx lobes.

Discussion. In view of the differences noted in the diagnoses above and considering the difference in flowering periods and distributions, this new taxon may warrant specific rank. However, I have not seen it in the field, nor have I seen mature pods of either subspecies, hence I consider subspecific rank more appropriate.

Acacia auronitens Lindley, Sketch Veg. Swan R. xv (1839). *Type:* Swan River, Western Australia, 1839, *J. Drummond s.n.* (*lecto:* CGE, here selected; *isolecto:* K); Swan River, Western Australia, *Toward* 41 (*paralecto:* CGE).

This name was based on two collections, *viz. Drummond s.n.* (branchlets hairy) and *Toward* 41 (branchlets glabrous). Specimens with glabrous branchlets are infrequent in *A. auronitens* and current indications are that these variants do not warrant formal rank. The Drummond specimen with its hairy branchlets has therefore been selected as the lectotype because it typifies the normal condition in this species.

Acacia barbinervis Benth., *London J. Bot.* 1: 326 (1842). *Type:* Swan River, Western Australia, 1839, *J. Drummond s.n.* (*holo:* K – sheet stamped Herb. Benthamianum; *iso:* K – sheet stamped Herb. Hookerianum, PERTH 01193007 – fragment ex K).

Spreading, multi-stemmed *shrub* 0.2–0.4 m tall. *Branchlets* yellow-ribbed, sometimes (subsp. *barbinervis*) acutely angled towards apex, glabrous or pubescent to puberulous, the hairs often minutely tubercle-based. *Stipules* narrowly triangular to setaceous, 1.5–4.5 mm long, inclined to erect, straight or shallowly recurved, scarious but thickened towards base, rather persistent, but commonly the distal portion breaking and only bases remaining at older nodes, reddish brown. *Phyllodes* linear

to narrowly oblong or narrowly oblanceolate, 10–30 mm long, 1–2(2.5) mm wide, l:w 6–22(28), rigid, erect to inclined, straight or shallowly incurved or shallowly recurved, flat but when very narrow appearing angular (especially in subsp. *borealis*) due to the pronounced, raised nerves, glabrous or (especially when young) indumentum as on branchlets, green; *nerves* 5, prominent, 1 abaxial, 2 lateral (the midrib) – these prominently raised when dry and central (subsp. *borealis*) or situated near lower margin (subsp. *barbinervis*), 2 adaxial—extending wholly from base to apex and together forming a prominent nerve-like upper margin); minor secondary nerves usually not apparent; *apex* obliquely narrowed to a straight, rigid, subulate cusp 0.5–2 mm long, the cusp yellow (when young), ageing brown; *pulvinus* present or absent. *Gland* absent or (subsp. *borealis*) situated on flattened upper margin of phyllode 2–12 mm above base, circular or sometimes oblong, 0.3–0.6 mm long; central orifice shallow; lip sometimes raised. *Inflorescences* simple or extremely reduced 1-headed racemes; axis less than 0.5 mm long, 1(2) per node; *peduncles* 5–14 mm long, glabrous or indumentum as on branchlets; basal bract persistent, solitary, 0.5–1 mm long, oblong to triangular, very shallowly concave, gradually or abruptly acute, apically ciliolate, rather obscurely 1-nerved. *Heads* globular, golden or creamy yellow, 12–22-flowered, flowers densely or subdensely arranged; *bracteoles* 1.5–3.5 mm long; claw minute; lamina slightly inflexed, prominently acuminate (exserted in buds). *Flowers* 5-merous; unexpanded buds apiculate or rounded–obtuse; *calyx* 1/4–1/2 length of corolla, gamosepalous, dissected for 1/4–1/2 its length into triangular, non-thickened lobes; calyx tube brown, nerveless or obscurely 5-nerved when dry; *petals* 2–2.5 mm long, striate but often obscurely so, glabrous or sparsely hairy. *Pods* terete to subterete, scarcely constricted between seeds, but occasional random, moderately deep constrictions occur, arcuate, to 7 cm long, *c.* 4 mm wide, coriaceous to thinly crustaceous, red-brown, glabrous or minutely puberulous, tapering towards base and rather abruptly narrowed at apex, prominently longitudinally nerved; nerves openly anastomosing; marginal nerves not thickened. *Seeds* (subsp. *borealis*) longitudinal and facing apex of pod, obloid, 5.5–6 mm long, 2.5–3 mm wide, turgid, medium brown, dull; *pleurogram* obscure, open at hilar end, bordered by a diffuse band of yellowish tissue (at least when almost mature); *areole* 3 x 1 mm; *funicle* filiform, 1 mm long, light brown when dry, abruptly expanded into a thick, conical, yellowish aril.

Distribution. Occurs in the south-west of Western Australia from near Eneabba south to Waroona.

Affinities. Closely related to *A. costata* Benth. which is distinguished by its narrowly lanceolate, normally shorter phyllodes (6–15 mm long). Two subspecies are recognized.

Key to subspecies of *Acacia barbinervis*

Some or all phyllodes shallowly recurved; branchlets acutely angled towards tip; heads golden ..... subsp. **barbinervis**

Phyllodes straight to shallowly incurved; branchlets scarcely angled; heads creamy yellow ..... subsp. **borealis**

Acacia barbinervis Benth. subsp. **barbinervis**

Branchlets acutely angled at apex; indumentum of spreading, straight to slightly crisped hairs, confined to ribs. *Stipules* 1.5–3 mm long, inclined to ascending, straight or shallowly recurved. *Phyllodes* inclined to ascending, mostly shallowly recurved (curving uniformly throughout or only the upper 1/3), sometimes a few straight or sigmoid, flat, with a nerve-like upper margin; *midrib* near lower margin; cusp 1–2 mm long; *pulvinus* ± absent. *Gland* normally absent. *Peduncles* 5–9 mm long. *Heads* golden. *Flower* buds apiculate; *calyx* cupular, 1/4–1/3 length of corolla, shallowly dissected for *c.* 1/4 its length into broadly triangular lobes.

Selected specimens examined. WESTERN AUSTRALIA: John Forrest National Park, *P. Armstrong* 84/318 (PERTH); 8 km NE of Coolup on road to Dwellingup, 16 June 1980, *R.J. Cranfield s.n.* (PERTH 00454435); Waroona, *L. Diels & E. Pritzel* 154 (PERTH); 3 miles [4.8 km] E of North Bannister on road to Wandering, *A.S. George* 10615 (PERTH); Kalamunda plateau, *R. & M. Hamilton* 90 (BRI, MEL, PERTH); Lake Leschenaultia, *D.P. Johnson* LL017 (PERTH); Wooroloo, Darling Range, *M. Koch* 1894 (PERTH); E of Bullsbrook East, *B.R. Maslin* 4801 (CANB, K, PERTH); Julimar Rd, Toodyay, 5 Jan. 1992, *P.A. Phillips s.n.* (PERTH 02116227); Helena Valley, *J. Seabrook* 523 (PERTH).

Distribution. Occurs in the south-west of Western Australia, scattered but locally common in the Darling Range from near Bindoon and Toodyay south to Waroona.

Habitat. Grows in lateritic soils in Jarrah-Marri woodland and forest.

Phenology. The main flowering flush is December–February, but specimens collected in June bear a few flowers; mature pods have been collected in December.

Conservation status. Not under threat.

Acacia barbinervis subsp. **borealis** Maslin, sp. nov.

Ab *Acacia* subsp. *barbinervi* ramulis ad apices vix angulatis, indumento ubi praesenti non ad costas limitato; stipulis longioribus (2–4.5 mm longis); phyllodiis plerumque rectis, costa ± mediana, mucrone breviore (0.5–1 mm longo), pulvino 0.5–1 mm longo, glande praesenti; pedunculis ad 14 mm longis; floribus cremeis; calycis lobis anguste triangularibus, differt.

Typus: near Victoria location 10212, 22 km north of Eneabba, Western Australia, 2 January 1979, *E.A. Griffin* 1802 (*holo:* PERTH 00179515).

Branchlets scarcely angled; hairs of indumentum not confined to ribs, spreading to antrorse and variably crisped. *Stipules* 2–4.5 mm long, ascending to erect, straight. *Phyllodes* 10–30 mm long, 1–2 mm wide, ascending to erect, straight to shallowly incurved, sometimes very shallowly recurved at apex, flat with a nerve-like upper margin but appearing angular in section when narrow due to pronounced nerves; *midrib* ± central; cusp 0.5–1 mm long; *pulvinus* not prominent, 0.5–1 mm long, yellow to light brown when dry. *Gland* 2–12 mm above base. *Peduncles* 6–14 mm long. *Heads* creamy yellow. *Flower* buds rounded-obtuse; *calyx* narrowly turbinate, *c.* 1/2 length of corolla, somewhat variably dissected for *c.* 1/2 its length into narrowly triangular lobes.

Selected specimens examined. WESTERN AUSTRALIA: 1.5 miles [2.5 km] SSW of Yeal Swamp, Wanneroo Forest Reserve, *Y. Chadwick* 2527 (PERTH); 7.5 km E of Rose Thompson Rd along Coorow–Greenhead road, Alexander Morrison National Park, *R.J. Cranfield & P.J. Spencer* 8008 (PERTH); Perry Rd, N of Gnangara, *J. Dodd* 21 (PERTH); Moore River National Park, *J. Dodd* 45 (PERTH); Hill River, Jan. 1931, *C.A. Gardner s.n.* (CANB, MEL, PERTH 0179485); 8 km S of Eneabba, *E.A. Griffin* 796 (K, PERTH); Clover Rd, Wanneroo–Yanchep, *J. Havel* 215 (PERTH); Moore River bridge, *J. Havel* 259 (PERTH).

Distribution. Occurs in south-west Western Australia in coastal or near-coastal areas from Wanneroo (Yeal Swamp) north to the Eneabba area.

Habitat. Grows in sand and sometimes gravel in open heath and low *Banksia* woodland.

Phenology. Flowering recorded from November to February; mature pods collected in November and March.

Conservation status. Not under threat.

Etymology. The subspecific epithet, the Latin *borealis* (northern), refers to the distribution compared to that of the typical subspecies.

Affinities. The phyllodes of subsp. *borealis* resemble those of *A. laricina* but they are not continuous with the branchlets as in the latter; also its petals are striate, whereas *A. laricina* has smooth petals. Superficially this subspecies resembles the variant of *A. auronitens* with quadrangular 4-nerved phyllodes, thickly crustaceous to woody pods and smaller, mottled seeds.

Acacia blaxellii Maslin, *sp. nov.*

Frutex ad 1.2 m altus. Ramuli teretes, obscure costati, tomentulosi vel puberuli. Stipulae caducae, c. 1 mm longae. Phyllodia anguste oblonga ad oblongo-elliptica, obtusa, plerumque 10–20 mm longa, 3–5 mm lata, laevia, glabra vel parum pubescentia, costa non prominenti; glans obscura, proxime supra pulvinam inserta. Pedunculi binati, plerumque 10–22 mm longi, glabri; capitulum floribus 17–31. Flores 5-meri. Sepala libera, glabra. Petala enervia. Legumen undulatum vel circinatum vel sigmoideum, ad 20 mm longum, 3.5 mm latum, glabrum. Semina longitudinalia ad transverse obliqua, ovoidea, 2–2.2 mm longa, parum nitentia; arillus anguste clavatus.

Typus: 106 km south of Queen Victoria Rock on the road to Hyden, Western Australia, 22 September 1983, *B.R. Maslin* 5418 (*holo:* PERTH 00171778; *iso:* CANB, K, MEL, NSW).

Spreading *shrub*, dense to mid-dense, rounded to obconic, 0.3–1.2 m tall, to 1.5 m across, multi-stemmed or branching just above ground level. *Bark* slightly rough, grey. *Branchlets* terete, obscurely ribbed, tomentulose to densely puberulous (hairs patent to ± appressed), marked by persistent raised leaf bases where phyllodes have fallen. *New shoots* initiated at anthesis, arising in axil of peduncle, the stems densely puberulous to tomentulose with silvery white hairs, the phyllodes either glabrous to subglabrous and (at least at initiation) dull purple-red and faintly pruinose, or with a dense, appressed silvery white indumentum. *Stipules* triangular to narrowly triangular, *c.* 1 mm long, scarious, caducous. *Phyllodes* narrowly oblong to oblong-elliptic or slightly oblanceolate, 10–20 mm long, rarely a few 25–28 mm, 3–5 mm wide, l:w (3)4–6, slightly thick and fleshy, smooth, ascending to erect, straight, glabrous or (when new shoots are hairy) the terminal ones with sparse to moderate fine appressed hairs, light green to dark green when mature; stomata minute, numerous (observe at x10 mag.); *midrib* not prominent (not or only slightly raised when dry), central or slightly excentric; *lateral nerves* absent or very obscure; *apex* ± obtuse, with a minute, brown mucro; *pulvinus* terete, *c.* 1 mm long, densely puberulous to tomentulose with hairs sometimes restricted to adaxial surface. *Gland* not prominent, on upper margin of phyllode at distal end of pulvinus, narrowly oblong, sometimes circular, (0.3)0.4–0.6 mm long. *Inflorescence* a 2-headed raceme; axis less than 0.5 mm long; *peduncles* (7)10–22 mm long, glabrous, yellow to light green, light brownish when dry, recurved in fruit; *basal peduncular bracts* caducous, rostriform, *c.* 2 mm long, puberulous abaxially, dark brown. *Heads* globular, light- to mid-golden, 5–6 mm diam. at anthesis, 17–31-flowered; *bracteoles* few or absent, linear, *c.* 0.5 mm long. *Flowers* 5-merous; *sepals* free, linear to narrowly spathulate, 1/4–2/5 length

of petals, membranous, glabrous or subglabrous, sometimes absent; *petals* 1.5–2 mm long, glabrous, nerveless. *Pods* to 20 mm long, 3.5 mm wide, variably undulate to circinate or irregularly sigmoid, thinly coriaceous, not constricted between seeds, glabrous, dark purplish brown and slightly pruinose, ageing dark brown; marginal nerve narrow. *Seeds* longitudinal to transversely oblique, ovoid, 2–2.2 mm long, 1.2–1.5 mm wide, somewhat compressed (0.8–0.9 mm thick), slightly shiny, dark grey-brown to black; *pleurogram* very obscure, U-shaped, open at hilar end; *areole c.* 0.3 mm long, 0.2 mm wide; *funicle* filiform, to *c.* 1 mm long; *aril* sublaterally attached to seed, narrowly clavate, 2/3–3/4 length of seed, white.

Selected specimens examined. WESTERN AUSTRALIA: 159 km E of Hyden towards Norseman, *D.F. Blaxell* W75/48 (PERTH); 42.2 miles [67.8 km] W of Kumarl towards Lake King, *R. Cumming* 2557 (PERTH); between Bremer Range and Lake King–Kumarl road, *B.R. Maslin* 5431 (G, MO, PERTH); 106 km S of Queen Victoria Rock on road to Hyden, *B.R. Maslin* 5516 (K, PERTH); *c.* 4 km N of Maggie Hay Hill, between Lake Johnston and Lake Hope, *B.R. Maslin* 5518 (PERTH); 25 km ESE of Tadpole Lake, Frank Hann National Park, *K. Newbey* 5537 (AD, NY, PERTH); 4.8 km E of Graham Rock turnoff on Hyden–Newdegate road, *M.H. Simmons* 1327 (PERTH).

Distribution. Occurs in the south-west of Western Australia, largely confined to an area between Frank Hann National Park and McDermid Rock (*c.* 100 km west of Norseman). Also collected near Hyden (*c.* 150 km west of the principal collecting area) and near Norseman (*c.* 90 km east of principal collecting area).

Habitat. Grows in red-brown clay on flat land or in loam on low rocky hills, in mallee scrub or eucalypt woodland.

Phenology. Flowering recorded from August to early October; mature pods collected in December.

Conservation status. Not under threat.

Etymology. It is a pleasure to name this species in honour of its discoverer, Don Blaxell (formerly of the Royal Botanic Gardens, Sydney). Don has made major contributions to Australian botany through his publications on orchids and eucalypts and his administrative role at Sydney.

Affinities. Most closely allied to *A. evenulosa* (see below) and *A. saxatilis* S. Moore. Some of the important characters shared by these three species include: phyllodes narrowly oblong to linear, short (to 4 cm), obtuse, inconspicuously mucronulate, midrib not prominent, lateral nerves absent or obscure; peduncles twinned on extremely reduced raceme axes, basal bracts rostriform, caducous; bracteoles few or absent; sepals free; aril narrowly clavate and sublaterally attached to seed. *Acacia blaxellii* is readily distinguished from *A. evenulosa* and *A. saxatilis* by its densely puberulous to tomentulose branchlets (glabrous in *A. saxatilis*, hairs appressed, obscure and commonly confined to phyllode axils in *A. evenulosa*) and its phyllodes which are frequently shorter with the gland situated at the distal end of the pulvinus (1–4 mm above the pulvinus in the other two species). *Acacia saxatilis* occurs to the north of both *A. blaxellii* and *A. evenulosa*.

Acacia bracteolata Maslin, *sp. nov.*

Frutex effusus ad 0.6 m altus. Ramuli teretes, subtiliter costati, villosi ad tomentulosi, glabrescentes. Stipulae 3–4 mm longae, persistentes. Phyllodia parum asymmetrica, plerumque anguste elliptica ad

oblanceolata, obtusa vel subacuta, minute mucronata, 15–25 mm longa, 5–10 mm lata, recta, parce byssacea; costa non prominens; glans 2.5–5 mm supra pulvinam inserta. Inflorescentia racemus reductus, (1)2(3)-capitatus. Pedunculi 4–6 mm longi, pilosi; capitula floribus 19–25; bracteolae prominentes, exsertae, ovatae, acuminatae, 1.5–2 mm longae, parce pilosae. Flores 4-meri. Sepala unita, glabra. Petala glabra, enervia. Legumen anguste oblongum, ad 6 cm longum, 6–7 mm latum, ± planum, chartaceum, subvelutinosum. Semina longitudinalia, oblongoideo-ellipsoidea, 3.5–4 mm longa, hebetia praeter marginem pleurogrami; arillus clavatus.

Typus: Scaddan (Scaddan Rd, 11.2 km east of Esperance–Norseman highway), Western Australia, 2 July 1984, *P. van der Moezel* 373 (*holo:* PERTH 00345520; *iso:* K, MEL).

Spreading *shrub*, moderately dense to moderately open, to 0.6 m tall and 1.2 m wide. *Branchlets* terete, very finely ribbed, ascending, sparingly divided, straight to slightly flexuose, villous to tomentulose, glabrous with age, dark red-brown. *Stipules* narrowly triangular to linear-triangular, (2)3–4(5) mm long, scarious, slightly thickened at base, hairy abaxially, glabrous with age, persistent. *Phyllodes* slightly asymmetric, the upper margin normally slightly more convex than the lower, usually narrowly elliptic to oblanceolate, sometimes elliptic, (13)15–25(30) mm long, (4)5–10 mm wide, l:w 2–4(5), coriaceous, slightly thickened, sometimes finely rugose when dry, mostly inclined to ascending, straight, sometimes slightly undulate or twisted, with sparse to moderate fine, weak, appressed hairs (i.e. cottony to cobwebby), sometimes glabrous with age, green; *midrib* ± central on each face of phyllode, not prominent (only very slightly raised and the same colour as rest of lamina when dry), terminating before apical mucro, sometimes with an indistinct longitudinal nerve arising from adaxial side of midrib in region of pulvinus and terminating about middle of phyllode; *lateral nerves* obscure, diverging from midrib at *c.* 45°, anastomosing; marginal nerves not thickened, yellowish to light brown; *apex* obtuse or sometimes subacute, excentrically mucronulate, the mucro minute (*c.* 0.5 mm long), slightly pungent, straight or occasionally slightly hooked; *pulvinus* 1–2 mm long, yellowish to brown, finely transversely wrinkled, glabrous to moderately tomentulose. *Gland* not prominent, on upper margin of phyllode 2.5–5 mm above pulvinus, circular or oblong, 0.3–0.5 mm long, yellowish to dark brown when dry, lip not raised. *Inflorescence* shorter than phyllodes, an extremely reduced (1)2(3)-headed raceme; axis less than 0.5 mm long, sometimes growing out after flowering; *peduncles* 4–6 mm long (sometimes to 9 mm in fruit), antrorsely hairy, mostly recurved when in fruit; *basal peduncular bracts* solitary, ovate, acute to subacute, 2–3 mm long, 1–2 mm wide, concave, sessile, hairy abaxially, brown, persistent. *Heads* globular to very slightly obloid, 4.5–5.5 mm diam. (dry), 7 mm diam (fresh) , bright lemon-yellow, 19–25-flowered; *bracteoles* prominent, exserted in bud, minutely stipitate; lamina ovate, acuminate (point straight or slightly recurved), 1.5–2 mm long, shallowly concave, brown, sparsely hairy abaxially especially at apex, faintly 1-nerved. *Flowers* 4-merous; *calyx* gamosepalous, 1/2 length of corolla, dissected for 1/4–1/3 its length into broadly triangular, non-thickened lobes; calyx tube nerveless, glabrous to subglabrous; *petals* 1.8–2 mm long, elliptic to obovate, connate for *c.* 1/2 their length but readily splitting to base upon dissection, glabrous, not obviously nerved, obtuse to bluntly acute. *Pods* narrowly oblong, to 6 cm long, 6–7 mm wide, with up to 10 seeds, flat but rounded over seeds, scarcely constricted although very occasional random deep constrictions occur, firmly chartaceous, distinctly arcuate, not reticulate, subvelutinous, abruptly constricted at both ends, greyish brown; stipe thick, *c.* 0.5 mm long; marginal nerve slightly thickened, yellow or light brown. *Seeds* longitudinal, facing apex of pod, obloid–ellipsoid but obliquely truncate along edge adjacent to aril, 3.5–4 mm long, 2.5–2.8 mm wide, somewhat compressed (1.5 mm thick), dull except a narrow band of glossy tissue bordering pleurogram, black; *pleurogram* U-shaped, open at hilar end; *areole c.* 1.5 x 1 mm; *funicle* filiform, *c.* 1 mm long, reflexed below and expanded into a relatively large, cream, clavate aril which extends 1/2 way down one side of seed.

Selected specimens examined. WESTERN AUSTRALIA: 51 miles [*c.* 82 km] S of Nanambinia Station, S of Balladonia, *T.E.H. Aplin* 2585 (PERTH); between Mt Ragged and [Queen] Victoria Spring, 1886, *Miss S. Brooke s.n.* (PERTH 00169897); Scaddan Rd, 11.2 km from Coolgardie–Esperance road turnoff, *G. Craig* 1473 & *P. van der Moezel* (PERTH); Junana Rock, 10 km N of Mt Ragged on Balladonia track, Cape Arid National Park, *D. Edinger* 205 (MEL, PERTH); Pine Hill, *A.S. George* 16110 (PERTH); Parmango Rd adjacent to Clyde Hill, *B.R. Maslin* 5830 (CANB, PERTH); 50 km W of Grass Patch, *K. Newbey* 9683 (PERTH); *c.* 100 km S of Balladonia, *P. Wilson* 2877 (PERTH).

Distribution. Occurs in the south-west of Western Australia, confined to an area from *c.* 50 km west of Grass Patch east to Pine Hill at the north end of Cape Arid National Park and *c.* 50 km north towards Balladonia.

Habitat. Sand over clay or calcareous (infrequently granitic) loam on flat plains or in shallow depressions (sometimes near salt lakes) in mallee woodland or shrubland.

Phenology. Flowering recorded from July to September; mature pods collected in November and December.

Conservation status. Not under threat.

Etymology. From the Latin *bracteolatus* (bracteolate), in reference to the prominently exserted bracteoles of the flower head.

Affinities. Problematic. Superficially resembles *A. merrallii* F. Muell. which is similar in phyllode shape and size but differs significantly in its 5-merous flowers with free sepals; semi-terete, commonly coiled pods 2–3 mm wide; conspicuous, bright orange aril; smaller, usually caducous stipules; and much shorter indumentum.

Acacia carnosula Maslin, *sp. nov.*

Frutex effusus 0.5–1.5 m altus. Ramuli teretes, obscure costati, glabri. Stipulae inconspicuae. Phyllodia obovata ad oblanceolata, ± recta, obtusa, non mucronata, 5–10 mm longa, 1–2.5 mm lata, crassa, glabra, costa immersa; glans 2–4.5 mm supra pulvinam inserta. Inflorescentia racemus reductus, 1(2)-capitatus. Pedunculi 4–6 mm longi, glabri; capitula floribus 9–11. Flores 5-meri. Sepala libera, fimbriolata. Petala glabra, enervia. Legumen lineare, ad 4 cm longa, 2.5–3.5 mm latum, chartaceum, glabrum. Semina longitudinalia.

Typus: 19.6 km south of Caiguna on Baxter Memorial track, Western Australia, 27 August 1983, *M.J. Fitzgerald* B68 (*holo:* PERTH 00199664; *iso:* CANB, K).

Spreading *shrub*, domed or ± straggly, much branched, 0.5–1.5 m tall, to 3.5 m wide; stems 10–15 mm diam. at base. *Branchlets* terete, obscurely nerved, glabrous, roughened by bark breaking into irregular or ± rectangular flakes. *Stipules* inconspicuous. *Phyllodes* obovate to oblanceolate with almost straight edges, obtuse, ± without mucro, 5–10 mm long, 1–2.5 mm wide, l:w 3–6.5, flat, thick, subfleshy, finely longitudinally rugose when dry, ascending to erect, a few inclined, straight to very shallowly incurved, glabrous, green; *midrib* submerged, not or scarcely observable when dry (drying same colour as rest of lamina), usually slightly excentric being situated towards upper margin; nerve on abaxial margin distinct (x10 mag.), drying brownish; adaxial nerve submerged, superficially absent

except sometimes near phyllode apex where it resembles the abaxial nerve; lateral nerves superficially absent; *pulvinus* terete, 0.4–0.7 mm long, drying brownish and very slightly rugose. *Gland* situated 1/3–2/3 along upper margin of phyllode 2–4.5 mm above pulvinus, not prominent, circular to shortly oblong, 0.2–0.3 mm long, 0.1–0.2 mm wide. *Inflorescence* an extremely reduced raceme; axis *c.* 0.1 mm long; *peduncles* 1 or 2 per node, 4–6(8) mm long, glabrous, recurved in fruit; *basal peduncular bract* solitary, persistent, cymbiform–cucullate (concave, slightly curved, obtuse to subacute, sometimes cleft, sessile), 0.5–1 mm long, minutely white-fimbriolate, otherwise glabrous, dark brown. *Heads* globular, light golden, 3–3.5 mm diam. (dry), 9–11-flowered; *bracteoles* peltate; claw linear, 0.1–0.2 mm long, lamina ± circular, *c.* 0.5 mm diam., white-fimbriolate, brown. *Flowers* 5-merous; *sepals c.* 1/3 length of petals, free, broadly spathulate; claw *c.* 0.2 mm long, lamina shallowly concave, *c.* 0.4 mm long, slightly thickened abaxially, acute to subacute, white-fimbriolate; *petals* 1.5 mm long, glabrous, nerveless. *Pod* (only dehisced valves seen) linear, to 4 cm long, 2.5–3.5 mm wide, chartaceous, not or scarcely constricted between seeds, flat but slightly raised over seeds, dehiscing along length of one suture with the split valves commonly remaining attached along opposite suture, glabrous, dark red-brown, the seemingly vernicose marginal nerve very narrow. *Seeds* (very immature, one seen) longitudinal.

Selected specimens examined. WESTERN AUSTRALIA: 19.6 km S of Caiguna on Baxter Memorial track, *M.J. Fitzgerald* B4 (PERTH), B26, B32, B57, B66 and B69 (all PERTH), B89 (BM, CANB, G, PERTH) and B99 (CANB, PERTH); 9 km S of Cocklebiddy, *A.S. George* 11838 (AD, BRI, PERTH); 36 km SE of Mt Ragged [near Israelite Bay], *A.S. George* 16027 (PERTH); 12 km NNW of Eyre, *S.D. Hopper* 3017 (K, MEL, PERTH); 25 km SSE of Cocklebiddy towards Eyre, *G.J. Keighery* 7570 (MO, PERTH); Twilight Cove, 9 Aug. 1982, *A. Tapper s.n.* (PERTH 00704822); Cocklebiddy Bird Sanctuary, 15 Aug. 1982, *A. Tapper s.n.* (PERTH 00177148).

Distribution. Occurs in the south-east of Western Australia, confined to the Caiguna–Eyre–Cocklebiddy area except one collection from near Israelite Bay, *c.* 200 km south-west of Caiguna.

Habitat. Grows in calcareous sand, loamy sand or clay-loam over limestone pavement at shallow depth, in open shrub or tree mallee.

Flowering period. Flowering recorded from July to October. Fruiting period not known.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. Specific epithet from the Latin *carnosus* (fleshy) with the diminutive adjectival suffix *-ulus*, in reference to the phyllodes.

Affinities. The 3-nerved phyllodes are similar to those of *A. profusa* (see below), though shorter, wider, and rounded at the apex; *A. carnosula* also has peduncular bracteoles and longitudinal seeds.

Acacia castanostegia Maslin, *sp. nov.*

Frutex compactus, intricatus, glaber, normaliter ad 0.5 m altus. Stipulae caducae, in surculis valde juvenilibus tantum obviae, spathulatae, ad 5 mm longi; lamina elliptica, c. 2 mm longa; unguis linearis. Phyllodia linearia, quadrangularia (in sicco quidem), quadrinervia, 11–29 mm longa, 1–1.5 mm lata, rigida, normaliter recta, pungentia, pulvino nullo. Inflorescentia racemus 1- vel 2-capitatus; alabastra bracteis conspicuis, imbricatis, atrobrunneis inclusa. Florum capitula globularia, cremea, 6–8-flora;

bracteolae nullae. Flores 5-meri. Sepala libera vel 2 pro 1/4–1/2 longitudunis unita. Petala elliptica, 2–2.5 mm longa, 1.3–1.5 mm lata. Legumen lineare, ad 6 cm longum, 3.5 mm latum. Semina longitudinalia, obloidea ad ellipsoidea, 3–3.5 mm longa, 2 mm lata, ± nitentia, atro-brunnea

Typus: 18 km north of Mt Holland, *c.* 92 km south-south-east of Southern Cross, Western Australia, 23 August 1979, *K. Newbey* 5820 (*holo:* PERTH 00743631; *iso:* CANB, G, K, MEL, NY, PERTH 00743658, 00743666, 00743674 and 00908975).

Harsh, spreading *shrub*, moderately dense, much-branched, intricate, glabrous, normally to 0.5 m tall and 0.6 m wide but sometimes to 1 m tall and 1.5 m wide. *Bark* light grey. *New shoots* initiated at anthesis from distal end of raceme axis, red with age. *Branchlets* terete, apically with rather obvious yellow ribs and brownish to light green interstices, covered with a variably pronounced, white, exfoliating epidermis. *Stipules* present only on extremely young new shoots, falling by the time the inflorescence bracts have dropped, spathulate, to 5 mm long; lamina elliptic, *c.* 2 mm long; claw linear. *Phyllodes* linear, quadrangular (at least when dry), 11–29 mm long, 1–1.5 mm wide, l:w 11–30, rigid, subdistant, patent to slightly inclined, normally straight but sometimes very shallowly arcuate (either incurved or recurved), light greyish green, sometimes very slightly dilated at base, with a yellowish nerve along each angle, the adaxial nerve bifurcating in the region of the gland; apical cusp 1.5–2.5 mm long, straight, rigid, dark brown; *pulvinus* absent. *Gland* on adaxial surface of phyllode at or to 1 mm above base, not prominent, circular, 0.3–0.4 mm diam. *Inflorescence* usually a 1-headed raceme, very occasionally 2-headed; axis 1–1.5 mm long, enclosed in bud by conspicuous, dark brown, scarious, very finely striate, imbricate, glabrous (margins fimbriate) bracts that decrease in size basipetally (the largest to *c.* 5 mm long) and are normally shed by anthesis; *peduncles* 3–4.5 mm long at anthesis, 8–15 mm long in fruit. *Heads* globular, 4–5 mm diam. when dry, cream, 6–8-flowered; *bracteoles* absent. *Flowers* 5-merous; *sepals c.* 1/3 length of petals, free or occasionally 2 united for 1/4–1/2 their length, diaphanous, narrowly oblong; *petals* elliptic, 2–2.5 mm long, 1.3–1.5 mm wide, very obscurely 1-nerved. *Pod* terete to compressed, not or scarcely constricted between seeds, 3–8 cm long, 3–3.5 mm wide, pendulous, thinly coriaceous to thinly crustaceous, ± straight to shallowly curved, not reticulate, dark greyish brown (red when very young), abruptly narrowed at both ends, acute; margins not thickened; stipe terete, *c.* 1 mm long. *Seeds* longitudinal, obloid to obloid-ellipsoid, obliquely truncate along edge adjacent to aril, 3–3.5 mm long, 2 mm wide, ± shiny, dark brown, sparingly mottled; *pleurogram* open towards hilum; *areole c.* 1 mm long, 0.5 mm wide; *aril* clavate, *c.* 1/2 as long as seed, creamy white tinged brown (when dry).

Selected specimens examined. WESTERN AUSTRALIA: 1.4 km W of Hyden–Norseman crossroads with Southern Cross–Forrestania road, *R.M. Buehrig* 93.12.10.7 (PERTH); Dundas Coach Rd–Heritage Trail, 6.3 km SSE of Norseman, *G.F. Craig* 2465 (PERTH); 6 miles [9.6 km] NNW of Mt Holland, *A.S. George* 9437 (BRI, NSW, PERTH); E of North Ironcap on Forrestania–Southern Cross road, *J.W. Green* 5556 (PERTH); 31 km E of Vermin Proof Fence No. 1 on Norseman–Hyden road, *B.R. Maslin* 3943 (PERTH); Forrestania area, 25 July 1979, *R.F. Maslin s.n.* (PERTH 00189960); Forrestania–Hatter Hill, 27 July 1979, *R.F. Maslin s.n.* (PERTH 00189979); South Ironcap, *K. Newbey* 5226 (PERTH); 6.5 km S of Lake Seabrook, *c.* 38 km NE of Southern Cross, *K. Newbey* 5860 (PERTH); 1 km W of Lake Cronin, *c.* 83 km E of Hyden, *K. Newbey* 6262 (PERTH).

Distribution. Occurs in the south-west of Western Australia, restricted along the eastern margin of the south-central wheatbelt, with scattered populations at Lake Seabrook (north of Southern Cross), south of Marvel Loch, between Mt Holland and Hatter Hill, west of Lake King and a population near Norseman.

Habitat. Grows in well-drained sand, loam or laterite in eucalypt woodland, open scrub or heath.

Phenology. Flowering recorded from June to October; mature pods collected in November.

Conservation status. Not under threat.

Etymology. The specific epithet is derived from the Latin *castaneus* (chestnut brown) and the Greek *stege* (a shelter or cover), and refers to the very conspicuous brown bracts that completely enclose the young inflorescences.

Affinities. Acacia castanostegia is most closely allied to *A. pachypoda* Maslin. Both species have pungent phyllodes, reduced racemes enclosed by conspicuous bracts when in bud, cream flower heads which lack bracteoles, and similar carpological features. Additionally, both species have the same, highly unusual stipule morphology. The principal distinguishing features between the two species are given in the key below.

Phyllodes prominently dilated at base, terete, nerveless; racemes mostly 2- or 3-headed; petals narrowly linear (*c.* 0.2 mm wide); calyx cupular ..... **A. pachypoda**

Phyllodes not (or only very slightly) dilated at base, quadrangular, with a rather obvious nerve along crest of each angle; racemes mostly 1-headed; petals elliptic (1.3–1.5 mm wide); calyx of ± free, narrowly oblong sepals ..... **A. castanostegia**

Although both species occur in the wheatbelt–goldfields region of Western Australia in an area roughly bounded by Southern Cross, Coolgardie, Salmon Gums and Lake King, *A. castanostegia* is the more westerly distributed of the two. The most westerly known locality for *A. pachypoda* is the Frank Hann National Park (27 km south of Tadpole Lake), which is about 30 km east of Hatter Hill. It is quite possible that future work in this relatively poorly collected region will show the two species to have overlapping ranges.

Acacia concolorans Maslin, *sp. nov.*

Frutex intricatus ad 0.4 m altus, 1–2 m latus. Rami et phyllodia mediocriter ad atro- viridia et variabiliter scabridula. Stipulae c. 2 mm longae, spinosae, basi incrassatae, persistentes. Phyllodia oblonga ad anguste oblonga, compressa sed crassa, 4–10 mm longa, 1.5–2 mm lata, versus apicem ramuli decrescentia, pungentia; nervi 5, 2 in margine adaxiali interdum secus phyllodium coalescentes. Inflorescentia normaliter racemus valde reductus binatus, axe ad 0.5 mm longo. Pedunculi 1.5–3 mm longi, fructiferi recurvi. Florum capitula globularia, in vivo 6 mm diametro. Flores 5-meri. Sepala libera. Legumen anguste oblongum, ad 5 cm longum, 4–5 mm latum, ptyxis variabilis (sigmoidea, reclinata, curvata vel ± circinata). Semina obliqua, subirregulariter ovoideo–ellipsoidea, 2.5–3 mm longa, 2 mm lata, compressa (1 mm crassa), atrobrunnea; funiculus filiformis, 2 mm longus; arillus albus, ± curvatus et clavatus et unilateraliter dimidiam usque totam longitudinem seminis attingens.

Typus: north-east end of Parker Range, 47.5 km south-south-east of Southern Cross, Western Australia, 6 August 1983, *B.R. Maslin* 5353 (*holo:* PERTH 00745243; *iso:* CANB, G, K, MEL, NSW, NY).

Sprawling, harsh, intricate *shrub* to 0.4 m tall and 1–2 m wide, with many slender, medium to dark green (sometimes tinged purplish) stems arising from ground level. *New shoots* arising at distal end of minute raceme axis from axils of peduncles, initiated at anthesis. *Branchlets* terete, finely nerved

(the nerves yellowish or light brown), slightly flexuose, very slightly viscid, variably scabridulous. *Stipules* spinescent, *c.* 2 mm long, thick (0.6–0.7 mm diam.) and green at base, distally brown, widely spreading, straight, smooth or variably scabridulous, persistent. *Phyllodes* oblong to narrowly oblong, decreasing in size towards branchlet apex, 4–10 mm long (including cusp) and 1.5–2 mm wide at maturity, l:w 2.5–5.5, distant, falling early from some nodes, patent to very slightly reflexed, straight, very rigid, compressed but thickened (i.e. an orthopachyphyllode, *cf.* Vassal & Maslin 1979), when dry, sometimes appearing quadrangular due to the pronounced midrib on each face; *apex* somewhat abruptly narrowed into a rigid, normally straight, brown cusp 1–1.5 mm long; *nerves* 5, yellowish or light brown; *midrib* central on each face (or sometimes slightly excentric), prominently raised when dry; abaxial margin with a single nerve; adaxial margin with 2 nerves which normally extend wholly from phyllode base to apical cusp (interstices between adaxial nerves flat, 0.5–0.8 mm wide) but sometimes these nerves coalescing about half-way along phyllode; secondary nerves absent; indumentum and colour as on branchlets; *pulvinus* not apparent. *Gland* not prominent, on adaxial margin of phyllode 1–2 mm above base, circular, 0.3–0.4 mm diam., with a shallow central depression. *Inflorescence* an extremely reduced 2(rarely 1)-headed raceme; axis < 0.5 mm long, frequently with a new shoot arising at its distal end in axil of peduncle; flowering confined to extremities of branchlets; *peduncles* 1.5–3 mm long, glabrous; *basal peduncular bract* solitary, *c.* 1.5 mm long, sessile, concave, curved, dark brown, minutely ciliolate, otherwise glabrous, usually falling early. *Heads* globular, 6 mm diam. when fresh, 3–4 mm diam. when dry, mid-golden, 7–8-flowered; *bracteoles* oblong to narrowly oblong, *c.* 0.5 mm long, inflexed at apex, ciliolate. *Flowers* 5-merous; *calyx* 1/4–1/3 length of corolla; *sepals* free, narrowly oblong to narrowly spathulate, brown in upper half, yellowish in lower half, minutely fimbriate, especially in upper half, apically shallowly concave; *petals* 1.5–1.7 mm long, elliptic, free, glabrous, sometimes apically brownish, very obscurely 1-nerved but normally superficially nerveless. *Gynoecium* sessile. *Pod* narrowly oblong, compressed, very slightly raised over seeds, rarely constricted between, to 5 cm long (expanded length), 4–5 mm wide, declinate due to recurved fruiting peduncle, thinly coriaceous to somewhat crustaceous, ptyxis variable (sigmoid, reclinate, curved or ± circinate), not reticulate, glabrous, greyish dark brown, rather abruptly narrowed at both ends, mucronulate; basal stipe minute; margins slightly thickened. *Seeds* oblique with aril facing adaxial margin and directed towards apex of pod, slightly irregularly ovoid-ellipsoid, obliquely narrowed at hilar end, 2.5–3 mm long, 2 mm wide, compressed (1 mm thick), somewhat shiny, dark brown; *pleurogram* very obscure, shallowly U-shaped, open at hilar end; *areole* 0.2–0.3 mm long, 0.3 mm wide; *funicle* filiform, *c.* 2 mm long, reflexed below and expanded into a rather conspicuous, ± curved, clavate, white aril which extends from half to wholly down one side of seed.

Selected specimens examined. WESTERN AUSTRALIA: 0.5 miles [0.8 km] W of Marvel Loch town centre, *R.J. Cumming* 2396 (BM, PERTH); Parker Range, *A.S. George* 9434 (CANB, PERTH); NE end of Parker Range, 47.5 km due SSE of Southern Cross, *B.R. Maslin* 5354 (AD, BRI, PERTH); about 1 km W of Marvel Loch on the road to Southern Cross, *B.R. Maslin* 5355 (PERTH, TLF); 1 km from Marvel Loch on road to Southern Cross, *B.R. Maslin* 5510 (PERTH); Karlgarin, 16 km by road SW of Hyden, *B.R. Maslin* 5773 (MEXU, PERTH); *c.* 500 m SW of Parker Range Tank, 50.5 km SE of Southern Cross, *F. & M. Mollemans* 2864 (PERTH).

Distribution. Occurs in the south-west of Western Australia, known only from a small area south of Southern Cross from near Marvel Loch to the Parker Range with a single collection from Karlgarin (*c.* 135 km south-west of Marvel Loch).

Habitat. Grows in rocky clay or loam in eucalypt woodland or mallee shrubland. Up to half the specimens collected occur in disturbed areas such as a road verge, cleared area or an old digging.

Phenology. Flowering recorded from June to September; mature pods collected in late December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The specific epithet (Latin *concolorans*, of uniform colour) is in allusion to the branchlets and phyllodes which are of the same green colour.

Affinities. *Acacia concolorans* is readily recognized by a combination of its harsh, intricate, low habit, its spinescent stipules that are prominently thickened at the base, its small, patent, thick, 5-nerved, pungent phyllodes which are the same colour as the branchlets, its small heads on short peduncles, and its relatively small pods that are declinate due to curvature of the fruiting peduncles. The new species appears to be most closely related to the more easterly distributed *A. inamabilis* E. Pritz. on account of its pungent stipules and its pungent, 5-nerved phyllodes which lack pulvini, but it is readily distinguished by its scabridulous branchlets, shorter phyllodes and pods, its smaller fewer-flowered heads and its free sepals. *Acacia inamabilis* has glabrous branchlets, phyllodes 15–45 mm long, pods to 8.5 cm long, heads with *c.* 25 flowers, and a gamosepalous calyx; it is distributed from near Norseman east to the Fraser Range and south-east to Peak Charles.

Acacia acutata W. Fitzg. bears a superficial resemblance to *A. concolorans* in its striate branchlets, its small, patent, pungent, 5-nerved phyllodes and its small heads on short peduncles, but Fitzgerald's species is readily distinguished by its caducous stipules. *Acacia acutata* is widespread in the Western Australian wheatbelt and adjacent goldfield regions and has been recorded from about 30 km north of Parker Range (the type locality for *A. concolorans*). The new species is distantly related to *A. hystrix* (see below for discussion).

Acacia congesta Benth., *London J. Bot.* 1: 327 (1842). *Type:* Swan River, Western Australia, *J. Drummond s.n.* (*holo:* K – Herb. Bentham. sheet annotated 'with [Drummond] 161'; *iso:* K – Herb. Hooker. sheet).

Acacia collina E. Pritz., *Bot. Jahrb. Syst.* 35: 291 (1904), *synon. nov. Type:* east of Mogumber, Western Australia, 31 August 1901, *L. Diels* 4043 (*iso:* PERTH 00745197 – fragment ex B).

Intricate, spreading *shrub* 0.5–2.5 m tall. *Bark* dark grey. *Branchlets* glabrous or hairy, with a grey-white epidermis, fissured with age. *Stipules* spinose, sometimes only the hardened bases persisting. *Phyllodes* variable, dimidiate, pungent, 5–30 mm long, 3–7 mm wide, glabrous or hairy, dark green; abaxial margin ± straight; adaxial margin shallowly or markedly convex; *midrib* prominent, normally situated towards lower margin; lateral nerves obscure or pronounced. *Inflorescences* simple or in short terminal or axillary racemes; *peduncles* 5–20 mm long, glabrous or hairy, bract sometimes above middle. *Heads* globular to obloid, golden, 30–70-flowered. *Flowers* 5-merous; *sepals* free; *petals* nerveless. *Pod* moniliform or submoniliform, to 6 cm long, 4–5 mm wide, thinly coriaceous-crustaceous to firmly chartaceous, curved to openly once-coiled, glabrous, brown to yellow. *Seeds* longitudinal, obloid to ovoid or ellipsoid, 3–5 mm long, dark brown, commonly minutely rugulose at centre, arillate.

Distribution. Discontinuous in the south-west of Western Australia from near Geraldton south to Mogumber and Wongan Hills.

Affinities. A variable species, especially with respect to phyllode shape, size and indumentum, and inflorescence morphology. The circumscription of *A. congesta* is here amended by including *A. cliftoniana* as a subspecies and removing two elements as the new species *A. cuneifolia* and *A. puncticulata* (see below). *Acacia aculeiformis* (see above) is seemingly related to this group and *A. lullfitziorum* (see below) is sometimes confused with *A. congesta*.

Sometimes similar to *A. idiomorpha* A. Cunn. ex Benth. which has more undulate phyllodes with a convex abaxial margin, united sepals, uni-nerved petals, and densely pilose to villous undulate pods. Similar to *A. paradoxa* R. Br. which has innocuous phyllodes and more prominent stipules. Three subspecies are recognized.

Key to subspecies of *Acacia congesta*

1 Phyllodes 10–30 mm long, (glabrous or margins and midrib sparsely hirsutellous; heads 35–65-flowered, on axillary peduncles or in racemes) ..... subsp. **congesta**

1. Phyllodes 5–10 long

2 Phyllodes glabrous, sometimes margins sparsely hairy; heads 50–70-flowered, racemosely arranged ..... subsp. **wonganensis**

2. Phyllodes hairy (hairs not restricted to margins or midrib); heads 30–40-flowered, not in racemes ..... subsp. **cliftoniana**

Acacia congesta Benth. subsp. **congesta**

Shrub 0.5–2.5 m tall. *Branchlets* glabrous or sparsely ± hirsutellous, the hairs patent to retrorsely appressed. *Phyllodes* 10–30 mm long, l:w = 2–5, glabrous or margins and midrib sparsely hirsutellous, slightly shiny; adaxial margin commonly slightly angled at the gland. *Peduncles* 5–20 mm long, 1 per axil or in short racemes, glabrous or sparsely hairy. *Heads* globular or obloid, 35–65-flowered. *Pod* 5 mm wide. *Seeds* 4–5 mm long.

Selected specimens examined. WESTERN AUSTRALIA: White Peak, N of Geraldton, *A.M. Ashby* 2514 (BRI, PERTH); Swan River, *J. Drummond* 293 (BM, G, K, OXF, P); Mogumber townsite 0.9 km at 100 degrees Bridge over Moore River, *E.A. Griffin* 6096 (PERTH); 1.6 km NE of Nabawa, *B.R. Maslin* 719 (CANB, MEL, NSW, PERTH); 14 km N of Moora then 1 km E of The Midlands Rd, *B.R. Maslin* 6121 (PERTH); 11 km N from Miling on Great Northern Highway to Pithara, *B.R. Maslin* 6210 (PERTH); 24.5 km E of Mingenew on road to Moora, *B.R. Maslin* 6243 (PERTH).

Distribution. Occurs in disjunct populations in the south-west of Western Australia from Northampton and Geraldton south-east to Mingenew and Morawa and south to Pithara, Moora and Mogumber.

Habitat. Grows in red-brown loam and gravel on rocky hills, in scrub or heath.

Phenology. Flowering recorded from June to October; mature pods collected in November and December.

Conservation status. Not under threat.

Acacia congesta subsp. **cliftoniana** (W. Fitzg.) Maslin, *comb. et stat. nov.*

Acacia cliftoniana W. Fitzg., *J. W. Austral. Nat. Hist. Soc.* 1: 10 (1904). *Type:* Arrino, Western Australia, September 1903, *W.V. Fitzgerald s.n.* (*lecto:* NSW 167229, *fide* B.R. Maslin & R.S. Cowan (1994c: 390); *isolecto:* NSW 167228, PERTH 00744735, 00744743 & 00744727).

Shrub 0.5–1 m tall. *Branchlets* usually hirsutellous or shortly pilose, the hairs patent. *Phyllodes* 5–10 mm long, l:w = 1.2–2.5, hirsutellous to hirtellous, the hairs not restricted to midribs and margins; lateral nerves commonly pronounced when dry. *Peduncles* 1–3 per axil, 5–12 mm long, hirsute–hirsutellous. *Heads* globular to shortly obloid, 30–40-flowered. *Pod* 4–5 mm wide. *Seeds* 3 mm long.

Selected specimens examined. WESTERN AUSTRALIA: *c.* 13.8 km N of Three Springs towards Mingenew, *R.J. Cumming* 2157 (MELU, PERTH); *c.* 6.4 km S of Arrino on Geraldton Highway, *B.R. Maslin* 734 (PERTH); 11 km N of Three Springs on The Midlands Rd, *B.R. Maslin* 5488 (PERTH); Yandanooka, 14 Sept. 1904, *A. Morrison s.n.* (NSW, PERTH); 11 km N of Three Springs on The Midlands Rd, *D. Papenfus* DP 514 (PERTH).

Distribution. Occurs in the south-west of Western Australia from Yandanooka south to near Three Springs.

Habitat. Grows on rocky or lateritic loam in mallee woodland with open scrub.

Phenology. Flowering recorded in August and September; mature pods collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Acacia congesta subsp. **wonganensis** Maslin, *subsp. nov.*

Frutex 1–2 m altus. Ramuli hirsutelli vel scabriduli. Phyllodia 5–9 mm, glabri vel marginibus parce ciliolatis. Inflorescentia racemiformis. Pedunculi 5–7 mm longi, glabri vel parce hirsutelli. Capitula oblongoidea, floribus 50–70. Legumen 4 mm latum. Semina 3.5–4 mm longa.

Typus: 'Fowlers Gully' in the Wongan Hills, Western Australia, 9 September 1975, *B.R. Maslin* 3807 (*holo:* PERTH 00106909; *iso:* CANB).

Shrub 1–2 m tall. *Branchlets* hirsutellous to scabridulous, the hairs reflexed. *Phyllodes* 5–9 mm long, l:w = 1.5–3, glabrous or margins sometimes sparsely ciliolate. *Peduncles* 5–7 mm long, arranged in short racemes, glabrous, infrequently sparsely hirsutellous. *Heads* obloid, 50–70-flowered. *Pods* 4 mm wide. *Seeds* 3.5–4 mm long.

Selected specimens examined. WESTERN AUSTRALIA: Monk's Well Gully, 1.5 km E of Mt Rupert, Wongan Hills, *K.F. Kenneally* 5831 (PERTH); 12.8 km NW of Wongan Hills towards Piawaning, *B.R. Maslin* 1637 (MEL, NSW, PERTH); the Wongan Hills, *c.* 12.5 km NW of Wongan Hills townsite, *B.R. Maslin* 4426 (PERTH); 11.3 km NW of Wongan Hills on road to Piawaning, *M.D. Tindale* 2791 (PERTH).

Distribution. Known only in and around the Wongan Hills, in the south-west of Western Australia.

Habitat. Grows in rocky or lateritic clay or loam in mallee communities.

Phenology. Flowering recorded in August and September; mature pods collected in January.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The subspecific epithet is derived from the name of the Wongan Hills, with the Latin suffix *-ensis* indicating place of origin.

Acacia cuneifolia Maslin, *sp. nov.*

Frutex rectus 1.5–3 m altus. Ramuli teretes, non vel obscure costati, glabri ad pilosi. Stipulae spinescentes, 1–3 mm longae, caducae praeter basem induratam. Phyllodia cuneata, dimidiata, acuta ad obtusa, 8–20 mm longa, 3–6 mm lata, coriacea, interdum fasciculata, glabra, costa tenui; glans 3–13 mm supra pulvinam inserta. Inflorescentia racemus reductus, capitulis 1–multis, plerumque fasciculatis. Pedunculi 5–20 mm longi, glabri vel hirsutelli; capitula floribus 23–30. Flores 5-meri. Sepala unita, plerumque glabra. Petala glabra, obscure 1-nervosa. Legumen valde curvatum, inter semina constrictum, ad 5 cm longum, 4.5–5.5 mm latum, coriaceum vel crustaceum, glabrum. Semina longitudinalia, obloidea vel ellipsoidea, 4–5 mm longa, 1.5–2 mm lata, hebeta vel aliquantum nitentia; arillus complicatus.

Typus: Pony Hill, 18 km due south-west of York, Western Australia, 8 September 1987, *B.R. Maslin* 6176 (*holo:* PERTH 00865850; *iso:* CANB, K).

Erect *shrub* 1.5–3 m tall, 2–7-branched at ground level. *Bark* smooth, dark grey; transverse lenticels prominent on main trunks and branches. *Branchlets* terete, ribless or very obscurely ribbed, not spinescent, glabrous or hirtellous to hirsutellous or pilose (hairs short, straight, patent, commonly slightly coarse); epidermis grey-white, longitudinally fissured with age. *Stipules* not prominent, ± spinescent with age but usually brittle so that only the hardened base remains, forming tooth-like projections, 1–3 mm long, glabrous, brown, straight or recurved. *Phyllodes* variable in shape but commonly dimidiately cuneate, the lower margin ± straight, upper margin rounded or obtusely angled, (5)8–20(25) mm long, (2)3–6(8) mm wide, l:w (1)2–3(4), thinly to moderately coriaceous, sometimes fasciculate (on extremely congested branchlets) at a few nodes, erect to gently recurved, slightly undulate, glabrous, rarely margins sparsely hirtellous, dark green (young growth bright green), slightly shiny; *midrib* fine but evident, ± central or situated towards lower margin; lateral nerves obscure; *apex* acute to obtuse; mucro excentric, 0.5–1(1.5) mm long, pungent or almost so, straight, slender, brown; *pulvinus* to *c.* 0.5 mm long. *Gland* on upper margin of phyllode 3–13 mm above pulvinus; infrequently 2 glands present. *Inflorescences* complex, comprising reduced, 1–many-headed racemes initiated in axils of mature phyllodes, at initiation the heads commonly appearing in clusters of up to 6 or more, with maturity the raceme axis frequently growing out and simultaneously a phyllode developing at base of each peduncle, infrequently these phyllodes failing to develop; *raceme axis* subtended by 2 brown bracts; *peduncles* 5–20 mm long, glabrous or minutely hirtellous, ebracteate at base but a small triangular bract commonly present near or above middle. *Heads* globular to slightly obloid, yellow, 3.5–4.5 mm diam., 23–26-flowered; *bracteoles* 0.6–0.7 mm long, ± spathulate, sparsely and minutely hairy; claw linear; lamina longer than claw, triangular to ovate, acute to subacute, not exserted in mature buds. *Flowers* 5-merous; *calyx* gamosepalous, 1/4–1/3 length of corolla, dissected for 1/4–1/3 its length into broadly triangular or oblong, rounded lobes, glabrous or sparsely hairy; *petals* 2–2.2 mm long (reconstituted), joined for *c.* 2/3 their length, very obscurely 1-nerved, glabrous; apical margin granulate. *Pod* strongly curved (± circular) to loosely and slightly irregularly coiled, slightly raised

over seeds, slightly to deeply constricted between seeds, to 5 cm long, 4.5–5.5 mm wide, thinly coriaceous to slightly crustaceous, glabrous, light brown to yellow-brown. *Seeds* longitudinal, obloid to slightly ellipsoid, 4–5 mm long, 3–4 mm wide, 1.5–2 mm thick, dull or slightly shiny, dark brown to blackish; *pleurogram* obscure, continuous or open at hilar end; *areole* 0.7–1(1.4) mm long, 0.5–0.9 mm wide; *funicle* filiform, minute (0.5 mm long), gradually expanded into a thick, cream, folded aril situated at end of seed.

Selected specimens examined. WESTERN AUSTRALIA: Boyagin Rock Reserve, *J.S. Beard* 8124 (PERTH); Tarwonga Hill, *V. Crowley* 2 (PERTH); Boyagin Reserve, *H. Demarz* 10375 (PERTH); Boyagin Reserve, SW of Brookton, *A.S. George* 9811 (PERTH); Boyagin Rock, *A.S. George* 10903 (BRI, PERTH); Boyagin Rock, *B.R. Maslin* 4857 & 6164 (PERTH); *c.* 8 km SSE of Beverley, 7 Sep. 1998, *M. Golding s.n.* (K, PERTH); Pony Hill, 18 km due SW of York, *B.R. Maslin* 6178 (MEL, PERTH); Surrey Rd, 2 km SSE of Deefer Rd, *c.* 41 km due ESE of Lesmurdie, *B.R. Maslin* 6188 (G, K, PERTH); Pony Hill, *L. Talbot* B (PERTH).

Distribution. Occurs in the south-west of Western Australia, known from disjunct localities at Pony Hill (and *c.* 20 km south-west of Pony Hill), Boyagin Rock Reserve (south-west of Brookton), near Beverley and Tarwonga Hill (north of Arthur River).

Habitat. Grows in dark brown clay and coarse sand in runoff channels on granite rocks.

Phenology. Flowering recorded in September and October; mature pods collected in December and January.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Four.

Etymology. From the Latin *cuneatus* (wedge-shaped) and *folium* (a leaf), in reference to the phyllode shape.

Affinities. Acacia cuneifolia is most closely related to *A. congesta* (*syn. A. collina* E. Pritz.). These two species share the following significant characters: stipules spinescent; phyllodes 1-nerved, dimidiate, cuspidate; a small bract sometimes present near or above middle of peduncle; very similar inflorescence development and carpological characters. The most important character separating these two species is their calyx: gamosepalous and 1/4–1/3 length of corolla in *A. cuneifolia*; ± free, narrowly spathulate sepals *c.* 1/2 the length of the petals in *A. congesta*. Judging from experience with a large number of *Acacia* species I would find it impossible to include within a single species entities with such different calyces. Other characters distinguishing the more northerly distributed *A. congesta* include the following: phyllodes never fasciculate, inaequilaterally lanceolate to narrowly elliptic (thus broadest near or below their middle; although narrowly elliptic phyllodes occasionally occur in *A. cuneifolia* they are always accompanied by ones that are obviously broadest above their middle) and heads 30–70-flowered and more obviously and consistently obloid.

Acacia deficiens Maslin, *sp. nov.*

Frutex prostratus vel effusus, plerumque ad 0.5 m altus, interdum ad 1.7 m altus. Ramuli spinescentes, teretes, recti, laevi, glabri. Stipulae c. 0.5 mm longae, caducae. Phyllodia pauca ad basin ramulorum, supra absentia, lanceolata ad anguste oblongo-elliptica, plerumque parum asymmetrica, obtusa vel acuta, mucronulata, 10–20 mm longa, 1.5–4 mm lata, coriacea, glabra, costa obscura; glans

0.5–3.5 mm supra pulvinam inserta. Inflorescentia racemus redactus capitulis 1 vel 2. Pedunculi 4–9 mm longi, glabri; capitula floribus 20–30(40). Flores 5-meri. Sepala libera, glabra vel abaxialiter puberula. Petala glabra, 1-nervosa. Legumen anguste oblongum, raro lineare, ad 4 cm longum, 4–6 mm latum, rectum vel parum curvatum, chartaceum, interdum vernicosum. Semina transversa, raro longitudinalia, ovoidea vel oblongoidea, 3–4 mm longa, nitentia; arillus nullus.

Typus: 36 km by Rd south of Queen Victoria Rock, Western Australia, 22 September 1983, *B.R. Maslin* 5412 (*holo:* PERTH 00106461; *iso*: CANB, G, K, MEL, NY).

Acacia nodiflora var. *ferox* E. Pritz., *Bot. Jahrb. Syst.* 35: 299 (1904). *Type*: near Grasspatch [Grass Patch], Western Australia, November [1901], *L. Diels* 5310 (*n.v.*).

Acacia nodiflora var. *scoparia* E. Pritz., *loc. cit. Type:* Tammin, Western Australia, October 1901, *E. Pritzel* 764 (*iso:* A, G, K, M, MO, PERTH 00734969 – fragment ex B, PR, Z.)

Prostrate, domed or spreading *shrub*, dense to mid-dense, commonly to *c.* 0.5 m tall and 1 m across, sometimes to 1 m tall, one specimen (*K.R. Newbey* 6030) 1.7 m tall and 2 m across. *Branches* glabrous, light grey, sometimes tinged dull orange-pink at base. *Branchlets* rigid, spinescent, ascending to erect, ± straight, smooth, obscurely longitudinally rugose when dry, glabrous, green or subglaucous, terete, rarely angled at extremities due to narrow wings; ribs absent or very obscure. *Stipules* insignificant, *c.* 0.5 mm long, caducous. *Phyllodes* few at base of branchlets, absent from upper (inflorescence-bearing) nodes, usually lanceolate to narrowly oblong-elliptic, infrequently linear, commonly slightly asymmetric, mostly 10–20 mm long but sometimes interspersed with some shorter (to 6 mm) or longer (to 40 mm), 1.5–4(5) mm wide, l:w 4–8(11), thinly coriaceous, smooth, distant, patent to erect, straight to shallowly incurved, glabrous, green to subglaucous; *apex* obtuse to acute, mucronulate; *midrib* obscure; *lateral nerves* absent; *pulvinus c.* 0.5 mm long, yellowish, not or scarcely wrinkled when dry. *Gland* on upper margin of phyllode 0.5–3.5 mm above pulvinus, not prominent, ± circular to oblong, 0.3–0.4 mm long, 0.15–0.25 mm wide, drying yellowish or light reddish brown. *Inflorescences* 1(2) per node, comprising extremely reduced 1(2)-branched racemes; axis 0.5–1 mm long; base ebracteate; *peduncles* 4–9 mm long, recurved in fruit, glabrous, commonly reddish, commonly faintly pruinose; base rimmed by a row of minute, glandular papillae; basal bracts 1 or 2, *c.* 0.5 mm long. *Heads* globular, rarely obloid in bud, mid-golden, 10 mm diam. at anthesis (drying 4–5 mm diam.), 20–30(40)-flowered; *bracteoles* spathulate, as long as sepals; claw linear or narrowly oblong, 0.2–0.5 mm long; lamina ± widely ovate, 0.4–0.5 mm wide. *Flowers* 5-merous; *sepals* 2/5 to almost 1/2 length of petals, free, spathulate or sometimes narrowly oblong, glabrous or puberulous abaxially; *petals* 1.5–2 mm long, glabrous, light orange in young bud, ageing yellow, 1-nerved but nerve not apparent when dry. *Pod* narrowly oblong, rarely linear, to 4 cm long, (3)4–6 mm wide, prominently raised over seeds and straight-edged or slightly constricted between them, straight or shallowly curved, thinly chartaceous and very brittle, sometimes vernicose, sometimes dull and faintly pruinose, dark brown or purplish brown; margins narrow, reddish when immature. *Seeds* transverse, rarely longitudinal, ovoid to obloid or slightly ellipsoid, 3–4 mm long, 2 mm wide, compressed (1–1.5 mm thick), black or dark brown, shiny or dull; *pleurogram* very obscure with a wide opening at hilar end; *areole* 0.3–0.4 mm long, 0.3–0.5 mm wide; *funicle* filiform, non-arillate.

Selected specimens examined. WESTERN AUSTRALIA: Bruce Rock, Sep. 1933, *E.T. Bailey s.n.* (PERTH 00103098); 18.8 km from Southern Cross towards Bullfinch, *E.M. Canning* WA/68 2510 (PERTH); 4.8 miles [7.7 km] E of Burakin towards Beacon, *R. Cumming* 2336 (PERTH); 5.9 miles [9.5 km] W of Bullabulling towards Southern Cross, *R. Cumming* 2484 (PERTH); Westonia, *C.A. Gardner* 1850 (PERTH); 'West' [W of] Westonia, *F. Lullfitz* L3133 (PERTH); 0.8 km N of Salmon

Gums towards Norseman, *B.R. Maslin* 2443 (CANB, PERTH); 10.5 km S of Lake King towards Ravensthorpe, *B.R. Maslin* 3439 (K, PERTH); 32 km SE of Kulin towards Lake Grace, *B.R. Maslin* 3842 (AD, BRI, CANB, K, MEL, NY, PERTH); 23 km N of Lake Grace towards Kulin, *B.R. Maslin* 4069 (PERTH); 1.5 km from Peak Charles campsite on track to Hyden–Kumarl road, *B.R. Maslin* 5438 (PERTH); Frank Hann National Park, *D. Monk* 414 (PERTH); 7 km N of Mt Andrew, *c.* 116 km SE of Norseman, *K. Newbey* 7776 (PERTH).

Distribution. Scattered in the south-west of Western Australia from between Burakin in the north, south to near Lake Grace and east to near Mount Andrew (south-west of Balladonia).

Habitat. Grows in various soil types including loam, clay and sand in open shrub mallee and woodland with various eucalypt species on flat or gently undulating plains.

Phenology. Flowering recorded from September to November; mature pods collected in December.

Conservation status. Widespread, not under threat.

Etymology. The specific epithet (Latin, *deficiens*, lacking), refers to the lack of phyllodes on flowering branchlets.

Affinities. Acacia deficiens is sometimes confused with the more northerly distributed *A. exocarpoides* W. Fitzg. on account of its ± spinescent branchlets with few small phyllodes, but that species is a larger, coarser shrub with terete phyllodes, long, submoniliform, thinly coriaceous pods and arillate seeds. *Acacia erinacea* Benth. is another species with spinescent branchlets, few phyllodes and prostrate habit, but is not close to *A. deficiens*; it is a more intricately branched shrub with shorter, more pungent branchlets, smaller, differently-shaped phyllodes, united sepals, usually crustaceous, narrowly to broadly oblong pods, and arillate seeds.

Variation. The above description encompasses a few atypical specimens.

1. Branchlets are usually ± straight and terete but are sometimes angled due to the development of a narrow wing-like extension (e.g. *Gardner* 1850, *Lullfitz* L3133) and additionally, slightly flexuose (*Monk* 414).

2. Phyllodes are usually 10–20 mm long but reach 30–40 mm in *Bailey s.n.*, *Cumming* 2336 and *Maslin* 5438.

3. The most extreme variation is seen in the pods of *Maslin* 3842 and 4069 (collected from the same population). These are *c.* 3 mm wide and have longitudinal seeds. Elsewhere the pods are 4–6 mm wide with transverse seeds. The presence of both longitudinal and transverse seeds in the same species is rare in *Acacia*.

Acacia diminuta Maslin, *sp. nov.*

Frutex effusus ad 20 cm altus. Ramuli teretes, non costati, pungentes, glabri. Stipulae c. 0.5 mm longae, caducae. Phyllodia vulgo reflexa, linearia vel oblonga, mucronulata, 3–5 mm longa, incurva, c. 1 mm lata, crassa, glabra, costa obscura, margine adaxiali binervoso; glans versus medium marginis inserta. Inflorescentia simplex. Pedunculi 2.5–4 mm longi, glabri; capitula floribus c.15. Flores

5-meri. Sepala libera, glabra. Petala enervia. Legumen lineare, c. 20 mm longum, 4–5 mm latum, glabrum. Semina longitudinalia, obloideo–ellipsoidea, c. 5 mm longa.

Typus: west of Ravensthorpe [precise locality withheld for conservation reasons], Western Australia, 30 October 1965, *A.S. George* 7069 (*holo:* PERTH 00175188; *iso:* CANB, K, PERTH 00729604).

Intricate, spreading, dwarf *shrub* to 0.2 m tall. *Branchlets* terete, ribless, coarsely pungent, glabrous, light grey. *Stipules* triangular, *c.* 0.5 mm long, commonly caducous. *Phyllodes* ± linear to oblong, 3–5(6) mm long, *c.* 1 mm wide, flat but thick and sometimes appearing ± subterete, sometimes a few fasciculate on nodose branchlets, mostly reflexed, commonly shallowly incurved, sometimes straight, glabrous, green, finely longitudinally wrinkled (dry), the upper margin ± flat and *c.* 0.5 mm wide, with 2 yellowish nerves, usually sparsely asperulate, other nerves obscure or absent; *apex* excentrically mucronulate, the mucro slightly upturned as in *Acacia brunioides*; *pulvinus* distinct, 0.3–0.4 mm long, terete. *Gland* not prominent, commonly absent, on upper margin near middle of phyllode, circular, 0.1–0.2 mm diam. *Inflorescence* simple; *peduncle* 1 per node, (1.5)2.5–4 mm long; basal bract solitary, triangular–ovate, *c.* 0.5 mm long, shallowly concave, glabrous. *Heads* globular, cream or yellow, 4 mm diam. (reconstituted, 2 mm diam. when dry), *c.* 15-flowered; *bracteoles c.* 1 mm long, very sparsely hairy; claws linear, *c.* 0.5 mm long; lamina triangular–ovate, acute, 0.5 mm long, 0.4 mm wide, slightly inflexed. *Flowers* 5-merous, very brittle when dry; *sepals* 1/2–3/4 length of petals, free, spathulate, subglabrous; *petals c.* 1 mm long, nerveless. *Pod* (immature) linear, to *c.* 20 mm long, 4–5 mm wide, slightly constricted between seeds and slightly rounded over them, glabrous. *Seed* (1 seen, immature) longitudinal, obloid–ellipsoid, 5 mm long, 3 mm wide, dull brown.

Other specimens examined. WESTERN AUSTRALIA [precise localities withheld for conservation reasons]: W of Scaddan, *M.A. Burgman* 4562 (PERTH); between Esperance and Norseman, *J.W. Wrigley* WA/68 5318 (PERTH).

Distribution. Occurs in the south-west of Western Australia, known from only a few scattered localities between Jerramungup and Scaddan.

Habitat. Grows in sandy clay in shrub mallee.

Phenology. Flowering recorded in October and November; mature pods not seen, but a pod with an immature seed was collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The specific epithet, from the Latin *diminutus* (made small, diminished), refers to the small stature, phyllodes, flowers and heads.

Affinities. Relationships uncertain.

Acacia ericksoniae Maslin, *sp. nov.*

Frutex effusus 20–60 cm altus. Ramuli ± pungentes, teretes, hirsutelli, glabrescentes. Stipulae 1–1.5 mm longae, persistentes. Phyllodia inaequaliter obtriangularia, mucronata, 2–5 mm longa, 1.5–4 mm lata, hirsutella, nervi 1 (vel 2), obscuri; glans 1–3 mm supra pulvinam inserta. Inflorescentia racemus reductus 1-capitatus. Pedunculi 2–5 mm longi, hirsutelli; capitula floribus 10–17. Flores

5-meri. Sepala unita, glabra vel ciliolata. Petala glabra, enervia. Legumen circinatum, ad c. 8 mm 'diam.', 2–2.5 mm latum, chartaceum, glabrum vel hirtellum. Semina longitudinalia, ovoidea vel oblongoidea, 2–3 mm longa, nitentia; arillus crassus.

Typus: 5.5 km north-west of Wongan Hills towards Piawaning, Western Australia, 27 August 1976, *B.R. Maslin* 4202 (*holo:* PERTH 00182826; *iso:* CANB, K, MEL, NY).

[*Acacia bidentata auct. non* Benth.: E. Pritz., *Bot. Jahrb. Syst.* 35: 298 (1904), as to *E. Pritzel* 563 – K, LY, M, MO; also *L. Diels* 3966, *n.v.*].

Much-branched *shrub*, somewhat spreading, 0.2–0.6 m tall, single-stemmed or few-branched at ground level, the smooth or slightly roughened light grey bark extending to upper branches, branchlet extremities green or light brown. *Branchlets* rather slender, ± straight, patent to erect, somewhat pungent, terete, very obscurely nerved, moderately to densely hirsutellous to hirtellous (hairs short, straight, patent or slightly reflexed, sometimes seemingly stellate, usually soon glabrous). *Stipules* persistent on upper branches, triangular to narrowly triangular, 1–1.5 mm long, 0.2–0.4 mm wide, erect, dark brown, not joined when young as in *A. acanthoclada*. *Phyllodes* unequally obtriangular with the upper margin forming a prominent rounded angle and the lower margin shallowly convex, mucronate and sometimes pungent, 2–5 mm long, 1.5–4 mm wide, l:w 1.3–2, flat, slightly thickened, slightly wrinkled when dry, sparsely to moderately hirsutellous to hirtellous (hairs not confined to margins), green; ± obscurely 1- or 2-nerved; *main longitudinal nerve* situated towards adaxial margin and terminating in the mucro; *secondary longitudinal nerve* (when developed) subparallel to main and intersecting distal margin near mucro; diverging lateral nerves few or absent; pulvinus terete, *c.* 0.3 mm long. *Gland* insignificant, on upper margin of phyllode 1–3 mm above pulvinus, commonly absent, circular, < 0.1–0.2 mm diam. *Inflorescence* 1 per node, an extremely reduced 1-headed raceme; raceme axis 0.2–0.3 mm long, subtended by a pair of minute lateral bracts which are depressed-ovate, *c.* 0.3 mm long, sessile, ciliolate, otherwise glabrous; *peduncles* 2–5 mm long, sparsely to moderately hirsutellous to hirtellous; *basal bracts* subtending abaxial side of peduncle, depressed-ovate, *c.* 0.5 mm long, shallowly cleft, concave, brown, ciliolate, otherwise glabrous. *Heads* globular, light- to mid-golden, 3–4 mm diam. (dry), 10–17-flowered; *bracteoles c.* 0.5 mm long, ± oblong, shallowly concave towards apex, obtuse to abruptly acute, fimbriolate at apex. *Flowers* 5-merous; *calyx* 1/4 to 1/3 length of corolla, membranous, divided for 1/3–2/3 its length into oblong or triangular glabrous or ciliolate lobes; *petals* 1–1.5 mm long, glabrous, nerveless. *Pod* coiled as in *Medicago*, to *c.* 8 mm long (unexpanded), 2–2.5 mm wide, firmly chartaceous to very thinly coriaceous, slightly shiny, red-brown, glabrous or hirtellous. *Seeds* longitudinal, ovoid to obloid, 2–3 mm long, 1.3–1.5 mm wide, 0.8–1 mm thick, glossy, brown mottled black; *pleurogram* obscure, open at hilar end; *areole c.* 0.3 mm long and 0.2 mm wide; *funicle* filiform, abruptly expanded into a thick, sublateral aril.

Selected specimens examined. WESTERN AUSTRALIA: 6.4 km S of Walebing, *R. Cumming* 1334 (PERTH); 5.7 km W of Moora–Mogumber road at Barberton on Barberton West Rd, *R. Cumming* 3578 (PERTH); 5 miles [8 km] N of Wongan Hills, *R.T. Lange* 58 (PERTH); 3 km E of Waddington towards Piawaning, *B.R. Maslin* 3252 (CANB, PERTH); 11 km N of Three Springs on The Midlands Rd, *B.R. Maslin* 5489 (CANB, PERTH); Chiddarcooping Nature Reserve, *B.R. Maslin* 6386 (PERTH, Z); 2 miles [3.2 km] S of Tammin, *K. Newbey* 1951 (PERTH); 7.7 km E of Goomalling township, S along Robert Rd, *P. Roberts* 104 (PERTH); Wyalkatchem, *S.B. Rosier* 351 (PERTH); 1 mile [1.6 km] SW of Manmanning, *B.H. Smith* 386 (PERTH, also BRI, CANB, HO, MEL, NSW, but *n.v.*); 48.1 km N of New Norcia on Great Northern Highway, *M.D. Tindale* 2649 (PERTH, also CANB, K, NSW, but *n.v.*).

Distribution. Occurs in the south-west of Western Australia discontinuously from near Mingenew south-east to near Three Springs and Watheroo, south-south-east to near Tammin, and at the Chiddarcooping Nature Reserve.

Habitat. Grows in rocky or lateritic loam or sand, usually in low hilly country with *Melaleuca* heath or eucalypt woodland.

Phenology. Flowering recorded from June to September; mature pods collected in November.

Conservation status. Not under threat.

Etymology. I have great pleasure in naming this species for Mrs Frederika (Rica) Erickson, who has made a significant contribution to our knowledge of the Western Australian flora, including books on James Drummond, orchids, carnivorous plants and triggerplants (George 1998).

Affinities. The new species is most closely related to *A. acanthoclada* on account of its terete, obscurely nerved, spinescent branchlets, its very reduced, 1-headed racemes with their axes subtended by two minute bracts and their peduncles subtended by a larger cleft bract, its gamosepalous calyx, its coiled pods and its mottled seeds with relatively large, sublateral arils. *Acacia acanthoclada* is most readily distinguished by its glabrous and longer peduncles, 1-nerved petals and its stipules which are connate when young and less persistent; also its branchlets are more rigid and less sharply pungent, and its phyllodes are usually more elongate. These differences may not seem great, but when taken in combination justify specific rank.

In Western Australia, *A. acanthoclada* subsp. *acanthoclada* usually has glabrous, narrow, elongate phyllodes (commonly 0.6–2 mm wide, l:w 3–6) rendering the species easily distinguishable from *A. ericksoniae*. On a few specimens, however, particularly from Wongan Hills and some from the Cosmo Newbery area (*c.* 85 km north-east of Laverton), the phyllodes of *A. acanthoclada* are hairy and broader (2–3 mm wide, l:w 2–3) and in these characters it approaches the new species.

Acacia ericksoniae was formerly confused with *A. bidentata* Benth. which has non-spinescent, scurfy-white branchlets, creamy white to pale yellow heads, arcuate to 1 1/2-coiled pods and non-mottled seeds. It also resembles the Western Australian variant of *A. pravifolia* F. Muell. which is distinguished by its prominent main longitudinal phyllode nerve, normally glabrous peduncles, 1-nerved petals and non-mottled seeds.

Variation. Specimens from Wongan Hills east through Manmanning (*c.* 40 km east of Wongan Hills) and south to Tammin have very small phyllodes (2–3 x 1.5–2 mm) whereas those from Goomalling, Moora and Three Springs are commonly slightly larger (2–5 x 2–4 mm). Specimens from the Yerecoin–Walebing area (near New Norcia) are unusual in their seemingly stellate branchlet and phyllode indumentum (hairs simple elsewhere).

Acacia errabunda Maslin, *sp. nov.*

Frutex effusus 1–2.5 m altus. Ramuli teretes, subtiliter costati, interdum farinosi. Stipulae c. 0.5 mm longi, persistentes vel caducae. Phyllodia oblanceolata ad anguste oblanceolata, obtusa vel acuta, mucronata, 2–5 cm longa, 3–8 mm lata, coriacea, costa excentrica, vel centrali, margine adaxiali binervoso; glans 0–2 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi c. 2 mm longi,

glabri; capitula floribus 17–22. Flores 5-meri. Sepala unita, lobis obscure 1-nervosis. Petala obscure 1-nervosa. Legumen lineare, leviter curvatum, ad 9 cm longum, 3.5 mm latum, chartaceum, glabrum. Semina longitudinalia, obloidea, 4 mm longa; arillus conspicuus.

Typus: 4 km east of Needilup, Western Australia, 27 August 1975, *K. Newbey* 4765 (*holo:* PERTH 00703834; *iso:* CANB, K, MEL).

Dense or moderately dense *shrub*, spreading, sometimes rounded, 1–2.5 m tall, to 3 m wide; main stem much-branched at ground level. *Bark* smooth or slightly roughened, grey or blackish grey. *New shoots* farinose or covered with yellowish resin. *Branchlets* terete, slightly angled at extremities, finely ribbed, the ribs sometimes farinose. *Stipules* inconspicuous, *c.* 0.5 mm long, persistent or caducous. *Phyllodes* oblanceolate to narrowly oblanceolate, obtuse–mucronulate or ± acute, 2–5(9) cm long, 3–8 mm wide, l:w 5–12(16), thinly coriaceous, inclined to erect, straight to shallowly incurved, glabrous, green or subglaucous; *midrib* commonly towards lower margin, sometimes ± central, the 2 adaxial nerves commonly intramarginal giving phyllodes the appearance of 2 nerves per face; nerves resinous (not viscid) or farinose; *minor nerves* longitudinally anastomosing and forming an open reticulum with elongated nerve islands; *pulvinus* 1–2 mm long, finely transversely wrinkled, yellowish. *Gland* on upper margin of phyllode 0–2(4) mm above pulvinus, not prominent, *c.* 0.4 mm diam. *Inflorescences* simple, normally 2 per axil and with a dormant vegetative bud in the axil at anthesis; *peduncles c.* 2 mm long, ± obscured by stamens at anthesis, glabrous; *basal peduncular bract* solitary, persistent, widely ovate, shallowly concave, 0.5–1 mm long, glabrous, sometimes farinose. *Heads* globular, 4–5 mm diam. (dry), 17–22-flowered, light golden; *bracteoles* spathulate, 1 mm long, glabrous; claw linear; lamina *c.* 0.5 mm wide, shallowly concave, light brown, sometimes farinose. *Flowers* 5-merous, glabrous; *calyx* 1/2–2/3 length of corolla, gamosepalous, very shallowly divided into ± widely triangular, slightly inflexed lobes that are sometimes farinose abaxially; calyx tube obscurely 5-nerved; *petals c.* 1.5 mm long, obscurely 1-nerved. *Pod* linear, to 9 cm long, 3.5 mm wide, with up to 8 seeds, firmly chartaceous, shallowly arcuate, ± straight-edged, rounded over seeds, glabrous, light brown, slightly pruinose. *Seeds* longitudinal, obloid, 4 mm long, 2 mm wide, *c.* 1.2 mm thick, dark brown, shiny; *pleurogram* obscure, oblong, open at hilar end; *areole* 3 mm long, 1 mm wide; *funicle* filiform, 2 mm long; aril terminal, rather conspicuous, orange-brown and wrinkled when dry.

Selected specimens examined. WESTERN AUSTRALIA: 1 km W of Moir Rd on Quagitups northern boundary, *K. Bradby* KLB56 (PERTH); E of Needilup, on corner of Brown Rd, *G. Craig* 1565 (AD, BRI, PERTH); 8 km S of Ravensthorpe towards Hopetoun, *B.R. Maslin* 2565 (CANB, K, MEL, NY, PERTH); 2 miles [3.2 km] SE of Ravensthorpe, *K. Newbey* 940 (PERTH); 11 miles [17.7 km] SE of Jerramungup, *K. Newbey* 1299 (BRI, NSW, NY, PERTH); 1 mile [1.6 km] E of Broomehill, *K. Newbey* 3434 (G, PERTH).

Distribution. Occurs in the south-west of Western Australia known only from the Broomehill, Jerramungup and Ravensthorpe areas.

Habitat. Grows in loam and clay, in woodland, mallee communities and *Acacia* shrubland.

Phenology. Flowering recorded in August and September; mature pods collected in late November and December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The specific epithet is derived from the Latin *erro* (to wander) and *-bundus* (continuance, augmentation), in reference to the two fine adaxial nerves on the phyllodes. These nerves are located either along the upper edge of the phyllode or become displaced a few millimetres below the edge, i.e. have diverged from the normal central position. In the latter case the phyllodes appear 2-nerved per face.

Affinities. It seems that *A. errabunda* is related to the widespread eastern Australian species *A. stricta* (Andr.) Willd. The more important characters shared by these two species include the following: (1) phyllodes with anastomosing minor nerves; (2) inflorescences simple (peduncles very rarely arranged on short racemes in *A. stricta*); (3) basal peduncular bract solitary, persistent; (4) calyx gamosepalous, very shortly lobed; (5) pods long, linear, firmly chartaceous; (6) seeds longitudinal, with a terminal aril. The two species are readily distinguished by their phyllodes which in *A. stricta* are commonly larger (3.5–14 cm long and 3–15 mm wide), are only 1-nerved along their adaxial margin, and have more numerous minor nerves that diverge from the midrib at an acute angle and form a close reticulum. Other characters distinguishing *A. stricta* include the following: branchlets prominently angled, basal gland rather prominent, peduncles 2–5 mm long and normally 2–4 per axil, heads creamy yellow to lemon yellow and flowers 20–38 per head.

Variation. In *Newbey* 940 from south of Ravensthorpe the phyllodes are atypically long (to 9 cm with the gland 4 mm above the pulvinus). Other specimens from this locality have phyllodes within the normal range of variation (i.e. 2–5 cm long, gland 0–2 mm above the pulvinus).

Acacia euthyphylla Maslin, *sp. nov.*

Frutex rotundatus vel infundibularis, 1–2 m altus. Ramuli teretes, subtiliter costati, glabri. Stipulae c. 0.5 mm longae, caducae. Phyllodia linearia, obtusa et mucronata vel acuta, 4–9 cm longa, 2–3 mm lata, glabra, costa non prominenti; glans c. 10 mm supra pulvinam inserta. Inflorescentia racemus reductus capitulis (1)2(3). Pedunculi 5–8 mm longi, glabri; capitula floribus 18–21. Flores 5-meri. Sepala libera, sparsim puberula. Petala glabra, enervia. Legumen lineare, ad 6 cm longum, 3.5 mm latum, coriaceum, glabrum. Semina (immatura) longitudinalia.

Typus: Truslove Reserve (near water reserve *c.* 0.5 km south of northern boundary of Reserve), *c.* 11 km due north-north-east of Scaddan, Western Australia, 15 August 1985, *B.R. Maslin* 5804 (*holo:* PERTH 00758361; *iso:* CANB, K, PERTH 00758914).

Dense to mid-dense *shrub*, rounded to obconic, 1–2 m tall, multi-stemmed or if single-stemmed then branching close to ground level. *Bark* smooth, light grey to mid-grey. *Branchlets* terete, slightly angled at extremities, finely ribbed, slightly flexuose, glabrous, light brown to pale reddish brown, sometimes slightly pruinose. *Stipules* triangular, *c.* 0.5 mm long, scarious, caducous. *Phyllodes* linear, narrowed at base, 4–9 cm long, 2–3(4) mm wide, l:w 15–30, very slightly thickened, erect, straight to shallowly incurved, flat, glabrous, dull, light green; *midrib* and *marginal nerves* not prominent, commonly drying yellowish; nerve on adaxial margin not bifurcating; *lateral nerves* trending longitudinally, submerged and obscure (upon drying tissue between nerves collapses to produce a very fine rugose effect); *apex* obtuse, mucronulate to acute; mucro *c.* 0.5 mm long, straight and erect or occasionally slightly undulate, dark brown, hard, coarsely pungent when dry; *pulvinus c.* 1 mm long, yellow to brown, finely transversely rugose when dry. *Gland* not prominent, on adaxial margin near or below middle of phyllode 10 mm or more above pulvinus, oblong, 0.4–0.7 mm long, usually impressed. *Inflorescence* a reduced raceme; axis 1–2 mm long with (1)2(3) heads, commonly growing out in late anthesis, thus fruiting peduncle commonly situated at base of new shoot, glabrous; *peduncles* 5–8 mm long, glabrous;

basal peduncular bract solitary, very early caducous, ± rostriform, *c.* 1 mm long, glabrous but minutely ciliolate towards apex, dark brown. *Heads* globular, golden, 7–8 mm diam. (fresh), 4–5 mm diam. (dry), 18–21-flowered; *bracteoles* narrowly spathulate, 1 mm long, obtuse, light brown. *Flowers* 5-merous; *sepals* 1/2 length of petals, free, sparsely puberulous; claws linear, expanded into narrow, slightly inflexed, slightly thickened, obtuse to acute, brown lamina; *petals* 2 mm long, glabrous, nerveless. *Pod* (immature pods and old dehisced valves seen), linear, to 6 cm long, 3.5 mm wide, straight to shallowly curved, slightly undulate, scarcely constricted between seeds and slightly rounded over them, seemingly thinly coriaceous, glabrous, dark brown; marginal nerve narrow, red-brown. *Seeds* (very immature) longitudinal.

Selected specimens examined. WESTERN AUSTRALIA: 15 km SW of Mt Ney, 5 km NE of Burdett Rd on Mt Ney Rd, *M.A. Burgman* 1652 & *S. McNee* (PERTH); 9 km SW of Mt Ridley, 16.9 km N of Scaddan Rd on Dempster Rd, *M.A. Burgman* 2310 & *S. McNee* (PERTH); Truslove Rd, 2.3 km E of junction with Cox Rd (near Scaddan), *G. Craig* 1459 (PERTH); E of Scaddan, on Dempster Rd (N of Norwood Rd intersection), *G. Craig* 1672 (PERTH); Truslove Reserve, Cox Rd, 1.5 km S of Truslove Rd intersection (*c.* 13 km due NE of Scaddan), *B.R. Maslin* 5805 (G, MEL, NY, PERTH).

Distribution. Occurs in the south-west of Western Australia, of restricted occurrence from Truslove (north of Esperance) east to near Clyde Hill (*c.* 110 km east of Truslove).

Habitat. Grows in sand or clay-loam in seasonal swamps or around periphery of salt lakes and marshes in tall myrtaceous shrubland and mallee woodland.

Phenology. Flowering recorded from July to September; immature fruit collected in early November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The specific epithet, from the Greek *euthys* (straight) and *phyllon* (a leaf), refers to the ± erect phyllodes.

Affinities. Acacia euthyphylla closely resembles *A. crassiuscula* H.L. Wendl. in phyllode shape and size, inflorescence structure and in its linear pods with longitudinal seeds. *Acacia crassiuscula* is distinguished from *A. euthyphylla* by its thicker, dark green phyllodes (more coarsely wrinkled when dry), with prominent midribs, gland 2–8 mm above pulvinus, cream heads, gamosepalous calyx and racemes 1–6 cm long. With the collection of mature pods and seeds, additional distinguishing features may come to light. *Acacia crassiuscula* is commonly a spindly open shrub and occurs in coastal and near-coastal habitats south of the known range of the new species; it is commonly associated with granite outcrops.

Acacia evenulosa Maslin, *sp. nov.*

Frutex densus 0.5–1.7 m altus. Ramuli teretes, juvenes et axilla minute puberula, cetera glabri. Stipulae 1.5–3 mm longae, vulgo persistentes. Phyllodia anguste oblonga ad linearia, obtusa, minute mucronata, 15–40 mm longa, 2.5–3.5 mm lata, laevia, glabra; costa inconspicua; nervi laterales superficiares, absentes vel obscurissima; glans marginalis, 1–4 mm supra pulvinam inserta. Inflorescentia racemus reductus capitulis (1)2. Pedunculi 4–10 mm longi, glabri; capitula globularia, 5–6 mm diam. (viva), floribus 15–22. Flores 5-meri. Sepala libera, parce puberula. Petala glabra, enervia. Legumen anguste oblongum, circinatum, ad 30 mm longum, 4–4.5 mm latum, coriaceo-crustatum, glabrum. Semina longitudinalia, ovoidea, 2.5 mm longa, nitentia; arillus lineari-clavatus, albus.

Typus: 1 km north of Salmon Gums on Coolgardie–Esperance highway, Western Australia, 25 September 1983, *B.R. Maslin* 5449 (*holo:* PERTH 00199710; *iso:* CANB, K, MEL, NY)

Dense, spreading *shrub* with rounded crown, 0.5–1.7 m tall, 0.6–2(3) m wide, multi-stemmed, infrequently single-stemmed or sparingly branched at ground level. *Bark* grey, sometimes fissured at base of stems, otherwise smooth. *Branchlets* terete, very finely ribbed, glabrous or more frequently with minute, appressed, straight, white hairs in phyllode axils and commonly towards branchlet apices. *Stipules* narrowly triangular, 1.5–3 mm long; shallowly incurved, brown, glabrous, brittle but persisting at base of most phyllodes, at old nodes where phyllodes have fallen the slightly thickened stipule bases frequently forming minute, tooth-like projections. *Phyllodes* narrowly oblong to linear, narrowed at base, 15–40 mm long, 2–3.5(4) mm wide, l:w 5–15, coriaceous, commonly slightly thickened, smooth (fresh), commonly faintly wrinkled when dry, dull or sometimes ± shiny, erect, straight to shallowly incurved, flat or semi-terete to shallowly rhombic in cross-section, glabrous (except pulvinus), light green to dark green, occasionally a few subglaucous; *apex* obtuse, the mucro minute (*c.* 0.2 mm long), hard, brown, ± straight, erect; *midrib* and *marginal nerves* usually not prominent; nerve on upper margin bifurcating near pulvinus but nerves obscure and frequently submerged; *lateral nerves* absent (submerged) or very obscure; *pulvinus* terete, 1–1.5 mm long, finely transversely wrinkled and yellow, orange or brown when dry, glabrous or more commonly minutely hairy on upper surface. *Gland* not prominent, on upper margin 1–4 mm above pulvinus, occasionally absent, circular to oblong, 0.3–0.5 mm long. *Inflorescence* a rudimentary raceme (axis to 1 mm long) with (1)2 heads, sometimes growing out at anthesis; *peduncles* (3)4–10(13) mm long, glabrous, recurved from base in fruit; *basal peduncular bract* solitary, caducous, ± rostriform, 1.5–2 mm long, hairy abaxially, light brown. *Heads* globular, mid-golden, 5–6 mm diam. (fresh), 4–4.5 mm diam. (dry), 15–22-flowered; *bracteoles* absent or if few present then subtending flower(s), 0.6 mm long, narrowly spathulate. *Flowers* 5-merous; *sepals c.* 1/2 length of petals, free, narrowly linear, sparsely puberulous; *petals c.* 1.5 mm long, glabrous, nerveless. *Pod* narrowly oblong, semi-circinate to circinate, sometimes irregularly sigmoid or shallowly undulate, to 30 mm long, 4–4.5 mm wide, thinly coriaceous–crustaceous, straight-edged or slightly constricted between seeds, slightly rounded over seeds, nerveless, brown to purplish brown, glabrous; marginal nerve narrow. *Seeds* longitudinal, ovoid, 2.5 mm long, 1.5 mm wide, compressed (0.8 mm thick), shiny, greyish brown, becoming dark brown; *pleurogram* very obscure, U-shaped, open at hilar end; *areole* 0.3 mm long, 0.2 mm wide; *funicle* filiform, *c.* 1 mm long; aril sublaterally attached to seed, linear-clavate, extending 3/4 to wholly down side of seed, creamy white.

Selected specimens examined. WESTERN AUSTRALIA: 30.5 km N of Mt Ney, *M.A. Burgman* 1281 & *S. McNee* (PERTH); Salmon Gums, *P.E. Conrick* 1702 (MO, PERTH, also AD but *n.v.*); 0.5 km E on Holts Rd from Esperance–Norseman highway, *G.F. Craig* 2441 (PERTH); 14 km S of Mt Holland, *B.R. Maslin* 3949 (PERTH); between 10 and 40 km W of Peak Charles turn-off on Lake King–Kumarl road, *B.R. Maslin* 5432 (BRI, CANB, G, PERTH); 24 km SSW of Mt Malcolm, Fraser Range, *K. Newbey* 7637 (PERTH); 37 km W of Balladonia on Eyre Highway, *M.H. Simmons* 1163 (PERTH); 40 km E of Lake King on road to Daniell, *P.G. Wilson* 5738 (AD, PERTH).

Distribution. Occurs in the south-west of Western Australia in an area bounded by Mt Holland, Lake King, Clyde Hill and Balladonia, with most collections from the Peak Charles–Salmon Gums–Grass Patch area (north of Esperance).

Habitat. Grows in red-brown clay to sandy loam (occasionally sand), sometimes with stony inclusions on flat or gently undulating plains, in low eucalypt woodland or open to very open scrub mallee, commonly over low to dwarf scrub, occasionally in low *Allocasuarina* scrub.

Phenology. Flowering recorded from August to October; mature pods collected in November and December.

Conservation status. Widespread, not under threat.

Etymology. The specific epithet, from the Latin *venulosus* (veined) with the prefix *ex-* (lacking), alludes to the lateral venation which is superficially absent or very obscure. This characteristic occurs in a number of species where the nerves are submerged in a relatively thick lamina.

Affinities. Closely allied to the more northerly distributed *A. saxatilis* S. Moore which differs most obviously in the following ways: branchlets and pulvinus consistently glabrous; phyllodes 4–7 mm wide, pruinose; heads 27–35-flowered; pods *c.* 3 mm wide, curved in same plane as suture (in *A. evenulosa* the curvature is at right angles to the plane of the suture). Also allied to *A. blaxellii* (see above).

Acacia glaucissima Maslin, *sp.nov.*

Frutex infundibularis, 0.6–1.5 m altus. Ramuli teretes, glabri. Stipulae 3–4 mm longae, atro-brunneae, caducae praeter bases crassos. Phyllodia anguste elliptica ad oblongo-elliptica vel oblanceolata, obtusa vel acute mucronata, 2–4 cm longa, 5–15 mm lata, glabra, crasse coriacea, glaucissima, pulvinata; costa prominens; nervi laterales absentes vel obscurissimi; glans marginalis, 3–7 mm supra pulvinam inserta. Inflorescentia racemus reductus, capitulis 2. Pedunculi 10–20 mm longi, glabri; capitula globularia, floribus 20–35. Flores 5-meri. Sepala libera, glabra vel parce puberula. Petala glabra, enervia. Legumen irregulariter contortum vel spirale, teres, ad 6.5 mm longum, 2–3 mm latum, tenuiter coriaceum ad crustaceum, plerumque glabrum. Semina longitudinalia, obloidea, *c.* 3 mm longa; arillus conspicuus, flavus.

Typus: 20 km south of Salmon Gums on the Coolgardie–Esperance highway, Western Australia, 25 September 1983, *B.R. Maslin* 5454 (*holo*: PERTH 00178039; *iso*: CANB, K).

Obconic or somewhat rounded *shrub*, spreading, dense or openly branched, 0.6–1.5 m tall and to 2 m diam., few–6-branched at ground level. *Bark* light grey, smooth. *New shoots* glabrous, slightly shiny, dull red to red-brown (drying blackish). *Branchlets* terete, finely to moderately ribbed, glabrous, light brown to light red-brown or yellow-brown at extremities, sometimes greenish on undersurface. *Stipules* narrowly triangular to linear-triangular, (2)3–4(5) mm long, brittle with sometimes only the thickened bases remaining, glabrous, dark brown to blackish. *Phyllodes* slightly asymmetric, narrowly elliptic to oblong-elliptic or oblanceolate, infrequently elliptic or obovate, (1.5)2–4(5.5) cm long, (4)5–15 mm wide, l:w (2)3–6, thickly coriaceous, smooth, not or scarcely wrinkled when dry, ± straight, commonly very slightly undulate or twisted, glabrous, dull, very glaucous (± light blue); *midrib* and *marginal nerves* prominent, slightly shiny, greenish yellow, sometimes drying light brown, nerve on adaxial margin bifurcating near gland; *lateral nerves* absent or very obscure; *apex* obtuse to acute, mucronate; mucro 1–2 mm long, indurate, coarsely to somewhat sharply pungent, dark brown and straight to slightly inflexed; *pulvinus* 1–2 mm long, dull orange, commonly drying dark brown. *Gland* on upper margin of phyllode 3–7(10) mm above pulvinus, not prominent, usually oblong and 0.4–0.6 mm long, infrequently circular and *c.* 0.3 mm diam. *Inflorescence* an extremely reduced 2-branched raceme 1–2 mm long, the axis sometimes growing out at anthesis; *peduncles* 10–20 mm long, glabrous, light greenish yellow or light red-brown (fresh), usually darkening upon drying, ascending to inclined at anthesis, patent (rarely recurved) when in fruit; *basal peduncular bract* caducous, *c.* 1.5 mm long, semi-cucullate, oblong, concave especially at the slightly curved, obtuse

to subacute apex, sessile, glabrous, dark brown. *Heads* globular, bright light- to mid-golden, 7–8 mm diam. (reconstituted), 5–6 mm diam. when dry, to 11 mm diam. when fresh, 20–35-flowered; *bracteoles* not subtending all flowers, narrowly spathulate or resembling sepals. *Flowers* 5-merous; *sepals* 1/3 to almost 1/2 length of petals, free, linear to narrowly oblong, commonly slightly thickened and inflexed at apex, sparsely puberulous to glabrous; *petals c.* 2 mm long, united for 1/2 to 2/3 their length, glabrous, commonly tinged brownish to black when dry, nerveless. *Pod* irregularly twisted to loosely coiled, to 6.5 cm long, 2–3 mm wide, thinly coriaceous to slightly crustaceous, terete to semi-terete, scarcely constricted between seeds, glabrous or sprinkled with minute, straight, appressed hairs, black. *Seeds* longitudinal, obloid, 3 mm long, 1.5–2 mm wide, somewhat shiny, dark brown to blackish, sometimes obscurely mottled; *pleurogram* U-shaped, open at hilar end; *areole* 0.6–0.7 mm long, 0.5–0.6 mm wide; *funicle* filiform, *c.* 1 mm long, abruptly expanded into a conspicuous, conical to galeate, yellow, fleshy, terminal aril 2–3 mm long.

Selected specimens examined. WESTERN AUSTRALIA: near Mt Heywood, *J.S. Beard* 6389 (PERTH); 2.6 km N of Rolland Rd on Fields Rd [*c.* 45 km due W of Red Lake], *M.A. Burgman* 3010 (PERTH); 31.6 km NNE of Mt Heywood, 12.4 km NW of Mt Ney Rd on Clyde Rd, *M.A. Burgman* 3052 & *C. Layman* (PERTH); 25 km NNE of Mt Ney, *M.A. Burgman* 1256 & *S. McNee* (PERTH); 2.5 km S of Salmon Gums towards Esperance, *B.R. Maslin* 2492 (MEL, PERTH); 20 km S of Salmon Gums on Coolgardie–Esperance highway towards Esperance, *B.R. Maslin* 5532 (PERTH).

Distribution. Occurs in the south-west of Western Australia, scattered in an area from near Mt Madden (north of Ravensthorpe) east to near Mt Heywood (north-east of Esperance). Most collections are from the area around Salmon Gums, south to Grass Patch and east to near Mt Heywood.

Habitat. Grows in sand and on greyish clay flats, in open low or mallee woodland with low open dwarf scrub or low heath.

Phenology. Flowering recorded in August and September; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The specific epithet is derived from the superlative of the Latin *glaucus* (blue-tinged), in reference to the characteristic colour of the phyllodes.

Affinities. Acacia glaucissima is related to *A. merrallii* F. Muell. which differs in its usually puberulous branchlets, caducous stipules and generally shorter (8–25 mm long), less glaucous phyllodes. It also resembles, and is sometimes sympatric with, *A. dermatophylla* Benth., which is most easily distinguished by its persistent, longer (4–8 mm) stipules, its phyllodes which are green to subglaucous (glaucous when young), finely wrinkled when dry and lacking a clearly defined pulvinus, its peduncles surrounded at base by a tuft of hairs and its hard-bony, narrowly oblong pods 8–10 mm wide with oblique, larger seeds (*c.* 5 mm long, 4–4.5 mm wide). Also allied to *A. acoma* (see above).

Acacia graniticola Maslin, *sp. nov.*

Frutex intricatus, effusus, 2–3 m altus. Ramuli teretes, glabri. Stipulae 1–2 mm longae, caducae sed bases induratae interdum persistentes. Phyllodia linearia, acuta, 9–15 cm longa, 1–3 mm lata, coriacea, glabra praeter margines pilis minutis tuberculatis caducis instructos; costa conspicua, elevata; glans marginalis, 5–8 mm supra pulvinam inserta, interdum absens. Inflorescentiae simplices,

binatae. Pedunculi 6–20 mm longi, glabri; capitula globularia vel ellipsoidea, floribus 35–40. Flores 5-meri. Sepala libera vel breviter unita, parce puberula. Petala glabra, enervia. Legumen late lineare, ad 8 cm longum, 3–4 mm latum, inter semina constrictum, chartaceum vel tenuiter coriaceum, glabrum. Semina longitudinalia, ellipsoidea, 3–3.5 mm longa; arillus crassus, albus.

Typus: 3 miles [4.8 km] north of Mukinbudin–Bencubbin road on Barbalin North Rd, Western Australia, 6 September 1982, *R.J. Cumming* 2365 (*holo:* PERTH 00168335; *iso:* MELU).

Much-branched, intricate spreading *shrub* 1–3 m tall, to 4 m wide, dividing at ground level into 2–4 rather crooked main stems. *Bark* grey, rough or smooth, lenticellular. *Branchlets* terete, finely ribbed, shallowly to obviously flexuose, glabrous; lenticels obvious; young branchlets, phyllodes and peduncles invested with minute, scattered, brown, ± circular resin secretions, sometimes persisting as golden papillae on phyllode nerves. *Stipules* on new shoots narrowly oblong to triangular, 1–2 mm long, scarious, with mature bases sometimes hardening and persistent. *Phyllodes* linear, (6)9–15(20, rarely 28) cm long, 1–3 mm wide, moderately coriaceous, sessile (i.e. *pulvinus* absent), not continuous with the branchlets but not easily separated from them, shallowly curved to sinuous, flat or (when very narrow) subquadrangular due to pronounced midrib, green, glabrous except margins and sometimes midrib with minute, scattered tubercle-based, caducous, antrorsely appressed hairs; nerves 4 or 5 (2 lateral, 1 abaxial, 1 adaxial but bifurcating near phyllode base); *midrib* prominent on each face; margins and sometimes midrib sparsely tuberculate; *apex* acute, innocuous or sometimes almost coarsely pungent. *Gland* not prominent, (2)5–8 mm above base, sometimes absent. *Inflorescences* 7–12-branched racemes 1–5.5 cm long, the raceme axis often growing out as a 'leafy' shoot before flowering has finished with the subsequent pedunculate heads occurring in 2s or 3s in axils of young phyllodes; *peduncles* 6–25 mm long, slender, glabrous, base ebracteate; *bract* near or above middle of peduncle persistent or subpersistent to anthesis, rarely caducous on all peduncles except when in fruit, ± lanceolate, shallowly concave, 1–2 mm long, scarious, light brown, glabrous except sparsely ciliolate margins. *Heads* globular to widely ellipsoid, golden, *c.* 8 mm diam. (fresh), 4.5–5 mm diam. (dry), densely 35–40-flowered; *bracteoles* spathulate, *c.* 1.5 mm long, sparsely puberulous; claw linear; lamina ovate, *c.* 0.5 mm wide, acute, slightly inflexed. *Flowers* 5-merous; *calyx* divided to base or frequently some sepals irregularly united for usually 1/4–1/3 their length, sparsely puberulous; *petals* 1.5–2 mm long, glabrous, nerveless. *Pod* linear, shallowly raised over seeds and moderately to deeply constricted between them, shallowly undulate, 6–8(9.5) cm long, 2.5–4 mm wide, chartaceous to thinly coriaceous, glabrous, light brown, nerveless. *Seeds* longitudinal, with aril facing base of pod, widely ellipsoid, 2.5–3.5 mm long, 2.5–2.8 mm wide, sub-glossy, tan with black mottlings (when fresh) but drying yellowish grey-brown mottled black, or uniformly yellowish brown; *areole* dark, surrounded by a narrow band of yellowish tissue that extends in a line to the hilum; *pleurogram* obscure, open at hilar end; *areole* 0.2–0.4 mm long, 0.2–0.3 mm wide; *funicle* filiform, 0.5–1 mm long, gradually expanded into a thick, creamy white, folded aril.

Selected specimens examined. WESTERN AUSTRALIA: Bruce Rock, Sep. 1933, *E.T. Bailey* (PERTH 00166871); near summit of Mt Churchman, *B.J. Conn* 2280 (MEL, NSW, PERTH, TL); Twine Reserve, 21 km ESE of Mt Walker, *S.D. Hopper* 7858 (PERTH); Muntadgin Rock, *B.R. Maslin* 1819 (AD, BRI, NSW, PERTH); Nungarin Hill, *B.R. Maslin* 2348 (NY, PERTH); Barbalin Rock, 12 km due SW of Mukinbudin, *B.R. Maslin* 6448 (BRI, CANB, PERTH); Billyacatting Hill Reserve, 17746, 11 km NE of Kununoppin, *B.G. Muir* 97(3.7) (PERTH); Yorkrakine Rock Reserve, 23586, 24 km N of Tammin, *B.G. Muir* 173(3.7) (PERTH); Walyahmoning Rock, *c.* 60 km NW of Bullfinch, *K. Newbey* 9558 (MO, PERTH); White Elephant Hill, *P. de Rebeira* 176 (PERTH); Roe Dam, just N of Mt Walker (N of Hyden), *J.G. & M.H. Simmons* 1311 (PERTH).

Distribution. Occurs in the south-west of Western Australia confined to the central wheatbelt from near Kalannie and Mt Churchman (north of Beacon) east to Walyahmoning Rock (north-west of Southern Cross) and south to Mt Walker (east of Narembeen).

Habitat. Grows in sand, sandy-clay or loam on soil aprons on and at the base of granite outcrops, sometimes in scrub or shrubland in semi-arid areas.

Phenology. Flowering recorded from August to October; mature pods collected in December.

Conservation status. Widespread, not under threat.

Etymology. The specific epithet is derived from the Latin *graniticus* (granitic) with the ending *-cola* (a dweller) and reflects the species' preference for granite rocks.

Affinities. Acacia graniticola is most closely allied to *A. dentifera* Benth. which is distinguished by its branchlets being non-flexuose, phyllodes distinctly pulvinate (and easily removed from the branchlets), generally wider (2–5 mm) and without tuberculate margins, peduncular bracts less persistent (usually absent at anthesis) and pods tending to be more terete in section. The two species are allopatric, *A. dentifera* being confined principally to the temperate forests and woodlands of the Darling Range and *A. graniticola* occurring inland in the semi-arid Transitional Rainfall Zone (Hopper 1979) of the wheatbelt; both species are associated with granite rocks. A similar distribution pattern exists for the *A. oncinophylla* Lindley–*A. fauntleroyi* (Maiden) Maiden & Blakely species pair in sect. *Juliflorae* (Benth.) C. Moore & Betche.

Acacia halliana Maslin, *Nuytsia* 6: 36, fig. 1 (1987). *Type:* 10 km N of Bute on the road to Port Broughton, South Australia, 22 September 1985, *B.R. Maslin* 6003 (*holo:* PERTH; *iso:* AD, CANB, G, K, MEL, NSW, NY).

Acacia iteaphylla var. *latifolia* F. Muell., *J. Proc. Linn. Soc., Bot.* 3: 125 (1859), *synon. nov. Type:* Poonindie [sphalm. 'Ponindi'], South Australia, *C. Wilhelmi* (*lecto:* NSW 180828, here selected; *isolecto:* MEL [sphalm. 'Ponindy']).

Typification. The NSW type sheet of the name *Acacia iteaphylla* var. *latifolia* bears two collections, both labelled by Mueller: (1) '*Acacia iteaphylla* fer Mul. ß latifolia. Frutex altior. Ponindi. W[ilhelmi]'; there is a duplicate of this fruiting specimen (annotated 'Ponindy') at MEL. (2) '*Acacia iteaphylla.* In fruticetis .... fl. Murray haud procul a Wellington. Wuerth. 1 Mai 1849'; this is a sterile specimen of the small-headed variant of *A. halliana* Maslin, *fide* B.R. Maslin, *loc. cit.* The specimen at NSW of the former collection is selected as lectotype as it is representative of the more common variant of the species and is better material than that on the sheet at MEL.

Acacia hystrix Maslin, *sp. nov.*

Frutex 0.3–1 (1.8) m altus. Ramuli glabri, ad apices extremos costis flavis vernicosis provisi. Stipulae inconspicuae. Phyllodia crasse acicularia, in sectione transversali pentagonalia, 2–6(6.5) cm longa, 1–1.7 mm lata, versus apices ramorum subconferta, rigida, erecta, pungentia, articulata (subsp. *hystrix*), vel ramulis continua sine pulvina (subsp. *continua*). Inflorescentia racemus eximie reductus binatus; axis glaber, quam 0.5 mm brevior. Pedunculi 5–15 mm longi; bracteae basales pedunculares caducae (subsp. *hystrix*) vel persistentes (subsp. *continua*). Florum capitula globularia, 10–13 floribus; bracteolae anguste spathulatae. Sepala libera. Petala 1.5 mm longa. Legumen oblongum ad anguste

oblongum, ad 25(30) mm longum, 3–5 mm latum, deflexum, compressum sed supra semina leviter convexum. Semina longitudinalia ad obliqua, obloideo-ellipsoidea, 2.2–2.7 mm longa, 1.2–1.5 mm lata, sublucida, atrobrunnea; arillus albus, unilateraliter dimidium usque totam seminis longitudinem attingens.

Typus: 1.5 miles [2.4 km] north of Kulin, Western Australia, 3 August 1970, *K. Newbey* 3226 (*holo:* PERTH 00760552; *iso:* CANB, K, MEL, PERTH 00760560).

Dense to mid-dense *shrub*, rounded to obconic, multi-stemmed, 0.3–1(1.8) m tall, normally as broad as or broader than tall, with up to 6 main stems arising from ground level. *Bark* medium grey. *New shoots* arising at distal end of minute raceme axis from axil of peduncles. *Branchlets* terete, greenish to light brown; with yellow, vernicose ribs (resin commonly not present on dry specimens) at extreme apex but soon red-brown, then grey and very obscurely ribbed or ribless, glabrous, marked with slightly raised leaf bases where phyllodes have fallen. *Stipules* inconspicuous, 0.5–0.7 mm long, commonly slightly thickened and yellowish at base, the dark brown, rather scarious, distal portions normally soon caducous. *Phyllodes* pentagonal in cross section, 2–6(6.5) cm long, 1–1.7 mm diam., rather crowded towards ends of branches, articulate and falling upon death in subsp. *hystrix*, continuous with branches and somewhat persistent following death in subsp. *continua*, erect, rigid, straight to very slightly curved, frequently slightly kinked in the region of the gland, glabrous, glaucous to subglaucous between nerves; prominently 5-nerved, the nerves raised, yellowish to yellowish green and vernicose on young phyllodes, resin commonly drying whitish on mature phyllodes; narrowed into a rigid, straight, dark brown, subulate cusp 1–2 mm long; *pulvinus* present (subsp. *hystrix*) or absent (subsp. *continua*), *c.* 1 mm long, slightly depressed, dilated at the base, broadly channelled above (when dry), not prominently wrinkled, yellowish orange but commonly drying light brown. *Gland* not prominent, situated on adaxial surface of the phyllode between the two adaxial nerves, about or above middle of phyllode (phyllode frequently slightly kinked in the region of the gland), circular to oblong, 0.2–0.5 mm long, the lip yellowish or brown and not raised, the orifice shallow, indistinct. *Inflorescence* an extremely reduced binate raceme; axis less than 0.5 mm long, glabrous, growing out at apex; *peduncles* 5–15 mm long, rather slender, glabrous; *basal peduncular bracts* solitary, caducous (subsp. *hystrix*) or persistent (subsp. *continua*), 1.5–3 mm long, dark brown, curved, concave, ± auricled on lower half, cleft at apex in subsp. *continua*. *Heads* globular, 5–6 mm diam. when fresh, 3–4 mm diam. when dry, bright light golden, 10–13-flowered; *bracteoles* spathulate, 1–1.5 mm long, variably hairy abaxially (hairs white, glistening); lamina dark brown, observable between flowers in mature unexpanded buds, as long as or longer than the claw. *Flowers* 5-merous; *sepals c.* 1/2 length of petals, free to base, narrowly spathulate, glabrescent to moderately villous abaxially, brown; *petals* 1.5 mm long, free, abruptly acute, glabrous, very obscurely 1-nerved but nerve not apparent when dry; *ovary* glabrous. *Pod* oblong to narrowly oblong, to 25(30) mm long, 3–5 mm wide, with up to 9 seeds per pod, declinate due to abrupt curving of the very short basal stipe, compressed but slightly raised over seeds, normally not constricted between seeds although on some pods a random deep constriction occurs, firmly chartaceous to slightly coriaceous, straight or sometimes very shallowly falcate, variably slightly curved, very obscurely openly reticulate, glabrous, brown and sometimes with a very faint bloom, abruptly narrowed at both ends, apically mucronulate (mucro *c.* 0.5 mm long, central or excentric); margins narrow, slightly thickened, yellowish to light brown. *Seeds* longitudinal to oblique, the aril facing adaxial margin (when seeds oblique) or apex of pod (when seeds longitudinal), obloid-ellipsoid to obloid-obovoid, slightly narrowed at hilar end, 2.2–2.7 mm long, 1.2–1.5 mm wide, somewhat compressed (*c.* 0.7 mm thick), somewhat glossy, brown; *pleurogram* very obscure, U-shaped, open at hilar end; *areole* 0.4–0.5 mm long, 0.2–0.3 mm wide; *funicle* filiform, 1–1.5 mm long, reflexed below and expanded into a ± clavate, white aril which is 2–3 mm long and extends from half to wholly down one side of seed.

Distribution. Occurs in south-west Western Australia from near Kulin east to near Lake Gilmore (south-south-west of Norseman), and as far north as Mt Holland (north-east of Hyden).

Etymology. The specific epithet is the Greek word for hedgehog and is in allusion to the straight, rigid, erect, pungent phyllodes which are rather crowded towards the ends of the branchlets.

Affinities. Acacia hystrix is a very distinctive species on account of its pungent, rigid, prominently 5-nerved, pentagonal phyllodes, its small heads borne on extremely reduced binate racemes and its small, deflexed pods. According to Ph. Guinet (pers. comm.), the pollen characters clearly place the species in sect. *Phyllodineae* DC., but within this section I am unable to ascertain a definite close relative. It possibly has some affinities to *A. tetanophylla* Maslin which differs most obviously in having 7-nerved phyllodes and pods which are not declinate.

Key to the subspecies of *Acacia hystrix*

Phyllodes articulate at junction with branchlet; pulvinus yellowish orange (commonly drying brown), dilated at base ..... subsp. **hystrix**

Phyllodes not articulate on branches, decurrent; pulvinus absent ..... subsp. **continua**

Acacia hystrix Maslin subsp. **hystrix**

Shrub 0.3–0.6 m tall (*Royce* 6674 given as *c.* 1.8 m tall). *Phyllodes* 2–4.5 cm long, articulate on branches and caducous upon death; *pulvinus* present, dilated at base, yellowish orange but commonly drying light brown. *Peduncles* 5–10 mm long; *basal peduncular bracts* falling early, not cleft.

Selected specimens examined. WESTERN AUSTRALIA: Pingaring Nature Reserve 23993, 45 km NNE of Lake Grace, *K. Atkins* 1583 (PERTH); 42.2 miles [67.8 km] W of Kumarl towards Lake King, *R. Cumming* 2558 (AD, BRI, PERTH); 10.3 km E of Shed Tank (32°42'S, 120°51'E), *R. Hnatiuk* 760882 (PERTH); 6.5 km S of Kulin, *B.R. Maslin* 3425 (AD, BRI, NY, PERTH); Bremer Range, *c.* 32°31'S, 120°44'E, *B.R. Maslin* 5427 and 5427A (BM, CANB, MEL, MO, NSW, PERTH); 8.5 km E of Bendering on Bendering East Rd, *B.R. Maslin* 5764A (PERTH); 66 km S of Southern Cross on road to Hyden, *B.R. Maslin* 6726 (PERTH); 13 km S of Mt Glasse, Bremer Range, *K. Newbey* 5396 (PERTH); 21 km NNW of Mt Holland, *c.* 85 km SSE of Southern Cross, *K. Newbey* 5805 (PERTH); 9 km SSE of Mt Gibbs, *c.* 36 km ENE of Lake King, *K. Newbey* 6585 (CANB, K, PERTH); Frank Hann National Park, *R.D. Royce* 10188 (PERTH).

Distribution. Occurs in the south-west of Western Australia scattered in an area from near Kulin eastwards through the Frank Hann National Park (east-north-east of Lake King) to the area of Mt Glasse in the Bremer Range (east of Hyden), and north to between Mt Holland and Southern Cross.

Habitat. Grows in sand, clay or loam, sometimes with lateritic or quartz nodules in gently undulating country in open scrub or open low woodland with mallee eucalypts.

Phenology. Flowering recorded from July to October; mature pods collected in December.

Conservation status. Not under threat.

Acacia hystrix subsp. **continua** Maslin *subsp. nov.*

Frutex ad 1 m altus et ad 3 m latus. Phyllodia (2.5)3–6(6.5) cm longa, cum ramis continua, emarcida aliquantum persistentia; pulvinus nullus. Pedunculi 7–15 mm longi; bracteae pedunculares basales persistentes, fissae.

Typus: north of Salmon Gums [precise locality withheld for conservation reasons], Western Australia, 24 September 1983, *B.R. Maslin* 5439 (*holo:* PERTH 00760544; *iso:* CANB, K).

Shrub to *c.* 1 m tall and 3 m wide. *Phyllodes* (2.5)3–6(6.5) cm long, continuous with branches, somewhat persistent following death; *pulvinus* absent. *Peduncles* 7–15 mm long; *basal peducular bracts* persistent, cleft.

Other specimens examined. WESTERN AUSTRALIA, N of Salmon Gums [precise localities withheld for conservation reasons]: *B.R. Maslin* 2462 (CANB, K, MEL, NY, PERTH); *B.R. Maslin* 5439A (MEL, PERTH).

Distribution. Occurs in the south-west of Western Australia known only from north of Salmon Gums (where it is reasonably abundant) which is about 60 km east of the closest known occurrence of subsp. *hystrix*.

Habitat. Grows in red-brown clayey loam along a diffuse watercourse, in eucalypt woodland with a dense myrtaceous understorey.

Phenology. Flowering recorded in September; mature pods collected in December but the full phenological range has not yet been determined.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The subspecific epithet is from the Latin *continuus* and refers to the phyllodes which are continuous with the branches (a diagnostic character).

Acacia imitans Maslin, *sp. nov.*

Frutex semi-prostratus, 0.3–1 m altus. Ramuli divaricati, spinescentes, teretes, glabri. Stipulae c. 0.5 mm longae, caducae. Phyllodia asymmetrica, oblonga vel late elliptica, mucronulata, 3.5–7 mm longa, 1.5–2.5 mm lata, glabra; nervi non prominentes; glans marginalis, 0.3–0.5 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi 3–4 mm longi, appresso-puberuli; spica breviter cylindrica, floribus 25–30. Flores 5-meri. Sepala unita, parce puberula. Petala glabra, enervia. Legumen arcte spirale, ad c. 7 mm 'diam.', 3 mm latum, chartaceum, glabrum. Semina longitudinalia, obloideo-ellipsoidea vel ovoidea, c. 3 mm longa; arillus parvus.

Typus: Ninghan Station [precise locality withheld for conservation reasons], Western Australia, 21 August 1985, *B.H. Smith* 613 (*holo:* PERTH 00632341).

Dense, intricate, low-domed, semi-prostrate, spreading *shrub* 0.3–1 m tall, to 3 m wide. *Bark* grey, smooth or slightly roughened. *Branches* terete, ribless, glabrous, dividing into numerous, divaricate, short, straight, rigid, spinescent branchlets which (especially with age) are commonly devoid of

phyllodes. *Stipules* united, *c.* 0.5 mm long, ciliolate, otherwise glabrous, early caducous. *Phyllodes* asymmetric, arcuate-oblong or widely elliptic, upper margin straight to shallowly concave, lower margin markedly convex, 3.5–7 mm long, 1.5–2.5 mm wide, l:w 2–3, thin, not fasciculate, patent to slightly or prominently reflexed, glabrous, subglaucous; *midrib* not prominent, excentric (slightly towards upper margin), nerve on adaxial margin bifurcating near gland; *lateral nerves* not prominent, ascending and anastomosing near margins; excentrically mucronulate, mucro 0.2–0.3 mm long, brown, upturned; base unequal; *pulvinus* terete, 0.5 mm long, yellow, finely transversely wrinkled when dry. *Gland* situated on adaxial margin 0.3–0.5 mm above pulvinus, circular, minute, 0.1–0.2 mm diam. *Inflorescences* 1 per node, sometimes inserted with vegetative bud on a minute common axis < 0.5 mm long; *peduncles* 3–4 mm long, antrorsely appressed-puberulous; *basal bract* solitary, widely ovate, *c.* 0.5 mm long, thickened at base. *Spikes* obloid to shortly cylindrical, 6–8 mm long and 4–5 mm wide at anthesis (dry), probably golden, 25–30-flowered; *bracteoles* peltate, those at base of spike ± sessile, otherwise claws linear and *c.* 0.5 mm long; lamina circular to reniform, 0.5–0.7 mm wide, ciliolate otherwise glabrous. *Flowers* 5-merous; *calyx c.* 1/2 length of corolla, divided to 1/4–1/2 its length into broadly triangular or oblong lobes, sparsely puberulous; *petals* 1–1.2 mm long, free almost to base, glabrous, nerveless. *Pod* tightly coiled as in *Medicago*, to *c.* 7 mm long (unexpanded), 3 mm wide, firmly chartaceous; glabrous, dark red–brown. *Seeds* (old crop retained in pod), longitudinal, obloid-ellipsoid to ovoid, 3 mm long, 2 mm wide, 1 mm thick, dull, dark brown; *funicle* filiform; aril 0.6–0.8 mm long, obliquely placed at end of seed.

Selected specimens examined. WESTERN AUSTRALIA [precise localities withheld for conservation reasons]: SW of Paynes Find, *R. Coveny* 7911 & *B.R. Maslin* (PERTH; also CANB, K, NSW, US but *n.v.*, distributed as *A. kochii*); Ninghan Station, *B.R. Maslin* 4239 (CANB, K, MEL, PERTH); Mt Gibson Station, *B.R. Maslin* 6654 (CANB, K, MEL, PERTH); Ninghan Station, *K. Newbey* 2010 (PERTH).

Distribution. Occurs in the south-west of Western Australia on Ninghan and Mt Gibson Stations, south of Paynes Find. The area has not been well surveyed botanically, and the species is likely to be more widely distributed than current collections indicate.

Habitat. Grows on slopes in rocky red loam derived from dolerite, in tall shrubland.

Flowering period. Flowering recorded in August and September. Only old pods seen.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The specific epithet refers to its superficial resemblance to *A. kochii*.

Affinities. Until now the new species has usually been confused with *A. kochii* W. Fitzg. ex A.J. Ewart & Jean White which is recorded from the type locality and resembles the new species superficially in its spinescent branchlets, cylindrical spikes and 1-nerved phyllodes with fine, anastomosing lateral veins. Other characters shared by these two species include their ± ribless, commonly glabrous branchlets, their united sepals and peltate bracteoles. *Acacia kochii* can be distinguished easily from *A. imitans* in the following ways: mature phyllodes 10–20 mm long and fasciculate in groups of 2–8, a patent thorn (modified branchlet) 10–20 mm long associated with most fascicles; peduncles 10–20 mm long; spikes 7–15 mm long (at anthesis, dry); petals *c.* 2 mm long; pods torulose, to 9 cm long, not tightly spirally coiled; seeds 5 x 3.5 mm; aril ± conical and conspicuous. *Patrick* 1850 from NNW of Mt Gibson (PERTH) is more openly branched and has phyllodes 5–9 mm long and peduncles 3–4 mm long, giving it some resemblance to *A. kochii*.

Acacia erinacea Benth. also occurs near the type locality and superficially resembles the new species in its habit, spinescent branchlets and small phyllodes. This species is readily distinguished from *A. imitans* by its globular heads and short, straight, flat oblong pods 7–10 mm wide.

Species such as *A. imitans* and *A. kochii* which combine 1-nerved phyllodes and spicate inflorescences are rare in *Acacia*. Such a combination of characters is known in *A. dorothea* Maiden (New South Wales), *A. lucasii* Blakely (New South Wales, Victoria) and *A. anomala* Court (Western Australia) but these taxa are not closely related to the new species.

Notes. The stipules are minute and present only on very young new shoots. They form a subtending sheath on the abaxial side of pulvinus, as in *A. leptospermoides* (see Maslin 1978: Figure 4F).

Acacia imparilis Maslin, *sp. nov.*

Frutex effusus ad c. 0.7 m altus. Ramuli teretes, puberuli. Stipulae 2–4 mm longae, plerumque persistentes. Phyllodia inaequaliter obovata ad anguste oblonga, obtusa, subuncinata, 6–13 mm longa, 2–4.5 mm lata, pubescentia vel puberula; costa prominens; nervi laterales absentes; glans marginalis, 2–3 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi 7–10 mm longi, glabri; capitula globularia, cremea, floribus 12–15. Flores 4-meri. Sepala libera, ciliolata, cetera glabra. Petala glabra, enervia. Legumen (immaturum) angustum, rectum, ad 5 cm longum. Semina longitudinalia, obloidea, c. 5 mm longa; arillus conicus.

Typus: Hamilla Hill, 15 km due east of Cranbrook, Western Australia, 8 October 1989, *B.R. Maslin* 6396 (*holo:* PERTH 01012673; *iso:* CANB, K, MEL, PERTH 01012681).

Sprawling, spindly *shrub* to *c.* 0.7 m tall. *Branchlets* terete, finely ribbed, puberulous, hairs patent to slightly antrorse. *Stipules* linear to narrowly triangular, 2–4 mm long, erect, brown, usually persistent. *Phyllodes* unequally obovate to narrowly oblong, 6–16 mm long, 2–4.5 mm wide, l:w 2–4, inclined to erect, shallowly sigmoid, moderately pubescent to sparsely puberulous, hairs ± antrorse and tubercle-based, sparsely to densely verruculose; *midrib* rather prominent, central or situated near lower margin; lateral nerves absent; *apex* subuncinate, rounded or obliquely narrowed to an excentric mucro, the mucro 0.5–1 mm long, straight, rigid and pungent; *pulvinus* not prominent, *c.* 0.5 mm long. *Gland* on upper margin of phyllode 2–3 mm above pulvinus, inconspicuous, circular, *c.* 0.2 mm diam. *Inflorescences* simple, 1 per axil; *peduncles* 7–10 mm long, slender, glabrous; *basal peduncular bract* solitary, persistent, oblong–triangular, concave, *c.* 0.5 mm long, ciliolate, otherwise glabrous or puberulous abaxially, dark brown. *Heads* globular, 12–15-flowered, cream to pale yellow; *bracteoles* 0.7 mm long, resembling sepals. *Flowers* 4-merous; *sepals c.* 1/2 length of petals, free, spathulate to narrowly spathulate, ciliolate at apex, otherwise glabrous, brown at least at apex (when dry); *petals c.* 1.5 mm long, glabrous, nerveless. *Pod* (immature) linear, to 5 cm long, 2.5 mm wide, straight to slightly curved, compressed, straight-edged or shallowly constricted between seeds, appressed-puberulous, red-brown, longitudinally nerved. *Seeds* (immature) longitudinal, obloid, *c.* 5 mm long; *funicle* filiform, *c.* 1 mm long, abruptly expanded into a terminal, conical aril *c.* 1.5 mm high.

Other specimens examined. WESTERN AUSTRALIA: Mt Hamilla [Hamilla Hill], 14.5 km from Cranbrook along Salt River Rd, *E.M. Canning* WA/68 6156 (PERTH, also CBG *n.v.*); ?Talyuberlup Peak, Stirling Range, *R.J. Cumming* 955 (PERTH); SW slope of Talyuberlup Peak, *R.J. Cumming* 1015 (PERTH); Hamilla Hill, 15 km due E of Cranbrook, *B.R. Maslin* 6395 (PERTH).

Distribution. Occurs in the south-west of Western Australia, on Hamilla Hill and Talyuberlup Peak in the Stirling Range National Park.

Habitat. Grows on rocky hills in open or closed mallee scrub.

Phenology. Flowering recorded in early October and late November; mature pods not seen. The paucity of collections makes the determination of flowering and fruiting phenology difficult to assess.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The specific epithet is from the Latin *imparilis* (unequal), in reference to the inaequilateral phyllode margins which produce an asymmetric phyllode shape.

Affinities. The precise affinities of this new species are unknown. Its phyllodes resemble some variants of *A. ferocior* Maiden (which also occurs in the Stirling Range), a species readily distinguished from *A. imparilis* by its numerous spinescent branchlets, 5-merous flowers, gamosepalous calyx and strongly arcuate to few-coiled pods. Furthermore, the inflorescence structure in *A. ferocior* sets it apart from *A. imparilis*. In *A. ferocior* the solitary peduncles are inserted on a minute raceme axis, the axis is subtended by two small bracts and the peduncle by a larger (commonly cleft) bract. In *A. imparilis* no raceme axis develops. These inflorescence structures, although small, are considered taxonomically important in subg. *Phyllodineae*.

The phyllodes of *A. imparilis* sometimes resemble those of *A. huegelii* Benth. Furthermore, both species have globular, cream heads, axillary peduncles with a solitary basal bract, long stipules, longitudinally nerved pods and longitudinal seeds with a terminal, conical aril. However, *A. huegelii* differs significantly from the new species in its 5-merous flowers which lack a calyx (asepalous flowers are most unusual in *Acacia*). It is further distinguished by its 20–30 flowers per head, 1-nerved petals and phyllodes with the midrib intersecting the upper margin below the prominent cusp (not running into the cusp as in *A. imparilis*).

Acacia improcera Maslin, *sp. nov.*

Frutex effusus 15–40 cm altus. Ramuli teretes, spinescentes, striati, hirtelli. Stipulae 0.5–1 mm longae, persistentes. Phyllodia oblique ovata ad elliptica vel obovata, acuta, apiculata, 3–6 mm longa, 1.5–3.5 mm lata, hirtella; costa vix prominens; nervi laterales absentes vel pauci, obscuri; glans obscura, marginalis, 0.2–0.6 mm supra pulvinam inserta. Inflorescentia racemus reductus, capitulo 1. Pedunculi 2.5–4 mm longi, glabri; capitula globularia, aurea, floribus 9–11. Flores 5-meri. Sepala unita, lobis ciliolatis, cetera glabra. Petala glabra, enervia. Legumen curvatum, inter semina constrictum, ad 3 cm longum, c. 4 mm latum, chartaceum ad coriaceum, glabrum. Semina longitudinalia, ovoidea, c. 3 mm longa, nitentia; arillus porcatus.

Typus: Fields Rd, 11 km north of Rolland Rd, *c.* 50 km due east-north-east of Grass Patch, Western Australia, 14 August 1985, *B.R. Maslin* 5794 (*holo:* PERTH 00776890; *iso:* K).

Spreading, mid-dense *shrub* 15–40 cm tall, to 80 cm wide, dividing at ground level into *c.* 6 spreading to erect main stems. *Branches* terete, striate, white-waxy between the fine ribs, hirtellous, dividing into numerous, short, straight, rigid, patent to inclined, spinescent branchlets. *Stipules* triangular, 0.5–1 mm long, very dark brown, ± persistent. *Phyllodes* obliquely ovate to elliptic or

obovate, 3–6 mm long, 1.5–3.5 mm wide, l:w 1.5–2.5, slightly thickened, hirtellous, green (purplish when young); *midrib* commonly scarcely prominent, central or slightly towards lower margin, extending from pulvinus to apiculum, sometimes a second, less prominent, longitudinal nerve diverging from the pulvinus; lateral nerves absent or few and obscure; *apex* obliquely narrowed into a short, acute, slightly recurved apiculum; *pulvinus c.* 0.5 mm long, terete. *Gland* insignificant, on upper margin of phyllode 0.2–0.6 mm above pulvinus, circular or oblong, *c.* 0.2 mm wide. *Inflorescence* 1 per node, an extremely reduced 1-headed raceme; axis less than 0.5 mm long, subtended by 2 ± triangular, sessile brown bracts 0.2–0.3 mm long and 0.3–0.5 mm wide; *peduncles* 2.5–4 mm long, glabrous, recurved at base when in fruit; *basal peuncular bract* solitary, *c.* 1 mm long and 0.5 mm wide, concave, cleft, fimbriolate otherwise glabrous, dark brown, persistent. *Heads* globular, light golden, 5–6 mm diam. (fresh), *c.* 4 mm diam (dry), 9–11-flowered; *bracteoles c.* 1 mm long, concave, ciliolate, otherwise glabrous or sparsely hairy towards the ± acute apex, brown, subsessile. *Flowers* 5-merous; *calyx* 1/4–1/3 length of corolla, irregularly dissected to *c.* 1/2 its length into triangular, ciliolate lobes, the 2 lobes enclosed by the bracteole shorter and less deeply dissected than the 3 on opposite side; tube brown, glabrous; *petals c.* 1.5 mm long, glabrous, nerveless. *Pod* curved, to 3 cm long, 4 mm wide, rounded over seeds and slightly to prominently constricted between them, firmly chartaceous to thinly coriaceous, glabrous, dark purple-brown, margins inrolled on one side. *Seeds* longitudinal, widely ovoid but obliquely truncate on edge adjacent to aril, 3 mm long, *c.* 2.5 mm wide, turgid (*c.* 2 mm thick), shiny, dark brown except yellow-brown tissue enveloping areole and extending to hilum; *pleurogram* obscure, U-shaped, open at hilar end; *areole c.* 0.5 mm long, *c.* 0.3 mm wide; *funicle* filiform, *c.* 1.5 mm long, straight, reflexed below the flattened, medially ridged aril which extends *c.* 3/4 down one side of seed.

Selected specimens examined. WESTERN AUSTRALIA: E of Ravensthorpe, *K.L. Bradby* 88 (PERTH); Dempster Rd, 1 km S of Bronzewing Rd, *c.* 5 km SW of Mt Ridley, *B.R. Maslin* 5814 (AD, MEL, MEXU, PERTH); Frank Hann National Park, *D. Monk* 054 (PERTH); 3 miles [4.8 km] SE of Ravensthorpe, *K. Newbey* 1615 (PERTH); 20 km WSW of Mt Glasse, Bremer Range, *K. Newbey* 5566 (PERTH); 23 km E of Grass Patch on Logan's Rd, *P. van der Moezel* PGV 296 (PERTH).

Distribution. Occurs in the south-west of Western Australia in discontinuous areas from near Lake King, north-east through Frank Hann National Park to the Bremer Range, east to near Grass Patch and towards Sheoak Hill, and south to near Ravensthorpe.

Habitat. Grows in clay, rocky loam or sand, in transition between heath and shrub mallee.

Phenology. Flowering recorded in July and August; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The specific epithet is from the Latin *procerus* (very tall) with the prefix *im-* (contrary), and refers to the species' small stature.

Affinities. Inflorescence and flower characters suggest that *A. improcera* is related to *A. bidentata* Benth. and its allies, differing in its phyllode shape (phyllodes of *A. bidentata* are inequilaterally obovate to obtriangular-obdeltate). Other useful distinguishing characters are its striate, white-waxy branchlets, light-golden, few-flowered heads, curved legumes and bi-coloured seeds. *Acacia erinacea* Benth. is similar to *A. improcera*, especially in its spinose branchlets and phyllode shape and size, but is distinguished most readily by its glabrous branchlets and phyllodes, 12–22-flowered heads and legume morphology. Although *A. improcera* superficially resembles *A. brachyclada* W. Fitzg. in

phyllode shape and size the two are not closely related. *Acacia brachyclada* differs significantly from *A. improcera* in its resinous branchlets, ebracteate peduncle bases, free sepals, coiled pods and black seeds with aril folded at one end.

Acacia insolita E. Pritz., *Bot. Jahrb. Syst.* 35: 310, fig. 36 (1904). *Type:* Darling Range, Western Australia, August 1901, *E. Pritzel* 1013 (*lecto:* K, *fide* B.R. Maslin, *Nuytsia* 2: 362 (1979); *isolecto:* A, AD, E, G-DC, K, LY, M, MO, NSW, PR, US, W, Z); near Greenbushes, Western Australia, [1901], *L.Diels* 3835 (*paralecto: n.v.*).

Affinities. The taxonomic position of this dwarf species from the forest region of south-west Western Australia is somewhat obscure. It was originally placed in series *Pulchellae* Benth. and retained there even though it has no close relatives in the group (Maslin 1975). Subsequent work by Guinet (1986) on its pollen, seed and seedling characters suggested its retention in this series.

Morphology. Acacia insolita is an unusual species in that, except for subsp. *efoliolata*, the mature plants retain their juvenile bipinnate foliage. The inflorescences commonly occur singly in the axils of phyllodes towards the ends of the branchlets; only infrequently do they arise in the axils of the uppermost bipinnate leaves. Occasionally, typical axillary racemes develop, but false, terminal racemes (resulting from phyllode suppression) are more frequent.

Variation. Since my 1975 revision of the *Pulchellae* (Maslin 1975), specimens of two new taxa from the wheatbelt region have come to my attention. One of these has foliage very similar to *A. insolita* as originally defined (except that its pinnules are involute and recurved) while the other commonly lacks the basal bipinnate foliage on mature plants. Based on their phyllode, inflorescence and pod characters these two taxa are regarded as subspecies of *A. insolita*.

Key to subspecies of *Acacia insolita*

1 Bipinnate leaves conspicuous, persistent on mature plants; phyllodes 1–6 cm long
  2 Pinnules flat, green to grey-green ..... subsp. **insolita**
  2. Pinnules concave, often conduplicate when dry, recurved, ±glaucous ..... subsp. **recurva**
1. Bipinnate leaves absent or very few at base of stems on mature plants; phyllodes (2)3–9(15) cm long ..... subsp. **efoliolata**

Acacia insolita E. Pritz. subsp. **insolita**

Shrub 0.3–0.6 cm high. *Stems* glabrous or pilose, or sometimes the ribs minutely hairy when very young. *Bipinnate leaves* persistent and conspicuous on mature plants; pinna rachis 2–3 cm long; *pinnules* 5–12 pairs, flat, green to grey-green. *Phyllodes* 2–6 cm long, 0.5–2 mm wide, flat; midrib prominent. *Flower heads* creamy yellow to golden. *Pods* 6–7 mm wide, the reticulum obvious (x10 mag.). *Seeds* transverse to oblique, spherical to ellipsoid or obloid.

Selected specimens examined. WESTERN AUSTRALIA: Contine Hill, Dryandra State Forest, *G.J. Keighery* 9326 (PERTH); 11.2 km E of Donnybrook on road to Collie, *B.R. Maslin* 615 (AD, MEL, NSW, PERTH); Nannup, *G.S. McCutcheon* 593 (PERTH).

Distribution. Occurs in the Darling Range from Dwellingup and Marradong south to Nannup and north of Tonebridge, also in the Popanyinning–Narrogin area in the adjacent wheatbelt.

Habitat. Grows in laterite, mainly in eucalypt forest or woodland.

Conservation status. Not under threat.

Acacia insolita subsp. **efoliolata** Maslin, *subsp. nov.*

Folia bipinnata absentia vel pauca ad basin ramulorum; pinnae 5–10 mm longae; para pinnulorum 2 vel 3, subglauca. Phyllodia 3–9 cm longa, 1–4 mm lata, plana; costa prominens. Legumen 4–7 mm latum, nervatione obscura. Semina longitudinalia.

Typus: Pingelly Microwave Repeater Station, Western Australia, 6 August 1981, *B.R. Maslin* 5044 (*holo:* PERTH 00168920; *iso:* CANB, K, NY, PERTH 00616249).

Multi-stemmed *subshrub* 0.4–0.7 m tall with slender, green or dark reddish stems, usually erect but sometimes scrambling through associated low vegetation. Differs from subsp. *insolita* chiefly as follows. *Stems* glabrous or occasionally sparsely appressed-puberulous towards base. *Bipinnate leaves* (on mature plants) absent or rarely a few at base of stems; pinnae 5–10 mm long; *pinnules* 2 or 3 pairs, subglaucous. *Phyllodes* (2)3–9(15) cm long, 1–4 mm wide (rarely to 9 mm); lower phyllodes usually longer than upper ones, flat with a prominent midrib, sometimes ± quadrangular when very narrow. *Heads* mid-golden. *Pod* 4–7 mm wide; reticulum obscure. *Seeds* longitudinal, cubical to obloid or obloid-ellipsoid.

Selected specimens examined. WESTERN AUSTRALIA: Tuttaning Reserve, SE of Pingelly, *A.S. George* 7371 (PERTH); Pingelly Microwave Repeater Station, *A.S. George* 14611 (AD, PERTH); Wandoo Conservation Park, Aug. 1988, *D. Lamont s.n.* (PERTH 00921270); Horne Nature Reserve, 14 km SE of Brookton, *B.J. Lepschi* BJL 2873 & *T.R. Lally* (AD, CANB, MEL, NSW, PERTH); Pingelly Microwave Repeater Station, *B.R. Maslin* 5044A (K, PERTH) and 5044B (PERTH); Pingelly Microwave Repeater Station Reserve, *D. Papenfus* DP 104 (PERTH); Pingelly Microwave Repeater Station, N of Pingelly, 7 & 8 Aug. 1980, *K. Wallace s.n.* (BRI, MEL, NSW, PERTH 00168475).

Distribution. Occurs in the south-west of Western Australia, restricted to the western wheatbelt at Wandoo Reserve (*c.* 65 km north-west of Brookton) through Brookton and south to Tuttaning Reserve (*c.* 25 km south-east of Pingelly).

Habitat. Grows in loam or clay on laterite hills in dense sandplain scrub or Wandoo woodland.

Phenology. Flowering recorded in July and August; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The subspecific epithet is derived from the Latin *foliatus* (provided with leaves) with the prefix *e-* (without, lacking), in reference to the typical absence of bipinnate leaves in the subspecies.

Variation. One specimen from Tuttaning Reserve (*J. Kelsall* 45, PERTH), is atypical in having the lower phyllodes up to 9 mm wide.

Notes. Because of its non-persistent bipinnate foliage this subspecies is often not readily recognized as belonging to *A. insolita*. It is sometimes confused with *A. flagelliformis* Court which has racemose inflorescences, 6–9-flowered heads, a nerveless corolla and no bracteoles.

Acacia insolita subsp. **recurva** Maslin, *subsp. nov.*

Foliorum bipinnatorum pinnulae vadose concavae (exsiccatae conduplicatae), recurvae, glaucae. Phyllodia 10–30 mm longa, 1–1.5 mm lata, crassa; costa non prominens. Legumen 5–6 mm latum. Semina transversalia.

Typus: East Yornaning Nature Reserve, Western Australia [precise locality witheld for conservation reasons], 4 September 1986, *K.J. Atkins* 86091 (*holo:* PERTH 00775991; *iso:* CANB, K).

Shrub 0.6–1.2 m tall, dividing at ground level into many slender, spreading to erect branches. Differs from subsp. *insolita* chiefly in the following ways. *Stems* pubescent, glabrescent. *Pinnules* shallowly concave but commonly conduplicate when dry, recurved, ± glaucous. *Phyllodes* 10–30 mm long, 1–1.5 mm wide, flat to compressed, thick, midrib not prominent (seemingly absent on very narrow phyllodes which instead have a shallow medial groove running their entire length). *Heads* apparently golden. *Pod* 5–6 mm wide. *Seeds* transverse, cubic to obloid.

Other specimens examined. WESTERN AUSTRALIA, all from East Yornaning Nature Reserve [precise localities witheld for conservation reasons]: *K. Atkins* 98404 (PERTH); 15 Nov. 1986, *K. Atkins s.n.* (CANB, PERTH 00798134); 17 Dec. 1986, *K. Atkins s.n.* (K, PERTH 00798126); *B.R. Maslin* 6322 (G, MEL, NSW, PERTH); *D. Papenfus* DP 160 (PERTH).

Distribution. Occurs in the south-west of Western Australia, known only from East Yornaning Nature Reserve.

Habitat. Grows in stony sandy clay on laterite ridge in low *Eucalyptus wandoo* woodland with tall *Dryandra sessilis*.

Phenology. The few specimens to hand show the flowering period as ending in early September and pods with mature seeds present in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The subspecific epithet is derived from the Latin *recurvus*, in reference to the pinnules.

Acacia lanceolata Maslin, *sp. nov.*

Frutex aculeatus ad 1 m altus. Ramuli divaricati, teretes, spinescentes, hirtelli vel pilosi. Stipulae 1.5–2 mm longae, caducae vel persistentes. Phyllodia inaequaliter vel dimidiate lanceolata vel anguste elliptica, pungentia, 7–13 mm longa, 1.5–4 mm lata, glabra vel parce hirsutella; costa centralis vel versus marginem abaxialem inserta; glans absens, vel marginalis, 4–7 mm supra pulvinam inserta. Inflorescentia racemus reductus capitulo 1. Pedunculi 3–8 mm longi, glabri; capitula globularia vel oblongoidea, aurea, floribus 20–23. Flores 5-meri. Sepala unita, lobis ciliolatis, cetera glabra. Petala glabra, tenuiter 1-nervia. Legumen spiralia, moniliformia, ad 17 mm longum, c. 10 mm latum, chartacea, glabra. Semina longitudinalia, obloideo-ellipsoidea, c. 4 mm longa; arillus clavatus.

Typus: Three Springs, Western Australia, September 1940, *W.E. Blackall* 4881 (*holo:* PERTH 01167162; *iso:* PERTH 00106941).

Harsh *shrub* to 1 m tall, open or sub-open, craggy, spreading, single-stemmed or with 2 or 3 main stems arising from ground level, much-branched in upper 1/2 of plant; branches ending in numerous short, straight, divaricate, somewhat spinescent branchlets. *Bark* medium grey, smooth or slightly roughened extending to branchlets. *New shoots* commonly initiated at anthesis, brick red when young. *Branchlets* terete, apically obscurely ribbed, moderately hirtellous to densely shortly pilose (hairs soft, patent, ± straight, 0.2–0.5 mm long, normally tubercle-based), slightly to moderately pruinose at extremities (pruinosity commonly obscured when the indumentum is dense), indumentum commonly sparser and pruinosity absent on mature branchlets. *Stipules* caducous or persistent, narrowly triangular to linear-triangular, 1.5–2 mm long, scarious, glabrous or sparsely ciliolate, dark brown, conspicuous on very young new shoots where those at the base are connate. *Phyllodes* inaequilateral and commonly dimidiate, 7–15 mm long, 1.5–4 mm wide, l:w 2–6, (upper margin slightly angled at the gland and more convex than the straight to very shallowly sigmoid or very shallowly convex lower margin), lanceolate to sometimes narrowly elliptic, acuminate, broadest at or below middle and tapering to a straight, rigid, subulate, slender, dark brown cusp which is 1–1.5 mm long, rigid, patent to inclined, straight to very slightly recurved-arcuate, flat, glabrous to sparsely hirsutellous (indumentum as on branchlets but hairs shorter, sparser and frequently somewhat antrorse), medium to dark green, base unequal; *principal nerve* central or slightly closer to lower margin, extending from pulvinus to cusp, slightly raised when dry, either pale yellow or more normally the same colour as the lamina and sometimes with a few minor lateral nerves diverging from it; *minor nerves* (arising at pulvinus) obscure to very obscure and commonly slightly anastomosing, normally with 1 minor nerve on lower side of principal nerve and extending almost to the cusp, normally 2 minor nerves on upper side of principal nerve with 1 extending to the gland and the other almost to the cusp; margins not thickened; *pulvinus* 0.3–0.5 mm long, yellow, slightly dilated at base. *Gland* sometimes absent from some phyllodes, obliquely situated on upper margin (which is usually slightly angled at the gland) near middle of phyllode (4–7 mm above pulvinus), circular, 0.2–0.3 mm diam. *Inflorescence* 1 per node, an extremely reduced 1–headed raceme; axis less than 0.5 mm long, commonly growing out at anthesis, 2 bracts at base of axis persistent, very widely ovate, *c.* 0.8 mm long, concave, thickened and yellowish on lower 1/2, dark brown on upper 1/2, minutely fimbriate otherwise glabrous; *peduncles* 3–8 mm long, glabrous to glabrescent, recurved in fruit; *basal peduncular bracts* persistent, 2, free or occasionally joined for *c.* 1/4 their length, asymmetrically triangular, *c.* 1.5 mm long (clearly exceeding the 2 smaller inflorescence bracts), dark brown, scarious, shallowly concave, minutely fimbriate in part, otherwise glabrous, sessile. *Heads* globular to shortly obloid, 5–6 mm long (when dry), 20–23-flowered, golden; *bracteoles* scarious, the claw *c.* 0.5 mm long and wide, expanded into ovate to very widely ovate, concave, inflexed, brown, rounded or sometimes very shortly acuminate lamina 1–1.5 mm long, 1–1.3 mm wide, glabrous or glabrescent except minutely fimbriate margins. *Flowers* 5-merous; *calyx* *c.* 1/2 length of corolla, gamosepalous, membranous, divided for 1/5–1/4 its length into oblong and rounded or broadly triangular, moderately inflexed, minutely ciliolate lobes; calyx tube glabrous to glabrescent; *petals* 1.5–2 mm long, connate for *c.* 1/2 their length, oblanceolate, abruptly narrowed and inflexed at apex, glabrous, rather finely 1-nerved. *Pod* rather tightly and a little irregularly coiled and ± moniliform, to 17 mm long and 10 mm wide in contorted state, valves 4 mm wide across seeds, with up to 10 seeds per pod, declinate due to fruiting peduncles recurved at base, firmly chartaceous, not reticulate, glabrous, light brown, abruptly narrowed at both ends; margins hardly thickened. *Seeds* (spirit material) longitudinal and facing apex of pod, obloid–ellipsoid but obliquely truncate along margin adjacent to aril, *c.* 4 mm long and 2.5 mm wide, turgid (2 mm thick); *pleurogram* U-shaped, open at hilar end; *areole c.* 0.5 mm long and 0.3 mm wide; *funicle c.* 2 mm long and ± filiform, reflexed below and expanded into a clavate aril which is laterally positioned (facing adaxial suture) and extending *c.* 2/3 down one side of the seed.

Selected specimens examined. WESTERN AUSTRALIA: 15.5 miles [24.8 km] from Mingenew on road to Morawa, *I.B. Armitage* 344 (PERTH); 6.9 miles [11 km] N of Three Springs towards Mingenew, *R. Cumming* 2158 (PERTH); 6 miles [9.6 km] N of Three Springs, *B.R. Maslin* 55 (PERTH); 11 km N of Three Springs on The Midlands Rd, *B.R. Maslin* 5487 (BRI, K, PERTH); about 24 km E of Mingenew, on 'Ebano' farm, *B.R. Maslin* 6242 (PERTH) 26.5 km E of Mingenew on road to Morawa, *B.R. Maslin* 6244 (PERTH); 6 km due NE of Arrino, Simpson Rd, 1.6 km E of Dudawa Rd, *B.R. Maslin* 6589 (PERTH); Mingenew–Morawa road at 4.9 km E of intersection with road from Yandanooka, *S. Patrick* SP 1916 & *A. Brown* (PERTH).

Distribution. Occurs in the south-west of Western Australia, restricted in the northern central wheatbelt to the Three Springs–Mingenew area.

Habitat. Grows in loam on low, lateritic hills in eucalypt woodland or *Allocasuarina* tall shrubland with sclerophyllous understorey.

Phenology. Flowering recorded in August and September; mature pods collected in late November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. From the Latin *lanceolatus* (lance-shaped) in reference to the typical phyllode shape.

Affinities. Acacia lanceolata is member of the *A. pravifolia* group (*fide* Maslin, in press) and is closely related to *A. amblygona* A. Cunn. ex Benth., which has non-spinose, non-pruinose branchlets, phyllodes with the midrib near the lower margin and the gland closer to the base, and curved to openly coiled pods.

Note. Judging from an un-numbered specimen collected by W.V. Fitzgerald from Arrino which is lodged at herb. NSW, it is probable that the taxon described as *A. scabra* Benth. by Fitzgerald (1904: 47) is in fact *A. lanceolata.*

Acacia laricina Meisn. *in* J.G.C.Lehmann, Pl. Preiss. 1: 6 (1844). *Type:* interior of south-west Western Australia, October 1840, *L. Preiss* 973 (*lecto:* NY, *fide* B.R. Maslin & R.S. Cowan 1994a: 407; *isolecto:* C, FI, G, GOET, HBG, L, LD, M, MEL, P, PERTH 02484595 – fragment ex MEL, STR).

Dense, spreading, ± domed *shrub*, normally to *c.* 0.5 m tall and 0.6–0.9 m wide, the peripheral branches prostrate or almost so. *Branches* sparingly divided, slender or thick, terete, apically densely antrorsely pubescent to tomentose, variably pruinose. *Stipules* narrowly triangular to setaceous, erect, 3–6 mm long, ultimately falling. *Phyllodes* continuous with branch but not forming a cauline wing, linear, 5-gonous (i.e. pentagonal with a prominent nerve along each angle but sulcate between nerves when dry), 1.5–4(5) cm long, 0.7–1.7 mm wide, rather rigid and crowded, ascending, straight to shallowly incurved or recurved, glabrous to sparsely puberulous, asymmetrically narrowed (either gradually or abruptly) into a rigid cusp. *Inflorescence* simple; *peduncles* solitary, (3)7–20 mm long, antrorsely pubescent. *Heads* globular, very pale yellow, 17–30-flowered. *Flowers* 5-merous; *sepals* united for 1/3–1/2 their length; *petals* 1-nerved or nerveless. *Pod* terete to subterete, constricted or not between seeds, to 4.5 cm long, 2–4 mm wide, thinly coriaceous, coarsely striate, red-brown. *Seeds* (seen only for var. *laricina*) longitudinal, obloid to obloid-ellipsoid, 3.5–4 mm long, 2.3–2.7 mm wide, brown, subshiny, pusticulate; aril ± conical.

Distribution. Occurs in the south-west of Western Australia between Dumbleyung, Frankland (*c.* 60 km north-west of Mount Barker) and near the Oldfield River (*c.* 40 km east of Ravensthorpe).

Affinities. *Acacia laricina* is closely related to *A. cedroides* Heward ex Benth. which is readily distinguished by its verticillate phyllodes. It is also related to *A. rhamphophylla*, and its phyllodes sometimes resemble those of *A. barbinervis* subsp. *borealis* and *A. ataxiphylla* subsp. *ataxiphylla* (see under these three taxa elsewhere in this paper for discussion of differences).

Varieties. Because individuals from the Ravensthorpe Range area, compared to those found elsewhere, are somewhat larger and coarser in vegetative features but diminutive in certain floral and pod attributes, it seems appropriate to recognise two varieties within the species. Two specimens collected from the area between the ranges of the two varieties seem intermediate in some characters. The two specimens are: 2.5 km NNW of Pabelup Lake, Fitzgerald River National Park, *K. Newbey* 3882 (PERTH); between Lake Magenta and the Jerramungup–Ravensthorpe road, *M.H. Simmons* 660 (PERTH).

Key to varieties of *Acacia laricina*

Phyllodes smooth, shallowly recurved; peduncle 10–20 mm long; pods *c.* 4 mm wide ..... var. **laricina**

Phyllodes scabridulous, straight to shallowly incurved; peduncles mostly 3–10 mm long; pods *c.* 2 mm wide ..... var. **crassifolia**

Acacia laricina Meisn. var. **laricina**

Branches rather slender. *Phyllodes* rather slender, 15–35(50) mm long, 0.7–1(1.5) mm wide, mostly shallowly recurved, smooth, glabrous or with a sprinkling of hairs, abruptly narrowed into a slender cusp. *Peduncles* 10–20 mm long. *Heads* 20–30-flowered. *Petals* 1-nerved. *Pod* to 4.5 cm long, *c.* 4 mm wide, normally constricted between seeds. *Seeds* as in species description.

Selected specimens examined. WESTERN AUSTRALIA: Pingrup–Borden road, 130 km N of Albany, *A.M. Ashby* 5090 (AD, PERTH); between Dumbleyung and Lake Grace, *W.E. Blackall* 3161 (PERTH); 22.7 km due SE of Muckinwobert Rock, *M.A. Burgman* MAB2707 & *S. McNee* (PERTH); 57 km from Albany towards Borden on Chester Pass Rd, *E.M. Canning* WA/68 6826 (CANB, PERTH); E side of Cranbrook, *R.J. Cumming* 1036 (PERTH); S of Red Gum Pass, *A.S. George* 6473 (PERTH); 46 km S of Kojonup towards Rocky Gully, *B.R. Maslin* 3994 (MEL, PERTH); 13 miles [20.8 km] NW of Ongerup, *K. Newbey* 3016 (PERTH); 10 miles [16 km] S of Tunney, *R.D. Royce* 8062 (PERTH); Cranbrook, *J. Slater* 54 (K, PERTH).

Distribution. Occurs in the south-west of Western Australia scattered throughout the south-central wheatbelt from near Dumbleyung south to Frankland and east to near Ravensthorpe including the Stirling Range and Fitzgerald River National Parks and Dunn Rock Nature Reserve.

Habitat. Usually grows on gravelly sand in eucalypt woodland or low shrubland.

Phenology. Flowering recorded from September to December; mature pods collected in October and also in December when the specimen has been in flower.

Conservation status. Not under threat.

Variation. A variant from near the Oldfield River, *c.* 40 km east of Ravensthorpe, is characterized by rather thick phyllodes (1.5 mm wide) and up to 5 cm long, e.g. 22.7 km due SE of Muckinwobert Rock, *M.A.Burgman* 2707 & *S.McNee* (PERTH).

Acacia laricina var. **crassifolia** Maslin, *var. nov.*

A varietate typica imprimis characteribus sequentibus differt: Rami principales crassi. Phyllodia crassa, grossa, 2.8–4.2 cm longa, 1–1.7 mm lata, recta ad levissime incurva, laevia vel scabridula, in cuspidem rigidam subsensim attenuata. Pedunculi 7–10 mm, raro 3 mm, longi. Capitula 17–21-flora. Petala enervia. Legumen (valvae delapsae tantum visae) ad 3 cm longum, 2 mm latum, inter semina non constrictum. Semina non visa.

Typus: Mt Desmond, 9.8 km south [east] of Ravensthorpe, Western Australia, 9 October 1975, *B.R. Maslin* 3902 (*holo:* PERTH 00762121; *iso:* CANB).

Differs from the typical variety principally in the following ways. Main *branches* thick. *Phyllodes* thick, coarse, 28–42 mm long, 1–1.7 mm wide, straight to very shallowly incurved, scabridulous, glabrous to sparsely puberulous, rather gradually narrowed into a rigid cusp. *Peduncles* 7–10 mm long, rarely 3 mm. *Heads* 17–21-flowered. *Petals* nerveless. *Pod* (only dehisced valves seen) to 3 cm long, 2 mm wide, not constricted between seeds. *Seeds* not seen.

Selected specimens examined. WESTERN AUSTRALIA: E of Kundip, *K.L. Bradby* 87 (PERTH); Mt Desmond, *C.A. Gardner* 13693 (PERTH); Mt Short, N of Ravensthorpe, *A.S. George* 5713 (PERTH); Ravensthorpe Range, near Kundip, *c.* 18 km S of Ravensthorpe, *B.R. Maslin* 4783 (PERTH); Ravensthorpe Range, 2 km NE of Kundip, *K. Newbey* 9525A-1 (MELU, PERTH); Kundip mine Rd, (S of Ravensthorpe), *M.H. Simmons* 1374 (PERTH).

Distribution. Occurs in the south-west of Western Australia, restricted to the Ravensthorpe Range where it occurs from Mt Short south to Kundip.

Habitat. Grows in well-drained loamy sand or sand over clay on rocky ridges in open shrub mallee or very open shrub mallee.

Phenology. Flowering recorded from September to November; dehisced pods have been collected early December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The varietal epithet is derived from the Latin *crassus* (thick) and *folium* (a leaf), in reference to the coarse phyllodes which distinguish the variety from var. *laricina*.

Acacia leptalea Maslin, *sp. nov.*

Frutex ad 2 m altus. Ramuli teretes, pilosi. Stipulae 0. Phyllodia conferta, teretia vel parum compressa, oblique obtusa sed minute mucronata, 5–8 mm longa, 0.3–0.4 mm lata, parce pilosa; nervation obscura; glans ut videtur absens. Inflorescentia racemus reductus capitulis 1 vel 2. Pedunculi

3–4 mm longi, puberuli; capitula globularia, floribus c. 25. Flores 5-meri. Sepala unita, puberula. Petala appresso-puberula, enervia. Legumen anguste oblongum, ad 25 mm longum, 4–5 mm latum, chartaceum vel coriaceum, pilosum, parum viscidum. Semina longitudinalia, ovoidea, 3–3.5 mm longa, ± nitentia; arillus clavatus.

Typus: Nyabing area [precise locality withheld for conservation reasons], Western Australia, 21 July 1989, *B.R. Maslin* 6349 & *V. Maslin* (*holo:* PERTH 01001027; *iso:* BM, BRI, CANB, G, K, MEL, MO, NSW, NY, Z).

Dense, rounded *shrub* 0.5–2 m tall, to about 2 m across, branching at ground level *Bark* dark grey, roughened towards base of main stems, otherwise smooth. *Branchlets* terete, very obscurely ribbed, shortly pilose, the raised leaf bases prominent on older parts where phyllodes have fallen. *Stipules* absent. *Phyllodes* terete or slightly compressed, 5–8 mm long, 0.3–0.4 mm wide, rather crowded, some sub-verticillate (although commonly obliquely so), some scattered, patent (except erect on new shoots), ± straight or sometimes slightly recurved, slender, very finely wrinkled when dry, glabrous or sparsely pilose; *nervature* superficially not discernable; *apex* obliquely narrowed to a minute yet distinct excentric mucro; *pulvinus* minute (*c.* 0.3 mm long) yet distinct (at ´10 mag.). *Gland* seemingly absent. *Inflorescence* an extremely reduced, 1(2)-headed raceme; axis 0.5–1 mm long, ebracteate at base, terminated by a vegetative bud; *peduncles* 3–4 mm long, densely puberulous, hairs pale yellow; *basal peduncular bract* solitary, persistent, scarious, *c.* 1 mm long, glabrous, light brown. *Heads* globular to very slightly obloid, 4 mm diam. (dry), 25-flowered, golden; *bracteoles c.* 2 mm long, acuminate and slightly exserted in mature buds; base auriculate, puberulous, otherwise ± glabrous; claw *c.* 0.5 mm long. *Flowers* 5-merous; *calyx* 3/5 length of corolla, gamosepalous, dissected for 1/4–1/2 its length, densely puberulous; hairs pale yellow except silvery at apices of lobes; *petals* 1.5–2 mm long, free, nerves not evident, appressed-puberulous on upper 1/3–1/2 with pale yellow hairs, or glabrous. *Pod* narrowly oblong, to 25 mm long, 4–5 mm wide, firmly chartaceous to thinly coriaceous, sparsely to moderately pilose with pale yellow or white hairs, slightly viscid, brown; dehisced valves curved to sigmoid. *Seeds* longitudinal, ovoid, 3–3.5 mm long, 2 mm wide, compressed (1 mm thick), brown, moderately shiny; *pleurogram* very obscure, open at hilar end; *areole c.* 1 mm long, 0.5 mm wide; *funicle* not seen; aril subterminal, ± clavate, *c.* 2 mm long, extending 1/3–1/2 down one side of seed.

Other specimens examined. WESTERN AUSTRALIA, Nyabing area [precise localities witheld for conservation reasons]: *M.S. Graham* 245 (PERTH); *B.R. Maslin* 6350 (PERTH); *K. Newbey* 3399 (PERTH).

Distribution. Occurs in the south-west of Western Australia, known only from the Nyabing area.

Habitat. Grows in sand or sandy loam in open mallee woodland with a dense understorey.

Phenology. Flowering recorded for June and July, possibly extending to August. The single fruiting specimen to hand is undated.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The specific epithet is taken from the Greek *leptaleos* (thin, delicate), in reference to the phyllodes.

Common name. Chinocup Wattle.

Affinities. Appears most closely related to *A. viscifolia* Maiden & Blakely, a member of the *A. wilhelmiana* group (see Maslin 1990), which is distinguished most readily by its sparse, appressed peduncle indumentum, small bracteoles that are not acuminate or exserted in buds and narrower, glabrous pods; *A. viscifolia* also normally has appressed branchlet hairs.

Acacia lullfitziorum Maslin, *sp. nov.*

Frutex effusus vel prostratus, 0.2–0.7 m altus, ad 2 m latus. Ramuli divaricati, teretes, spinescentes, glabri vel minute pubescentes. Stipulae 1–2.5 mm longae, persistentes. Phyllodia interdum ± fasciculata, oblonga ad elliptica, interdum ovata vel obovata, obtusa, minute mucronulata, 5–10 mm longa, 2–4 mm lata, tenuia; nervi obscuri; glans 1–2 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi 5–10 mm longi, glabri; capitula globularia vel obloidea, aurea, floribus 15–20. Flores 4- vel 5-meri. Sepala libera, membranacea. Petala enervia. Legumen teres, curvatum, ad 30 mm longum, c. 2 mm latum, coriaceum vel crustaceum, longitudinaliter reticulatum, glabrum. Semina longitudinalia, 2.5–3 mm longa; arillus crassus, flavescens.

Typus: near Arthur River crossing, Narrogin–Katanning road, Western Australia, 27 August 1975, *B.R. Maslin* 3761 (*holo:* PERTH 00174688; *iso:* CANB, K, MEL, NSW, NY).

Spreading *shrub* 0.2–0.7 m tall and to 2 m wide, commonly forming low-domed, ± prostrate mats. *Bark* light grey. *Branches* terete, ribs absent or obscure, glabrous or minutely hairy (hairs spreading to subappressed, 0.1–0.3(0.4) mm long, usually antrorsely shallowly curved or hooked), the grey-white epidermis commonly longitudinally fissured with age, dark red-brown beneath, dividing into numerous, short, ± straight, divaricate, rigid, spinescent branchlets which are sometimes devoid of phyllodes. *Stipules* narrowly triangular to linear-triangular, 1–2.5 mm long, scarious, straight, brown, persistent. *Phyllodes* sometimes occurring in ± nodose fascicles of 2–5, commonly oblong to elliptic, sometimes ovate or obovate, commonly some asymmetric with upper margin ± straight and lower margin convex, 5–10(13) mm long, 2–4(6.5) mm wide, l:w 2–3.5(4.5), thin, commonly at least a few deflexed, ± straight, glabrous or (especially when young) minutely appressed-hairy on margins, green; *midrib* not prominent; lateral nerves obscure; *apex* obtuse, often minutely mucronulate, mucro central or excentric; *pulvinus c.* 0.5 mm long. *Gland* insignificant, 1–2 mm above pulvinus, 0.2–0.3 mm long. *Inflorescence* simple; *peduncles* 1 or 2 per node, (3)5–10 mm long, glabrous, infrequently with sparse, antrorsely hooked hairs; base ebracteate; *bract* 1/3–2/3 along peduncle, subpersistent, ovate to triangular, 0.5–1 mm long, erect, shallowly concave, glabrous. *Heads* globular to shortly obloid, golden, 3–4.5 mm diam., 15–20-flowered; *bracteoles* membranous, usually spathulate, *c.* 1 mm long, glabrous; lamina ovate, concave, acute or obtuse, longer than or equalling the narrowly oblong claws, not or scarcely evident between flowers in young buds. *Flowers* 4- or 5-merous, glabrous; *sepals* 1/2–2/5 length of petals, free, infrequently some irregularly united, narrowly spathulate or narrowly oblong, membranous, diaphanous; *petals* 1.5–1.7 mm long, nerveless. *Pod* terete, scarcely constricted between seeds, to 30 mm long, 2 mm wide, arcuate, thinly coriaceous–crustaceous, longitudinally reticulate, glabrous, red-brown; interior of valve with a pale stripe (*c.* 0.7 mm wide) along midline, marginal nerves narrow, not thickened. *Seeds* longitudinal, obloid to slightly ellipsoid or ovoid, 2.5–3 mm long, *c.* 2 mm wide, *c.* 1 mm thick, dark brown to black and shiny except centre which is yellowish and dull; *pleurogram* obscure, U-shaped, open at hilar end; *areole* 0.2–0.4 mm long and *c.* 0.3 mm wide; *funicle* filiform; aril thick, terminal, yellowish and somewhat convoluted when dry.

Selected specimens examined. WESTERN AUSTRALIA: near Cranbrook golf course, *A.M. Ashby* 4609 (AD, K, PERTH); *c.* 14 miles [22.5 km] N of Badgingarra, *A.S. George* 6728 (PERTH); near Mortlock River, 9 km SW of Goomalling, *A.S. George* 15742 (PERTH); 3 km W of Kojaneerup Springs Rd from

Quarderwarderup Lake, Stirling Range, *G.J. Keighery* 8385 (PERTH); 12 miles [19 km] W of Ongerup, *K. Newbey* 864 (PERTH); 4 km NE of Moir Hill, *K. Newbey* 4233 (BRI, CANB, NY, PERTH); Red Gum Pass, Stirling Range, 17 Sep. 1960, *L. Steenbohm s.n.* (PERTH 00174726); Beaufort River, *E. Wittwer* W1548 (PERTH).

Distribution. Occurs in the south-west of Western Australia, mainly from south-west of Arthur River south to near Cranbrook, and east to the eastern boundary of the Stirling Range National Park and Ongerup. Also two populations to the north from near the Mortlock River south-west of Goomalling, and north of Badgingarra.

Habitat. Grows in clay, sand or gravelly loam, usually in Wandoo woodland, but also in *Acacia acuminata–Allocasuarina* tall shrubland.

Phenology. Flowering recorded from August to October, one flowering specimen collected in June. The date of collection for the single fruiting specimen seen is unknown.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The species is named for Fred Lullfitz (1914–1983) and his nephew George Lullfitz, both of whom have been instrumental in popularising the cultivation of Western Australia's native flora.

Cultivation. Recently introduced [as *A. congesta*] into cultivation by George Lullfitz. Although the species has potential as a ground cover it does not survive well on the deep sandy soil of the Perth metropolitan area.

Affinities. This species has until now often been erroneously called *A. congesta* Benth. This confusion seems to have arisen from the mistaken belief that the unnumbered Drummond collection cited above was the type of *A. congesta*. The new species is readily distinguished from *A. congesta* which is a taller shrub (to 2.5 m) with pungent phyllodes and 30–70 flowers per head.

Variation. A number of specimens at the southern end of the geographic range of *A. lullfitziorum* are tentatively referred to this species, but this assemblage requires further study for its full resolution. These specimens are not encompassed by the above description; they differ most obviously from typical representatives of the species in having very few or no short, divaricate spinescent branchlets. Other differences include the following:

1. Peduncles 10–20 mm long, bracteoles slightly exserted in young buds, phyllodes sometimes obviously incurved. Specimens examined (all flowering): south-west Australia, *J. Drummond s.n.* (K, annotated *A. scabra* by Bentham) and 34 (MEL); cultivated, Furner, South Australia, *W.R. Elliot* 1618 (PERTH); 21 km N of Frankland on Kojonup Rd, *A.S. George* 15255 (PERTH).

2. Peduncles 35–45 mm long, bracteoles slightly exserted in young buds, phyllodes 15–30 mm long. Specimen examined (in flower): Fairfield Rd, SSW of Katanning, *A.S. George* 11063 (PERTH).

3. Phyllodes 3–6 x 1.5–2 mm, pods (few seen, slightly immature) rounded over and moderately constricted between seeds, not longitudinally reticulate. Specimens examined: 7 miles [11 km] S of Toompup, *K. Newbey* 930 (PERTH, in flower); 11 miles [17.5 km] SE of Ongerup, *K. Newbey* 1508 (PERTH, in fruit) and 1794 (PERTH in flower); 25 km SE of Ongerup, *K. Newbey* 4319 (PERTH, in flower).

Acacia mutabilis Maslin, *sp. nov.*

Frutex ad 2 m altus et 2.5 m latus. Ramuli teretes, parum flexuosi, glabri vel axillis incanis. Stipulae 0.5–5 mm longae, caducae vel persistentes. Phyllodia plerumque linearia ad oblanceolata, interdum obovata vel anguste oblonga vel elliptica, interdum subteretia vel pentagona, acuta ad obtusa, mucronata, 1.5–6 cm longa, 1–8 mm lata, coriacea, laevia; costa prominens; glans marginalis, 1–15 mm supra pulvinam inserta. Inflorescentia racemus reductus capitulis (1)2(3). Pedunculi 3–18 mm longi, glabri, raro strigulosi; capitula globularia, aurea, floribus 16–32. Flores 5-meri. Sepala libera, glabra vel puberula. Petala glabra, plerumque enervia. Legumen teres, vulgo parum moniliforme, ad 7 cm longum, 2–3 mm latum, coriaceum, glabrum vel parum strigulosum. Semina longitudinalia, obloidea, 3–4 mm longa; arillus conicus.

Typus: east of Scaddan, Western Australia, 7 August 1970, *K.M. Allan* 355 (*holo:* PERTH 05168511; iso: CANB, K, PERTH 00162264).

Shrub 0.3–2 m tall, spreading or domed and to 2.5(4.5) m across, single- or multi-stemmed. *Bark* grey to brownish grey, smooth but sometimes roughened at base of stems. *New shoots* usually glabrous to subglabrous, sometimes densely appressed-hairy when young (hairs pale yellow and white). *Branchlets* terete, slightly angled at extremities, obscurely ribbed, usually slightly flexuose, glabrous or more commonly hoary in phyllode axils, rarely sparsely strigulose towards branchlet apices, with short, white, straight, appressed hairs, commonly light brownish at apices but with maturity often invested with a white-grey cortex. *Stipules* usually triangular to narrowly triangular, 0.5–5 mm long, 0.2–0.7 mm wide, caducous or persistent. *Phyllodes* variable in shape and size, frequently linear to oblanceolate but ranging to obovate or narrowly oblong to narrowly elliptic, (1)1.5–5.5(6) cm long, 1–8 mm wide (larger on regrowth specimens), l:w 3–30(35), coriaceous, commonly rather thick and somewhat rigid, smooth, rather spreading to erect, straight to incurved or shallowly recurved, flat, infrequently subterete to obtusely pentagonal in T.S., glabrous (except pulvinus), dull or slightly shiny, green or grey-green, sometimes glaucescent in subsp. *angustifolia*; *midrib* prominent when dry, very rarely 1 or 2 minor nerves arising near pulvinus and subparallel to midrib; abaxial margin 1-nerved; adaxial margin 2-nerved but not thick as in *A. barbinervis*, *A. unifissilis* etc., the nerves frequently coalescing above gland but in subsp. *angustifolia* remaining separate to apex, rarely joined; 1-nerved on each lateral face; secondary nerves (diverging from lateral nerves i.e. midrib) absent or obscure; *apex* acute to obtuse, mucronate, the mucro short, hard (commonly coarsely pungent), straight to shallowly incurved and central or excentric (occasionally lateral to sublateral); *pulvinus* 0.5–1 mm long, usually appressed-hairy adaxially. *Gland* rarely absent, situated 1–15 mm above pulvinus on adaxial margin of phyllode between the 2 nerves and commonly not far below their coalescence, (circular) oblong–elliptic, 0.4–1 mm long, 0.2–0.5 mm wide, margin sometimes slightly indented. *Inflorescences* usually extremely reduced racemes with (1)2(3) head; axis < 0.5–1 mm long, commonly terminated by a vegetative bud which occasionally grows out at anthesis, sometimes absent; *peduncles* 3–14(18) mm long, glabrous, occasionally sparsely strigulose, ± patent (sometimes ascending or reclined) in fruit; *basal peduncular bract* navicular, cucullate, 1–2 mm long, usually caducous, occasionally persisting to anthesis. *Heads* globular, bright light- to mid-golden, 5–9 mm diam. at anthesis (fresh), 4–5 mm diam. (dry), 16–32-flowered; *bracteoles* present or absent, linear to narrowly spathulate and resembling sepals, occasionally (subsp. *rhynchophylla*) spathulate; lamina *c.* 0.5 mm wide. *Flowers* 5-merous; *sepals* free, 1/2–2/5 length of petals, linear to narrowly oblong but usually slightly expanded at apex, subglabrous to moderately puberulous; *apex* slightly inflexed, acute, sometimes brown; *petals* 1.2–2 mm long, glabrous, margins sometimes granulose towards apex, nerveless or obscurely 1-nerved. *Pod* (not seen for subsp. *rhynchophylla*) to 7 cm long, 2–3 mm wide, thinly coriaceous, curved to once coiled, terete to subterete, commonly slightly constricted between seeds especially along internal suture, sometimes very obscurely longitudinally nerved, glabrous or sparsely strigulose, black,

infrequently dark grey-brown, marginal nerve not thickened. *Seeds* (not seen for subsp. *angustifolia* or *rhynchophylla*) longitudinal in pod, obloid, infrequently ellipsoid, 3–4(5) mm long, 1.5–2 mm wide, black, shiny; *pleurogram* obscure, open at hilar end; *areole* 1–2(3) mm long, *c.* 0.5 mm wide; *funicle* filiform, *c.* 1 mm long, abruptly expanded into a conical, non-convoluted, terminal aril 1.5–3 mm long that dries white or dull yellow.

Distribution. Occurs in south-west and southern Western Australia from Gnowangerup east to the western extremity of South Australia near Eucla.

Affinities. Allied most closely with *A. halliana*, *A. merrallii* F. Muell. and *A. nitidula* Benth. in the *A. sulcata* group (see Cowan & Maslin 1993).

Subspecies. Very variable in phyllode morphology with five subspecies recognized, based mostly on phyllode shape and proportions, stipule persistence and peduncle length.

Key to subspecies of *Acacia mutabilis*

1 Phyllodes 1–2 mm wide, subterete to obtusely pentagonal, rarely flat ..... subsp. **angustifolia**
1. Phyllodes 3–8 mm wide, flat
2 Phyllodes obtuse, excentrically rostriform (mucro lateral to sublateral) ..... subsp. **rhynchophylla**
2. Phyllodes acute or obtuse, often excentrically narrowed at apex but mucro not lateral or sublateral
3 Phyllodes distinctly incurved; gland 1–5 mm above pulvinus; peduncles 3–6 mm long ..... subsp. **incurva**
3. Phyllodes straight to shallowly recurved, or if shallowly incurved then gland further from pulvinus and/or peduncles longer
4 Stipules persistent, 2–3 mm long, 0.5–0.7 mm wide ..... subsp. **stipulifera**
4. Stipules caducous or if persistent (rare), then *c.* 1 mm long and 0.2–0.3 mm wide ..... subsp. **mutabilis**

Acacia mutabilis Maslin subsp. **mutabilis**

Dense to mid-dense *shrub*, ± rounded to somewhat obconic, spreading, 0.3–1.2(2) m tall, 0.4–2 m wide, multi-stemmed or sparingly branched near ground level, rarely single-stemmed. *Stipules* narrowly triangular, *c.* 1 mm long, 0.2–0.3 mm wide, caducous or rarely persistent. *Phyllodes* usually linear-oblanceolate but ranging to oblanceolate, obovate-oblanceolate or sometimes narrowly oblong-elliptic, acute to obtuse, mucro straight or slightly incurved, (1)1.5–5(5.5) cm long, (2)3–5(7) mm wide, l:w (3)5–14, straight to shallowly incurved or shallowly recurved. *Gland* (3)5–15 mm above pulvinus. *Peduncles* 5–10(15) mm long.

Selected specimens examined. WESTERN AUSTRALIA: Nature Reserve A24435, [near] Lake King townsite, *K.J. Atkins* 1534 (PERTH); 36.7 km ENE of Muckinwobert Rock, *M.A. Burgman* 2182 & *S. McNee* (PERTH); 12 km NE of Scaddan, Cox Rd, 3.5 km from junction with Truslove Rd, *G. Craig* 1650B (PERTH); 1.8 km N of Fisheries Rd on Point Malcolm Rd, 0.4 km N of Tooklejenna Rock, Nuytsland Nature Reserve, *G.F. Craig* 2530 (PERTH); near Scaddan, *H.E. Knox* 22 (PERTH); *c.* 20 km due SW of Scaddan, *B.R. Maslin* 2529 (NY, PERTH); 8 km S of Lake King towards Ravensthorpe,

B.R. Maslin 3437 (MEL, PERTH); Truslove Reserve (near water reserve *c.* 0.5 km S of northern boundary of Reserve), *c.* 11 km due NNE of Scaddan, *B.R. Maslin* 5802 (CANB, PERTH); Dempster Rd, 1 km S of Bronzewing Rd, *c.* 5 km due SW of Mt Ridley, *B.R. Maslin* 5815 (AD, BRI, PERTH); Frank Hann National Park, *D. Monk* 234 (PERTH); 2 miles [3.2 km] E of Pingrup, *K.R. Newbey* 1356D (PERTH); 2 km E of Gnowangerup, *K. Newbey* 3903 (PERTH); 36 km E of Lake King, *K.R. Newbey* 9477-1 (MELU, PERTH); 26 km NE of Ongerup, *K.R. Newbey* 9512 (MELU, PERTH).

Distribution. Scattered in the south-west of Western Australia in a large area from Kondinin and Kulin south to Gnowangerup, east to just beyond Cape Arid National Park and north to Mt Ridley (east of Grass Patch).

Habitat. Grows in sand, clay or loam in heath, open shrub or tree mallee and as understorey in open eucalypt woodland, commonly close to salt lakes or marshes, mostly on flat land.

Phenology. Flowering recorded from August to October, with one specimen (*H.E. Knox* 22) collected with flowers in December; mature pods collected in December.

Conservation status. Not under threat.

Variation. Phyllodes are very variable in shape and size. Normally they are straight to shallowly incurved, but specimens with shallowly recurved phyllodes occur near Truslove (*c.* 60 km due north of Esperance) and specimens with unusually short phyllodes occur east of Ravensthorpe and in the Mt Madden–Lake King area (north of Ravensthorpe). Specimens with shallowly incurved phyllodes differ from subsp. *incurva* in having longer peduncles and/or the gland farther removed from the pulvinus.

Acacia mutabilis subsp. **angustifolia** Maslin, *subsp. nov.*

Frutex ad 1.3 m altus. Stipulae plerumque caducae. Phyllodia anguste linearia, interdum subteretia vel pentagona, 2–4.5 cm longa, 1–2 mm lata, mucrone recto vel vadose inflexo; glans 7–15 mm supra pulvinam inserta. Pedunculi 5–18 mm longi.

Typus: Parmango Rd adjacent to Clyde Hill (which is *c.* 120 km due north-east of Esperance), Western Australia, 16 August 1985, *B.R. Maslin* 5824 (*holo:* PERTH 00756830).

Spreading, open to moderately dense *shrub* 0.3–1.3 m tall and to 2.5 m diam., single-stemmed or up to *c.* 6-branched at ground level. *Stipules* caducous or persistent, narrowly triangular to linear-triangular and 3–5 mm long. *Phyllodes* narrowly linear, 2–4.5(6) cm long, 1–2 mm wide, l:w 12–30(35), flat to subterete or obtusely pentagonal in T.S., straight to shallowly incurved, green or glaucescent; adaxial nerves free to apex, rarely coalescing; gland 7–15 mm above pulvinus. *Peduncles* 5–18 mm long.

Selected specimens examined. WESTERN AUSTRALIA: about 100 m inside Western Australia–South Australia border, near Eucla, *N. Beattie* 32 (K, PERTH); 9 km SE of Cascades, *M.A. Burgman* MAB4536 (PERTH); Twilight Cove, Great Australian Bight, *A.S. George* 8566 (PERTH); 2.6 km N of Eyre, *G.J. Keighery* 7922 (K, MEL, PERTH); *c.* 14 km E of Eucla at Western Australia–South Australia border, Eyre Highway, *B.R. Maslin* 4814 (PERTH); Parmango Rd adjacent to Clyde Hill, *B.R. Maslin* 5823 (CANB, MEL, PERTH) and 5825 (PERTH); 24 km NNE of Jerramungup, *K. Newbey* 4818 (G, K, NSW, NY, PERTH); 31 km W of Ponier Rock, *c.* 80 km SW of Balladonia Motel, *K. Newbey* 7624 (PERTH);

1 km N of Eyre (Nuytsland), *K.R. Newbey* 11482 (PERTH); 11 km from Mt Ragged towards Esperance, Cape Arid National Park, *J. Taylor* 1582 & *P. Ollerenshaw* (AD, MEL, PERTH).
SOUTH AUSTRALIA: 3.5 km E of Western Australia–South Australia border [on the Eyre Highway], *R.J. Chinnock* 3346 (AD, PERTH); 4 km E of Western Australia–South Australia border on the Eyre Highway, *M.H. Simmons* 1147 (AD, PERTH).

Distribution. Scattered in the far south-east of Western Australia and the south-west of South Australia from near Jerramungup (Western Australia) east to Eucla (at the South Australian–Western Australian border) and east into South Australia.

Habitat. Grows in calcareous loam or sand with clay, sometimes with limestone nodules, in open low woodland or open shrub mallee.

Phenology. Flowering recorded mainly from August to October with single flowering collections also recorded for May and November; mature pods collected in December.

Conservation status. Not under threat.

Etymology. Subspecific epithet from the Latin *angustus* (narrow) and *folium* (a leaf), in reference to the phyllodes.

Affinities. In phyllode morphology subsp. *augustifolia* often resembles species such as *A. binata* Maslin, *A. gonophylla*, A. *maxwellii* Maiden & Blakely, *A. pachyphylla* Maslin, *A. poliochroa* E. Pritz. and *A. sulcata* R. Br. The new subspecies is distinguished from these species by a combination of the following characters: mature branchlets and phyllodes glabrous or if hoary then indumentum confined to phyllode axils; phyllodes 2–4.5 cm long, 5-nerved (but the adaxial 2 sometimes coalescing near middle of phyllode); heads golden; sepals free; pods to 5 cm long, *c.* 2 mm wide, curved, not undulate. *Acacia quinquenervia* (see below) also has similar phyllodes (but obviously hairy, at least when young) and normally has densely hairy branchlets, simple inflorescences and mottled seeds. *Acacia pinguifolia* J.M. Black (South Australia) superficially resembles this subspecies but is distinguished by its thick, fleshy 10–15-nerved phyllodes that are conspicuously wrinkled when dry.

Variation. Two variants are recognized that may, upon further study, be shown to be distinct taxa; adequate fruiting material has not been seen for these variants. In the western part of the range most specimens have persistent stipules and heads (6)7–8 mm diam. at anthesis; this variant includes the type and is especially common around Clyde Hill, *c.* 110 km north-east of Esperance. Specimens from farther east have mostly caducous stipules and slightly smaller heads (5–6 mm diam. at anthesis); this variant is common near Eucla. The specimen *K.R. Newbey* 4818 from 24 km north-north-east of Jerramungup is unusual in that it has caducous stipules and heads 6–7 mm diam.; this locality represents the western extremity of the known range of subsp. *augustifolia*.

Acacia mutabilis subsp. **incurva** Maslin, *subsp. nov.*

Frutex ad 2 m altus. Stipulae caducae vel interdum persistentes. Phyllodia lineari-oblanceolata, 30–55 mm longa, 3–4 mm lata, mucrone recto vel vadose inflexo; glans 1–5 mm supra pulvinam inserta. Pedunculi 3–6 mm longi.

Typus: Pingrup area [precise locality withheld for conservation reasons], Western Australia, 1 September 1975, *K. Newbey* 4774 (*holo:* PERTH 00175633; *iso:* CANB, K).

Spreading or domed, dense to mid-dense *shrub* 1.6–2 m tall, 1.5–2.5 m wide. *Stipules c.* 2 mm long and 0.3 mm wide, occasionally persistent. *Phyllodes* linear–oblanceolate, the mucro straight or shallowly inflexed, (25)30–55 mm long, 3–4 mm wide, l:w 8–13, subdistant, incurved, bright deep green. *Gland* 1–5 mm above pulvinus. *Peduncles* 3–6 mm long.

Selected specimens examined. WESTERN AUSTRALIA, Ongerup area [precise localities withheld for conservation reasons]: *K.R. Newbey* 373 (PERTH); *K.R. Newbey* 3010 (MEL, NSW, PERTH); *K.R. Newbey* 3010D (PERTH); *K.R. Newbey* 3803 (AD, BM, BRI, CANB, MEL, MO, NSW, P); *D. Papenfus* DP 682 (PERTH); *D. Papenfus* DP 684 (PERTH); *D. Papenfus* DP 690 & *L. Strahan* (PERTH); *D. Papenfus* DP 691 & *L. Strahan* (PERTH); *N. Stevens* KRN9513-1 (MELU, PERTH).

Distribution. Occurs in the south-west of Western Australia, known only from the Pingrup to Ongerup area.

Habitat. Grows on gentle undulating plain in sand, loam or clay in eucalypt low woodland or open shrub mallee.

Phenology. Flowering recorded from August to October; mature pods collected in early December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. From the Latin *incurvus* (curved inwards), in reference to the phyllodes.

Note. This subspecies is the tallest member of *A. mutabilis*.

Acacia mutabilis subsp. **rhynchophylla** Maslin, *subsp. nov.*

Frutex ad 1 m altus. Stipulae subpersistentes. Phyllodia oblanceolata, 20–30 mm longa, 4–8 mm lata, mucrone laterali rostriformi; glans 4–6 mm supra pulvinam inserta. Pedunculi 3–7 mm longi.

Typus: 8.5 miles [14.1 km] south-east of Nyabing on the road to Pingrup, Western Australia, 29 September 1970, *B.R. Maslin* 796 (*holo:* PERTH 00176664; *iso:* K, MEL, NSW, PERTH 00730130).

Spreading, moderately open *shrub* 0.5–1 m tall. *New shoots* densely appressed-puberulous (hairs pale yellow and white). *Stipules* triangular, 0.5–1.5 mm long, *c.* 0.7 mm wide, subpersistent. *Phyllodes* oblanceolate, obtuse and excentrically rostriform (mucro lateral to sublateral), (16)20–30 mm long, 4–8 mm wide, l:w 3–7, straight to shallowly recurved, rarely 1 or 2 minor nerves subparallel to midrib. *Gland* 4–6 mm above pulvinus. *Peduncles* 3–7 mm long, glabrous or sparsely strigulose. *Bracteoles* spathulate *c.* 0.5 mm diam. *Pods* and *seeds* not seen.

Selected specimens examined. WESTERN AUSTRALIA: about 106 miles [170 km] from Albany on Borden–Pingrup road, *A.M. Ashby* 4680 (AD, CANB, G, K, MEL, NSW, NY, PERTH); Pingrup, *W.E. Blackall* 3111 (PERTH); E of Tambellup, *C.A. Gardner* 2078 (PERTH); near Gnowangerup, 30 Sep. 1928, *C.A. Gardner s.n.* (PERTH 00176656); 10 miles [16 km] SW of Borden, *K. Newbey* 1442

(PERTH); 14 miles [22.5 km] NE of Gnowangerup, *K. Newbey* 3436 (PERTH); Reserve No. 18803, 13 km WSW of Pingrup, 29 Aug. 1984, *K.J. Wallace s.n.* (PERTH 00610321).

Distribution. Occurs in the south-west of Western Australia, known only from the Nyabing to Pingrup area and south to near Borden.

Habitat. Grows in gravelly sand or loam in open shrub mallee.

Phenology. Flowering recorded from August to October; fruiting period not known.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The subspecific epithet is derived from the Greek *rhynchos* (a beak) and *phyllon* (a leaf), in reference to the characteristic phyllode apex which resembles a bird's head (e.g. cuckoo-shrike) in side view. The phyllode apex is rounded and the beak-like mucro is lateral to sublateral.

Note. Subspecies *rhynchophylla* is most readily distinguished from other subspecies of *A. mutabilis* by its obtuse phyllodes with a lateral to sublateral mucro, although *Ashby 4680* is slightly atypical in that the mucro is less lateral than normal.

Acacia mutabilis subsp. **stipulifera** Maslin, *subsp. nov.*

Frutex ad 1 m altus. Ramuli strigulosi vel glabri. Stipulae persistentes, robustae. Phyllodia anguste elliptica ad anguste oblongo-elliptica vel oblanceolata, 2–5 cm longa, 4–8 mm lata, mucrone recto; glans 5–10 mm supra pulvinam inserta. Pedunculi 4–12 mm longi.

Typus: Lake Cobham area [precise locality withheld for conservation reasons], Western Australia, 17 August 1970, *K.R. Newbey* 3263 (*holo:* PERTH 00176168; *iso:* CANB, K, MEL, PERTH 00730114, 00908967).

Dense to mid-dense, domed *shrub* 0.3–1 m tall and 1–4.5 m diam. *Branchlets* white-strigulose to glabrous. *Stipules* stout, triangular to oblong-triangular, 2–3 mm long, 0.5–0.7 mm wide, persistent. *Phyllodes* narrowly elliptic to narrowly oblong-elliptic or oblanceolate, acute to obtuse, mucro usually straight and excentric, 2–5 cm long, 4–8 mm wide (larger on regrowth specimens), l:w 4–10, rather rigid, ascending to erect, straight, dark green. *Gland* (3)5–10 mm above pulvinus. *Peduncles* variable, 4–12 mm long.

Selected specimens examined. WESTERN AUSTRALIA, S of Newdegate [precise localities withheld for conservation reasons]: *G. Craig* 1494 (PERTH); *G. Craig* 1494C (PERTH); *G. Craig* 1553 (PERTH); *G. Craig* 1659 (K, PERTH); *B.R. Maslin* 3861 (PERTH); *K. Newbey* 3263A (PERTH); *M.H. Simmons* 1349 (PERTH).

Distribution. Localised in the south-west of Western Australia south of Newdegate near Lake Bryde and Lake Cobham.

Habitat. Grows in loamy sand and clay, usually slightly saline, in salt lake systems in low woodland of *Eucalyptus kondininensis* and *E. occidentalis*.

Phenology. Flowering recorded from August to October; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The subspecific epithet refers to the prominent stipules. In the other subspecies (except subsp. *angustifolia*) the stipules are caducous, or if persistent then smaller than in subsp. *stipulifera*. Subspecies *augustifolia* has narrower phyllodes than all other subspecies of A. *mutabilis*.

Acacia nigripilosa Maiden, *J. & Proc. Roy. Soc. New South Wales* 53: 172; pl. 10, figs 1–8 (1920) [as *nigripilosus*]. *Type:* Cowcowing, Western Australia, August 1904, *M. Koch* 1030 *pro parte*; (*holo:* NSW; *iso:* A, P, PERTH).

[*Acacia inaequiloba auct. non* W. Fitzg.: J.H. Maiden, *J. & Proc. Roy. Soc. New South Wales* 51: 240 (1917).]

Shrub 0.5–2 m high. *Branchlets* ash-grey, glabrous. *Phyllodes* usually ascending to erect, variable, linear to narrowly oblong-elliptic or oblanceolate, flat to terete, 2–7 cm long, 1–8 mm wide, narrowed at base, ± pungent, subrigid, smooth, dull or somewhat shiny, green or glaucous, glabrous; *nerves* 4 in all, 1 per face when flat; *lateral nerves* absent or obscure; *pulvinus* dilated at base. *Gland* 0–4 mm above pulvinus. *Inflorescence* a 1- or 2-headed raceme, enclosed when young by conspicuous, brown, imbricate bracts; axis 1–3 mm long, growing out at anthesis; *peduncles* usually 4–10 mm long, glabrous; heads slightly obloid, 18–34-flowered, golden. *Flowers* 5-merous; *sepals* united at base; *petals* with ± sparse, brown to black, appressed hairs. *Pods* ± moniliform, sometimes straight-edged, 4–9 cm long, 4–7 mm wide, thinly coriaceous–crustaceous, glabrous. *Seeds* longitudinal, obloid-ellipsoid to ovoid, *c.* 4 mm long, shiny, dark brown; aril thick.

Distribution. Occurs from Yuna south to near Goomalling and east to Mt Holland and near Queen Victoria Rock, south-western Western Australia.

Affinities. Probably related to *A. inaequiloba* W. Fitzg. and *A. ashbyae* Maslin, but readily distinguished from both, and from all other species of *Acacia*, by its petals having appressed, scattered, brown to black hairs. Two subspecies are recognized.

Key to subspecies of *Acacia nigripilosa*

Phyllodes 1–5 mm wide, green, somewhat shiny ..... subsp. **nigripilosa**
Phyllodes 5–8 mm wide, glaucous to subglaucous, dull ..... subsp. **latifolia**

Acacia nigripilosa Maiden subsp. **nigripilosa**

Phyllodes flat to terete, 2.5–7 cm long, 1–5 mm wide, l:w = 7–50, somewhat shiny, green, normally gradually narrowed to a straight or delicately curved, pungent or subpungent point.

Selected specimens examined. WESTERN AUSTRALIA: 34.5 km NE of Wubin on Paynes Find road, *R. Coveny* 7876 & *B.R. Maslin* (CANB *n.v.*, K *n.v.*, NSW, PERTH); 30 km E of Morawa on road through Koolanooka Hills, *R.J. Cumming* 1916 (PERTH); 7 km S of Mullewa on road to Mingenew, *B.R. Maslin* 5080 (CANB, K, MEL, PERTH); 19 km SSW of Queen Victoria Rock, *c.* 63 km SW of Coolgardie, *K. Newbey* 6098 (PERTH).

Distribution. Occurs throughout the species' distribution as described above.

Habitat. Grows in yellow or light brown sand in closed- or open-scrub.

Variation. Very variable and may comprise more than one taxon. Typical subsp. *nigripilosa* occurs from Ballidu east to Mt Holland and near Queen Victoria Rock. Its phyllodes are flat (rhombic in section when very narrow) with a prominent midrib and a delicately curved, subpungent mucro, the new shoots are glabrous and the peduncles normally 4–10 mm long. Variants with ± terete phyllodes occur between Wubin and Perenjori (e.g. *R. Coveny* 7876 & *B.R. Maslin*). Their phyllodes have straight to curved, often very pungent points and often obscure midribs, the new shoots are glabrous or tomentose. On some specimens from near Wongan Hills and in the Mullewa–Yuna area, the phyllodes are broad (to 5 mm wide) and have straight, very pungent points; plants from the latter area may also have peduncles 10–20 mm long and occasionally hairy new shoots (e.g. *B.R. Maslin* 5080). Plants from the Koolanooka Hills often have atypically ± patent phyllodes (e.g. *R.J. Cumming* 1916).

Acacia nigripilosa subsp. **latifolia** Maslin, *subsp. nov.*

Ab *A. nigripilosa* subsp. *nigripilosa* phyllodiis latioribus, 20–35 mm longis, 5–8 mm latis, plerumque hebetibus, glaucis, differt.

Typus: between Caron and Maya [precise locality details withheld for conservation reasons], Western Australia, 23 August 1973, *B.R. Maslin* 3367 (*holo:* PERTH 00186120; *iso:* AD, BM, CANB, G, K, MEL, MO, NSW).

Differs from *A. nigripilosa* subsp. *nigripilosa* in phyllodes broader and usually dull (not shiny), subglaucous to glaucous. *Phyllodes* slightly asymmetric, narrowly oblong-elliptic to oblanceolate, (15)20–35 mm long, (4)5–8(10) mm wide, l:w 3–6; lower margin ± straight; upper margin usually slightly convex; *apex* abruptly narrowing to a rigid, ± pungent point; mostly dull and subglaucous to glaucous, a few sometimes slightly shiny and dark green.

Selected specimens examined. WESTERN AUSTRALIA, all between Caron and Maya unless otherwise indicated [precise localities withheld for conservation reasons]: *W.E. Blackall* 761 (PERTH); *C.A. Gardner* 14342 (PERTH); *J. Goodwin* 181 (PERTH); *B.R. Maslin* 742 (K, MEL, PERTH, S); *B.R. Maslin* 5066 (PERTH); NE of Geraldton, *P.C. Ryan* PCR 165 (PERTH); *M.H. Simmons* 423 (PERTH); *M.D. Tindale* 2777 (CANB, K, L, MEL, NSW, PERTH, US).

Distribution. Occurs in two disjunct areas in the south-west of Western Australia, between Caron and Maya, and *c.* 100 km north-east of Geraldton.

Habitat. Grows in stony yellow sand, sometimes in loam, in tall dense scrub and heath.

Phenology. Flowering recorded in August and September; mature pods collected in mid-December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. From the Latin *latus* (broad) and *folium* (a leaf), in reference to the phyllodes.

Notes. Variants of subsp. *nigripilosa* with terete phyllodes occur in the same general region as the new subspecies.

Acacia pachyphylla Maslin, *stat. et nom. nov.*

Based on *Acacia gonophylla* var. *crassifolia* Benth., Fl. Austral. 2: 340 (1864). *Type:* towards the Great Bight, south-western Australia, [*G. Maxwell s.n.*] (*lecto:* K – right hand specimen on Herb. Hooker. sheet, here selected; *isolecto:* K, MEL 27237 – see discussion below).

Low, spreading, moderately open *shrub* with up to *c.* 6 main stems at ground level arising from a woody rootstock, normally to 0.3 m tall, occasionally to *c.* 0.5 m tall, to 0.6 m wide. *Bark* commonly very slightly roughened. *New shoots* reddish. *Branchlets* terete, light grey (due to an epidermal layer which commonly exfoliates longitudinally) and not evidently ribbed except at extreme apex which is normally reddish and finely nerved, glabrous. *Stipules* persistent on upper branchlets but caducous or only the slightly thickened basal portion remaining on old wood where phyllodes have fallen, linear to narrowly triangular, 1.5–3 mm long, slightly thickened (especially towards base), the apical portions readily breaking off with age, rather slender and not particularly rigid, not pungent, normally erect and incurved. *Phyllodes* 2–6.5 cm long, dimorphic; upper phyllodes usually linear to narrowly linear, terete or subterete to quadrangular, 1–2 mm wide, l:w 10–20(25) (sometimes compressed, narrowly to very narrowly oblanceolate and 2–3 mm wide); lower phyllodes distinctly compressed, oblanceolate to very narrowly oblanceolate, 4–6(7.5) mm wide, l:w normally 5–10, frequently falling early; thickly coriaceous, finely longitudinally wrinkled when dry, rather crowded towards ends of branches, rather rigid, ascending to erect, straight to slightly curved, glabrous, glaucous or dull medium green; 4-nerved (one on each face and 2 marginal); *midrib* variably pronounced, central to very slightly excentric, situated at apex of angles when phyllodes are ± quadrangular, usually yellowish; *secondary nerves* absent or very obscure; margins not thickened; *abaxial marginal nerve* normally superficially absent (being submerged) in the region between the gland and the pulvinus; *apex* abruptly and asymmetrically (rarely symmetrically) narrowed into a slender, rigid, sharply or coarsely pungent point 0.5–1 mm long and which is normally straight (not prominently inflexed as frequently occurs in *A. dermatophylla*); *pulvinar region* 0.5–1.5 mm long, slightly dilated at base, smooth or slightly wrinkled. *Gland* not prominent, on upper margin of phyllode 6–7 mm above pulvinus, *c.* 0.4 mm long and 0.2 mm wide or smaller. *Inflorescence* 1 per node, an extremely reduced 1-headed raceme; axis *c.* 0.5 mm long, glabrous (except a sparse tuft of hairs surrounding peduncle base), normally growing out at apex; *peduncles* 12–22(30) mm long, rather thick (0.8–1 mm diam. and finely longitudinally wrinkled when dry), glabrous. *Heads* globular, bright medium to deep golden yellow, with 36–53 (rarely 24) densely arranged flowers; *bracteoles* caducous. *Flowers* 5-merous; *calyx c.* 1/2 length of corolla; sepals free, narrowly oblanceolate to ± narrowly oblong, glabrous to glabrescent, apically slightly thickened; *petals* 2.3–3 mm long, connate for *c.* 1/2 their length, glabrous, obscurely 1-nerved, apically somewhat thickened and abruptly acute. *Gynoecium* glabrous. *Pod* linear, terete to subterete, not constricted between seeds, to 8.5 cm long, 6–8 mm wide, firmly crustaceous, hard and bony when dry, normally curved but sometimes straight, glabrous, dark purplish brown, moderately pruinose, finely longitudinally wrinkled when dry, not reticulate, basal stipe thick and *c.* 2 mm long, apex abruptly acute; margins not thickened, yellowish. *Seeds* longitudinal, facing apex of pod, embedded in spongy tissue which disappears as pods mature, obloid, 4.5–5 mm long, 3.5–4 mm wide, *c.* 2 mm thick, not shiny, dark brown to black; *pleurogram* open at hilar end, bordered by a narrow band of yellowish tissue; *areole* 2–3.5 x 1–2 mm; *funicle* filiform, 1–3 mm long abruptly expanded into a thick, terminal, yellowish, pileiform aril.

Selected specimens examined. WESTERN AUSTRALIA: 52 km WSW of Israelite Bay along road to Esperance, *B. Barnsley* 368 (CANB, PERTH, NSW); *c.* 30 km NNE of Young River Crossing on Ravensthorpe–Esperance main road, *N.N. Donner* 3045 (AD, PERTH, Z); S of Mt Ragged towards Point Malcolm, *C.A. Gardner* 2908 (BM, K, PERTH); 82 km E of Esperance on Merivale Rd between

Alexander Rd & Daniels Rd, *J.W. Green* 5171 (PERTH); 9 km WNW of Wittenoom Hills Nature Reserve on Norwood Rd, 50 km NNE of Esperance, *S.D. Hopper* 1944 (PERTH); *c.* 8 km NNW of Young River Crossing on Ravensthorpe–Esperance main road, *E.N.S. Jackson* 1461 (AD, PERTH); 18.5 km N of Gibson towards Norseman, *B.R. Maslin* 2533 (PERTH); 12 km SW of Buraminya, *c.* 38 km W of Mt Ragged, *K. Newbey* 8006 (PERTH); Cape Arid National Park, *R.D. Royce* 10052 (PERTH); 10 km due S of Clyde Hill, *H. Smolinski s.n.* (PERTH); Cape Arid National Park, W part, by the track S and SE of Mt Baring, *A. Strid* 21242 (PERTH)

Distribution. Occurs in coastal and near-coastal areas in the south-west of Western Australia from the vicinity of the Young River east to Israelite Bay and extending inland to near Truslove and Mt Buraminya. If the localities given on the following two herb. MEL sheets are correct then this species has a much wider distribution than I have indicated above. One sheet is annotated by Mueller 'Near K.G.S. [King George Sound, Albany] 1888'; the collector is not given. Albany is about 350 km south-west of the Young River. The second sheet is annotated 'Norseman, 1897, J.D. Batt'. This locality is *c.* 200 km north of Esperance.

Habitat. Grows in sand (sometimes gravelly and commonly with clay at a shallow depth), loam or clay, in open heath or open shrub mallee over heath, in flat or gently undulating topography.

Phenology. Flowering recorded from September to January; mature pods collected in November and December.

Conservation status. Not under threat.

Etymology. The specific epithet, from the Greek *pachy-* (thick-) and *-phyllus* (-leaved), refers to the characteristically thick phyllodes and reflects Bentham's varietal epithet (*crassifolia* being already occupied at species rank).

Typification. The type citation of *A. gonophylla* var. *crassifolia* Benth. is 'Towards the Great Bight, *Maxwell*'. The only sheet at herb. Kew of type significance is one stamped Herbarium Hookerianum and annotated '*Acacia gonophylla* var. S.W. Australia towards the Great Bight.' This writing is Mueller's except for '*gonophylla* var.' which is Bentham's. Neither the varietal name nor the collector's name appear on this label but the locality is almost identical to that given in the protologue. The three flowering specimens mounted on this sheet agree with Bentham's brief description of var. *crassifolia*. There is a duplicate of this gathering at herb. MEL annotated by Mueller but there is no indication that Bentham saw this sheet. I regard the Kew collection as the type and assume that Bentham neglected to annotate the sheet with the varietal name. The right hand specimen on the Kew sheet has been selected as the lectotype; the other Kew specimen plus the ones at MEL are regarded as isolectotypes.

Affinities. Although Bentham described this taxon as a variety of *A. gonophylla*, the two are not particularly closely related. *Acacia pachyphylla* differs significantly from *A. gonophylla* in its semi-persistent (not caducous) stipules, 4(not 5)-nerved, dimorphic phyllodes, larger, golden (not creamy white) heads and much larger, harder, terete to subterete pods. *Acacia pachyphylla* is closely related to *A. dermatophylla* Benth. on account of its thickly coriaceous, 1-nerved phyllodes, its globular heads arranged in extremely reduced racemes and its general carpological characters. *Acacia dermatophylla* is distinguished from the new species in the following ways. Shrub normally single-stemmed; stipules thicker, more prominent, 4–8 mm long; phyllodes not dimorphic, although commonly decreasing in size towards the branchlet apices, never linear or terete, the basal ones reaching 23 mm in width, their apical points are thicker, commonly less pungent and frequently inflexed, the nerve on the adaxial

margin obviously bifurcating on the lower 1/3–1/2 of the phyllode which does not happen in *A. pachyphylla*; racemes 2-headed; peduncles commonly shorter (normally 5.5–15 mm long), thinner; heads generally fewer-flowered (20–40); pods broader (8–10 mm wide), with oblique seeds. Although both species occur in south coastal areas (*A. dermatophylla* ranges from near Ravensthorpe to near Balladonia), it is not known whether they grow sympatrically.

The new species is also similar superficially to *A. maxwellii* Maiden & Blakely which has uniformly shaped phyllodes, mostly 1–3-headed reduced racemes, pale yellow to cream, smaller heads with many fewer flowers, a gamosepalous calyx and smaller, crustaceous pods enclosing ± spherical seeds. The phyllodes of *A. pachyphylla* are generally similar to those of a South Australian species, *A. pinguifolia* J.M. Black, but in that species the phyllodes are 10–15-veined, the peduncles are shorter (mostly 4–10 mm long) and the heads are smaller and fewer-flowered (18–20-flowered). *Acacia pachyphylla* is also superficially similar to *A. mutabilis* subsp. *angustifolia* (see above).

Acacia plautella Maslin, *sp. nov.*

Frutex 0.7–1 m altus. Ramuli teretes, subtiliter costati, glabri. Stipulae 1–1.5 mm longae, caducae. Phyllodia sessilia, patentia, anguste triangularia, ad apicem angustata, cuspidata, 8–15 mm longa, 1.5–2 mm lata, glabra; costa parum excentrica; glans marginalis, 1–3 mm supra basin inserta. Inflorescentia racemus reductus capitulis 1(2). Pedunculi 5–10 mm longi, glabri; capitula globularia, aurea, floribus 15–20. Flores 5-meri. Sepala unita, glabra. Petala glabra, obscure nervosa. Legumen moniliforme, ad 7.5 cm longum, 3.5–4 mm latum, coriaceum vel crustaceum, glabrum. Semina longitudinalia, obloidea vel ellipsoidea, 3–4 mm longa; arillus conicus.

Typus: 48 km north of Murchison River on North West Coastal Highway, Western Australia, 25 August 1984, *B.R. Maslin* 5580 (*holo:* PERTH 00171387; *iso:* CANB, K, MEL).

Spreading *shrub* 0.7–1 m tall, rarely to 1.2 m, single-stemmed or sparingly divided at ground level, main stems somewhat crooked. *Bark* rough and longitudinally fissured towards base of old stems, otherwise smooth, medium grey to dark grey (except branchlets). *Branchlets* terete, very finely ribbed, straight, somewhat coarsely pungent, glabrous, occasionally green but more commonly covered (either wholly or sometimes only on upper surface which is exposed to direct sunlight) with a white, puncticulate epidermal layer which exfoliates with age. *Stipules* present only on extremely young new shoots, narrowly oblong to narrowly triangular, 1–1.5 mm long, scarious, light brown, 1-nerved. *Phyllodes* narrowly triangular, tapering from a broad, sessile base into a straight, rigid, brown cusp 1–2 mm long, (5)8–15 mm long, 1.5–2 mm wide, l:w (4)6–9, rigid, patent to very slightly inclined, straight to very slightly recurved, flat, glabrous, green; stomata numerous, just visible at x10 mag.; *midrib* slightly excentric (situated nearer upper margin), yellowish to light brown, slightly raised when dry, commonly a very fine submerged nerve parallel to midrib on its abaxial side; *marginal nerves* not raised, yellowish to light brown, on upper margin the nerve bifurcating at the gland and submerged between the gland and the phyllode base. *Gland* on upper margin of phyllode (commonly on a very slight angle) 1–3 mm above base, normally shallowly recessed within margin, normally circular, 0.2–0.3 mm diam. *Inflorescence* an extremely reduced 1(2)-headed raceme; raceme axis 0.5–1 mm long, commonly growing out at anthesis, subtended at base by *c.* 4, early caducous, unequal, scarious, brown bracts to *c.* 1 mm long; bract scars persistent; *peduncles* 5–10 mm long at anthesis, to 14 mm long in fruit, glabrous, yellow or pale red; *basal peduncular bracts* absent, as racemes grow out a secondary phyllode commonly develops at the base of the peduncles. *Heads* globular, 7–9 mm diam. (fresh), 5–6 mm diam. (dry), 15–20-flowered, golden; *bracteoles* absent but flowers rimmed at base by minute (*c.* 0.1 mm long) brown papillae which arise from the receptacle. *Flowers* 5-merous, glabrous;

calyx c. 1/3 length of corolla, gamosepalous, variably dissected for 1/5 to *c.* 1/2 its length into oblong to broadly triangular lobes which are very slightly keeled abaxially; *petals* oblanceolate, 2–2.3 mm long, connate for 1/3–1/2 their length but readily splitting upon dissection, acute, very obscurely 1-nerved (superficially nerveless when dry). *Pod* ± moniliform, to 7.5 cm long, 3.5–4 mm wide, with up to 9 seeds per pod, thinly coriaceous to slightly crustaceous, normally shallowly curved, finely longitudinally reticulate, glabrous, reddish brown; marginal nerves not thickened, yellowish to light brown. *Seeds* longitudinal with hilum facing apex of pod, obloid or ellipsoid to obovoid, obliquely truncate along one margin at top of seed near hilum, 3–4 mm long, 2–2.7 mm wide, somewhat compressed (1.4 mm thick) but areolar area very slightly raised, very slightly shiny, black with cream mottlings; *pleurogram* very fine, narrowly elliptic, continuous; areole 1–1.2 mm long, 0.3–0.4 mm wide; *funicle* filiform, appressed against and distally expanded into a narrowly conical aril which asymmetrically sheaths the top of the seed.

Selected specimens examined. WESTERN AUSTRALIA: 30 miles [48 km] N of Ajana, *W.E. Blackall* 577 (PERTH); 60 km N of Ajana, 28 Aug. 1931, *C.A. Gardner s.n.* (PERTH 00171360); near 413 mile peg, North West Coastal Highway [*c.* 50 km N of the Murchison River crossing], *A.S. George* 11225 (PERTH); 44.5 km N of Murchison River on North West Coastal Highway, *B.R. Maslin* 7033 (PERTH).

Distribution. Occurs in the south-west of Western Australia, between Ajana and Billabong Roadhouse on the North West Coastal Highway.

Habitat. Grows in yellow sand in dense mallee scrub. Associated taxa include *Acacia coolgardiensis*, *A. longispinea*, *Melaleuca*, and *Persoonia*.

Phenology. Flowering recorded in August; mature pods collected in December and January.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. From the Latin *plautus* (flat, broad), used for the Umbrians in the sense 'flat-footed', here with the diminutive suffix *-ellus*, alluding to the relatively broad phyllode base.

Affinities. Similar to the more southerly distributed *A. ingrata* Benth. which differs most obviously in its cream to white, 5–7-flowered heads, pods 4–5.5 mm wide, seeds not mottled, gland (minute) at extreme base of phyllode, epidermis not puncticulate and stipule bases commonly thickened with age and persisting at many nodes. Members of the *A. horridula* Meisn. group (see Maslin 1978) are superficially similar to *A. plautella* in having somewhat similar phyllode and carpological features. They are readily distinguished, however, by their 4-merous flowers, non-racemose inflorescences, obvious gland angles on upper margin of phyllodes, terete pods not constricted between seeds, and their more southerly distribution.

Variation. In August 1967, C.H. Gittins collected two flowering specimens from 66 km S of Billabong Roadhouse on North West Coastal Highway. One of these (no. 1554) is typical *A. plautella*, but the other (no. 1556), while resembling this species in many respects, differs most obviously in its poorly developed, non-puncticulate epidermis and its linear, much longer (4–6 cm), inclined to ascending, shortly pulvinate phyllodes. In the absence of pods it is not possible to assess the status of *Gittins* 1556 and it is therefore not included in *A. plautella*. Its general facies is reminiscent of some forms of *A. prainii* Maiden and *A. scleroclada* Maslin but it is readily distinguished from both by its gamosepalous, ± truncate calyx.

Acacia profusa Maslin, *sp. nov.*

Frutex ad 0.9 m altus. Ramuli teretes, glabri, interdum resinosi. Stipulae *c.* 0.2 mm longae, plerumque caducae. Phyllodia conferta, linearia, acuta, pungentia, 7–17 mm longa, 1–1.5 mm lata, plerumque parum sulcata (in sicco), glabra, ± glauca, nervis 3 (1 in margine abaxiali, 1 in quoque pagina laterali); costa immersa; glans 0.2–1.5 mm supra pulvinam inserta. Inflorescentia racemus reductus capitulis 1 vel 2. Pedunculi 9–16 mm longi, glabri; capitula floribus 10–17. Flores 5-meri. Sepala libera vel ad basin unita, sub-glabra. Petala glabra, enervia. Legumen oblongum vel anguste oblongum, ad 25 mm longum, 10–12 mm latum, chartaceum, glabrum. Semina transversa, late ellipsoidea, *c.* 5 mm longa; arillus plicatus.

Typus: 7.5 km west of Grass Patch on Grass Patch Rd, Western Australia, 24 September 1983, *B.R. Maslin* 5442 (*holo:* PERTH 00170364; *iso:* CANB, G, K, MEL, MO, NSW, NY, PERTH 00750530).

Compact to moderately open, erect *shrub* 0.3–0.9 m tall, multi-stemmed, or sparingly branched at ground level. *Bark* grey except orange-brown branchlets. *Old wood* somewhat roughened by scars of raised leaf bases where phyllodes have fallen. *New shoots* light purplish. *Branchlets* terete, ribbed immediately below raised leaf bases, glabrous, sometimes resinous and subvernicose, the resin sometimes drying white. *Stipules* setaceous, inconspicuous, *c.* 0.2 mm long, commonly falling early. *Phyllodes* linear, narrowed at base, (5)7–17 mm long, 1–1.5 mm wide, l:w (5)7–16, crowded, erect or (with age) sometimes ascending, straight or shallowly incurved, flat, slightly thickened, usually slightly sulcate when dry, glabrous, glaucous (young) to subglaucous (mature); stomata minute, numerous; *nerves* 3 (1 on abaxial margin, 1 on each lateral face); abaxial nerve impressed and yellow to brown (when dry), lateral nerves (i.e. *midrib*) submerged and not or scarcely evident when fresh but surface usually slightly wrinkled when dry; adaxial marginal nerve absent; *apex* obliquely narrowed to a straight, brown, hard, acute, slightly pungent point 0.3–0.5 mm long; *pulvinus* terete, 0.5–0.7 mm long. *Gland* inconspicuous, 0.2–1.5 mm above pulvinus, slightly impressed, circular to oblong, 0.2 mm long, 0.1–0.2 mm wide. *Inflorescence* an extremely reduced raceme, 1 per node, normally terminal; *peduncles* 1(2), 9–16 mm long, equalling or longer than phyllodes, glabrous, sometimes red; *axis* 0.5–1 mm long, glabrous, ± pruinose, usually with a dormant vegetative bud near apex; bract at base of axis *c.* 0.3 mm long; *basal peduncular bract* solitary, persistent, 0.5–1 mm long, concave, sessile. *Heads* globular, 8 mm diam. at anthesis when fresh (4–5 mm diam. when dry), light to mid-golden, 10–17-flowered; *bracteoles* absent. *Flowers* 5-merous; *sepals c.* 2/5 length of petals, free or united near base, narrowly oblong, subglabrous with microscopic hairs; *petals* 2 mm long, free at anthesis, glabrous, nerveless. *Ovary* glabrous; gynophore *c.* 0.2 mm long. *Pods* oblong to narrowly oblong, to 25 mm long, 10–12 mm wide, prominently raised over the seeds alternately on each side, not constricted between seeds, chartaceous, glabrous, pruinose when young. *Seeds* (slightly immature) transverse, widely ellipsoid, *c.* 5 mm long and 2.5 mm wide; *pleurogram* U-shaped, open at hilar end; *areole* minute; *funicle* filiform, 2–3 mm long, gradually thickened to a once-folded subterminal aril.

Selected specimens examined. WESTERN AUSTRALIA: 4 miles [6.4 km] SW of Mt Ridley, *T.E.H. Aplin* 4003 (AD, PERTH); between Salmon Gums and Grass Patch, *W.E. Blackall* 1014 (PERTH); 17 km due SSE of Peak Eleanora, intersection of Rolland and Cups Rds, *M.A. Burgman* 3858 (PERTH); *c.* 30 km E of Truslove, on track between Dempster and Burdett Rds, *G. Craig* 1575 (BRI, PERTH); 7.8 km W of Salmon Gums on Salmon Gums West Rd, *G.F. Craig* 2437 (PERTH); near Kumarl, Oct. 1934, *C.A. Gardner s.n.* (PERTH 00170402); 7.5 km W of Grass Patch on Grass Patch Rd, *B.R. Maslin* 5442A (PERTH); 26 km NNE of Swallow Rock, Frank Hann National Park, *K. Newbey* 6857 (PERTH); 4 km W along Rolland Rd from Fields Rd, *c.* 50 km W of Grass Patch, *J. Taylor* 1654 & *P. Ollerenshaw* (CANB, K, PERTH).

Distribution. Occurs in the south-west of Western Australia from Frank Hann National Park, east to Kumarl and south-east to Mt Ridley and Mt Burdett.

Habitat. Grows in clay, sand or loam on flats in open shrub mallee, open dwarf scrub or low heath.

Phenology. Flowering recorded in September and October; immature pods collected in late December.

Conservation status. Not under threat.

Etymology. Named from the Latin *profusus* (profuse), in reference to the crowded phyllodes.

Affinities. The new species is distinctive on account of its crowded, 3-nerved phyllodes (midrib submerged), rudimentary racemes and short, broad pods. It is possibly related to *A. carnosula* (see above) which has a similar phyllode nervation, but in that species the phyllodes are obovate to oblanceolate and 1–2.5 mm wide, the flowers are subtended by small bracteoles, and the seeds are longitudinally arranged in the pods. Glabrous variants of *A. lachnophylla* F. Muell., another possible relative, may superficially resemble the new species but are distinguished by their narrow (*c.* 1.5 mm wide), coiled pods and phyllodes with a discernible midrib on each face and a gland (when present) more than 4 mm above the pulvinus.

Acacia puncticulata Maslin, *sp. nov.*

Frutex expansus, 0.6–1.3(2) m altus. Ramuli teretes, pubescentes ad hirsutelli. Stipulae 2–4 mm longae, spinescentes, basibus persistentibus. Phyllodia ovata ad elliptica, acuta vel obtusa, mucronata, 15–25 mm longa, 7–15 mm lata, parum undulata, glabra praeter margines et costam hirtellam; costa prominens; glans 4–13 mm supra pulvinam inserta. Inflorescentia simplex, axillaris sed sub anthesi phyllodiis plerumque immaturis. Pedunculi 8–20 mm longi, hirtelli, 1-bracteati; capitula floribus 35–60. Flores 5-meri. Sepala libera, parce pilosa. Petala glabra, enervia. Legumen circinatum (spira c. 1–1.5 cm diam.), c. 2.5 cm longum, 4.5–5.5 mm latum, inter semina constrictum, coriaceum, glabrum. Semina longitudinalia, obloidea vel ellipsoidea vel ovoidea, c. 3.5 mm longa; arillus curvus.

Typus: about 1 km south of Murchison River along eastern boundary of Kalbarri National Park, Western Australia, 18 July 1987, *D. Bellairs s.n.* (*holo:* PERTH 01129236; *iso:* CANB, G, K, MEL, NSW, NY).

Dense *shrub*, spreading, domed or flat-topped, much-branched, 0.6–1.3(2) m tall, to *c.* 2 m across. *Bark* smooth, mid-grey, dark grey-brown, grey-black or red-grey. *Branches* with prominent lenticels. *Branchlets* terete, ribless or ribs very obscure, ± pubescent to hirsutellous or hirtellous, the indumentum arising from epidermis which soon becomes grey-white and with age is longitudinally fissured to reveal a glabrous, reddish undersurface. *Stipules* 2–4 mm long, spreading, straight to shallowly recurved, sharp and rigid but somewhat brittle so that at old nodes commonly only the hardened basal portions remain. *Phyllodes* slightly oblique, ovate to elliptic but commonly widely so, both upper and lower margins convex, (10)15–25(30) mm long, (5)7–15(20) mm wide, l:w 1.5–2.5, coriaceous, patent to inclined, slightly undulate, glabrous or margins and midrib hirtellous to hirsutellous (hairs commonly sparse, usually tubercle-based but commonly wearing away with age so that only tubercles remain), dark green, puncticulate with minute, brown (ageing black) circular scales which are commonly sparse or absent on old phyllodes; *midrib* prominent; lateral nerves visible but not prominent; nerve on upper margin bifurcating below the gland; *apex* acute to obtuse but mucronate; mucro 1–3 mm long, straight, slender, rigid, brown; *pulvinus* not prominent, to *c.* 0.5 mm long. *Gland* situated on upper margin of

phyllode 4–13 mm above pulvinus. *Inflorescences* initiated on developing new shoots with 1(2) peduncles in axils of immature phyllodes; subtending phyllodes may or may not be fully expanded by anthesis; *peduncles* 8–20(30) mm long, hirtellous to hirsutellous, *basal bract* absent but a solitary, narrowly triangular to lanceolate, ± caducous bract 1.5–3 mm long, frequently present near or above middle of peduncle. *Heads* globular to obloid, golden, densely 35–60(70)-flowered; *bracteoles* 1.5–2 mm long; claw linear, ± as long as lamina, sparsely hairy; lamina narrowly ovate, acuminate, slightly exserted in young buds, brown, ciliolate. *Flowers* 5-merous; *sepals* 3/5 length of petals, free, linear to narrowly spathulate, sparsely hairy; *petals* 2(–2.5) mm long, glabrous, margins minutely papillate towards the apex, nerveless. *Pods* circinate in a coil *c.* 1–1.5 cm diam. (curving at 90° to plane of suture), sometimes a few irregularly sigmoid, *c.* 2.5 cm long (expanded length), 4.5–5.5 mm wide, rounded over seeds on inner face of curves or spirals, continuously convex on outer face, not or scarcely constricted between seeds, coriaceous, glabrous, brown to yellow-brown, sometimes with a few very obscure transverse veins most visible near the narrow, marginal nerves. *Seeds* longitudinal, obloid to slightly ellipsoid or ovoid, 3.5 mm long, 3 mm wide, dull to slightly shiny, dark brown to blackish, sometimes yellowish, surrounding areole and extending to hilar area; *pleurogram* obscure, open at hilar end; *areole c.* 0.5 mm long, 0.4–0.5 mm wide; aril curved over top of seed.

Selected specimens examined. WESTERN AUSTRALIA: between Coorow and Arrino, *W.E. Blackall* 2615 (PERTH); 6 km S of Kalbarri turnoff on North West Coastal Highway, *R.S. Cowan* A831 (AD, BRI, CANB, G, K, MO, PERTH); Murchison River gorge, *A.S. George* 7906 (K, PERTH); 16 km from North West Coastal Highway towards Kalbarri, *B.R. Maslin* 3330 (CANB, PERTH); 4.8 km E of Mullewa towards Yalgoo, *B.R. Maslin* 3627 (NY, PERTH); about 32 km from Mingenew on the road to Morawa, *B.R. Maslin* 6247 (PERTH); about 2 km S of Murchison River along eastern boundary of Kalbarri National Park, *B.R. Maslin* 6260 (K, PERTH); 18 miles [29 km] N of Caron, *K. Newbey* 2090 (PERTH).

Distribution. Scattered in the south-west of Western Australia from Kalbarri National Park to near Perenjori and Three Springs.

Habitat. Grows normally on rocky red loam, sometimes yellow sand or red clay, commonly in *Acacia acuminata* tall shrubland.

Phenology. Flowering recorded in August and September; mature pods collected in November.

Conservation status. Not under threat.

Etymology. The specific epithet is derived from the Latin *puncticulatus* (minutely dotted), in reference to the many small punctae on young phyllodes.

Affinities. Until now, *A. puncticulata* has been included in *A. congesta* (see above). The two species are closely related and resemble one another most obviously in the following ways. Stipules spinescent (although they are somewhat brittle and with age are commonly broken so that only their bases remain, forming hardened, slightly spinescent projections at the base of the phyllodes); phyllodes with a slender pungent mucro, midrib prominent, lateral veins obscure or pronounced; peduncle sometimes with a small bract near or above the middle; heads commonly slightly obloid; sepals ± free, linear or narrowly spathulate, 1/2–3/5 length of petals. Were it not for the marked differences in the pods it would be reasonable to treat *A. puncticulata* as a subspecies of *A. congesta* which is distinguished by its narrower phyllodes (3–7 mm wide), dimidiately inaequilateral and not, or scarcely, puncticulate. In *A. congesta*, the pods curve in the plane of the suture whereas in *A. puncticulata* they curve at right angles to the plane of the suture. Furthermore, in *A. congesta* the pods are usually more obviously constricted between the seeds.

Acacia pusilla Maslin, *sp. nov.*

Frutex decumbens vel tholiformis ad 30 cm altus. Ramuli teretes, minute pubescentes. Stipulae 1.5–3.5 mm longae, persistentes. Phyllodia conferta, linearia ad subteretia, incurva, oblique mucronulata, 5–10 mm longa, c. 1 mm lata, glabra vel minute pubescentia, nervis 3 immersis (1 in margine abaxiali, 1 in quoque pagina laterali); glans 0.5–2 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi 6–8 mm longi, glabri; capitula floribus 8–12. Flores 5-meri. Sepala libera, parce ciliolata. Petala glabra, enervia. Legumen lineare, spirale, ad c. 10 mm longum (non expansum), c. 2 mm latum, crustaceum, glabrum. Semina longitudinalia, obloidea ad ellipsoidea, 2.4–2.7 mm longa; arillus pileiformis.

Typus: near base of east side of Ravensthorpe Range, about 10 km south-east of Ravensthorpe township, Western Australia, 27 September 1983, *B.R. Maslin* 5462 (*holo:* PERTH 00173274; *iso:* CANB, G, K, MEL, NY, PERTH 00760498).

Decumbent to erect, multi-stemmed *shrub*, forming circular, domed bushes to 20–30 cm tall and 1 m wide. *Old wood* roughened by scars of raised leaf bases. *Stems* slender, dark grey but frequently light orange towards apices. *Branchlets* terete, nerveless, minutely pubescent. *Stipules* setaceous, 1.5–3.5 mm long, recurved, glabrous, dark brown to black, persistent. *Phyllodes* linear, narrowed at base, 5–10(13) mm long, *c.* 1 mm wide, l:w 5–10(12), crowded, patent to erect, incurved from near base, subterete, commonly ± flat when dry, smooth, slightly longitudinally sulcate when dry, glabrous to subglabrous, hairs minute and appressed, dull, green to subglaucous; nerves 3 (1 on abaxial margin, 1 on each lateral face) but submerged and not or scarcely evident; *apex* obliquely mucronulate, the mucro 0.1–0.3 mm long, thick, acute, brown to black; *pulvinus* terete, *c.* 0.5 mm long, sparsely puberulous adaxially. *Gland* inconspicuous, 0.5–2 mm above pulvinus, occasionally at distal end of pulvinus, commonly slightly impressed and sometimes connected to pulvinus by a shallow groove (when dry), circular to oblong, 0.1–0.2 mm long. *Inflorescence* simple; *peduncles* 6–8 mm long, 1 per axil, slender, erect at anthesis, strongly recurved from base in fruit, glabrous; *basal peduncular bract* subpersistent, cucullate, 1–2 mm long, dark brown to black, sparsely puberulous abaxially. *Heads* globular, bright light golden, 3 mm diam. at anthesis (fresh), 8–12-flowered; *bracteoles* absent. *Flowers* 5-merous; *sepals c.* 1/3 length of petals, free, narrowly oblong, sparsely ciliolate; *petals c.* 1 mm long, free at anthesis, glabrous, nerveless. *Ovary* glabrous. *Pods* linear, tightly irregularly coiled, to *c.* 10 mm long (unexpanded), 2 mm wide, turgid, very slightly constricted between seeds, thinly crustaceous, glabrous, very slightly shiny, ± resinous, black, very finely wrinkled. *Seeds* longitudinal, obloid to ellipsoid, 2.4–2.7 mm long, 1.5 mm wide, slightly depressed (1 mm thick), black, shiny; *pleurogram* very obscure, open at hilar end; *areole c.* 1 mm long, 0.5 mm wide; *funicle* filiform, *c.* 1 mm long, abruptly expanded into a fleshy, pileiform, white, terminal aril.

Selected specimens examined. WESTERN AUSTRALIA: lower slopes of Ravensthorpe Range, *E.M. Bennett* 2398 (PERTH); 9.8 miles [15.6 km] W of Bendalup Creek, just E of Ravensthorpe, *F. Lullfitz* L5497 (PERTH); near Mt Desmond, *c.* 13 km due SE of Ravensthorpe, *B.R. Maslin* 3905 (AD, BRI, MO, NSW, PERTH); Ravensthorpe Range near Mt Desmond, Elverdton Rd 0.5 km from Highway No. 1, *B.R. Maslin* 4795 (PERTH); E side of Ravensthorpe Range about 10 km SE of Ravensthorpe township, *B.R. Maslin* 5548 (PERTH); 5 km E of Ravensthorpe, *P.G. Wilson* 5536 (AD, MEL, NSW, PERTH); Mt Desmond, *E. Wittwer* W1887 (PERTH).

Distribution. Occurs in the south-west of Western Australia, endemic to the Ravensthorpe Range. The label details of the collection by *C.F. Davies* 111 (PERTH) appear to be incorrect, with the collector querying the locality of Holt Rock, which is *c.* 120 km north-east of Ravensthorpe. It is also recorded as being collected in flower in December. All other collections of *A. pusilla* were flowering between August and October.

Habitat. Grows in rocky clay on lower slopes, favours watercourses in dense shrub mallee woodland.

Phenology. Flowering recorded from August to October (but see note below); mature pods collected in December.

Conservation status. Not under threat.

Etymology. The specific epithet, from the Latin *pusillus* (very small), refers to the diminutive habit and phyllodes.

Affinities. *Acacia pusilla* is allied to *A. rhamphophylla*, another new species endemic in the Ravensthorpe Range (see discussion below under *A. rhamphophylla*). It also superficially resembles *A. lachnophylla* F. Muell. (syn. *A. cometes* C.P.R. Andrews) which also grows near Ravensthorpe but which can be distinguished in the following ways: stipules caducous, phyllodes longer (1–2 cm) and with at least the midvein on each face normally evident, gland commonly 4–12 mm above the pulvinus, heads larger with more flowers (20–32) and seeds mottled. In the Norseman–Grass Patch area there occurs a variant of *A. lachnophylla* with glabrous phyllodes 7–14 mm long whose midribs are submerged and thus superficially absent. Besides the characters already given, this variant is distinguished from *A. pusilla* by its phyllodes which have a 1-nerved abaxial margin.

Acacia quinquenervia Maslin, *sp. nov.*

Frutex patens plerumque ad 1.5 m altus, interdum ad 0.5 m. Ramuli teretes, subtiliter costati, antrorse pubescentes. Stipulae 1–2 mm longae, caducae. Phyllodia anguste linearia, interdum teretia, acuta, mucronata, 2–7 cm longa, 1–2 mm lata, antrorse pubescentia, glabrescentia, 5-nervia; glans 5–15 mm supra pulvinam inserta. Inflorescentia racemus reductus capitulis 2. Pedunculi 3–15 mm longi, glabri; capitula floribus 15–20. Flores 5-meri. Sepala libera vel brevissime unita, glabra vel pubescentia. Petala glabra, enervia. Legumen lineare, ± teres, arcuatum, ad c. 5.5 cm longum, 1.5–3 mm latum, coriaceum–crustaceum, glabrum. Semina longitudinalia, obloidea, 2.5–3 mm longa; arillus conicus.

Typus: 19 km east of Lake King, Western Australia, 20 August 1982, *K. Newbey* 9480–1 (*holo:* PERTH 00139386; *iso:* CANB, K, MEL, MELU, NY).

Spreading *shrub*, rather dense or moderately open, commonly 0.5–1.5 m tall, in eastern part of range commonly 0.2–0.5 m tall, 0.5–3 m wide. *Bark* grey. *New shoots* densely appressed-pubescent (hairs very pale yellow at initiation, soon turning white). *Branchlets* terete, finely ribbed, pubescent (hairs dense, soft, white, short, straight, antrorse, commonly appressed or almost so, sparse or absent on mature branches), rarely glabrous. *Stipules* narrowly oblong to narrowly triangular, 1–2 mm long, *c.* 0.2 mm wide, scarious, brown, pubescent abaxially, caducous. *Phyllodes* narrowly linear, narrowed at base, rarely narrowly oblanceolate, (1.5)2–7 cm long, 1–2 mm wide, 5–7 mm wide in one young regrowth specimen, ascending to erect, straight to shallowly incurved, flat to almost terete, indumentum as on branchlets but hairs sparse or absent with age, rarely glabrous when young, mid-green to glaucous, frequently greyish when dry; *nerves* 5 (i.e. 2 on adaxial margin (these nerves infrequently coalescing near or above middle of phyllode), 1 on adaxial margin, 1 on each lateral face); minor lateral nerves absent; *apex* excentrically acute to subacute, straight or sometimes subuncinate, the mucro 0.5–1 mm long and coarsely or sometimes sharply pungent; *pulvinus c.* 1 mm long, obscurely transversely wrinkled, pubescent, yellow-brown. *Gland* situated on adaxial margin of phyllode between the two

nerves 5–15 mm above pulvinus, oblong, rarely circular, 0.4–0.8 mm long, 0.2–0.4 mm wide. *Inflorescence* a simple or rudimentary 2-branched raceme, axis 0.3–0.5 mm long; *peduncles* 3–15 mm long, glabrous, commonly deflexed from base in fruit; *basal peduncular bract* rostriform, *c.* 2 mm long, sessile, pubescent abaxially, brown, caducous. *Heads* globular, light golden, 6–7 mm diam. (reconstituted), 3.5–4 mm diam. (dry), 15–20-flowered; *bracteoles* few or absent, resembling sepals. *Flowers* 5-merous; *sepals* 1/3–1/2 length of petals, free or very shortly united at base, narrowly spathulate or sometimes narrowly oblong, glabrous or pubescent; *petals* 1.5 mm long, united for 1/4 to 1/3, nerveless, glabrous, infrequently subglabrous. *Pods* linear, shallowly to moderately arcuate, to 5.5 cm long, 1.5–3 mm wide, thinly coriaceous–crustaceous, ± terete, not or scarcely constricted between seeds, glabrous to puberulous (hairs sometimes appressed), dark brown to black. *Seeds* longitudinal, obloid, 2.5–3 mm long, 1.2–1.6 mm wide, mottled although sometimes obscurely so; *pleurogram* U-shaped, open at hilar end; *areole* 0.4–0.7 mm long, 0.2–0.5 mm wide; *funicle* filiform, *c.* 1.5 mm long, abruptly expanded into a ± conical, creamy white or light yellow-brown (dry), terminal aril 1.5–2 mm long.

Selected specimens examined. WESTERN AUSTRALIA: 48.2 km due E of Lake King on the Rabbit Proof Fence, *K. Bradby* 38 (PERTH); 19 miles [30.5 km] E of Newdegate, *A.S. George* 5689 (PERTH); 5.5 miles [8.8 km] W of Nyabing on the road to Katanning, *B.R. Maslin* 793 (K, MEL, PERTH); 14 km from Ravensthorpe towards Lake King, *B.R. Maslin* 2575 (K, PERTH); Hatters Hill, *K.R. Newbey* 3292 (CBG, G, PERTH); 23 km SW of Peak Charles, *c.* 66 km W of Salmon Gums, *K. Newbey* 6466 (CANB, PERTH); 34 km SW of 90 Mile Tank, Frank Hann National Park, Norseman–Lake King road, *K.R. Newbey* 6507 (CANB, MEL, PERTH); 0.3 km N of Hatters Hill, *c.* 41 km NE of Lake King, *K. Newbey* 6563 (CANB, PERTH).

Distribution. Scattered in the south-west of Western Australia from near Nyabing east to Peak Charles National Park.

Habitat. Grows in moderate to well-drained loam, sand or clay on plains and alluvial flats in eucalypt low woodland or open shrub mallee.

Phenology. Flowering recorded in August and September; mature pods collected in November and December.

Conservation status. Not under threat.

Etymology. The specific epithet is derived from the Latin *quinque* (five) and *-nervis* (-nerved), in reference to the phyllodes.

Affinities. The new species appears most closely related to *A. poliochroa* E. Pritz. on account of its branchlet and phyllode indumentum, very reduced binate racemes, rostriform (caducous) basal peduncular bracts, free sepals, ± terete pods and longitudinal seeds with terminal, ± conical arils. *Acacia poliochroa* is most reliably distinguished from *A. quinquenervia* by its 4-nerved phyllodes, its strongly curved to once-coiled pods which reach *c.* 2 cm long (*c.* 1 cm diam. when coiled) and its non-mottled seeds 2 x 1.3 mm. Furthermore, *A. poliochroa* is a frequently smaller shrub (0.1–0.5 m tall) with shorter phyllodes (1–2.5 cm long). However, some specimens of *A. quinquenervia* from the Frank Hann National Park (located 30–110 km east-north-east of Lake King) to Bremer Range area (about 100 km west-south-west of Norseman) are low shrubs 0.2–0.5 m tall (elsewhere they are commonly 0.5–1.5 m tall). The phyllodes of *A. quinquenervia* may superficially resemble those of *A. mutabilis* subsp. *angustifolia* (see above).

Variation. A young regrowth specimen (*viz. K. Newbey* 5458, PERTH, in flower) from Hatters Hill has phyllodes 5–7 mm wide which is much wider than those of adult plants. The Nyabing specimen listed above is at the western extremity of the range for this species. It is atypical in having short glabrous phyllodes (*c.* 15 mm long) and glabrous branchlets. This variant may ultimately be shown to warrant formal rank, but pods are required before a sound taxonomic judgement can be made (*B.R. Maslin* 793 is in flower).

Notes. As implied by the specific epithet the phyllodes have 5 longitudinal nerves which extend from the pulvinus to the mucro. Infrequently it happens that the nerves on the adaxial margin coalesce near or above the middle of the phyllode. In these cases the phyllode is 4-nerved distal to the coalescence and 5-nerved below it. When the phyllodes are distinctly compressed (i.e. flat), the adaxial margin is 2-nerved and *c.* 0.5 mm wide, the abaxial margin is formed by the single nerve which runs along it, and the midrib on each face represents the remaining 2 nerves. When the phyllodes are thick and narrow they are described above as almost terete. In fact, they are obtusely pentagonal in T.S. with a nerve at the apex of each angle. This type of nervation pattern is not uncommon in species of section *Phyllodineae* in south-western Western Australia.

Acacia rhamphophylla Maslin, *sp. nov.*

Frutex effusus, 0.2–0.4 m altus. Ramuli teretes, pubescentes. Stipulae setaceae, 5–7 mm longae, persistentes. Phyllodia conferta, linearia, parum uncinata, 11–17 mm longa, 1–1.5 mm lata, glabra, margine abaxiali 1-nervi, adaxiali 2-nervi; costa prominens; glans ad 0.5 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi 8–13 mm longi, glabri; capitula floribus 12–16. Flores 5-meri. Sepala libera, ciliata. Petala glabra, enervia. Legumen subteres, leniter moniliforme, 10–15 mm longum, c. 2 mm latum, crustaceum, glabrum vel parce strigillosum. Semina longitudinalia, obloidea ad ovoidea, 2–2.5 mm longa; arillus pileiformis.

Typus: Ravensthorpe Range [precise locality withheld for conservation reasons], Western Australia, 31 August 1980, *B.R. Maslin* 4785 (*holo:* PERTH 00174203; *iso:* CANB, G, K, MEL, NSW, NY).

Spreading, openly branched *shrub*, 0.2–0.4 m tall, 0.4–1.1 m wide, sparingly divided at ground level into slender, dark grey stems. *Branchlets* terete, very obscurely nerved, densely pubescent (hairs short, straight and soft). *Stipules* setaceous, 5–7 mm long, recurved, glabrous, dark red-brown but ageing blackish, persistent. *Phyllodes* linear, narrowed at base, 11–17 mm long, 1–1.5 mm wide, l:w 8–13, crowded, patent to inclined, sometimes ascending at ends of branchlets, straight to shallowly curved, glabrous (except pulvinus), dark green; *apex* excentrically rostellate, commonly slightly uncinate; *midrib* prominently raised and situated near the 1-nerved abaxial margin, the 2-nerved adaxial margin thick and nerve-like, *c.* 0.5 mm wide; lateral nerves absent; *pulvinus* 0.5–1 mm long, adaxially pubescent, drying yellow or orange. *Gland* situated on adaxial margin at distal end of pulvinus or to 0.5 mm above it, sometimes absent, circular, *c.* 0.1 mm diam. *Inflorescence* simple; *peduncles* 1 per axil, 8–13 mm long, recurved in fruit, glabrous, situated on an extremely reduced raceme axis less than 0.5 mm long; *basal peduncular bract* somewhat persistent, *c.* 2 mm long, navicular, cucullate, shallowly curved, concave, puberulous abaxially, brown. *Heads* globular, bright light golden, *c.* 3 mm diam. (dry), 12–16-flowered; *bracteoles* absent. *Flowers* 5-merous; *sepals* *c.* 1/3 length of petals, free, narrowly oblong to slightly spathulate, membranous, ciliate; petals *c.* 1 mm long, connate in lower 1/2, nerveless, glabrous. *Pods* commonly 10–15 mm long, occasionally 20 mm, *c.* 2.5 mm wide, thinly crustaceous, curved but sometimes only slightly so, subterete, commonly slightly constricted between seeds, finely rugose-striate (dry), glabrous or very sparsely strigillose, blackish; marginal nerves yellow to light brown, not thickened. *Seeds* longitudinal, obloid–ellipsoid

to ovoid, shape a little irregular, 2–2.5 mm long, *c.* 1.5 mm wide, compressed (*c.* 1 mm thick), dark brown to blackish, shiny; *pleurogram* obscure, open at hilar end; *areole* 0.5–1 mm long, *c.* 0.5 mm wide; *funicle* filiform, *c.* 1 mm long, abruptly expanded into a small, white, pileiform, terminal aril.

Other specimens examined. WESTERN AUSTRALIA, Ravensthorpe Range [precise localities withheld for conservation reasons]: *G.F. Craig* 1952 (CANB, PERTH); *K.R. Newbey* 9523A (MELU, PERTH); *K.R. Newbey* 9523A-1 (MELU, PERTH); *K.R. Newbey* 9692 (PERTH); *D. Papenfus* DP 157 (PERTH).

Distribution. Occurs in the south-west of Western Australia, endemic in the Ravensthorpe Range.

Habitat. Grows in rocky clay or sand on upper slopes of lower part of the Range in open shrub mallee.

Phenology. Flowering recorded in August and September; mature pods collected in early December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The specific epithet is taken from the Greek *rhamphos* (a curving bill or beak) and *phyllon* (a leaf), in reference to the phyllode apex which is beaked.

Affinities. Acacia rhamphophylla appears most closely related to *A. laricina* and *A. cedroides* Heward ex Benth. *Acacia laricina* has often longer, pungent phyllodes that are continuous on the branchlets, appressed-pubescent peduncles, cream to pale yellow heads with fewer flowers, gamosepalous calyx and larger pods and seeds. *Acacia cedroides* has finely striate-ribbed branchlets, verticillate phyllodes, shorter, linear-triangular stipules, gamosepalous calyx and much larger seeds. The new species is also allied to *A. pusilla* (see above), another Ravensthorpe Range endemic, which has smaller, subterete, nearly veinless phyllodes, shorter stipules, shorter peduncles bearing heads with fewer flowers and coiled pods (the pods of *A. rhampophylla* are curved and sometimes only slightly so).

Acacia rigida Maslin, *sp. nov.*

Frutex ad 1.5 m altus et 3.5 m latus, aut compactus (in locis expositis) aut decumbens et diffusus (in fruticetis densis). Rami rubelli ad aurantiaci. Ramuli dense pubescentes pilis retrorsis. Stipulae pubescentes, 2.5–3.5 mm longae, basi induratae, non pungentes. Phyllodia normaliter assymetrice anguste lanceolata, 9–14 mm longa, 1.2–2 mm lata, interdum linearia usque anguste linearia et tunc 20 mm longa et 0.7–1 mm lata, patentia, rigida, cuspidata, margine superiore crassa et nerviformi, pulvino basi dilatato. Inflorescentiae in nodis plerumque singulae. Pedunculi 5–9 mm longi (3–4 mm in forma phyllodiis linearibus), glabri ad moderate puberuli. Florum capitula globularia, 8–12-flora. Flores 4-meri. Calyx gamosepalus, 1/5–1/4 longitudine corollae. Petala 1.6–1.8 mm longa, sparse ad moderate puberula. Legumen teres, ad 6 cm longum et 4.5 mm diametro, modice coriaceum, indistincte longitudinaliter striatum, minute puberulum. Semina (subimmatura) in legumine longitudinalia, obloidea, 5–5.5 mm longa, 2.5–2.8 mm lata, turgida; funiculus c. 1 mm longus, in arillum crassum conicum abrupte expansus.

Typus: 7.5 km east of Corrigin towards Bendering, Western Australia, 13 June 1976, *B.R. Maslin* 4174 (*holo:* PERTH 00769479; *iso:* CANB, K, MEL, NY).

Harsh *shrub*, either dense, compact, intricately branched, to 1.5 m tall and 3.5 m wide (in exposed situations) or sprawling and diffuse (in dense scrub). *Bark* grey at base of stems, reddish to orange on branches. *Branches* reddish orange. *Branchlets* rather sparingly divided and sometimes arching downwards, terete, very finely ribbed, not flexuose, densely puberulous (hairs white and retrorse), scars evident on older branches where phyllodes have fallen. *Stipules* obvious and persistent but normally only base remaining on old wood, narrowly linear-triangular, thickened and indurate towards the base but rather scarious and brittle on distal half, 2.5–3.5 mm long, straight, somewhat rigid, not pungent, glabrescent, reddish brown. *Phyllodes* normally asymmetrically lanceolate to asymmetrically narrowly lanceolate with the upper margin more curved than the lower margin, occasionally (when phyllodes very narrow) linear to narrowly linear, 9–14 mm long (to 20 mm on linear phyllodes), 1.2–2 mm wide (0.7–1 mm on linear phyllodes), l:w 5–10 (15–27 on linear phyllodes), somewhat crowded, patent, straight or sometimes (especially on linear phyllodes) very slightly recurved, rigid, compressed but not obviously so when phyllodes very narrow (appearing somewhat angular), glabrous or with a sprinkling of hairs near the base, dark green; 5-nerved, nerves prominent and yellowish; *midrib* central or more normally near lower margin; upper margin 1 mm wide, flat to very shallowly channelled, thick, nerve-like due to 2 prominent nerves which extend from base to apex; *apex* narrowed into a straight, rigid, subulate, orange to red-brown cusp *c.* 1.5 mm long; *pulvinus* to 0.5 mm long, dilated at base, ± smooth, yellow to orange when dry. *Gland* not prominent, situated on the ± flattened upper margin, 2.5–4 mm above the pulvinus, ± circular, 0.3 mm diam., lip yellowish and not raised, central orifice shallow and brownish. *Inflorescences* simple, normally 1 per node, sometimes 2 at a few nodes, normally about as long as phyllodes; *peduncles* 5–9 mm long (3–4 mm on linear phyllode variant), patent to inclined, glabrous to moderately puberulous (hairs short, soft, white, straight to slightly hooked, patent to slightly reflexed or antrorse); *basal peduncular bracts* persistent, inconspicuous, *c.* 0.5 mm long, solitary, subtending adaxial side of peduncle, ± deltate to shallowly triangular but apex normally rounded, scarious, puberulous abaxially, dark brown. *Heads* globular, light to medium golden, 8–12-flowered, the flowers not densely arranged; *bracteoles* oblong or narrowly spathulate, *c.* 0.5 mm long, scarious, puberulous abaxially, dark brown. *Flowers* 4-merous; *calyx* gamosepalous, 1/5–1/4 length of petals, commonly drying brownish, divided for 1/3–1/2 its length into triangular to deltate, non-thickened, ciliolate lobes; calyx tube turbinate, nerveless, glabrous to glabrescent; *petals* 1.6–1.8 mm long, connate for about 1/2 their length, sparsely to moderately puberulous, obscurely 1–nerved but normally appearing superficially nerveless. *Pods* terete, hardly constricted between seeds, to 6 cm long and 4.5 mm diam., with up to 7 seeds, moderately coriaceous, shallowly curved, obscurely longitudinally striate, densely minutely puberulous, red-brown, somewhat abruptly narrowed at both ends, margins not thickened. *Seeds* (slightly immature) longitudinal with hilum facing apex of pod, obloid, 5–5.5 mm long, 2.5–2.8 mm wide, turgid, minutely tuberculate at hilar end, otherwise smooth, probably dull and dark brown at maturity; *pleurogram* open at hilar end; *areole* *c.* 3 x 1.5 mm; *funicle c.* 1 mm long, abruptly expanded into a thick yellowish conical aril 2.5 mm wide, 2.3 mm high and situated on top of seed.

Selected specimens examined. WESTERN AUSTRALIA: in area between Narembeen and Kondinin, *A.M. Ashby* 5323 (AD, PERTH); *c.* 14 km N of Kellerberrin, *L. Atkins* HLA62 (PERTH); 10 km E of Cuballing (N of Narrogin) towards Wardering Brook then 1 km S along road towards the Narrogin–Wickepin road, *A.S. George* 10610 (AD, BRI, CANB, PERTH); 5 km NE of Jitarning, *R. Hnatiuk* 780060 (PERTH); Monkepin, 4 Mar. 1960, *R.T. Lange s.n.* (PERTH 00122424); *c.* 7 km due NE of Bendering, *B.R. Maslin* 4173 (NSW, PERTH); 7.5 km E of Corrigin towards Bendering, *B.R. Maslin* 4371 (PERTH); Dryandra State Forest, *D.M. Rose* 551 (PERTH); E of Mundaring on West Talbot Rd, 6 Dec. 1976, *A. Selkirk s.n.* (PERTH 00122386).

Distribution. Scattered in the south-west of Western Australia from Mundaring east to near Kellerberrin and south to between Dryandra State Forest and Kondinin.

Habitat. Grows in deep sand or gravelly loam or clay in high shrubland or woodland.

Phenology. Flowering concentrated in May and June, but also seems to flower sporadically throughout the year. Pods with slightly immature seeds collected in June and December.

Conservation status. Not under threat.

Etymology. The specific epithet is taken from the Latin *rigidus* (rigid, stiff), in reference to the phyllodes.

Affinities. *Acacia rigida* is recognized by a combination of the following characters: phyllodes pungent, 5-nerved, upper margin thick and nerve-like; peduncles axillary; flowers 4-merous; petals 1-nerved; pods terete, striate, red-brown. On account of its phyllode and pod morphology *A. costata* Benth. is related to *A. rigida* but is readily distinguished by its more numerous-flowered heads (13–19-flowered), 5-merous flowers and striate petals. The new species also resembles members of the *A. horridula* group (Maslin 1978) in inflorescence and carpological features but is readily distinguished by its phyllodes having a thick, vein-like upper margin.

Variation. Most collections of *A. rigida* are from the Corrigin–Kondinin area in the central wheatbelt and these specimens have peduncles 5–9 mm long and phyllodes which are asymmetrically lanceolate to narrowly lanceolate, 9–14 mm long, 1.2–2 mm wide and with a l:w of 5–10. Two collections (*George* 10610 and *Selkirk s.n.*) from along the western margin of the range (near Narrogin and east of Mundaring Weir), differ in their shorter peduncles (3–4 mm long) and linear phyllodes (15–20 mm long, 0.7–1 mm wide, l:w 15–27).

Acacia rostellata Maslin, *sp. nov.*

Frutex effusus plerumque ad 50 cm altus. Ramuli pungentes, teretes, hirtelli ad pubescentes. Stipulae 0.7–1.5 mm longae, persistentes vel caducae. Phyllodia inaequilariter obtriangularia, acuta, mucronata, angulo supero rotundato, 3–6 mm longa, 2–4 mm lata, hirtella; nervus principalis medianus vel ad marginem infernum positus; glans 1–3 mm supra pulvinam inserta. Inflorescentia racemus reductus, capitulo 1. Pedunculi 4–10 mm longi, hirtelli vel pubescentes, raro glabri; capitula floribus 8–15. Flores 5-meri, raro 4-meri. Sepala unita, hirtella. Petala hirtella, raro glabra, enervia. Legumen curvatum ad circinatum, ad 30 mm longum, 3–3.5 mm latum, parum moniliforme, coriaceum, glabrum, pubescens vel hirtellum, atro-brunneum. Semina longitudinalia, ovoidea vel ellipsoidea, 2.5–3 mm longa.

Typus: 18 km from Lake King towards Ravensthorpe, Western Australia, 6 October 1975, *B.R. Maslin* 3868 (*holo:* PERTH 00183288; *iso:* CANB, K, MEL, NY).

Spreading *shrub*, commonly domed, ± dense, 10–50 cm tall (50–100 cm, *Strid* 21069). *Branches* much divided and ending in short, commonly ± pungent, terete, obscurely ribbed green branchlets which are densely hirtellous to pubescent (hairs usually patent and straight to slightly curved, infrequently prominently curved and/or antrorsely ± appressed). *Stipules* triangular to narrowly triangular, 0.7–1.5 mm long, scarious, dark brown, not connate when young, persistent or caducous. *Phyllodes* inaequilaterally obtriangular to obdeltate, the upper apical angle rounded and the lower angle acute and distinctly mucronate (mucro 0.3–0.8 mm long, straight or shallowly recurved, ± pungent, dark brown), upper margin below the rounded angle commonly partially or wholly parallel

to and abutting the branchlet, distal edge of upper margin with a shallow sinus near where main nerve intersects this margin, 3–6 mm long, 2–4 mm wide, l:w 1–2, inclined to ascending, slightly undulate, moderately to densely hirtellous (hairs straight and patent) or occasionally sparsely antrorsely hairy with indumentum commonly confined to margins, green; *midrib* almost central or clearly near lower margin, obscure or somewhat prominent, shortly concurrent with upper margin near the mucro, rarely a few phyllodes with a second minor nerve diverging from pulvinus; lateral nerves absent or very few and obscure; *pulvinus* 0.1–0.5 mm long, dull yellow or gold, transversely wrinkled. *Gland* 1–3 mm above base. *Inflorescence* an extremely reduced 1-headed raceme, the axis to *c.* 1 mm long and supporting 3 bracts; *peduncles* 4–10 mm long, slender, hirtellous or pubescent, occasionally glabrous, basal bracts 2 or 3, brown, larger than raceme bracts. *Heads* globular, lemon-yellow or golden, 8–15-flowered, 3–4 mm diam.; *bracteoles* absent. *Flowers* 5-merous, a few occasionally 4-merous in some heads; *calyx* gamosepalous, divided for 1/4–1/2 its length into ± triangular lobes, hirtellous; *petals* 1–1.5 mm long, hirtellous to hirsutellous, infrequently glabrous, nerveless. *Pods* curved to openly 1-coiled, to 30 mm long, 3–3.5 mm wide, prominently rounded over seeds alternately on each face, slightly to moderately constricted between seeds, thinly coriaceous, glabrous, pubescent or hirtellous, dark brown to blackish. *Seeds* longitudinal, ± plano-convex, ovoid to ellipsoid or obloid, 2.5–3 mm long, 1.8–2 mm wide, rugulose, black, dull; *pleurogram* obscure, open at hilar end; *areole* 1.2–1.5 mm long, 0.5–0.8 mm wide; *funicle* gradually expanded into an aril which is little-folded on top of seed.

Selected specimens examined. WESTERN AUSTRALIA: Bruce Rock, Sep. 1933, *E.T. Bailey s.n.* (PERTH 00183318); W of Ravensthorpe, *A.S. George* 7067 (PERTH); 6 km S of Harrismith towards Dumbleyung, *G.J. Keighery* 6765 (PERTH); 20 miles [32 km] NE of Ongerup, *K. Newbey* 3667 (PERTH); 16–19 km from Lake King along road to Lake Grace, *A. Strid* 21069 (AD, BRI, NSW, PERTH, W, Z); 33 km E of Lake King at No. 1 Rabbit Proof Fence, *P.G. Wilson* 5751 (K, PERTH); 34 km ENE of Corrigin, *P.G. Wilson* 11889 (PERTH); *c.* 13 km from Lake Grace towards Kukerin, *J.W. Wrigley* WA/68 5741 (CBG, PERTH).

Distribution. Scattered in the south-west of Western Australia from Bruce Rock south to near Ongerup and east to Speddingup (north of Esperance).

Habitat. Grows in sand, gravel and clay in heath under open eucalypt scrub or woodland.

Phenology. Flowering recorded from September to November; mature pods collected in December.

Conservation status. Not under threat.

Etymology. The specific epithet *rostellatus* (somewhat beaked), in reference to the phyllode apex which has the form of a small beak.

Affinities. Uncertain. Possibly having some relationship to *A. spinosissima* Benth. which also lacks bracteoles but is readily distinguished by its glabrous, ± pruinose branchlets and narrowly oblong, glabrous, innocuous phyllodes which are sometimes sub-fasciculate on short branchlets. This new species has some superficial resemblance to *A. aristulata* (see above).

Acacia sabulosa Maslin, *sp. nov.*

Frutex effusus 1–3 m altus. Ramuli juvenes angulati resinosi, mox teretes, subtiliter costati, raro farinacei. Stipulae 0.5–1 mm longae, persistentes. Phyllodia anguste linearia, obtusa vel rotundata,

obtuse mucronulata, 6–10 cm longa, 1–3.5 mm lata, tenuia, glabra, juvenia resinosa; costa non prominens; nervi laterales pauci, anastomosantes; glans plerumque 1–2 mm supra pulvinam inserta, et glans minor juxta mucronem inserta. Inflorescentia simplex, phyllodiis simul effecta. Pedunculi 6–20 mm longi, resinosi, ebracteati; capitula floribus 35–50. Flores 5-meri. Sepala unita, glabra. Petala connata, glabra, obscure 1-nervata. Legumen anguste oblongum, ad 6 cm longum, c. 10 mm latum, chartaceum, resinosum, tranverse reticulatum. Semina transversa ad parum obliqua, obloidea vel ellipsoidea, 4–4.5 mm longa; arillus membranaceus, angustus.

Typus: near Cossack cemetery, Cossack, Western Australia, 16 May 1982, *B.R. Maslin* 5249 (*holo:* PERTH 00167037; *iso:* BRI, CANB, G, K, MEL, NSW, NY).

Glabrous, spreading, bushy *shrub*, 1–3(5) m tall, to 3 m across, several-stemmed at or near base, rarely single-stemmed and branching 1 m or more above base. *Bark* dark grey, smooth, fissured with age. *Branchlets* rather slender, angled at extremities, soon terete, finely ribbed, ribs most obvious immediately below stem projections which support phyllodes, sometimes sparsely tuberculate, light brown to reddish brown, occasionally farinose, resinous when young. *Stipules* narrowly triangular, 0.5–1 mm long, erect, yellow to light brown, persistent. *Phyllodes* narrowly linear, narrowed at base, 6–10 cm long, 1–3.5 mm wide, one specimen to 6 mm, l:w 20–100, flat, thin, obscurely longitudinally wrinkled when dry, not rigid, patent to erect, straight, resinous at least when young, green, sometimes scurfy especially over nerves, very sparsely tuberculate, stomata numerous (observe at mag. x10 or more); *midrib* not prominent, yellowish and slightly raised when dry, occasionally on some phyllodes a faint second nerve arising from pulvinar region and running parallel to midrib; *lateral nerves* few, obscure (commonly not visible on narrowest phyllodes), anastomosing and trending longitudinal marginal nerves narrow and yellow; *apex* mucronulate, mucro short, thick and central or excentric; *pulvinus* terete, *c.* 1 mm long, yellow to light brown, finely transversely wrinkled when dry. *Gland* on upper margin of phyllode 1–2(5) mm above pulvinus, not prominent although sometimes raised, circular to oblong-elliptic, 0.2–0.5 mm long, yellow, commonly with an indistinct shallow central orifice; a second smaller gland adjacent to the mucro. *Inflorescences* initiated synchronously with phyllodes on terminal and axillary new shoots, the subtending phyllodes mature or semi-mature by the time the heads reach anthesis, the shoot seemingly continuing to grow after inflorescence production has ceased; *peduncles* 1 or 2 per axil, slender, 6–20 mm long, resinous, base ebracteate, rarely a small solitary bract on upper 1/3 near the head. *Heads* globular, densely 35–50-flowered, resinous, bright light golden; *bracteoles* narrowly spathulate, 1–1.5 mm long; laminae ovate, abruptly acute, thickened abaxially. *Flowers* 5-merous; *calyx* 2/3–3/4 length of corolla, diaphanous, gamosepalous, dissected for 1/6–1/4 its length into broadly triangular, abaxially thickened lobes; *petals* 1.5–2 mm long, connate for *c.* 2/3 their length, very obscurely 1-nerved. *Pods* narrowly oblong, to 6 cm long, *c.* 10 mm wide, chartaceous, resinous, flat, raised over seeds alternately on each side, usually not constricted between seeds although occasional deep constrictions occur, light brown, transversely reticulate, stipe slender and *c.* 5 mm long. *Seeds* transverse to slightly oblique, obloid to ellipsoid, 4–4.5 mm long, 2.5–3.5 mm wide, narrowed towards the periphery, brown; *pleurogram* open at hilar end; *areole* 1.5–2.5 x *c.* 1 mm; funicle and aril membranous and creamy white, *funicle* flattened and irregularly folded at the end where it expands into a narrow, oblique aril.

Selected specimens examined. WESTERN AUSTRALIA: 5 miles [8 km] W of Wickham, 31 Mar. 1982, *G. Craig s.n.* (CANB, K, PERTH 00347868); Lake Auld, *A.S. George* 15667 (CANB, K, MEL, NY, PERTH); Telfer Mining Centre, *E.M. Goble-Garratt* 93 (BRI, PERTH, short/broad phyllode variant); 60 miles [96 km] NE of Callawa Station, *M. House & P. Smith* 116 (PERTH); 26 km due ESE of Sandfire Roadhouse, between Port Hedland and Broome, *B.R. Maslin* 4878 (NSW, PERTH); 9.7 km from North West Coastal Highway at Roebourne on road to Wickham, *B.R. Maslin* 5751 (CANB, PERTH); Macroy

Station, *L. Merrit* R2 (PERTH); Keartland district, Durba Hills, *G.J. Morse* 186 (CANB, PERTH); Keartland district, 90 km E of Calvert Range, *G.J. Morse* 210 (CBG, PERTH, short/broad phyllode variant); 10 km S of Mandora turnoff on the Great Northern Highway, *T. Willing* 95 (PERTH). NORTHERN TERRITORY: *c.* 16 km SSE of Fiddlers Lake, Sangster Bore area, *D.E.Albrecht* 6176 (Alice Springs, PERTH); 21 km SSE of Sangster Bore, Tanami Desert, *P.K.Latz* 11977 (Alice Springs, PERTH).

Distribution. Occurs in northern Western Australia, discontinuous from Karratha east to the south-eastern corner of the Great Sandy Desert and south to the Calvert Range in the Little Sandy Desert. Also recorded for the Northern Territory near Sangster Bore in the Tanami Desert.

Habitat. Grows on deep red or brown sand, commonly on dunes and associated with spinifex.

Phenology. Flowering recorded from late March to July; mature pods collected in October.

Conservation status. Not under threat.

Etymology. The specific epithet is from the Latin *sabulosus* (sandy), in reference to the soil in which the species grows.

Affinities. Acacia sabulosa is most closely related to two other sand-loving Arid Zone species: *A. dictyophleba* F. Muell. and *A. jensenii* Maiden. Besides being resinous, glabrous shrubs, these three species share the following important characters: glands present at both base and apex of phyllodes; stipules persistent; inflorescences initiated synchronously with phyllodes on new shoots; peduncles ebracteate at base; calyx gamosepalous. The carpological features of *A. sabulosa* are very similar to those of *A. dictyophleba* but mature pods and seeds are unknown for *A. jensenii*. The new species is most readily distinguished from the other two by its long, linear, 1-nerved phyllodes (see key below). The available data show *A. jensenii* to be a spindly, open shrub or tree with one or two thin main stems and foliage confined to the slender upper branches. *Acacia sabulosa*, on the other hand, is a dense bushy shrub which is usually several-stemmed from near the base.

It is with some reservation that *A. sabulosa* is recognized at the rank of species. It could equally be treated as a subspecies of *A. jensenii*, or alternatively, these two taxa could be treated as subspecies of a single variable species, *A. dictyophleba*. To adopt the latter approach would only compound the confusing range of variation already known to exist within *A. dictyophleba* (see Maslin 1980). To treat *A. sabulosa* as a subspecies of *A. jensenii* is difficult because so little is known about *A. jensenii*. Therefore, to avoid making unwarranted assumptions based on inadequate data it seems prudent to treat *A. sabulosa* as a distinct species.

1 Phyllodes with 1 main longitudinal nerve on each face; gland 0.3–1 mm long
  2 Phyllodes 6–10 cm long, 1–3.5(6) mm wide, l:w 20–100; bushy shrub ..... **A. sabulosa**
  2. Phyllodes 2.5–6 cm long, 3–6 mm wide, l:w 7–13; spindly open shrub or tree ..... **A. jensenii**
1. Phyllodes with 2 or 3 main longitudinal nerves on each face with the minor nerves forming a prominent reticulum between them; gland 1–2(3) mm long ..... **A. dictyophleba**

Vegetatively *A. sabulosa* resembles the Queensland species *A. hockingsii* Pedley which is distinguished by its shorter peduncles (3–5 mm long), heads with fewer flowers (about 30) and narrower pods (5–7 mm wide) with longitudinal seeds.

Variation. A few specimens have atypically short/broad phyllodes, 5–7 cm long, 5–6 mm wide, l:w = 10–15 (e.g. *Goble-Garratt* 93 and *Morse* 210, see specimens cited above). The typical variant grows in the same region as these specimens.

Acacia scalena Maslin, *sp. nov.*

Frutex rigidus, ramosissimus, ad 1.3 m altus. Ramuli aliquantum spinescentes, saepe leviter pruinosi. Stipulae plerumque caducae. Phyllodia ± cuneata vel obovata, 5–10 mm longa cuspide excluso, 3–10 mm lata, evidenter asymmetrica, margine superiore conspicue rotundata, margine proximali ramo parallelo, cuspide 1.5–3 mm longa, glabra, glauca ad subglauca, costa mediana excentrica margini inferiori approximata, nervis lateralibus bifurcatis a latere adaxiali costae medianae ascendentibus partem crenulatam marginis superioris secantibus. Glans non prominens. Racemi valde reducti, monocephali; bracteae ad basin axis racemi persistentes. Pedunculi 4–7 mm longi, glabri. Florum capitula globularia, 18–22-flora. Bracteae in gemmis conspicuae. Flores 5-meri. Sepala unita, 1/2–3/3 longitudinis corollae. Petala c. 2 mm longa. Legumina anguste oblonga, ad 4 cm longa, 4–6 mm lata, undulata, supra semina manifeste convexa, glabra, atrobrunnea, leviter pruinosa. Semina in leguminibus longitudinalia, ellipsoidea, 2.7–3 mm longa, 2–2.5 mm lata, turgida, griseo-brunnea, nigro-maculata; pleurogramma continuum; funiculus c. 2 mm longus, inferne reflex et in arillum subapplanatum, flavum cerinum expansus.

Typus: 1.5 km north-east of Wubin towards Paynes Find, Great Northern Highway, Western Australia, 5 July 1980, *B.R. Maslin* 4553 (*holo:* PERTH 00771619; *iso:* CANB, K, MEL, NY).

Harsh, rigid, commonly straggly *shrub* to 1.3 m tall, much-branched and ending in numerous, short, straight, rigid, somewhat spinescent, patent to ascending branchlets. *Bark* smooth, grey except the pinkish brown or green branch apices. *New shoots* red. *Branches* terete, very finely ribbed (ribs yellow to light brown), commonly faintly pruinose at extremities, glabrous, marked with raised leaf scars where phyllodes have fallen. *Stipules* linear–triangular, 1–1.5 mm long, scarious, mostly caducous but sometimes persistent at a few nodes. *Phyllodes* 5–10 mm long (excluding the cusp), 3–10 mm wide, l:w 0.6–1.4, ± cuneate or obovate, markedly asymmetric, the lower margin straight to shallowly convex, the upper margin conspicuously rounded with its proximal edge ± parallel to the branch and its distal edge variably crenulate–erose, somewhat crowded towards ends of branches, patent to slightly inclined, commonly very slightly undulate (at least when dry), glabrous, glaucous to subglaucous; *midrib* evident on each face of phyllode, close to and ± parallel with its lower margin; *lateral nerves* very fine, ascending from adaxial side of midrib, normally bifurcating and commonly openly anastomosing, ultimately intersecting crenulate portion of upper margin; nerves on abaxial side of midrib absent or very obscure; margins not thickened; *apex* narrowed to a straight, rigid, subulate, dark brown cusp 1.5–3 mm long; *pulvinus* not clearly developed, sometimes apparently absent, comprising a narrow rim (c. 0.1–0.2 mm wide) of yellowish brown tissue which is slightly dilated at the base. *Gland* not prominent, situated on proximal portion of upper margin of phyllode (below its widest part) 1.5–4 mm above the base, circular, 0.2–0.3 mm diam. *Inflorescence* an extremely reduced 1-headed raceme, 1 per node; raceme axis to 0.5 mm long, provided at base with 2, small (c. 0.8 mm long and 0.9 mm wide), very widely ovate, sessile, minutely fimbriate (otherwise glabrous), slightly thickened bracts which persist to anthesis, vegetative bud at distal end of axis dormant at anthesis and provided at its base with a very widely ovate to shallowly triangular, scarious, obscurely striate, minutely fimbriate, light brown bract c. 1 mm long and 1.3 mm wide; *peduncles* 4–7 mm long, glabrous; *basal peduncular bracts* caducous but sometimes persisting to anthesis, 2, fused but readily splitting with age, obliquely rounded-triangular to ovate, 1.5–2 mm long (obviously exceeding raceme bracts), concave, dark brown, minutely fimbriate othrwise glabrous. *Heads* globular, 5–6 mm diam. when dry,

light to mid-golden, 18–22-flowered; *bracteoles* obvious in buds where they overtop the flowers, persistent, spathulate, *c.* 2 mm long, glabrous or abaxially strigillose; claws 0.5–0.7 mm long, expanded into broad (0.8–1 mm), obtuse, concave, very obcurely striate, scarious, brown laminae. *Flowers* 5-merous; *calyx* 1/2–2/3 length of corolla, divided for *c.* 1/3 its length into oblong, slightly inflexed, rounded to broadly triangular, fimbriate lobes, the tube glabrous to glabrescent and not obviously nerved; *petals c.* 2 mm long, connate for *c.* 1/2 their length, glabrous, midrib slightly pronounced. *Pods* narrowly oblong, to 4 cm long, 4–6 mm wide, with up to 11 seeds per pod, undulate, markedly raised over one side of the seeds with adjacent pronounced convexities occurring on opposite side of the pod over its entire length, very finely chartaceous to slightly coriaceous, straight to shallowly curve, very finely wrinkled over the seeds, glabrous, dark brown (tinged purple), faintly pruinose, abruptly constricted at apex, tapered at base into a stipe *c.* 2 mm long. *Seeds* longitudinal, ellipsoid but obliquely truncate along edge adjacent to the aril, 2.7–3 mm long, 2–2.5 mm wide, turgid (2–2.5 mm thick), hilum obliquely positioned on top of seed and facing the adaxial suture, greyish brown with black mottlings; *pleurogram* circular to oblong, continuous; *areole* 0.4–0.5 mm long, 0.3–0.4 mm wide; *funicle* *c.* 2 mm long, reflexed below and expanded into a somewhat flattened, ridged, waxy-looking, dull yellow, slightly shiny aril which extends wholly down one side of the seed.

Selected specimens examined. WESTERN AUSTRALIA: 3 miles [5 km] E of Wubin, *T.E.H. Aplin* 553 (PERTH); 31.2 km E of Coorow Hall, *C. Chapman* (13)77 (NSW, PERTH); 12 miles [19 km] S of Latham, *J. Goodwin* 185 (PERTH); 5 km S of Wubin towards Dalwallinu, *B.R. Maslin* 3369 (PERTH); 8 km from Wubin towards Mount Magnet, *B.R. Maslin* 3530 (PERTH); 1.5 km NE of Wubin off Great Northern Highway, *B.R. Maslin* 5059 (PERTH); Manuel Rd, NNE of Wubin, *B.R. Maslin* 7606 (PERTH); 1.5 km NE of Wubin on Paynes Find road, *S. Patrick* 2243 (PERTH); 2.8 miles [3.4 km] SSE of Wubin on the highway to Dalwallinu, *M.D. Tindale* 2778 (K, NSW, PERTH, US).

Distribution. Restricted along the western edge of the north-central wheatbelt of south-west Western Australia, from Ballidu northwards to near Latham with the principal collecting area around Wubin (*c.* 55 km north of Ballidu).

Habitat. Grows in sand or laterite, in open heath or eucalypt (mallees or trees) low woodland.

Phenology. The main flush of flowering is recorded from July to September, but also occurs as early as May; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The epithet is derived from the Latin *scalenus* (unequal), in reference to the very asymmetric phyllodes.

Affinities. The pungent, asymmetric phyllodes with their peculiar nervature, spinescent branchlets, inflorescence structure and bracteole morphology relate the new species to *A. fiabellifolia* W. Fitzg. from which it is readily distinguished in the following ways: branchlets glabrous (not hirtellous); phyllodes subglaucous to glaucous (not green); pods not spirally coiled; seeds mottled (not uniformly dark brown). *Acacia flabellifolia* is restricted to the Yandanooka–Watheroo area which is about 30 km W of the known range of *A. scalena*. Species related to the above two include *A. amblygona* A. Cunn. ex Benth. (Queensland and New South Wales), *A. pravifolia* F. Muell. (Queensland, New South Wales and South Australia) and *A. lanceolata* (see above) and *A. sphenophylla* (see below) from Western Australia. These six species comprise the *A. pravifolia* group (see Maslin, in press). The new species superficially resembles *A. rendlei* Maiden which is readily recognized by it prominent, spiny stipules.

Acacia sedifolia Maiden & Blakely, *J. Roy. Soc. W. Australia* 13: 3; pl. 1, figs 13–18 (1928). *Type:* Bendering, Western Australia, 26 August 1923, *C.A. Gardner* 2006 (*holo:* NSW; *iso:* K, PERTH).

Resinous, glabrous, dense, rounded *shrub* to *c.* 1.5 m high and *c.* 3 m wide. *Branchlets* aromatic when crushed. *Phyllodes* crowded, sometimes on raised stem projections, ascending to erect, ± oblong to asymmetrically cuneate, recurved at least at apex, terete to flat, 2–5 mm long, 0.5–1.5 mm wide, l:w = 2–5, obliquely narrowed to a distinct, acute point, thick, green, nerveless, medially sulcate when dry; *pulvinus* present or absent. *Inflorescences* simple, 1-headed in upper axils; *peduncles* 1–7 mm long, somewhat stout. *Heads* globular, 20–26-flowered, light- to mid-golden. *Flowers* 5-merous; *sepals* united. *Pods* linear, flat, to 5 cm long, 4.5–5.5 mm wide, crustaceous to coriaceous, openly reticulate. *Seeds* longitudinal, obloid to ellipsoid, 3.5–5 mm long, brown-black mottled yellow; aril thick.

Distribution. Occurs from Muntadgin south to Newdegate, Lake King and Mt Gibbs, south-western Western Australia.

Affinities. Perhaps related to *A. handonis* Pedley from Queensland, which is readily distinguished by its longer phyllodes. Two subspecies are recognized.

Key to subspecies of *Acacia sedifolia*

Pulvinus absent; raised stem projections absent ..... subsp. **sedifolia**
Pulvinus present; phyllodes seated on raised stem projections ..... subsp. **pulvinata**

Acacia sedifolia Maiden & Blakely subsp. **sedifolia**

Phyllodes not on raised stem projections, sessile, 1.5–2.5 mm long, usually 0.5–1 mm wide and terete to subterete. *Peduncles* usually 1–4 mm long. *Seeds* 3.5–4 mm long.

Selected specimens examined. WESTERN AUSTRALIA: Bendering Reserve, *G.J. Keighery* 7023 (PERTH); Kittler's property, 35 km due NE of Corrigin, *B.R. Maslin* 5759 (BRI, CANB, G, K, MEL, NY, PERTH); near Muntadgin, *K. Newbey s.n.* (PERTH 00125040).

Distribution. Occurs from Muntadgin south to Bendering and Hyden, Western Australia.

Habitat. Grows in lateritic sand or loam, in closed heath or open scrub.

Note. Plants from north of Hyden are characterized by flat phyllodes 1–2 mm wide and peduncles 5–10 mm long. They may be worthy of separate infraspecific rank.

Acacia sedifolia subsp. **pulvinata** Maslin, *subsp. nov.*

Ab *Acacia sedifolia* subsp. *sedifolia* ramulis basibus foliorum elevatis persistentibus asperis; phyllodiis 2–5 mm longis, 0.8–1.5 mm latis, planis sed crassis, pulvino distincto; pedunculis 4–7 mm longis; seminis 4.5–5 mm longis, 2.5–3 mm latis; differt.

Typus: 5 miles [8 km] south of Mt Gibbs, Western Australia, 31 July 1969, *A.S. George* 9457 (*holo:* PERTH 00169420; *iso:* CANB, K, PERTH 00738379).

Differs from subsp. *sedifolia* in the following ways. *Branchlets* rough with raised projections where phyllodes have fallen. *Phyllodes* 2–5 mm long, 0.8–1.5 mm wide, flat but thick; pulvinus distinct, 0.3–0.5 mm long, yellow. *Peduncles* 4–7 mm long. *Seeds* 4.5–5 mm long, 2.5–3 mm wide.

Selected specimens examined. WESTERN AUSTRALIA: 15 km W [of] Newdegate, *H. Demarz* 11081 (PERTH); 3 km E by road of former Pederah Siding, *B.R. Maslin* 5775 (BRI, CANB, K, MEL, NSW, PERTH); Dragon Rocks Nature Reserve, Buettners Rd, 1.5 km S of Pingaring Varley Rd North, *B.R. Maslin* 6310 (PERTH); 2 miles [3.2 km] S of Mt Gibbs, *K. Newbey* 3279 (PERTH); 11 km E of Lake King, *K. Newbey* 9482–1 (MELU, PERTH); SE of Lake King and E of Lake King–Ravensthorpe road at 288 mile peg, *R.A. Saffrey* 404 (CANB, NY, PERTH).

Distribution. Confined to the central wheatbelt in the south-west of Western Australia, from Karlgarin, south to near Newdegate and east to Mt Gibbs (north-east of Lake King).

Habitat. Grows in sand or clay on lateritic hilltops or ridges in open shrub mallee.

Phenology. Flowering recorded from late June to early September; mature pods collected in late November to December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. Epithet from the Latin *pulvinatus* (cushion-shaped), in reference to the pulvinus always present at the phyllode base in the subspecies.

Acacia sphacelata Benth., *London J. Bot.* 1: 338 (1842) and *Fl. Austral.* 2: 331 (1864). *Type:* Swan River, Western Australia, *J. Drummond s.n.* (*holo:* K; *iso:* G).

Acacia tamminensis E. Pritz., *Bot. Jahrb. Syst.* 35: 290 (1904), *synon. nov. Type:* near Tammin, Western Australia, 21 May 1901, *L. Diels* 2879 (*iso:* PERTH 00774278 – fragment ex B).

[*Acacia striatula auct. non* Benth.; *in sched.*, as to: in fruticetis arenosis inter flumina Moore et Murchison, *E. Pritzel* 375 (B, BM, E, G, K, L, M, US, Z).]

Harsh *shrub* 0.2–1.5 m high. *Bark* light grey to mid-grey. *Branchlets* rigid, glabrous or minutely hairy. *Stipules* persistent or caducous, 1–2 mm long. Phyllodes ± sessile, scattered, verticillate or subverticillate, ± patent, linear or linear-lanceolate, straight to shallowly curved, terete, quadrangular or flat, 6–25 mm long, 0.6–2 mm wide, pungent, rigid, green, smooth, glabrous or nerves ± sparsely puberulous; *nerves* 5 but the 2 adaxial nerves coalescing at the ± obscure gland, 1-nerved per face when flat. *Inflorescences* simple, mostly 1 per axil; *peduncles* 3–13 mm long, glabrous; *heads* showy, globular, 13–50-flowered, bright golden. *Flowers* 5-merous; *sepals* free, spathulate, dark brown at apex. *Pods* narrowly oblong to linear, to 4 cm long, 2.5–7 mm wide, firmly chartaceous to somewhat crustaceous, glabrous. *Seeds* longitudinal, 2.5–5 mm long, dark brown to black, arillate.

Distribution. Common in south-west Western Australia from near Port Gregory south to near the Stirling Range and east to near Scaddan.

Typification. The type sheet of *A. sphacelata* at Kew supports two Drummond collections, one unnumbered (the holotype) and the other annotated no. 299. Comparing the photograph and notes

I made in 1975 of the holotype with the herb. PERTH isotype of *A. tamminensis*, it is evident that the two specimens represent the same taxon. Although the name *A. tamminensis* has been in common use for this widespread Western Australian wheatbelt species, it must now be replaced by the earlier name *A. sphacelata*. Pritzel seems to have been confused about the identity of *A. sphacelata*. Although he described this species [as *A. tamminensis*] based on a Diels specimen collected near Tammin, he also collected it between the Moore and Murchison Rivers. This gathering, *Pritzel* 375, is represented in numerous herbaria (B, BM, E, K, M, MO, P, US) where it is labelled either *A. sphacelata* or *A. striatula*.

Variation. *Acacia sphacelata* is a variable species but can be recognized by its ± sessile, pungent, 4- or 5-nerved phyllodes which are not inserted on raised leaf bases, its showy, globular flower heads, its 5-merous flowers and its free, linear-spathulate sepals which are dark brown towards their apices (thus the specific epithet, *sphacelata*).

Notes. Until now the name *A. sphacelata* has generally been misapplied to *A. sessilis* Benth. For example, the distribution given in Maslin & Pedley (1982) as *A. sphacelata* is that of *A. sessilis*; the distribution of *A. tamminensis* given there is that of *A. sphacelata*.

Subspecies. Two new subspecies are recognized here, one along the north-western and one on the southern margin of the species' range.

Key to subspecies of *Acacia sphacelata*

1 Phyllodes all or mostly verticillate, subverticillate or in groups of 2 or 3 per node ..... subsp. **verticillata**

1. Phyllodes scattered (rarely 2 or 3 together at a few nodes)

2 Phyllodes mostly straight, linear, terete or quadrangular; gland situated near or above middle of phyllode 3–8 mm above base ..... subsp. **sphacelata**

2. Phyllodes mostly shallowly recurved, compressed or sometimes quadrangular; gland situated on lower half of phyllode (1)2–3(5) mm above base ..... subsp. **recurva**

Acacia sphacelata Benth. subsp. **sphacelata**

Harsh, rigid *shrub* normally to *c.* 1.5 m tall. *Branchlets* normally glabrous or (towards their apicies) minutely hirsutellous to antrorsely puberulous. *Stipules* normally soon caducous. *Phyllodes* mostly scattered, very rarely interspersed with some that are clustered (2 together) or whorled (2 or 3 together), terete to quadrangular, 6–25 mm long, 0.6–1.3 mm wide, straight or sometimes shallowly incurved or recurved, normally glabrous; nerves 4 or 5, the 2 adaxial nerves coalescing at the gland. *Gland* near or above middle of phyllode, 3–8 mm above the base. *Peduncles* normally 5–10 (rarely 3–4) mm long. *Flowers* 22–50 per head. *Pods* 3–5 mm wide. *Seeds* 2.5–4 mm long, 2–2.5 mm wide.

Selected specimens examined. WESTERN AUSTRALIA: 88 miles [*c.* 141 km] from Albany on Borden–Pingrup road, *A.M. Ashby* 4732 (PERTH); 23.5 km SSE of Peak Charles, *M.A. Burgman* 1481 & *S. McNee* (PERTH); near Pithara, *C.A. Gardner* 2204 (PERTH); about 16 km SE of Kulin, *R.J. Hnatiuk* 770165 (PERTH); 2 miles [3.2 km] W of Quairading on road to York, *B.R. Maslin* 490 (CANB, K, PERTH); 13 miles [*c.* 21 km] E of Karalee on Great Eastern Highway, *B.R. Maslin* 1853 (AD, PERTH); Charles Gardner Flora Reserve, 19 km S of Tammin, *B.R. Maslin* 4079 (PERTH); about 35 km due WNW of Arrino, *B.R. Maslin* 4800 (PERTH); Deefor Rd, *c.* 6 km ESE of Yarra Rd, 38 km E of Lesmurdie,

B.R.Maslin 6189 (PERTH); 25 km WNW of Barker Lake, *c.* 70 km SE of Southern Cross, *K. Newbey* 5290 (MEL, PERTH); Ravensthorpe, 26 June 1924, *Ralp & Stamford s.n.* (PERTH 00125601); 15 miles [24 km] S of Tammin, *R.D. Royce* 9315 (PERTH).

Distribution. Common in the wheatbelt area of the south-west of Western Australia, from near Port Gregory, south to Ongerup and Ravensthorpe and east to near Southern Cross and Peak Charles (south-west of Norseman).

Habitat. Grows on sand or laterite, sometimes with loam or clay, commonly in heath, shrubland or mallee woodland. In the Darling Range, east of Perth, it sometimes occurs in loam on granite outcrops.

Phenology. Flowering recorded from May to August, the main flush in June and July; mature pods collected in December.

Conservation status. Widespread, not under threat.

Acacia sphacelata subsp. **recurva** Maslin, *subsp. nov.*

Ab *Acacia sphacelata* subsp. *sphacelata* characteribus sequentibus differt: Phyllodia 10–18 mm longa, 1.2–2 mm lata, compressa sed crassa et in utraque facie costa mediana prominente provisa; phyllodia angusta, in sicco quadrangularia, leviter recurva, interdum autem phyllodiis nonnullis rectis interspersa, margine superiore recto ad leviter concavo, glans (1)2–3(5) mm supra basin phyllodii sita. Pedunculi 3–5 mm longi. Capitula 13–23-flora.

Typus: 5 miles [8 km] north of Chillinup Pool, Pallinup River, Western Australia, 19 July 1971, *K. Newbey* 3398 (*holo:* PERTH 00773670; *iso:* K).

Distinguished from subsp. *sphacelata* in the following ways. *Phyllodes* 10–18(24) mm long, 1.2–2 mm wide, compressed but thick and with a prominent midrib on each face, narrow phyllodes quadrangular when dry, shallowly recurved but commonly interspersed with some which are straight; upper margin convex; lower margin straight to shallowly concave. *Gland* (1)2–3(5) mm above base. *Peduncles* 3–5(8) mm long. *Flowers* 13–23(25) per head.

Selected specimens examined. WESTERN AUSTRALIA: Yate Swamp, 2 miles [3.2 km] SW of Quoin Head Rd turnoff, *T.E.H. Aplin* 4749 (PERTH); *c.* 46 km due SE of Hyden, *B.R.Maslin* 6368 (PERTH, Z); Tambellup, *A. Meebold* 11624 (M); cultivated, Melbourne Botanic Garden, Sep. 1868, *F. Mueller s.n.* (MEL 92053); 11 km W of Gnowangerup, *K. Newbey* 3407 (PERTH); 25 km ESE of Mt Gibbs, Frank Hann National Park, *K. Newbey* 5422 (PERTH); East Boundary Rd, S of Chillinup, *M.H. Simmons* 593 (PERTH); 8 km SW of Ongerup, *N. Stevens* KRN9495-1 (MELU, PERTH); Scaddan, *P. van der Moezel* 372 (CANB, K, MEL, PERTH).

Distribution. Scattered in the south-west of Western Australia, principally from Gnowangerup and Ongerup, east to near Scaddan and north to near Hyden.

Habitat. Grows in well-drained sites, on sand, sometimes loam or clay in open shrub mallee or eucalypt woodland over heath. Although subsp. *recurva* usually occurs as scattered, solitary plants, it does regenerate prolifically in cleared areas following summer rain. It is a fast-growing species with a single tap root and has an extensive lateral root system. Its life-span is 8–10 years. These data were supplied by K.R. Newbey (pers. comm.).

Phenology. Flowering recorded from July to September; immature pods collected in October.

Conservation status. Not under threat.

Etymology. The subspecific epithet, from the Latin *recurvus* (curved backwards), refers to the phyllode shape.

Discussion. Subspecies *recurva* is generally recognized by its shallowly recurved, commonly slightly compressed phyllodes and its short peduncles. It is distinguished from the more widely distributed typical subspecies in characters given in the diagnosis above. Although the ranges of the two subspecies come together near Ongerup they are not known to grow sympatrically.

Some specimens of subsp. *recurva* with broad phyllodes superficially resemble the eastern Australian species *A. siculiformis* A. Cunn. ex Benth, but the latter is readily recognized by its branchlets which have prominent lenticels or bark breaking into ± rectangular flakes, 4-nerved phyllodes (adaxial nerve not bifurcating at the gland as in subsp. *recurva*), 30–40 flowers per head and its filiform, non-arillate funicles.

Acacia sphacelata subsp. **verticillata** Maslin, *subsp. nov.*

Frutex rigidus, ad 0.5 m altus, ab *Acacia sphacelata* subsp. *sphacelata* characteribus sequentibus diversa: Ramuli imprimis apicem versus hispiduli ad puberuli vel interdum fere glabri. Stipulae plerumque ad basin phyllodiorum plurimorum persistentes, interdum caducae. Phyllodia regulariter (vel interdum irregulariter) verticillata, in quoque verticillo ad 6–8, sed saepe nonnulla solitaria vel (in plerumque 2 vel 3) fasciculata interspersa, (4–6)8–19 mm longa, 0.8–1.8 mm lata, normaliter secus nervos sparse antrorse puberula. Pedunculi 6–13 mm longi. Capitula 22–32-flora. Legumina 5–7 mm lata. Semina 4.5–5 mm longa, 3.2–3.8 mm lata.

Typus: 1.5 km north of Mt Lesueur, north-east of Jurien, Western Australia, 20 July 1979, *E.A. Griffin* 1965 (*holo:* PERTH 00773778; *iso:* PERTH 00773689).

Harsh, rigid *shrub* to 0.5 m tall distinguished from subsp. *sphacelata* in the following ways. *Branchlets* (especially towards their apices) hirsutellous to puberulous or sometimes almost glabrous. *Stipules* normally persistent at base of most phyllodes but sometimes falling. *Phyllodes* in regular (or sometimes irregular) whorls of up to 6–8 but frequently interspersed with some which are solitary or clustered (usually 2 or 3 together), normally 8–19 mm long (rarely 4–6 mm), 0.8–1.8 mm wide, normally sparsely antrorsely puberulous along nerves. *Peduncles* 6–13 mm long. *Flowers* 22–32 per head. *Pods* 5–7 mm wide. *Seeds* 4.5–5 mm long, 3.2–3.8 mm wide.

Selected specimens examined. WESTERN AUSTRALIA: 2 miles [*c.* 3.2 km] N of Regans Ford on Brand Highway, *R.J. Cranfield* 211 (PERTH); 2 miles [*c.* 3.2 km] E of Brand Highway along McNamara Rd, *R.J. Cranfield* 245 (PERTH); 3.3 miles [*c.* 5.3 km] N of Cataby Roadhouse on Brand Highway, *R. Cumming* 1698 (PERTH); Moore River National Park, *c.* 26 km N of Gingin on Brand Highway, *D.G. Fell* 0240 (PERTH); Hill River, June 1943, *C.A. Gardner s.n.* (PERTH 00127078); 1.5 km N of Mt Lesueur, NE of Jurien, *E.A. Griffin* 1965 (PERTH); 5 km N of Cataby Roadhouse on Brand Highway, *B.R. Maslin* 5481 (PERTH); 2.7 km NE from Brand Highway on McNamara Rd (which intersects the Highway *c.* 8 km S of Badgingarra, *B.R. Maslin* 5485 (PERTH).

Distribution. Occurs in the south-west of Western Australia, common from Mt Lesueur east to Badgingarra and south to the Moore River National Park.

Habitat. Grows in sand or lateritic sand in low open shrubland or open heath.

Phenology. Flowering recorded from May to July; mature pods collected in November.

Conservation status. Not under threat.

Etymology. Specific epithet from the Latin *verticillatus* (whorled), in reference to the arrangement of the phyllodes.

Acacia sphenophylla Maslin, *sp. nov.*

Frutex intricatus effusus 0.3–1.3 m altus. Ramuli teretes, subtiliter costati, pungentes, pubescentes ad hirsutelli vel glabri. Stipulae 1.5–2 longae, persistentes vel caducae. Phyllodia inaequilatere obtriangularia ad cuneata, mucronata, angulo supero obtuso, plerumque 3.5–8 mm longa, 1.5–4 mm lata, glabra vel parce hirtella, nervis 2 vel 3; glans obscura. Inflorescentia racemus reductus capitulis 1 vel 2. Pedunculi 4–8 mm longi, glabri, raro pubescentes; capitula floribus 15–30. Flores 5-meri. Sepala unita, lobis ciliatis, cetera glabra. Petala glabra, 1-nervosa. Legumen aperte circinatum, parum moniliforme, ad 15 mm longum, 2–3 mm latum, chartaceum ad coriaceum, glabrum vel parce hirsutellum, atro-brunneum. Semina longitudinalia, ovoidea ad ellipsoidea, 2 mm longa; arillus clavatus.

Typus: near 413 mile peg [48 km north of Murchison River crossing], North West Coastal Highway, Western Australia, 2 January 1972, *A.S. George* 11226 (*holo:* PERTH 00705322).

Intricate, ± rounded, spreading *shrub* 0.3–1.3 m tall and to 2 m across, dividing at or near ground level into a few main stems, upper branches much divided. *Bark* light to mid-grey, smooth. *Branchlets* terete, finely ribbed, patent to erect, sharply or sometimes coarsely pungent, pubescent to hirsutellous (hairs short, soft or slightly coarse, straight, patent to slightly reflexed) or glabrous, commonly pruinose at extremities, the pruinosity sometimes occurring only on the upper exposed surface (green beneath). *Stipules* persistent or caducous, narrowly triangular to linear-triangular, 1.5–2 mm long, light brown and connate upon initiation on the very young new shoots. *Phyllodes* inequilateral, variable in shape and size, obtriangular to cuneate with the upper apical angle obtuse and the lower angle mucronate (mucro rigid, ± pungent, to 0.5 mm long, dark brown), distal margin (between mucro and upper angle) ± obliquely truncate and commonly shallowly concave, infrequently some sublunate, (3)3.5–8(11) mm long, 1.5–4(5) mm wide, l:w 1.5–3.5, ascending to erect, glabrous or sparsely hirtellous (hairs usually restricted to margins and main nerves), dark green, slightly shiny; with 2 or 3 rather obvious (at least when dry) *longitudinal nerves*, the lowermost nerve situated near and ± parallel with lower margin and terminating in the mucro, this nerve commonly the most pronounced, other nerves sparingly divided and mostly running into distal margin. *Gland* insignificant, on adaxial margin between pulvinus and upper angle, 0.1–0.2 mm diam. *Inflorescence* an extremely reduced 1(very rarely 2)-headed raceme; raceme axis less than 0.5 mm long and subtended by 2, unequal, usually persistent, sessile, brown, glabrous or fimbriolate bracts 0.5–0.8 mm long; a vegetative bud commonly arising from axis and growing out during anthesis; *peduncles* 4–8(15) mm long, glabrous, infrequently pubescent; *basal peduncular bracts* subpersistent, 1.5–2 mm long, deeply cleft with age, brown, obscurely striate, glabrous or fimbriolate. *Heads* globular or obloid, golden, 7 mm diam. at anthesis

(fresh), 15–30-flowered; *bracteoles* spathulate, *c.* 1 mm long, claws shorter than the scarious lamina which is 0.5–0.7 mm wide, concave, acute to sub-acute, brown, fimbriolate. *Flowers* 5-merous; *calyx* *c.* 1/2 length of corolla, gamosepalous, irregularly lobed, the 2 lobes enclosed by the bracteole smaller than the 3 on opposite side, the lobes ciliate, otherwise glabrous; *petals* 1.5–2 mm long, glabrous, 1-nerved, the nerve commonly slightly thickened. *Pods* openly 1–1 1/2 coiled, rounded over seeds and moderately constricted between them, to 15 mm long (unexpanded), 2–3 mm wide, firmly chartaceous to very thinly coriaceous–crustaceous, glabrous or sparsely hirsutellous, slightly shiny, dark brown to black. *Seeds* longitudinal, ovoid or ellipsoid but obliquely truncate along edge adjacent to aril, 2 mm long, *c.* 1.5 mm wide, turgid (1.3 mm thick), brown to almost black, not mottled, shiny; *pleurogram* very obscure, open at hilar end, bordered by an obscure rim of yellowish tissue; *areole* 0.5 mm long, 0.2 mm wide; *funicle* filiform, *c.* 1.5 mm long, reflexed below the ± clavate aril which is ridged adaxially, extends wholly or more down one side of seed.

Selected specimens examined. WESTERN AUSTRALIA: Ajana plains, N of Geraldton, *W.E. Blackall* 612 (PERTH); Wandalong Rd, [N of] Yuna, *A.C. Burns* 84 (PERTH); 24.1 km from Kalbarri Coast Rd towards Ajana, *R.S. Cowan* 813 (PERTH); 13 km N of Murchison River bridge, *H. Demarz* D7645 (PERTH); 30.5 km from Kalbarri towards Ajana, *B.R. Maslin* 3327 (PERTH); 48 km N of Murchison River on North West Coastal Highway, *B.R. Maslin* 3343 (AD, BM, BRI, CANB, G, MEL, NSW, PERTH); 21 km from Nabawa towards Yuna, *B.R. Maslin* 3351 (K, MO, NY, PERTH); 21.2 km SW of Nabawa, *M.D. Tindale* 2756 (CANB, K, NSW, PERTH, US); *c.* 20 km N of Junga Dam, *P.G. Wilson* 6697 (PERTH).

Distribution. Occurs in the south-west of Western Australia from near Geraldton north to the 100 Mile Tank, *c.* 50 km north of the Murchison River crossing on the North West Coastal Highway.

Habitat. Grows in sand or loam, sometimes over laterite, in mixed open scrub, tall shrubland or open heath.

Phenology. Flowering recorded from late June to September; mature pods collected in late October and December to January.

Conservation status. Not under threat.

Etymology. From the Greek *sphenos* (a wedge) and *phyllon* (a leaf), in reference to the phyllode shape.

Affinities. Acacia sphenophylla is a member of the *A. pravifolia* group (see Maslin, in press). and is closely related to *A. pravifolia* F. Muell. itself, a species with a wide, discontinuous distribution in Australia, i.e. south-east Queensland, the western slopes and plains of New South Wales between Cobar, Narrabri and Temora, the Flinders and Lofty Ranges, South Australia and in Western Australia from Israelite Bay west to Boxwood Hill and north to near Wubin. These two species have the same basic inflorescence structure and somewhat similar phyllodes and seeds. Besides normally being distinguished by differences in phyllode shape and size (*A. pravifolia* usually has obtriangular to obdeltate phyllodes with l:w not above 2), the two species are distinguished by their pods. In *A. pravifolia* the pods are rather tightly coiled and irregularly twisted and the aril is 1/2–2/3 the length of the seed. Furthermore, except for the Western Australian representatives of the species (which occur further south than *A. sphenophylla*), *A. pravifolia* has broader pods (*c.* 5 mm wide) with larger seeds (3–4.5 mm long and *c.* 3 mm wide). In Western Australia the pods of *A. pravifolia* are *c.* 3 mm wide with seeds 2–2.5 mm long but, in addition to the characters given above, these plants are readily distinguished from *A. sphenophylla* by their very short peduncles (1–3 mm long), smaller heads, and small (2–4 mm long), obtriangular to obdeltate phyllodes which are about as long as wide.

Acacia sphenophylla is also related to *A. acanthoclada* F. Muell. on account of its spinescent branchlets, connate stipules (when young), and phyllode shape and size. Individual character differences between the two species are not great but, when taken in combination, the attributes discussed below justify specific rank for the new taxon. The geographical ranges of the two species do not overlap, *A. sphenophylla* being distributed to the north-west of *A. acanthoclada*. The pods are the most obvious character distinguishing the two species. In *A. acanthoclada* they are tightly many-coiled with the valves scarcely constricted between the obscurely mottled seeds. In *A. sphenophylla* the pods are loosely coiled once to 1½ times and moderately constricted between the non-mottled seeds. Additionally *A. acanthoclada* has innocuous, 1-nerved phyllodes (although the nerves are often obscure) which are sometimes glaucous.

Acacia tetraptera Maslin, *sp. nov.*

Frutex effusus 0.2–0.7 m altus. Ramuli divaricati, teretes, puberuli, glabrescentes. Stipulae c. 0.5 mm longae, caducae. Phyllodia conferta, asymmetrice ovata ad depresso-ovata vel oblata, abrupte vel gradatim in apicem grosse pungentem contracta, 2.5–4 mm longa, 2.2–4 mm lata, costa in porca prominenti paginae utraeque posita, et marginibus etiam nervosis; glans obscura, 1–2 mm supra pulvinam inserta. Inflorescentia racemus reductus capitulis 1 vel 2. Pedunculi 4–8 mm longi, glabri; capitula floribus 20–30. Flores 5-meri. Sepala libera, glabra vel parce puberula. Petala glabra, obscure 1-nervosa. Legumen subteres, curvatum ad subcircinatum, ad 20 mm longum, *c.* 2 mm latum, coriaceum ad crustaceum, glabrum. Semina longitudinalia, obloidea, *c.* 2 mm longa; arillus conicus, flavus.

Typus: Fields Rd, 11 km north of Rolland Rd, *c.* 50 km due east-north-east of Grass Patch, Western Australia, 14 August 1985, *B.R. Maslin* 5793 (*holo:* PERTH 00729167; *iso:* CANB, G, K, MEL, NY).

Spreading to low-spreading *shrub*, open to moderately open, divaricately branched, 0.2–0.7 m tall and the same or wider across, single-stemmed or up to 6-branched at ground level, stems and branches slender. *Bark* grey, finely roughened. *New shoots* dull red, initiated at anthesis and arising at distal end of raceme axes within axil of peduncle. *Branchlets* terete, finely nerved towards apex (nerves yellow or light brown and most evident immediately below insertion of phyllodes), moderately to densely puberulous to somewhat tomentulose (hairs patent to antrorse); mature branchlets glabrescent and with a longitudinally fissured, light grey epidermal layer which exfoliates to reveal a finely roughened undersurface (this surface breaking into ± irregular rectangular plates). *Stipules* linear-triangular, 0.5 mm long, rather spreading, scarious, dark brown, falling with age. *Phyllodes* asymmetric, widely ovate to widely depressed-ovate or oblate, 2.5–4 mm long, 2.2–4 mm wide, l:w 0.7–1.2, thick, smooth and turgid when fresh, prominently ridged on each face when dry (ridge central or excentric, very shallowly sinuous, extending from base to apex), rather crowded towards ends of branchlets but falling with age, patent to slightly inclined or rarely slightly reclined, glabrous, green; *nerves* 5, 1 along adaxial margin, 1 on each face along crest of the prominent ridge, and 2 very fine and obscure on adaxial margin which coalesce above the gland and extend to the apex as a single, broad, yellow or brown nerve; *lateral nerves* submerged and not readily apparent; *apex* abruptly or ± gradually narrowed into a short (*c.* 0.5 mm long) thick, indurate, subulate, coarsely pungent, straight to uncinate point which is dark brown at its tip; *pulvinus* 0.2–0.4 mm long, yellowish brown and finely transversely wrinkled when dry, glabrous or adaxially puberulous. *Gland* inconspicuous, on upper margin of phyllode (between the 2 fine adaxial nerves) 1–2 mm above pulvinus, normally circular and *c.* 0.2 mm diam., lip not raised, brown when dry. *Inflorescences* showy, usually concentrated towards ends of branches, extremely reduced 2(1)-headed racemes with axes less than 0.5 mm long; new shoots sometimes initiated at anthesis from distal end of axis; *peduncle* 4–8 mm long, glabrous; *basal peduncular bracts* caducous,

solitary, broadest at base and narrowed towards apex, 1–1.5 mm long, curved, concave, sessile, puberulous abaxially, dark brown. *Heads* prolific, globular, bright light- to mid-golden, 7 mm diam. at anthesis (fresh), 4–5 mm diam. (dry), 20–30-flowered; young buds pale orange, ageing yellow; *bracteoles* insignificant, linear, *c.* 0.7 mm long. *Flowers* 5-merous; *sepals c.* 1/2 the length of the petals, free, either linear spathulate or oblong but slightly dilated at the apex, glabrous or sparsely puberulous abaxially; *petals* 1.5 mm long, oblanceolate, free at anthesis, glabrous, very obscurely 1-nerved. *Pods* strongly arcuate to subcoiled, subterete, barely constricted between seeds, to 20 mm long, *c.* 2 mm wide, slightly coriaceous to thinly crustaceous, not reticulate, glabrous, black when dry, abruptly constricted at base; marginal nerve not thickened, light brown. *Seeds* longitudinal with hilum facing apex of pod, obloid, abruptly narrowed at hilar end, rounded at base, *c.* 2 mm long and 1.5 mm wide, turgid (*c.* 1 mm thick), shiny, grey with black mottlings, marked with a non-raised, black peripheral nerve; *pleurogram* obscure, slightly excentric, open at hilar end; *areole* 0.3–0.4 mm long, 0.2 mm wide; *funicle* filiform, *c.* 1 mm long, expanded into a yellow conical aril situated on top of the seed.

Selected specimens examined. WESTERN AUSTRALIA: 10.2–10.5 km N of Rolland Rd on Fields Rd, *G.F. Craig* 2109 (PERTH); 61.8 km along Lake King–Norseman road from Vermin Proof Fence, *G.F. Craig* 3300A (PERTH); 7 km S of Mt Holland, *H. Demarz* 11663 (PERTH); Peak Charles turnoff on Lake King–Kumarl road, *B.R. Maslin* 5792 (AD, BRI, CANB, G, MEL, MO, NSW, PERTH); 20 km NE of Peak Charles, *c.* 41 km NW of Salmon Gums, *K. Newbey* 6484 (K, PERTH); 22 km WNW of Roberts Swamp, *c.* 53 km W of Grass Patch, *K. Newbey* 8138 (PERTH); Frank Hann National Park, *R.D. Royce* 10219 (PERTH).

Distribution. Occurs in the south-west of Western Australia, extending from Mt Holland in the north and The Pimple (*c.* 40 km east of Hyden) in the west, south to Muckinwobert Rock (north-east of Ravensthorpe) and east to near Grass Patch. Most collections are from and near the Frank Hann and Peak Charles National Parks.

Habitat. Grows in well-drained loam or shallow sand over clayey loam on almost flat to gently undulating plains or low granite rises in open shrub mallee or low woodland.

Phenology. Flowering recorded in August and September; mature pods collected in November and December.

Conservation status. Not under threat.

Etymology. Named from the Greek *tetra-* (four-) and *-pterus* (-winged), in reference to the phyllodes which appear so in transverse section.

Hybrids. One collection (W of Peak Eleanora, *M.A. Burgman & S. McNee* 2231, PERTH) appears to represent a possible hybrid with *A. merrallii* F. Muell.

Discussion. Acacia tetraptera has very characteristic phyllodes. Apart from being among the smallest in the genus they are thick, smooth and turgid when fresh, however, upon drying the tissue on either side of the midrib collapses to produced a prominently raised ridge on each face of the phyllodes. Other characters useful in recognising this new species include its small, thick, rather crowded, apiculate phyllodes (apiculum straight or recurved), its small heads on short peduncles and its circinate pods.

Acacia truculenta Maslin, *sp. nov.*

Frutex echinatus, effusus, 0.7–2.2 m altus. Ramuli teretes, rigidi, costati, glabri. Stipulae 2–4 mm longae, rigidae, persistentes. Phyllodia parum inaequaliter lanceolata ad anguste triangularia, interdum ovata, attenuata, cuspidata, 7–13 mm longa, 1.8–3.6 mm lata, glabra; costa mediana vel parum excentrica; glans 1–3.5 mm supra pulvinam inserta. Inflorescentia simplex. Pedunculi 6–8 mm longi, glabri, bracteis 2 lateralibus basalibus; capitula floribus *c.* 23, sine bracteolis. Flores 5-meri. Sepala libera, glabra vel lamina parce pubescenti. Petala glabra, obscure 1-nervosa. Legumen teres, curvatum, 3–5 cm longum, 2–4 mm latum, coriaceum ad crustaceum, glabrum. Semina longitudinalia, obloideo-ellipsoidea, 3–3.5 mm longa; arillus terminalia.

Typus: Frank Hann National Park, 68 km by road east of Lake King store towards Peak Charles, Western Australia, 13 August 1985, *B.R. Maslin* 5783 (*holo:* PERTH 00758469; *iso:* CANB, G, K, MEL, NY).

Harsh *shrub*, spreading to spreading to erect, moderately open, 0.7–2.2 m tall, 0.8–1.5 m diam. *Bark* rough, dark grey to black. *Branchlets* rather sparingly divided, ± straight, rigid, when young terete and green but marked with rather obvious yellow ribs, glabrous, later splitting to reveal rough dark bark. *Stipules* 2–4 mm long, slender (0.3–0.4 mm diam. at base), widely spreading, straight, rigid, pungent, glabrous, light brown but sometimes yellowish at base, persistent. *Phyllodes* slightly asymmetric, sessile, lanceolate to narrowly triangular, sometimes ovate, broadest below middle, the upper margin obviously more convex than the lower and frequently narrowed to intersect the midrib 1/2–2/3 along the phyllode, 7–13 mm long (including cusp), 1.8–3.6 mm wide, l:w 2–6, somewhat crowded (and frequently smaller) at base of branchlet but terminally rather distant, patent to very slightly reclined, straight, rigid, compressed, glabrous, dull medium to darkish green; *midrib* central or sometimes slightly excentric, frequently prominently raised when dry, green to yellow; *lateral nerves* not evident; *marginal nerves* yellowish, neither thickened nor prominent, adaxial marginal nerve bifurcating 1–4.5 mm above base of phyllode; *apex* gradually tapered to a straight, rigid, light brown cusp 1–2 mm long. *Gland* not prominent, sometimes absent, situated 1–3.5 mm above the base of phyllode below the bifurcation of the adaxial nerve, circular or oblong, 0.3–0.5 mm long, brown. *Inflorescences* simple, 1 per axil; *peduncles* 6–8 mm long, rather slender, glabrous, commonly reddish brown when dry; *basal peduncular bracts* 2, persistent, laterally positioned, scarious, brown, glabrous, sessile, concave, *c.* 1 mm long, of unequal width, the narrower *c.* 0.5 mm wide, the broader *c.* 1 mm wide. *Heads* globular, *c.* 5 mm diam. when dry, deep golden yellow, *c.* 23-flowered; *bracteoles* absent. *Flowers* 5-merous; *sepals c.* 1/2 length of petals, free to base, very narrowly linear-spathulate, claws yellow and glabrous; lamina slightly expanded, light brown, glabrous or with a sprinkling of hairs; *petals* to 2 mm long, connate for *c.* 1/2 their length, very obscurely 1-nerved but superficially appearing nerveless, glabrous, the apex acute, slightly thickened. *Gynoecium* glabrous. *Pods* ± terete, 3–5 cm long, 2–4 mm wide, coriaceous-crustaceous, curved, red-brown, not striate, glabrous. *Seeds* longitudinal, obloid-ellipsoid, 3–3.5 mm long, mottled; aril terminal.

Selected specimens examined. WESTERN AUSTRALIA: 35.4 km E of Vermin Proof Fence along Lake King–Norseman road, Frank Hann National Park, *G.F. Craig* 2909B (CANB, PERTH); 35 km W of Mt Glasse, Bremer Range, *K. Newbey* 5574 (PERTH); 20 km NNE of Swallow Rock, Frank Hann National Park, *K. Newbey* 6858 (PERTH); 19 km NNE of Swallow Rock, Frank Hann National Park, *K. Newbey* 7223 (PERTH); 35.6 km NE of Ninety Mile Tank (which is between Lake King and Salmon Gums), *M. Trudgen* 1716 (PERTH).

Distribution. Restricted to a small area in the south-west of Western Australia, from between Swallow Rock (east of Lake King) and Mt Glasse in the Bremer Range including the Frank Hann National Park.

Habitat. Grows on sand or loam in low woodland or open mallee scrub.

Phenology. Flowering recorded from July to September; mature pods collected in January.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. Named from the Latin *truculentus* (savage, harsh), in reference to the prickly nature of the plant due to its pungent phyllodes and stipules.

Affinities. Uncertain. This is a harsh, glabrous species, recognized by its pungent stipules, its widely spreading, ovate to lanceolate, rigid, sessile, pungent phyllodes, its solitary peduncles with two laterally positioned bracts at their base, its lack of bracteoles and its 5-merous flowers with free sepals.

Acacia tuberculata Maslin, *sp. nov.*

Frutex diffusus 0.5–2 0 altus, ramulis phyllodiis et pedunculis resino-papillosis. Ramuli teretes, subtiliter costati, puberuli. Stipulae 1–2 mm longae, basibus persistentibus. Phyllodia anguste elliptica ad oblongo-elliptica, obtusa vel acuta, mucronulata, 10–30 mm longa, 2–5 mm lata, costa marginibusque puberulis pilis tuberculatibus, pilis demum cadentibus praeter bases tuberculiformes; costa prominens; glans 3–6 mm supra pulvinam inserta. Inflorescentia racemus, capitulis 2–5 sphaericis ad obloideis. Pedunculi 6–20 mm longi, glabri vel parce puberuli; capitula floribus 30–60. Flores 5-meri. Sepala ± libera, subglabra. Petala glabra, enervia. Legumen non visum.

Typus: base of Mt Vernon, southern side, Western Australia, 10 September 1988, *B.R. Maslin* 6317 (*holo:* PERTH 00862274; *iso:* CANB, G, K, MEL, NSW, NY, PERTH 00862827).

Diffuse *shrub* 0.5–2 m tall. *Bark* smooth, dark grey. *New shoots* light green, phyllode margins red. *Branchlets* terete, ± straight, lenticels scattered, finely ribbed, light grey cuticle persisting in region of ribs, inter-rib area red-brown where cuticle has exfoliated, puberulous with the commonly tubercule-based hairs mostly confined to ribs. Young *branchlets*, phyllodes and commonly the peduncles puncticulate with minute, brown to black, ± circular, flat, resin papillae. *Stipules* narrowly triangular, 1–2 mm long, at mature nodes normally only the hardened bases persisting as blunt tooth-like projections by loss of stipule apex. *Phyllodes* narrowly elliptic to narrowly oblong–elliptic, 10–30 mm long, occasionally a few to 4.5 cm, 2–5 mm wide, l:w 4–10(13), moderately coriaceous, subsessile, not easily separated from stem, ± straight, flat or margins slightly to prominently undulate, dark green, slightly shiny, margins and midribs antrorsely puberulous, hairs tubercle-based and wearing away with age leaving prominent, yellow tubercles; *midrib* prominent, slightly curved towards adaxial margin at base of phyllode, adaxial margin 2-nerved below gland and ± flat, 1-nerved above; *lateral nerves* few, very obscure; *apex* obtuse to acute, mucronulate; *pulvinus* reduced to a very narrow, dilated rim of yellow-brown tissue. *Gland* 3–6 mm above base, sometimes absent, 0.2–0.4 mm long, circular to oblong. *Inflorescences* arising at base of axillary new shoots, the lowermost peduncle inserted at extreme base of shoot and subtended by a broadly oblong-ovate, slightly concave bract *c.* 0.5 mm long, subsequent peduncles usually with a phyllode arising at base and flanked by a pair of stipules. *Inflorescence* a 2–5-headed raceme, the axis 4–7 mm long and sometimes growing out, the subsequent inflorescences produced as single axillary heads; *peduncles* 6–20 mm long, slender, glabrous to sparsely puberulous; *bract* near or above middle of peduncle; semi-persistent, oblong to ovate, 1 mm long, erect, subglabrous. *Heads* globular to obloid, interspersed with a few shortly cylindrical spikes in occasional specimens, mid-golden, 5.5–7 mm long, 4–5.5 mm diam.,

30–60-flowered; *bracteoles* narrowly spathulate, *c.* 1 mm long; claws linear, subglabrous; laminae ± ovate, shallowly incurved, acute, subglabrous. *Flowers* 5-merous; *sepals c.* 3/4 length of petals, membranous, mostly divided to base, rarely a few irregularly united, spathulate, occasionally linear, subglabrous; *petals* 1.7–2 mm long, glabrous, nerveless. *Pods* and *seeds* not seen.

Selected specimens examined. WESTERN AUSTRALIA: 300 m W from Wave Rock turnoff to Hyden, *R. Buehrig* 385 (PERTH); Mt Vernon, *M. Graham s.n.* (CANB, PERTH 00866822); base of Mt Vernon, southern side, *B.R. Maslin* 6317A (PERTH); 11 miles [17.7 km] NE of Hyden, *K. Newbey* 1081 (CANB, MEL, PERTH); E of Hyden near turnoff to Wave Rock, *M. Simmons* 354 (PERTH); *c.* 6 km N of Hyden on the road to The Humps, *M.H. Simmons* 1317 (PERTH); Camel Peaks, due N of Hyden, *K. Wallace* 1819 (PERTH).

Distribution. Occurs in the south-west of Western Australia, known only from Mt Vernon (*c.* 50 km south-east of Hyden) and localities close to Hyden (i.e. near Wave Rock, The Humps and Camel Peaks).

Habitat. Seemingly confined to soils associated with large granite outcrops.

Phenology. Flowering recorded from late August to early October. Fruiting not known.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. From the Latin *tuberculatus* (covered with small swellings), in reference to the tubercles at the base of the hairs on the phyllode margins and midrib. After the hairs have dropped, the margins and midrib are obviously warty.

Affinities. This new species is most closely allied to *A. dentifera* Benth. and *A. graniticola* (see above). These three species commonly share the following important characters: (1) mature stipules commonly thick and hardened at base and persisting as small, blunt, tooth-like projections by loss of stipule apex (this character is infrequent in *A. graniticola*); (2) peduncles with a solitary, persistent or caducous bract near or above their middle; (3) inflorescences arising towards base of new shoots; (4) heads varying from globular to obloid (or sometimes, in *A. tuberculata*, shortly cylindrical); (5) sepals ± free; (6) phyllodes, branchlets and peduncles (at least when young) possessing minute, scattered resin secretions which are ± circular, flat and brown. In the absence of pods the most reliable characters for distinguishing *A. dentifera* and *A. graniticola* from *A. tuberculata* are their longer (commonly 7–15 cm), non-undulate phyllodes and peduncles which occur in twos or threes in the phyllode axils or along the raceme axes. As discussed under *A. graniticola* above, this is also a granite rock, wheatbelt species, but is distributed to the north of *A. tuberculata*. *Acacia dentifera* occurs further west, mainly in the temperate forests and woodlands of the Darling Range (where it commonly occurs around granite rocks).

Variation. Heads vary in shape from globular to shortly cylindrical, but commonly they are obloid. All three shapes may occur on a single plant. Phyllode undulation is also a variable character. On plants from around Hyden the margins are not, or only slightly, undulate. However, at Mt Vernon (the type locality) the margins are very undulate; these plants were collected from a regrowth population (following fire). I have not inspected plants in the field from the Hyden area.

Acacia xerophila W. Fitzg. var. **brevior** (E. Pritz.) Maslin, *comb. nov.*

Acacia fitzgeraldii var. *brevior* E. Pritz., *Bot. Jahrb. Syst.* 35: 291 (1904). *Type:* near Coolgardie, Western Australia, 1898, *C.L. Webster s.n.* (*iso:* Z).

Discussion. Pritzel (*loc. cit.*) and Fitzgerald (1904) independently described the taxon known today as *A. xerophila* in 1904, basing their respective names on different specimens of the same collection (see Cowan & Maslin 1994). I am here following Pritzel (1904) in recognizing two varieties within *A. xerophila* (which was treated by him under the name *A. fitzgeraldii* E. Pritz.). However, because of the paucity of collections and especially the lack of adequate carpological material for var. *xerophila*, it is not possible to accurately assess the range of morphological variation and consequently the degree of character overlap between the two varieties. The principal distinguishing features of the varieties are given in the key below. Variety *xerophila* occurs north and east of Kalgoorlie (from Bardoc east to Kanandah) while var. *brevior* has a more restricted range, between Kalgoorlie and Widgiemooltha.

Key to varieties of *Acacia xerophila*

Branchlets and phyllodes glabrous; phyllodes 20–30 mm long;
sepals 1/4–1/2 united ..... var. **xerophila**
Branchlets and phyllodes usually puberulous; phyllodes 10–20 mm;
sepals free ..... var. **brevior**

Acknowledgements

I am grateful to Alex George for checking the Latin and providing editorial assistance and Terena Lally for valuable technical assistance during the preparation of the manuscript. Support for them and for the project generally was given by the Australian Biological Resources Study, to whom I am indebted.

References

Costermans, L. (1981). "Native Trees and Shrubs of South-Eastern Australia." (Rigby: Adelaide.)

Cowan, R.S. & Maslin, B.R. (1993). *Acacia* miscellany 7. *Acacia sulcata* and related taxa (Leguminosae: Mimosoideae) in Western Australia. *Nuytsia* 9: 69–78.

Cowan, R.S. & Maslin, B.R. (1994). William Vincent Fitzgerald's species of *Acacia* (Leguminosae: Mimosoideae): typification of the names. *Nuytsia* 9: 387–398.

Fitzgerald, W.V. (1904). Notes on some West Australian species of *Acacia*. *Journal of the West Australian Natural History Society* 1: 44–52.

George, A.S. (1998). A tribute to Rica Erickson. *The Western Word* 22 (9): 5, 14.

Grieve, B.J. (1998). "How to Know Western Australian Wildflowers." Part 2. 2nd edn. (University of Western Australia Press.)

Guinet, P. (1986). Geographic patterns of the main pollen characters in the genus *Acacia* (Leguminosae), with particular reference to subgenus *Phyllodineae*. *In:* Blackmore, S. & Ferguson, I.K. (eds) "Pollen and Spores: Form and Functions." Linnean Society Symposium Series, Vol. 12. (Academic Press: London.)

Hopper, S.D. (1979). Biogeographical aspects of speciation in the south-western Australian flora. *Annual Review of Ecology and Systematics* 10: 399–422.

Maslin, B.R. (1975). Studies in the genus *Acacia* (Mimosaceae) – 4. A revision of the series *Pulchellae*. *Nuytsia* 1: 388–494.

Maslin, B.R. (1978). Studies in the genus *Acacia* (Mimosaceae) – 7. The taxonomy of some diaphyllodinous species. *Nuytsia* 2: 200–219.

Maslin, B.R. (1980). *Acacia* (Leguminosae-Mimosoideae): A contribution to the Flora of Central Australia. *Journal of the Adelaide Botanic Gardens* 2: 301–321.

Maslin, B.R. (1982). Studies in the genus *Acacia* (Leguminosae: Mimosoideae) – 10. *Acacia* species of the Wongan Hills, Western Australia. *Nuytsia* 4: 29–46.

Maslin, B.R. (1990). *Acacia* miscellany 4. Three new Western Australian species with affinities to *A. wilhelmiana* (Leguminosae: Mimosoideae: section *Plurinerves*) from Western Australia. *Nuytsia* 7: 221–228.

Maslin, B.R. (in press). *Acacia p.p. In:* "Flora of Australia." Vol. 11. (Australian Biological Resources Study: Canberra, and CSIRO Australia: Collingwood.)

Maslin, B.R. & Cowan, R.S. (1994a). What type of type? *Australian Systematic Botany Society Newsletter* 81: 2–7.

Maslin, B.R. & Cowan, R.S. (1994b). C.F. Meissner's species of *Acacia* (Leguminosae: Mimosoideae): typification of the names. *Nuytsia* 9: 399–414.

Maslin, B.R. & Pedley, L. (1982). The distribution of *Acacia* (Leguminosae: Mimosoideae) in Australia. Part 1. Species distribution maps. *Western Australian Herbarium Research Notes* 6: 1–128.

Pritzel, E. (1904). *Acacia. In:* Diels, L. & Pritzel, E. "Fragmenta Phytographiae Australiae Occidentalis." pp. 276–314. (Wilhelm Engelmann: Leipzig.)

Vassal, J. & Maslin, B.R. (1979). Phyllodes et phyllodisation dans le genre *Acacia*. *Bulletin de la Société d'Histoire Naturelle de Toulouse* 115, fasc. 3–4: 393–401.

Whibley, D.J.E., revised by D.E. Symon (1992). "Acacias of South Australia." 2nd edn. (Handbooks Committee of South Australia: Adelaide.)

Acacia miscellany 17. Miscellaneous new taxa and lectotypifications in Western Australian *Acacia*, mostly section *Plurinerves* (Leguminosae: Mimosoideae)

R.S. Cowan† and B.R. Maslin[1]

†Deceased 17 November 1997
[1]Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Abstract

Cowan, R.S. and Maslin, B.R. *Acacia* miscellany 17. Miscellaneous new taxa and lectotypifications in Western Australian *Acacia*, mostly section *Plurinerves* (Leguminosae: Mimosoideae). *Nuytsia* 12(3): 413–452 (1999). Fourteen new species of *Acacia* are described. *Acacia diaphana* R.S. Cowan & Maslin is in sect. *Phyllodineae*. The remainder belong to sect. *Plurinerves*: *A. auratiflora* R.S. Cowan & Maslin, *A. auripila* R.S. Cowan & Maslin, *A. balsamea* R.S. Cowan & Maslin, *A. crenulata* R.S. Cowan & Maslin, *A. gemina* R.S. Cowan & Maslin, *A. pelophila* R.S. Cowan & Maslin, *A. pinguiculosa* R.S. Cowan & Maslin (including subsp. *teretifolia* R.S. Cowan & Maslin), *A. recurvata* R.S. Cowan & Maslin, *A. trinalis* R.S. Cowan & Maslin, *A. resinosa* R.S. Cowan & Maslin, *A. trulliformis* R.S. Cowan & Maslin, *A. vittata* R.S. Cowan & Maslin and *A. wilsonii* R.S. Cowan & Maslin. Three species containing new infraspecific taxa are re-described – *A. heteroclita* Meisner (including subsp. *valida* R.S. Cowan & Maslin), *A. sclerophylla* Lindley (including var. *pilosa* R.S. Cowan & Maslin) and *A. subflexuosa* Maiden (including subsp. *capillata* R.S. Cowan & Maslin). Notes on the morphology and on typification of *A. cyclops* A. Cunn. ex Don, *A. leptoneura* Benth. and *A. rigens* A. Cunn. ex Don are presented, as well as lectotypifications of *A. oswaldii* F. Muell. and *A. triptycha* F. Muell. ex Benth. *Acacia sessiliceps* F. Muell. is treated as conspecific with *A. oswaldii*.

Introduction

This paper continues the series of '*Acacia* miscellany' to validate new taxa and record lectotypifications in advance of their publication in the treatment of *Acacia* Mill. (Leguminosae: Mimosoideae) in "Flora of Australia".

In reviewing for the "Flora" any sizeable Australian plant group, it is inevitable that one accumulates a number of novelties as well as notes on earlier described taxa. Those included in this paper are truly a miscellany, for they have their affinities with a wide range of species-groups; most are in section *Plurinerves* (Benth.) C. Moore & Betche, but one – *A. diaphana* – is in section *Phyllodineae* DC. Most of the new taxa are from the wattle-rich south-western region of Western Australia; some others are transcontinental in distribution.

Methods

Most measurements are from dried herbarium specimens which are also the prime source of data on habitat, distribution and phenology, as well as bark morphology and flower colour. Head diameter is measured, as indicated in the descriptions, from fresh, dried or reconstituted material; it includes the stamens. As we use the term 'pungent' it refers to a phyllode apex that is drawn-out into a hard, spine-like tip; 'sharply pungent' refers to one that readily pierces the skin when touched and 'coarsely pungent' to one that is less sharp.

Our approach to typification is discussed elsewhere (Maslin & Cowan 1994b). The taxa are arranged in alphabetical order.

Descriptions

Acacia auratiflora R.S. Cowan & Maslin, *sp. nov.*

Frutex densus 0.3–1 m altus. Ramuli teretes, resinosi, antrorse et minute appresso-puberuli. Stipulae 1–2 mm longae, persistentes. Phyllodia anguste oblongo-elliptica, acuta ad obtuse mucronata, 20–40 mm longa, 3–7 mm lata, coriacea, glabra vel interdum marginibus appresso-hirsutis; nervi longitudinales plerumque 3, nervis secondariis anastomosantibus; glans in margine adaxiali 2–4 mm supra pulvinum inserta. Inflorescentia racemus reductus 1-capitatus; axis c. 1 mm longa; pedunculi 1–2 mm longi, aureo-puberuli. Capitula globularia, floribus 30–42. Flores 5-meri; sepala unita, pilosulosa; petala appresso-hirsuta. Legumen (juvene) pilosum vel villosum. Semina non visa.

Typus: between Lake Grace and Newdegate [precise locality withheld for conservation reasons], Western Australia, 28 August 1973, *M.D. Tindale* 3759 (*holo:* PERTH 00192902; *iso:* K, CANB, NSW, US).

Dense, spreading *shrub* 0.3–1 m tall, 0.6–2 m diam. *New shoots* resinous. *Branchlets* terete except slightly angular extremities, resinous but not viscid, sparsely to moderately antrorsely appressed-puberulous, the hairs minute (sometimes difficult to see) and white or pale golden. *Stipules* 1–2 mm long, narrowly triangular to lanceolate-triangular, glabrous, persistent. *Phyllodes* narrowly oblong-elliptic, 20–40 mm long, 3–7 mm wide, coriaceous, patent to ascending, straight but often slightly upcurved at the narrowed base, pale green, glabrous or sometimes sparsely appressed-hairy on margins; main *longitudinal nerves* about 3, generally obscured by the secondary nerves which anastomose longitudinally to form an open reticulum, the veins often meally-resinous; *apex* acute to obtuse-mucronate; *pulvinus* indistinct, 0.5–1 mm long. *Gland* 1, on upper margin of phyllode (1)2–4(5) mm above pulvinus, not prominent but sometimes with an obvious rim. *Inflorescence* a rudimentary 1-headed raceme; axis c. 1 mm long, terminated by a resin-coated vegetative bud at anthesis; *peduncles* 1–2 mm long, often obscured by the anthers at anthesis, densely golden-puberulous; *basal peduncular bracts* persistent, ovate, acute, thick, 1.5–2 mm long, glabrous. *Heads* globular, golden, 5-7 mm diam. at anthesis, 30–42-flowered; *bracteoles* spathulate, subappressed golden-pilosulose adaxially. *Flowers* 5-merous; *sepals* 2/3 as long as petals, united to below middle or almost to apex, oblong to oblancolate-oblong, subappressed golden-pilosulose; *petals* oblanceolate, free but coherent in midsection, subappressed golden-hairy. *Ovary* papillose–puberulous. *Pods* (young) densely pilose/villous, the hairs light golden. *Seeds* not seen.

Other specimens examined. WESTERN AUSTRALIA, all between Lake Grace and Newdegate [precise localities withheld for conservation reasons]: *B. Dell* 164 (PERTH); *B.R. Maslin* 3430 (PERTH); *D. Papenfus* DP 125 (PERTH); *M.D. Tindale* 3758 (CANB, NSW, PERTH); *P.G. Wilson* 7169 (NY, PERTH).

Distribution. Restricted to the Lake Grace–Newdegate area, south-west Western Australia.

Habitat. Grows in sand, clay or loamy clay in open scrub in depressions.

Phenology. Most collections made in mid- to late-August when the flowering season was well advanced, but old flowers with very young fruits have been found as late as October; mature fruits not seen.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The name is chosen to draw attention to the golden flowers – the colour of both the flower parts and the indumentum on them – from the Latin *auratus* (golden), and *flos* (a flower).

Affinities. Acacia auratiflora is part of the '*A. flavipila* alliance' (Cowan & Maslin 1990), closely related to *A. cassicula* R.S. Cowan & Maslin which can be distinguished by its shorter phyllodes (mostly 15–20 mm long), 20–30-flowered heads on glabrous peduncles 3–5 mm long, and glabrous petals and pods. It is also related to *A. lanei* R.S. Cowan & Maslin which is recognized by its essentially non-anastomosing phyllode nerves, longer peduncles (3–5 mm), free sepals and glabrous pods.

Acacia auripila R.S. Cowan & Maslin, *sp. nov.*

Frutex rotundatus vel arbor fruticosa ad 3 m alta, cortice griseo, fissurato, ramulis glabrescentibus. Phyllodia teretia ad subteretia, acuta ad obtusa, 8–12(15) cm longa, 1–1.5 mm diam., erecta, leviter curvata, initio sericea sed glabrescens, nervis numerosis, arcte parallelis, leviter elevatis. Inflorescentia racema 1–4-capitata; axis c. 0.5–8 mm longus, puberulus; pedunculi 4–8 mm longi, appresso-puberuli; capitula globularia, 4.5–5 mm diametro, 35–40-floribus. Flores pentameri. Sepala petalis 3/4 breviora, discreta, lineari-spathulata, aureo-puberula. Legumen lineare, valde constrictum inter semina et elevatum supra semina, c. 6.5 cm longum, 5–5.5 mm latum, rectum, appresso-puberulum. Semina non visa.

Typus: Rudall River district, *c.* 500 km south of Broome, Western Australia, 17 August 1971, *P.G. Wilson* 10614 (*holo:* PERTH 00148466; *iso:* CANB, K, NY).

Rounded shrubby *tree c.* 3 m tall; crown dense, silvery green. *Bark* grey, fissured on trunks, smooth on branches. *Branchlets* terete, finely ribbed, silvery sericeous towards apices, glabrous with age. *Stipules* early caducous. *Phyllodes* terete to subterete, 8–12(15) cm long, 1–1.5 mm diam., coriaceous, erect, straight to shallowly incurved, sericeous when young, glabrous or some hairs persisting between nerves, silvery-green; *longitudinal nerves* numerous, fine, close together; *apex* obtuse to acute, innocuous to coarsely pungent; *pulvinus c.* 1 mm long. *Gland* small, slit-like, situated on upper surface of phyllode 1–2 mm above pulvinus. *Inflorescence* a 1–4-headed raceme; *raceme axis* 0.5–8 mm long, white or pale yellow appressed-puberulous, sometimes terminated by vegetative bud; peduncles 4–8 mm long, white or pale yellow appressed-puberulous; *basal peduncular bracts* cucullate, caducous. *Heads* globular, 4.5–5 mm diam., 35–40-flowered; *bracteoles* spathulate, golden-puberulous,

the blade widely elliptic or elliptic and acute. *Flowers* 5-merous; *sepals* 3/4 petal length, free, narrowly spathulate, golden appressed-puberulous, especially apically; *petals* narrowly oblanceolate, apically golden-puberulous. *Ovary* densely appressed-puberulous, the hairs silvery to golden. *Pod* (old valves) ± moniliform, *c.* 6.5 cm long, 5–5.5 mm wide, straight, firmly chartaceous, glabrous throughout or sericeous at constrictions. *Seeds* not seen.

Other specimens examined. WESTERN AUSTRALIA: Rudall River region, 22°32'S, 122°09'E, *R.P. Hart* 562 (PERTH); Rudall River Region, 22°32'S, 122°09'E, *R.P. Hart s.n.* (PERTH 01107801); upper Rudall River area, 22°30'S, 122°15'E, *B.R. Maslin* 2101 (BRI, NSW, NT, PERTH); upper Rudall River area, 22°30'S, 122°15'E, *B.R. Maslin* 2174 (PERTH).

Distribution. Restricted to a small area in the Rudall River National Park (*c.* 200–300 km east-north-east of Newman), north-western Western Australia.

Habitat. Grows in dry quartzitic gravel on slopes and in gullies in *Triodia* communities.

Phenology. Very few collections from a remote region, so the data are incomplete. Flowering collections have been made in June and August; by early September most flowers have given way to very small, developing pods. The fruiting period is unknown.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The specific name, from the Latin *aureus* (golden) and *pilus* (hair), refers to the golden indumentum on the perianth.

Common name. Rudall River Myall.

Affinities. Acacia auripila is one of a group of species commonly referred to informally as the myalls, which are arid zone acacias characterized by their bushy shrub or tree habit, globular heads arranged in short axillary racemes and finely multistriate phyllodes. Although many myalls grow in calcareous substrates, *A. auripila* grows in dry, quartzitic, rocky soil.

Maslin & Hopper (1982) illustrated their discussion of the phytogeography of arid zone acacias, and their Figure 6c includes *A. auripila* [as *Acacia* sp. (1)] and its relatives, *Acacia sibilans* Maslin [as *Acacia* sp. (3)], an undescribed and perhaps not distinct pair of populations related to *A. papyrocarpa* [as *Acacia* sp. (2)], *A. papyrocarpa* Benth. and *A. loderi* Maiden. *Acacia auripila* is distinguished from these more southerly near-relatives by a combination of its 35–40-flowered heads (20–30-flowered in the other species), ± moniliform, narrow pods and its terete to subterete phyllodes. The new species appears most closely related to *A. sibilans* which has wider and seemingly much longer pods (to 20 cm long, 7–10 mm wide), fewer-flowered heads, white or very pale yellow, appressed-puberulous petals, and more sinuous phyllodes which are commonly longer (10–18 cm). While these may not seem very convincing differences, species in the myall group are finely graded, as pointed out by Pedley (1986) in his paper on *A. maconochieana*. Many species in this group can be difficult to recognise from herbarium material but have distinctive facies in the field. The inadequacy of collections (especially fruiting material) makes it difficult to assess accurately the taxonomic status of *A. auripila*.

Maslin (1981) treated the collections of *A. auripila* as *A.* aff. *rigens*. While it possibly has some relationships with *A. rigens* A. Cunn. ex Don, that species is readily distinguished by its yellow-ribbed

branchlets, non-racemose inflorescences, partly united sepals, glabrous petals and much narrower pods (2–3 mm wide).

Acacia balsamea R.S. Cowan & Maslin, *sp. nov.*

Frutex rotundatus vel infundibuliformis, 1–2.5 m altus. Cortex pallide vel fuscate griseus, versus basem subtiliter fissuratus. Ramuli teretes, versus apicem c. 4 costis resinosis, inter costas appresso-puberuli. Stipulae triangulares, minutae, persistentes. Phyllodia teretia ad compressa, raro linearia, ad apicem curvata ad subuncinata; lamina 8–13 cm longa, 1–1.2 mm diam. (forma teretia) ad 3 mm lata (forma linearia), ± rigida, erecta, recta vel leviter incurvata, resinosa, nervis c. 16, leviter elevatis, inter nervos appresso-puberula; glans minuta, 0.5–1 mm supra pulvinum inserta. Pedunculi 9–10 mm longi, 1 vel 2 in quoque axilla, appresso-puberuli, pedunculorum bracteis basalibus ovatis, concavis, ciliolatis. Capitula obloidea, 5–8 mm longa et 4 mm diam., 21-floribus, bracteolis subpeltatis. Flores 5-meri. Sepala discreta, spathulata, puberula, ciliolata. Petala 1/3-connata. Legumen (immature) moniliforme, 6–12 cm longum, 3–4 mm diametro, pendulum, rectum, crassum, lignosum, glabrum, nervis numerosis elevatis parallelis ornatum. Semina (submatura) longitudinalia, ellipsoideo–linearia, 5 mm longa, 1.5 mm lata, obscure brunnea, arillo terminali.

Typus: Mount William Lambert, east from Wiluna on Gunbarrel Highway, Gibson Desert, Western Australia, 8 September 1984, *B.R. Maslin* 5646 (*holo:* PERTH 00166650; *iso:* CANB, K).

Bushy, rounded or obconic *shrub* 1–2.5 m tall, *c.* 4-branched at ground level, the phyllodes concentrated towards ends of branchlets. *Bark* medium- to dark-grey and longitudinally fissured toward base of main trunks, smooth and often a lighter grey on upper branches and branchlets. *Branchlets* terete, with yellow resinous ribs at extremities, sericeous between ribs, glabrous with age. *Stipules* triangular, minute, persistent. *Phyllodes* terete, occasionally flat and linear, 8–13 cm long, 1–1.2 mm diam. when terete, to 3 mm wide when flat, erect, not rigid, straight to shallowly incurved or sometimes shallowly sinuous, mid-green when fresh, drying ± khaki green, aromatic (smelling of Friars Balsam, especially when crushed), sparsely appressed-hairy between nerves (superficially appearing ± glabrous); *longitudinal nerves c.* 16, ± close, slightly raised (just visible to unaided eye) and resinous; *apex* curved to subuncinate; *pulvinus* 1 mm or less long, yellow. *Gland* not prominent, on upper surface of phyllode 0.5–1 mm above pulvinus, small. *Inflorescences* simple, 1 or 2 per axil; *peduncles* 5–10 mm long, glabrous or sericeous; *basal peduncular bracts* ovate, concave, ciliolate. *Heads* subglobular to obloid, 5–8 mm long, 4 mm diam., *c.* 21-flowered; *bracteoles* subpeltate, ciliolate. *Flowers* 5-merous; *sepals* less than half petal length, free or slightly united at base, spathlulate, puberulous, ciliolate; *petals* 1/3-united. *Pod* (submature) ± moniliform, 6–12(16) cm long, 3–4 mm diam., pendulous, thick, coriaceous to sub-woody, straight to shallowly curved, striate with longitudinal nerves (nerves most evident when dry), glabrous, resinous. *Seeds* (immature) longitudinal, ellipsoid–cylindrical, 5 mm long, 1.5 mm wide, dull brown; *pleurogram* linear–U-shaped; *areole* small; aril terminal, more than half as long as seed.

Other specimens examined. WESTERN AUSTRALIA: Paterson Range area, 1979, *E.M. Goble-Garratt s.n.* (MEL, PERTH 00153672); NE end of Clutterbuck Hills, Gibson Desert, *S.D. Hopper* 2833 (PERTH); 40 km SSE of eastern end of Clutterbuck Hills, Gibson Desert, *S.D. Hopper* 2898 (PERTH); Leinster Downs Station, 3 km N of Perseverence Well (Agnew Mine Camp No. 1 site), *B.R. Maslin* 5402 (NSW, PERTH); near Billygoat Bore, Noreena Downs Stn, SE of Nullagine and *c.* 150 km N of Newman, *A.A. Mitchell* PRP 1434 (PERTH).

Distribution. Widely scattered in arid central Western Australia, from near Nullagine and the Paterson Range (south-east region of the Great Sandy Desert), south to Leinster Downs and east to the Clutterbuck Hills in the Gibson Desert.

Habitat. Grows on rocky (commonly weathered granite) hills in tall open shrubland, often with *Acacia aneura* and frequently locally common in these habitats.

Phenology. Flowering recorded in August and September with old flowers persisting in June; young pods present in August and September, often together with flowers.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The odour of the foliage in fresh condition, reminiscent of Balsam Fir, suggests the specific epithet, from *balsameus*, an adjectival form of a Latin word for a fragrant gum.

Common name. Balsam Wattle.

Affinities. This little-collected species of the arid interior of Western Australia is at once recognizable in the field by the resinous odour of its phyllodes resembling that of the Northern Hemisphere Balsam Fir. Its precise affinities are unknown at present. It has some of the general appearance of the mulga group of species (i.e. *A. aneura* F. Muell. ex Benth. and its allies, see Randell 1992) but its subglobular to obloid heads and glabrous, ± moniliform pods distinguish it.

Variation. One collection (*Hopper* 2833, in very young bud) has flat phyllodes but otherwise appears to agree with the apparently more normal variants of the species with terete phyllodes.

Acacia crenulata R.S. Cowan & Maslin, *sp. nov.*

Frutex vel arbor effusa, rotundata, resinosa, 1–3 m alta, ramulis ad apicem complanatis, resinoso-costatis, demum teretibus, glabrescentibus. Stipulae c. 0.75 mm longae, triangulares, persistentes. Phyllodia anguste elliptica ad lineari–elliptica, apice curvato ad ± uncinato, pulvino 1–2 mm longo, resinoso, lamina (20)30–60 mm longa, (2)3–6 mm lata, coriacea, glabra vel minutis rubris resinoso-pilis ornata, glabrescentia, ad marginem resinosa, saepe crenulato-resinosa, nervis secondariis numerosis arcte parallelis indistinctis. Pedunculi solitarii vel binati, 1–2 mm longi, glabri praeter juvenales minute puberuli pilis numerosis rubris resinosis, bractea basali caduca. Capitula globularia, aurea, c. 4 mm diametro, 20–25-floribus, bracteolis unilateraliter peltatis. Flores 5-meri. Sepala in cupula connata, 1/3 petala brevioria. Legumen lineare, 20–45 mm longum, 3–3.5 mm latum, tenuiter coriaceo–crustaceum, rectum ad leviter curvatum, ± quadrangulare, minute resinoso-puberulum. Semina longitudinalia, obloideo–ovoidea, 2.3–2.7 mm longa, *c.* 1.5 mm lata, subnitida, maculata, arillo terminali luteo.

Typus: 5.5 km east of Carrabin, 61.3 km west of Southern Cross, on Great Eastern Highway, Western Australia, 30 March 1992, *B.R. Maslin* 7048 (*holo:* PERTH 05160863; *iso:* CANB, K, MEL, NSW, NY, PERTH 01994859).

Obconic or rounded *shrub* 1–3 m tall, single-stemmed or more commonly sparingly to moderately branched at ground level, in habit often resembling *Melaleuca uncinata*. *Bark* rather dark grey, finely longitudinally fissured on main stems, smooth on branches. *New shoots* slightly resinous (not viscid),

the phyllodes green with brownish margins. *Branchlets* flattened-angular at their extremities but soon becoming terete, crenulate resin-ribbed, the ribs yellow but ageing whitish as the resin dries, normally scurfy between ribs. *Stipules c.* 0.75 mm long, triangular, persistent. *Phyllodes* narrowly elliptic to linear-elliptic, (20)30–60 mm long, (2)3–6 mm wide, coriaceous, patent to inclined or erect, straight or sometimes very shallowly recurved, glabrous, or with many minute, red, resin-hairs, especially on nerves, glabrescent, dull and rather glaucous when young but ageing sub-shiny and green; *apex* acute, shallowly recurved to subuncinate, innocuous; *pulvinus* 1–2 mm long, resinous; *longitudinal nerves* numerous, closely parallel, indistinct (view with transmitted light when fresh) except the central nerve somewhat evident; *margins* resinous, often crenulately so, sometimes translucent-red when fresh (based on few observations), most commonly yellow or yellow-brown when dry. *Gland* on upper margin of phyllode 0–2 mm above pulvinus, rounded. *Inflorescences* simple, solitary at base of vegetative bud, or paired with a vegetative bud that grows out; *peduncles* 1–2 mm long, glabrous except minute, reddish resin-papillae especially when young; *basal peduncular bract* caducous, concave-triangular, *c.* 0.8 mm long. *Heads* globular, golden, *c.* 4 mm diam., 20–25-flowered; *bracteoles* unilaterally peltate, 0.5 mm long, the blade oblate with many minute, red resin-hairs. *Flowers* 5-merous; *sepals* united in a minutely puberulous, slightly lobed cup 1/3 as long as the basally united petals, c. 1.8 mm long. *Pods* linear, straight-edged or slightly constricted between seeds, scarcely raised over seeds, 20–45 mm long, 3–3.5 mm wide, thinly coriaceous–crustaceous, glabrous, straight to shallowly curved, resinous but not viscid; valve margins slightly raised vertically to valve face so that pods appear slightly quadrangular. *Seeds* longitudinal, obloid–ovoid, 2.3–2.7 mm long, *c.* 1.5 mm wide, subglossy, mottled; *funicle/aril* terminal and (at least when dry) yellow.

Selected specimens examined. WESTERN AUSTRALIA: *c.* 30 km W of Southern Cross, *R. Cumming* 1439 (PERTH); Sanford Rock Nature Reserve, *J.E.D. Fox* 7302 (PERTH); 3.5 miles [5.6 km] NW of Bullabulling towards Caenyie Rock, *B.R. Maslin* 1887 (PERTH); 17.5 km SE of Mukinbudin on road to Bullfinch, *B.R. Maslin* 6699 (MEL, PERTH); 0.3 km E of Walyahmoning Rock, *c.* 60 km NW of Bullfinch, *K. Newbey* 9553 (PERTH); near N boundary of Chiddarcooping Hill Nature Reserve, *c.* 70 km NE of Merredin, *A.S. Weston* 14180 (CANB, PERTH).

Distribution. Scattered in the south-west of Western Australia in an area bound by Mukinbudin in the west, east to Walyahmoning Rock (north-west of Bullfinch) and from Carrabin to Bullabulling in the south.

Habitat. Occurs mostly on rocky outcrops in heavy soil and sandy clay-loam, in open eucalypt woodland.

Phenology. Flowering recorded in September and October; immature pods collected in early November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The name is given in allusion to the crenulate-resinous margins of the phyllodes (from *crenulatus*, Latin for crenulate, a term commonly applied to leaf margins with rounded teeth).

Affinities. The precise relationships of this new species are unknown at present. It perhaps has affinities to *A. duriuscula* W. Fitzg. which is distinguished by its grey-green, commonly obtuse to subacute phyllodes with essentially uniform, fine nerves (the central nerve not or scarcely more pronounced than the rest) and non-resinous margins, longer peduncles (2–5 mm, or up to 8 mm when in fruit), longer

calyx relative to the corolla, papery pods lacking the raised margins of *A. crenulata*, and white seed arils.

Acacia cyclops A. Cunn. ex Don, *Gen. Syst.* 2: 404 (1832). *Type:* King George Sound, [Western Australia], January 1818, *A. Cunningham* 104 (*syn:* K); same location, December 1821, *A. Cunningham* 328 (*syn:* BM, K).

Acacia cyclopis Mackay ex Loudon, *nom. nud., Hort. Brit.* 407 (1830).

?*Acacia eglandulosa* DC., *Prodr.* 2: 450 (1825); *Mém. Légum.* 445 (1827). *Type:* Australia, Herb. *B. Delessert* 1816 (*holo:* G–DC).

?*Acacia mirbelii* Dehnh. [as *Mirbeli*], *Rivista Napol.* 1: 168 (1839). *Type:* not designated. (Judging from the protologue and from specimens at FI, NAP, RO and W, it seems that Dehnhardt's *A. mirbelii* is the same as *A. cyclops*.)

Notes. It would be unfortunate if such a well-known, easily recognized, widespread species should require a change of name, especially when the present name is so descriptive. It is possible, however, that de Candolle's species *A. eglandulosa* is conspecific with what has been known for over 150 years as *A. cyclops*, and his name is older by just seven years. There is no indication of the collector of de Candolle's type, only that the sheet was from the herbarium of Benjamin Delessert. We leave to a future monographer the resolution of the correct name to apply to this taxon; in the meantime we will continue to use the well-known epithet in preference to adopting an unknown one without unequivocal evidence of the necessity to do so. Should they prove conspecific, a case for conservation of the name *A. cyclops* should be prepared.

When G. Don published Cunningham's manuscript name *Mimosa cyclopis* as an *Acacia*, he omitted the 'i', making it *A. cyclops* but as publishing author such an emendation, intentionally or accidentally, does not affect the name or the authorship. The name was treated by Loudon in "Hortus Britannicus" in its original form but he attributed the binomial to Mackay who apparently used it in a catalogue of plants growing at his nursery at Clapton in England. In any case, *A. cyclopis* Mackay is a *nomen nudum*. The remaining epithet in the above synonymy, *A. mirbelii*, surely refers to this species; although no certain type material of it has been located, Maslin studied two sheets in the Cesati Herbarium at RO which are labelled '*A. mirbeli*' but with no further data.

Acacia diaphana R.S. Cowan & Maslin, *sp. nov.*

Frutex fruticosus, effusus, resinosus, 1.5–3 m altus, ad 2.5 m latus. Phyllodia linearia, obtusa vel obtusa et minute excentrice mucronulata; lamina (32)40–65(70) mm longa, 2.5–4 mm lata, tenuiter coriacea, leviter incurvata, glabra, in quoque pagina uninervata, costo et marginibus valde resinosis, rare aliquot penninervis evidentibus; glans basalis. Racemi (1)2–6-capitulis, axe 2–8 mm longo, resinoso, minute appresso-puberulo pilis albis; pedunculi 2–5 mm longi; pedunculorum bracteae basales c. 0.3 mm longae, triangulares, persistentes; capitula globularia, 3.5–4.5 mm diametro, aurea, resinosa, 15–20-floribus; bracteolae spathulatae, lamina crassa et viscida, stipite diaphano. Flores 5-meri, perianthio diaphano. Sepala longitudine 2/3 petali partes aequantia, libera, lineari-oblanceolata, glabra. Petala libera, reflexa, glabra. Legumen et semina non visa.

Typus: north-west of Mt Ragged [precise locality withheld for conservation reasons], Western Australia, 15 September 1990, *W. Archer* 15099011 (*holo:* PERTH 01166417; *iso:* CANB, K).

Bushy, spreading–erect, resinous *shrub* 1.5–3 m tall, branching just above ground level, the crown 2–2.5 m across. *Branchlets* angular-flattened at extremities with resinous ribs, ageing terete and ribless or very obscurely ribbed, glabrous or minutely white appressed-puberulous. *Branches* dull light brownish grey. *Stipules* absent or obscured by resin and indumentum. *Phyllodes* linear, attenuate basally, (30)40–65(70) mm long, 2.5–4 mm wide, thinly coriaceous, smooth, ascending, straight to shallowly incurved, glabrous, bright green (colour taken from collectors' field notes, but upon drying some specimens appear glaucous); *apex* obtuse with a minute, blunt, centric or excentric mucro; *pulvinus* 1 mm long, glabrous or minutely appressed-puberulous on upper surface; midrib and marginal nerves prominent and strongly resinous, the resin often in obvious droplets, rarely a few, scattered penninerves arising from midnerve evident. *Gland* on upper margin of phyllode at or near distal end of pulvinus, not prominent. *Inflorescences* (1)2–6-headed racemes 2–8 mm long; *raceme axis* resinous, minutely white appressed-puberulous (very pale yellow when young; hairs often obscured by resin); *peduncles* 2–5 mm long, resinous, hairy as on raceme axis; *basal peduncular bracts c.* 0.3 mm long, triangular, persistent. *Heads* globular, 3.5–4.5 mm diam., golden, resinous, 15–20-flowered; *bracteoles* spathulate, the blade thick and viscid, the stipe diaphanous. *Flowers* 5-merous; perianth diaphanous; *sepals* free, linear–oblanceolate, 2/3 length of petals, glabrous; *petals* free, reflexed, glabrous. *Pod* and *seeds* not seen.

Other specimens examined. WESTERN AUSTRALIA, all NW of Mt Ragged [precise localities withheld for conservation reasons]: *W. Archer* 22099023 (NY, PERTH); *K. Newbey* 8276 (PERTH); *K. Newbey* 9726 (PERTH); 19 Sep. 1984, *H. Smolinski s.n.* (PERTH 00609862).

Distribution. Localized in an area north-west of Mt Ragged, *c.* 130 km north-east of Esperance, south-east Western Australia.

Habitat. Grows in clay or sandy loam in small to large depressions that are wet to waterlogged at least seasonally, commonly with *Eucalyptus occidentalis*.

Phenology. Flowering recorded in September; pods not yet collected.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The specific epithet refers to the translucent character of the perianth, from the Latin *diaphanus* (more or less transparent).

Affinities. Acacia diaphana belongs to the group of sect. *Phyllodineae* with racemose heads but its relatives are unknown at present. It is a distinctive species characterized by long, linear phyllodes with prominently resinous midribs and margins, and short racemes of heads and peduncles that are resinous and hairy (the indumentum often obscured by the resin).

Acacia gemina R.S. Cowan & Maslin, *sp. nov.*

Ab *A. deflexa* Maiden & Blakely ramulis, phyllodiis pedunculisque appresso-puberulis sed glabrescentibus; phyllodiis 10–25(30) mm longis, excentrice mucronulatis, patentibus ad inclinatis, rare leviter deflexis; glande 1–3 mm super pulvinum inserta; et pedunculorum bracteis basalibus 3-nervatis, differt.

Typus: Tunnell Rd, 0.2 km south-east of Forty Hollow Rd, Mt Saddleback, Western Australia, 29 August 1980, *A.S. Weston* 12667 (*holo:* PERTH 00695610; *iso:* K).

Spreading, much-branched *shrub* 0.4–1 m tall. *Bark* smooth, medium grey. *Branchlets* terete, insignificantly ribbed, appressed-puberulous. *Stipules* subulate, *c.* 1.5 mm long, appressed-puberulous, caducous to persistent. *Phyllodes* narrowly oblong to oblong-oblanceolate or widely elliptic, 10–25(30) mm long, 3–4.5(6) mm wide, thick, coriaceous, patent to inclined, rarely slightly deflexed, straight or sometimes recurved, glabrous or more commonly ± sparsely appressed puberulous on margins and nerves; *longitudinal nerves* 3 on each face, raised and widely separated; intervening secondary nerves absent or few and obscure; *apex* rounded-obtuse and excentrically mucronulate; *pulvinus* 1 mm long, smooth, yellow-brown, appressed puberulous, dilated at base. *Gland* situated between two branches of adaxial marginal nerve on upper margin of phyllode 1–3 mm above pulvinus, plane, circular. *Inflorescences* simple, 1 or 2 per axil; *peduncles* 2–4 mm long, appressed-puberulous; *basal peduncular bracts* cucullate, oblate, appressed-puberulous, 1–3-nerved, caducous. *Heads* globular, golden, 3–4 mm diam., (9)12–18-flowered; *bracteoles* fusiform to elliptic or oblanceolate, ciliate. *Flowers* 5-merous; *sepals* about half as long as petals, free, spathulate-linear to linear, ciliolate; *petals* oblanceolate, free. *Ovary* appressed-puberulous. *Pods* linear, raised over and slightly constricted between seeds, 20–50 mm long, 2 mm wide, firmly chartaceous to thinly crustaceous, strongly curved to openly once-coiled, subglabrous, tan, the margins paler. *Seeds* longitudinal, ovoid–ellipsoid, 2 mm long, 1.3 mm wide, 1 mm thick, dull, black; *pleurogram* in paler area; *areole* minute, umbonate, grey; aril subterminal, white.

Selected specimens examined. WESTERN AUSTRALIA: near Narrogin, March 1938, *W.E. Blackall s.n.* (PERTH 00695580); 0.6 km from Boyagin Rock Reserve boundary on WSW side of road, *R.S. Cowan* A783 (PERTH); W side of Boyagin Rock Reserve, SW of Brookton, *A.S. George* 10895 (PERTH, TLF); near junction of Forty Hollow Rd and Tunnell Rd, Saddleback State Forest, 32°56'S, 116°27'E, *D. Halford* 808217 (CANB, PERTH); Boyagin Rock Reserve, *R.D. Royce* 8185 (PERTH); 21 miles [35 km] E of Billericay [near Hyden], *K. Newbey* 3236 (MEL, PERTH).

Distribution. All but two collections are from either within or near the Boyagin Rock Nature Reserve (*c.* 15 km south-west of Brookton) or the Saddleback Timber Reserve (which encompasses the Worsley mining area, *c.* 10 km south of Boddington). The two collections outside this area are from near Narrogin (*c.* 70 km east of Boddington) and near Hyden (*c.* 200 km east of Brookton).

Habitat. In open heath dominated by *Dryandra squarrosa* or in *Eucalyptus drummondii* low woodland, in both situations in lateritic gravel; the outlying population near Hyden (*Newbey* 3236) occurs in deep sand.

Phenology. Flowering recorded from August to October (Blackall collection from near Narrogin recorded as flowering in March); mature pods in late December and early January.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The close affinity with its nearest relative suggested the name, from *geminus*, Latin for twin-born or paired.

Affinities. Acacia gemina is most closely related to *A. deflexa* Maiden & Blakely which is most readily distinguished by its puberulous branchlets and peduncles (the hairs patent) and the phyllode gland situated at the distal end of the pulvinus; also, its basal peduncular bracts are ± nerveless and its

phyllodes are often prominently deflexed. Both species are probably related to the '*A. sulcata* group' (Cowan & Maslin 1993), particularly to *A. nitidula* Benth. and *A. dura* Benth.

Acacia heteroclita Meisn. *in* J.G.C. Lehmann, *Pl. Preiss.* 1: 18 (1844). *Type:* Cape Riche, Western Australia, 19 November 1840, *L. Preiss* 938 (*lecto:* 406: LD, *fide* Maslin & Cowan (1994b); *isolecto:* G, NY, PERTH – fragments ex G and NY).

Acacia trissoneura F. Muell., Fragm. 4: 6 (1863). *Type:* Gairdner Range, Fitzgerald River, Western Australia, *G. Maxwell s.n.* (*holo:* MEL; ?*iso:* K, MEL).

Shrub or small *tree* 1–4 m tall, 2–5 m wide, the trunk to 12 cm diam. *New growth* sericeous (hairs usually yellow). *Bark* grey or grey-brown, smooth throughout or fissured at base of trunk. *Branchlets* compressed to terete, glabrous or sparsely appressed-puberulous, light brown to red-brown. *Stipules* minute, caducous. *Phyllodes* linear to linear-oblanceolate or narrowly oblong-elliptic, (3)5–11 cm long, (2)3–9 mm wide, coriaceous, patent to ascending, somewhat curved, sometimes sigmoidally, appressed-puberulous at first, tardily glabrescent with apical portion often remaining ± appressed puberulous, dark or bright green; *apex* arcuately long-acuminate, the tip somewhat curved; *pulvinus* distinct (1)2–3.5 mm long; nerves 3 per face, rarely fewer, strongly raised, the midnerve on each face often stronger than lateral nerves; anastomoses absent or occasional. *Gland* on upper margin of phyllode 1–10 mm above pulvinus, distinct, large, round or widely elliptic. *Inflorescences* simple, 1 or 2 per axil; *peduncles* (4)6–10(12) mm long, sparsely appressed-puberulous to glabrous; *basal peduncular bract* caducous, broadly ovate, ciliolate. *Heads* globular or subglobular, bright to pale medium-yellow, 4–6 mm diam., 25–60-flowered, congested; *bracteoles* spathulate, the lamina circular to elliptic, puberulous, ciliolate, the stipe several times as long as the lamina, narrow to filiform. *Flowers* 5-merous; *sepals* less to more than half length of petals, free, spathulate, ciliolate; *petals* 1/2–3/4-united, the lobes triangular, acute, often with a prominent nerve. *Ovary* ± appressed-puberulous. *Pods* narrowly oblong to linear, slightly raised over but not constricted between seeds, 50–80 mm long, 2.5–9 mm wide, thinly coriaceous to thinly crustaceous, straight, sometimes ± undulate, glabrous or sparsely appressed-puberulous. *Seeds* longitudinal, ellipsoid–obloid, 2.5–6 mm long, 1.5–3 mm wide, compressed, dull, indistinctly mottled lighter brown on brown-black; *pleurogram* indistinct and U-shaped or narrower; *areole* small, or large and narrow and more than half seed-length; aril subterminal, small.

Notes. Acacia heteroclita is characterized by the linear to linear-oblanceolate phyllodes (3.5)5–11 cm long, (2)3–9 mm wide, with 3 evident nerves on each face and curved, long-acuminate tips, normally yellow-sericeous new shoots, globular flower heads and free sepals. The species is most closely related to *A. triptycha* F. Muell. ex Benth. and *A. trinalis* R.S. Cowan & Maslin; a key to these three species is presented below under *A. trinalis*.

Acacia heteroclita comprises two subspecies – a wide-ranging typical subspecies and subsp. *valida*, here described as new and restricted to the Porongurup Range north of Albany. Subspecies *valida* is a robust form of the species; it is larger in its phyllodes, pod and seeds than the typical subspecies.

Key to subspecies of *Acacia heteroclita*

Phyllodes (2)3–4 mm wide (occasionally to 6 mm in coastal habitats);
pods 2.5–5 mm wide; seeds 2.5–3.5 mm long, 1.5 mm wide, areole small ..... subsp. **heteroclita**

Phyllodes 4–9(11) mm wide; pods 7–9 mm wide; seeds 5.5–6 mm long,
3 mm wide, areole large ..... subsp. **valida**

Acacia heteroclita Meisn. subsp. **heteroclita**

Phyllodes (3)5–9(11) cm long, (2)3–4(6) mm wide, linear to linear-oblanceolate, with no minor nerve anastomoses evident. *Heads* 4–5 mm diam., 25–41-flowered. *Pods* 50–55 mm long, 2.5–5 mm wide. *Seeds* 2.5–3.5 mm long, 1.5 mm wide; *areole* small.

Selected specimens examined. WESTERN AUSTRALIA: North Twin Peak Island, Recherche Archipelago, *M.I.H. Brooker* 3682 (PERTH); Bremer Bay, *C.A. Gardner* 7503 (PERTH); West Mt Barren, *A.S. George* 6965 (PERTH); Sandy Hook Island, 22 km SSE of Esperance, *S.D. Hopper* 2240 (PERTH); 21 km SE of Kulin towards Lake Grace, *B.R. Maslin* 3838 (AD, G, NSW, PERTH); Gordon Inlet, *K. Newbey* 1736 (PERTH); 12.6 km W of Mt Drummond, Fitzgerald River National Park, *K. Newbey* 3872 (CANB, MEL, NFLD, PERTH); Bremer Bay, *K. Newbey* 4276 (PERTH); North Twin Peak Island, Recherche Archipelago, *R.D. Royce* 6258 (PERTH); Triple Peak, Cape Le Grand National Park, *A.S. Weston* 7533 (PERTH).

Distribution. Discontinuous in south-west Western Australia extending from Kulin south to the Fitzgerald River National Park and east to Cape Le Grand National Park, including the nearby islands of the Recherche Archipelago. Most collections are from the Kulin–Dumbleyung–Lake Grace area, the Fitzgerald River National Park and in the vicinity of Cape Le Grand.

Phenology. Most flowering recorded in October, others between August and December; mature pods collected in January.

Variation. The phyllodes of subsp. *heteroclita* are normally 5–9(11) cm long and 3–4 mm wide; in coastal habitats at Bremer Bay and on islands of the Recherche Archipelago they tend to be slightly shorter (normally 3–7 cm long) and occasionally may reach 6 mm wide; furthermore, sometimes the new growth is silvery instead of the otherwise characteristic golden sericeous (e.g. *C.A. Gardner* 7503, *K. Newbey* 4276 and *R.D. Royce* 6258).

A variant from the Kulin area (e.g. *B.R. Maslin* 3838) has an unusual phyllode nervation for *A. heteroclita*, to which the collections must surely be referred: the midnerve is uniformly well developed but the major nerve on each side of it may fail to develop at all, at least not evidently, or only near the base or apex. Otherwise it is typical of the subspecies.

Discussion. Some duplicates of *J. Drummond* 5: 8 were distributed as *J. Drummond* '4: 8', but according to Bentham (1864) this number is properly assigned to *Acacia nodiflora*.

Acacia heteroclita subsp. **valida** R.S. Cowan & Maslin, *subsp. nov.*

Phyllodia (3.5)5–8 cm longa, 4–9(11) mm lata, laminae nervis saepe anastomosantibus. Capitula 5–6 mm diametro, 40–60-floribus. Legumen 75–80 mm longum, 7–9 mm latum. Semina 5.5–6 mm longa, 3 mm lata, pleurogramma angusta, plus quam dimidio longitudine seminis.

Typus: Porongurup Range, Western Australia, 26 May 1964, *A.S. George* 6236 (*holo:* PERTH 00701033).

Phyllodes (3.5)5–8 cm long, 4–9(11) mm wide, narrowly oblong-elliptic to almost linear, minor nerves often forming sparse anastomoses. *Heads* 5–6 mm diam., 40–60-flowered. *Pods* 75–80 mm long, 7–9 mm wide. *Seeds* 5.5–6 mm long, 3 mm wide; *areole* large, narrow, more than half the seed length.

Selected specimens examined. WESTERN AUSTRALIA: Devils Slide, Porongurup Range, *J.S. Beard* 7638 (PERTH); Porongurup Range, Jan. 1941, *F.M. Bennett s.n.* (PERTH 00701041); western end of Porongurup Range, *R.H. Kuchel* 1976 (PERTH); below Gibraltar Rock, Porongurup National Park, *C.J. Robinson* 1083 (PERTH); Porongurup Range, *R.D. Royce* 6117 (PERTH).

Distribution. Endemic in the Porongurup Range, *c.* 40 km north of Albany, south-west Western Australia.

Habitat. Grows in loamy soil on or near granite in heath or woodland.

Phenology. Flowers sporadically through the year, recorded in January, April, May and October; mature pods collected in January at which time mature flowers were also present.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The robust nature of the material of this subspecies is highlighted by the choice of the name, from *validus*, Latin for strong, powerful.

Affinities. Subspecies *valida* is a robust form of the species, apparently restricted to the Porongurup Range. It is larger in its phyllodes, pod and seeds than the typical subspecies and was referred to as such by Bentham (1864).

Discussion. Some duplicates of *J. Drummond* 5: 11 were distributed as *J. Drummond* '4: 11' but according to Bentham (1864) this number is properly assigned to *A. leptospermoides.*

Acacia leptoneura Benth., *London J. Bot.* 1: 341 (1842). *Type:* Swan River, Western Australia, *J. Drummond s.n.* (*holo:* K; *iso:* K, MEL, PERTH – fragment ex MEL).

Illustration. Bot. Mag. 74: pl. 4350 (1848).

Notes. This species is known only from the type and a few historical collections. In all respects it is very similar to *A. subflexuosa* Maiden (see below), from which it differs in its 16-nerved phyllodes and glabrous ovary; in *A. subflexuosa* the phyllodes are 8-nerved and the ovary appressed-puberulous. The type sheet of *A. leptoneura* at Herb. Kew is stamped 'Herbarium Hookerianum 1867' and bears two collections:

1. The left-hand specimen is probably part of *Gilbert* 187 (see below) and represents a narrow phyllode variant of *A. lineolata* subsp. *lineolata*; this specimen was probably not used by Bentham when preparing his original description of *A. leptoneura.*

2. The middle and right-hand specimens are the same collection, labelled simply 'Swan R., *Drummond*' and with '*leptoneura*' pencilled on the sheet in Bentham's hand between the two branchlets. This collection accords well with the protologue and is regarded as the holotype of *A. leptoneura.*

A second sheet at K, presented in 1915 by the Linnean Society, has what may be the same two collections, *Gilbert* 187 from the Wongan Hills, labelled 'a', and a Drummond collection numbered 303, and labelled 'b'. There are duplicates of *Drummond* 303 (or 3: 303) at BM, K, MEL, NY, OXF, P and PERTH; certainly all are conspecific with the Drummond type, if not the same gathering, which

may possibly be the case; however, Bentham did not cite the number 303 in the protologue of *A. leptoneura*. A third sheet at Kew, clearly annotated by Bentham as *A. leptoneura*, is from a plant grown presumably at Kew and used as the basis for the illustration in the *Botanical Magazine*. There are no precise locality or habitat data with the Drummond collection on which to base a search for the species and it is unlikely to be found henceforth, except perhaps accidentally.

Acacia leptoneura var. *pungens* Meisner was based on a sterile specimen and certain identification is impossible, but it has some of the appearance of *A. acellerata* Maiden & Blakely. It was referred by Bentham (1864), dubiously, to *A. aciphylla*.

Acacia oswaldii F. Muell. [as *Oswaldi*], Fragm. 4: 5 (1863). – *Racosperma oswaldii* (F. Muell.) Pedley, *Austrobaileya* 2: 353 (1987). *Type:* Morundee on Murray River, South Australia, February 1851, *F. Mueller s.n.* (*lecto:* MEL 117104, upper branchlet, here selected; *?isolecto:* K).

Acacia oswaldii F. Muell., *nom. nud.*, *Linnaea* 26: 609 (1855), *pro syn. sub A. lanigera.*

Acacia oswaldii F. Muell., *nom. inval.*, *Pl. Victoria* 2: 27 (1863), not effectively published; see Court *et al.* (1994) for discussion.

?*Acacia. oswaldii* var. *abbreviata* Benth. [as *Oswaldi*], Fl. Austral. 2: 384 (1864). *Type:* S. Coast, *R. Brown s.n.* (*n.v.*).

Acacia sessiliceps F. Muell., *Chem. Druggist Australas.* Suppl. 5 (51): 26 (1882), *synon. nov. Type:* near Finke River, Northern Territory, 1880, *H. Kempe* (*holo:* MEL, flowering specimens on lower half of sheet, see discussion below; *iso:* PERTH 00770566, fragment ex MEL).

Acacia amaliae Domin, *Biblioth. Bot.* 89: 249 (1926). *Type:* without specific locality, Queensland, *A. Dietrich s.n.* [*Domin* no. '5403'] (*holo*: PR). Synonymy *fide* Pedley (1978).

Acacia amaliae var. *orthophylla* Domin, *loc. cit. Type:* Dividing Range near Jericho, Queensland, March 1910, *K. Domin* '5402', '5404' (*syn:* PR, *n.v.*). Synonymy *fide* Pedley (1978).

Bushy *shrub* or *tree* 2–6 m tall. *Bark* dark grey, fibrous, stringy on trunks, smooth on branches. *Branchlets* terete, glabrous, appressed-puberulous or tomentulose-sericeous, usually with many red or brown resin hairs. *New growth* with scattered clusters of appressed, red or brown resin hairs, sometimes golden- or silvery-sericeous without resin hairs. *Phyllodes* terete to compressed or flat, linear, narrowly elliptic or narrowly oblong–elliptic, (10)35–73(105) mm long, (1)3–7(15) mm wide, coriaceous to rigid, spreading to erect, straight to recurved, usually glabrous or early glabrescent except for often somewhat appressed-puberulous pulvinus, green or grey-green, occasionally somewhat glaucous; *longitudinal nerves* 3–6 per face, normally raised, with many secondary nerves that are nearly as prominent, anastomoses absent or occasional; *apex* generally acute to acuminate or obtuse with straight to uncinate mucro, sharply to coarsely pungent or innocuous; *pulvinus* 0.5–3 mm at often inequilaterally tapering base, especially in broader phyllodes. *Gland* prominent, basal, elongate-lenticular, rimmed, 2–4 mm long, impressed, infrequently round or widely elliptic and 1–1.5 mm long. *Inflorescences* usually simple, 2 per axil; *peduncles* 0(2) mm long, sericeous and with many red or brown resin hairs; *bracts* including basal peduncular bract, oblong-ovate to broadly ovate, ciliolate, appressed-puberulous to sericeous, slightly concave. *Heads* depressed-globular, 5-bracteolate at base, pale yellow, 4.5–5 mm diam., 4–15-flowered; *bracteoles* obovate to spathulate, the blade flabellate,

ciliolate. *Flowers* 5-merous; *sepals* more than 1/2 petal length, 1/4–2/3-connate, oblong to linear or oblanceolate; *petals* oblanceolate to elliptic, free, acute, tips reflexed, glabrous or appressed-puberulous. *Pods* persistent after dehiscence, linear, strongly raised over and slightly constricted between seeds, 9–31 cm long, 6–12 mm wide, strongly curved to openly coiled or twisted, coriaceous to woody, appressed-puberulous and (when young) with many clumps of red micro-hairs. *Seeds* longitudinal, obloid–ellipsoid, 6–8 mm long, 4–7 mm wide, *c.* 3–3.5 mm thick, glossy, dark brown; *pleurogram* narrowly oblong; aril large and fleshy, orange.

Common names. Umbrella Wattle, Miljee, Nelia, Middia, Curly Yarran, Whyacka, and more.

Typification. In the protologue of *A. oswaldii*, Mueller cited several localities but no collections. We have selected a lectotype from among his collections at herb. MEL in order to fix the application of the name. The sheet bearing the lectotype has a label in the author's hand and consists of two branchlets, both of which are referable to *A. oswaldii*; it is the upper branchlet with flower heads and old pod valves that we have designated as the lectotype. The second branchlet is sterile with differently shaped phyllodes and is probably another collection. The lectotype sheet also has a label added by J.H. Willis and is the sheet referred to by Pedley (1978). Collections from the other geographic areas given in the protologue cannot be located with certainty.

The type of *A. sessiliceps* is a flowering collection mounted on a herb. MEL sheet with a later collection by the same collector; the later collection is in fruit and several pods are to be found in the packet with the type along with flowers and phyllodes, probably from both collections.

Synonymy. Although we have not seen Domin's type of *A. amaliae* var. *orthophylla* we have followed Pedley (1978) in treating this name as synonymous with *A. oswaldii*. Bentham's *A. oswaldii* var. *abbreviata* is probably not distinct from the typical variant but we have not seen the type or any other authentic material representing this variant.

Variation. This is a transcontinental species with many variations but seemingly none of sufficient significance and discontinuity to warrant formal recognition, not even to accommodate *A. sessiliceps* which occurs principally in the Northern Territory and south-central Western Australia. Specimens formerly referred to *A. sessiliceps* are characterized by their very narrow (1–2 mm wide), terete to flat phyllodes; however, these appear to be the end of a cline in phyllode width. It is true that when one compares these variants with narrow phyllodes with typical *A. oswaldii* (phyllodes 3 mm or more wide) their facies are very different, but following an examination of herbarium material we think that it is not appropriate, at present at least, to recognize two taxa formally; Pedley (1978) suggested that *A. sessiliceps* 'may be no more than a narrow-phylloded variant of *A. oswaldii*'.

Other variations within *A. oswaldii*, also not given any formal status, may in fact represent distinguishable entities but again further work is needed to assess the significance of the differences that have been observed in herbarium material. The variants that we have been able to recognize include the following.

1. Some specimens which occur scattered throughout the range of the species have densely golden- or silvery-sericeous new shoots which lack resin. The flowers and fruits on these plants appear to be identical to those of typical *A. oswaldii* (which has new shoots with a sparse silvery appressed indumentum intermixed with many reddish resin hairs; the latter impart a rusty brown colour to the new growth). Unfortunately too few specimens are with new growth for us to meaningfully assess the significance and extent of the sericeous variant. Examples of the sericeous variant include

Koodnanie Creek, Birdsville Track, South Australia, *R. Filson* 3316 (MEL, PERTH) and *c.* 62 miles [99.2 km] SSE of Milparinka, New South Wales, *E.F. Constable* 4621 (NSW, PERTH).

2. Plants around Lake Moore, Western Australia, are *c.* 2 m tall with unusually short phyllodes (1–2.5 cm long), e.g. Mouroubra Station, *B.R. Maslin* 6669 (CANB, PERTH).

3. The inflorescences of *A. oswaldii* normally comprise closely sessile, axillary heads, but occasionally the heads are in rudimentary racemes (1- or 2-branched with axes 2–3 mm long) with peduncles 1–2 mm long, e.g. Gibson Desert, Western Australia, *T. Vercoe* and *M. McDonald* TKV 534 (PERTH).

4. The phyllodes of *A. oswaldii* are commonly coarsely to sharply pungent and sub-acute to acute or shortly acuminate, but sometimes they are not at all pungent and obtusely mucronulate, e.g. 45 km due SW of Yalgoo, Western Australia, *B.R. Maslin* 5378 (PERTH), Lake Amadeus, Northern Teritory, *P.K. Latz* 5718 (BRI, DNA, PERTH).

Acacia pelophila R.S. Cowan & Maslin, *sp. nov.*

Frutex densus, rotundatus, glaber, 1–2 m altus, ad 2 m latus. Phyllodia lineari-oblanceolata, latissima ad medium et versus basem contracta, obtusa et apiculata, interdum oblique, 35–75 mm longa, 3–6 mm lata, coriacea, recta ad leviter curvata, glabra, nervis principalibus 6–10, distantis et elevatis, nervis secondariis fere quam distinctis, cum nervis primariis parallelis, aliquando anastomosantibus. Pedunculi 5–10 mm longi, 2 in quoque axilla, glabri, pedunculorum bracteis caducis, ovatis, 1.5–2.5 mm longis. Capitula ± obloidea, aurea, 5.5–6 mm longa, 4.5 mm diametro, 33–45-floribus, bracteolis oblanceolato-spathulatis, longo-ciliatis. Flores 5-meri. Sepala petalis dimidia breviora, discreta, spathulato-linearia, ± ciliata. Petala anguste elliptica ad oblanceolata, discreta, glabra, patentia. Ovarium papillosum. Legumen lineare, supra semina elevatum et inter semina constrictum, 2–5 cm longum, 1.5 mm latum, tenuiter coriaceum, leviter curvatum, appresso-puberulum. Semina longitudinalia, obloideo-ellipsoidea, 3 mm longa, 1.2 mm lata, 0.8 mm crassitie, subnitida, nigra; arillus terminalis, albus.

Typus: north-west of Northampton [precise locality withheld for conservation reasons], Western Australia, 6 October 1972, *B.R. Maslin* 3125 (*holo:* PERTH 00193453; *iso:* CANB, K).

Dense, rounded *shrub* 1–2 m tall, to 2 m wide. *New growth* pale green, resinous and shiny. *Branchlets* glabrous, somewhat angled when young, soon terete. *Stipules* narrowly triangular, 0.5–0.8 mm long, glabrous, persistent. *Phyllodes* linear–oblanceolate, 35–75 mm long, 3–6 mm wide, coriaceous, ascending to erect, straight to very shallowly incurved, glabrous; *longitudinal nerves* 6–10 per face, distant (inter-nerve distance much wider than width of nerves), impressed or slightly raised, anastomoses absent or very few; *apex* obtuse, apiculate; *pulvinus* 1–2 mm long. *Gland* on upper margin of phyllode at distal end of pulvinus or up to 1 mm above it, small. *Inflorescences* simple, 2 per axil; *peduncles* 5–10 mm long, glabrous or occasionally sparsely puberulous; *basal peduncular bracts* caducous, cucullate, ovate, 1.5–2.5 mm long, glabrous or ciliolate. *Heads* subglobular to obloid, 5.5–6 mm long, 4.5 mm diam., 33–45-flowered; *bracteoles* oblanceolate–spathulate, long-ciliate, the lamina widely elliptic to elliptic, acute. *Flowers* 5-merous; *sepals* 1/2 the petal length, free, spathulate–linear, ± ciliate; *petals* narrowly elliptic to oblanceolate, free, glabrous, spreading. *Ovary* papillose. *Pod* linear, raised over and ± slightly constricted between seeds, 2–5 cm long, 1.5 mm wide, firmly chartaceous to thinly coriaceous, straight to slightly curved, resinous, appressed puberulous. *Seeds*

longitudinal, obloid-ellipsoid, 3 mm long, 1.2 mm wide, 0.8 mm thick, semi-glossy, black; *pleurogram* U-shaped; *areole* small, slightly raised; aril terminal, 1/4–1/3 as long as seed, white.

Selected specimens examined. WESTERN AUSTRALIA, all NW of Northampton [precise localities withheld for conservation reasons]: *W.E. Blackall* 4539 (PERTH); *N. Perry* 252 (PERTH); *P.C. Ryan* 34 (CANB, K, PERTH); *D. Wilcox* 22 (PERTH).

Distribution. Known from only a few localities north-west of Northampton, Western Australia.

Habitat. Grows in white to grey-brown clay sometimes with an overburden of red or brown silt, commonly along saline creek lines with *Eucalyptus* sp. and *Acacia brumalis*.

Phenology. Flowering recorded in July, August and October; mature pods collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The name refers to the fact that all the present collections of *A. pelophila* are from plants growing on clayey substrates, from two Latinized Greek words, *pelos* (clay), and the suffix *-phila* (loving, having an affinity for).

Affinities. Acacia pelophila is most closely related to the widespread species *A. sclerophylla* (see below) from which it is most readily distinguished by its generally larger phyllodes, obloid to subglobular heads containing more numerous flowers and its narrower, straighter pods. The new species may superficially resemble *A. lanei* R.S. Cowan & Maslin which is readily distinguished by its white-sericeous, resinous branchlets and peduncles, globular heads commonly arranged in rudimentary racemes, and glabrous pods 2–3 mm wide. *Acacia lanei* is restricted to a small area around Hyden.

Acacia pinguiculosa R.S. Cowan & Maslin, *sp. nov.*

Frutex ramosissimus (0.1)0.3–1(1.5) m altus. Phyllodia linearia, obovata- ad oblanceolato-oblonga vel teretia, 10–30 mm longa, 1–7.5 mm lata, carnosa, ± recta vel leviter incurvata, glabra, nervis principalibus in quoque pagina 1–3 (laminis applanatis) vel 6–8 (laminis teretibus), nervis secondariis plerumque imperfectis vel destitutis. Pedunculi 1 vel 2 in quoque axilla, (5)7–10(13) mm longi, pedunculorum bracteis basalibus ± ovatis, 0.5 mm longis latisque. Capitula globularia, 3–6 mm diametro, 10–17-floribus. Flores 5-meri. Sepala 2/3–3/4 connata. Legumen lineare, biconvexum vel planum, leviter curvatum, 1–4 cm longum, 2–5 mm latum, coriaceum vel crasso-crustaceum, glabrum. Semina longitudinalia, lato-ellipsoidea ad ellipsoidea, 2.5–3.5 mm longa, 1.5–2 mm lata, maculata, arillo terminali.

Typus: Ravensthorpe Range near Kundip, *c.* 18 km south of Ravensthorpe township, Western Australia, 31 August 1980, *B.R. Maslin* 4784 (*holo:* PERTH 00170917; *iso:* CANB, K, MEL, NY).

Rounded or sometimes ± obconic *shrub*, spreading, compact to moderately open, (0.1)0.3–1(1.5) m tall and 0.7–2 m across, 2–many-branched at ground-level. *Branchlets* glabrous or occasionally sparsely appressed-puberulous at the resinous (not viscid) and sometimes scurfy extremities. *Bark* grey, finely fissured at base of main stems, otherwise smooth. *New shoots* resinous. *Stipules* triangular, 0.2–0.5 mm long, glabrous, caducous. *Phyllodes* terete to flat, linear or obovate to oblong-

oblanceolate, 10–30 mm long, 1–7.5 mm wide, ± fleshy, smooth when fresh but drying finely to coarsely longitudinally wrinkled, ascending to erect, sub-straight to shallowly incurved, glabrous, green to yellowish-green; *longitudinal nerves* 1–3(5) per face (when flat) or 6–8 (when terete), on dry, terete phyllodes the nerves sometimes difficult to distinguish from the longitudinal wrinkles; *apex* rounded-obtuse; *pulvinus* 1–2 mm long, appressed-puberulous adaxially or glabrous. *Gland* obscure or sometimes absent, on upper margin of phyllode 0–4 mm above pulvinus. *Inflorescences* simple, 1 or 2 per axil; *peduncles* (5)7–10(13) mm long, glabrous or occasionally sparsely appressed-puberulous and sometimes with minute, reddish resin-hairs; *basal peduncular bract* often persistent, ± ovate, 0.5 mm long and wide. *Heads* globular, bright light- to medium-golden, 7–9 mm diam. (fresh), 3–6 mm diam. (dry), sub-densely 10–17-flowered; *buds* sub-acute to apiculate. *Flowers* 5-merous; *sepals* 1/4–1/2 length of petals, 2/3–3/4 connate, ciliolate; *petals* free, narrowly elliptic, acute, glabrous, prominently 1-nerved. *Ovary* granulose to appressed-puberulous. *Pod* narrowly oblong to linear, biconvex to flat, straight to shallowly curved, 1–4 cm long, 2–5 mm wide, coriaceous to crustaceous, smooth or longitudinally wrinkled, glabrous. *Seeds* longitudinal, widely ellipsoid to ellipsoid, 2.5–3.5 mm long, 1.5–2 mm wide, mottled grey or yellowish and brown; aril terminal.

Distribution. Extends from the vicinity of Frank Hann National Park south to near Ravensthorpe and east to Mt Burdett and Cape Le Grand, southern Western Australia.

Etymology. The name for the species is from the diminutive of *pinguis*, Latin for fat, rich, in allusion to the thick, fleshy phyllodes.

Affinities. Perhaps related to the '*A. sulcata* group' but most of the taxa of that alliance have different phyllode nervature, cucullate basal peduncular bracts and undulate pods (see Cowan & Maslin 1993).

Subspecies. This species comprises two subspecies: the typical subspecies is geographically restricted to a small area south and east of Ravensthorpe and is recognized by its broad, flat phyllodes, and the widespread subsp. *teretifolia* normally has ± terete phyllodes 1–1.5 mm wide. However, some plants from about 15 km due north-east of Ravensthorpe (e.g. *B.R. Maslin* 4774, MEL, NY, PERTH) are unusual in having flat phyllodes 2–2.5 mm wide; these are probably variants of subsp. *teretifolia* (which occurs in the area) but further work is needed to confidently determine their taxonomic status.

Future study may require recognition of the two subspecies as distinct species but our present knowledge of the group does not justify that course.

Key to subspecies of *Acacia pinguiculosa*

Phyllodes flat, (3)4–7 mm wide, obovate to oblong-oblanceolate; pods smooth, coriaceous ..... subsp. **pinguiculosa**

Phyllodes ± terete, 1–1.5 mm wide; pods longitudinally wrinkled when dry, crustaceous ..... subsp. **teretifolia**

Acacia pinguiculosa R.S. Cowan & Maslin subsp. **pinguiculosa**

Phyllodes obovate to oblong-oblanceolate, flat, 10–30 mm long, (3)4–7.5 mm wide, 1 or 3 (rarely 5) main nerves on each phyllode face. *Pod* smooth, coriaceous.

Selected specimens examined. WESTERN AUSTRALIA: NW of No Tree Hill on John Forrest track [*c.* 20 km due SSW of Ravensthorpe], *K. Bradby* 40 (PERTH); 7.4 km S of Ravensthorpe towards

Hopetoun, *B.R. Maslin* 3896 (BM, BRI, G, K, NSW, PERTH); 33.5 km E of Ravensthorpe towards Esperance, *B.R. Maslin* 3913 (PERTH); 15 km S of Ravensthorpe on road to Hopetoun, *B.R. Maslin* 4780 (AD, MO, PERTH); Ravensthorpe Range, 3 km NE of Kundip, *K. Newbey* 9691 (PERTH).

Distribution. Occurs to the south and east of the Ravensthorpe area, including the Ravensthorpe Range, south west Western Australia.

Habitat. Grows in loam, clay or laterite on low hills with *Eucalyptus tetraptera* or *Allocasuarina humilis* in dense scrub, commonly in association with granite.

Phenology. Flowering recorded from late June to September; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Acacia pinguiculosa subsp. **teretifolia** R.S. Cowan & Maslin, *subsp. nov.*

A subsp. *pinguiculosa* phyllodiis teretibus, 12–20 mm longis, 1–1.5 mm diametro, 6- vel 8-nervatis, glande minuta indistincta, legumine 15–35 mm longo, 2–3.5 mm lato, in sicco longitudinaliter rugoso, differt.

Typus: Cape Le Grand, *c.* 25 km south-east of Esperance, Western Australia, 7 October 1966, *P.G. Wilson* 5557 (*holo:* PERTH 00664650; *iso:* CANB, K, MEL).

Phyllodes terete or nearly so, 12–20 mm long, 1–1.5 mm diam., 6-nerved or uncommonly 8-nerved; gland minute, indistinct. *Pods* 15–35 mm long, 2–3.5 mm wide, wrinkled longitudinally when dry, crustaceous.

Selected specimens examined. WESTERN AUSTRALIA: on Hatters track, 1.3 km N of Mt Gibbs turnoff, *K. Bradby* 30 (PERTH); 38 km SE of Coujinup Hill, *M.A. Burgman* 1354 & *S. McNee* (PERTH); Mt Burdett, *M.A. Burgman* 3280 & *C. Layman* (PERTH); *c.* 17 km NNW of Young River crossing on Ravensthorpe–Esperance road, *N.N. Donner* 2806 (PERTH); N side of Mt Le Grand, *A.S. George* 11012 (PERTH); *c.* 65 miles [*c.* 104 km] E of Lake King, *R.H. Kuchel* 1827 (PERTH); Frank Hann National Park, *D. Monk* 322 (PERTH); *c.* 18 km NE of Ravensthorpe, near Woodenup Creek, *B.R. Maslin* 4775 (NSW, NY, PERTH); 16 miles [25.7 km] E of Lake King, *K. Newbey* 3276 (B, MO, PERTH); 13 km S of Mt Glasse, Bremer Ra., *K. Newbey* 5389 (BM, PERTH).

Distribution. Occurs in south-west Western Australia, extending from Frank Hann National Park and nearby (near Mt Gibbs, east of Lake King and south of Mt Glasse) south to near Ravensthorpe and east to Mt Burdett in the Wittenoom Hills and Cape Le Grand.

Habitat. Grows in sand, gravel, loam or clay, commonly on lower slopes of hills or around their base, on or in association with granite, in open mallee shrubland, heath and dwarf scrub.

Phenology. Most flowering recorded from July to September (single flowering collections recorded for May and October); mature pods collected in December.

Conservation status. Not under threat.

Etymology. The subspecific epithet is derived from the Latin *teres* (rounded or cylindrical in section) and *folium* (a leaf), in reference to the terete form of the phyllodes.

Acacia recurvata R.S. Cowan & Maslin, *sp. nov.*

Frutex tholiformis, densus, 0.5–2.5 m altus. Cortex levis, griseus. Ramuli initio angulares resinosique. Stipulae 0.5–1.5 mm longae, persistentes. Phyllodia inaequilateraliter anguste elliptica, acuta, apiculata, 2.5–4 cm longa, 4–8 mm lata, coriacea, ± recurvata, glabra, nervis resinosis, in quoque pagina 5–10 nervis primariis leviter elevatis, nervis secondaris aliquando anastomosantibus; glans basalis. Racemi axis 0.5–1 mm longus, valde resinosus, post anthesin crescens. Pedunculi 5–8 mm longi, glabri vel hirsutelli, resinosi. Capitula globularia, aurea, 4.5–5 mm diametro, 18–25-floribus. Flores pentameri. Sepala 1/2–3/4-connata, resinosa. Petala in medio cohaerentia. Legumen lineare, 3–6 cm longum et 3.5–4 mm latum, resinosum, tenuiter crustaceum. Semina obloidea, 3.5–4 mm longa.

Typus: near Coorow [precise locality withheld for conservation reasons], Western Australia, 20 June 1977, *C. Chapman s.n.* (*holo:* PERTH 00193437; *iso:* CANB).

Dense, domed, much-branched *shrub* 0.5–2.5 m tall and 1–3 m across, branching at ground level. *Bark* smooth, grey or reddish grey. *New shoots* resinous, slightly viscid, shiny, green (drying brownish). *Branchlets* angular and strongly resinous at first, becoming terete, glabrous or sparsely and minutely, sub-appressed hirsutellous with antrorse pale yellowish or white hairs. *Stipules* triangular, 0.5–1.5 mm long, persistent. *Phyllodes* inequilaterally narrowly elliptic with the adaxial margin normally more curved than abaxial, 2.5–4 cm long, 4–8 mm wide, coriaceous, ascending, mostly shallowly to moderately recurved, sometimes straight and dimidiate, glabrous or rarely hirsutellous on nerves, dull grey-green or dark green with a silvery sheen; longitudinal nerves 5–10 per face, resinous (resin sometimes dryig whitish), anastomoses few; *apex* acute to sub-acute, ± apiculate; *pulvinus* 1–1.5 mm long. *Gland* on upper margin of phyllode at distal end of pulvinus, not prominent. *Inflorescences* simple in axillary pairs or 1- or 2-headed rudimentary racemes; axis 0.5-1 mm long, growing out at anthesis; *peduncles* 5–8 mm long, glabrous or sparsely hirsutellous with pale golden or white, spreading to ± appressed hairs, resinous; *basal peduncular bract* persistent through anthesis, ovate, acute, 0.8–1.5 mm long. *Heads* globular, golden, 4.5–5 mm diam., 18–25-flowered; bracteoles spathulate, the blade ovate, acute, apiculate, minutely puberulous, resinous. *Flowers* 5-merous; *sepals* *c.* 2/3 length of petals, 1/2–3/4-united, resinous; lobes rounded; *petals* reflexed, free but coherent in mid-section, resinous. *Ovary* papillose. *Pods* linear, slightly raised over seeds and not constricted between them, 3–6 cm long, 2–3 mm wide, thinly coriaceous-crustaceous, curved, glabrous, resinous, viscid when young. *Seeds* longitudinal, obloid, 3.5–4 mm long, 2 mm wide, dark brown, slightly shiny; aril terminal.

Selected specimens examined. WESTERN AUSTRALIA: all near Coorow [precise localities withheld for conservation reasons], 25 July 1977, *C. Chapman s.n.* (PERTH); *B.R. Maslin* 6580 (K, MEL, PERTH); *D. Papenfus* DP 452 (MEL, NSW, PERTH); *S. Patrick* SP 1367 & *A. Brown* (CANB, PERTH).

Distribution. Restricted to the Coorow–Three Springs area, south-west Western Australia.

Habitat. Grows in sandy clay and hard granitic clay-loam, on or near breakaways in *Melaleuca uncinata* shrubland, and in *Eucalyptus wandoo* open woodland along watercourses.

Phenology. Flowering recorded in June and July; mature pods collected in October.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The specific epithet is based on the Latin *recurvatus* (recurved), in reference to the phyllodes.

Affinities. Superficially similar to *A. vittata* (see below).

Acacia resinosa R.S. Cowan & Maslin, *sp. nov.*

Frutex aromaticus, rotundatus, 1–3 m altus. Ramuli resinosi, luteo-porcati. Phyllodia teretia, acuta, breviter curvata usque ad uncinata, (25)30–80(90) mm longa, 0.5–1 mm diam., recta ad leviter curvata, nervis c. 16, planis, pulvino cylindrico, 2–3.5 mm longo, resinoso, abrupte separato. Glans basalis. Pedunculi (2)4–8(9) mm longi, binati, resinosi, obscure puberuli, pilis minutis, rubris, glandulosis. Capitula globularia, 3.5–4 mm diametro, 18–37-floribus; bracteolae peltatae, lamina dense glanduloso-puberula pilis rubris minutis. Flores 5-meri. Calyx cupulatus, 5-angulatus, lobis subnullis usque ad breviter rotundatis, marginaliter rubro-glanduloso-puberulis. Corolla 1/2–3/4-connata. Legumen lineare, 40–70 mm longum, 2–3.5 mm latum, chartaceum, rectum, resinosum. Semina longitudinalia, ellipsoidea, 2.5–3.5 mm longa, c. 1.5 mm lata, maculata atro-brunnea et diluto-grisea; arillus terminalis.

Typus: Vermin Proof Fence No. 1, 5 km due SE of Emu Rock, E of Hyden, Western Australia, 11 October 1975, *B.R. Maslin* 3939 (*holo:* PERTH 00150800; *iso:* AD, BM, BRI, CANB, K, MEL, MO, NSW, NY, W, Z).

Somewhat aromatic *shrub*, generally resinous (but not viscid), dense, rounded or sometimes obconical, 1–3 m tall, 1.5–4 m wide, normally much-branched basally, rarely single-stemmed with age; crown extending to ground level or occupying about 40% of plant height. *Bark* dark grey, fibrous or rough at base, smooth above. *Branchlets* glabrous, yellow-resinous, the resin encrusting the entire surface or confined to ridges. *Stipules* triangular, caducous or occasionally persistent. *Phyllodes* terete to subterete, (25)30–80(90) mm long, 0.5–1 mm diam., sub-rigid, ascending to erect, straight to shallowly incurved, glabrous, light green; *apex* straight or very shallowly curved to uncinate, innocuous; *longitudinal nerves c.* 16, plane, flat-topped and very close together; *pulvinus* 2–3.5 mm long, cylindrical, resinous, orange, abruptly separated from phyllode blade. *Gland* small, immersed in swollen base of phyllode blade. *Inflorescences* simple, 1 or 2 per axil; *peduncles* (2)4–8(9) mm long, glabrous or sometimes minutely appressed-puberulous, resinous; *basal peduncular bract* ovate, ± concave, resinous. *Heads* globular, golden, 5 mm diam. when fresh (3.5–4 mm when dry), densely 18–37-flowered; *bracteoles* peltate, stipe slender, blade rounded, densely glandular-puberulous with red micro hairs. *Flowers* 5-merous; *calyx* 1/2–3/4 length of corolla; sepals united, with 5 marginal irregularities or with definite, rounded lobes, puberulous on nerves, margins puberulous with glandular, red micro hairs; *petals* oblanceolate, 1/2–3/4-united, glabrous, each lobe uninerved. *Ovary* papillate-puberulous. *Pods* linear, slightly constricted between and slightly raised over seeds, slightly undulate, 40–70 mm long, 2–3.5 mm wide, firmly chartaceous to thinly coriaceous, straight, resinous, glabrous, greyish yellow; margins paler. *Seeds* longitudinal, ellipsoid, 2.5–3.5 mm long, *c.* 1.5 mm wide, glossy, mottled dark brown on dull yellow, mid-brown or grey; *pleurogram* obscure, U-shaped; *areole* small; aril white.

Selected specimens examined. WESTERN AUSTRALIA: 41.7 km ENE of Sheoak Hill, *M.A. Burgman* 2439 & *S. McNee* (PERTH); 12.1 miles [19.5 km] W of Kumarl towards Lake King, *R. Cumming* 2546 (PERTH); 3.6 km NNW of Wongan Hills–Ballidu road on Craig Road, turnoff 4.3 km N of Wongan Hills, *R. Cumming* 3627 (PERTH); 51 km from Wubin towards Mount Magnet, *B.R. Maslin* 3534

(CANB, PERTH, Z); 16 km SE of Kulin towards Lake Grace, *B.R. Maslin* 4075 (CANB, MO, PERTH); 34 km due NNE of Kalannie, *B.R. Maslin* 7529 (PERTH); 7 km SW of Ponier Rock, *c.* 72 km S of Balladonia Motel, Eyre Hwy, *K. Newbey* 7356 (PERTH); 3 km NE of Clear Streak Well, *c.* 73 km SE of Norseman, *K. Newbey* 7568 (PERTH); 23 km SE of Karonie, *K. Newbey* 8497 (PERTH); *c.* 6.5 km by road N of Wongan Hills, Wongan Hills Experimental Farm, Reserve 18672, Craig Road, *C.M. Parker* 210 (AD, CANB, PERTH); 14 km NE of Wubin on road to Mount Magnet, *P.G. Wilson* 6476 (AD, CANB, K, MEL, PERTH).

Distribution. Occurs in the south-west of Western Australia, widespread but discontinuous from near Gutha, south to near Wongan Hills, north of Koolyanobbing at Diemals, east to Karonie and in scattered localities from near Kulin east to near Ponier Rock (south of Balladonia).

Habitat. Grows on clay loam and sandy flats; occasional to locally abundant in low open woodland, thickets, open scrub and heath in association with *Acacia*, *Allocasuarina*, *Eucalyptus*, *Grevillea*, *Hakea* and *Melaleuca* spp.

Phenology. Flowering recorded in March and from June to December, but it is likely that sporadic flowering occurs most of the year; mature pods collected in December.

Conservation status. Widespread, not under threat.

Etymology. The specific epithet is derived from the Latin *resinosus* (resinous), in allusion to the more or less obvious resinous nature of most parts of the plant. In the case of flower parts, there are many red micro hairs which are apparently glandular, to the extent that bracteoles and calyx margins are coherent with one another.

Common name. Summer Wattle.

Affinities. In the Kalannie region (in the north-central wheatbelt region of Western Australia) there is a rare taxon of uncertain taxonomic status that appears to be closely related to *A. resinosa*; in places the two taxa are sympatric. This taxon is referred to as *A.* aff. *resinosa* and is most readily distinguished from *A. resinosa* its smaller statue (0.3–1 m tall), generally shorter phyllodes (2–5 cm long), sessile heads and yellow arils. Other close relatives for *A. resinosa* are unknown, although it does have a superficial resemblence to *A. coolgardiensis* Maiden subsp. *coolgardiensis*; these two taxa grow close to one another in places and care is needed to ensure that they are not confused on account of their similar growth habit and phyllodes. From a distance the crown of subsp. *coolgardiensis* has an overall greyish hue, whereas that of *A. resinosa* is light green; upon closer inspection subsp. *coolgardiensis* is distinguished by its fluted trunk, sessile, commonly obloid heads, and terete pods containing non-mottled seeds.

Acacia rigens A. Cunn. ex Don, *Gen. Hist.* 2: 403 (1832); Benth., *London J. Bot.* 1: 342 (1842). – *Racosperma rigens* (A. Cunn. ex Don) Pedley, *Austrobaileya* 2: 355 (1987). *?Type:* Lachlan River, New South Wales, 1817, *A. Cunningham* 400 and 401 (both BM, K); see discussion below under *Typification.*

Acacia rigens A. Cunn. ex Loudon, *nom. subnud.*, *Hort. Brit.* 2: 406 (1830).

Acacia chordophylla F. Muell. ex Benth., *Linnaea* 26: 612 (1855). *Type:* Murray River, [Victoria], October 1848, *F. Mueller s.n.* (*lecto:* MEL 500636, *fide* Pedley 1978: 186; *isolecto:* A, BM, K).

Spreading *shrub* 2–3 m tall, occasionally a small *tree* to 6 m. *Bark* smooth, thin, exfoliating in narrow, elongate strips, dark grey. *Branchlets* strongly yellow-ribbed, sericeous between glabrous ribs, with many red resin hairs intermixed with shining white ones. *Phyllodes* linear, terete, rarely flat, 3–14 cm long, 0.8–1 mm diam. (terete form) to 2.5 mm wide (flat form), coriaceous to sub-rigid, patent to erect, straight to shallowly incurved, grey-green, glabrous or sericeous between nerves; *longitudinal nerves* numerous, some more prominent than others, yellowish; *apex* innocuous to ± coarsely pungent by a straight or curved point; *pulvinus* short, thick, appressed-puberulous, *c.* 1 mm long. *Gland* basal, small, depressed. *Inflorescences* simple, (1)2(4) per axil; *peduncles* normally 2–6 mm long, sericeous with many red resin hairs intermixed; *basal peduncular bracts* persistent, broadly ovate, concave, acute, sericeous. *Heads* globular, golden, 4–8 mm diam., 20–33-flowered; *bracteoles* spathulate with slender stipe and flabellate lamina, puberulous apically with many red, viscid resin hairs, ciliolate. *Flowers* 5-merous; *sepals* 1/2–2/3 length of petals, free to 1/2-united, oblong to oblong-spathulate, glabrous or lobes apically sericeous or puberulous, ciliolate; *petals* narrowly elliptic to oblanceolate-elliptic, free, glabrous. *Ovary* papillate puberulous. *Pod* sub-moniliform, raised over and constricted between seeds, 3.5–10 cm long, 2–3 mm wide, firmly chartaceous to thinly coriaceous, straight to slightly curved, twisted and loosely coiled after dehiscence, somewhat appressed-puberulous. *Seeds* longitudinal, obloid-ellipsoid to narrowly ellipsoid, 3–4.5 mm long, 1.5–2 mm wide, pale brown, glossy; *areole* half or more as long as seed, surrounded by paler brown area; aril conical, terminal, covering only seed apex.

Selected specimens examined. WESTERN AUSTRALIA: Ponton Creek, N of Zanthus, *A.S. George* 5979 (PERTH); 100 km E of Cosmo Newbery on Warburton road, *A.S. George* 12191 (PERTH, TLF); 1.4 miles [2.3 km] W of Hines Hill, *B.R. Maslin* 1733 (CANB, MEL, NSW, PERTH); *c.* 21 km due NE of Nungarin, *B.R. Maslin* 1967 (CANB, K, MEL, NSW); 3.2 km E of Boorabbin on Great Eastern Highway, *B.R. Maslin* 2407 (BRI, CANB, NY, PERTH, S); 25 km SW of Balladonia Motel, Dundas Nature Reserve, *K. Newbey* 11740 (PERTH); about 88 km from Southern Cross towards Coolgardie, *M.E. Phillips* WA/68 703 (PERTH).
SOUTH AUSTRALIA: Hundred of Ramsay, *c.* 15 km ESE of Minlaton, southern Yorke Peninsula, *B.J. Blaylock* 1699 (PERTH); about 12 km NE of Arno Bay along Lincoln Highway, *Hj. Eichler* 19172 (PERTH); 22.8 km SE of water tower in Tailem Bend on Dukes Highway, *N. Hall* H80/85 (PERTH); 18 km N of Mount Lindsay, 25 July 1980, *D. Hewett s.n.* (PERTH 00682004); Murray River, between Renmark and Chowilla Station, 2 Sep. 1982, *B.R. Maslin s.n.* (MEL, PERTH 00682020); Gawler Range area, *M.H. Simmons* 1720 (PERTH); about 14 km E of Cummins on Cummins–Tumby Bay road, *D.J.E. Whibley* 1939 (PERTH).
QUEENSLAND: Dingwall, 97 miles [155 km] SSE of Charleville, *S.L. Everist* 7508 (BRI); 45 km E of Cunnamulla, August 1971, *F.D. Hockings s.n.* (BRI); *c.* 14 miles [22.4 km] NNW of Tara along upper Humbug road, *L.S. Smith* 14154 (BRI).
NEW SOUTH WALES: 6 miles [9.6 km] by road E of Rankin Springs, *E.F. Constable* 7256 (PERTH); 3 miles [4.8 km] NE of West Wyalong, *R. Coveny* 2377 (PERTH); 12 km N of Condobolin, *R. Perry* 110 (PERTH).
VICTORIA: Stewart Flora and Fauna Reserve, Redcliffs area, *M.G. Corrick* 7387 (PERTH); 22.3 km N of Speed on Sunraysia Highway, *N. Hall* H80/38 (PERTH).

Distribution. Widespread throughout southern Australia, occurring in all mainland states except the Northern Territory. The principal range is from the Gawler Ranges, South Australia, east through north-western Victoria to near Dubbo in New South Wales but with a few scattered occurrences in western South Australia, Western Australia and Queensland.

Habitat. Common in drier red, sandy soils, mostly in mallee communities but also adjoining woodland (pine, box) communities.

Phenology. Flowering recorded from July to November, with the main period from August to September; mature pods collected from November to January.

Conservation status. Not considered to be under threat.

Typification. In his revision of *Acacia* in Queensland, Pedley (1978) typified *A. rigens* by *Cunningham* 400, indicating the lower left-hand specimen on a sheet at K as the holotype. The typification of this species, however, cannot be solved so easily, for it is rife with problems and uncertainties, compounded by the collector and by the author of the taxon.

Two Cunningham numbers are involved, 400 and 401, both of which were apparently only in flower; at least the collector in his field notes described only flowers. We have determined from lists of seeds collected in later years that Cunningham used the epithet '*rigens*' for 401, even though in the original field notes he wrote '*Acacia calamistrifolia*' for that number. His collection number 400 with old fruits and young inflorescences may well have been collected as late as 1823 when Cunningham re-collected in the type locality and presumably gave the same collection number to the new material. Since neither Cunningham nor Don mentioned fruits it seems appropriate here to review all the material of both collections before considering further what course to adopt with respect to typification.

Two sheets at Herb. BM bear type material, one with a flowering branchlet of *Cunningham* 400, the other with a flowering branchlet of *Cunningham* 401, as well as a branchlet of *A. havilandiorum* Maiden on each of the two sheets.

At Herb. K there are three sheets bearing type material, as well as various bits of other collections. Sheet one with a pinned label for *Cunningham* 400 has a single flowering branchlet which is probably a duplicate of that same collection represented at BM; there is also a small packet on this sheet, enclosing flower heads, presumably from the branchlet on this sheet, and old pod valves from a branchlet on a second sheet in young bud and old fruit.

The second sheet at K also bears, in the centre, set off by pencilled lines and stamped Herb. Hookerianum, a branchlet with the notation on a slip-on label '*Acacia sulcata*/ low flat country on L. R.'; in Cunningham's diary his notes for No. 400 read '*A. sulcata*. This appears to be *A. sulcata* of Mr Brown, agreeing with that plant in its persistent bractea . . . a twiggy shrub in sterile scrubby tract in the low flat Country on the Lachlan River 31 May–20 June'. This is perhaps the first of the collections numbered 400 referred to above, and the fruiting one may well have been collected later. The lower left-hand specimen on this sheet is ex Herb. Cunningham and has flower buds and dehisced pods. It is labelled *Acacia rigens*, Lachlan River, NSW, June 1817, *Cunningham* 400 and is the one nominated by Pedley as the holotype. The third specimen on this second sheet is not labelled but it and the centre one were incorrectly assigned to *A. elongata* Sieber ex DC. by Pedley (1978).

The third K sheet has three branchlets: the one on the right is *A. havilandiorum* and of no further interest here; the one on the left is a Fraser collection with a largely indecipherable label which was also wrongly allocated to *A. elongata* by Pedley; and the central specimen in young bud and old fruit is labelled, with a slip-on label, '*Acacia calamistrifolia* L. R.', the name used by Cunningham in his diary for his number 401, '*A. calamistrifolia*: . . . It differs from preceding in having decid. bractae & from *A. acicularis* in its geminate capitula / with preceding 20 June'. This branchlet would appear to be a duplicate of the left-hand specimen with young buds and old pods labelled '400' on the second K sheet.

To complicate matters further, there is no evidence on either the K or BM sheets to indicate that the material was seen by Don, and the only authentic Cunningham script (that we can recognize at least) on any of the sheets involved is represented by the collection numbers on the BM sheets which were cut from a field label or something similar and glued onto the sheets.

The Code (Greuter *et al.* 1994) stipulates that a lectotype must be chosen from the original material seen or used by the author prior to publication of the name of the taxon, but in this instance we cannot be certain even what constitutes original material. Don may have seen specimens of both 400 and 401, or neither, for it is entirely possible that Don's description was based on cultivated material, perhaps grown from seed taken from the K specimen of *Cunningham* 400, named as holotype by Pedley. Since there is so much uncertainty regarding what constitutes original material of *A. rigens*, resolution of the typification of the name must await further investigation.

Several important discrepancies between *A. rigens* as understood today and Don's protologue should be recorded. (1) He described the phyllodes as '3-nerved at the base' but those of *A. rigens* are multinerved (*c.* 16-nerved); (2) the phyllodes are said to have 'a gland-bearing tooth on the upper margin at the base', but in *A. rigens* the gland is minute, scarcely noticeable, certainly not borne on a 'tooth'; and (3) the heads are described as 'solitary' on peduncles 'clothed with rufous scales', but heads in *A. rigens* are preponderantly geminate, rarely one or as many as four in an axil, and the peduncles are generally sericeous with appressed, shiny white hairs and varying numbers of red resin hairs.

Notwithstanding the above discussion, Bentham's description in "Flora Australiensis" (1864) is essentially of *A. rigens* as understood today, and it is in this sense that we apply the name here.

Synonomy. *Acacia rigens* var. *humilis* was described by Bentham (1842) based on a Fraser collection but with a question mark to indicate that he was not certain of the rank. This specimen is in the Herbarium Hookerianum at K and annotated '*rigens humilis*' by Bentham; however, it is not *A. rigens* but *A. johnsonii*. The label in Fraser's hand reads: 'Acacia. Native of Bowen. bushes in S.W. Interior. flowers in Septr–a dwarf shrub'.

On a K sheet labelled *A. elongata* there are a number of branchlets; two of these, set off by pencil lines, have a Cunningham label for his number 44 collected April 1824 but this label appears to apply only to the left-hand specimen (in bud), for the other branchlet has a slip-on, indecipherable label and is in open flower. Bentham wrote '*rigens* ß *humilis*' at the base of the left-hand specimen but it is clear that the specimen is of *A. elongata*.

Bentham (1864) described *A. rigens* var. *longifolia* based on a Leichhardt collection of unknown provenance with very long phyllodes. We have not seen this specimen and cannot be sure of the identity of this taxon.

Bentham (1864) published Mueller's manuscript name *A. chordophylla* but reduced it to synonomy under *A. rigens*; the two names apply to the same taxon.

Affinities. Often compared with *A. havilandiorum* which is not very closely related: *A. havilandiorum* has phyllodes with more numerous, fine, inconspicuous nerves and the gland is situated in the middle third of the blade; its peduncles are glabrous, its flowers mostly 4-merous, and its aril galeate, subterminal. *Acacia rigens* has some similarity to the Western Australian endemics *A. masliniana* R.S. Cowan and *A. roycei* Maslin, both of which are readily distinguished by their subulate-pungent phyllode apex.

Variation. The hoary phyllodes and young branchlets, hoary between the nerves, taken with partly united sepals, appressed-puberulous pods and conical aril, serve to distinguish this species. Many collections from the Kellerberrin and Southern Cross areas in south-west Western Australia have phyllodes that are glabrous at maturity (rather than sericeous between the nerves which is the typical condition) and the occurrence of free sepals is more common in these collections which are mostly from margins of saline habitats.

There is a gradual transition from terete phyllodes to broader, flat ones; although the broader phyllode form appears to occur more often in South Australia, there appears to be no real geographical disjunction. Specimens from New South Wales and Western Australia are more similar to each other than to those from South Australia; typically, phyllodes are elongate, slender, straight to somewhat curved. Material from Victoria and adjacent South Australia usually has the shortest phyllodes of the species and these are distinctly grey-green; in addition, in the southern Eyre Peninsula a variant with the most compressed, broadest phyllodes is found sympatrically with populations of the short phyllode variant. The species obviously should be investigated further throughout its range, especially populations around salt lakes and salt flats, for they may be potentially useful for reducing soil salinity in agricultural areas.

Acacia sclerophylla Lindley *in* T. Mitchell, Three Exped. Australia, 1st edn, 2: 139 (1838). *Type:* interior of New Holland [along the Murray River near junction with Loddon River at Swan Hill, Victoria], 20 June 1836, *T. Mitchell* '182' (*holo:* CGE; *iso:* K (left-hand specimen), MEL, PERTH–fragment ex K).

Dense *shrub*, rounded or flat-topped, much-branched, 0.5–2 m tall, often wider than tall. *Bark* grey, smooth or slightly fissured. *New shoots* ± glabrous and resinous or sometimes hairy. *Branchlets* ± terete, glabrous to hairy. *Stipules* (best observed on new shoots), triangular and *c.* 0.5 mm long, or linear-triangular and 1.5–2.5 mm long, sub-persistent to caducous. *Phyllodes* narrowly oblong-oblanceolate to linear-oblanceolate or linear, flat to sub-terete, rarely terete, (10)20–45(60) mm long, 1–4(5) mm wide, thick, coriaceous, ascending to erect, straight to shallowly incurved, glabrous or hairy, green or grey-green; *longitudinal nerves* 8 or more, 3–7(10) per face when flat, the nerves often of unequal prominence (3 commonly more prominent than the rest), sometimes meally and often raised when dry, inter-nerve distance wider than nerve diameter, anastomoses absent; *apex* obtuse, straight- or excentrically curved-mucronate. *Gland* on upper margin of phyllode 0–1 mm above pulvinus, not prominent. *Inflorescences* simple, 1 or 2(4) per axil; *peduncles* (1)2–4(5) mm long, glabrous or hairy; *basal peduncular bract* caducous or sub-persistent, cucullate. *Heads* globular, light-golden, 5–6 mm (3–4 mm dry) diam., 12–20-flowered; *bracteoles* oblanceolate to obovate-oblong or narrowly elliptic. *Flowers* 5-merous; *sepals* 1/4–1/3 petal length, free, linear to oblong or narrowly spathulate, obtuse. *Pods* linear, raised over and slightly constricted between seeds, 30–60 mm long, 2–3 mm wide, curved to openly and somewhat irregularly coiled or twisted, glabrous or hairy. *Seeds* longitudinal, obloid to obloid-ovoid; aril terminal.

Distribution. Eastern Australia in south-east South Australia, north-west Victoria and south-west New South Wales; less common in south-west Western Australia.

Type locality. No details were given in the protologue for the precise place, date or number of the type collection; the data given above are taken from the holotype (collection number and date) and from Mitchell's map and journal of the expedition on which the species was found.

Affinities. Most closely related to *A. pelophila* (see above); see also under varieties below.

Variation. There is considerable variation in the phyllode nervature of the typical variety. Sometimes there are clearly three raised main nerves that are distinctly resinous but with the secondary nerves only slightly raised; this is also the normal condition in var. *teretiuscula.* In var. *sclerophylla* and var. *pilosa,* however, the number of phyllode nerves varies from three to seven, depending on the relative prominence of the secondary nerves, but often the main nerves may be distinguished, even when more numerous, by their greater prominence and by the fact that they are resinous.

Infraspecific taxa. Acacia sclerophylla occurs as three varieties. The typical variety has glabrous phyllodes which are usually broader than the other varieties (except a few atypical specimens from South Australia: see below). Variety *pilosa* differs from the other elements of *A. sclerophylla* by the nature of its branchlet and phyllode indumentum as well as by its longer stipules. Variety *teretiuscula* is closely related to the typical variety, differing primarily in its narrower phyllodes and uncinate-puberulous branchlets.

Key to varieties of *Acacia sclerophylla*

1 Branchlet apices, new shoots and phyllodes (at least when young) pubescent to pilose with tolerably long, weak, spreading or appressed hairs; stipules 1.5–2.5 mm long. (Western Australia.) ..... var. **pilosa**

1. Branchlet apices, new shoots and phyllodes glabrous or sparsely uncinate-puberulous (hairs very short, ± appressed and abruptly curved upwards from base); stipules *c.* 0.5 mm long

2 Phyllodes 1–1.5 mm wide, linear; branchlets sparsely uncinate-puberulous (sometimes almost glabrous). (Western Australia.) ..... var. **teretiuscula**

2. Phyllodes (1.5)2–4(5) mm wide, linear-oblanceolate to narrowly oblong-oblanceolate, rarely linear; branchlets glabrous (rarely very sparsely uncinate-puberulous). (Western Australia, South Australia, New South Wales, Victoria.) ..... var. **sclerophylla**

Acacia sclerophylla Lindley var. **sclerophylla**

Branchlets glabrous or occasionally very sparsely uncinate-puberulous as in var. *teretiuscula. New shoots* glabrous, resinous. *Phyllodes* linear-oblanceolate to narrowly oblong-oblanceolate and flat, rarely linear and compressed to subterete (in South Austaralian variant), (10)20–45 mm long, 2–4(5) mm wide, 1 mm wide in S.A. variant, glabrous, with 5–7(10) longitudinal nerves. *Peduncles* glabrous. *Pod* curved to twisted, glabrous.

Selected specimens examined. WESTERN AUSTRALIA: 6.9 miles [11 km] S of Cadoux, *R.J. Cumming* 1859 (PERTH); 10 km S of Tammin on road to Gardner Reserve, *B.R. Maslin* 6301 (CANB, K, MEL, PERTH); 0.6 km N of Wilsons Down turnoff on the Cunderdin–Wyalkatchem road, *M.H. Simmons* 1279 (PERTH).
SOUTH AUSTRALIA: Bute, *B. Copley* 3858 (PERTH); 31.9 km from Kimba on Eyre Highway to Ceduna, *N. Hall* H80/60 (PERTH); near Hartley, *D. Hunt* 2689 (PERTH); Hambridge National Park, *T.R.N. Lothian s.n.* (AD, PERTH); *c.* 24 km due E of Kadina, *B.R. Maslin* 4526 (PERTH); 2 miles [3.2 km] S of Port Wakefield, *M.D. Tindale* 403 (PERTH); *c.* 54.5 km N of Cowell, *M.D. Tindale* 438 (PERTH); western side of Murray River on road to Mannum, 10 km N of Murray Bridge, *D.J.G. Whibley* 4207 (PERTH); *c.* 16 km WSW of Waikerie, *J.R. Wheeler* 461 (PERTH).
VICTORIA: beside Ouyen–Pinnaroo road just E of Tutye, *M.G. Corrick* 6236 & *B.A. Fuhrer* (MEL, PERTH); Big Desert, 8 km S of Murrayville on Nhill road, *M.G. Corrick* 6388 (MEL, PERTH);

c. 11.7 km along road running W of Sunset Tank–Merrinee road, *P.S. Short* 1195 & *M.G. Corrick* (MEL, PERTH).
NEW SOUTH WALES: Sturt Highway, 3 km W of Balranald, *W. Bishop* 290 (NSW); Loch Lily, S of Broken Hill, *W.E. Mulham* W–1005 (NSW); 30 km W of Euston, *W.E. Mulham* 1349 (NSW).

Distribution. Restricted to a few localities in south-west Western Australia, between Cadoux and Tammin; common in south-east South Australia from Streaky Bay on the west coast of Eyre Peninsula, east to north-west Victoria where it is confined to an area from the Murray River south to near Nhill and as far east as Swan Hill, and then to south-west New South Wales where it is uncommon.

Habitat. Grows in a wide range of soil types, mostly in sandy soil and in some places overlying limestone (South Australia), but also in loam (Western Australia), red-gravel or clay, sometimes on dunes (New South Wales), in mallee eucalypt scrub or woodland.

Phenology. Flowering recorded from August to November; mature pods collected from January to March and July to December.

Conservation status. Widespread, not under threat.

Variation. Typically this variety has flat, linear-oblanceolate phyllodes 2–4 cm long and 2–4 mm wide, but in S.A. two unusual variants occur: one from the Murray region with linear phyllodes 4–6 cm long (e.g. *W.R. Barker* 4393, AD, PERTH), the other from the Eyre Peninsula with subterete phyllodes *c.* 1 mm wide (e.g. *B. Copley* 2965, AD, PERTH).

Affinities. Sometimes confused with *A. wilhelmiana* F. Muell. which is readily distinguished by its normally very reduced racemes and peduncles that are densely yellow hairy.

Acacia sclerophylla var. **pilosa** R.S. Cowan & Maslin, *var. nov.*

A var. *sclerophylla* ramulis et phyllodiorum nervis pilosis vel pubescentibus, saepe glabrescentibus, stipulis persistentibus, linearibus, 1.5–2.5 mm longis, differt.

Typus: Reserve 24282, Dumbleyung, Western Australia, 25 October 1977, *J.S. Beard* 8181 (*holo:* PERTH 00193402).

Branchlets pubescent to pilose at tips (hairs tolerably long, weak and spreading to appressed), often soon becoming glabrous. *New shoots* moderately to densely hairy. *Stipules* linear-triangular, 1.5–2.5 mm long. *Phyllodes* linear to linear-oblanceolate, 20–35 mm long, 2–3 mm wide, flat, hairy when young (indumentum similar to branchlets except hairs sometimes shorter), glabrous with age, with 3–5(7) longitudinal nerves. Old *pod* valves coiled, sparsely to densely hairy.

Selected specimens examined. WESTERN AUSTRALIA: 'Ryans Property', Doodlakine–Kununoppin road, 26 August 1987, *L. Atkins s.n.* (CANB, K, MEL, NY, PERTH 00823368); North Bungalla Reserve, 11 km N of Bungalla on road to Yorkrakine, *R.S. Cowan* A742 & *B.R. Maslin* (BRI, CANB, K, MEL, NSW, PERTH); 20 km from Lake Grace towards Kulin, *N. Perry* 518 (PERTH).

Distribution. A little-collected variety known from only a few localities in the central wheatbelt between Kununoppin and Dumbleyung, south-west Western Australia.

Habitat. Grows in sandy loam or clay in mallee, sometimes at margins of salt flats.

Phenology. Flowering recorded from August to October; pods not seen.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The name of the new variety is founded on the pilose character of the branchlets and main nerves of the phyllodes, from *pilosus*, Latin for pilose.

Acacia sclerophylla var. **teretiuscula** Maiden & Blakely, *J. Roy. Soc. Western Australia* 13: 22 (1928). *Type:* Bruce Rock, Merredin district, Western Australia, August 1917, *F. Stoward* 171 (*holo:* NSW; *iso:* K, PERTH 00771678).

Branchlets uncinate-puberulous (hairs very short, appressed to sub-appressed, abruptly curved upwards from base), sometimes almost glabrous. *New shoots* glabrous or very sparsely hairy, resinous. *Stipules* triangular, *c.* 0.5 mm long. *Phyllodes* linear, flat to sub-terete, 20–45 mm long, 1–1.5 mm wide, glabrous or very sparsely uncinate-puberulous as on branchlets, with 3(5) longitudinal nerves occasionally whitish. *Pods* glabrous or sparsely appressed-hairy.

Selected specimens examined. WESTERN AUSTRALIA, between Bruce Rock and Lake Grace [precise localities withheld for conservation reasons]: *R.S. Cowan* A751 & *B.R. Maslin* (BM, BRI, CANB, K, MEL, NSW, PERTH); *K. Newbey* 1359 (CANB, K, MEL, MO, PERTH).

Distribution: A little-collected variety known from only a few scattered localities in the central wheatbelt between Bruce Rock and Lake Grace, south-west Western Australia.

Habitat. In scattered small populations on well-drained, light grey sand or brown clay-loam, in open mallee shrubland or woodland. A variant noted below occurs around salt lakes.

Phenology. Flowering recorded in August and September; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Variation. A variant not included in the above description is recognized by its completely glabrous, resinous branchlets and terete to subterete, resinous, erect phyllodes. It occurs in saline habitats in scattered localities at Mt Kokeby (between Beverley and Brookton), Corrigin and Hines Hill, e.g. *B.R. Maslin* 6339 (PERTH). Further study may show this variant to warrant formal recognition.

Acacia subflexuosa Maiden, *J. & Proc. Roy. Soc. New South Wales* 53: 178, pl. 10, fig. 23, pl. 11, figs 1–6 (1920). *Type:* south-western area of Western Australia, 1849, *J. Drummond* 5: 5 (*holo:* NSW; *iso:* BM, CGE, K, MEL, P, PERTH 00772186, W).

[*Acacia triptycha auct., non* F.Muell. ex Benth.: Fl. Austral. 2: 337 (1864), not as to lectotype but as to *J. Drummond* 4: 132 and 5: 5 (see below).]

Spreading, rounded *shrub* 0.3–1 m tall and 0.4–1.8 m across. *Bark* dark grey-brown, exfoliating in narrow recurving strips at stem bases. *Branchlets* terete, ribs absent or scarcely evident, puberulous

(hairs patent) or appressed-puberulous at first, often becoming glabrous with age, grey but red-brown with loss of epidermis, older branchlets sometimes roughened. *Stipules* lanceolate-oblong to subulate, broadly based, 1–2.2 mm long, acute, 1-nerved, ± persistent. *Phyllodes* terete to almost flat, (20)35–70(80) mm long, 1–2 mm diam., sub-rigid, commonly wide-spreading, ± irregularly curved to shallowly sigmoid, puberulous or glabrous except pulvinus and base of blades appressed-puberulous, dark green; *longitudinal nerves* 8, 3 per face when ± flat, strongly raised (furrowed between when dry) and widely separated; *apex* curved-mucronate to subuncinate; *pulvinus* short, ± smooth, slightly flared at base. *Gland* on upper suface of phyllode 0–4 mm above pulvinus between 2 adaxial nerves that join above gland, small, plane, circular. *Inflorescences* simple, 2 per axil; *peduncles* 2–6 mm long, puberulous or appressed-puberulous or glabrous; *basal peduncular bracts* cucullate, rounded, puberulous or appressed-puberulous, 3-nerved. *Heads* globular, bright yellow, 3.5–4 mm diam., 15–22-flowered; *bracteoles* slightly exserted in bud, obovate to oblanceolate, acute, curved, slightly puberulous, ciliate. *Flowers* 5-merous; *sepals* more than half as long as petals, free, linear-spathulate; *petals* oblanceolate, free or *c.* 1/2-connate, occasionally weakly puberulous in apical portion. *Ovary* glabrous, puberulous or appressed-puberulous. *Pods* sub-moniliform, raised over seeds and shallowly to rather prominently constricted between them, often slightly undulate, 25–80 mm long, 2–2.5 mm wide, pendent, thinly crustaceous, curved, subnitid, sparsely puberulous or glabrous, margins distinctly thickened. *Seeds* longitudinal, widely ellipsoid, unilaterally constricted terminally, 2.5 mm long, 1.7 mm wide, 1.5 mm thick, dull, uniformly brown or mottled dark and light brown; *pleurogram* U-shaped; *areole* tiny; aril subterminal, crested.

Typification. The holotype is indicated as being at NSW because the protologue (p. 176) makes it clear that the source of Maiden's material was the British Museum herbarium and the NSW sheet bears a label to this effect. The sheet is annotated in Blakely's hand.

Affinities. *Acacia subflexuosa* is closely related to both *A. consanguinea* R.S. Cowan & Maslin and *A. leptoneura*. *Acacia consanguinea* differs most obviously from *A. subflexuosa* in having ascending to erect phyllodes which are generally straighter (normally they are uniformly very shallowly incurved), consistently terete and with (eight) rather obscure, scarcely raised longitudinal nerves that are shallowly and irregularly furrowed between; furthermore, the (obscure) gland is usually 6–10 mm above the pulvinus. *Acacia consanguinea* occurs from Muntadgin to Coolgardie, with outlying populations near Wialki and Kalannie. The differences between *A. subflexuosa* and *A. leptoneura* are found principally in the number of nerves in the phyllodes, eight in *A. subflexuosa* and about sixteen in *A. leptoneura*; the bracteoles are more obviously exserted in *A. subflexuosa* but otherwise the two species are extremely similar and deserve thorough field studies to resolve the question of whether or not the two taxa are really distinct, especially in view of the fact that *A. leptoneura* is known only by the (flowering) type collection. The latter statement will be surprising to many who have assigned collections to this species for years but all the sheets we have seen so determined are identifiable with other taxa.

Notes. As pointed out by Maiden (1920), the type of *A. subflexuosa* was included by Bentham (1864) in his *A. triptycha*, and was the source of his description of the phyllode of *A. triptycha* as 'flexuose'.

Acacia subflexuosa comprises two geographically disjunct subspecies.

Key to subspecies of *Acacia subflexuosa*

Branchlets and peduncles with minute, appressed hairs; phyllodes glabrous except appressed-puberulous at base ..... subsp. **subflexuosa**

Branchlets and peduncles with dense, spreading hairs; phyllodes with sparse to moderately dense spreading hairs ..... subsp. **capillata**

Acacia subflexuosa Maiden subsp. **subflexuosa**

Branchlets minutely appressed-puberulous at first, normally glabrescent with age. *Phyllodes* glabrous except minutely appressed-puberulous base of blade and pulvinus. *Peduncles* 2–5 mm long, glabrous or minutely appressed-puberulous.

Selected specimens examined. WESTERN AUSTRALIA: Dryandra State Forest, 24 June 1986, *K. Atkins s.n.* (K, PERTH 00756628); St Fergus Farm Road, *c.* 2–3 km N of turnoff to Avon Valley National Park along Toodyay Road, *H. Demarz* 6162 (PERTH); Jarrahdale, vicinity of Travellers Arms [hotel], Jan. 1968, *R.J. Edmiston s.n.* (PERTH 00700983); Baanga Hill, 16 km due SE of Lake King, on Hatters Hill Road, 1 km N of Baanga Hill Road, *B.R. Maslin* 6320 (CANB, K, MEL, PERTH); 18 km E of Lake King, *K. Newbey* 9478-1 (CANB, MELU, PERTH); Dryandra State Forest, *D. Rose* 190 (CANB, PERTH); Goonaring Springs, [*c.* 20 km due SW of Toodyay], late Nov. 1986, *B. Rowley s.n.* (PERTH 00799726); Baanga Hill, *c.* 16 km SE of Lake King townsite, *P.G. Wilson* 7017 (PERTH).

Distribution. Scattered localities between Wundowie and Dryandra State Forest with a disjunct occurrence near Lake King, south-west Western Australia.

Habitat. Grows in gravelly loam and gravel, usually on laterite hills and ridges in scrub and shrubland. Sometimes associated with granite outcrops.

Phenology. Flowering recorded from August to November, and a single collection in January; mature pods collected in November.

Conservation status. Not under threat.

Acacia subflexuosa subsp. **capillata** R.S. Cowan & Maslin, *subsp. nov.*

A subsp. *subflexuosa* ramulis, phyllodiis, pedunculis, bracteis basalibus, ovario et leguminibus puberulis, et petalis 1/2-connatis, differt.

Typus: south of Cunderdin [precise locality withheld for conservation reasons], Western Australia, 13 September 1982, *B.H. Smith* 101 (*holo:* PERTH 00866857; *iso:* MEL).

Branchlets densely puberulous with patent hairs. *Phyllodes* sparsely to moderately puberulous with patent hairs. *Peduncles* 4–6 mm long, densely puberulous with patent hairs.

Other specimens examined. WESTERN AUSTRALIA: S of Cunderdin [precise localities withheld for conservation reasons]; 27 Sept. 1994, *Anonymous s.n.* (PERTH 04105648); *D. Papenfus* DP 668 (PERTH); Nov. 1982, *B.H. Smith s.n.* (PERTH 00702218).

Distribution. Known from only a single population south of Cunderdin, south-west Western Australia, east and north of the typical subspecies.

Habitat. Grows in laterite and grey sand in scrubland.

Phenology. Flowers (past peak anthesis) collected in September; pods with seeds have not been seen.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The specific epithet refers to the indumentum on many parts of the plant, from the Latin *capillatus* (hairy).

Acacia trinalis R.S. Cowan & Maslin, *sp. nov.*

Frutex densus, rotundatus, vel arbuscula fruticosa, 1.5–4 m alta. Ramuli glabri, ± resinoso-costati. Phyllodia linearia, acuta, ad apicem curvata ad subuncinata, 4.5–9 cm longa, 2–3 mm lata, recta ad leviter incurvata, 3-nervata, costa valde elevata et resinosa. Pedunculi (3)4–6(9) mm longi, 2 in quoque axilla, glabri, capitulis globularibus, 4–4.5 mm diametro, 22–28-floribus. Flores pentameri; sepalis 1/4–1/2-connatis et anguste oblongis; petalis discretis. Legumen et semina non visa.

Typus: between Wongan Hills and Piawaning [precise locality withheld for conservation reasons], Western Australia, 10 September 1975, *B.R. Maslin* 3812 (*holo:* PERTH 00193933; *iso:* BM, BRI, CANB, G, K, MEL, NSW, NY).

[*Acacia cochlearis auct. non* (Labill.) H.L. Wendl.; G. Bentham, Fl. Austral. 2: 324 (1864), as to *J. Drummond* 2: 139.]

Dense *shrub* or bushy small *tree*, rounded or obconic, multi-stemmed, 1.5–4 m tall; crown to 4 m across; trunk to 12 cm diam. *Bark* smooth, grey. *New growth* glabrous, strongly resinous. *Branchlets* somewhat angular and resin-ribbed at extremities, soon terete, glabrous, orange to light brown. *Stipules* minute, triangular, caducous. *Phyllodes* linear, 4.5–9 cm long, 2–3 mm wide, thinly coriaceous, not rigid, patent to ascending, straight to shallowly incurved, glabrous, mid- to dark-green; *longitudinal nerves* 3 per face and widely spaced, somewhat raised (when dry) with the mid-nerve the most prominent, all nerves resinous (ageing mealy) or only the mid-nerve, anastomoses absent or few and longitudinally oriented; *apex* shortly acuminate, delicately recurved to sub-uncinate; *pulvinus* 1–3 mm long. *Gland* on upper margin of phyllode 1–2 mm above pulvinus, inconspicuous. *Inflorescences* simple, 2 per axil; *peduncles* (3)4–6(9) mm long, glabrous; *basal peduncular bracts* caducous. *Heads* globular to obloid, bright mid-golden, 7 mm diam. when fresh (4–4.5 mm diam. when dry), 22–28-flowered; *bracteoles* fusiform, elliptic or oblanceolate, acute, ciliate. *Flowers* 5-merous; *sepals* 1/2 as long as petals, free to 1/2-united, linear-spathulate, glabrous except ciliolate at apex; *petals* free. *Ovary* glabrous to papillose or minutely appressed-puberulous. *Pod* and *seeds* not seen.

Selected specimens examined. WESTERN AUSTRALIA [precise localities withheld for conservation reasons]: near Goomalling, *R.S. Cowan* A734 & *B.R. Maslin* (CANB, K, MEL, PERTH); near Goomalling, *R.S.* & *R.A. Cowan* A871 (CANB, K, MEL, NY, PERTH, US); near Goomalling, *G.F. Craig* 1612 (PERTH); near Coorow, *A. Doley* 1 (PERTH); near Goomalling, *B.R. Maslin* 4199 (PERTH); near Miling, *B.R. Maslin* 6211 (BRI, NSW, PERTH).

Distribution. A little-collected species, restricted to an area from near Marchagee (which is *c.* 65 km due north of Moora) south-east to the Mortlock River near Goomalling.

Habitat. Grows in brown sand and clay-loam associated with saline situations in ± swampy areas with saltbush scrub.

Phenology. Flowering recorded from July to September; pods not seen.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The specific epithet is chosen with reference to the 3-nerved phyllodes, from *trinalis*, a Latin word for three.

Typification. At both K and BM, material of the *Drummond* 2: 139, cited above, is mounted on the same sheet with type material of *A. benthamii* Meisner. Bentham (1864) cited it incorrectly under *A. cochlearis* (Labill.) H.L. Wendl.

Affinities. The new species is so similar in general appearance to *A. heteroclita* Meisner and *A. triptycha* F. Muell. ex Benth. that a key may assist the user to distinguish them:

1 New shoots glabrous, resinous; phyllodes 2–3 mm wide; branchlets resin-ribbed at extremities ..... **A. trinalis**

1. New shoots sericeous (hairs golden, rarely white), not resinous; branchlets not resin-ribbed at extremities

2 Phyllodes 1–2 mm wide, flat to ± terete ..... **A. triptycha**

2. Phyllodes normally 3–9 mm wide, flat ..... **A. heteroclita**

Acacia trinalis has often been mistaken for a disjunct variant of *A. heteroclita*, the nearest relative, which has sericeous new shoots (hairs golden, occasionally white), non-resinous branchlet apices and phyllode nerves, large, conspicuous phyllode glands, free spathulate sepals and partly united petals. Geographically, *A. heteroclita* is also well-separated, occurring from Kulin south to Fitzgerald River National Park and east of Esperance.

Acacia triptycha F. Muell. ex Benth., Fl. Austral. 2: 337 (1864). *Type:* Kalgan River, Western Australia, *A.F. Oldfield* (*lecto:* MEL, here selected; *isolecto:* K, PERTH – fragments ex K and MEL; Termination Rock, Western Australia, *G. Maxwell* (*paralecto:* K, MEL, PERTH – fragment ex MEL).

Bushy, spreading *shrub* to small *tree* 1–4 m tall and to 3 m across. *New growth* appressed-puberulous, hairs golden (ageing white). *Branchlets* subterete to terete, glabrous or very sparsely appressed-puberulous. *Stipules* caducous. *Phyllodes* flat to ± terete, linear, (30)70–100(130) mm long, 1–2 mm wide, coriaceous to thinly so, ascending to erect, straight or more often shallowly incurved, glabrous except at tip, dark green; *longitudinal nerves* 3 per face when flat, 8 in all when ± terete, distant, raised (at least when dry); *apex* arcuately long-acuminate, the tip sericeous at least at first, commonly glabrous with age; *pulvinus* distinct, *c.* 2 mm long, transversely wrinkled. *Gland* on upper edge of phyllode 1–11(15) mm above pulvinus, not prominent. *Inflorescences* simple, 2 per axil; *peduncles* (4)6–9(10) mm long, glabrous or sparsely appressed-puberulous; *basal peduncular bract* cucullate, broadly ovate, glabrous except ciliate margins. *Heads* globular, pale to bright yellow, 4(6) mm diam., 26–40(70)-flowered; *bracteoles* spathulate, the blade rounded, ± geniculate at junction with stipe, cucullate, ciliate, the stipe slender. *Flowers* 5-merous; *sepals* half or more as long as petals, free, linear–spathulate with a long, very slender stipe; *petals* 2/3–3/4-united. *Ovary* micro-puberulous or glabrous. *Pod* linear, slightly raised over seeds and straight-edged or shallowly constricted between seeds, 50–60 mm long, 3–4 mm wide, thinly crustaceous, straight, glabrous or sparingly appressed-puberulous. *Seeds* longitudinal, ellipsoid to obloid-ellipsoid, compressed, unilaterally constricted terminally, 2.8–3.3 mm long, 1.8 mm wide, glossy, mottled darker and lighter brown; *pleurogram* U-shaped; *areole* minute; aril subterminal, crested.

Selected specimens examined. WESTERN AUSTRALIA: slope of Mt Ragged, *T.E.H. Aplin* 4331 (AD, BRI, CANB, K, PERTH); Mt Barker (hill), *J.S. Beard* 7701 (PERTH); 20 miles [32 km] NE of Wittenoom Hills, *J.S. Beard* 6384 (PERTH); opposite Kamballup Roadhouse, South Stirling, *R.J. Cumming* 1002 (PERTH); Jacup Creek, Fitzgerald River, 12 Oct. 1935, *C.A. Gardner s.n.* (BM, PERTH 00686794); *c.* 15 km due SW of Scaddan, *B.R. Maslin* 2531 (PERTH); *c.* 10 km from Ravensthorpe towards Lake King, *B.R. Maslin* 3873 (CANB, G, K, MEL, NSW, NY, PERTH); 35 km SE of Ongerup, *N. Stevens* KRN 9519–1 (MELU, PERTH); Ravensthorpe Range, *c.* 8 km N of Ravensthorpe, *P.G. Wilson* 7973 (MEL, PERTH).

Distribution. Occurs sporadically in southern Western Australia from Mt Frankland east to Cape Arid National Park and near Ponier Rock. Many collections are from Cape Arid National Park, mostly from Mt Ragged.

Habitat. Usually associated with granite or quartzite on granitic sand or reddish-brown clayey sand over quartz, in open scrub or heath on hills, thus the sporadic distribution.

Phenology. Most flowering recorded from September to December; a few, however, collected in the April to June period suggest perhaps two flowering periods; mature pods collected in December.

Conservation status. Not under threat.

Typification. Although the lectotype at MEL is labelled '*Oldfield* 473', this is the only specimen of the lectotype collection with a number. Moreover, the number does not appear elsewhere in literature or on the material seen by Bentham. Consequently we have omitted the number in citing the lectotype collection. The selection of the lectotype and its location are based on the journal article by Maiden (1920) in which he indicated (p. 176) that his conclusion is based on material of Oldfield from the Kalgan River along with the material of the other three collections which Ewart had sent him for study, only two of which he considered to be this species. Because lectotypification is not, at the moment, retroactive, we validate here what Maiden apparently intended and which is necessary in any case. The two Drummond collections cited as this species by Bentham (1864) were used by Maiden to typify *A. subflexuosa* (see above).

Affinities. Acacia triptycha is very closely related to *A. heteroclita* (see key under *A. trinalis* above) and further studies may show that these taxa are only infraspecifically distinct. *Acacia triptycha* and its allies are taxonomically close to the '*A. fragilis* group' (see Cowan & Maslin 1995: 237).

Acacia trulliformis R.S. Cowan & Maslin, *sp. nov.*

Frutex ad 3 m altus, 1–2 m latus, ramulis angulatis, antrorse puberulis, pilis aureis. Stipulae triangulares ad ovatae, crassae, glabrae, persistentes. Phyllodia elliptica ad oblongo-elliptica, obtusa, apiculata, pulvino 0.8–2 mm longo, glabro, lamina 15–45 mm longa, 8–16 mm lata, tenuiter coriacea, nervis primariis 3 vel 4, nervis secondariis irregulariter anastomosantibus. Racemorum axes 2–8 mm longi, puberuli atque ramuli, bicapitulati; pedunculi 8–15 mm longi, puberuli et resinosi, 1- vel 2-capitati, bracteis basalibus persistentibus, 1.5–2 mm longis, ovatis ad oblongo-ovatis, glabris, crassis. Capitula globularia vel breviter obloidea, atro-aurea, 5–6 mm diametro, 62–75-floribus, bracteolis trulliformibus, longo-acuminatis. Flores 5-meri. Sepala 1/2–3/4-connata, anguste oblonga, parce puberula. Petala discreta, anguste oblanceolata, glabra. Ovarium minute papillatum. Legumen anguste oblongum, 3–3.5 cm longum, 5–6 mm latum, coriaceum, rectum ad ± sigmoideo-curvatum,

pilosum, resinosum, brunneum, marginibus incrassatis. Semina longitudinalia, obloideo-ellipsoidea, 3.5–4 mm longa, 2.5 mm lata, atro-brunnea, arillo subterminali, albo.

Typus: south-east of Ongerup [precise locality withheld for conservation reasons], Western Australia, 12 September 1974, *K.R. Newbey* 4360 (*holo:* PERTH 00697176).

[*Acacia ixiophylla auct. non* Benth.; G. Bentham, Fl. Austral. 2: 387 (1864), as to the *G. Maxwell*, collection.]

Spreading, open *shrub* 1–3 m tall, 1–2 m across. *Branchlets* angled at extremities but ageing terete and ± finely ribbed, resinous, ± appressed-puberulous, the hairs antrorsely curved and golden (ageing white). *Stipules* triangular to ovate, acute, thick, glabrous, minutely verruculose by raised stomata, persistent. *Phyllodes* elliptic to oblong-elliptic, slightly asymmetric, 15–45 mm long, 8–16 mm wide, l:w *c.* 1.5–3, thinly coriaceous, ascending to erect, straight, resinous, appressed-puberulous (with antrorsely curved hairs) when young on margins and main nerves, the hairs golden but often ageing white, sometimes becoming glabrous, dull to glossy, darkish green, glabrous; with 3 or 4 main, slightly raised, resinous *longitudinal nerves* per face, the secondary nerves anastomosing to form an open reticulum; *apex* obtuse–mucronate; *pulvinus* 0.8–2 mm long. *Gland* on upper margin of phyllode at distal end of pulvinus or to 1 mm above it. *Inflorescence* a (1)2-headed raceme; *raceme axes* 2–8 mm long, resinous, sparsely to densely golden appressed-puberulous, growing out; *peduncles* 8–15 mm (to 20 mm in fruit) long, resinous, indumentum as on raceme axes; *basal peduncular bracts* persistent, 1.5–2 mm long, ovate to oblong-ovate, acute, glabrous, thick, minutely verruculose by raised stomata; *heads* globular to obloid, golden, 5–6 mm diam., 62–75-flowered; buds resinous; *bracteoles* spathulate, the stipe sparingly puberulous, slender, the blade trullate, acuminate, often strongly uninerved, somewhat puberulous basally, minutely ciliolate. *Flowers* 5-merous; *sepals* 1/2–2/3 petal length, 1/2–3/4-united, narrowly oblong, apex rounded-obtuse, sparingly puberulous; *petals* free, narrowly oblanceolate, glabrous. *Ovary* minutely papillate. *Pods* narrowly oblong, raised over but not constricted between seeds, 3–3.5 cm long, 5–6 mm wide, coriaceous to thinly coriaceous, straight to sigmoidally curved, shortly pilose with glistening white hairs, resinous, brown, the margins thickened. *Seeds* longitudinal, obloid-ellipsoid, unilaterally constricted terminally, 3.5–4 mm long, 2.5 mm wide, 1.2 mm thick, semi-glossy, dark-brown; *pleurogram* U-shaped; areole 1/3–1/2 as long as seed; aril subterminal, white.

Selected specimens examined. WESTERN AUSTRALIA: SE of Ongerup [precise localities withheld for conservation reasons], *K. Newbey* 1628D (PERTH); *K. Newbey* 3254 (PERTH); *K. Newbey* 11825 (CANB, K, MEL, PERTH); *D. Papenfus* DP 500 & *E. Hickman* (PERTH); *D. Papenfus* DP 686 & *L. Strahan* (PERTH).

Distribution. Restricted to an area south-east of Ongerup with an early collection from 'Gordon Range' (which is probably near Gordon Inlet at the south-east corner of the Fitzgerald River National Park, about 90 km south-east of Ongerup). There are several mountains in that area (West Mt Barren, Mt Bland and, farther inland, Mt Maxwell) which might have been the basis for the collecting locality given.

Habitat. Grows on loamy sand creek flats in *Eucalyptus occidentalis* woodland.

Phenology. Flowering recorded from August to October; mature pods collected in December and January.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The specific name is given in allusion to the shape of the bracteoles which are trowel-shaped, from the Latin *trulla*, the diminutive of *trua* (a skimmer or stirring spoon), and the suffix *–formis* (having the form of).

Affinities. *Acacia trulliformis* is a member of the *A. flavipila* group (see Cowan & Maslin 1990 and Maslin in press) and seems closest to *A. loxophylla* Benth. which is most readily distinguished by its smaller phyllodes (3–8 mm long, 2–5 mm wide) with resin masses in their axils, shorter peduncles (2–3 mm long) and fewer-flowered heads (20–40-flowered). There is also a relationship, less closely, with another member of the *A. flavipila* group – *A. cassicula* R.S. Cowan & Maslin – which has two main nerves on each phyllode face and a much more regular, impressed reticulum; it also has glabrous, shorter peduncles (3–5 mm long in flower, to 10 mm when in fruit), smaller, fewer-flowered heads (22–30-flowered) and glabrous, narrower pods (3–4 mm wide).

Discussion. This is the plant that Bentham labelled '*Acacia ixiophylla* Benth. var. *latifolia*' on a sheet at Kew but never formally published. The specimen was collected by G. Maxwell in the 'Gordon Range' and was cited by Bentham (1864) under *A. ixiophylla*.

Acacia vittata R.S. Cowan & Maslin, *sp. nov.*

Frutex densus, rotundatus, multicaulis, 1–4 m altus, 1–3 m latus. Cortex levis, manifeste lenticellatus, brunneolo-cinereus. Ramuli teretes, longitudinale vittati, lemniscis alternatim glabris et non-resinosis vel puberulis et resinosis, pilis antrorse curvatis. Phyllodia anguste elliptica ad anguste oblongo-elliptica, leviter inaequilateralia, acuta ad obtusa et excentrice apiculata, 3–5.5 cm longa, 3–7 mm lata, ratione horum 7.5–10.5, subrigide coriacea, leviter recurva, glabra vel nervis pilis antrorse curvatis, cinereo-viridia, nervis numerosis, leviter elevatis, aliquando anastomosantibus, resinosis, glande basali, inconspicua. Racemorum axis nullus vel ad 1 mm longus, bicapitatus, in resina inclusus; pedunculi 4–6 mm longi, appresso-puberuli, pedunculorum bracteae basales persistens, ovatae, acutae, c. 1 mm longae. Capitula globularia, medio-aurea, 4.5 mm diametro, 29–31-floribus, bracteolis peltatis, lamina rotundata, minute viscido-puberula. Flores pentameri. Sepala longitudine 2/3 petali partes aequantia, 1/2–2/3-connata, oblonga, parce puberula, lobis obtusis ad rotundato-obtusis, viscido-ciliolatis. Petala elliptica ad oblanceolata, acuta, discreta, glabra. Ovarium appresso-puberulum. Legumen lineare, 1–3 cm longum et 4–5 mm latum, coriaceum, undulatum ad plicatum, subtiliter reticulatum, ± resinosum, villosum, lateribus villosis minoribus et interdum pilis a resina obscuris, diluto-brunneum. Semina longitudinalia, lato ellipsoidea ad obloideo-ellipsoidea, 3–4 mm longa, 2–2.5 mm lata, c. 1.5 mm crassitie, subnitida, atro-brunnea vel brunneo-nigra, pleurogramma U-formati, arillo cremeo, subterminali.

Typus: near Eneabba [precise locality withheld for conservation reasons], Western Australia, 25 August 1988, *B.R. Maslin* 6269 (*holo:* PERTH 00879940; *iso:* CANB).

Multi-stemmed, dense, rounded *shrub* 1–4 m tall, 1–3 m wide. *Bark* smooth, lenticellular, brownish grey. *New shoots* pale green, resinous. *Branchlets* terete, resinous, longitudinally striped with glabrous, light green or yellowish epidermis and brownish, ± appressed-puberulous bands (the hairs antrorsely curved). *Stipules* minute, triangular, persistent. *Phyllodes* narrowly elliptic to narrowly oblong-elliptic, slightly inequilateral (the adaxial margin more rounded than the abaxial one), 3–5.5 cm long, 3–7 mm wide, l:w = 7.5–10.5, coriaceous, ascending to erect, straight or shallowly incurved or shallowly recurved, glabrous or with scattered, antrorsely curved hairlets on nerves and

margins, grey-green; *longitudinal nerves* numerous (8–12 on each face), impressed or slightly raised, resinous, the inter-nerve distance much wider than nerve diameter, anastomoses between nerves absent or few; *apex* acute to obtuse and apiculate; *pulvinus* to 0.5 mm long. *Gland* basal, inconspicuous. *Inflorescences* simple (2 or 3 per axil) or sometimes a few in very short, 2-headed racemes, the axis 0.5–1 mm long; *peduncles* 4–6 mm long, densely appressed-puberulous, resinous; *basal peduncular bract* persistent, ovate, acute, *c.* 1 mm long. *Heads* globular to slightly obloid, medium-golden, 4.5 mm diam. (8 mm fresh), 29–31-flowered; *bracteoles* peltate, the blade rounded, viscid-puberulous. *Flowers* 5-merous; *sepals* 2/3 as long as petals, 1/2–2/3-united, oblong, sparingly puberulous, lobes obtuse to rounded-obtuse, viscid-ciliolate; *petals* elliptic to oblanceolate, acute, free, glabrous. *Ovary* appressed-puberulous. *Pod* prominently undulate, not constricted between seeds, 1–3 cm long (unexpanded length), 4–5 mm wide, thinly coriaceous, finely reticulate, resinous, villous, light brown. *Seeds* longitudinal, widely ellipsoid to obloid-ellipsoid, 3–4 mm long, 2–2.5 mm wide, *c.* 1.5 mm thick, somewhat shiny, dark brown to brown-black; *pleurogram* U-shaped; *areole c.* 1/2 as long as seed, slightly raised; aril creamy white, sub-terminal.

Selected specimens examined. WESTERN AUSTRALIA, near Eneabba [precise localities withheld for conservation reasons]: *A.R. Chapman* 615 (K, NY, PERTH); *B.R. Maslin* 6409 (CANB, K, MEL, PERTH); *S. Patrick* SP 1193 & *A. Brown* (BRI, NSW, PERTH).

Distribution. Occurs in the south-west of Western Australia, occasional to common in a restricted area near Eneabba.

Habitat. Grows in sand and slightly saline clay-loam on margins of seasonal lakes, in low open forest and low woodland of *Eucalyptus camaldulensis*, *Casuarina obesa* and *Melaleuca* sp.

Phenology. Flowering recorded in July and August; mature pods collected in November, December and February.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The specific name alludes to the distinctive striping of the branchlets, from *vittatus*, Latin for striped.

Affinities. Acacia vittata is part of the *A. flavipila* group (Cowan & Maslin 1990, Maslin in press), perhaps with affinities to *A. verricula* R.S. Cowan & Maslin which has clearly reticulate phyllodes, free sepals and curved to loosely undulate pods, and non-striped branchlets. *Acacia recurvata* (see above) resembles *A. vittata* in its phyllode and inflorescence characters but is distinguished by its non-striped branchlets and linear, non-undulate, glabrous pods. Furthermore, the phyllodes on *A. recurvata* tend to be more commonly recurved and more inaequilateral than those of *A. vittata*.

Acacia wilsonii R.S. Cowan & Maslin, *sp. nov.*

Frutex effusus, 0.2–0.3 m altus, 0.3 m latus. Ramuli initio leviter angulati, ± pilosi et pilis minutis resinosis nigris ornatis, demum teretes et glabri. Stipulae rigidae, anguste triangulari–lanceolatae, caudato–acuminatae, 1.5–3 mm longae, persistentes. Phyllodia sessilia, cum ramulis continua, teretia vel subteretia, innocua, ad apicem acuta et ± curvata ad uncinata, lamina 6.5–22.5 cm longa, 1–1.5 mm diam., coriacea ad subrigida, ascendens ad erecta, gradatim ± curvata, glabra, nervis 8 valde elevatis, glande destituta. Alabastra late ellipsoidea, bracteolis conspicue exsertis; pedunculi 4–10 mm longi,

ad 14 mm in fructu, solitarii vel raro binati, villosi et cum pilis minutis resinosis; pedunculorum bracteae basales, persistentes, lanceolatae, caudato-acuminatae, 2.5 mm longae, ciliolatae; capitula globularia, 24–37-floribus. Flores 5-meri; sepala longitudine 1/2–3/4 petali partes aequantia, 1/2-3/4-connata; petala 1/2-connata, elliptica, glabra. Legumen lineare, subteres, inter semina non constrictum, 3–5.5 cm longum, 3–3.5 mm latum, tenuiter crustaceum, leviter curvatum, pilis minutis nigris resinosis, marginibus latis pallidioribus. Semina longitudinalia, obloidea, 2–3 mm longa, 1.5 mm lata et crassa, hebetato-brunnea, tuberculata, arcola levi et pallidiore, pleurogramma fere semicirculari, arillo terminali, luteo.

Typus: 10 km north of Badgingarra, Western Australia, 2 November 1965, *P.G. Wilson* 3850 (*holo:* PERTH 00723754; *iso:* K, PERTH 01160060).

Prostrate *shrub*, normally 0.2–0.3 m tall, to *c.* 0.3 m wide, the branches spreading horizontally. *Branchlets* at first slightly angled, densely villous to pubescent with minute black resin hairs intermixed, soon terete and glabrous except resin hairs sometimes persistent. *Stipules* triangular, acuminate, 1.5–3 mm long, persistent. *Phyllodes* sessile, continuous on branchlets and not easily detached from them, terete to subterete, 6.5–22.5 cm long, 1–1.5 mm diam., coriaceous to semi-rigid, ascending to erect, shallowly incurved to shallowly sigmoid or sinuous, glabrous, green (ageing yellow-green), stomata evident at x10 mag.; *apex* acute, commonly slightly curved to uncinate, innocuous; *longitudinal nerves* 8, strongly raised when dry (nerves separated by well-defined, longitudinal furrows). *Gland* absent. *Inflorescences* simple, 1 or 2 per axil; *peduncles* 4–10 mm long, sometimes to 14 mm long in fruit, densely villous and with minute resin hairs intermixed; *basal peduncular bract* lanceolate, 2.5 mm long, persistent. *Heads* globular, golden, 8 mm diam., densely 24–37-flowered; *bracteoles* exserted in young bud. *Flowers* 5-merous; *sepals* 1/2–3/4 as long as petals, narrowly elliptic, 1/2–3/4 -united, ciliolate; *petals* 1/2-united, elliptic, glabrous. *Pods* linear, subterete, not constricted between seeds, 3–5.5 cm long, 3–3.5 mm wide, thinly crustaceous, slightly curved, dotted with minute, black resin hairs, greenish grey with yellowish, non-thickened margins. *Seeds* longitudinal, obloid, 2–3 mm long, 1.5 mm wide, 1.5 mm thick, dull, brown, tuberculate, tubercles irregular in form, the arcole area smooth, paler, sometimes raised; *pleurogram* U-shaped to nearly semicircular; aril terminal, yellow, scalloped.

Selected specimens examined. WESTERN AUSTRALIA: Alexander Morrison National Park, *J. Coleby-Williams* 352 (PERTH); corner of Rose Thompson Rd and Eneabba–Carnamah road, *J.A. Cochrane* JAC 2019 (PERTH); *c.* 12 km E of Eneabba, *E.A. Griffin* 8143 (PERTH); E of Eneabba, *M. Simmons* 510 (PERTH).

Distribution. A rare but very distinctive species restricted to between Eneabba and Badgingarra, south-west Western Australia.

Habitat. Grows in white or grey sand in heath.

Phenology. Flowering recorded from September to November; mature pods also collected from September to October with both flower buds and mature pods present on most specimens.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The new species is named for Paul G. Wilson, collector of the type material but, more importantly, our respected colleague at PERTH who, for more than 30 years, has given us and many

others the benefit of his vast knowledge of plant systematics, of Latin and of the "International Code of Botanical Nomenclature". We welcome this opportunity to express our gratitude by naming this very interesting wattle in his honour.

Affinities. Close relatives of this distinctive new species are not readily apparent, but its pod characters suggest some affinities to *A. ridleyana* W. Fitzg. which occurs within the geographic range of *A. wilsonii*. *Acacia ridleyana* is readily recognized by its pulvinate, flat, much shorter phyllodes which have a clear articulation between the pulvinus and the branchlet.

Discussion. In this part of the genus, the occurrence of phyllodes that are epulvinate and continuous on the branchlets is rare. Among the plurinerved species, *A. campylophylla* Benth. and *A. chapmanii* R.S. Cowan & Maslin (1999) have such phyllodes but they are much shorter than those of *A. wilsonii*, their petals and sepals are free and their pods are vey different.

Acknowledgements

Alex George is thanked for checking the Latin diagnoses and for editorial assistance. We are grateful to Terena Lally, Suzanne Curry and Diana Corbyn who provided valuable assistance during the preparation of the manuscript. Support for them and for the project generally was given by the Australian Biological Resources Study, to whom we are indebted.

References

Bentham, G. (1842). Notes on Mimoseae, with a Synopsis of Species. *London Journal of Botany* 1: 318–528.

Bentham, G. (1864). "Flora Australiensis." Vol. 2. (Lovell Reeve: London.)

Court, A.B., Cowan, R.S. & Maslin, B.R. (1994). Mueller's "The Plants Indigenous to the Colony of Victoria" - Is volume 2 effectively published? *Nuytsia* 9: 315–318.

Cowan, R.S. & Maslin, B.R. (1990). *Acacia* miscellany 1. Some oligoneurous species of *Acacia* (Leguminosae: Mimosoideae: Section *Plurinerves*) from Western Australia. *Nuytsia* 7: 183–199.

Cowan, R.S. & Maslin, B.R. (1993). *Acacia* miscellany 7. *Acacia sulcata* and related taxa (Leguminosae: Mimosoideae) in Western Australia. *Nuytsia* 9: 69–78.

Cowan, R.S. & Maslin, B.R. (1995). *Acacia* miscellany 15. Five groups of microneurous species of *Acacia*, mostly from Western Australia (Leguminosae: Mimosoideae: section *Plurinerves*). *Nuytsia* 10: 205–254.

Cowan, R.S. & Maslin, B.R. (1999). Acacia miscellany 18. The taxonomy of miscellaneous species with sharply pungent phyllodes in *Acacia* section *Plurinerves* (Leguminosae: Mimosoideae). Nuytsia 12: 453–467.

Greuter, W. et al. (1994). "International Code of Botanical Nomenclature (Tokyo Code)." (Koeltz Scientific Books: Königstein, Germany.)

Maiden, J.H. (1920). Notes on *Acacia*, No. IV, (with descriptions of new species). *Journal and Proceedings of the Royal Society of New South Wales* 53: 171–238, pls X–XVII.

Maslin, B.R. (1981). *Acacia*. *In:* Jessop, J. (ed.) "Flora of Central Australia." pp. 115–142. (A.H. & A.W. Reed: Sydney.)

Maslin, B.R. (in press). *Acacia*. *In*: "Flora of Australia." Vol. 11. (Australian Biological Resources Study, Canberra, and CSIRO Australia, Collingwood.)

Maslin, B.R. & Cowan, R.S. (1994a). What type of type? *Australian Systematic Botany Society Newsletter* 81: 2–7.

Maslin, B.R. & Cowan, R.S. (1994b). C.F. Meissner's species of *Acacia* (Leguminosae: Mimosoideae): typification of the names. *Nuytsia* 9: 399–414.

Maslin, B.R. & Hopper, S.D. (1982). Phytogeography of *Acacia* (Leguminosae: Mimosoideae) in Central Australia. pp. 301–316. *In:* Barker, W.R. & Greenslade, P.J.M. (eds) "Evolution of the Flora and Fauna of Arid Australia." (Peacock Publications: Adelaide.)

Pedley, L. (1978). A revision of *Acacia* Mill. in Queensland. *Austrobaileya* 1: 75–234.

Pedley, L. (1986). *Acacia maconochieana* (Mimosaceae), a new species from semi-arid Australia. *Austrobaileya* 2: 235–237.

Randell, B.R. (1992). Mulga, a revision of the major species. *Journal of the Adelaide Botanic Gardens* 14: 105–132.

Acacia miscellany 18. The taxonomy of miscellaneous species with sharply pungent phyllodes in *Acacia* section *Plurinerves* (Leguminosae: Mimosoideae)

R.S. Cowan† and B.R. Maslin[1]

†Deceased 17 November 1997
[1]Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Abstract

Cowan, R.S. and Maslin, B.R. *Acacia* miscellany 18. The taxonomy of miscellaneous species with sharply pungent phyllodes in *Acacia* section *Plurinerves* (Leguminosae: Mimosoideae). *Nuytsia* 12 (3): 453–467 (1999). Several new taxa are proposed in this paper: *A. cavealis* R.S. Cowan & Maslin, *A. chapmanii* R.S. Cowan & Maslin with two subspecies (subsp. *chapmanii* and subsp. *australis* R.S. Cowan & Maslin), *A. donaldsonii* R.S. Cowan & Maslin, *A. formidabilis* C.A. Gardner ex R.S. Cowan & Maslin, *A. latipes* subsp. *licina* R.S. Cowan & Maslin and *A. speckii* R.S. Cowan & Maslin. *Acacia havilandiorum* Maiden and *A. nyssophylla* F. Muell. are lectotypified and the typification of *A. colletioides* Benth. is discussed. Notes on *A. latipes* Benth. and its very close relative, *A. cochlearis* (Labill.) H. Wendl., are presented along with a key to these two species and another closely related species-pair, *A. adnata* F. Muell. and *A. comans* W. Fitzg. These four species comprise the informal '*A. latipes* group'.

Introduction

This paper continues the series of contributions to publish notes on various matters that have arisen in the course of our preparation of the account of *Acacia* Mill. (Leguminosae: Mimosoideae) for the "Flora of Australia". Here we describe as new seven miscellaneous taxa with sharply pungent phyllodes of the section *Plurinerves* (Benth.) C. Moore & Betche from southern and central Western Australia. The typification of several names of southern Australian taxa is discussed and two are newly lectotypified.

Methods

Most measurements are from dried herbarium specimens which are also the prime source of data on habitat, distribution and phenology, as well as bark morphology and flower colour. Head diameter is measured, as indicated in the descriptions, from either fresh or dried material; it includes the stamens. As we use the term 'pungent' it refers to a phyllode apex that is drawn-out into a hard, spine-like tip;

'sharply pungent' refers to one that readily pierces the skin when touched and 'coarsely pungent' to one that is less sharp.

Our approach to typification is discussed elsewhere (Maslin & Cowan 1994b). The taxa are arranged in alphabetical order.

Taxonomy

Acacia cavealis R.S. Cowan & Maslin, *sp. nov.*

Frutex humilis, ± viscidus, 0.3–0.7(1) m altus, 0.5–1.3 m expansus. Cortex cinereus, levis praeter basim exasperatus. Ramuli arachnoideo-tomentulosi sed pubibus implicitis. Stipulae persistentes, anguste triangulares ad subulatae, 0.75–2.2 mm longae. Phyllodia linearia, plana ad subteretia, abrupte obtusa et mucronato-pungentia, 10–35 mm longa, 1–1.8 mm lata, ratione horum 14–23, subrigida, patentia ad ascendentia praeter aliquando ± reclinata, inter nervos initio arachnoideo-tomentulosa sed ± glabrescentia, nervis principalibus 8 parallelis valde elevatis, glande inconspicua, 1.5–2.5 mm super basem. Pedunculi 7–12 mm longi, 2 in quoque axilla, glabri vel sparse minuto puberuli. Capitula globularia, aurea, 3.5–5 mm diam., floribus (9)12–18. Flores pentameri. Sepala longitudine 1/3–2/3 petali partes aequantia, discreta, spathulata ad spathulato-linearia, ciliata. Petala 1/2–3/4-connata, glabra. Legumen lineare, biconvexum sed non constrictum, 10–45 mm longum, 3–3.5 mm latum, lignosum, arcuatum, minute puberulum vel glabrum, secus suturas resinosum, cinereo-brunneum. Semina longitudinalia, late ellipsoidea, 2.5 mm longa, 2 mm lata, maculata, arillo subterminali, galeato.

Typus: Arrowsmith Lake, Western Australia, 9 December 1974, *A.S. George* 12933 (*holo:* PERTH 00197734; *iso:* CANB).

Sprawling, prostrate or low-domed *shrub* 0.3–0.7(1) m tall, 0.4–1.3 m across, sparingly branched at ground level. *Bark* light grey, smooth except roughened at base of stems. *Branchlets* terete, very obscurely ribbed, straight, arachnoid-tomentulose with the hairs embedded in resin and thus superficially appearing glabrous. *Stipules* narrowly triangular to subulate, 0.75–2.2 mm long, straight, acuminate, persistent. *Phyllodes* solitary or clustered in groups of 2 or 3(4), linear, flat to almost terete, 10–35 mm long, 1–1.8 mm wide, l:w 14–23, slender, rigid to subrigid, patent to ascending, some somewhat reclined, straight or rarely shallowly incurved, arachnoid-tomentulose between nerves at first but hairs obscured by resin, becoming glabrous (or apparently so) with age, green or sometimes grey-green; *longitudinal nerves* 8, not overly prominent, 3 per face when phyllode is flat; *apex* abruptly narrowed to a short, rigid, slender, pungent point; *pulvinus* 0.3–1 mm long, yellow to light orange but ageing brown. *Gland* inconspicuous, on upper margin of phyllode 1.5–2.5 mm above pulvinus, widely elliptic or circular with the rim raised. *Inflorescences* simple, 2 per axil; *peduncles* 7–12 mm long, glabrous; *basal peduncular bracts* similar to stipules but slightly smaller. *Heads* globular, pale yellow to light golden, 3.5–5 mm diam., (9)12–18-flowered; bracteoles ± fusiform, ciliate. *Flowers* 5-merous; *sepals* 1/3–2/3 as long as petals, free, spathulate to narrowly spathulate, ciliate; *petals* widely elliptic, 1/2–3/4-united, glabrous, usually distinctly uninerved. *Ovary* villous, appressed-puberulous or glabrous. *Pods* linear, bicorvex, not constricted between seeds, 10–45 mm long, 3–3.5 mm wide, coriaceous to subwoody, shallowly to moderately curved, very finely longitudinally nerved, minutely puberulous or glabrous, resinous, red-brown to dark brown, the marginal nerves thick, paler, the valves often persisting on plants into next season. *Seeds* longitudinal, widely ellipsoid, 2.5 mm long, 2 mm wide, 1.5–2.5 mm thick, dull, mottled brown on pale brownish grey; *pleurogram* U-shaped; *areole* small, *c.* 1/5 as long as seed, strongly raised; aril clavate, (?)white or cream.

Selected specimens examined. WESTERN AUSTRALIA: Watheroo, *L. Diels* 2129 (PERTH); 16 km S of Carnamah on Eneabba No. 1 Road, *S.J. Forbes* 1777 (MEL, PERTH); 23 miles [36.8 km] N of Mingenew, *A.S. George* 9212 (PERTH); Reserve 29073, 5 km N of Lake Indoon, W of Eneabba, *E.A. Griffin* 2852 & *M.I. Blackwell* (K, PERTH); Mudge Rd, N of Launer Rd, W of Coorow, *E.A. Griffin* 8176 (PERTH); 8 miles [12.8 km] W of Mullewa towards Geraldton, *B.R. Maslin* 69 (PERTH); Brand Hwy, 39.5 km S of intersection with The Midlands Rd (between Eneabba and Dongara), *B.R. Maslin* 5157 (CANB, NY, PERTH); 2 km from Ajana–Kalbarri road on track to Hawks Head Lookout, Murchison River, *B.R. Maslin* 5159 (PERTH); Indarra Springs reserve, SW of Mullewa, *B.R. Maslin* 7039 (PERTH).

Distribution. Occurs in the south-west of Western Australia from the Emu Proof Fence (north of the lower Murchison River) south to Watheroo.

Habitat. Grows in sand in heath, shrubland, low open woodland in sand or on lower slopes of sand ridges, especially with *Banksia prionotes* or scattered *Eucalyptus todtiana*.

Phenology. Flowering recorded from October to February and April to June; mature pods collected from September to December.

Conservation status. Not under threat.

Etymology. The seeds of *A. cavealis* are borne in discrete, elliptic-oblong chambers in the pods and it is this characteristic that gives the species its name, an adjectival form of *cavus*, Latin for hollow or hole, with the meaning 'kept in a cave or cellar'.

Affinities. The new species appears to be related most closely to *Acacia ridleyana* W. Fitzg. which differs most obviously in its broader (2–3.5 mm wide), normally shallowly sigmoid and hirsutellous to pubescent phyllodes (occasional glabrous or straight-phyllode variants occur in *A. ridleyana*). It also superficially resembles *A. auronitens* Lindl. and *A. quadrisulcata* F. Muell. The first of these has phyllodes 4-nerved in all (1-nerved per face when flat), frequently spinose stipules and crustaceous to woody pods with transverse seeds. The quadrangular, 4-nerved phyllodes and longitudinal to transversely oriented seeds of *A. quadrisulcata* readily separate this species from *A. cavealis*.

Notes. The indumentum of the branchlets especially is not at once obvious because it is covered and obscured by a layer of a water-imbibing resin. If a branchlet is soaked in water, the resin swells into a slimy, gelatinous coating so that the stem appears several times its true diameter; much the same sort of reaction occurs on the phyllodes but less obviously so. We have no explanation for the condition and cannot even advance an hypothesis to explain the purpose of such an evolutionary innovation.

Acacia chapmanii R.S. Cowan & Maslin, *sp. nov.*

Frutex compactus, 0.5–2 m altus. Ramuli teretes, glabri, saepe pruinosi. Stipulae indurato-spinosae vel tenues et subulatae, 0.8–3 mm longae. Phyllodia subulata, sessilia, saepe continua, pungentia, (17)20–30(48) mm longa, 0.7–1 mm diam., rigida, glabra, saepe pruinosa, nervis 8, elevatis, distantibus. Pedunculi solitarii, plerumque 10–15 mm longi, filiformes, glabri; bracteae basales 2, semicirculares, cucullatae, c. 1.5 mm longae, glabrae, aliquando pruinosae. Capitula globosa, aurea, 4–5 mm diam., floribus 14–27. Flores 5-meri. Sepala discreta, spathulata vel anguste spathulata, ± puberula. Petala discreta, glabra. Legumen (subsp. *chapmanii*) lineare, torsivum, 20–40 mm longum, 2.5–3 mm latum,

aliquando pruinosum. Semina longitudinalia, late ellipsoidea, 2.5–3 mm longa, 1.5–2 mm lata, nitida, maculosa.

Typus: near Three Springs [precise locality withheld for conservation reasons], Western Australia, 1 September 1976, *B.R. Maslin* 4277 (*holo:* PERTH 00197238; *iso:* BRI, CANB, K, MEL, MO, NSW, NY).

Harsh, dense, intricately branched *shrub* 0.5–2 m tall, 1–3 m wide, compact and ± rounded in open, exposed sites, somewhat spindly in dense scrub, few–many-branched at ground level. *Bark* grey, fibrous and fissured on main stems, smooth on branches. *Branchlets* terete, glabrous, often lightly pruinose at ribbed tips. *New shoots* purple-red and pruinose. *Stipules* rigid and spinose or thin and subulate, 0.8–3 mm long, straight, glabrous, pungent or not, persistent. *Phyllodes* acicular, normally continuous with branchlets but not forming cauline wings, sessile, terete to flat, (17)20–30(50) mm long, 0.7–1 mm diam., rigid, patent to strongly reflexed or ascending, straight or shallowly recurved, glabrous, green to subglaucous (conspicuously glaucous when young); *longitudinal nerves* 8, 3 per face when flat, prominent, raised (at least when dry), narrow and with a distant inter-space between each nerve; *apex* narrowed to a straight, rigid, sharply pungent brown point; *pulvinus* absent. *Gland* not prominent, on upper surface of phyllode either near base or around middle and located below junction of 2 adaxial nerves, sometimes absent. *Inflorescence* simple, 1 per axil; *peduncles* (8)10–15(20) mm long, glabrous; *basal bracts* 2, persistent, semicircular, cucullate, *c.* 1.5 mm long, glabrous, dark, sometimes pruinose, one larger bract subtending peduncle, the other smaller one subtending a vegetative bud. *Heads* globular, prolific, bright light golden, 4–5 mm diam. (dry), 14–27-flowered; *bracteoles* spathulate, acute or obtuse, about same size and shape as sepals or much broader, exserted or not in mature buds. *Flowers* 5-merous; *sepals* 1/2 length of petals, free, spathulate or narrowly spathulate, ± puberulous; *petals* narrowly elliptic to oblanceolate, free, glabrous. *Ovary* glabrous. *Pods* (typical subspecies only) narrowly oblong to linear, rounded over seeds but not or scarcely constricted between, 20–40 mm long, 2.5–3 mm wide, strongly curved to openly once-coiled, glabrous, brown (purplish when very young), lightly pruinose, firmly chartaceous. *Seeds* longitudinal, widely ellipsoid, 2.5–3 mm long, 1.5–2 mm wide, shiny, mottled dark brown and yellowish brown; *areole* minute; funicle filiform and short, the thickened aril ± clavate, not folded, extending 1/2–2/3 down one side of seed.

Etymology. The species is named for Charles Chapman (1904–1988), a farmer who lived near Winchester, Western Australia, and became interested in the local flora, especially those he did not recognize. He collected extensively in the Coorow area and across to Green Head and made the first collections of this and other new species.

Affinities. Acacia chapmanii is allied most closely to *A. campylophylla* Benth. which is distinguished by its generally shorter (10–20 mm long), strongly recurved phyllodes and by its straight, broader pods (4–7.5 mm wide) containing transverse seeds (but note that mature pods are unknown for *A. chapmanii* subsp. *australis*.) *Acacia campylophylla* has a scattered distribution from Bolgart (within the range of *A. chapmanii* subsp. *australis*) and Wyalkatchem south to near Corrigin. *Acacia chapmanii* has a superficial resemblance to *A. subsessilis* A.R. Chapman & Maslin (Chapman & Maslin 1999) and *A. wilsonii* R.S. Cowan & Maslin (Cowan & Maslin 1999).

Subspecies. There are two geographically disjunct subspecies – subsp. *chapmanii* and subsp. *australis*. It is possible that future studies may show that these subspecies would be better treated as distinct species, but because pods are not known for the latter an informed decision on this matter cannot be made now.

Key to subspecies of *Acacia chapmanii*

Phyllodes terete, patent to reflexed, straight; stipules spinose (Marchagee to Three Springs) ..... subsp. **chapmanii**

Phyllodes subterete to flat, ascending, shallowly recurved; stipules not spinose (Calingiri to Bolgart) ..... subsp. **australis**

Acacia chapmanii R.S. Cowan & Maslin subsp. **chapmanii**

Stipules 1.5–3 mm long, rigid and spinose. *Phyllodes* terete, straight, patent to reflexed. *Gland* 0.5–3 mm above phyllode base, commonly absent. *Heads* 14–19-flowered; *bracteoles* insignificant, the small lamina about same width as the sepals.

Selected specimens examined. WESTERN AUSTRALIA, [precise localities withheld for conservation reasons]: near Three Springs, 17 June 1977, *C. Chapman s.n.* (CANB, PERTH 00197319), W of Three Springs, *B.R. Maslin* 3062 (CANB, MEL, PERTH); near Marchagee, *B.R. Maslin* 5305 (K, PERTH); SW of Three Springs, *B.R. Maslin* 6413 (PERTH); Marchagee Track, *D. Papenfus* DP 539 (PERTH).

Distribution. Occurs in the south-west of Western Australia from near Three Springs south to near Marchagee.

Habitat. Grows in laterite or gravel over clay-loam or yellow sand, sometimes on saline flats, in scrub or heath with *Banksia*, *Allocasuarina*, *Xylomelum* and *Verticordia*.

Phenology. Flowers in September–October; mature pods collected in late November and December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Acacia chapmanii subsp. **australis** R.S. Cowan & Maslin, *subsp. nov.*

Ab *Acacia* subsp. *chapmanii* phyllodiis ascendentibus, leviter recurvatis, glande 4–9 mm supra basin inserta; stipulis c. 1 mm longis subulatis sed not rigidis; pedunculis 12–19 mm longis; capitulis 5 mm diam., floribus 24–27; bracteolis quam sepalis latioribus, ad 0.75 mm latis, laminis acutis in alabastro ± exsertis, differt.

Typus: near Bolgart [precise locality withheld for conservation reasons], Western Australia, 15 September 1972, *H. Demarz* D.3920 (*holo:* PERTH 00197289; *iso:* CANB, K).

Stipules c. 1 mm long, not at all rigid, subulate. *Phyllodes* subterete to flat, ascending, shallowly recurved; gland 4–9 mm above base. *Peduncles* 12–19 mm long. *Heads* 5 mm diam., 24–27-flowered; *bracteoles* evident in mature buds, the comparatively large lamina much broader than the sepals, to 0.75 mm wide. Mature *pods* and *seeds* not seen.

Selected specimens examined. WESTERN AUSTRALIA, all near Bolgart [precise localities withheld for conservation reasons]: *R.J. Cranfield* 8364 & *P. Spencer* (PERTH); *P. Hussey* 6 (PERTH); *D. Papenfus* DP 119 (PERTH); *S. Paust* 1005 (PERTH).

Distribution. Occurs in the south-west of Western Australia near Bolgart.

Habitat. Grows in brown, grey or white sand or gravel in winter-wet low heath.

Phenology. Flowering recorded in August and September; mature pods not collected, but specimens with immature pods have been collected in October and November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The subspecific name *australis* (southern) refers to the more southerly distribution of this taxon relative to the typical subspecies.

Affinities. Subsp. *australis* has a superficial resemblance to the more southerly distributed *A. acellerata* Maiden & Blakely which occurs between Cranbrook and Ravensthorpe and is most readily distinguished by its 16-nerved phyllodes that are not continuous with the branchlets, paired peduncles and undulate pods.

Acacia colletioides Benth., *London J. Bot.* 1: 336 (1842). *Type:* Harrington plains, New South Wales, [June 1817], *A. Cunningham* [405/1817] (*holo:* K; *iso:* BM, K).

Acacia nyssophylla F. Muell., not as to lectotype, as to Lake Gairdner, South Australia, *B.H. Babbage* (*paralecto:* MEL, PERTH – fragment ex MEL).

Typification. At the Royal Botanic Gardens, Kew, there are two sheets with type material of the name *A. colletioides*. One bears a single branchlet and a label in neither Bentham's nor Cunningham's hand, giving the type locality, June 1817 as the collection date, and 405 as Cunningham's collection number. The other sheet bears three branchlets: one (upper left) has a field label '405/1817'; the second (lower left) has no label and may be a second piece of the one above; the third is separated by a pencil line and has a field label in Cunningham's hand but with neither date nor collection number. In December 1966, A.B. Court studied these materials and labelled the third specimen (just cited) as the holotype and all the others on both sheets as isotypes. We accept his determination.

Acacia donaldsonii R.S. Cowan & Maslin, *sp. nov.*

Frutex vel arbor 1.5–5 m alta. Ramuli teretes, dense puberuli, demum resinosi. Stipulae persistentes, anguste triangulares, *c.* 0.5 mm longae. Phyllodia teretia, pungentia, pulvino indistincto, versus basem expanso, 1–2 mm longo, dense puberulo et albo-resinoso, lamina 6–14.5 cm longa, 1.5–2.5 mm diam., rigida, ascendenti ad erecta, parce appresso-puberula sed glabrescenti, nervis 4–8, ± distinctis, immersis vel leviter elevatis; glandulae 2, minutae. Pedunculi 5–7 mm longi, in quoque axilla vulgo binati, appresso-puberuli. Capitula globularia, aurea, 4–5 mm diam., floribus 30–56, bracteolis spathulatis. Flores 5-meri. Sepala petalis dimidio breviora, 2/3–3/4-connata, ± puberula. Petala glabra. Ovarium dense albo-puberulum. Legumen compresso-moniliforme vel anguste oblongum, biconvexum, 7.5–14 cm longum, 7–10 mm latum, rigido-coriaceum, arcuatum. Semina longitudinalia, ellipsoidea ad obloideo-ellipsoidea, 6.5–9 mm longa, 4.5–5.5 mm lata, hebetato-brunnea, distincte alveolata, pleurogramma 4–5 mm longa, impressa, arillo carnoso, terminali.

Typus: 3 km north-east of No. 1 Well, Weebo Station, Western Australia, 9 June 1988, *R.J. Cranfield* 6938 (*holo:* PERTH 01060635; *iso:* CANB, K, NY).

Bushy or compact *shrub* to ± gnarled *tree* 1.5–3(5) m tall, 1–4 m across, with several trunks to 10 cm diam. *Bark* smooth or ± tessellated, grey. *Branchlets* terete, very obscurely ribbed, densely minutely puberulous at first, resinous (but not viscid), scarred by raised projections where phyllodes have fallen. *Stipules* narrowly triangular, *c.* 0.5 mm long, persistent. *Phyllodes* terete, 6–14.5 cm long, 1.5–2.5 mm diam., rigid, ascending to erect, straight to gently incurved, sparingly appressed-puberulous at first, glabrescent except pulvinus, the surface often microscopically pitted, light green; *apex* tapered to a straight, rigid, dark, pungent tip; *pulvinus* indistinct, expanded towards base, 1–2 mm long, densely puberulous, white-resinous; *longitudinal nerves* 4–8, rather obscure, immersed to very slightly raised with distinct inter-nerve spaces between. *Glands* 2 on upper surface of phyllode, minute, the lower 1–14 mm above phyllode base, the upper 4–40 mm below apex. *Inflorescences* simple, 2 or more per node; *peduncles* 5–15 mm long, appressed-puberulous; *basal bracts* broadly ovate, appressed-puberulous. *Heads* globular, golden, 4–5 mm diam., 30–56-flowered; *bracteoles* spathulate, somewhat puberulous, the widely elliptic lamina ciliolate. *Flowers* 5-merous, rarely 6- or 7-merous; *sepals* 1/2 petal length, 2/3–3/4-united, puberulous, obtuse to acute, ciliolate; *petals* free, glabrous. *Ovary* densely white-puberulous. *Pods* moniliform to linear, slightly to prominently raised over seeds and scarcely to markedly constricted between, 7.5–25 cm long, 6–10 mm wide, coriaceous, the crustaceous exocarp fragmenting and falling away after dehiscence, curved, the valves twisted after dehiscence, glabrous, dark brown to red-brown, ageing blackish. *Seeds* longitudinal, ellipsoid to obloid-ellipsoid, 6.5–9 mm long, 4.5–5.5 mm wide, 2.5–3 mm thick, dull, brown, minutely rugulose; *pleurogram* open at hilar end; *areole* 4–5 mm long, 2 mm wide; *aril* fleshy, clavate to sub-hemispherical, relatively small.

Selected specimens examined. WESTERN AUSTRALIA: Lake Lefroy, *M. Donaldson* K50(b) (CANB, PERTH); Hogans Lagoon on E end of Lake Lefroy, *M. Donaldson* K50(c) (PERTH); NE end of Lake Cowan near Binneringie Homestead, *M. Donaldson* K50(d) (AD, NSW, PERTH); Jubilee [Lake], 1 Aug. 1966, *J. Lowry s.n.* (PERTH); Goddard Dam, just below SW extremity of Lake Yindarlgooda, *c.* 40 km due ESE of Kalgoorlie, *B.R. Maslin* 6018 (MEL, PERTH); 75 km ENE of Paynes Find on road to Sandstone, *c.* 1.75 km N of turn off to Narndee Station, N of Road Bore (Well), *F.H. Mollemans* 4238 (PERTH); near Red Bluff, Narndee Station, *A.L. Payne* 3468 (PERTH); 22.5 km NW of Queen Victoria Spring, *D.J. Pearson* DJP 3116 (CANB, PERTH); 1 km SW of Errol's Brook, Cogla Downs [Station], *H. Pringle* 3640 (PERTH).

Distribution. Scattered in the goldfields of Western Australia from between Paynes Find and Cue east to Jubilee and Carlisle Lakes in the Great Victoria Desert and south to Kalgoorlie and Norseman.

Habitat. Grows in pale brown or orange sand, clay or loam with quartzite gravel on saline flats or breakaways in mallee shrubland.

Phenology. Flowering recorded from April to September; mature pods collected in November, December, March and April.

Conservation status. Not under threat.

Etymology. The new species is named for Michael Donaldson, who was a mining engineer working near Kalgoorlie, Western Australia, when he first brought the plant to our attention in early 1988; since then he has made several additional collections over a wide range. His efforts have made this description possible and we are pleased to recognize and applaud his interest.

Affinities. *Acacia donaldsonii* is superficially very similar to, and could easily be confused with, *A. gilesiana* F. Muell. but these two species may not be particularly closely related. *Acacia gilesiana* occurs mainly in the Gibson and Great Victoria Deserts and is easily recognized by its glabrous branchlets and peduncles, well-developed racemes, innocuous to coarsely pungent phyllodes, peltate bracteoles, glabrous ovary and non-arillate seeds. *Acacia donaldsonii* also has a superficial resemblance to *A. kalgoorliensis* R.S. Cowan & Maslin which has smaller phyllodes (2.5–7 cm long, *c.* 1.5 mm diam.) with more numerous, more obvious nerves (stomata evident at x10 magnification in the inter-nerve spaces); it also has free sepals. In the same general area that *A. donaldsonii* occurs, there is another species with rigid, ascending, pungent phyllodes – *A. masliniana* R.S. Cowan which has much more slender phyllodes (1–1.5 mm diam.) with numerous, fine, closely spaced longitudinal nerves, shorter peduncles (0.5–3 mm long) and narrower pods (3–4.5 mm wide).

Acacia formidabilis C.A. Gardner ex R.S. Cowan & Maslin, *sp. nov.*

Frutex diffusus 0.25–0.6 m altus. Ramuli pilosi ad appresso-pilosi. Stipulae persistentes, recurvo-spinosae, 1.5–3 mm longae. Phyllodia plana, ± inaequilateraliter anguste elliptica vel oblongo-lanceolata, longo-acuminata, pungentia, pulvino c. 0.5 mm longo, lamina 13–25 mm longa, 2.5–4 mm lata, rigido-coriacea, patenti ad ascendenti, recurvata, glabra, glauca, multinervata, nervis arcte parallelis prominulis, solum leviter elevatis, glandulis 2. Pedunculi binati, 4–10 mm longi, parce pilosi ad glabri, interdum glauci, bracteis basalibus persistentibus, crassis, late ovatis, acutis, cucullatis appresso-puberulis, interdum glaucis. Capitula globularia, pallido-aurea vel atro-aurea, 4–5.5 mm diam., floribus 31–52; bracteolae spathulatae, ± puberulae ciliataeque, acutae ad acuminatae, in alabastro exsertae, atro-brunneae. Flores 5-meri. Sepala petalis 1/2–2/3 breviora, discreta ad 1/2-connata, linearia ad anguste spathulata. Petala 2/3-connata, glabra. Ovarium glabrum. Legumen planum, orbiculare ad late oblongo-ellipticum, supra semina elevatum, 12–18 mm longum, 12 mm latum, chartaceum, subtiliter reticulatum, glabrum, interdum resinosum, nervis marginalibus crassis cum reticulo interconjugatis. Semina transversa, ovoidea, c. 2.5 mm longa, 1.8–2 mm lata, maculata cum luteo-brunnea et atro-brunnea; areola minuta, umbonata, exarillata.

Typus: 6 miles [9.6 km] north-west of Southern Cross towards Bullfinch, Western Australia, 12 August 1971, *B.R. Maslin* 1956 (*holo:* PERTH 00196819; *iso:* CANB, K, NY).

Diffuse *sub-shrub* 0.25–0.6 m tall, 0.3–0.5 m wide. *Branchlets* terete, densely pubescent (hairs spreading to appressed). *Stipules* persistent, recurved-spinose, 1.5–3 mm long, ± appressed-puberulous, glabrescent, arising from two sides of stem projections bearing phyllodes. *Phyllodes* ± unequally narrowly elliptic or oblong-lanceolate, commonly the upper margin ± shallowly convex and the lower margin straight to shallowly concave, 13–25 mm long, 2.5–4 mm wide, rigid, coriaceous, patent to ascending, often shallowly recurved, glabrous, glaucous or pale green; *apex* long-acuminate, ending in a straight, rigid, brown, pungent point; *pulvinus c.* 0.5 mm long; *longitudinal nerves* numerous, fine, close together, not anastomosing. *Glands* 2, on upper margin of phyllode about 1/3 and 2/3 of phyllode length above pulvinus, small, inconspicuous. *Inflorescences* simple, 2 per axil; *peduncles* 4–10 mm long, sparingly puberulous or glabrous, sometimes pruinose; *basal bracts* persistent through anthesis, thick, broadly ovate, acute, cucullate, appressed-puberulous, sometimes pruinose. *Heads* globular, pale golden to deep golden, 4–5.5 mm diam., 31–52-flowered; *bracteoles* spathulate, ± puberulous, ciliate, exserted in buds, dark brown, the lamina widely elliptic, ovate or lanceolate, concave, acute to acuminate. *Flowers* 5-merous; *sepals* 1/2–2/3 length of petals, free to 1/2-united, linear to narrowly spathulate, ± puberulous and ciliate; *petals* ± oblanceolate, acute, recurved or the tip incurved, 2/3-united, glabrous. *Ovary* glabrous. *Pods* flat, orbicular to oblong-elliptic, raised over seeds along midline, 12–18 mm long, 12 mm wide, papery, straight, glabrous, sometimes resinous, light brown,

obscurely transversely reticulate; marginal nerves slightly thickened. *Seeds* transverse, ovoid, *c.* 2.5 mm long, 1.8–2 mm wide, 1.2–1.4 mm thick, dull, mottled dark brown on pale brown; *pleurogram* U-shaped, open at hilar end; *areole* minute, 0.2–0.3 mm long, pale; *aril* absent.

Selected specimens examined. WESTERN AUSTRALIA: 3 miles [4.8 km] S of Paynes Find on Great Northern Highway, *I.B. Armitage* 411 (PERTH); 10 miles [16.6 km] N of Warralakin, NE of Merredin, *J.S. Beard* 4742 (PERTH); Whitewells near Ninghan, *C.A. Gardner* 12500 (PERTH); 4 km WSW of Paynes Find on Great Northern Highway, *A.S. George* 14276 (PERTH); 16 km NE of Bungalbin Hill, *c.* 62 km NNE of Koolyanobbing, *K. Newbey* 10832 (PERTH); 3 miles [4.8 km] W of Paynes Find on [Great Northern] Highway, *R.A. Saffrey* 849 (G, MEL, PERTH).

Distribution. Occurs in the south-west of Western Australia, scattered from near Perenjori and Paynes Find, south-east to Southern Cross.

Habitat. Grows in sand on plains and hillsides in tall open shrubland, sometimes associated with *Banksia elderiana*, *Eucalyptus leptopoda* or *Triodia* sp.

Phenology. Flowering recorded from July to September; mature pods collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The specific epithet, from the Latin *formidabilis* (causing fear, terrible), was chosen by the late Charles Gardner for his collection 12500 but not published by him; it refers to the spinescent stipules and long-cuspidate, pungent phyllodes.

Affinities. Phyllodes of *A. formidabilis* closely resemble those of *A. resinistipulea* W. Fitzg. which is a taller shrub (1.5–3 m high) with non-spinose stipules, shorter peduncles (3–4 mm long) and fewer-flowered heads (23–25-flowered). *Acacia resinistipulea* occurs sporadically from Yellowdine (just east of Southern Cross) and Coolgardie south-east to near Balladonia; until pods are collected from this species it is not possible to determine how closely related it is to *A. formidabilis.* The new species is sometimes superficially similar to *A. unguicula* R.S. Cowan & Maslin which is a taller plant (1–3 m) with nearly glabrous branchlets, more prominent, yellowish phyllode nerves with stomata on the green, inter-nerve region, and linear pods *c.* 2 mm wide. *Acacia unguicula* is known only from Ninghan Station, between Wubin and Paynes Find.

Acacia havilandiorum Maiden, *J. & Proc. Roy. Soc. New South Wales* 53: 182 (1920), as *A. havilandi. Type:* 'Wong Suey's [Suie's] Paddock', Cobar, New South Wales, September 1917, *E. Haviland s.n.* (*lecto:* NSW, flowering specimen, here selected; *isolecto:* K, NSW, PERTH 00954977); 'Wong Suie's Paddock', Cobar, New South Wales, November 1917, *E. Haviland* (*paralecto:* K, NSW, PERTH 00954969).

Typification. Two collections, one flowering (September), the other fruiting (November), were cited by Maiden in his protologue. Although both represent the same taxon, in order to avoid possible later complications the flowering specimen at NSW is chosen as the lectotype; a duplicate of each collection is at PERTH through the generosity of NSW. The type locality was spelled 'Wong Suey's' in Maiden's publication but on the labels it is spelled 'Wong Suie's'. The original spelling of the epithet was '*havilandi*'; the change to '*havilandiorum*' recognizes the author's stated intention to honour both the Rev. Haviland and his son, both of whom were avid plant collectors (Hall & Johnson 1992).

Acacia latipes Benth., *London J. Bot.* 1: 334 (1842). *Type*: Swan River, Western Australia, *J. Drummond s.n.* (*holo:* K).

Acacia striatula Benth., *London J. Bot.* 1: 336 (1842). *Type:* Swan River, Western Australia, *J. Drummond s.n.* (*holo:* K).

Acacia latipes Benth. var. *pubescens* Meisn. *in* J.G.C. Lehmann, Pl. Preiss. 1: 10 (1844), *synon. nov. Type:* Quangen [near Wongamine, E of Toodyay, *c.* 31°29'S, 116°37'E], Western Australia, 20 March 1840, *L. Preiss* 989 (*lecto:* NY, *fide* Maslin & Cowan (1994a); *isolecto:* LD).

Affinities. *Acacia latipes* is most closely related to *A. cochlearis* (Labill.) H. Wendl. Together with another closely related species-pair – *A. comans* W. Fitzg. and *A. adnata* F. Muell.– they comprise the informal *Acacia latipes* group. These four species are characterized by having flat, sessile, pungent phyllodes with 3 or 4 longitudinal nerves on each face, free sepals, united petals and linear pods. In the past there has been much confusion between the species of each pair and this has led to difficulties in applying the names.

Key to species of the *Acacia latipes* group

1 Stipules persistent, more or less spinose
  2 Branchlets and pods with spreading hairs ..... **A. comans**
  2. Branchlets and pods with appressed hairs (or pods glabrous) ..... **A. adnata**
1. Stipules caducous, not at all spinose
  3 Phyllodes thinly coriaceous to subrigid, the nerves plane or slightly to moderately raised, the base narrowed (base normally much narrower than mid-section of phyllode); plant mainly of coastal sand ..... **A. cochlearis**
  3. Phyllodes rigid to thick-rigid, the nerves moderately to strongly raised, the base not or ± scarcely narrowed (base more than half as wide as mid-section of phyllode); plant of near-coastal and inland areas ..... **A. latipes**

Affinities. Although the above differences between *A. latipes* and *A. cochlearis* are relatively subtle, each species tends to have its own distinctive facies and specimens can generally be assigned to one or the other. Because the flowers and fruits of *A. latipes* and *A. cochlearis* are very similar, it is the highly variable phyllodes that are the main source of characters for distinguishing the two species. Even so, particular problems occur with plants having very narrow phyllodes (11–26 times longer than wide) which occur scattered along the south coast between Albany and Madura and adjacent inland areas in places. Some of these plants show enough of the characteristics of *A. cochlearis* to be assignable with confidence to that species; others approach *A. latipes* so closely that to assign them to either species is difficult. It is conceivable that, in at least some instances, the collections are from hybrid populations but we have no firm data to support such an hypothesis. Future in-depth studies will have to determine, more precisely than we have time to do, whether *A. cochlearis* and *A. latipes* are, in fact, infraspecific parts of a single taxon. We leave our preliminary studies of the two species with the distinct impression that we may have been trying to dissect a variation continuum.

The typical variant of *A. cochlearis* has a discontinuous distribution along the coast of south-west Western Australia from Lancelin (north of Perth) to the mouth of the Donnelly River, from Albany to Hopetoun, and from Esperance to south-east of Madura; this variant extends inland only at the Porongurup Range, north of Albany. Variants of *A. cochlearis* with narrow phyllodes occur scattered

along the south coast of Western Australia between Albany and Israelite Bay, extending inland to near Katanning, the Newdegate–Lake King area, and near Clyde Hill, north-east of Esperance. *Acacia latipes* has a generally more northerly or more inland distribution compared to that of *A. cochlearis* (see below).

Variation. *Acacia latipes* exhibits a perplexing range of variation, particularly in regard to phyllode morphology. Of the many variants that can be recognized from an examination of herbarium material we consider it prudent at this stage to formally recognize only one, subsp. *licina*, characterized by its exceedingly long phyllodes. The typical subspecies therefore remains broadly circumscribed and it has not been possible within the scope of the present study to undertake the considerable field and laboratory work needed to elucidate these patterns of variation. At least ten variants can be recognized within this subspecies.

The principal impression gained by our study of the available material attributed to *A. latipes* is variability in all respects, but a few tentative observations are worth recording.

1. Indumentum alone is not correlated with any other characteristic. Northern populations have puberulous branchlets and/or phyllode nerves more often than do those to the south. The type of *A. latipes* var. *pubescens* Meisn. was collected by Preiss in the Victoria district of Western Australia, east of Toodyay; this variant is not worthy of formal recognition.

2. We have not been able to identify any modern collection that precisely corresponds to the type of *A. striatula* Benth., although some are fairly close to it. It is characterized by unusually small, straight or recurved, linear phyllodes and appressed-puberulous branchlets. These characters seem hardly to justify its separation at any level and accordingly for the present we treat *A. striatula* as conspecific with *A. latipes*.

3. Plants with the longest peduncles and heads with the largest number of flowers occur in the northern part of the range.

4. We cannot over-emphasize the importance of extensive, intensive field studies from Shark Bay to Esperance for the further refinement of our, admittedly, broad treatment of *A. latipes*.

Key to subspecies of *Acacia latipes*

Phyllodes straight to shallowly recurved, narrowly oblong-elliptic to widely elliptic, subtriangular, linear or subulate, mostly 3.5–8 times longer than wide, often glaucous or subglaucous ..... subsp. **latipes**

Phyllodes normally curved upwardly, rarely straight, elongate-linear, 23–40 times longer than wide, not glaucous ..... subsp. **licina**

Acacia latipes Benth. subsp. **latipes**

Phyllodes straight to very shallowly recurved, narrowly oblong-elliptic, elliptic, widely elliptic, subtriangular, linear or subulate, (7)11–25(40) mm long, (0.8)1.5–4(7) mm wide, (1.5)3.5–8(20) times as long as wide, commonly glaucous or sub-glaucous, occasionally pruinose.

Selected specimens examined. WESTERN AUSTRALIA: 40.7 miles [65.5 km] from [ENE of] Geraldton (W of Indarra), *A.M. Ashby* 3795 (AD, CANB, K, L, MEL, NSW, PERTH); 16 km N of Watheroo towards Three Springs, *B.R. Maslin* 3298 (CANB, PERTH); Lawnswood, between Toodyay and Clackline, *B.R. Maslin* 3387 (PERTH); *c.* 77 km due NE of Esperance, Parmango Rd, 16.5 km NE of Fisheries Road, *B.R. Maslin* 5833 (PERTH); *c.* 25 km WSW of York, Talbot Road West, 12.5 km SE of York–Perth road, *B.R. Maslin* 6171 (PERTH); *c.* 8 miles [12.9 km] N of Bulyee, *K. Newbey* 3424 (PERTH); 6.6 miles [10.6 km] S of Caltex garage, Coorow on Geraldton Highway, *M.D. Tindale* 2670 (PERTH); Hill River Spring, between Badgingarra and Jurien Bay, 8 Oct. 1961, *J.H. Willis s.n.* (PERTH).

Distribution. Occurs in the south-west of Western Australia from Hamelin Pool to Quairading with scattered populations from near Lake King to east of Scaddan.

Habitat. Grows in sand, sandy loam, loam and lateritic soil in heath (especially near the coast), shrubland, scrub and woodland of banksias, York Gum and Wandoo.

Phenology. Flowering recorded from May to October; mature pods collected from late November to January.

Conservation status. Not under threat.

Acacia latipes subsp. **licina** R.S. Cowan & Maslin, *subsp. nov.*

Ab *A. latipes* subsp. *latipes* phyllodiis rectis vel plerumque incurvatis, elongato-linearibus, 24–52 mm longis, 1–2 mm latis, ratione horum 23–40, differt.

Typus: 14.1 miles [22.6 km] south of Mullewa–Geraldton rail crossing on Erangy Springs road, Western Australia, 30 July 1972, *A.M. Ashby* 4622 (*holo:* PERTH 00714550; *iso:* CANB, K, NSW, NY, PERTH 00853372).

Phyllodes straight or more often incurved, elongate-linear, 24–52 mm long, 1–2 mm wide, 23–40 times as long as wide.

Selected specimens examined. WESTERN AUSTRALIA: 8 miles [12.9 km] along Casuarina Road, SE of Geraldton, *A.C. Burns* 5 (PERTH); 5 miles [8 km] N of Port Gregory–Northampton road towards Kalbarri, *R. Cumming* 1746 (PERTH); N of Encabba, E of Brand Highway and 1.6 km W of intersection of Beekeepers Reserve Rd and railway line, *E.D. Kabay* 225 (PERTH); South Hutt River, *A. Oldfield s.n.* (PERTH 00714542); Erangy Springs road, 14 miles [22.5 km] S of 42 mile peg on Geraldton–Mullewa road, *G. Phillips* GP54 (DNA, PERTH); 8.5 miles [13.7 km] S of Geraldton–Mullewa rail crossing on Erangy Springs road *G. Phillips* for *A.M. Ashby* AMA4627 (MEL, PERTH).

Distribution. Occurs in the south-west of Western Australia from Port Gregory to north of Three Springs. A collection from Esperance (*C.A. Gardner* 1690) appears to have incorrect label data and it has not been possible to clarify the locality from his field books.

Habitat. Grows in sand and limestone in heath and low shrubland.

Flowering period. Flowering recorded in June and July. No mature pods seen.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Discussion. Bentham (1864) referred an Oldfield collection from the 'South Hutt' [River], near Port Gregory, to his *A. striatula*; this collection represents the northern limit of *A. latipes* subsp. *licina*.

Etymology. Named from the Latin *licinus* (bent or turned upwards), in reference to the typical phyllode shape.

Acacia nyssophylla F. Muell., *nom. inval.*, Fragm. 4: 4 (1863); *Pl. Victoria* 2: 9 (1863), not effectively published, see Court *et al.* (1994). – *Acacia colletioides* var. *nyssophylla* (F. Muell.) Benth., Fl. Austral. 2: 326 (1864). *Type:* in the Desert on the River Murray, Victoria, *F. Mueller s.n.* (*lecto:* MEL 500592, here selected); *isolecto:* K, PERTH – fragment ex MEL); Lake Gairdner, South Australia, *B.H. Babbage* (*paralecto:* MEL, PERTH – fragment ex MEL [this collection is *A. colletioides* Benth.]).

Acacia periculosa S. Moore, *J. Linn. Soc. Bot.* 45: 171 (1920), *synon. nov. Type:* Nungarin, Western Australia, 1917, *F. Stoward* 753 (*holo:* BM).

Typification. When Mueller described *A. nyssophylla* he cited two collections in his protologue but one of them, *B.H. Babbage s.n.* from South Australia, is *A. colletioides*. As a consequence, we have chosen as the lectotype Mueller's own collection, which also agrees more closely with his protologue.

This binomial and others are to be found in the broadsheets distributed by Mueller to a few friends of the first part of Volume 2 of his "The Plants Indigenous to the Colony of Victoria"; because only forty pages of the second volume were printed, apparently for economic reasons, and never properly distributed, Court *et al.* (1994) concluded that the work was not effectively published and the new names in it therefore invalid. In this instance the binomial dates from his slightly later publication in the second reference cited above.

Acacia speckii R.S. Cowan & Maslin, *sp. nov.*

Frutex fruticosus vel arbor parva 2–3 m alta. Phyllodia teretia, pungentia, (70)80–120 mm longa, 1–1.5 mm diam., recta ad leviter incurvata, glabra, subglauca, nerviis 8, distantibus, valde elevatis, glande 2–4.5 mm supra pulvinum, punctiformi, depressa, pulvino perbrevi. Pedunculi 5–10 mm longi (in fructo), 1 vel 2 in quoque axilla, glabri. Capitula probabiliter lato-ellipsoidalia ad obloidea. Flores 4-meri. Sepala et petala 1/4 connata, sepalis anguste oblongis. Legumen moniliforme, (30)70–135 mm longum, 4–6 mm latum, leviter curvatum, glabrum, valvis chartaceis. Semina longitudinalia, globosa, ad apicem umbonata, c. 5 mm diam., obscure brunnea, arillo minuto.

Typus: 16 miles [25.6 km] south-west of Nannine, Western Australia, 8 September 1957, *N.H. Speck* 718 (*holo:* PERTH 00196746; *iso:* CANB, K, NSW).

Bushy, multi-stemmed, obconic (crown rounded) *shrub* to *c.* 2 m tall, maturing to ± gnarled *tree* *c.* 3 m tall, single-stemmed or sparingly branched at ground level. *Bark* grey, fissured on main stems. *Branchlets* terete, finely ribbed, glabrous, grey. *New shoots* pale green. *Stipules* early caducous. *Phyllodes* terete, (70)80–120 mm long, 1–1.5 mm diam., rigid, erect, straight to shallowly incurved, often somewhat bent at the gland, glabrous, pale subglaucous to light green; *longitudinal nerves* 8, prominent, raised, widely spaced with well-defined inter-nerve spaces; *apex* narrowed to a straight, rigid, brown, ± pungent point; *pulvinus* very short, yellow. *Gland* on upper surface of phyllode

2–4.5 mm above pulvinus, minute, punctiform, depressed. *Inflorescences* (judging from very young buds) simple, 1 or 2 per axil; *peduncles* 5–10 mm long (in fruit), glabrous, the receptacle (at fruiting) elongate, to *c.* 5 mm long; *basal bracts* cucullate, glabrous. *Heads* (judging from fruiting receptacles) broadly ellipsoid to obloid. *Flowers* 4-merous. *Pod* moniliform with rounded segments, (30)70–135 mm long, 4–6 mm wide; valves chartaceous, shallowly curved, light brown, glabrous. *Seeds* longitudinal, globose, ± equatorially ridged, umbonate at apex, *c.* 5 mm diam., dull, brown; *pleurogram* not evident; *aril* minute.

Selected specimens examined. WESTERN AUSTRALIA: 43.5 km W of Yalgoo towards Mullewa, *B.R. Maslin* 3621 (PERTH); 27 km W of Yalgoo towards Mullewa, *B.R. Maslin* 4259 (CANB, MEL, NSW, PERTH); 17 km due N of Mount Magnet, *c.* 5 km due NW of 'Baxter's Welcome' mine pit, *B.R. Maslin* 7340 (PERTH); Norie Station, *A.A. Mitchell* 979 (AD, BRI, G, PERTH); 10 km W of Coodardy Station homestead, *A.A. Mitchell* 1337 (PERTH); Gabanintha road, S of Meekatharra, *N.H. Speck* 891 (PERTH).

Distribution. Occurs in Western Australia, scattered from north-west of Meekatharra to Mount Magnet and south-west of Yalgoo, and towards Mullewa and Morawa.

Habitat. Grows in rocky granitic soil on slopes of low hills with underlying basalt, granite or dolerite, in shrubland or open scrub with *Acacia aneura*.

Fruiting period. Flowering season not known but mature pods collected in September.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The epithet acknowledges Nathaniel H. Speck (1906–1970) who discovered and first collected the species in 1957. See Hall (1984) for biographical notes.

Affinities. The relationship of this species to others is not clear but it may be related to *Acacia obtecta* Maiden & Blakely which is readily distinguished by its flat, innocuous phyllodes that are 4–6 mm wide and its exarillate seeds. *Acacia obtecta* occurs in the Paynes Find–Wubin–Kununoppin area.

Acknowledgements

Alex George checked the Latin descriptions and provided editorial assistance. Terena Lally, Suzanne Curry and Diana Corbyn provided valuable assistance during the preparation of the manuscript. Support for them and for the project generally was given by the Australian Biological Resources Study, to whom we are indebted.

References

Bentham, G. (1864). "Flora Australiensis". Vol. 2. (Lovell Reeve & Co.: London.)

Chapman, A.R. & Maslin, B.R. (1999). *Acacia* miscellany 20. Description of three new Western Australian species of *Acacia* section *Juliflorae* (Leguminosae: Mimosoideae). *Nuytsia* 12: 487–491.

Court, A.B., Cowan, R.S. & Maslin, B.R. (1994). Mueller's "The Plants Indigenous to the Colony of Victoria" – Is Volume 2 effectively published? *Nuytsia* 9: 315–318.

Cowan, R.S. & Maslin, B.R. (1999). *Acacia* miscellany 17. Miscellaneous new taxa and lectotypifications in Western Australian *Acacia*, mostly section *Plurinerves* (Leguminosae: Mimosoideae). *Nuytsia* 12: 413–452.

Hall, N.H. (1984). "Botanists of Australian Acacias". (CSIRO: Melbourne.)

Hall, N.H. & Johnson, L.A.S. (1992). "The names of Acacias of New South Wales". (Royal Botanic Gardens: Sydney.)

Maslin, B.R. & Cowan, R.S. (1994a). C.F. Meissner's species of *Acacia* (Leguminosae: Mimosoideae): typification of the names. *Nuytsia* 9: 399–414.

Maslin, B.R. & Cowan, R.S. (1994b). What type of type? *Australian Systematic Botany Society Newsletter* 81: 2–7.

Acacia miscellany 19. The taxonomy of some Western Australian species of *Acacia* section *Juliflorae* with 4-merous flowers (Leguminosae: Mimosoideae)

B.R. Maslin and A.R. Chapman

Western Australian Herbarium, Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Abstract

Maslin, B.R. and Chapman, A.R. *Acacia* miscellany 19. The taxonomy of some Western Australian species of *Acacia* section *Juliflorae* with 4-merous flowers (Leguminosae: Mimosoideae). *Nuytsia* 12(3): 469–486 (1999). Nine new Western Australian taxa of *Acacia* are described, namely, *A. aprica* Maslin & A.R. Chapman, *A. arcuatilis* R.S. Cowan & Maslin, *A. cochlocarpa* subsp. *velutinosa* Maslin & A.R. Chapman (a description is also provided for *A. cochlocarpa* W. Fitzg. subsp. *cochlocarpa*), *A. cracentis* R.S. Cowan & Maslin, *A. isoneura* Maslin & A.R. Chapman (comprising subsp. *isoneura* and subsp. *nimia* Maslin & A.R. Chapman), *A. lirellata* Maslin & A.R. Chapman (comprising subsp. *lirellata* and subsp. *compressa* Maslin & A.R. Chapman) and *A. tetraneura* Maslin & A.R. Chapman. The differences between the closely related species pair *A. filifolia* Benth. and *A. tratmaniana* W. Fitzg. are elucidated and a description of each species is provided. All these species are characterized by having 4-merous flowers arranged in ± sessile heads or spikes and most have terete to quadrangular phyllodes (flat in *A. cochlocarpa* and *A. lirellata* subsp. *compressa*, and sometimes in *A. tetraneura*). A key to the species described in this paper is provided.

Introduction

This paper deals with a number of Western Australian species of *Acacia* Mill.(Leguminosae: Mimosoideae) that have 4-merous flowers arranged in more or less sessile heads or spikes. Many of the species also have slender, terete or quadrangular phyllodes with 4 or 8 longitudinal nerves. In the past, some plants with this combination of characters were called *A. filifolia* which is shown here to be a relatively uncommon species. Not all species with the above-mentioned floral attributes are included in this paper. Indeed, the taxa presented here are grouped largely for convenience in order that the new names can be made available for use in the forthcoming "Flora of Australia" Volume 11.

Plurinerved phyllodinous acacias are classified as belonging to section *Juliflorae* (Benth.) C. Moore & Betche when the flowers are arranged in cylindrical spikes, and section *Plurinerves* (Benth.) C. Moore & Betche when the flowers are in globular heads (Pedley 1978). As discussed by Maslin & Stirton (1998), in many ways this distinction is largely artificial. Some species included in the present paper have globular heads, others cylindrical spikes, and yet others are intermediate with obloid heads. A similar range of variation in head shape occurs in other groups of closely related species in the Australian *Acacia* flora, e.g. the *A. stigmatophylla* group (Tindale 1980).

Independently of the present study, Cowan and Maslin had prepared descriptions of two new species, *A. arcuatilis* and *A. cracentis*. These species are published here because they are clearly related to others included in this paper.

Key to taxa described in this paper

1 Phyllodes flat, 1.5–6 mm wide

2 Phyllodes 1-nerved on each face, straight to shallowly incurved, (2–3 mm wide) ..... **A. tetraneura**

2. Phyllodes 3–7-nerved on each face, shallowly to strongly incurved

3 Phyllodes 1.5–2(3) mm wide; pods ± straight (branchlets glabrous) ..... **A. lirellata** subsp. **compressa**

3. Phyllodes 3–6 mm wide; pods tightly spirally or ± irregularly coiled

4 Branchlets, pods and phyllodes glabrous ..... **A. cochlocarpa** subsp. **cochlocarpa**

4. Branchlets, pods and normally phyllode nerves hairy .... **A. cochlocarpa** subsp. **velutinosa**

1. Phyllodes terete to quadrangular, 0.5–1.5 mm wide

5 Phyllodes decurrent on branchlets ..... **A. lirellata** subsp. **lirellata**

5. Phyllodes not decurrent on branchlets

6 Flowers 30–55 in sub-globular to obloid heads or cylindrical spikes; phyllodes 5–20(25) cm long

7 Flowers in cylindrical spikes or sometimes obloid heads 4–5 mm wide (when dry); phyllodes straight to shallowly incurved, (7–12(14) cm long)

8 Phyllodes slender (0.5–0.6 mm diam.), soft and flexible, with nerves 0.2 mm wide; spikes mostly paired in axil of phyllode ..... **A. isoneura** subsp. **isoneura**

8. Phyllodes thick (0.8–1.2 mm diam.), rigid, with nerves 0.3 mm wide; spikes single in axil of phyllode ..... **A. isoneura** subsp. **nimia**

7. Flowers in sub-globular to obloid heads 5–8 mm wide (when dry); phyllodes shallowly to strongly incurved or sometimes irregularly sigmoid or serpentinous

9 Phyllodes mostly 5–11 cm long; diffuse shrub 1.5–2 m tall; upper branches commonly spreading ± horizontally ..... **A. aprica**

9. Phyllodes mostly 12–20 cm long; wispy, erect shrub 1.5–3 m tall; terminal branchlets sometimes subpendulous ..... **A. filifolia**

6. Flowers less than 30 in globular to obloid heads; phyllodes 2.5–8(–11) cm long

10 Phyllodes quadrangular with a broad, flat nerve along each angle ..... **A. tratmaniana**

10. Phyllodes terete (occasionally slightly quadrangular) with 4 or 8 equal, broad nerves

11 Phyllodes 4-nerved, deeply furrowed between nerves ..... **A. tetraneura**

11. Phyllodes 8-nerved, very shallowly furrowed between nerves

12 Phyllodes shallowly to strongly incurved (sometimes into a circle), grey-green to subglaucous (ignore new growth); heads normally twinned in axil of phyllode ..... **A. arcuatilis**

12. Phyllodes straight to very shallowly incurved, dark green to milky green; heads normally single in axil of phyllode ..... **A. cracentis**

Descriptions

Acacia aprica Maslin & A.R. Chapman, *sp. nov.*

Frutex diffusus, apertus, ad 2 m altus. Ramuli leniter flexuosi, inter costas dense argenteo-sericei. Phyllodia teretia ad subquadrangularia, ± sessilia, 5–11 cm longa, 1–1.5 m lata, parce ad valde incurva, 8-nervia, nervis latis, applanatis, sulcis vadosis fuscis segregatis. Inflorescentia simplex; capitula sessilia ad subsessilia (pedunculo ad 2 mm longo), subglobosa ad oblongoidea. Flores 4-meri. Sepala c. dimidio unita. Legumen lineare, ad 6 cm longum, c. 2 mm latum, sericeum, marginibus latis, glabris. Semina longitudinalia; arillus parvus.

Typus: near Coorow [precise locality withheld for conservation reasons], Western Australia, 2 June 1976, *B.R. Maslin* 4126 (*holo:* PERTH 00156086; *iso:* CANB, K, MEL, NSW).

Diffuse, open *shrub* 1.5–2 m tall, dividing near ground level into 2 to many spreading main stems, the upper branches often spreading ± horizontally. *Bark* dark grey, smooth except fine fissures towards base of stems. *Branchlets* slightly flexuose, not or scarcely pendulous, red-brown, densely silvery sericeous between the often-resinous ribs. *Stipules* not seen. *Phyllodes* terete to sub-quadrangular, 5–11 cm long, rarely very few to 14 cm, 1–1.5 mm diam., rather stout and sparse, moderately to strongly incurved or sometimes shallowly serpentinous, silvery sericeous when young (especially between nerves), commonly glabrous at maturity except appressed hairs at base, dull, green to grey-green; *longitudinal nerves* 8, broad (0.2–0.3 mm wide), ± flat-topped, not or scarcely raised and separated by an equal number of shallow and narrow yet distinct, dark longitudinal furrows, the nerves of ± uniform width and prominence; *apex* acute with a dark brown point; *pulvinus* very indistinct. *Gland* situated on upper surface of phyllode 1–3 mm above base, obscure, slightly swollen. *Inflorescence* simple, single or paired in axil of phyllode. *Heads* subglobular to obloid, sessile to subsessile (peduncle to 2 mm long, densely hairy), 7–10 mm long and 7–8 mm wide when dry, densely 40–55-flowered, golden; *bracteoles* persistent, spathulate, *c.* 1 mm long, with a narrow stipe and a rhomboid, acute, dark lamina. *Flowers* 4-merous; *sepals* 1/2 to 2/3 length of petals, *c.* 1/2 united, the lobes narrow, thickened at apex, dark and puberulent along midrib; *petals* 1.5–2 mm long, viscid, without an obvious midrib. *Ovary* sessile, puberulous; style sub-lateral. *Pods* linear, shallowly to moderately constricted between seeds, flat, 2.5–6 cm long, *c.* 2 mm wide, thinly crustaceous, straight to shallowly curved, red-brown, silvery sericeous on faces; margins broad, glabrous, yellow or red-brown. *Seeds* longitudinal, obloid-ellipsoid, 2.5–3 mm long, 1.5–2 mm wide, 1 mm thick, glossy, pale brown mottled yellow (pale yellowish prior to maturity); *funicle* filiform, expanded into a small, terminal, cream (dry) aril measuring 1/4–1/3 length of seed.

Selected specimens examined. WESTERN AUSTRALIA, all near Coorow [precise localities withheld for conservation reasons]: 1 July 1962, *C. Chapman s.n.* (BRI, PERTH); *B.R. Maslin* 6406 (NY, PERTH); *D. Papenfus* DP 451 (PERTH); *D. Papenfus* DP 456 (PERTH).

Distribution. Occurs in the south-west of Western Australia where it is restricted to a small area near Coorow.

Habitat. Grows in gravelly or clayey sand or loam in scrub and low woodland.

Phenology. Flowering recorded from June to August; mature pods collected in mid-December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Etymology. The specific epithet is derived from the Latin *apricus* (lying open, exposed to the sun) and alludes to the open, diffuse habit of the shrubs.

Affinities. Related to *A. arcuatilis* (which is distinguished by generally shorter, more slender phyllodes, fewer-flowered heads and normally a lower stature) and *A. lirellata* subsp. *lirellata* (which is most readily distinguished by its decurrent, deeply furrowed phyllodes and obtuse bracteoles). Also closely related to *A. filifolia* which can be distinguished by its wispy, taller habit and longer, generally thinner phyllodes. *Acacia aprica*, *A. filifolia* and *A. lirellata* subsp. *lirellata* all occur in the Coorow area.

Acacia arcuatilis R.S. Cowan & Maslin, *sp. nov.*

Frutex effusus 0.4–0.8 m altus. Ramuli versus apices sericei inter costas resinosas rubescentes. Phyllodia teretia, plerumque 3–6 cm longa, 0.6–1.2 mm lata, parum ad valde incurva (interdum omnino in circulo), nervis 8, latis, applanatis, non vel parum elevatis, sulcis vadosis angustis adpresso-puberulis,. Inflorescentia simplex; capitula sessilia, ± globosa. Flores 4-meri. Sepala pro 2/3 vel 3/4 unita. Legumen lineare, ad 6 cm longum, 1.5–2 mm latum, in quoque pagina minute adpresso-puberulum, marginibus latis. Semina longitudinalia, maculata.

Typus: 6.5 km south of Kulin, Western Australia, 27 August 1973, *B.R. Maslin* 3424 (*holo:* PERTH 00158461; *iso:* AD, CANB, K, MEL, NSW, NY).

Low, spreading, sometimes ± flat-topped *shrub*, usually 0.4–0.8 m tall and 0.4–1.3 m across, occasionally 1–2 m tall. *New shoots* resinous. *Bark* dark grey or grey-brown, longitudinally fissured (sometimes only at base of stems) exposing light brown underlayer. *Branchlets* silvery sericeous between the red-brown or yellow-brown resin-ribs at extremities, the new shoots resinous. *Stipules* minute (0.5–1 mm long), triangular, persistent. *Phyllodes* terete, (2.5)3–6(7) cm long, 0.6–1.2 mm diam., sometimes quite stout, shallowly to strongly incurved (sometimes into a complete circle) or sometimes shallowly sigmoid, resinous, minutely appressed- or sub-appressed-puberulous between nerves (hairs sometimes sparse and difficult to see, observe at magnification), grey-green to sub-glaucous (light green on new growth); *longitudinal nerves* 8, broad (0.2–0.3 mm wide), of uniform width and prominence, ± flat-topped, not or scarcely raised, separated by very narrow, shallow, longitudinal furrows; *apex* acute or obtusely mucronate with a straight or sometimes oblique, dark brown point; *pulvinus* indistinct, *c.* 0.5 mm long. *Gland* situated on surface of phyllode at its base, small, not always evident. *Inflorescence* simple, paired (occasionally 3) in axil of phyllode, very rarely a specimen with all heads solitary; *peduncles* 0.5–1 mm long, hairy. *Heads* globular to very shortly obloid or widely ellipsoid, 4–6 mm long and 4–5 mm diam. when dry, 10–22-flowered, golden; *buds* resinous; *bracteoles* 0.5–1 mm long, dark, obtuse to shortly acuminate. *Flowers* 4-merous; *sepals* 1/2 or more of petal length, 2/3–3/4-united; lobes triangular, glabrous; *petals* glabrous. *Ovary* densely hairy. *Pods* linear, slightly raised over and constricted between seeds, 2.5–6 cm long, 1.5–2 mm wide, very thinly coriaceous, straight to very shallowly curved, resinous, minutely appressed-puberulous on lateral faces; margins broad (but not thickened), glabrous. *Seeds* longitudinal in pod, ellipsoid, 2–2.5 mm long, 1–1.3 mm wide, glossy, mottled dark brown on grey and with a dark brown peripheral nerve; *pleurogram* U-shaped; *areole* small, pale; *aril* terminal, bluntly conical, about as long as seed, drying a pale waxy yellow.

Selected specimens examined. WESTERN AUSTRALIA: Swan River colony, *J. Drummond* 5: 2 (MEL, PERTH); 3 miles [4.8 km] W of Corrigin on road to Brookton, *B.R. Maslin* 500 (NY, PERTH); 7 km S of Kulin towards Kukerin, *B.R. Maslin* 4376 (PERTH); 9 km W of Piawaning on road to Great Northern

Highway, *B.R. Maslin* 4967 (CANB, K, MEL, PERTH); about 2 km due W of Camel Peaks, *B.R. Maslin* 5770 (BRI, G, MEL, PERTH); about 12 km due SE of Quairading, *B.R. Maslin* 7675 (PERTH); 20 km NW of Ongerup, *N. Stephens* KRN9492–1 (MELU, PERTH); intersection off Kulin–Wickepin road, 30 miles [48 km] to Pingaring and 30 miles [48 km] to Harrismith, *M.D. Tindale* 3746 (BRI, CANB, K, MEL, NSW, PERTH); Reserve No. 26381, 10 km NNW of Nyabing, 4 Sep. 1984, *K.J. Wallace s.n.* (PERTH).

Distribution. Occurs in south-west Western Australia in three disjunct areas, between Bindi Bindi and Piawaning in the north, Ongerup and Nyabing in the south, and from Quairading and Wickepin east to just north of Hyden.

Habitat. Grows in sand and loam, sometimes with gravel or quartzite, in mallee scrub or low heath.

Phenology. Flowering recorded from June to September; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The specific epithet is chosen because of the curvature of the phyllodes, from the Latin *arcuatilis* (curved like a bow).

Affinities. Acacia arcuatilis is very closely related to *A. cracentis* and the two could perhaps be treated as subspecies of a single species, as they share the same basic phyllode nervature, inflorescence structure and carpological features. Normally *A. cracentis* is distinguished by its more slender, straighter, greener phyllodes with only a single head in the axil. However, when the phyllodes of *A. arcuatilis* are only shallowly curved, this species can be difficult to distinguish from *A. cracentis*. Apart from the number of heads per axil, other characters helpful in recognizing *A. cracentis* include its commonly glabrous phyllodes and taller growth habit.

Acacia arcuatilis is also related to *A. aprica* and *A. lirellata* subsp. *lirellata* (see discussion under these taxa). Specimens of *A. arcuatilis* with particularly thick phyllodes may superficially resemble *A. obesa* R.S. Cowan & Maslin which is readily distinguished by its striate, 12–16-nerved phyllodes, 5-merous flowers and strongly curved pods. A general similarity between *A. arcuatilis* and *A. pinguiculosa* subsp. *teretifolia* R.S. Cowan & Maslin may be noted but that subspecies is readily recognized by its longer peduncles (5–10 mm), 5-merous flowers and glabrous, thickly textured pods.

Variation. Most specimens have distinctive, markedly curved phyllodes, but a few have shallowly curved phyllodes and then resemble *A. cracentis* (see above). Judging from the relatively few field data, it appears that *A. arcuatilis* is normally a low, spreading shrub 0.4–0.8 m tall; however, specimen label information on *Stevens* KRN9492–1 and *Maslin* 500 suggest that under some circumstances plants can reach 1–2 m in height.

Acacia cochlocarpa Meisner, *Bot. Zeitung* (Berlin) 13:10 (1855). *Type:* "Drumm. Coll. VI n. 6: Nov. Holl. Australi - occid. inter flum. Moore et Murchison" [between Moore River and Murchison River, Western Australia], *J. Drummond* coll. 6:6, comm. *Shuttleworth* 1854 (*holo:* NY; *iso:* BM, CGE, LD (sphalm. "coll. 3"), OXF, P, PERTH 00745162 – fragment of unknown origin). See Maslin & Cowan (1994) for details of typification.

Sprawling low *shrub* 0.3–0.7 m high, 1.5–3 m across. *Bark* smooth or slightly stringy, reddish-grey. *Branchlets* straight to shallowly flexuose, ribbed and yellow-brown at extremities, glabrous or pubescent (with short, ± straight, patent, soft hairs). *Stipules* early caducous (scars only seen) or persistent. *Phyllodes* narrowly oblong-elliptic, 2.5–7.5 cm long, 3–6 mm wide, coriaceous, flat, shallowly to strongly incurved, erect, hairy on nerves or glabrous, green; *longitudinal nerves* prominent, 3–7 per face, the midrib broader and more evident than the rest, the nerves rather widely spaced (distinct inter-nerve spaces between) and commonly a few not extending full length of phyllode; *apex* acute or obtuse, mucronate; *pulvinus* 1–3 mm long, yellow-brown, ± smooth. *Gland* on upper margin of phyllode 0–1 mm above pulvinus, often obscured by hairs in subsp. *velutinosa*, elliptic, 0.5–0.6 mm long, 0.3–0.4 mm wide, yellow-brown. *Inflorescences* simple, paired in axil of phyllode. *Heads* sub-globular to shortly cylindrical, 5–10 mm long and 5–6 mm diam. (dry), sub-densely flowered, golden; *bracteoles* persistent, ovate or obovate, 0.7–1.8 mm long, 0.5–0.8 mm wide, red-brown, obtuse or acute to acuminate. *Flowers* 4-merous; *sepals* 0.8–1.2 mm long *c.* 1/2 length of petals, lobed to 1/2 their length. *Petals* 1.6–2.2 mm long, ± free, yellow; nerves not evident. *Ovary* sessile, puberulous, style ± central. *Pods* tightly spirally or ± irregularly coiled; valves 3–4 mm wide, chartaceous, smooth, brown, glabrous or ± velutinous (the hairs dense, moderately long, sub-straight, patent and soft); margins broad, yellow, glabrous. *Seeds* longitudinal in pod, spherical to obloid, 1.5–2.5 mm long, 1.5–2.5 mm wide, *c.* 1 mm thick, glossy, grey with brown speckling and a dark peripheral nerve; *pleurogram* fine, circular, open 0.2 mm at hilar end; *areole c.* 0.2 mm long, 0.2 mm wide; *funicle* short, filiform, straight, expanded into a terminal, cream (dry) aril.

Distribution. Occurs in the north-central wheatbelt region of south-west Western Australia near Watheroo and Manmanning with an early collection from west of Moora and possibly also from near York.

Affinities. Acacia cochlocarpa appears to be most closely related to *A. lirellata* and *A. tetraneura* but is sharply distinguished from both these taxa by its tightly coiled pods. The two taxa that superficially most closely resemble one another are *A. cochlocarpa* subsp. *velutinosa* and *A. lirellata* subsp. *compressa* on account of both having flat, curved, strongly multi-nerved phyllodes, sessile, sub-globular to shortly obloid heads and acute to acuminate, dark bracteoles. Apart from its ± straight, moniliform pods, subsp. *compressa* is most readily recognized by its glabrous branchlets and by its phyllodes that are narrower (normally 1–2 mm wide) and glabrous.

Until recent years the name *A. neurophylla* W. Fitzg. was commonly but erroneously applied to plants of *A. cochlocarpa*. The two species are not particularly closely related.

Subspecies. Two subspecies, subsp. *cochlocarpa* and subsp. *velutinosa*, are recognized within *A. cochlocarpa* and these can be readily distinguished by their branchlet and pod indumentum and other characters (see subspecies descriptions below and key above). Both subspecies have restricted geographic ranges and their distributions do not overlap.

Acacia cochlocarpa Meisner subsp. **cochlocarpa**

Branchlets glabrous. *Stipules* early caducous. *Phyllodes* (3)4–7.5 cm long, 4–6 mm wide, glabrous, 5–7-nerved with the central nerve equidistant from margins; *apex* acute. *Heads* obloid to shortly cylindrical, 7–10 mm long (dry); *bracteoles* obovate, 0.7–0.8 mm long, obtuse. *Pods* glabrous.

Selected specimens examined. WESTERN AUSTRALIA, near Watheroo [precise localities withheld for conservation reasons]: July–Aug. 1973, *C. Chapman s.n.* (AD, CANB, K, L, PERTH); 18 Nov. 1973,

C. Chapman s.n. (B, BFT, BRI, CANB, K, MEL, NSW, NY, PERTH); *C. Chapman* 4 (AD, PERTH); *B.R. Maslin* 4492 (MEXU, PERTH); *D. Papenfus* 462 (CANB, PERTH); westward from Moora, *L. Diels* 3096 (PERTH).

Distribution. Occurs in the south-west of Western Australia, restricted to near Watheroo and an early collection west of Moora.

Habitat. Grows on clayey sand in open shrubland or scrub with *Allocasuarina campestris.*

Phenology. Flowering recorded from June to August; mature pods collected in November and December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Declared Rare.

Acacia cochlocarpa subsp. **velutinosa** Maslin & A.R. Chapman, *subsp. nov.*

Ramuli pubescentes. Phyllodia 2.5–4 cm longa, 3–5 m lata, nervis 3–5(7); stipulae persistentes. Capitula subglobosa; bracteolae acuminatae. Legumen ± velutinum.

Typus: Manmanning area [precise locality withheld for conservation reasons], Western Australia, 30 November 1974, *A.S. George* 12926 (*holo:* PERTH 00455644; *iso:* CANB, K, NSW).

Branchlets pubescent. *Stipules* persistent, triangular, 1.5–2 mm long, 0.5–0.7 mm wide, scarious, acute, red-brown, sparsely hairy abaxially. *Phyllodes* 2.5–4 cm long, 3–5 mm wide, 3–5(7)-nerved, normally hairy on nerves, the central nerve slightly excentric (slightly closer to adaxial margin); *apex* obtuse or occasionally acute. *Heads* sub-globular, 5–7 mm long (dry). *Bracteoles* ovate, 1.2–1.8 mm long, acute to acuminate. *Pods* ± velutinous.

Selected specimens examined. WESTERN AUSTRALIA [precise localities withheld for conservation reasons]: York district, *L. Preiss* 937 (G, NY, LUND, PERTH – photograph); near Manmanning, *B. & M. Smith* 352 (PERTH); 2 May 1974; *B. & M. Smith s.n.* (CANB, PERTH); 20 June 1974, *B. & M. Smith s.n.* (MEL, PERTH).

Distribution. Occurs in the south-west of Western Australia, restricted to near Manmanning with an early collection of dubious locality from near York (see Notes below).

Habitat. Grows in sandy clay in heath and on sandy laterite in mallee.

Phenology. Flowering recorded from May to July; mature pods collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The subspecific epithet, from the Latin *velutinus* (velvety) and the suffix *-osus* (indicating full development), alludes to the indumentum on the branchlets, phyllodes and especially the pods.

Affinities. Similar to *A. lirellata* subsp. *compressa* (see discussion under other subspecies).

Notes. The first gathering of this taxon appears to have been *Preiss* 937 which is a specimen bearing the following annotation: "Frutex 3 pedalis. In planitie arenosis sylvae inter praedia rustica DD. Barker et Lennard. April 12. [18]40". Based on information provided in Marchant (1990) this locality is somewhere between E.P.B. Lennard's property on the Swan River near Guildford and S.A. Barker's property near York. There are no modern collections of subsp. *velutinosa* from this region and it is unlikely to occur there because of an absence of suitable habitats; it is therefore probable that the locality given by Preiss is an error.

Acacia cracentis R.S. Cowan & Maslin, *sp. nov.*

Frutex 0.5–2 m altus. Ramuli versus apices sericei inter costas resinosas. Phyllodia teretia, gracilia, 2.5–6 cm longa, 0.5–0.7 m lata, recta ad parum incurva, nervis 8, latis, applanatis. Inflorescentia simplex; capitula sessilia, globosa ad subglobosa, floribus 12–20. Flores 4-meri. Sepala 3/4 unita. Legumen lineare, ad 5 cm longum, 1–2 mm latum, rectum. Semina longitudinalia, maculata; arillus semen fere aequans.

Typus: Chiddarcooping Nature Reserve, Morrison Road, 9 km east of Echo Road, Western Australia, 23 July 1989, *B.R. Maslin* 6383 (*holo:* PERTH 01014366; *iso:* CANB, K, Z).

Bushy, multistemmed, rounded or obconic *shrub* 0.5–2 m tall. *Bark* dark grey, smooth or furrowed. *New shoots* resinous. *Branchlets* with yellow-brown or red-brown resin-ribs at tips, sparsely to densely sericeous between ribs (hairs sometimes difficult to see, lost with age). *Stipules* minute, triangular, persistent. *Phyllodes* terete or sometimes slightly quadrangular, 2.5–5(6) cm long, 0.5–0.7 mm diam., slender, patent to ascending, straight to very shallowly incurved, resinous at least when young, glabrous or sparsely appressed-hairy between nerves (hairs normally difficult to see, observe at magnification), dark green to milky green; *longitudinal nerves* 8, broad (0.2 mm wide), of uniform width and prominence, ± flat-topped, not or scarcely raised, separated by very narrow, shallow, dark longitudinal furrows; *pulvinus* indistinct; *apex* acute with an normally oblique, dark brown point. *Gland* situated on upper surface of phyllode at its base, indistinct. *Inflorescence* simple, solitary in axil of phyllode, very rarely a specimens with all heads paired. *Heads* sessile (peduncle sometimes to 0.5 mm long, hairy), globular to subglobular, golden, 4–6 mm diam. when dry, 7–8 mm diam. when fresh, 12–20-flowered; *bracteoles c.* 1 mm long, dark coloured, acute or obtuse. *Flowers* 4-merous, commonly resinous; *sepals* about half as long as petals, 3/4-united; lobes triangular, ± puberulous; *petals* free, elliptic, acute, glabrous, 1-nerved. *Ovary* densely hairy. *Pods* linear, slightly raised over and slightly constricted between seeds, 2.5–5 cm long, 1–2 mm wide, mostly erect, very thinly coriaceous, straight to shallowly curved (valves curving more upon dehiscence), minutely appressed-puberulous on lateral faces, resinous especially when young, resembling the phyllodes when green, red-brown at maturity; margins broad but not thickened (in immature pods the margins appear to overgrow the lateral faces), commonly glabrous. *Seeds* longitudinal in pod, ellipsoid, 2–2.5 mm long, 1–1.3 mm wide, 1 mm thick, glossy, mottled dark brown on yellow-brown or brown-grey and with a dark brown peripheral nerve; *pleurogram* semicircular to U-shaped; *areole* small, pale; *aril* terminal, bluntly conic, as long or nearly as long as seed, white when fresh (drying a pale waxy yellow).

Selected specimens examined. WESTERN AUSTRALIA: 5.4 miles [8.6 km] E of East (Wheat) Bin, Hyden, *M. Barrow* M28 (PERTH); 40 miles [64 km] E of Hyden, *J.S. Beard* 3925 (PERTH); E of Gibb Rock, *J.S. Beard* 5926 (PERTH); Lake Hurlstone Nature Reserve, 9 km NW of Holt Rock on road to Hyden, *B.R. Maslin* 6373A (G, PERTH, Z); Lake Hurlstone Nature Reserve, 9 km NW of Holt Rock on road to Hyden, *B.R. Maslin* 6485 (CANB, K, PERTH); NW corner of Chiddarcooping Nature Reserve, *J.G. & M.H. Simmons* 2469 (PERTH).

Distribution. Occurs in south-west Western Australia in two discontinuous areas – the Chiddarcooping Nature Reserve north-east of Merredin; and from Gibb Rock to near Hyden and south-east to Lake Hurlstone.

Habitat. Grows in gravelly loam in association with granite outcrops or along watercourses, in *Melaleuca* scrub, low heath or *Eucalyptus stowardii* and *Allocasuarina campestris* shrubland.

Phenology. Flowering recorded from July to September; mature pods collected from November to January.

Conservation status. Although there are few collections, this species occurs in two nature reserves and is considered not under threat.

Etymology. The name is derived from *cracens*, Latin for slender, graceful, in allusion to the very slender phyllodes.

Affinities. Very closely related to *A. arcuatilis* (see discussion under this species above). Forms of *A. tratmaniana* with short phyllodes could easily be confused with *A. cracentis*.

Acacia filifolia Benth., *London J. Bot.* 1: 369 (1842). *Type citation:* Swan River, Drummond. *Type:* Western Australia, *J. Drummond* 156 (*syn:* K); Swan River to King George Sound [Albany], Western Australia, *J. Drummond* 302 (*syn:* K, OXF, P).

[*A. ephedroides auct. non* Meisn.: G. Bentham, Fl. Austral. 2: 400 (1864), *pro parte*, as to *J. Drummond* 156.]

Open, wispy *shrub* 1.5–3 m tall, single-stemmed or sparingly branched at base. *Branchlets* straight or slightly flexuose, silvery sericeous between the red-brown or yellowish resin-ribs at the sometimes sub-pendulous tips. *Phyllodes* quadrangular to subquadrangular, occasionally terete, sessile, (10)12–20(25) cm long, 0.7–1 mm wide, rather slender, ascending, shallowly to strongly incurved, sometimes irregularly sigmoid, glabrous (except appressed hairs at base), sometimes sparsely appressed-hairy between nerves; *longitudinal nerves* 8, of uniform width and prominence (when phyllodes terete) or the nerve at each of the 4 angles more raised than the rest (when phyllodes quadrangular), broad, ± flat-topped and resinous, separated by narrow, shallow, dark longitudinal furrows. *Gland* on upper surface of phyllode 1–6 mm above base. *Inflorescence* single or paired (rarely 4) in axil of phyllode. *Heads* sessile or on densely hairy peduncle to 1 mm long, sub-globular to obloid, densely 30–40-flowered, 6–12 mm long and 5–8 mm diam. when dry, golden; *bracteoles* acute. *Flowers* 4-merous; *sepals* 1/2–3/4 length of petals, dissected for 1/2–3/4 their length; *petals* 1.5–2 mm long. *Ovary* tomentose. *Pods* linear, shallowly constricted between seeds and very slightly raised over them, 7–12 cm long, 2.5–3 mm wide, firmly chartaceous, straight to shallowly curved, densely appressed-hairy on faces; margins wide, glabrous, yellowish. *Seed* longitudinal, obloid-ellipsoid, 3 mm long, shiny, grey-brown with brown mottling and a dark peripheral nerve; *aril* as long as seed, drying yellowish.

Selected specimens examined. WESTERN AUSTRALIA: 5 km N of Wongan Hills on the road to Ballidu, *B.R. Maslin* 4970 (BRI, CANB, K, MEL, MO, NY, PERTH); 6.9 km E of The Midlands Rd on South Waddy Rd, SE of Coorow, *D. Papenfus* DP454 (PERTH); 600 m S of Buntine–Marchagee Rd on Teasedale Rd, SE of Coorow, *D. Papenfus* DP459 (PERTH); Wongan [Hills] township road to

airstrip, *B.H. Smith* 667 (PERTH); Reynoldson's Reserve (N of Wongan Hills), *A.S. Weston* 7386 (PERTH).

Distribution. Scattered and discontinuous in south-west Western Australia from Coorow eastwards through Wongan Hills to near Burracoppin and Southern Cross.

Habitat. Grows in yellow or brown sand over laterite mostly in scrub or heath.

Phenology. Flowering recorded from May to September; mature pods collected in November.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Affinities. Closely related to *A. aprica* and *A. tratmaniana* (see these species for discussion of differences). Also related to *A. merinthophora* E. Pritz. which is readily recognized by its prominently flexuose branchlets.

Acacia isoneura Maslin & A.R. Chapman, *sp. nov.*

Frutex ad 3 m altus. Ramuli versus apices sericei inter costas. Phyllodia teretia, grosse pungentia, 7–12(14) cm longa, 0.5–1.2 mm lata; nervi 8, lati, aequales, costis vadosis angustis separati. Inflorescentia simplex, 1 vel 2 per axillam; capitula ± sessilia, obloidea ad breviter cylindrica. Flores 4-meri. Sepala 1/2 ad 3/4 unita. Legumen lineare ad submoniliforme, 3–6 cm longum, 2–2.5 mm latum. Semina longitudinalia, maculata.

Typus: near Mingenew [precise locality withheld for conservation reasons], Western Australia, 9 August 1970, *B.R. Maslin* 728 (*holo:* PERTH 00667919; *iso:* CANB, K, NY).

Rounded or obconic *shrub*, dense or openly branched, 0.5–3 m tall, few-branched or multistemmed at base. *Bark* smooth except fissured on main stems (sometimes only at base) of mature plants, dark grey except stems of young plants and upper branches of mature plants red-grey. *Branchlets* silvery sericeous between the rather fine yellow, light brown or red ribs towards apices, ageing glabrous. *Stipules* inconspicuous. *Phyllodes* terete, 7–12(14) cm long, 0.5–1.2 mm diam., soft, flexible or rigid, ascending to erect, straight to shallowly incurved, glabrous or sub-glabrous except appressed-puberulous when young and on upper surface at base of mature phyllodes, green to grey-green; *longitudinal nerves* 8, of uniform width and prominence, broad (0.2–0.3 mm wide), flat-topped or shallowly convex, not or scarcely raised, separated by shallow, narrow yet distinct, dark longitudinal furrows; *apex* acute with a coarsely pungent or innocuous dark brown, straight or slightly curved point; *pulvinus* indistinct, yellowish. *Gland* on upper surface of phyllode 0–3 mm above pulvinus, very indistinct, often obscured by hairs; phyllode sometimes slightly swollen about the gland. *Inflorescences* simple, single or paired in axil of phyllode. *Spikes* obloid to shortly cylindrical, 8–15 mm long, 4–5 mm wide when dry, ± sessile (peduncle sometimes to 2 mm long, sericeous), 30–40-flowered, golden; *bracteoles* spathulate, mostly *c.* 0.5 mm long, dark brown, ± puberulous abaxially, obtuse or acute. *Flowers* 4-merous; *sepals* 1/3–1/2 the length of the petals, dissected for 1/4–1/2 their length into triangular, normally ciliolate lobes; calyx tube glabrous or sparsely puberulous; *petals* glabrous, nerveless or almost so. *Ovary* tomentose. *Pods* linear to sub-moniliform, moderately constricted between seeds, ± flat or shallowly raised over the seeds, straight to very shallowly curved, pendulous, 3–6 cm long, 2–2.5 mm wide, firmly chartaceous, reddish brown, minutely appressed-puberulous; margins somewhat broad (not thickened), glabrous. *Seeds* longitudinal in pod, ellipsoid to obloid-

ellipsoid, 2–3 mm long, 1.5 mm wide, shiny, grey-brown with few dark brown speckles or light brown mottled yellow; pleurogram U- or V-shaped, open towards hilum, sometimes bordered by a narrow band of dark tissue; areole very small, 0.3–0.5 × 0.2 mm; funicle filiform, short, expanded into a ± conical, folded, white (drying pale yellow) aril which is 1/2 or fully the seed length.

Distribution. Occurs in the south-west of Western Australia in the Mingenew and Three Springs areas (subsp. *isoneura*) and from near Wubin to Perenjori (subsp. *nimia*), about 60 km to the south-east.

Affinities. Closely allied to *A. hopperiana* Maslin which is most readily distinguished by its 10-nerved phyllodes and discoid seeds.

Subspecies. Two allopatric subspecies are recognized, distinguished primarily by phyllode characters (see key above). The typical subspecies occurs further to the north-west than subsp. *nimia.*

Acacia isoneura Maslin & A.R. Chapman subsp. **isoneura**

Shrub 0.5–2 m tall. *Phyllodes* soft and flexible, slender and filiform (0.5–0.6 mm diam.); nerves 0.2 mm wide; apex innocuous to coarsely pungent. *Spikes* paired in axil of phyllode, rarely single. *Seeds* (few seen) light brown mottled yellow; *pleurogram* not bordered by dark tissue.

Selected specimens examined. WESTERN AUSTRALIA [precise localities withheld for conservation reasons]: near Mingenew, *A.M. Ashby* 4880 (AD, PERTH); near Three Springs, 28 Aug. 1972, *C. Chapman s.n.* (PERTH); near Mingenew, *R. Coveny* 3079 (NSW, PERTH); *B.R. Maslin* 6417 (CANB, PERTH).

Distribution. Restricted to the Mingenew and Three Springs areas.

Habitat. Yellow, white or brown sand on slopes and tops of low rises, in shrubland or roadside remnant.

Phenology. Flowering recorded from August to September; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Affinities. As discussed above, *A. isoneura* is closely related to *A. hopperiana* Maslin. In its slender, terete, multinerved phyllodes and sessile spikes, the new subspecies bears a superficial resemblance to *A. coolgardiensis* Maiden subsp. *coolgardiensis* which is most readily distinguished by its shorter spikes, 5-merous flowers and terete pods.

Acacia isoneura subsp. **nimia** Maslin & A.R. Chapman, *subsp. nov.*

Phyllodia rigida, crassa (0.8–1.2 mm diam.); nervi 0.3 mm lati. Inflorescentia spiciformis, solitaria, axillaris.

Typus: 3 miles [4.8 km] south of Bunjil on the road to Latham, Western Australia, 9 August 1970, *B.R. Maslin* 740 (*holo:* PERTH 00657867; *iso:* CANB, K).

Shrub 1.5–3 m tall. *Phyllodes* rigid, thick (0.8–1.2 mm diam.), coarsely pungent; nerves 0.3 mm wide. *Spikes* single in axil of phyllodes. *Seeds* (one collection seen) grey-brown bespeckled dark brown; *pleurogram* bordered by a narrow band of dark-coloured tissue.

Selected specimens examined. WESTERN AUSTRALIA: 6.5 miles [10.5 km] from Perenjori on Three Springs road, *I.B. Armitage* 372 (PERTH); 1.6 km S of Caron towards Wubin, *B.R. Maslin* 3177 (BM, BRI, MO, P, PERTH); 9 km S of Latham on road to Wubin, *B.R. Maslin* 6434 (CANB, K, MEL, PERTH); E of Caron, *F.W. Went* 157 (PERTH).

Distribution. Occurs between Wubin and Perenjori.

Habitat. Yellow sand in heath, scrub or tall shrubland.

Phenology. Flowering recorded from August to October; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Etymology. The subspecific epithet is derived from the Latin *nimius* (excessive or over-abundant), alluding to the broader phyllodes with wider nerves that help distinguish this subspecies from subsp. *isoneura*.

Affinities. As discussed above, *A. isoneura* is closely related to *A. hopperiana*. In its rigid, terete, multinerved phyllodes and sessile spikes the new subspecies bears a superficial resemblance to *A. cylindrica* R.S. Cowan & Maslin which is most readily distinguished by its 16-nerved phyllodes (the nerves narrower, often of unequal width).

Acacia lirellata Maslin & A.R. Chapman, *sp. nov.*

Frutex ad 1.5 m altus. Ramuli ± recti vel flexuosi, glabri vel minute adpresso-puberuli. Phyllodia teretia vel anguste linearia, 3–13 cm longa, 0.8–2.5 m lata, curvata ad circinata vel serpentina, glabra; nervi 8 (3 in quoque pagina phyllodiorum applanatorum), sulcis profundis longitudinalibus separati; pulvinus c. 1 mm longus, vel absens et itaque phyllodium decurrens. Inflorescentia simplex; capitula sessilia, subglobularis ad obloidea, raro cylindrica. Flores 4-meri. Calyx vadose lobatus. Legumen moniliformis vel submoniliformis, ad 7 cm longum, 2–3 mm latum. Semina longitudinalia; arillus flavidus.

Typus: 2 km east of Quairading towards Bruce Rock, Western Australia, 12 June 1976, *B.R. Maslin* 4163 (*holo:* PERTH 00156140; *iso:* CANB, K, NY).

Dense, low, spreading, intricate, sometimes procumbent *shrub*, 0.3–1(1.5) m high, 1–3(4) m wide. *Bark* smooth, fissured at base, reddish-grey; *branchlets* sub-straight to flexuose, spreading to erect, ribbed, yellow-brown, glabrous or minutely appressed-puberulous. *Stipules* triangular, *c.* 1 mm long, red-brown, persistent. *Phyllodes* sometimes continuous with the branchlets but not forming cauline wings (subsp. *lirellata*), terete to quadrangular (subsp. *lirellata*) or flat (subsp. *compressa*), 3–13 cm long, 0.8–2(3) mm wide, thick, erect, curved to circinate or serpentinous, green or glaucous between nerves, glabrous; *longitudinal nerves* 8, prominent, 3-nerved per face when phyllodes are flat, resinous and commonly of unequal width; on terete phyllodes the nerves separated by a deep longitudinal furrow (at least when dry); on flat phyllodes the midrib broader and more prominently raised than each

of the flanking nerves; *apex* innocuous to coarsely pungent, mucronate with a short dark brown point; *pulvinus* c. 1 mm long, yellow, wrinkled, or absent. *Gland* on upper margin of phyllode c. 1 mm above pulvinus, obscure. *Inflorescences* simple, 2(3) in axil of phyllode. *Heads* sessile, sub-globular to shortly obloid, rarely cylindrical, 5–7(15) mm long, 4–6 mm diam. when dry, sub-dense, golden. *Bracteoles* persistent, acute to acuminate or obtuse, very dark brown. *Flowers* 4-merous. *Sepals* 0.6–0.8 mm long, c. 1/2 length of petals, shallowly lobed, sparsely strigulose. *Petals* 1.5–2 mm long; nerves not evident. *Ovary* sessile, puberulous or hispidulous; *style* ± sub-lateral. *Pods* moniliform or sub-moniliform, 4–8 cm long, 2–3 mm wide, straight or loosely coiled, flat, firmly crustaceous or thinly coriaceous, brown, glabrous or densely antrorsely strigulose; margins broad, yellow, glabrous. *Seeds* longitudinal, obloid-ellipsoid, 2.5–3 mm long, 1.5–2 mm wide, *c.* 1 mm thick, dark brown; *pleurogram* fine, open towards hilum; *areole* oblong, *c.* 0.5 mm long, 0.2 mm wide; *funicle* short, filiform, straight, expanded into a terminal, yellowish (dry) aril.

Distribution. Of scattered occurrence in the wheatbelt region of south-west Western Australia from between Coorow and Ballidu, south to Bruce Rock and Waterbidden Rock.

Etymology. The species name is derived from the Latin diminutive of *lira* (a furrow), in allusion to the prominent longitudinal grooves that occur between the nerves on the phyllodes of this species.

Affinities. Seemingly most closely related to *A. cochlocarpa* and *A. tetraneura* (see *A. cochlocarpa* for discussion).

Subspecies. Two subspecies, subsp. *lirellata* and subsp. *compressa*, are recognized within *A. lirellata* and these can normally be readily distinguished by their phyllode and bracteole characters (see subspecies descriptions below and key above). Two specimens from the York–Quairading area, *(I.B. Armitage* 451 and *J. Seabrook s.n.*, both PERTH), are atypical and appear to combine characters of both subspecies. Although subsp. *lirellata* is recorded for this area, subsp. *compressa* is currently not recorded there.

Acacia lirellata Maslin & A.R. Chapman subsp. **lirellata**

Phyllodes decurrent along branchlets but not forming cauline wings, epulvinate, not easily detatched and commonly persisting on lower branchlets after phyllodes have died, terete to quadrangular, or occasionally sub-flat (but then with a prominently raised central nerve which renders the phyllodes flattened-quadrangular in t.s.), often filiform, (5)6–13 cm long, 0.8–1.5 mm wide, strongly curved to circinate or serpentinous. *Bracteoles* obtuse. *Pods* sub-moniliform.

Selected specimens examined. WESTERN AUSTRALIA: 5 km W of Quairading, *P. Armstrong* 84/90 (MO, PERTH); *c.* 152 mile peg Geraldton Highway [*c.* 19 km S of Coorow on The Midlands Rd], *C. Chapman* 3 (BRI, CANB, MEL, NSW, PERTH); Tammin, 1 Sep. 1936, *C.A. Gardner s.n.* (PERTH); 2 miles [3.2 km] W of Quairading on road to York, *B.R. Maslin* 489 (CANB, K, MEL, PERTH); 8 miles [13 km] E of Northam, *K. Newbey* 1937 (PERTH); private property, Edenvale, *D. Papenfus* DP447 (PERTH); 5.2 km S along Old Telegraph Rd from Winchester East Rd, NE of Coorow, *D. Papenfus* DP458 (PERTH); 5 miles [8 km] S on Meckering–York road, *R.D. Royce* 8514 (PERTH).

Distribution. Occurs in the south-west of Western Australia, in two discontinuous regions in the wheatbelt, the Coorow–Watheroo area and *c.* 180 km to the south-east between Northam and Beverley and east to Tammin and Quairading.

Habitat. Red or brown sandy loam, clayey sand and gravel in heath or woodland.

Phenology. Flowering recorded from June to September; mature pods collected in December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three.

Affinities. Closely related to *A. tetraneura* whose terete phyllode forms could be confused with subsp. *lirellata*. *Acacia tetraneura* is most readily distinguished, however, by its 4-nerved, non-decurrent phyllodes and its conspicuous bracteoles. Subsp. *lirellata* is also related to *A. aprica* and *A. arcuatilis* but is easily distinguished from both by its decurrent, deeply furrowed phyllodes.

Variation. The specimen *Newbey* 1937 is atypical in having flowers arranged in distinctly cylindrical spikes (all other specimens examined have sub-globular to obloid heads).

Acacia lirellata subsp. **compressa** Maslin & A.R.Chapman, *subsp. nov.*

Phyllodia non decurrentia, breviter pulvinata, anguste linearia, plana, raro compressa, 3–7 cm longa, 1.5–2(3) mm lata, nervis 3 in quoque pagina.

Typus: about 3 miles [5 km] north of Bruce Rock towards Merredin, Western Australia, 4 August 1971, *B.R. Maslin* 1773 (*holo:* PERTH 00156604; *iso:* CANB, G, K, NY).

Phyllodes not decurrent, shortly pulvinate, flat, occasionally compressed, narrowly linear, 3–5(7) cm long, 1.5–2(3) mm wide, shallowly to strongly incurved, 3-nerved per face with the midrib broader and more prominently raised than the flanking nerves. *Bracteoles* acute to acuminate. *Pods* moniliform.

Selected specimens examined. WESTERN AUSTRALIA: Holleton Nature Reserve, *c.* 50 km ENE of Narembeen, *K. Atkins* 860901 (PERTH); Muntadgin, *E.T. Bailey* 54 (PERTH); 43.5 km from Wubin towards Wongan Hills, *E.M. Canning* WA/68 2902 (PERTH); *c.* 3 miles [5 km] N of Bruce Rock towards Merredin, *B.R. Maslin* 1776 (CANB, K, MEL, NSW, PERTH); 1 km due S of Ballidu, *P. Roberts* 323 (PERTH); Hindmarsh rifle range, *B.H. Smith* 365 (AD, BRI, CBG, MEL, PERTH).

Distribution. Occurs in two discontinuous areas in the wheatbelt area of the south-west of Western Australia, near Ballidu and *c.* 180 km to the south-east between Wyalkatchem and Cunderdin and east to Bruce Rock and Waterbidden Rock.

Habitat. In yellow, brown or white sand, loam or clay in open low scrub and heath.

Phenology. Flowering recorded in May, June, August and September; mature pods collected in September.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The subspecific name is taken from the Latin *compressus* (flattened) and refers to the flattened phyllodes, a character which distinguishes this taxon from the typical subspecies.

Affinities. Superficially resembles *A. cochlocarpa* subsp. *velutinosa* (as discussed under *A. cochlocarpa*).

Acacia tetraneura Maslin & A.R. Chapman, *sp. nov.*

Frutex 0.3–0.4 m altus. Ramuli glabri vel versus apices parce adpresso-puberuli. Phyllodia teretia vel plana, (2)3–7 cm longa, 1.5–3 m lata, rigida, recta, plerumque leviter incurva; nervi 4, prominentes, applanati, lati, resinosi. Inflorescentia simplex; capitula ± sessilia, globosa ad breviter oblongoidea; bracteolae acuminatae. Flores 4-meri. Sepala 1/2–2/3 unita. Legumen lineare. Semina non visa.

Typus: south-east of Hyden [precise locality withheld for conservation reasons], Western Australia, 22 July 1989, *B.R. Maslin* 6372 (*holo:* PERTH 01001442; *iso:* AD, BRI, CANB, G, K, MEL, NSW, NY, Z).

Low, spreading, *shrub* 0.3–0.4 m tall, to 1 m across, ± flat-topped, circular in plane view, dividing at ground level into a number of main stems. *Bark* dark grey, finely longitudinally fissured at base of main stems, otherwise smooth. *Branchlets* glabrous or very sparsely spreading- or appressed-puberulous at the light brown, resin-ribbed (viscid when fresh) tips, glabrous and ribs absent or scarcely evident on mature branchlets. *Stipules* inconspicuous, triangular to deltate, *c.* 1 mm long, erect, dark brown to black, glabrous. *Phyllodes* narrowly linear (when terete) or linear to narrowly oblong (when flat), (2)3–7 cm long, 1.5–3 mm wide, rigid, erect, mostly shallowly incurved although some straight, smooth, glabrous except for pulvinar region, ± glaucous (commonly drying green) between the greenish (drying yellow-green) nerves; *longitudinal nerves* 4, prominent, the nerves flat-topped, broad (0.5–1 mm wide) and resinous (viscid when fresh), on terete phyllodes the nerves alternating with 4 equally prominent (but commonly narrower) longitudinal furrows, on flat phyllodes the nerves forming a prominent raised midrib on each face and prominent upper and lower margins; lateral nerves absent or obscure; apical mucro central or excentric, acute, hard, dark brown (colouring sometimes extending to lamina); *pulvinus* indistinct, 0.5–1 mm long, sub-smooth or obscurely transversely wrinkled, normally appressed-puberulous at least adaxially. *Gland* on upper margin of phyllode at or near distal end of pulvinus, very obscure. *Inflorescence* simple. *Heads* (1)2 per axil, sessile or on sparsely to densely puberulous peduncle to 1 mm long, globular to shortly obloid, 9 mm diam. when fresh, *c.* 5mm diam. when dry, 13–20-flowered, light golden; *bracteoles* exserted in buds, 2 mm long; claw very short; lamina ± narrowly trullate, acuminate, shallowly concave towards base, sparsely ciliolate, sometimes puberulous abaxially at base, dark brown to blackish. *Flowers* 4-merous; *sepals c.* 2/3 length of petals, dissected for 1/3–1/2 their length into triangular, sparsely ciliolate lobes which are commonly brown at their tips; calyx tube broadly obconic, truncate at base, yellow, glabrous to sub-glabrous; *petals c.* 2 mm long, glabrous, obscurely 1-nerved. *Pods* (immature and dehisced valves) linear, 2–5 cm long, 3 mm wide, coriaceous–crustaceous, curved and slightly twisted, raised over seeds and shallowly constricted between them, glabrous, dark brown, sub-winged due to prominent, broad (1 mm wide), yellow to light brown margins. *Seeds* (immature) longitudinal in pod.

Selected specimens examined. WESTERN AUSTRALIA [precise localities withheld for conservation reasons]: E of Pingaring, *A.S. George* 9338 (CBG, MO, PERTH); Bruce Rock area, *B.R. Maslin* 1801 (CANB, K, MEL, PERTH); Ironcaps area, *R.M. Buehrig* 93.11.4.15 (PERTH).

Distribution. Occurs in south-west Western Australia from the three disjunct areas cited above which occur in the central and south-eastern wheatbelt region over a distance of about 150 km.

Habitat. Grows in brown sandy loam, grey loam or yellowish-brown clay over or with laterite on the slopes of low rises in heath.

Flowering period. Flowering recorded in late May, July and August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The species name is derived from the Greek *tetra* (four) and *neuron* (nerve) and refers to the characteristic 4-nerved phyllodes.

Affinities. Acacia tetraneura is a very distinctive species on account of its low-spreading, ± flat-topped growth habit, ± sessile heads with 4-merous flowers, dark brown, acuminate bracteoles that are exserted in the buds, and linear pods with broad margins. Furthermore, the new species has a very distinctive phyllode nervation which alone distinguishes it from relatives such as *A. cochlocarpa* and *A. lirellata*. The phyllode nerves (but not the phyllode form) are remarkably similar to those of *A. sciophanes* Maslin, a species readily distinguished by its taller, wispy habit, pendulous, flexuose branchlets, pedunculate heads of 5-merous flowers and longer, terete pods (Maslin 1977: 153).

Variation. There is variation both within and between populations in the phyllode length and cross sectional shape; however, current evidence suggests that the recognition of infraspecific taxa is not warranted. For example, plants from south-east of Hyden (the type population) have terete to slightly compressed phyllodes about 1.5 mm wide and mostly 4–5 cm long, although a few phllodes may reach 7 cm. Plants from the Bruce Rock population, on the other hand, have clearly flattened phyllodes 2–3 mm wide and 2–4 cm long. This degree of variation can occur in a single population; for example, *Buehrig* 93.11.4.10 has specimens with both terete and sub-flattened phyllodes.

Acacia tratmaniana W.Fitzg., *J. West Australian Nat. Hist. Soc.* 1: 8 (1904). *Type:* Cunderdin, Western Australia, August 1903, *W.V. Fitzgerald s.n.* (*holo:* PERTH 00774200; *iso:* K, PERTH 00774197): see Maslin & Cowan (1994a) for discussion of types.

Dense *shrub*, rounded or obconic, multi-stemmed, 0.6–3(4) m tall. *Bark* smooth except fissured at base of main stems (rarely the branches) on oldest plants, commonly grey on main stems and red-brown on upper branches. *New shoots* resinous. *Branchlets* erect, straight, silvery sericeous between the red-brown or yellow resin-ribs. *Stipules* not seen. *Phyllodes* quadrangular, (2.5)4–8(11) cm long, 0.5–0.7 mm wide, slender, ascending to erect, shallowly to moderately incurved, ± sparsely appressed-puberulous (especially when young) becoming glabrous, often resinous (but not viscid), green to grey-green; with a ± flat-topped, equally broad, raised *longitudinal nerve* along each angle; nerve on each intervening four faces often not evident (represented by a broad, shallow longitudinal furrow) but when evident these are less raised and commonly narrower than those on angles (all 8 nerves then separated by narrow, shallow, dark longitudinal furrows); *apex* acute to shortly acuminate, innocuous to coarsely pungent, dark, incurved, shortly pungent; *pulvinus* indistinct, c. 1 mm long, yellow-brown. *Gland* on upper surface of phyllode 1(–2) mm above base, obscure. *Inflorescences* simple, single or paired in axil of phyllode. *Heads* sessile, globular to sub-globular or sometimes obloid, 13–24(28)-flowered, 4–7 mm long, 4–7 mm wide, sub-dense, bright golden; buds resinous; *bracteoles* c. 1 mm long, dark brown, obtuse to acute. *Flowers* 4-merous; *sepals* 1/3–1/2 length of petals, dissected for *c.* 1/2 their length into triangular lobes; *petals* 1.2–1.8 mm long. *Ovary* tomentose; style sub-lateral. *Pods* linear, 4–8 cm long, 2–3 mm wide, moderately constricted between seeds, flat but very slightly raised over seeds, thinly coriaceous–crustaceous, straight to shallowly curved, glabrous or minutely antrorsely strigulose, brown; margins yellowish; often rather broad (but not thickened). *Seeds* longitudinal in pod, obloid-ellipsoid, 2.5–3 mm long, 1.5–2 mm wide, 1–1.5 mm thick, shiny, light brown or greyish with dark brown mottlings; *pleurogram* fine, open at hilar end; *areole* very small, 0.3 mm long,

0.2–0.3 mm wide; *funicle* filiform, expanded into a folded, terminal, white (drying dull yellowish) aril which is almost as long as the seed.

Selected specimens examined. WESTERN AUSTRALIA: E of Ogilvie which is 15 miles [24 km] N of Northampton, *A.C. Burns* 21 (NSW, PERTH); Great Eastern Highway, 5 miles [8 km] W of Hines Hill, *A.S. George* 2662 (PERTH); 28 miles [45 km] SE of Quairading on the road to Corrigin, *B.R. Maslin* 499 (CANB, PERTH); 0.8 km E of Kununoppin towards Nungarin, *B.R. Maslin* 3409 (DNA, NSW, PERTH); about 1 km S of Hotham River crossing towards Katanning, *B.R. Maslin* 3760 (BRI, CANB, K, MEL, NSW, PERTH); 2.1 km E of Kununoppin on the road to Nungarin, *B.R. Maslin* 5318 (PERTH).

Distribution. Occurs in the south-west of Western Australia in an area from near Wongan Hills south to Pingelly and east to Mukinbudin and Hyden with disjunct populations in the Geraldton area in the north and Boyup Brook in the south.

Habitat. Grows on yellow or brown sand, lateritic gravel, clay or brown loam on flats, sides of hills or granite outcrops in scrub, shrubland or roadside regrowth.

Phenology. Flowering recorded from July to October; mature pods collected in December.

Conservation status. Not under threat.

Affinities. Until recently, *A. tratmaniana* was placed under *A. filifolia* (see above) which is readily distinguished by its larger heads with more numerous flowers and longer, stouter phyllodes that are more widely spaced along the branchlets. The short-phyllode variant of *A. tratmaniana* can easily be confused with *A. cracentis*.

Variation. A few flowering specimens with unusually short phyllodes (2.5–4 cm long) have been collected from near Hines Hill, Muntadgin, Hyden and Corrigin (e.g. *B.R. Maslin* 499, *M.H. Simmons* 1318, both PERTH). These closely resemble *A. cracentis* but are distinguished most readily by their quadrangular phyllodes with a broad nerve along each angle. Further studies are needed to determine the status of this short phyllode variant of *A. tratmaniana* and to re-examine its relationship with *A. cracentis*.

Acknowledgements

Alex George prepared the Latin diagnoses and provided editorial assistance. Terena Lally provided competent technical assistance. Financial support for this project was provided by the Australian Biological Resources Study, Canberra. The work was conducted at the Western Australian Herbarium, Perth.

References

Marchant, N.G. (1990). The Western Australian collecting localities of J.A.L. Preiss. *In:* Short, P.S. (ed.) "History of systematic botany in Australasia". pp. 131–135 (Australian Systematic Botany Society: Melbourne).

Maslin, B.R. (1977). Studies in the genus *Acacia* (Mimosaceae) – 6. Miscellany. *Nuytsia* 2: 145–161.

Maslin, B.R. & Cowan, R.S. (1994). C.F. Meissner's species of *Acacia* (Leguminosae: Mimosoideae): typification of the names. *Nuytsia* 9: 399–414.

Maslin, B.R. & Cowan, R.S. (1994a). William Vincent Fitzgerald's species of *Acacia* (Leguminosae: Mimosoideae): typification of the names. *Nuytsia* 9: 387–398.

Maslin, B.R. & Stirton, C.H. (1998 [1997 in publication]). Generic and infrageneric classification in *Acacia* (Leguminosae: Mimosoideae): a list of critical species on which to build a comparative data set. *Bulletin of the International Group for the Study of Mimosoideae* 20: 22–44.

Pedley, L. (1978). A revision of *Acacia* Mill. in Queensland. *Austrobaileya* 1: 75–234.

Tindale, M.D. (1980). Notes on Australian taxa of *Acacia* No. 7. *Telopea* 2: 113–125.

Acacia miscellany 20. Descriptions of three new Western Australian species of *Acacia* section *Juliflorae* (Leguminosae: Mimosoideae)

A.R. Chapman and B.R. Maslin

Western Australian Herbarium, Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Abstract

Chapman A.R. and Maslin, B.R. *Acacia* miscellany 20. Descriptions of three new Western Australian species of *Acacia* section *Juliflorae* (Leguminosae: Mimosoideae). *Nuytsia* 12(3): 487–491 (1999). Descriptions are provided for *A. gloeotricha* A.R. Chapman & Maslin, *A. incanicarpa* A.R. Chapman & Maslin and *A. subsessilis* A.R. Chapman & Maslin.

Introduction

Three new Western Australian species of *Acacia* Mill. (Leguminosae: Mimosoideae) – *A. gloeotricha, A. incanicarpa* and *A. subsessilis* – are described. All are referable to *Acacia* section *Juliflorae* (Benth.) C. Moore & Betche.

This is the final paper in a series commenced eight years ago (Cowan & Maslin 1990), dealing with the taxonomy of Australian species of *Acacia* prior to their presentation in "Flora of Australia" Volumes 11A and 11B.

New species

Acacia gloeotricha A.R. Chapman & Maslin, *sp.nov.*

Ramuli hispiduli, praecipue pilis glandiferis. Phyllodia anguste elliptica, asymmetrica, 5–9 cm longa, 8–18 mm lata, glanduloso-hispidula; venae longitudinales multae, 3–5 quam aliae prominentiores, venis minoribus approximatis, parce anastomosantibus; stipulae persistentes; glans basalis. Inflorescentiae simplices, plerumque 2 per axillum. Pedunculi 7–15 mm longi, glanduloso-hispiduli. Spicae *c.* 4 cm longae. Flores 5-meri. Sepala ad basin unita. Petala hispidula. Legumen lineare, 3–5 mm latum, glanduloso-hispidulum, marginibus crassis, pallidis. Semina longitudinalia, late ellipsoidea, 4.5 mm longa.

Typus: King Leopold Range [precise locality withheld for conservation reasons], Western Australia, 26 June 1976, *A.C. Beauglehole* 53912 (*holo:* PERTH 00512168; *iso:* BRI, PERTH 00938653).

Openly branched *shrub* to 4 m tall. *Branchlets* finely ribbed, densely glandular-hispidulous (hairs very short, straight, patent and gland-tipped), yellow-brown ageing grey. *Stipules* triangular, 1.5–1.7 mm long, 0.8–1 mm wide, ± scarious, sparsely fimbriolate, dark red-brown, persistent. *Phyllodes* narrowly elliptic, somewhat asymmetric (lower margin ± straight, upper margin convex), 5–9 cm long, 8–18 mm wide, l:w = 4–9, thinly coriaceous, erect, densely glandular-hispidulous (hairs very short, straight, patent and gland-tipped), grey-green; *longitudinal nerves* numerous, with 3–5 raised and more prominent than the rest (the central nerve the most pronounced), minor nerves close together and ± sparingly anastomosing, all free to base or sometimes the lowermost (including the central nerve) concurrent with lower margin for a short distance above pulvinus; *apex* acute with a darker, flattened mucro; *pulvinus c.* 2 mm long, finely wrinkled, yellow. *Gland* normally not prominent, situated on upper margin of phyllode at distal end of pulvinus or to 1 mm above it. *Inflorescence* simple, initiated on actively expanding new shoot, (1)2(3) per phyllode axil but sometimes phyllodes failing to develop at the terminal nodes (in which case the conflorescence appears falsely racemose); *peduncles* 7–15 mm long, densely glandular-hispidulous (hairs very short, straight, patent and gland-tipped). *Spikes* bright golden, *c.* 4 cm long, 4–6 mm wide when dry, the flowers sub-densely arranged; *bracteoles* persistent, spathulate, 0.8–1 mm long, *c.* 0.2 mm wide, incurved at apex, puberulous, light-brown. *Flowers* 5-merous; *sepals* united at base, *c.* 1 mm long, *c.* 2/3 length of petals, narrowly linear, incurved at apex, hispidulous; *petals c.* 1.5 mm long, united for *c.* 1/2 their length, hispidulous. *Ovary* sessile, densely appressed-hairy; style sub-lateral. *Pods* linear, prominently raised over seeds on both sides and shallowly constricted between them, 5–9 cm long, 3–5 mm wide, crustaceous, straight to shallowly curved, glandular-hispidulous, viscid; margins thickened, pale. *Seeds* longitudinal in pod, widely ellipsoid, *c.* 4.5 mm long, *c.* 3.5 mm wide, turgid, somewhat shiny, black; *pleurogram* continuous; *areole* elliptic, *c.* 1.5 mm long, shallowly raised, pale yellow-brown, bordered by a distinctly raised rim; funicle/aril broad, fleshy, terminal, white.

Other specimens examined. WESTERN AUSTRALIA, King Leopold Range [precise localities withheld for conservation reasons]: *A.C. Beauglehole* 53862 (BRI, K, PERTH); *A.C. Beauglehole* 53926 (BRI, PERTH); *T. Willing* 464 (CANB, K, MEL, NSW, PERTH).

Distribution. Occurs in northern Western Australia where it is known only from the King Leopold Range.

Habitat. Sand over sandstone in hummock grassland.

Phenology. Flowering recorded in June; mature pods collected in August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The species name is derived from the Greek *gloeo-* (a sticky substance) and *trichos* (hair), in reference to the conspicuous glandular hairs on the branchlets, phyllodes, peduncles and pods.

Affinities. Acacia gloeotricha superficially resembles the widespread northern Australian species *A. stipuligera* F. Muell. in phyllode shape and size, the persistent stipules, spicate inflorescences and long, linear pods. *A. stipuligera* is readily distinguished by its non-glandular indumentum, shorter peduncles (1–5 mm long), densely pubescent pods, brown seeds, and by the minor nerves of its phyllodes forming a more obvious reticulum. Seed characters suggest that *A. gloeotricha* has some affinities to northern Australian species such as *A. lysiphloia* F. Muell. and *A. trachycarpa* E. Pritz. which are characterized by their 'minni ritchi' bark. Although the latter two species are viscid plants, neither has a glandular-hispidulous indumentum. Bark characters are unknown for *A. gloeotricha*.

Acacia incanicarpa A.R. Chapman & Maslin, *sp. nov.*

Frutex 1–2.5 m altus. Ramuli incani, saepe furfuracei. Phyllodia oblanceolata ad anguste oblonga vel elliptica, obtusa, 4–9 cm longa, 7–14 mm lata, coriacea, inter venas sericea, argenteo-viridia, venis multis, subtilibus, arcte parallelis, non-anastomosantibus, venis marginalibus flavis (juvenilibus rufo-resinosis). Inflorescentia simplex, uniceps. Pedunculi 2–3 mm longi. Spicae oblongoideae ad breviter cylindraceae. Flores 5-meri. Sepala per 2/3–3/4 longitudinis unita, lobis late triangularibus. Legumen lineare, ad 10 cm longum, 4–5 mm latum, rectum, incanum. Semina longitudinalia.

Typus: Frenchman Peak (east of Esperance), Western Australia, 30 December 1983, *B.R. Maslin* 5545 (*holo:* PERTH 00161845; *iso:* CANB, G, K, MEL, NY).

Rounded or obconic bushy *shrub* 1–2.5 m tall, 2.5–3(6) m wide. *Bark* grey, longitudinally fissured at base of main trunks, smooth on branches. *Branchlets* ribbed, hoary (the hairs straight, closely appressed and silvery white), red-brown but often scurfy at tips, becoming glabrous and grey with age. *Stipules* not seen, no obvious scars apparent. *Phyllodes* oblanceolate to narrowly oblong or narrowly elliptic, 4–7.5(9) cm long, 7–14(16) mm wide, l:w = 4–7, coriaceous, ascending to erect, sericeous (hairs confined to between the nerves with age), silvery grey green; *longitudinal nerves* numerous, parallel (not anastomosing), fine and close together, resinous on young phyllodes, the central nerve and occasionally 1 or 2 others slightly more evident than the rest; *marginal nerves* yellow, often white-scurfy, reddish and resinous on young phyllodes; *apex* ± obtuse, commonly with a very small, blunt, red-brown mucro; *pulvinus c.* 2 mm long, sericeous. *Gland* obscure or absent. *Inflorescence* simple, commonly solitary in axil of phyllode, sometimes an immature bud present with the head at anthesis (2 heads in 1 axil at anthesis have not been observed); *peduncles* 2–3 mm long, sericeous but indumentum often obscured by resin; *basal peduncular bract* single, ovate, 1–1.4 mm long, 0.6–1 mm wide. *Spikes* oblongoid to shortly cylindrical, 7–10 mm long and 4–5 mm wide (dry), to 10 mm long and 7 mm wide (fresh), interrupted, *c.* 20-flowered, light golden; *young buds* resinous; *receptacle* sericeous, the indumentum often obscured by resin; *bracteoles* persistent, ovate, 0.6–0.8 mm long, 0.4–0.6 mm wide, sericeous, light-brown. *Flowers* 5-merous; *sepals* 0.8–1.1 mm long, 1/3–1/2 length of petals, dissected for 1/4–1/3 their length into broadly triangular lobes, sericeous; *petals* 2–2.2 mm long, united for 1/3–1/2 their length, nerveless, the lobes recurved. *Ovary* sessile, sericeous; style sub-lateral. *Pods* linear, 5–9(10) cm long, 4–5 mm wide, with up to 8 seeds per pod, firmly crustaceous, erect to patent, straight, smooth, hoary with minute, appressed, silvery hairs, dark brown. *Seeds* longitudinal in pod, obloid-ellipsoid, 3–5 mm long, 2–3 mm wide, 1–2 mm thick, glossy, dark brown with a lighter grey-brown patch on each face larger than the areole; *pleurogram* fine, grey-brown, oblong-elliptic, open 0.5 mm at hilar end; *areole* 1.5 mm long, 0.5–0.8 mm wide; *funicle* laterally compressed, expanding into a terminal, creamy-yellow (dry) or white (fresh) aril.

Selected specimens examined. WESTERN AUSTRALIA: Hill 49, Cape Le Grand National Park, *R.J. Cranfield* 1374 (PERTH); Frenchman Peak, Cape Le Grand National Park, *R. Cumming* 1157 (PERTH); Mt Le Grand, *A.S. George* 2221 (PERTH); just N of Thistle Cove, Cape Le Grand National Park, *A.S. George* 7488 (CANB, PERTH); 3 km N of Mt Le Grand, Cape Le Grand National Park, *K. Newbey* 8201 (PERTH); Cape Le Grand National Park, *A. Strid* 21174 (AD, CANB, MEL, NSW, PERTH); Cape Le Grand National Park, *A.S. Weston* 7169 (PERTH); Cape Le Grand National Park, *A.S. Weston* 7233 (CANB, PERTH); Mt Le Grand, *c.* 25 km SE of Esperance, *P.G. Wilson* 5582 (PERTH).

Distribution. Occurs in south-west of Western Australia where it is endemic in Cape Le Grand National Park, south-east of Esperance.

Habitat. Grows in pockets of loamy sand on granitic slopes and ridges in thicket dominated by *Melaleuca globifera*, heath and scrub.

Phenology. Flowering recorded in January, April, November and December; mature pods collected in November and December.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority One.

Etymology. The species name is derived from the Latin *incanus* (quite grey, hoary) and the Greek *karpos* (fruit) and refers to the obvious hoary indumentum of the pods.

Affinities. Acacia tarculensis J. Black in South Australia resembles *A. incanicarpa* with respect to phyllode shape and texture, indumentum, and inflorescence structure, but differs in having shorter phyllodes (2.5–5.5 cm long) with red, resinous margins, longer spikes (1.5–2.5 cm long), free sepals, and larger, strongly curved pods *c.* 1 cm wide with larger, oblique seeds (7.5 × *c.* 5 mm).

Acacia subsessilis A.R. Chapman & Maslin, *sp. nov.*

Frutex 1–2 m altus. Ramuli lenticellulares, glabri. Phyllodia anguste linearia vel linearitriangularia vel angustissime elliptica, 1–3 cm longa, 0.8–1.5 mm lata, pungentia, glabra, nervis 8, 3 in quoque pagina; glans 0–1 mm supra pulvinum inserta. Inflorescentia simplex, 1 vel 2 per axillum. Spicae oblongoidae vel cylindricae, 7–15 mm longae. Flores 5-meri. Sepala per 1/4–1/5 longitudinis unita. Legumen submoniliforme, 5–8 cm longum, 5–6 mm latum, tenuiter coriaceum vel crustaceum. Semina longitudinalia, 3.5–4 mm longa.

Typus: 0.5 km north of Fields Find road sign at Fields Find, Western Australia, 21–23 July 1982, *R.J. Cumming* 2018 (*holo:* PERTH 00154709; *iso:* CANB, G, K, MEL).

Rounded or obconic, straggly, spreading *shrub* 1–2 m tall, sparsely branched at ground level. *Bark* grey, fibrous at base of trunks, smooth and grey-brown on branches. *Branchlets* marked with raised scars where phyllodes have fallen, lenticellular, glabrous, red-brown. *Stipules* normally caducous. *Phyllodes* narrowly linear or (broadest phyllodes) linear–triangular or very narrowly elliptic, flat or (when very narrow) almost terete, 1–3 cm long, 0.8–1.5 mm wide, rigid, patent to slightly reclined, glabrous, light-green or subglaucous; nerves 8 in all, 3 per face when phyllodes flat, raised, yellow-green; *apex* narrowed to a fine, pungent, needle-like, dark brown tip; *pulvinus* much-reduced, 0.5–1 mm long, represented by a narrow band of yellowish tissue at base of lamina. *Gland* not prominent, 0–1(2) mm above pulvinus, elliptic–ovate, 0.3–0.4 mm long, 0.2 mm wide, dark. *Inflorescence* simple, 1 or 2 in axil of phyllode; *spikes* oblongoid to cylindrical, 7–15 mm long, 4–6 mm wide when dry, golden, sub-densely flowered; *peduncles* (2)3–5(6) mm long, glabrous or sparsely puberulous; *basal peduncular bract* often persistent, broadly ovate, 0.6–0.7 mm long and wide, glabrous except for minutely fimbriolate margin, dark brown. *Bracteoles* sub-persistent, peltate; claw narrowly linear; lamina broadly ovate, *c.* 1 mm long, 0.6–0.7 mm diam., brown, glabrous except for minutely fimbriolate margin. *Flowers* 5-merous; *sepals* 1–1.3 mm long, 1/2–2/3 length of petals, divided for 1/4–1/5 their length into broad lobes; calyx tube sparsely puberulous; *petals* 1.6–1.9 mm long, united for *c.* 2/3 their length, with a fine central nerve. *Ovary* sessile, glabrous; style sub-lateral. *Pods* sub-moniliform, ± shallowly raised over seeds, shallowly to moderately constricted between them, 5–8 cm long, 5–6 mm wide, thinly coriaceous to thinly crustaceous, sub-straight to shallowly curved, glabrous, dark reddish brown, lightly pruinose. *Seeds* (very few seen, slightly immature)

longitudinal in pod, ellipsoid, 3.5–4 mm long, *c.* 2.5 mm wide, ± shiny, black; aril small, terminal, ± conical, cream.

Selected specimens examined. WESTERN AUSTRALIA: Yalgoo, *W.E. Blackall* 490 (PERTH – 2 sheets); Fields Find, *W.M.B. Carr* UWA 1033 (BRI, MO, PERTH); 2.6 miles [4.2 km] E of Yalgoo, *R.J. Cumming* 1978 (CANB, NSW, PERTH); N of Fields Find, NW of Paynes Find, 12 July 1966, *D. Hardy s.n.* (PERTH); between Ninghan Station and Fields Find, *B.R. Maslin* 4246 (CANB, PERTH); 14 km E of Yalgoo and 1.5 km N of the Yalgoo–Mount Magnet road on track into quarry, *S. Patrick* SP 2266 (PERTH); Ninghan Station, 9.2 km N of Great Northern Highway on Warriedar Rd, E side of road, *S. Patrick & A. Brown* SP 2361 (PERTH); W side of Yalgoo–Jingamarra road, *c.* 9 km N of turnoff to Noongal Station, *S. Patrick & M. Meinema* SP 2895A (PERTH).

Distribution. Occurs in the south-west of Western Australia from the Yalgoo area to just south of Fields Find, with a further population near Mt Farmer.

Habitat. Grows in shallow red loam or clay, often on rocky slopes, in open low scrub. Associated species include *Acacia grasbyi*, *A. tetragonophylla*, *A. quadrimarginea* and *A. ramulosa*.

Phenology. Flowering recorded from June to August; mature pods (mostly dehisced but with a very few near-mature seeds remaining) collected in February.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two.

Etymology. The species name is taken from the Latin *sessilis* (destitute of a stalk) with the prefix *sub-* (somewhat, less than), in reference to the very poorly developed pulvinus, the phyllodes appearing subsessile.

Affinities. Close relatives of this new species are not readily apparent, but in the pungent, ± sessile, 8-nerved phyllodes it has a superficial resemblance to *A. colletioides* Benth. and *A. chapmanii* R.S. Cowan & Maslin subsp. *chapmanii*. These two taxa are readily distinguished from *A. subsessilis* by their globular to sub-globular heads, consistently terete phyllodes and strongly curved to openly coiled pods. *Acacia colletioides* is further distinguished by its phyllodes being positioned on discrete, raised stem projections and its bright yellow seed aril, and *A. chapmanii* subsp. *chapmanii* by its persistent, ± spinose stipules and narrower pods (2.5–3 mm wide).

Acknowledgements

Alex George provided the Latin descriptions and editorial assistance. Terena Lally provided competent technical assistance. Financial support for this project was provided by the Australian Biological Resources Study, Canberra. The work was conducted at the Western Australian Herbarium, Perth.

Reference

Cowan, R.S. & Maslin, B.R. (1990). *Acacia* miscellany 1. Some oligoneurous species of *Acacia* (Leguminosae: Mimosoideae: Section *Plurinerves*) from Western Australia. *Nuytsia* 7: 183–199.

SHORT COMMUNICATIONS

Acacia amputata, a new Western Australian species in section *Pulchellae* (Leguminosae: Mimosoideae)

Acacia pulchella R. Br., as defined by Maslin (1975), was excessively polymorphic, and even though *A. fagonioides* Benth. was subsequently removed (Maslin 1979) it remained a broadly circumscribed taxon. The status of *A. pulchella* was re-assessed during the preparation of an account of *Acacia* Mill. (Leguminosae: Mimosoideae) for "Flora of Australia". The acquisition of much new material, especially fruiting specimens, greatly aided this task. It is now seen that *A. pulchella* var. *subsessilis* differs significantly from the other varieties in its carpological features, as well as in inflorescence and vegetative characters. For these reasons it is now considered best to treat it at specific rank. The new species belongs to sect. *Pulchellae* (Benth.) Taub.

Acacia amputata Maslin, *nom. et stat. nov.*

Based on *Acacia pulchella* var. *subsessilis* Maslin, *Nuytsia* 1: 406, figs 4P–S & map 2 (1975). *Type:* Kukerin, Western Australia, 2 September 1934, *C.A. Gardner s.n.* (*holo:* PERTH 00768987; *iso:* CANB, K).

Conservation status. Widespread, not under threat.

Etymology. The epithet is from the Latin *amputo* (to cut away, lop off, shorten), in allusion to the characteristically short peduncles.

Affinities. The carpological features that clearly distinguish *A. amputata* from *A. pulchella* include the following: pods to 15 mm long and undulate to circinate; seeds transverse to oblique and mottled. In *A. pulchella* the pods are 1.5–5 cm long and flat or only slightly undulate; seeds longitudinal and not mottled. Inflorescence characters which generally distinguish the new species from *A. pulchella* include its very short peduncles and heads of 10–20 flowers. An uncommon variant of *A. pulchella* var. *pulchella* from the Busselton–Albany area (to the west of the range of *A. amputata*) has similar inflorescences but it is recognized by its green pinnules, longer glands (1–2 mm), slender spines, aristate bracteoles, longitudinal and non-mottled seeds, and usually longer pods (> 15 mm). Vegetatively *A. amputata* is similar to the inland variant of *A. pulchella* var. *glaberrima* Meisn. (*fide* Maslin 1975: 403) which has a similar distribution, at least for part of its range. These two taxa have numerous, prominent axillary spines and particularly small leaves, however, the new species is distinguished, in addition to the characters given above, by its hairy branchlets and acute to shortly acuminate, dark brown bracteoles. There is a suggestion that these taxa may hybridize in the Lake Grace district (e.g. *K. Newbey* 9485–1, PERTH).

References

Maslin, B.R. (1975). Studies in the genus *Acacia* (Mimosaceae) – 4. A revision of the series *Pulchellae*. *Nuytsia* 1: 388–492.

Maslin, B.R. (1979). Studies in the genus *Acacia* (Mimosoideae) – 9. Additional notes on the series *Pulchellae* Benth. *Nuytsia* 2: 354–367.

B.R. Maslin

Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Acacia hopperiana sp. nov. (Leguminosae: Mimosoideae)

Ab *Acacia isoneura* Maslin et A.R. Chapman phyllodiis 10-nervibus, glande 10–60 mm supra pulvinum posita, legumine griseo-brunneo, et seminibus obloideo-ellipsoidalibus vel discoideo, differt.

Typus: 44 km north of Murchison River on North West Coastal Highway, Western Australia, 3 August 1974, *B.R. Maslin* 3650 (*holo:* PERTH 00658340; *iso:* CANB, K, MEL – all distributed as *A. isoneura* subsp. *nimia*).

Dense, domed or obconic *shrub* 1–3 m tall and 1–4 m across, occasionally a *tree* to 4 m tall, single- or multi-stemmed at ground level; crown rounded. *Bark* longitudinally fissured, fibrous and dark grey at base of main stems on oldest plants otherwise smooth and dark grey or reddish grey. *Branchlets* erect, straight, red-brown (yellow-orange at extremities), terete but marked with fine, yellow or reddish ribs, silvery sericeous between ribs (hairs short, straight, closely appressed) but normally soon glabrous. *Stipules* inconspicuous, 0.5–1 mm long, scarious, red-brown. *Phyllodes* terete, 6–14 cm long, 0.7–1 mm wide, sub-rigid, straight to shallowly incurved, ascending to erect, light green, appressed-puberulous when young, glabrous or with hairs confined to furrows between nerves when mature; *longitudinal nerves* 10, of uniform width (0.2–0.3 mm wide) and prominence, flat-topped or shallowly convex, each separated by a very narrow, shallow, dark longitudinal furrow; *apex* acute, innocuous to coarsely pungent, dark brown; *pulvinus* 1–2 mm long, often indistinct being encrusted with resin, yellow to light orange, densely appressed-hairy on upper surface. *Gland* inconspicuous, sometimes absent, on upper surface of phyllode 10–60 mm above pulvinus. *Inflorescence* simple, 1 or 2 per axil; *peduncles* 1–2 mm long, often obscured by stamens at anthesis so that spike appears sessile, appressed-hairy; *basal peduncular bracts* caducous, *c.* 1 mm long. *Spikes* 10–20(25) mm long, 4–7 mm wide, sub-densely flowered, golden; *bracteoles* persistent, spathulate, 0.6–0.8 mm long. *Flowers* 4-merous; *calyx* gamosepalous, 1/4–1/2 length of corolla, dark brown, sub-glabrous to moderately puberulous, dissected for 1/4–1/2 its length into triangular lobes; *corolla* 1.4–2 mm long, glabrous; petals obscurely 1-nerved. *Pods* 5–9 cm long, 2–3 mm wide, pendulous, flat, moderately to deeply constricted between seeds and scarcely raised over them, thinly coriaceous–crustaceous to firmly chartaceous, straight to shallowly curved, greyish brown, glabrous or minutely antrorsely strigulose; margins narrow, thickened, yellow to light brown. *Seeds* longitudinal in pod, obloid/ellipsoid or discoid, 2–3 mm long, 1.5–2 mm wide, compressed (*c.* 1 mm thick), glossy, light brown or grey-brown mottled pale yellow, or greyish mottled dark brown; pleurogram fine, U- or V-shaped with a wide opening towards hilar end; areole small, 0.3–0.5 mm long, *c.* 0.2 mm wide; funicle filiform expanded into an obvious, ± conical, folded, white aril which commonly readily detaches from seed.

Selected specimens examined. WESTERN AUSTRALIA: 22.8 km S of Billabong Roadhouse, North West Coastal Highway, *M.E. Ballingall* 1894 (PERTH); Winchester area, 19 Aug. 1972, *C. Chapman s.n.* (PERTH 00656836); 70 km N of Northampton, *R. Hnatiuk* 760473 (PERTH); Coorow, late Nov. 1979, *B. Jack s.n.* (PERTH 00657255); 45 km N of Murchison River, North West Coastal Highway, *B.R. Maslin* 3345 (CANB, G, K, NY, PERTH); Buntine Rock, NNW of Wubin, *B.R. Maslin* 7605 (CANB, K, MEL, PERTH) and *S.D. Hopper* 8337 (BRI, NSW).

Distribution. South-west Western Australia where it occurs between Carnamah and Watheroo, at Buntine Rock (about 20 km north of Wubin), and north of Geraldton from Nerren Nerren Station south to about 10 km north of the Murchison River.

Habitat. North of the Murchison River *A. hopperiana* grows in yellow or reddish sand on plains or in the swales between sanddunes; around Coorow it occurs in yellow sand, and at Buntine Rock it grows in gritty loam on the soil apron that fringes the rock.

Phenology. Flowering specimens have been collected from late July to September. Pods with mature seeds have been collected from mid-November to mid-December.

Conservation status. Not under threat.

Etymology. This attractive new species is named for Stephen D. Hopper, Chief Executive Officer of Kings Park and Botanic Garden and, more importantly, my respected colleague whose scientific research over the past more than 20 years has contributed so much to the understanding of the Western Australia flora.

Affinities. Acacia hopperiana is a member of *Acacia* section *Juliflorae*. It is closely related to A. *isoneura* Maslin & A.R. Chapman (Maslin & Chapman 1999) and care is needed not to confuse the two. Characters shared by these two species include their sericeous, finely ribbed branchlets; long, terete, multi-nerved phyllodes (nerves ± broad and of uniform width and prominence); axillary spikes on very short peduncles; 4-merous flowers with a gamosepalous calyx; and long, narrow, thin-textured pods with ± obscurely mottled seeds. *Acacia isoneura* is most reliably distinguished from *A. hopperiana* by its 8-nerved phyllodes with the (obscure) gland situated 0–3 mm above the pulvinus, reddish brown pods and ellipsoid to obloid-ellipsoid seeds (never discoid). The most reliable way of counting nerve numbers accurately is to section the phyllode and observe the cut ends at x10 mag. or higher. In both species the glands are very obscure but their position is generally indicated by a slight swelling of the phyllode lamina about the gland. Both *A. hopperiana* and *A. isoneura* subsp. *nimia* occur near Buntine, but they appear not to be sympatric; in addition to the characters noted above subsp. *nimia* is distinguished from *A. hopperiana* by its essentially epulvinate phyllodes.

Variation. On plants occurring north of Geraldton the seeds are clearly discoid with the aril readily detaching from the seed. On plants south of Geraldton, however, the seeds are obloid-ellipsoid and the aril does not so readily detach.

Note. Most duplicates of this species were dispatched by PERTH some years ago, identified as *A. isoneura* subsp. *nimia* Maslin & A.R. Chapman.

Acknowledgement

Alex George is thanked for providing the Latin diagnosis and for editorial assistance in preparing this description.

Reference

Maslin, B.R. & Chapman, A.R. (1999). *Acacia* miscellany 19. The taxonomy of some Western Australian species of *Acacia* section *Juliflorae* with 4-merous flowers (Leguminosae: Mimosoideae). *Nuytsia* 12: 469–486.

B.R. Maslin
Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Index to *Acacia* names

New names and combinations are in **bold**; other accepted names in roman; synonyms etc. in *italic*. Page number for the main entry is in **bold**.

CONSERVATION CODES FOR WESTERN AUSTRALIAN FLORA

R: Declared Rare Flora – Extant Taxa (= Threatened Flora = Endangered + Vulnerable)

Taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

X: Declared Rare Flora – Presumed Extinct Taxa

Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

1: Priority One – Poorly Known Taxa

Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

2: Priority Two – Poorly Known Taxa

Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

3: Priority Three – Poorly Known Taxa

Taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.

4: Priority Four – Rare Taxa

Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

Referees for Volume 12

The assistance of referees in providing expert review of papers submitted to *Nuytsia* is gratefully acknowledged. The external referees consulted for Volume 12 are listed below. Each paper was also refereed internally by *Nuytsia* Committee members or other staff members of the Department of Conservation and Land Management.

Bean, A.R.
Conn, B.J.
Craven, L.A.
Dodd, J.
Duretto, M.F.
Everett, J.
George, A.S.
Grimes, J.W.
Hartley, T.G.
Hewson H.J.
Hunter, J.T.
Pedley, L.
Reynolds, S.T.
Ross, J.H.
Walsh, N.G.
Wege, J.A.
Wilson, K.L.

Publication date for *Nuytsia* Volume 12 Number 2: 16 September 1998

Notes for Authors

The aim of *Nuytsia* is to publish original papers on systematic botany with preference given to papers relating to the flora of Western Australia. All papers are refereed and the Editorial Advisory Committee reserves the right to reject papers. Opinions expressed by authors are their own and do not necessarily represent the policies or views of the Department of Conservation and Land Management.

After final acceptance of papers, authors are requested to provide discs readable directly by IBM computer or internet attachments. Wherever possible, the MS-WORD software should be used. Original figures should not be lettered but accompanied by copies indicating lettering. Page proofs will be forwarded to authors for checking. Twenty reprints of each paper will be provided free of charge; no additional copies may be ordered.

Style and layout should follow recent numbers of *Nuytsia*. Within a paragraph two spaces are required between sentences; after colons, semicolons, commas and dashes a single space is required. Italics should be used for formal taxonomic names, from the genus level down to the lowest infraspecific categories, and for collectors' names when citing specimens. Incidental Latin words in the text should be italicized but not the Latin diagnosis.

Title. Should include the family name of the genera or species treated, but not authorities. New taxa should be named if not too numerous. The type of paper (e.g. revision, synopsis) and geographic area of study should be given where appropriate.

Structure of papers. Authors are encouraged to use the conventional structure of scientific papers, especially when a complete study, such as a revision, is being reported.

(1) *Abstract.* Should be indented and commence with bibliographic information. New taxa, combinations and names should be listed with their authorities. The major contents of the paper should be concisely summarized but no additional material given.

(2) *Introduction.* Should give some background information and state the purpose of the paper.

(3) *Methods* or *Materials and methods.* May include the method of drawing up the description from specimens, extent of search for types and discussion of concepts of taxonomic categories.

(4) *Results* or *Taxonomy* or *Taxonomic treatment* or various alternative headings as appropriate to the data being presented in the paper.

(5) *Discussion.* A discussion section should be considered, which would include some or all of the following: a summary of the findings emphasizing the most significant; interpretation of the results in the light of other relevant work; statement of new problems which have arisen; advising of aspects which are to be followed up; suggestion of topics which others might usefully pursue; prediction and speculation.

Short Communications. These are short concise contributions, usually with few or no main headings. They lack an abstract and authors' names and addresses are placed at the end.

Headings. All headings should be mainly in lower case, major headings centred and bold, secondary headings (where required) left-justified and bold, and minor headings left-justified and italicized.

Keys. May be either indented (e.g. Nuytsia 11: 94) or bracketed (e.g. Nuytsia 11: 55–56). Indented keys involving more than nine levels of indentation should be avoided. Where a key is indented, tabs should be used and not space bars.

Species treatments. Use of certain named paragraphs, or sets of paragraphs, for matter following the descriptions is encouraged. The desired sequence and examples of commonly used headings are shown below. Italicized headings should be followed by text on the same line.

(1) Taxon name (in bold) and authority. For previously published taxa this should be followed by the reference, nomenclatural synonyms (if any) and *Type:* heading with full type details.

(2) Other synonyms with their type details, significant manuscript or phrase names. Recent papers should be consulted for examples of an appropriate format for citing synonyms.

(3) Latin diagnoses (for new taxa – not indented).

(4) *Typus:* (for new taxa – not indented).

(5) English description (indented).

(6) *Other specimens examined* or *Selected specimens examined* as appropriate. The number of specimens cited for each taxon should not exceed 20. Western Australian specimens should be cited first followed by any from other states in the order: Northern Territory, South Australia, Queensland, New South Wales, Victoria, Tasmania. Within each region, the specimens cited should be placed in alphabetical order according to the collectors' surnames. For each specimen the order of the details given should be as follows: locality, date, collector's name (in italics) and number, herbarium (in brackets).

(7) *Distribution.*

(8) *Habitat.*

(9) *Phenology* or *Flowering period.*

(10) *Conservation status.* Department of Conservation and Land Management Conservation Codes for Declared Rare and Priority Flora should be cited for any endangered or rare Western Australian plants.

(11) *Etymology.*

(12) *Typification.*

(13) *Affinities.*

(14) *Notes* or *Discussion* or *Comments.*

Threatened species. The Department of Conservation and Land Management has a policy not to publish precise locality data for threatened species. When describing threatened taxa authors are therefore requested to use generalized localities accompanied by the bracketed statement [precise locality withheld].

Standard abbreviations. When abbreviations are used, the following standards should be followed.

(1) Author abbreviations. Follow Brummitt, R.K. & Powell, C.E. (1992). "Authors of Plant Names." (Royal Botanic Gardens: Kew.).

(2) Book titles. These should not be abbreviated in the references but any literature citations in the text should follow Green, J.W. (1985). "Census of the Vascular Plants of Western Australia." 2nd edn. pp. 20–24. (Department of Agriculture: Perth.). A more complete list of book title abbreviations is given in Stafleu, F.A. & Cowan, R.S. (1976–83). "Taxonomic Literature." 2nd edn. (Bohn, Scheltema & Holkema: Utrecht.), but capital initial letters need to be used in *Nuytsia*.

(3) Journal titles. Follow Lawrence, G.H.M. *et al.* (1968). "B-P-H. Botanico-Periodicum-Huntianum." (Hunt Botanical Library: Pittsburgh.)

(4) Dates and directions. Generally should not be abbreviated except under the *Specimens examined* section. In that section, dates should be written in full only if they have less than five letters (e.g. July), otherwise should be shortened to the first three letters and a stop (e.g. Oct.), while compass directions should be abbreviated to capital letters with no stops (e.g. N and SSW).

(5) Other abbreviations. Standard abbreviations for measurements (e.g. mm), Latin abbreviations (e.g. *c.*, *nom. illeg.*), mountains and roads (e.g. Mt Koscuisko, Brooke Rd) are used in *Nuytsia*. Other abbreviations, especially ones that are ambiguous (e.g. Pt), should be avoided.

Figures. Numbers should follow a single sequence including maps.

References. Citation of references in the text should give the author's surname and date (e.g. Smith 1963) and full details should be given in the reference section. This format is also recommended to replace the traditional abbreviations for references listed under taxonomic names, for example using Benth. (Bentham 1878: 234) rather than Benth., Fl. Austral. 7: 234 (1878).