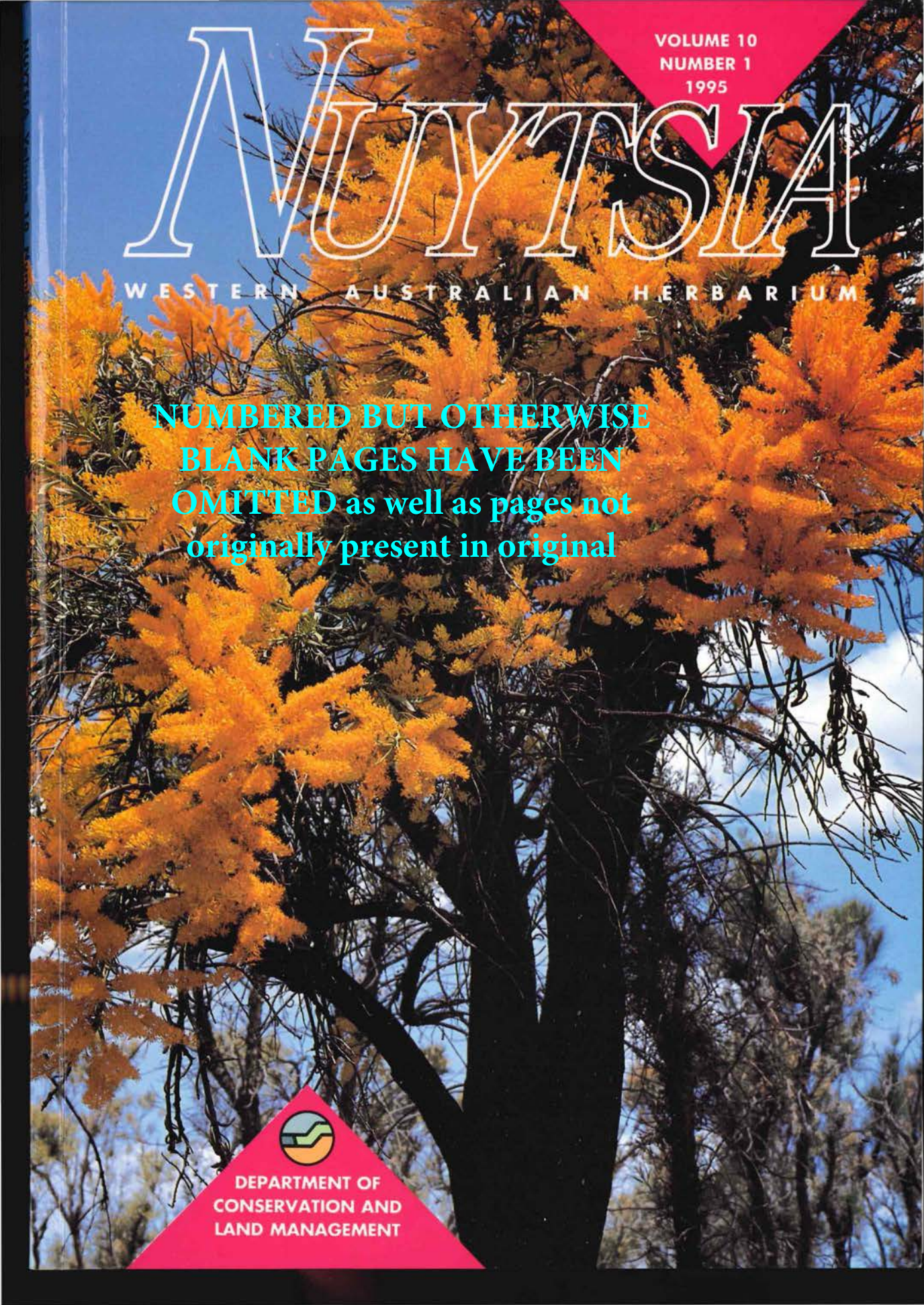
VOLUME 10
NUMBER 1
1995

NUYTSIA

WESTERN AUSTRALIAN HERBARIUM



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DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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ISSN 0085-4417

Print Post Approved PP665002/00003

NUYTSIA

VOLUME 10 NUMBER 1 1995

Western Australian Herbarium
Department of Conservation and Land Management
Como, Western Australia

NUYTSIA

Published by the Department of Conservation and Land Management, PO Box 104, Como, Western Australia 6152.

All papers should be submitted to the Editor.

The journals *Nuytsia* and *CALMScience* are products of the Science Publications Unit which links the work of two CALM divisions: Science and Information, 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.

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 ISSN 0085-4417

Department of Conservation and Land Management, Western Australia

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Western Australian Herbarium,
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Cover

Nuytsia floribunda (Labill.) R. Br. ex Fenzl (Loranthaceae) - the Western Australian Christmas Tree is one of the few aborescent 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

Hybrid between *Eucalyptus tetraptera* and *Eucalyptus stoatei* from Jerdacuttup, Western Australia

E.M. Bennett

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Abstract

E.M. Bennett. Hybrid between *Eucalyptus tetraptera* and *Eucalyptus stoatei* from Jerdacuttup, Western Australia. Nuytsia 10 (1): 1-5 (1995). An horticulturally attractive hybrid between *Eucalyptus tetraptera* Turcz. and *Eucalyptus stoatei* C. Gardner from near Jerdacuttup, Western Australia, is described. It is proposed this be named *Eucalyptus x stoataptera* E.M. Bennett.

Introduction

This spectacular small tree or medium sized mallee, a hybrid between *Eucalyptus tetraptera* Turcz. and *Eucalyptus stoatei* C. Gardner, was first seen by the author in 1980 when living in the Ravensthorpe area. After leaving Ravensthorpe in 1981 only a few field trips were made back to the area, unfortunately these were when the hybrid was not flowering. However fruiting material was collected for the Kings Park nursery and seed has been germinated. In late August 1991 the area was again visited specifically to collect the plants in full flower. Excellent flowering and fruiting collections were made.

Eucalyptus x stoataptera E.M. Bennett (Figure 1)

Arbor mediocris. Folia oblonga, 9-11 x 3-3.5 cm longa. Flos solitarius, pedunculus deorsum curvatis, 30-35 mm longus, 10-20 mm latus. Alabastrum breviter pedicellatum, pendus, quadrialatus; operculum conicum; stamine inflexa. Fructus pendens, ruber fuscescens, quadrialatus.

Typus: 18.8 km east along Upper Jerdacuttup Road, (just west of Mason Bay Road) between Ravensthorpe and Hopetoun, *E.M. Bennett* 5593, 6th October 1991 (holo: PERTH).

Upright *tree* to 4 m tall with dense canopy; bark smooth, dark grey and light grey. *Young stems* angular, mature stems round in section. *Adult leaves*, petiolate, alternate, oblong, apiculate, 9-11 x 3-3.5 cm, concolorous, glossy, thick, reticulation dense, broken with scattered, obscure oil glands. *Flowers* solitary; peduncle downcurved, angular at base becoming flattened beneath calyx, 30-35 mm

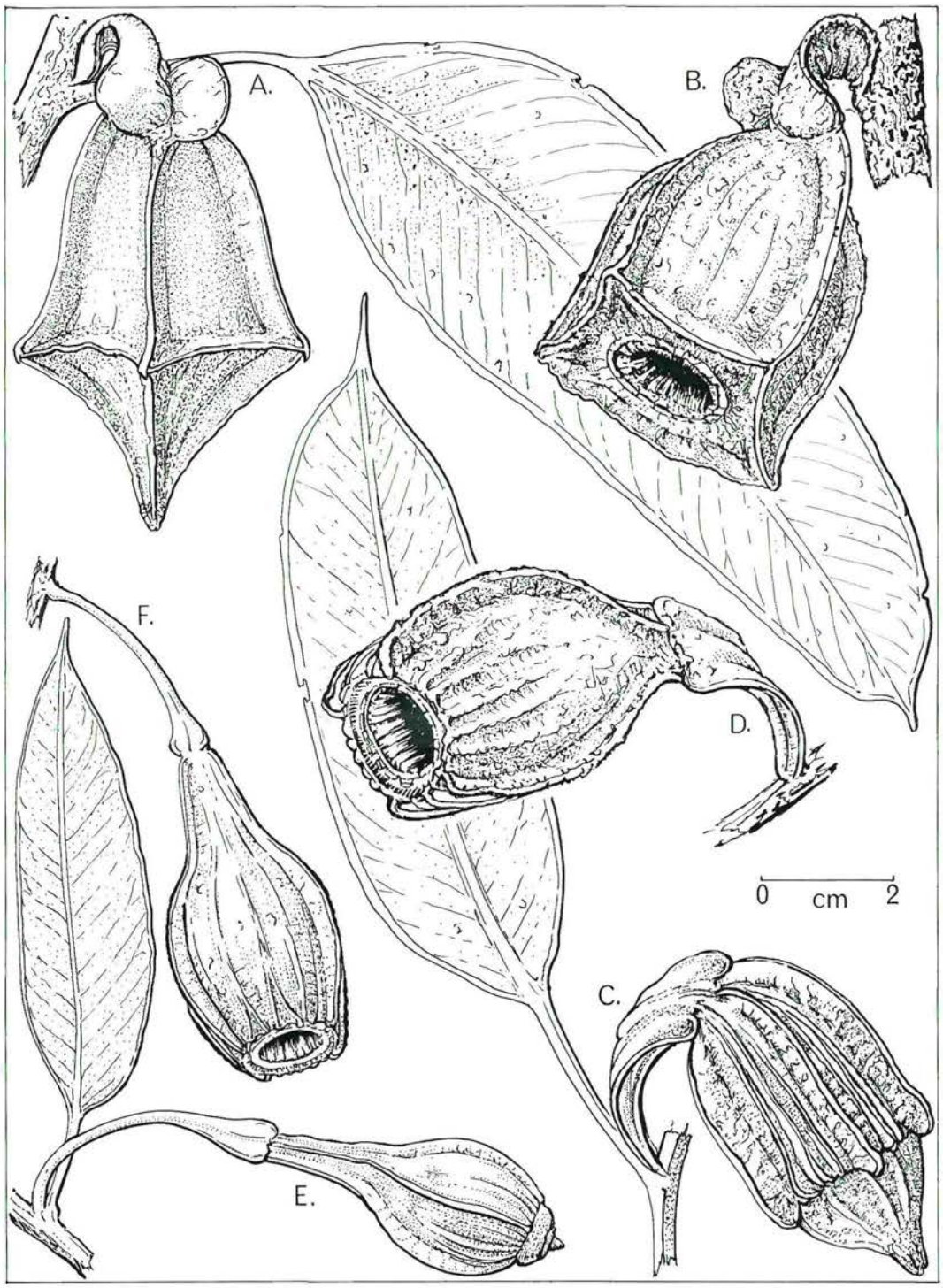

Figure 1. A-B *Eucalyptus tetraptera* A - bud and leaf, B - fruit. C-D *Eucalyptus stoataptera* C - bud and leaf, D - fruit. E-F *Eucalyptus stoatei* E - bud and leaf, F - fruit. Illustrations by M. Andrews.

long. *Buds* very shortly pedicellate, pendulous, red, square in cross section with the corners extended into wings, coarsely 2-4-ribbed between wings, 4.2-4.8 cm x 2.4-2.8 cm; operculum conical; stamens strongly inflexed in bud, ± inflexed in flower, 4-8 mm long; anthers versatile, sub-basifixed, ovoid, 1.5 mm long opening in longitudinal slits; flowers apricot. *Fruit* shortly pedicellate, pendulous, red becoming brown with age, square in cross section, 3.6-5.8 cm x 2.5-3.2 cm with 4 wings, each 5-9 mm broad with 1-5 ribs between, rim 5.7 mm thick, disc descending; valves 3 or 4.

Flowering period. August-September

Distribution. Western Australia in the Eyre Botanical District of the South-west Botanical Province.

Habitat. In sandy-loam soil where the distribution of *Eucalyptus tetraptera* and *Eucalyptus stoatei* overlap. Grows in low to medium mallee shrubland with *Eucalyptus tetraptera, Eucalyptus stoatei* and *Eucalyptus kessellii* Maiden and Blakely the common mallee species.

Conservation status. A restricted hybrid known from along a road verge adjoining agricultural land. The hybrid is listed as Priority Two in the Declared Rare and Priority Flora list for WA, 1992. It has the category of 2V of Briggs and Leigh (1988).

Other specimens examined. WESTERN AUSTRALIA: Hopetoun, west of Swamp Road, on Jerdacuttup Road, *E.M. Bennett* 1980 (PERTH); Jerdacuttup, *E.M. Bennett,* September 1980 (PERTH); 12 miles along Jerdacuttup Road from Ravensthorpe, *V. Klaplake* S954, 29.12.1969 (KPBG).

Etymology. As it is certainly a hybrid between these two species a combination of both the parents' names is used.

Discussion

This hybrid has many of the stunning features of both parents. It has the upright habit of *Eucalyptus stoatei* but the large, glossy leaves of *Eucalyptus tetraptera*. The stamen colour is apricot, between the yellow of *E. stoatei* and pink/red of *E. tetraptera*, again a colour not common in eucalypts and is offset by the bright red calyx characteristic of both parents. There were several plants of the hybrid of varying age growing throughout the area. Currently seedlings growing at Kings Park are a few years away from flowering.

Below is tabled the comparisons between the two parents and the hybrid.

Comparison table between *Eucalyptus stoatei, Eucalyptus tetraptera* and *Eucalyptus x stoataptera*

		Species		
		E. tetraptera	**E. stoatei**	**E. x stoataptera**
Habit		low, spreading mallee	upright tree	upright tree
Stems				
Young		angular	angular	angular
Mature		angular	round	round
Leaves				
Petiole	length	25-56 mm	13-20 mm	22-30 mm
	width	2.5-5 mm	1.5-2 mm	2-3 mm
Lamina	length	115-185(250) mm	55-90 mm	90-110 mm
	width	30-52(70) mm	17-27 mm	30-35 mm
	shape	lanceolate	elliptic/oblong	oblong/ obovate
Apex:	shape	apiculate	mucronate	apiculate
	size	10-12 mm	3-6 mm	5-11 mm
Bud				
Operculum	length	12-32 mm	10-12 mm	15-20 mm
	width	22-24 mm	10-12 mm	15-24 mm
	ribs	4	12-14 at base	0
Calyx	length	36-40 mm	40-48 mm	29-35 mm
	width	24-28 mm	17-19 mm	24-26 mm
	depth of wing	5-8(12) mm	-	1-3(5) mm
	rib number	0	12-17	2-4
	depth of ribs	-	1-3 mm	0.2-1.2 mm
Peduncle	length	18-28 mm	16-57 mm	30-35 mm
	width	12-34 mm	5-6 mm	10-20 mm
	appearance	tightly recurved	drooping	recurved
	TS	V-shaped	angular	nearly flat
Pedicel	length	0	(8)12-15mm	short, not readily seen
Stamens	colour	pink	yellow	apricot
	length	12-14 mm	9-11 mm	12-15 mm
	anther	1.5 mm	1-1.25 mm	1.5 mm
Fruit				
Calyx	length	43-65 mm	40-50 mm	36-58 mm
	width	26-40 mm	25-27 mm	25-32 mm
	major wings	4	0	4
	depth of wing	8-10 mm	-	5-9 mm
	number of ribs	0	12-17	1-5
	depth of ribs	-	1.5-3.5 mm	0.5-1.5
	thickness	11-20 mm	1-3 mm	5-7 mm

Peduncle	length	12-17 mm	30-57 mm	30-42 mm
	width (at apex)	19-20 mm	6-10 mm	15-19 mm
Pedicel	length	0	10-17 mm	6-8 mm
Seeds				
Colour		black	black	black
Dorsal side		shallow reticulations	smooth or shallow reticulations	shallow reticulations
Ventral side		ribs ascending to hilum	ribs ascending to hilum	ribs ascending to hilum
Cotyledons				
Shape		bilobed	bilobed	bilobed
Length		8.5-9 mm	9 mm	9 mm
Width		4.5 mm	3.5 mm	4 mm
Veining		3 prominent	3 ± prominent	3 prominent
Colour of undersurface		red	red	red
Flowering		Aug.-Dec.	Dec.-Feb.	Aug.-Sept.

NOTE: All measurements of bud and fruit width exclude the wing.

The above illustrates that the hybrid, *Eucalyptus x stoataptera* is sufficiently different to distinguish it from the two parents.

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Eucalyptus series *Preissianae* (Myrtaceae), a new series of Western Australian eucalypts and the description of a new subspecies in the series

M.I.H. Brooker and A.V. Slee

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Abstract

Brooker, M.I.H. and Slee, A.V. *Eucalyptus* ser. *Preissianae* (Myrtaceae), a new series of Western Australian eucalypts and the description of a new subspecies in the series. Nuytsia 10 (1): 7-13 (1995). A new taxon, *Eucalyptus* ser. *Preissianae*, comprising subser. *Pluriloculares* Blakely and *Glandulares* Blakely, and a new taxon, *E. preissiana* subsp. *lobata* are described, accompanied by illustrations and a distribution map.

Introduction

Eucalyptus preissiana Schau. was published in 1844 and *E. megacarpa* F. Muell. in 1860. Both were placed in the heterogeneous subseries *Robustae* by Bentham (1867), a taxon apparently named from the large flowers, thick pedicels and thick leaves. While the species were placed in succession, Bentham made no mention of affinities.

Maiden (1913) recognized the natural affinity of *E. preissiana* with *E. megacarpa* (and *E. cosmophylla* F. Muell. and *E. globulus* Labill. which must be disregarded in this context), following which, Blakely (1934) placed the two species in consecutive monotypic subseries, *Pluriloculares* and *Glandulares* respectively. Blakely was apparently unaware of the publication of *E. coronata* Gardner in 1931, although this species was included in a reprinting of Blakely's "Key to the Eucalypts" in 1955 in subser. *Glandulares* with *E. megacarpa.*

The diagnoses for the subseries *Pluriloculares* and *Glandulares* contrast only the characters habit and bud shape. Blakely's assertion that the staminal filaments of *E. megacarpa* are glandular with no corresponding comment regarding *E. preissiana* is misleading as all four species of the series have glandular filaments. Nevertheless, the subseries indicate the true division in the series based on the more reliably diagnostic characters seed colour and shape, flower colour and leaf ontogeny as shown below.

While Blakely's recognition of the affinity between the two species has been upheld by all subsequent authors, Carr & Carr (1962) demonstrated his incorrect placement of them in section *Macrantherae* and that they belonged to the renantherous group of eucalypts (*Monocalyptus* in Carr & Carr's terminology, a group generally referred to as the monocalypts).

The subsequently published *E. aquilina* Brooker (1974) also belongs with *E. preissiana, E. coronata* and *E. megacarpa* and the four species constitute a taxonomic series. This was recognized by Pryor & Johnson (1971) who segregated the only three species published to the time in an extra-codical series *Preissianae*.

By 1971 only twelve Western Australian *Monocalyptus* species had been published. In the following fifteen years eleven more species were published. Some of these obviously did not fit into any known classification. Consequently, a revised, necessarily enlarged classification for the Western Australian monocalypts was required. This was provided informally by Ladiges, Humphries & Brooker (1986) as result of their cladistic analyses of all the species involved.

The system comprised two sections divided ultimately into twelve taxonomic series (some by implication, e.g. the monotypic subsection *Patens* consisting of *E. patens* is not divided into taxa between subsection and species), one of which was the "*Preissianinae*". The series was split into two subseries, "*Coronatitae*" (*E. megacarpa, E. coronata* and *E. aquilina)* and *"Preissianitae"* (*E. acies* and *E. preissiana*).

We now reject the alliance in Ladiges, Humphries & Brooker of *E. acies* with *E. preissiana* on the grounds of its (1) reflexed not erect inflorescences, (2) 7- not 3-flowered inflorescences, (3) much smaller buds and fruits, (4) non-glandular filaments of the stamens, (5) incurved not longitudinal dehiscence slits of the anthers, (6) annular not lobed disc of the fruit and (7) number of valves of the fruit predominantly 3 or 4 not 5-7, and agree with the suggestion of Ladiges (pers. comm.) that *E. acies* might be better placed at the base of the clade.

Of the four closely related species, *E. preissiana* is the most divergent, with *E. megacarpa* also somewhat distant from the closely related pair, *E. coronata* and *E. aquilina*.

Chippendale (1988) placed the *preissiana* group of species with the monocalypts in ser. *Diversiformes*. This series is heterogeneous and bears no relationship to the classification published two years previously by Ladiges *et al.* and, as constituted, should be disregarded.

In this paper we formally establish the taxonomic series comprising the *preissiana* group of species and recognize the natural division within it.

Seedling studies

Without reference to other species, Maiden (1913) remarked that the juvenile foliage of *Eucalyptus megacarpa* was not "glandular-hairy" and later (1930) referred to the "stellate" hairs of the juvenile leaves of *E. preissiana*.

In the study by Ladiges *et al.* (1987) the seedlings of all the species concerned were assessed for various morphological features. The presence or absence of verrucae on the seedling stems was not

determined, but *E. preissiana* was considered unique as the only species with hairs on the cap cells of emergent oil glands.

In a smaller seedling study undertaken for the purposes of this paper, we have found "warts" or "hairs" on the seedling stems of all of the above species. It was confirmed that *E. preissiana* had the indumentum described by Ladiges *et al.* (Figure 1A). Verrucae were found to be poorly developed in *E. megacarpa* (Figure 1B), but in *E. aquilina* (Figure 1C) and *E. coronata*, they show greater development in having a distinct apical group of cells, obviously an incipient condition of the emergent oil glands with elongated apical cells of *E. preissiana.*

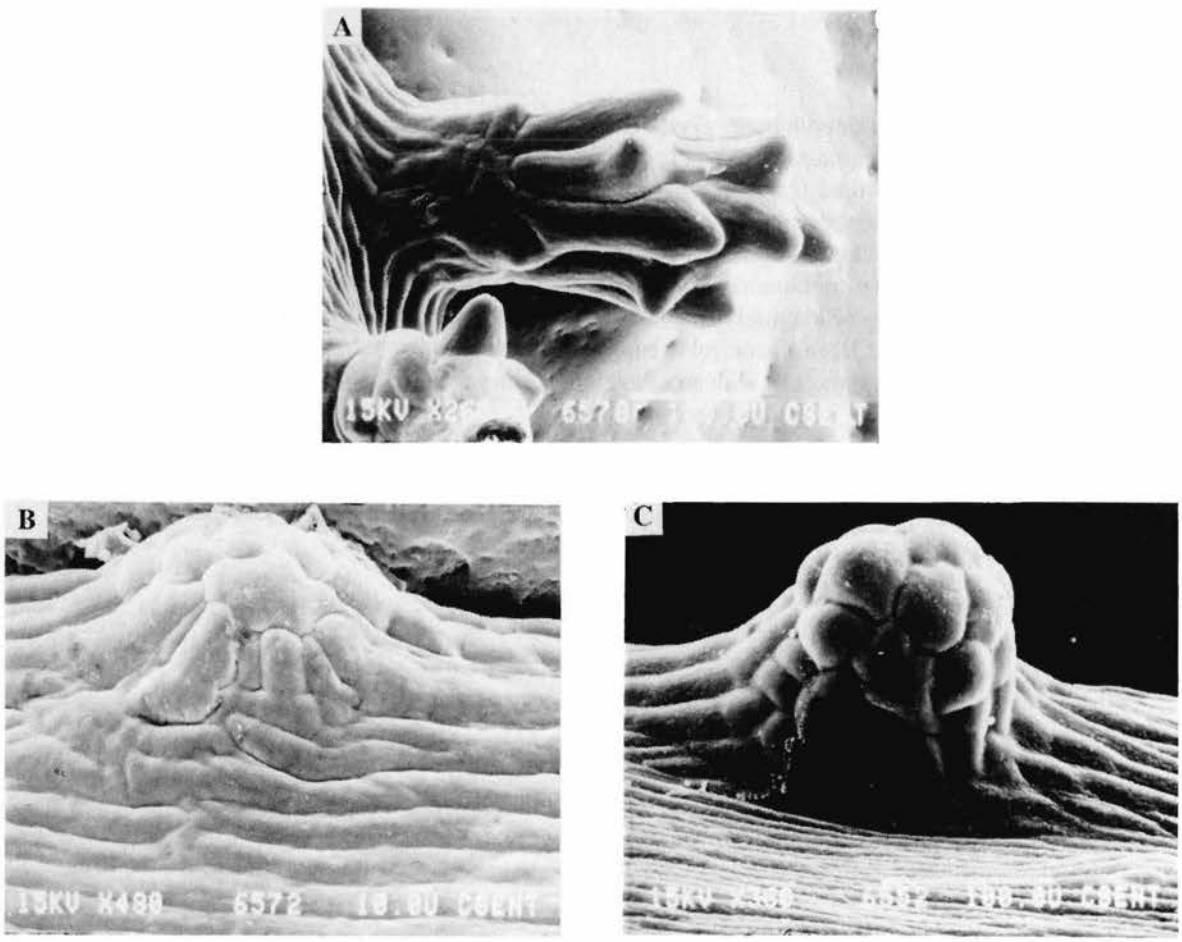

Figure 1. A. Typical emergent oil gland on the seedling stems of *E. preissiana* subsp. *preissiana* (*Brooker* 8932 (x260)); B. Typically well-developed wart on seedling stem of *E. megacarpa* (*Brooker* 5032 (x480)); C. Typical wart on seedling stem of *E. aquilina* (*Brooker* 7495 (x360)).

Taxonomy

Eucalyptus ser. **Preissianae** Pryor & Johnson ex Brooker & Slee, *ser. nov.*

Arbores vel frutices cortice laevi. Caules plantularum verrucosi vel pubescentes. Folia plantularum sessilia, opposita per 5-10 nodos. Inflorescentiae axillares, 3-floribus, in pedunculis robustis, complanatis. Alabastra fructusque magni. Filamenta staminum glandulifera. Antherae rimis longitudinalibus dehiscentes. Fructus plus minusve sessili, disco lobato et 4-7 valvis.

Informal *E.* ser. *Preissianae* Pryor & Johnson, "Classification of the Eucalypts" p. 39 (1971).

Informal *E.* ser. *Preissianinae* Ladiges, Humphries & Brooker, Aust. J. Bot. 35: 264 (1987), *pro parte maxima.*

E. ser. *Diversiformes* Blakely *sensu* Chippendale "Flora Australia" p. 123 (1988).

Type: E. preissiana Schauer

Trees or *mallees* with smooth bark. *Seedling stems* warty or with cap cells developing into hairs. *Seedling leaves* sessile, remaining opposite for 5-10 pairs, flat or undulate at the edges, broadly elliptical, non glaucous. *Adult leaves* alternate, petiolate, lanceolate to falcate, or remaining opposite to subopposite, shortly petiolate, elliptic to broad-lanceolate. *Inflorescences* axillary, unbranched, erect or pendulous; peduncles stout, flattened, 3-flowered. *Buds* ± sessile, large, smooth or ribbed, with a single operculum. *Stamens* oblique or inflexed, all fertile; filaments glandular. *Anthers* dorsifixed, strongly versatile, opening by longitudinal, non-confluent slits. *Ovules* in 2 vertical rows. *Flowers* white or yellow. *Fruit* ± sessile, large, obconical or cupular; disc broad, shiny red-brown when fresh, annular or obliquely descending, smooth or with gross lobes over the valves; valves 4-7. *Seed* black or brown, D-shaped or subpyramidal, with large, terminal, hilum.

Distribution. Western Australia. Coastal and subcoastal from south-east of Perth (*E. megacarpa*) almost to Thistle Cove east of Esperance (*E. aquilina*), including Sandy Hook Island in Esperance harbour. (Figure 2)

Key to subseries

1. Seed black, highly irregular, somewhat pyramidal; crown of lanceolate or falcate adult leaves; seedling stems warty, but lacking hairs; flowers white ..... subseries *Glandulares*
1. Seed brown or red-brown, regularly D-shaped and flattened; crown of elliptical to broadly lanceolate, juvenile or intermediate leaves; seedling stems with hairs on the cap cells of emergent oil glands; flowers yellow ..... subseries *Pluriloculares*

Eucalyptus subser. *Glandulares* Blakely, "Key Eucalypts" 35 (1934)

Type: E. megacarpa F. Muell.

Three species endemic to south-west Western Australia.

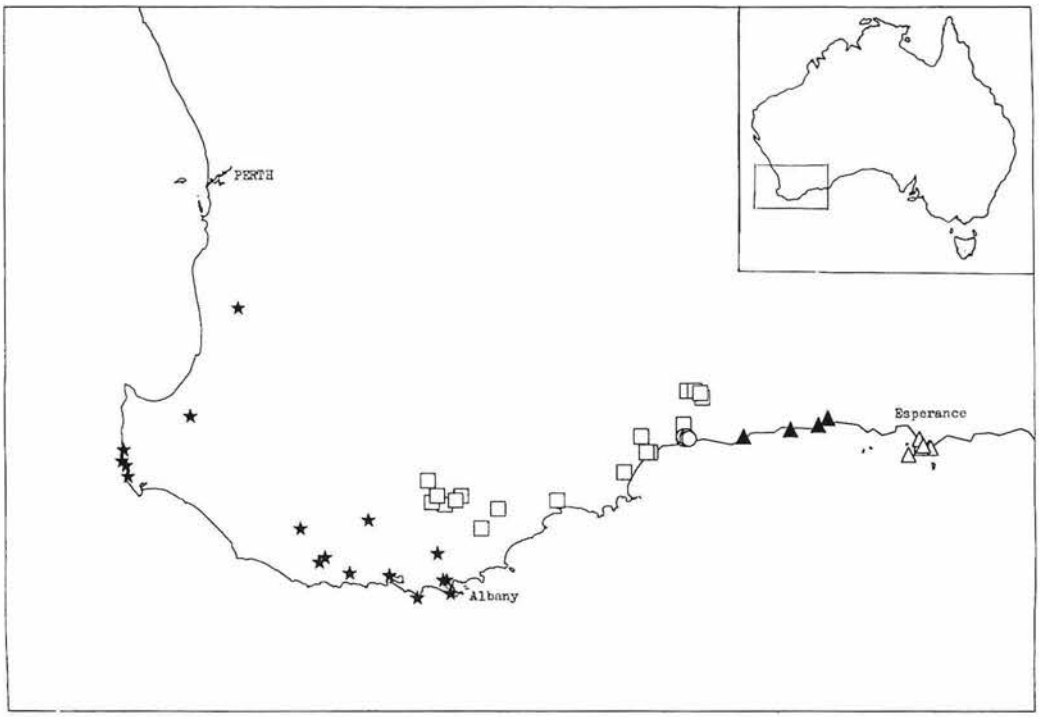

Figure 2. Distribution of *E.* ser. *Preissianae*. *E. megacarpa* (stars), *E. preissiana* subsp. *preissiana* (squares), *E. coronata* (circles), *E. preissiana* subsp. *lobata* (solid triangles), *E. aquilina* (open triangles).

Key to species

1. Buds and fruit strongly ribbed ..... *E. coronata*
1. Buds and fruit smooth
   2. Fruit with gross, protruding lobes of the disc ..... *E. aquilina*
   2. Fruit with annular or inward-sloping disc, lobes lacking or inconspicuous ..... *E. megacarpa*

For full descriptions of these species see Brooker & Kleinig (1990: 94-96).

Eucalyptus subser. *Pluriloculares* Blakely, "Key Eucalypts" 35 (1934).

Type: E. preissiana Schauer.

A monotypic subseries.

A new subspecies in *E. preissiana*

Eucalyptus preissiana Schau. is a well-known, small eucalypt occurring in Western Australia from the Stirling Range eastwards almost to Esperance. With its low, thin-stemmed sprawling habit and large yellow flowers, it is a favourite ornamental (Brooker & Kleinig 1990).

Recent collections of *E. preissiana* in the eastern part of its distribution have brought to light the distinctive fruits of the form growing from the Starvation Boat Harbour road eastwards to Quagi Beach, east of Stokes Bay National Park. The fruits with their extreme, protruding lobes of the disc are indistinguishable from those of *E. aquilina* Brooker. Morphology is otherwise that for *E. preissiana* including seedling indumentum (see above) and persistence of juvenile/intermediate foliage on the mature plant. In addition, these plants in their easterly distribution become more depauperate. Along the road to Quagi Beach they grow in a pure stand on limestony dunes and barely exceed one metre in height. The flowers and fruit are held prominently at the tops of the shrubs. We treat this eastern form as a new subspecies.

Key to taxa

1. Fruit with inward-sloping disc, lacking lobes or lobes small and below rim level ..... *E. preissiana* subsp. *preissiana*
1. Fruit with gross, protruding lobes of the disc ..... 1. *E. preissiana* subsp. *lobata*

1. *Eucalyptus preissiana* subsp. ***lobata*** Brooker & Slee, *subsp. nov.* (Figures 1,2,3)

A subspecie typica habitu minori et fructibus lobis disci magnis protrusis differt.

It differs from the typical subspecies by the lower habit and the fruit with large protruding lobes to the disc.

Typus: 9.2 km along Farrell's Road from highway towards Quagi Beach, Western Australia, (33° 47'S, 121° 17"E), 25 November 1991, *M.I.H. Brooker* 10909 & *P.M. Grayling* (holo: CANB; iso: AD, NSW, PERTH).

Specimens examined. WESTERN AUSTRALIA: Fanny Cove, 27 Oct. 1963, *T.E.H. Aplin* 2650b (PERTH); *c.* 5 km south of Springvale Road on Starvation Boat Harbour road, 11 Apr. 1985, *M.I.H. Brooker* 8933 (CANB, MEL, NSW, PERTH); type locality, 25 Nov. 1991, *M.I.H. Brooker* 10910, 10911 (CANB); 14 km east of mouth of Oldfield River, 12 Oct. 1968, *Hj. Eichler* 20202 (AD, CANB, PERTH).

Distribution and habitat. The new subspecies is known only from the vicinity of Starvation Boat Harbour east to Quagi Beach west of Esperance (Figure 1). The exact distribution has not been mapped. At the latter site it occurs notably on limestone rises north of the beach. A collection from 15 km south-west of Cape Riche (*Brooker* 6691, CANB) has fruit with a ± horizontal disc and lobes quite pronounced and is morphologically intermediate between the type form and subsp. *lobata.*

Conservation status. Possibly rare, but in need of further survey. It has been sampled once within Stokes Bay National Park, at Fanny Cove (*Aplin* 2650b). A Priority 2 taxon in the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Flowering period. Unknown, but a few plants were in flower in November 1991. *Eichler* 20202, collected in October, has a single flower.

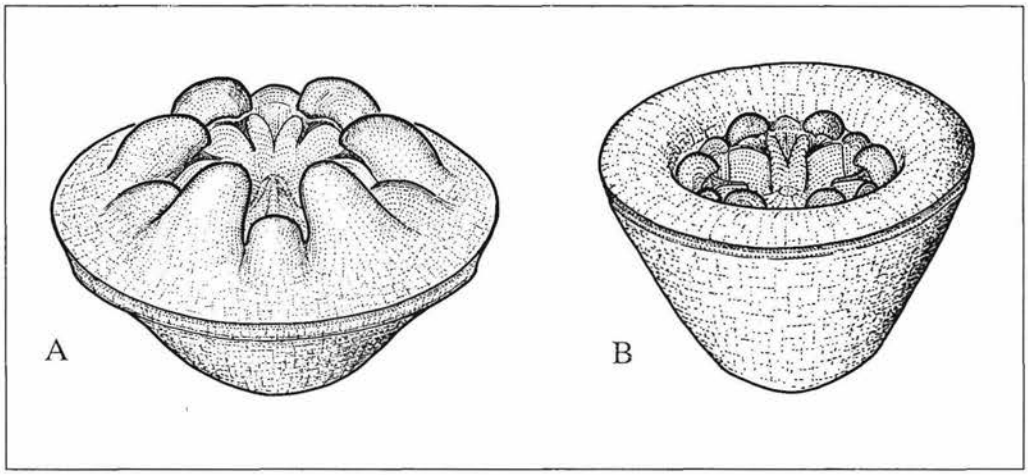

Figure 3. Fruit of A - *E. preissiana* subsp. *lobata* (*Brooker* 10909, type, near Quagi Beach) and B - *E. preissiana* subsp. *preissiana* (*Brooker* 8034, Stirling Range).

Etymology. From the Latin *lobatus* - lobed, referring to the lobes of the disc.

Notes. E. preissiana (type from Cape Riche) was discussed by Mueller in "Eucalyptographia" (1879). He gave the distribution as "extending as least as far as Stoke's Inlet (Maxwell)" without alluding to any pecularities of this eastern form.

Acknowledgements

We are grateful to William Archer for drawing our attention to these plants, to Kevin Thiele for the illustrations of the fruits, and to Celia Miller for assistance with preparation of material for the scanning electron microscopy.

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Acacia Miscellany 10. New taxa and notes on previously described taxa of *Acacia*, mostly section *Juliflorae* (Leguminosae: Mimosoideae), in Western Australia

R.S. Cowan and B.R. Maslin

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Abstract

Cowan, R.S. and B.R. Maslin. *Acacia* Miscellany 10. New taxa and notes on previously described taxa of *Acacia*, mostly section *Juliflorae* (Leguminosae: Mimosoideae), in Western Australia. Nuytsia 10 (1): 15-62 (1995). Coincident to clarifying the delimitation of several species described earlier, 20 new Western Australian taxa are proposed and one new combination made: *A. ampliata* Cowan & Maslin (related to *A. jamesiana* Maslin), *A. coolgardiensis* subsp. *effusa* Cowan & Maslin and subsp. *latior* Cowan & Maslin, *A. cuthbertsonii* subsp. *linearis* Cowan & Maslin, *A. cylindrica* Cowan & Maslin (related to *A. heteroneura* Benth.), *A. demissa* Cowan & Maslin (related to *A. quadrimarginea* F. Muell.), *A. desertorum* subsp. *nudipes* Cowan & Maslin, *A. epedunculata* Cowan & Maslin (related to *A. heteroneura* Benth.), *A. gibbosa* Cowan & Maslin (tenuously related to *A. websteri* Maiden & Blakely), *A. heteroneura* var. *petila* Cowan & Maslin, var. *prolixa* Cowan & Maslin and var. *jutsonii* (Maiden) Cowan & Maslin, *comb. et stat. nov.* (based on *A. jutsonii* Maiden), *A. incongesta* Cowan & Maslin (related to *A. neurophylla* W. Fitzg.), *A. levata* Cowan & Maslin (related to *A. cuthbertsonii* Luehm.), *A. neurophylla* subsp. *erugata* Cowan & Maslin, *A. oncinophylla* subsp. *patulifolia* Cowan & Maslin, *A. repanda* Cowan & Maslin (related to *A. ephedroides* Benth.), *A. singula* Cowan & Maslin (related to A. multispicata Benth.), *A. stereophylla* var. *cylindrata* Cowan & Maslin, *A. xanthocarpa* Cowan & Maslin (of unknown affinity), and *A. yorkrakinensis* subsp. *acrita* Cowan & Maslin. In addition, lectotypifications are recorded for the following names: *A. coolgardiensis* Maiden, *A. ephedroides* Benth., *A. jutsonii* Maiden, *A. multispicata* Benth., and *A. sessilispica* Maiden & Blakely.

Introduction

This contribution continues our series of papers to validate names and to record selection of lectotypes in advance of their publication in the "Flora of Australia".

Methods

Arrangement of the text. The text is comprised of descriptions of new taxa, discussions and notes on previously described taxa and lectotypifications of names. The binomials representing individual taxa, as well as those used to designate informal groupings of taxa, are arranged in alphabetical order. Taxa within the three informal groups that are recognized here, namely, the *A. heteroneura* group, the *A. multispicata* group and the *A. neurophylla* group, are also ordered alphabetically.

Taxonomic rank. It is perhaps useful to comment on our approach to the application of rank to the taxa described here and in forthcoming issues of the journal, as well as in the "Flora of Australia" treatment of *Acacia*. Absolute consistency in this regard is not possible because the assignment of rank is largely a subjective exercise dependent on ones knowledge of the relevant taxa. In a group of such magnitude as the genus *Acacia* the problem is compounded. Our basic premise is that taxa are biological entities with an evolutionary history; they should exhibit geographic integrity and have more or less distinct morphologic discontinuities. Assessment of the importance of these morphologic differences contributes heavily to our determination of rank.

For a population or populations to be accorded species recognition we would wish there to be one or more distinct features in both the vegetative and reproductive systems. However, for practical reasons which are noted below we have not always been able to realize this ideal. We have used the categories of subspecies and variety to call attention to degrees of distinctness of populations within the species. Furthermore, we have attempted to indicate variation within taxa by recognizing informal entities, referred to as variants. The reason for not formally recognizing these variants is the very considerable time and effort, especially in field studies over long distances, that is required to distinguish and rank theentities reliably. Moreover, recognition of informal variants identifies research opportunities for future botanists.

Because the determination of rank has its nomenclatural and bibliographic consequences and because we preferred not to change current nomenclature any more than absolutely necessary, we have taken a conservative approach. This is evinced by: (1) the rank we have accorded new taxa (our taxa might be treated at a level higher by some workers); (2) the fact that we have commonly adopted the rank and names used by earlier authors, particularly for species; and (3) our having recognized variants, rather than giving these a formal rank.

Typification. Our approach to typification is discussed elsewhere (Maslin & Cowan, in press).

Conservation status. We have assessed conservation status of taxa included in this treatment using the criteria outlined on page 141 of this journal.

Measurements. All measurements and observations were made from dried specimens unless stated otherwise.

Descriptions and notes

1. Acacia ampliata Cowan & Maslin, *sp. nov.*

Frutex vel arbuscula 2-5 m alta, cortice cinereo longitudinaliter et subtiliter fissurato. Ramuli subteretes, modice flexuosi, appresso-puberuli. Stipulae caducae. Phyllodia lineari-elliptica ad linearia,

acuta, pulvino 2-2.5 mm longo, appresso-puberulo, laminis 8-19 cm longis, 3-6 mm latis, rigidis, ascendentibus, rectis vel plerumque incurvatis, obscure appresso-puberulis sed glabrescentibus, subglaucis, in quoque superficie venis secondariis numerosis, arcte parallelis, nervo medio conspicue elevato, nervo marginali late expanso; glande obscura, laminae prope basem. Pedunculi 1 vel 2 in quoque axilla, 3.5-9 mm longi, appresso-puberuli; capitula lato-ellipsoideae ad oblongoideae, aureae, 9-12 mm longae, 7-8 mm diametro, dense floribus, bracteolis longo-stipitatis, spathulatis, puberulis et pilis rubro-brunneis resinosisque. Flores 5-meri. Sepala longitudine 1/2-3/4 petali partes aequantia, lineari-spathulata, 1/2-connata, puberula et pilis rubro-brunneis dispersis. Petala 2/3-3/4-connata, plus minusve appresso-puberula. Ovarium argenteum appresso-puberulum. Legumina crasso-linearia, elevata supra semina et leviter constricta inter semina, ad 11 cm longa et 5-6 mm lata, duro-crustacea, leviter curvata, longitudinaliter nervata, minute appresso-puberulis cum pilis rubro-brunneis. Semina longitudinalia, lato-elliptica ad elliptico-oblonga, 4.5-6 mm longa, 3-3.5 mm lata, 1-1.5 mm crassitie, nitide atrato-brunneo-nigra, pleurogramma in area subalba, areola pallida, minuta, arillo multi-plicato et voluminoso, terminali, aureo(?).

Typus: 5 km S of Mullewa on road to Mingenew, Western Australia, 17 December 1981, *B.R. Maslin* 5079 (holo: PERTH 00162841; iso: CANB, G, K, MEL, NSW, NY).

Shrub or *small tree* 2-5 m tall with grey, longitudinally finely fissured bark. *Branchlets* subterete, slightly ribbed, often somewhat flexuose, appressed puberulous with short, silvery hairs interspersed with scattered patches of red-brown resin-hairs. New growth densely invested with red-brown resin-hairs. *Stipules* caducous. *Phyllodes* linear-elliptic to linear, 8-19 cm long, 3-6 mm wide, rigid, ascending, straight to more often incurved, obscurely appressed puberulous but glabrescent between nerves, subglaucous; apex acute with thickened tip; pulvinus 2-2.5 mm long, appressed puberulous; nerves numerous, closely parallel, the midnerve conspicuously raised, the marginal nerves conspicuous and broader than the thickness of the blade; gland obscure, near base of blade. *Peduncles* 1 or 2 per node, 3.5-9 mm long, appressed puberulous and with patches of red-brown resin-hairs; heads maturing one before the other when paired, widely ellipsoid to oblongoid, golden, 9-12 mm long, 7-8 mm diam., densely flowered; bracteoles spathulate to subpeltate, puberulous, the lamina at right angles to elongate stipe and with scattered red-brown resin-hairs. *Flowers* 5-merous. *Sepals* 1/2-3/4 petal length, 1/2-united, linear with apex somewhat expanded, puberulous with red-brown resin-hairs on tip. *Petals* 2/3-3/4-united, puberulous, at least on nerve, the hairs more or less appressed. *Ovary* silvery appressed-puberulous. *Pods* thick-linear, raised over and slightly constricted between seeds, to 11 cm long, 5-6 mm wide, hard-crustaceous, slightly curved, longitudinally nerved, 1 or 2 main nerves conspicuous, red-brown, minutely appressed-puberulous with red-brown resin-hairs. *Seeds* longitudinally arranged in pods, widely elliptic to elliptic-oblong, 4.5-6 mm long, 3-3.5 mm wide, 1-1.5 mm thick, shiny, dark brown-black; pleurogram U-shaped, located in centre of nearly white area; areole minute; aril large, terminal, much-folded, golden (?).

Other specimens examined. WESTERN AUSTRALIA: *c.* 10 miles [c. 16 km] E of Mullewa towards Pindar, *A.M. Ashby* 4509 (PERTH) and *G. Phillips* for *A.M. Ashby* 4509 (PERTH); S of Coolcalalaya, *J.S. Beard* 7149 (PERTH); 9.8 miles [15.8 km] E of Mullewa, *R.J. Cumming* 1933a and 1933b (both PERTH); 3.2 miles [5.1 km] S of Mullewa towards Mingenew, *R.J. Cumming* 2184 (PERTH); 3 miles [4.8 km] from Mullewa towards Mingenew, *B.R. Maslin* 65 (PERTH); 6.4 km from Mullewa towards Mingenew, *B.R. Maslin* 3641 (PERTH).

Distribution. Restricted to the Mullewa area and with one collection from south of Coolcalalaya (*c.* 100 km north-northwest of Mullewa), southwest Western Australia.

Habitat. In mallee scrub on light brown loam, sandy loam and red or orange sand.

Flowering and fruiting periods. Flowering specimens have been collected in April, June, August, October and December; mature seeds have been collected in mid-December.

Affinities. The new species is most closely related to *A. jamesiana* Maslin which is normally readily distinguished by its mostly narrower (1-1.5 mm wide), tetragonous phyllodes, but has very similar flowers, fruits and seeds. Although flat phyllodes are occasionally interspersed with the tetragonous ones in *A. jamesiana*, they are not above 2 mm wide, except in a specimen from the Carnarvon Range (*A.A. Burbidge* 11, PERTH) which has consistently ± flat phyllodes, a few of which reach 3 mm wide. Compared with *A. ampliata*, the pods of *A. jamesiana* are slightly narrower (4 mm wide) and ± woody. *Acacia jamesiana* has a widespread, scattered distribution in the Arid Zone of Western Australia (from near Yalgoo (*c.* 120 km west-southwest of Mount Magnet) northeast to the Carnarvon Range (*c.* 270 km northeast of Meekatharra) and east to Leinster, with outliers in the Gibson and Great Victoria Deserts; *A. ampliata* is less common and occurs to the west of this range. There is some relationship, but a more distant one, with *A. heteroneura* Benth. var. *heteroneura* (see 7.4a below) which has much smaller compressed-rhombic phyllodes (5-7 cm long, occasionally 11 cm, 2-4 mm wide), globular heads with less densely arranged flowers, smaller linear pods (to 5.5 cm long, 2 mm wide and smaller (3-3.5 mm long and 1-1.3 mm wide), mottled seeds.

Conservation status. A Priority 2 taxon in the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The name is suggested by the fact that the phyllodes of the new species are wider than those of the related *A. jamesiana* and *heteroneura* var. *heteroneura*, from *ampliatus*, Latin for expanded or enlarged.

2. Acacia coolgardiensis Maiden, J. & Proc. Roy. Soc. New South Wales 53: 211, pl. 15, figs 1-7 (1920)

Lectotype (here selected): Coolgardie, Western Australia, 1900, *L.C. Webster* (NSW; isolecto: K, PERTH 00745731). Paralectotype: Coolgardie, Western Australia, 1899, *L.C. Webster* (NSW).

A. boorabbinensis Hochr., Candollea 2: 377 (1925), *synon. nov. Typus:* Boorabbin, Western Australia, 15 February 1905, *B.P.G. Hochreutiner* 2946 (holo: G).

Shrubs or *trees* 1-7 m tall, commonly with fluted trunks and main branches. *Bark* fibrous or somewhat fissured near base, usually smooth above, light- to dark-grey, often mottled with pale grey to white. *Branchlets* terete, appressed-puberulous between resinous-ribs, the resin sometimes conspicuous. *Phyllodes* terete, subterete, compressed or flat and linear, narrowly oblanceolate or linear-elliptic, 4.5-15 cm long, 0.7-10 mm wide, coriaceous to rigid, patent to ascending, straight to curved, more or less resinous, grey-green, silvery or light-green, sometimes glaucous, commonly minutely appressed puberulous between nerves; apex acute, the tip straight to uncinate; nerves numerous, closely parallel, fine, plane or somewhat rounded with resin; gland at base of blade. *Peduncles* 2 per node, 0-8 mm long, appressed puberulous and with red resin-hairs; heads globular, widely ellipsoid, oblongoid, or cylindric, golden, 5-34 mm long, 4-7 mm diam.; bracteoles spathulate, dark, the blade perpendicular to the stipe, puberulous and with few to many red, viscid, resin-hairs. *Flowers* 5-merous. *Sepals* 1/2-2/3 petal-length, free to 1/2-united, oblong to spathulate, puberulous and often with red

resin-hairs. *Petals* 1/2-2/3-united. *Pods* terete, somewhat constricted between seeds, to 10 cm long, 1.3-3 mm wide, patent to pendulous, coriaceous, straight to slightly curved, longitudinally lined or ribbed, appressed-puberulous between ribs, often more or less resinous. *Seeds* longitudinally arranged in pods, oblong to widely elliptic, 2.2-4 mm long, 1-1.5 mm wide, 1 mm thick, glossy, tan, the aril terminal, to 1/2 seed length.

Distribution. Often locally common in western-central region of Western Australia from near the Overlander Roadhouse (*c.* 150 km north-northeast of Kalbarri) and Northampton, east to Barwidgee (*c.* 85 km southeast of Wiluna) and Menangina Stations (*c.* 110 km north-northeast of Kalgoorlie) and south to near Holt Rock (*c.* 100 km northeast of Lake Grace), also occurs northeast and east of Overlander Roadhouse at Carey Downs, Byro and Curbur Stations with a northern outlier near Paraburdoo.

Typification. In the protologue, Maiden writes: "Type, Coolgardie, Western Australia (1899-1900)." with no mention of a collector. He goes on to list several collections by various collectors but only the L.C. Webster ones are from Coolgardie. At herb. NSW there are two Coolgardie collections by L.C. Webster made between 1899 and 1900 (and a third dated 26 August 1901 which was not mentioned in the protologue and is here regarded as not being a type); we have chosen as lectotype the most logical specimen, one the author saw, annotated and distributed as this species. It is possible that Maiden's failure to nominate a particular collection as type, which was his usual custom, was an unintentional error. All the collections listed in the protologue are at herb. NSW.

Hybridity. In the Mullewa to Yalgoo area (Yalgoo is *c.* 115 km east-northeast of Mullewa) subspecies *latior* and *effusa* (sessile-head variant) appear to hybridize, judging from the intermediate characters exhibited by such collections as *B.R. Maslin* 4261 and *R.J. Cumming* 1952 (both PERTH). These specimens have the phyllodes of subsp. *latior* but sessile heads. Similarly, in the Comet Vale area (*c.* 100 km north of Kalgoorlie), the two variants of subsp. *effusa* appear to hybridize; specimens of *L. Haegi* 934 and of *A. Strid* 20093 (both PERTH) have the elongate, cylindric heads of the pedunculate-head variant but they are nearly sessile as in the other variant.

Infraspecific taxa. Acacia coolgardiensis is a wide-ranging, variable species which we have treated conservatively by recognizing three subspecies, namely, subsp. *coolgardiensis*, subsp. *effusa* (comprising two variants) and subsp. *latior*; a key to these taxa is presented below. With more extensive study than we can undertake at the moment, the species may undergo further subdivision or some of the subspecific taxa may be separated as distinct species. Most of the variation is in the vegetative system, for flowers and fruits are very similar throughout the species. The typical subspecies differs most obviously by its terete phyllodes, the other two having flat ones; in subsp. *latior* the phyllodes are particularly wide (5-10 mm). Although flower structure is similar throughout the species, peduncle length is of some importance in defining the infraspecific taxa: subsp. *latior* and one variant of subsp. *effusa* have obvious peduncles whereas the typical subspecies and its close relative, the sessile-head variant of subsp. *effusa*, have ± sessile heads (except the peduncles are up to 2 mm long in some collections of subsp. *coolgardiensis* from the far north of its range, e.g. *A.M. Ashby* 4580 and 4630). Geographical ranges of the infraspecific taxa overlap significantly and all occur (often sympatrically) in the area between Yalgoo and Mullewa (*cf. A.C. Burns* 34, *B.R. Maslin* 4264, 4265 and 4266).

Key to infraspecific taxa of *Acacia coolgardiensis*

1. Phyllodes terete, rarely subterete to compressed, filiform, grey-green; heads 5-14 mm long ..... 2a. subsp. *coolgardiensis*
1. Phyllodes flat, linear to oblanceolate
   2. Peduncles 2.5-8 mm long
      3. Phyllodes 5-10 mm wide, narrowly oblanceolate, linear-oblanceolate or linear elliptic, silvery; heads 8-12 mm long ..... 2c. subsp. *latior*
      3. Phyllodes linear, 1-3 mm wide, pale green to grey-green or glaucous; heads 12-34 mm long . 2b. subsp. *effusa* (pedunculate-head variant)
   2. Peduncles 0-1.5 mm long; heads not more than 10 mm long ..... 2b. subsp. *effusa* (sessile-head variant)

2a. Acacia coolgardiensis Maiden subsp. **coolgardiensis**

Illustration. J.H.Maiden, J. & Proc. Roy. Soc. New South Wales 53: 211, pl. 15, figs. 1-7 (1920).

Trunks normally fluted with smooth grey bark, rarely fissured near the base. *Phyllodes* terete, rarely subterete or compressed, filiform, 6-15 cm long, 0.7-1 mm diam., grey-green. *Peduncles* typically lacking, rarely to 2 mm long; heads globular, widely ellipsoid or oblongoid, 5-14 mm long, 5-6 mm diam. *Sepals* free, occasionally to 1/2-united. *Pods* to 10 cm long, 1.5-2 mm diam.

Selected specimens examined. WESTERN AUSTRALIA: Railway Reserve 6.5 km N of Beacon, *T.E.H. Aplin* 5957 (PERTH); 6.2 miles [9.9 km] N of Mullewa, *A.M. Ashby* 4580 (MEL, NSW, PERTH); [25 km N of Murchison River on North West Coastal Highway], *A.M. Ashby* 4630 (PERTH, also AD but *n.v.*); 32 km S Paynes Find, *J.S. Beard* 2634 (PERTH); between Carey Downs and Callytharra, *J.S. Beard* 6848 (PERTH); 200 km N of Northampton, *W.E. Blackall* 4559 (PERTH); 1.8 miles [2.9 km] from Kununoppin towards Nungarin, *R.J. Cumming* 2265 (MELU, PERTH); Dalwallinu side of Nugadong, *M. Flynn* 19 (PERTH); Coolgardie, *C.A. Gardner* 1293 (PERTH); 1/2 mile [0.8 km] N of Queen Victoria Rocks, *A.S. George* 4238 (PERTH); 132 miles [218.8 km] and upwards, Watheroo Rabbit Fence, September 1904, *M. Koch* 1338a (NSW, PERTH); 1/4 mile [0.4 km] W of Boorabbin Siding, *B.R. Maslin* 1858 (AD, DNA, PERTH); 16 miles [25.7 km] SW of Kalgoorlie towards Coolgardie, *B.R. Maslin* 1899 (HO, NY, PERTH); 23 km N of Murchison River on North West Coastal Highway, *B.R. Maslin* 3338 (CANB, E, PERTH); *c.* 13 km S of Morawa towards Wubin, *B.R. Maslin* 3363 (BM, MO, PERTH, SPL); near Modesty Downs Station, c. 21.5 km N of Holt Rock, *B.R. Maslin* 3938 (PERTH); 59 km W of Yalgoo towards Mullewa, *B.R. Maslin* 4262 (PERTH); 45 km E of Mullewa towards Yalgoo, *B.R. Maslin* 4263 (MEL, PERTH); 9 km E of Mullewa on road to Mount Magnet, *B.R. Maslin* 4503 (PERTH); 97.5 km NNE of Kalgoorlie on road to Edjudina Station, *B.R. Maslin* 4849 (PERTH); 70 km E of Merredin on Great Eastern Highway to Southern Cross, *B.R. Maslin* 6012 (MEL, NSW, PERTH); Curbur Station, *A.L. Payne* 111 (CANB, K, PERTH); Bruce Rock-Merredin area, *F. Stoward* 8 and 14 (both NSW); Kunonoppin, *F. Stoward* 75 (NSW) and *F.E. Victor* 37 (PERTH); Coolgardie, 26 August 1901, *L.C. Webster* (NSW, PERTH 00609420).

Distribution. Occurs principally from Nerren Nerren Station (*c.* 80 km northeast of Kalbarri) and Northampton, southeast to near Holt Rock (*c.* 100 km northeast of Lake Grace) and Menangina Station (*c.* 80 km east of Menzies), but also occurs from near the Overlander Roadhouse (*c.* 90 km north of Nerren Nerren Station), and also *c.* 200 km north and northeast of Nerren Nerren Station at Carey Downs, Byro and Curbur Stations.

Habitat. Grows in a wide variety of soils from granitic or lateritic gravel to sands of all colours, sandy loam or loam, often on sandplains but also on low hills and granite outcrops in shrubland and "spinifex".

Flowering and fruiting periods. Flowering from July in the north to August and September through most of the range, occasionally in October; fruits with mature seeds collected October-January, mostly December.

Discussion. It is necessary to observe mature phyllodes to assess accurately the nervature in this subspecies, for specimens often have 8-nerved phyllodes in the apical portions of the branchlet and the later condition of having numerous nerves becomes evident only in the mature phyllodes farther down the branchlet. There is also a frequent variant that occurs throughout most of the range which has the branchlet ribs strongly resinous, the resin in conspicuous inter-connected globules, and the phyllodes shiny-resinous with the nerves appearing raised because of the overburden of resin. It is not a seasonal phenomonen, for the condition can be found on fruiting and flowering specimens equally.

While fluted main stems and branches with smooth bark is typical for the subspecies, two collections (*B.R. Maslin* 4262 and 4503) have unfluted or only slightly fluted main stems and the bark is fibrous and stringy. The same sort of variation occurs in subsp. *latior.*

Conservation status. Widespread and locally common in many places; not considered rare or endangered.

2b. Acacia coolgardiensis subsp. **effusa** Cowan & Maslin, *subsp. nov.*

Trunci convoluti, cortice griseo laevi; phyllodia plana, linearia, 4.5-13.5 cm longa, 1-3 mm lata, pallido-viridia vel cinereo-viridia vel glauca; pedunculi 0 vel ad 8 mm longi, capitulis globularibus ad cylindricis, 5-34 mm longis, 5-6 mm diametro; sepala discreta; legumina ad 8 cm longa et 1.5-2 mm lato.

Typus: 17.5 km SE of Mullewa towards Morawa, Western Australia, 22 August 1973, *B.R. Maslin* 3356 (holo: PERTH 00718580; iso: CANB, K).

Trunks fluted with smooth, grey bark. *Phyllodes* flat, linear, 4.5-13.5 cm long, 1-3 mm wide, pale green, grey-green or glaucous. *Peduncles* 0-8 mm long; heads globular to cylindric, 5-34 mm long, 5-6 mm diam.; sepals free. *Pods* to 8 cm long, 1.5-2 mm diam.

Selected specimens examined. WESTERN AUSTRALIA: 58.9 km S of Overlander Roadhouse, *M.E. Ballingall* 1892 (CANB, PERTH); Emu Fence N of Cleary, *J.S. Beard* 4716 (PERTH); 1 km E of Biddy Well, Barwidgee Station, *R.J. Cranfield* 6835 (K, NY, PERTH); Teutonic Townsite, *R. Cumming* 1100 (PERTH); 32.6 km N of Cleary on road to Paynes Find, *J.W. Green* 5234 (PERTH); western margin of Lake Goongarrie, *c.* 8.4 km N of Goongarrie Siding, L. Haegi 2003 (PERTH); near Comet Vale, *B.R. Maslin* 1944 (CANB, K, PERTH); 25.8 km from Paynes Find towards Wubin, *B.R. Maslin* 3563 (CANB, PERTH); 38 km E of Mullewa towards Yalgoo, *B.R. Maslin* 4265 (CANB, PERTH); Sturt Meadows, Leonora district, November 1973, *R.F. Maslin* (CANB, K, MEL, PERTH 00157503); 3 km S of Rabbit Proof Fence at intersection with Wiluna-Meekatharra road, *A.A. Mitchell* 1493 (PERTH); 8.5 km E of Davyhurst, *K. Newbey* 8788 (PERTH); 78 km N of Kalgoorlie towards Menzies, *D. Pearson* DJP345 (PERTH); 94 km N of Koorda, *P.G. Wilson* 6094 (BRI, NSW, PERTH); Mount Channar area, *P.A.S. Wurm* 1522 (PERTH).

Distribution. Widespread from near Mullewa and north of Cleary (Cleary is *c.* 100 km east of Dalwallinu) northeast to near Meekatharra, Barwidgee Station (*c.* 85 km southeast of Wiluna) and near Lake Goongarrie (which is *c.* 40 km south of Menzies); a western outlier occurs south of Wannoo (*c.* 155 km north of Northampton) and a northern outlier at Mount Channar (*c.* 35 km southeast of Paraburdoo), Western Australia

This distribution encompasses the ranges of the two variants recognized within this subspecies. The pedunculate-head variant (see below) has essentially the distribution of the subspecies; the sessile-head variant is more restricted and occurs predominantly from near Mullewa and near Yalgoo (Yalgoo is *c.* 115 km east-northeast of Mullewa) southeast to north of Cleary, with a northern outlier south of Wannoo (*c.* 155 km north of Northampton) and east at Comet Vale (*c.* 100 km north-northwest of Kalgoorlie).

Habitat. Grows mostly in variously coloured sands or loam, often with a high clay content on sandplains or flats, also on low hills and granite outcrops, in "spinifex" grassland with *Eucalyptus gonglyocarpa,* and in shrubland with various *Eucalyptus* and *Acacia* species especially *A. aneura.*

Flowering and fruiting periods. Flowering July-September; mature fruits with seeds October-November.

Variants. Within subsp. *effusa* two variants are recognized on the basis of the presence or absence of peduncles (see key above). There is also a correlation between presence or absence of peduncles and the length of the heads which gives the impression of different head forms: the pedunculate-head variant has heads 12-34 mm long and those of the sessile-head variant do not exceed 10 mm in length. These two forms of the subspecies may ultimately require more formal recognition but they appear to overlap geographically, as well as morphologically to some extent, and we prefer to treat them as variants, pending more data that will resolve their status more precisely.

Affinities. Nearest the typical subspecies, differing primarily in the shape and size of the phyllodes. There is a remarkable resemblance between subsp. *effusa* and *A. ramulosa*, not only superficially but with respect to the floral parts and their union; *A. ramulosa* has very different pods and seeds.

Conservation status. Not considered rare or endangered.

Etymology. The name refers to the flat, expanded nature of the phyllodes, compared to those of the typical subspecies, from *effusus*, Latin for spread out or expanded.

2c. Acacia coolgardiensis subsp. **latior** Cowan & Maslin, *subsp. nov.*

Trunci interdum convoluti, cortice fibroso, griseo ad atro; phyllodia anguste oblanceolata, lineari-oblanceolata vel lineari-elliptica, 5.5-11.5 cm longa, 5-10 mm lata, argentea; pedunculi 4-7 mm longi; capitula lato-ellipsoideae ad oblongoideae, 8-12 mm longae, 5-7 mm diametro; bracteolae lineari-spathulatae ad spathulatae, puberulae, aliquando etiam pilis rubris et resinosis; sepala 1/4-1/3-connata; legumina 3-6.5 cm longa, 2-3 mm diametro.

Typus: 6.4 km E of Mullewa towards Yalgoo, Western Australia, 2 August 1974, *B.R. Maslin* 3629 (holo: PERTH 00343188; iso: BM, BRI, CANB, G, K, MEL, MO, NSW, NY).

Trunks sometimes fluted. *Bark* fibrous, stringy, grey to black. *Phyllodes* narrowly oblanceolate, linear-oblanceolate or linear-elliptic, 5.5-11.5 cm long, 5-10 mm wide, silvery. *Peduncles* 4-7 mm long; heads widely ellipsoid to oblongoid, 8-12 mm long, 5-7 mm diam., bracteoles linear-spathulate to spathulate, puberulous, sometimes also with scattered red resin-hairs. *Sepals* 1/4-1/3-united. *Pods* 3-6.5 cm long, 2-3 mm diam.

Selected specimens examined. WESTERN AUSTRALIA: Whitewells Station, 64 km E of Perenjori, *J.S. Beard* 7367 (PERTH); between Cue and Mount Magnet, *W.E. Blackall* 81 (PERTH); East Yuna Reserve, *A.C. Burns* 1A (PERTH); 16.5 miles [24 km] S of Mullewa towards Morawa, *R.J. Cumming* 2189 (PERTH); 60 km W of Yalgoo towards Mullewa, *B.R. Maslin* 3626 (PERTH); Gabyon Station, *A.A. Mitchell* 914 (CANB, K, PERTH); 38 km E of Mullewa towards Yalgoo, *B.R. Maslin* 4266 (PERTH).

Distribution. Occurs from Yuna (*c.* 35 km east of Northampton) northeast to between Cue and Mount Magnet and southeast to Whitewells Station (*c.* 70 km east of Perenjori), especially frequent in the Mullewa area, Western Australia.

Habitat. Grows in red sand, rocky clay or clay-loam and sandy loam on sandplains, granite hills or gravelly rises in shrubland or scrub with mallee-type eucalypts and *Acacia* species.

Flowering and fruiting periods. Flowers mostly in July to September; fruits with mature seeds in November and December.

Discussion. The much wider, differently shaped phyllodes of subsp. *latior* give it a quite distinctive appearance and readily separates it from subsp. *effusa*, to which it is most similar. Subspecies *latior* has silvery phyllodes due to the silvery appressed pubescence on the broader expanse of the blades, as well as shorter heads than those of the pedunculate-head variant of subsp. *effusa* and the pods of subsp. *latior* tend to be thicker.

Conservation status. Not considered rare or endangered.

Etymology. The broad phyllodes of this subspecies suggest the name, from the comparative of *latus*, Latin for broad.

3. Acacia cuthbertsonii Luehm. (as 'Cuthbertsoni'), Victorian Naturalist 13: 117 (1897)

Syntypes: (1) between the Murchison and Gascoyne Rivers, Western Australia, *W. Cuthbertson (n.v.)*. (2) Murchison district, 1888, *W. Cuthbertson* (PERTH 00746819-fragment ex B). (3) near Mount Narryer, Western Australia, *I. Tyson (n.v.)*

Bushy, often gnarled, *shrubs* or *trees* 1-4 m tall, spreading to 5 m diam. *Bark* grey, brown or black, fissured, flaking off in brittle pieces. New growth citron- or grey-sericeous. *Branchlets* silvery sericeous. *Phyllodes* flat to compressed or rarely terete, elliptic to narrowly elliptic or linear, 3-11 cm long, 1-20 mm wide, coriaceous, subrigid, patent to erect, straight to gently incurved, light-green to grey-green but with a silvery sheen due to the dense, sericeous indumentum; apex acute and commonly mucronate; pulvinus 0.7-1.5 mm long; nerves rather indistinct but often slightly raised, numerous, distant to sub-distant, sometimes (in subsp. *cuthbertsonii*) sparingly anastamosing; glands 1-3, lowest 3-28 mm above pulvinus. *Peduncles* paired, 2-11 mm long, sericeous; spikes interrupted,

cylindric, golden, 10-34 mm long, 4-5 mm diam.; bracteoles spathulate to oblanceolate, distinctly stipitate. *Flowers* 5-merous. *Sepals* 1/5 as long as the petals, united. *Pods* narrowly oblong to linear, commonly compressed, straight-edged or shallowly constricted between the seeds, 5-14 cm long, 11-22 mm wide, woody, mostly shallowly to markedly curved, glabrous, drying yellowish and with strong longitudinal folds on surface. *Seeds* longitudinally arranged in pods, widely elliptic to sub-circular, 7.5-9 mm long, 7-8 mm wide, dull, brown, the aril a small, terminal, scalloped pad.

Distribution. Widespread in arid areas of Western Australia and Northern Territory.

Variation. There is considerable variation in the shape and dimensions of the phyllodes but the pods exhibit even greater variability: narrowly oblong or linear, shallowly to strongly curved (rarely straight), raised over the seeds on both sides to rather flat, shallowly constricted between seeds to straight-edged. This variation appears to be independent of other morphologic, geographic or ecologic factors.

Discussion. The nearest relatives of *A. cuthbertsonii* are *A. levata* Cowan & Maslin (see 8 below)and *A. wanyu* Tindale. Subspecies *linearis* is similar to *A. wanyu* which differs by its terete phyllodes that are golden sericeous in the new growth, as well as in having moniliform pods. Individuals of subsp. *cuthbertsonii* with large phyllodes are superficially similar to *A. levata* (see under that species below for discussion). The shape and relative proportions of the phyllodes is the basis for the admittedly rather arbitrary separation of the two subspecies comprising *A. cuthbertsonii:* subsp. *cuthbertsonii* has proportionately wider phyllodes than subsp. *linearis* and they are narrowly elliptic to linear-elliptic.

Key to subspecies of *Acacia cuthbertsonii*

1. Phyllodes 3-10(20) mm wide, elliptic, narrowly elliptic to linear-elliptic, flat ..... 3a. subsp. *cuthbertsonii*
1. Phyllodes 1-1.5 mm wide, narrowly linear, flat to compressed or rarely terete ..... 3b. subsp. *linearis*

3a. Acacia cuthbertsonii Luehm. subsp. **cuthbertsonii**

Illustration. B.R. Maslin in J. Jessop (ed.), Fl. Centr. Australia 125, fig. 161H (1981); M. Simmons, Acac. Australia 2: 241 (1988).

Phyllodes elliptic to narrowly elliptic or linear-elliptic, 3-8.5 cm long, 3-10(20) mm wide, l:w = 2.5-14, the central nerve of phyllodes the most evident, the other nerves when present longitudinally orientated and sometimes sparingly anastomosing. *Seeds* widely elliptic, 7.5 mm long, 7 mm wide.

Selected specimens examined. WESTERN AUSTRALIA: Wiluna Road, 80 km W of Carnegie, *U. Johnson* 41 (K, NSW, PERTH); Mount James Station, 53 km of Landor Homestead on track to Mount Augustus Station, *B.R. Maslin* 5189a (PERTH); 30.5 km N of Gordon Downs Station, *R.A. Perry & M. Lazarides* 2439 (PERTH).
NORTHERN TERRITORY: 77 km N of Aileron, Stuart Highway, *J.R. Maconochie* 976 (DNA, PERTH); 270 km N Alice Springs, 16 km S Barrow Creek, *J.R. Maconochie* 2502 (CANB, DNA, PERTH).

Distribution. Widespread from inland of Shark Bay and Kalbarri, Western Australia, eastward to south of Tennant Creek in the central part of Northern Territory.

Habitat. Commonly found in stony sand along creeks and drainage lines, often on hillocks but also on plains, mostly with "mulga" and "spinifex".

Discussion. There is considerable variation in phyllode width and shape with very narrow phyllode forms approaching subsp. *linearis* whose phyllodes are much longer in relation to their width.

3b. Acacia cuthbertsonii subsp. **linearis** Cowan & Maslin, *subsp. nov.*

A var. *cuthertsonii* phyllodiis linearibus et angustioribus planis ad compressis ad raro teretibus, 5-11 cm longis et 1-1.5 mm latis, nervis haud anastamosantibus, seminibus late ellipticis ad subcircularibus, 8-9 mm longis et 7-8 mm latis differt.

Typus: Towrana Station, Western Australia, 8 April 1981, *A.L. Payne* 39 (holo: PERTH 00606162; iso: CANB).

Phyllodes narrowly linear, 5-11 cm long, 1-1.5 mm wide, 33-110 times longer than wide, flat to compressed or rarely terete, nerves not anastomosing. *Seeds* widely elliptic to sub-circular, 8-9 mm long, 7-8 mm wide.

Selected specimens examined. WESTERN AUSTRALIA: 30 km S of Meekatharra, *C.A. Gardner* 13388 (PERTH); 18 km E of Meekatharra on road to Wiluna, *J.W. Green* 5301 (K, PERTH); Mount Vernon, *B. Kok* 5 (PERTH); Tangadee Station, *B. Kok s.n.* (PERTH 00605905); Dalgety Downs Station, 139 km E of Gascoyne Junction on road to Meekatharra, *B.R. Maslin* 5013 (PERTH); Bulloo Downs on Meekatharra Road, 15 June 1976, *A.A. Mitchell s.n.* (PERTH 00636002); 3.5 km W of Weedarrah Outcamp, Bidgemia Station, *D.G. Wilcox* 163 (PERTH).

Distribution. Occurs inland from the southern end of Shark Bay east to Meekatharra and to Bulloo Downs Station (*c.* 75 km south of Newman), Western Australia; in a few localities it occurs near populations of the typical subspecies.

Habitat. Grows commonly along creek lines in often stony sand and clay on gibber plains and stony rises, sometimes in saline conditions, with members of the "*A. aneura* Group".

Flowering and fruiting periods. Flowers October to December; fruits with mature seeds in September to October.

Discussion. The phyllodes which are commonly sericeous are glabrous in one PERTH collection (*B. Kok,* from Tangadee Station).

Etymology. The subspecific epithet refers to the narrowly linear phyllodes, from *linearis*, Latin for linear.

4. Acacia demissa Cowan & Maslin, *sp. nov.*

Frutex vel arbor plus minusve torsiva infundibularis expansa 1.5-4 m alta, corona ad 5 m effusa, ramis et ramulis pendentibus, truncorum cortice griseo fibrosoque sed supra levi. Ramuli glabri, in juventute ad extremitates sed in maturitate rubro-brunnei. Stipulae minutae, caducae. Phyllodia linearia ad lineari-elliptica vel anguste elliptica, acuta ad acuminata et arcuata ad uncinata, 5-18 cm longa et

1-6 mm lata, recta ad leviter curvata, tenuiter coriacea, laxa, pendula, olivacea, glabra, nervis numerosis arcte parallelis, subobscuris, non anastamosantibus, nervo marginali brunneo ad rubro-brunneo vel luteo et initio resinoso. Pedunculi 2 vel 3 in quoque axilla, interdum in axem 2.5-4 mm longi, resinosi et glabri vel raro pilis minutis sparsis dispersis; spicae oblongoideae ad cylindricae, aureae, sub-densae, 8-23 mm longae et c. 5.5 mm diametro, bracteolis spathulatis, ciliolatis. Flores pentameri, resinosi. Sepala longitudine 1/3-1/2 petali partes aequantia, ad basem connata, lobis oblongis ciliolatis. Petala c. 1/4-connata. Legumina oblonga ad anguste oblonga, plana et crassa, lignea, 5.5-10 cm longa et 8-17 mm lata, glabra et resinosa, marginibus latis et pallidioribus sed haud alatis. Semina longitudinalia, lato-elliptica ad sub-circularia, 6.5-9 mm longa et 4.5-7 mm lata, hebetato-brunnea ad nigra, pleurogramma obscura, arillo terminali.

Typus: Cobra Station, 82.5 km N of Landor Homestead on track to Mount Augustus Station, Western Australia, 8 May 1982, *B.R. Maslin* 5198 (holo: PERTH 00590770; iso: CANB, G, K, NY).

Obconic, weeping *shrubs* or *trees* 1.5-4 m tall, the crown spreading 5 m. *Bark* grey, fibrous on trunks but becoming smooth on branches. *Branches* and *branchlets* pendulous, slender, terete, obscurely nerved, glabrous, red-brown but yellow at extremities. *Stipules* minute, caducous. *Phyllodes* linear to linear-elliptic or narrowly elliptic, 5-18 cm long and 1-6 mm wide but commonly 6.5-15 cm long and 1.5-4 mm wide, straight to shallowly curved, thinly coriaceous, not rigid, pendulous, often crowded in tufts at ends of branchlets, olive-green, glabrous, slightly shiny; apex acute to acuminate, curved to uncinate; nerves numerous, closely parallel, scarcely evident and not anastamosing; marginal nerve discrete, brown to red-brown or yellow, resinous on young phyllodes but resin often lacking on mature phyllodes; gland small, basal. *Peduncles* 2 or 3 per axil, occasionally on a very short axis, 2.5-4 mm long, commonly glabrous and resinous but sometimes with scattered minute hairs; spikes oblongoid to cylindric, golden, 8-23 mm long and *c.* 5.5 mm diam., sub-densely flowered; bracteoles spathulate, ciliolate. *Flowers* 5-merous, resinous. *Sepals* 1/3-1/2 as long as petals, united only basally, oblong, ciliolate. *Petals* about 1/4-connate. *Pods* oblong to narrowly oblong, 5.5-10 cm long, 8-17 mm wide, straight to shallowly curved, thick and woody, flat, not constricted between seeds, commonly glabrous and slightly resinous, dark brown; margins broad (2 mm wide), unwinged, yellowish. *Seeds* longitudinally arranged in pods, widely elliptic to nearly circular, 6.5-9 mm long, 4.5-7 mm wide, dull, brown to black, minutely and irregularly pitted except for the areole and the tissue immediately surrounding it; pleurogram obscure, continuous or sometimes with a narrow opening at the hilar end; areole 1 mm long, *c.* 0.4 mm wide; aril terminal and small.

Selected specimens examined. WESTERN AUSTRALIA: 65.6 km S of road junction near Woolshed, *A.M. Ashby* 4760 (PERTH); 5 km W of Savory Bore, Innouendy Station, *R.J. Cranfield* 5173 (DNA, PERTH); 3 km NE of Anzac Bore, Koonmarra Station, *R.J. Cranfield* 5931 (PERTH); 120 km W of Meekatharra, *H. Demarz* 3826 (PERTH); floodplain of Murchison River, near Beringarra, *C.A. Gardner* 14487 (PERTH); Beringarra Station, 22 May 1963, *A.J. McComb* (PERTH 00888400); 41 km from Byro Homestead on track to Milly Milly Station, *B.R. Maslin* 5177 (BRI, NSW, PERTH); Erong Station, *c.* 6 km due NE of homestead, *B.R. Maslin* 5179 (CANB, K, MEL, PERTH); Landor Station, 14.5 km N of homestead on track to Mount Augustus Station, *B.R. Maslin* 5184 (PERTH); Cobra Station, 78 km N of Landor Homestead on track to Mount Augustus Station, *B.R. Maslin* 5194 (PERTH); Gifford Creek Station, 13 km by road SE of homestead towards Cobra Station, *B.R. Maslin* 5208 (AD, DNA, PERTH); Gifford Creek Station, 13 km by road SE of homestead towards Cobra Station, *B.R. Maslin* 5208A (CANB, K, PERTH); Belele Station, *A.A. Mitchell* 799 (PERTH); 20 km S of Koonmarra Homestead, *A.A. Mitchell* 1172 and 1174 (MEL, PERTH); 8 km S of Beringarra, *N.H. Speck* 985 (PERTH); Byro Station, 13 April 1981, *J. Stretch* (PERTH 00587362); Windmara Paddock, Mount Clere Station, *c.* 4 km E of Jack's Well, 30 October 1986, *J. Stretch* (PERTH

00801275); Mount Clere Station, 23 June 1970, *D.G. Wilcox* (PERTH 00590800); 8 km SE of Moorarie Homestead, 120 km NW of Meekatharra, *P.G. Wilson* 8504 (PERTH).

Distribution. Restricted to an area inland from Shark Bay and bounded by Gifford Creek Station (*c.* 270 km northeast of Carnarvon), Byro Station (*c.* 270 km southeast of Carnarvon) and Belele Station (*c.* 50 km northwest of Meekatharra), Western Australia.

Habitat. Grows in a variety of habitats: low quartzite or granite hills, red-brown clay or loam on flats with Mulga, on floodplains or in clayey sand along seasonally dry streams.

Flowering and fruiting periods. Flowers primarily from April to June but flowers have been found in November as well; pods with mature seeds collected in August to November.

Affinities. The new species is related to *A. quadrimarginea* F. Muell. which is usually readily distinguished by its non-pendulous branchlets, characteristically spreading phyllodes and prominently winged pods. *Acacia quadrimarginea* is widespread in south-central W.A. whereas *A. demissa* is geographically localised; however, the two are occasionally sympatric, e.g. on Cobra Station (*B.R. Maslin* 5195 - *A. quadrimarginea, B.R. Maslin* 5194 - *A. demissa*). Collections from Koonmarra Station have the shortest mature phyllodes known for the species.

Some collections from Gifford Creek Station have characters intermediate between *A. demissa* and *A. quadrimarginea*: plants with only the peripheral branches and branchlets pendulous occur along with completely pendulous ones and in the same area other plants with the spreading phyllodes characteristic of *A. quadrimarginea* (e.g., *B.R. Maslin* 5208 and 5208A, both PERTH; these collections also have slightly puberulous peduncles). Another collection (*B.R. Maslin* 5022-PERTH, from Mount Gould Station, between Gascoyne Junction and Meekatharra) is from a low stunted shrub with spreading phyllodes like those of *A. quadrimarginea* but the pods are similar to those of *A. demissa*; further collection from this area may well clarify the identity of this population.

Conservation status. Not considered rare or endangered.

Common names. Ashburton Willow; Moondyne tree.

Etymology. The epithet is derived from the weeping habit of the plant, both branchlets and phyllodes pendulous, from *demissus*, Latin for hanging down or drooping.

5. Acacia ephedroides Benth., London J. Bot. 1: 370 (1842)

Lectotype (here selected): rocky woodland near Halfwayhouse, Darling Range, Western Australia, 13 September 1839, *L. Preiss* 974 (K, right-hand specimen on Herb. Benth. sheet; isolecto: C, FI, LUND, M, MEL, NAP, NY, P, PERTH 01013823-fragment ex K and 01013815-fragment ex MEL, RO, TCD). Paralectotype: "Cape Porteray, New Holland", *C. Fraser* (K, PERTH 00750522-fragment ex K), this specimen is possibly *A. acuminata* Benth. subsp. *burkittii* (F. Muell. ex Benth.) Tindale & Kodela ms.

Typification. Bentham cited two collections in the protologue and both are mounted on a single Herb. Bentham sheet at K. The first of these on the left (Fraser from "Cape Porteray") is referrable to another

species altogether, possibly *A. acuminata* Benth. subsp. *burkittii* (F. Muell. ex Benth.) Tindale & Kodela (ms name); examination of the phyllode fragments at PERTH and of the collection at K leave some doubt as to its identity but it is discordant with the lectotype. The second collection, on the right hand of the type sheet, *Preiss* 974, we have designated as the lectotype.

Discussion. Although Bentham (1864) described the flowers as "mostly 4-merous" in "Flora Australiensis", we have very rarely seen other than 5-merous ones.

6. Acacia gibbosa Cowan & Maslin *sp. nov.*

Frutex vel arbor parva 1-3 m alta, corona rotundata, densa, 1.5-6 m diametro, cortice atro-cinereo, laevi praeter ad basem plus minusve fissurata et fibrosa. Phyllodia cylindrica, compressa vel plana, anguste linearia, acuta ad acuminata et recurvata ad subuncinata, pulvino 0.7-1.3 mm longo, laminis 4-9.5 cm longis, 0.8-1.5(2.3) mm latis, plerumque erectis, rectis, glabris, 8 distantibus nervis impressis ad raro leviter elevatis, brunneis et resinosis, haud anastamosantibus, glande minuta, obscura, laminarum prope basem. Pedunculi binati, 1.5-4 mm longi, glabri vel plus minusve appresso-puberuli; pedunculorum bracteae basales crassae, late ovatae, abaxialiter ad basem gibbosae, ciliolatae, raro plus minusve appresso-puberulae; capitula oblongoideae, aureae, 6-8 mm longae, 4-4.5 mm diametro, 22-27-floribus, bracteolis magnis, subpeltatis, lamina late oblata, concava, ciliolata. Flores 5-meri. Sepala longitudine 1/2-2/3 petali partes aequantia, prope basem connata, anguste oblonga ad spathulato-oblonga, ciliolata. Petala elliptica, discreta, glabra, lobis patentibus. Legumina linearia, supra semina elevata et inter semina leviter constricta, ad 6.5 cm longa, 2-2.5 mm lata, recta, firme chartacea, glabra. Semina longitudinalia, anguste oblongo-ovata, 2.8-3 mm longa, 1.5-2 mm lata, 1-1.5 mm crassitie, nitido-nigra, arillo cristato, inaequilateraliter pileato, terminali.

Typus: 4.5 miles [6.1 km] NW of Southern Cross towards Bullfinch, Western Australia, 12 August 1971, *B.R. Maslin* 1953 (holo: PERTH 00155152; iso: CANB, G, K, MEL, NY).

[*A. cyperophylla auct. non* F. Muell.: E. Pritzel, Bot. Jahrb. Syst. 35: 307 (1904), *pro parte*, as to *L. Diels* 5844 00750662-fragment ex B).]

Shrub or small *tree* 1-3 m tall with rounded, dense crown 1.5-6 m diam., single-stemmed or branching at or up to 45 cm above ground level into few to many main stems. *Bark* dark grey, smooth except more or less fissured and fibrous near base of main stems. *Branchlets* terete, ribbed, glabrous. *New shoots* pale green, resinous, nerves in young phyllodes brownish. Stipules not seen. *Phyllodes* terete, compressed or flat, narrowly linear, 4-9.5 cm long, 0.8-1.5(2.3) mm wide, l:w = 25-85, subrigid, commonly erect, straight, glabrous, green to grey-green; apex acute to acuminate and recurved to subuncinate; pulvinus 0.7-1.3 mm long; nerves 8 in all (3 per face on flat and compressed phyllodes), distant, impressed, rarely slightly raised, brown and resinous, not anastamosing; stomata more or less raised; gland minute, inconspicuous, ± 0.5 mm above base of blade. *Peduncles* 2 per axil, 1.5-4 mm long, glabrous or sparsely to lightly appressed puberulous with red, minute micro-hairs; basal peduncular bracts persistent to anthesis, thick, broadly ovate, abaxially gibbose at base, glabrous except ciliolate, rarely more or less appressed puberulous; heads oblongoid, golden, 6-8 mm long, 4-4.5 mm diam., 22-27-flowered; bracteoles large, subpeltate, blade broadly oblate, concave, ciliolate, dark-coloured. *Flowers* 5-merous. *Sepals* 1/2-2/3 as long as petals, connate basally to 1/3 their length, narrowly oblong to spathulate-oblong, ciliolate. *Petals* elliptic, free, glabrous, lobes spreading. *Ovary* minutely appressed puberulous. *Pods* linear, raised over and slightly constricted between seeds, to 6.5 cm long, 2-2.5 mm wide, firmly chartaceous, straight, smooth, glabrous, slightly shiny, dark brown, margins paler. *Seeds* longitudinally arranged in pods, narrowly oblong-ovate, 2.8-3 mm long, 1.5-2

mm wide, 1-1.5 mm thick, glossy, black; pleurogram obscure, U-shaped; areole *c.* 0.5 mm long; funicle somewhat enlarged, in 2 folds over top of inequilateral cap-like, terminal, crested aril with one lobe extending farther along one side of the seed.

Selected specimens examined. WESTERN AUSTRALIA: 22.1 miles [35.6 km] from Coolgardie towards Norseman, *E.M. Canning* WA/68 2357 (PERTH); 0.5 miles [0.8 km] W of Yellowdine toward Duladgin Rock, *R.J. Cumming* 2472 (MELU, NSW, PERTH); Dundas, *L. Diels* 5844 (PERTH); Kurrawang Mission, *c.* 17 km from Kalgoorlie towards Coolgardie, late September 1985, *E.M. Goble-Garratt s.n.* (PERTH 00612839); 5 miles [8 km] E of Koorda, *J. Goodwin* M28 (PERTH); *c.* 5 miles [8 km] E of Southern Cross on Great Eastern Highway, *B.R. Maslin* 1833 (CANB, K, MEL, PERTH); 7 km N of Southern Cross towards Bullfinch, *B.R. Maslin* 2379 (CANB, K, MEL, PERTH); 4.8 km E of Karalee on Great Eastern Highway, *B.R. Maslin* 2400 (BRI, NSW, PERTH); about 15 km N of Bruce Rock towards Merredin, *B.R. Maslin* 3417 (AD, CANB, K, MEL, P, PERTH); 46 km by road S of Queen Victoria Rock, *B.R. Maslin* 5413 (BM, BRI, MO); 10 km SW of Coolgardie, *K. Newbey* 5667 (CANB, PERTH); 1.6 km E of Marvel Loch turn-off on Great Eastern Highway, *M.H. Simmons* 1207 (PERTH); 9.5 miles [15.3 km] E of Bruce Rock on main road from Merredin, *M.D. Tindale* 3733 (CANB, K, L, NSW, PERTH, US).

Distribution. Occurs from Koorda and Kellerberrin east to the Coolgardie area and Dundas (*c.* 20 km south of Norseman), southwest Western Australia.

Habitat. Grows mostly in loam, both in low lying areas and on rises. Locally common in eucalypt woodland, scrub and shrubland, often associated with other *Acacia* spp., *Melaleuca* spp. and Sheoak.

Flowering and fruiting periods. Flowers in August and September; pods with mature seeds collected in December and February.

Affinities. Flat-phyllode individuals of the new species with three well-separated nerves on each face remind one in a general way of *A. websteri*. *Acacia websteri*, however, is readily distinguished by its consistently flat, broader phyllodes (2-3.5 mm wide) with raised nerves of ± the same green colour as the inter-nerve tissue (nerves not obviously brown as in *A. gibbosa*), its peduncles are commonly longer (2-6 mm long) and are sometimes borne on a short common axis, and its bracteoles are smaller and spathulate (stipe long, blade rounded).

Conservation status. Not considered rare or endangered.

Etymology. The specific name refers to the basal peduncular bracts which have a basal gibbosity on the abaxial side, from *gibbosus*, Latin for hunch-backed.

7. The "Acacia heteroneura Group"

This is a highly diverse group whose complete resolution must be reserved for the future; herein we have delimited those elements which appear to be biological realities but questions such as their appropriate taxonomic rank can be answered adequately only by more detailed studies (see under *A. heteroneura* for further discussion). The "Group" is characterized by: (1) branchlet tips with prominent, resinous ribs and which are sericeous between the ribs; (2) phyllodes that are generally rhombic in cross-section but the form varies to almost terete, compressed-rhombic and flat, each of the four angles of the rhombus in rhombic forms typically with a broader, more prominently raised

nerve and one to five narrower, equally raised or subobscure secondary nerves on the faces; (3) heads globular, pedunculate and borne singly or in pairs (except *A. cylindrica* and *A. pedunculata* which have ± sessile spikes and heads respectively); (4) flowers pentamerous with the sepals 1/4-1/2 as long as the petals, the sepals connate 1/3-3/4 or more, and the petals connate 1/2-2/3 their length; (5) pods linear and scarcely raised over the seeds and if constricted at all, only slightly so, the pods margins usually very broad (in some as broad or even broader than the lateral faces so that the pod is roughly quadrangular in cross-section); and (6) seeds arranged longitudinally in the pods, the seeds with an elongate-conic, terminal aril and in all but one species mottled (normally obscurely so).

Species of the "*A. heteroneura* Group" appear to be most closely related to *A. microneura, A. resinomarginea, A. jamesiana* and related taxa, which have similar phyllodes with many fine, secondary nerves between the main ones but different flowers.

The taxa comprising the "Group" are often separated by seemingly small differences. In the following key it is important to use characteristics of mature phyllodes, for juvenile and mature phyllodes often vary (on the same branchlet) in their transverse sectional shape and their number of nerves.

Key to taxa of the *Acacia heteroneura* Group

1. Mature phyllodes terete, semi-terete or slightly rhombic in section
   2. Flowers in cylindric, ± sessile spikes; pods flat; seeds not mottled ..... 7.1. *A. cylindrica*
   2. Flowers in globular to oblongoid or widely ellipsoid, pedunculate heads; pods terete to quadrangular; seeds ± obscurely mottled
      3. Phyllodes 3-6 cm long, 16-nerved ..... 7.4c. *A. heteroneura* var. *petila*
      3. Phyllodes commonly 7-13 cm long
         4. Phyllodes clearly compressed, 16-nerved ..... 7.4d. *A. heteroneura* var. *prolixa*
         4. Phyllodes terete or almost so
            5. Phyllodes with 8 nerves of equal width ..... 7.2a. *A. desertorum* var. *desertorum*
            5. Phyllodes with 16 nerves of unequal width ..... 7.2b. *A. desertorum* var. *nudipes*
1. Phyllodes flat to distinctly angular-rhombic
   2. Heads sessile; phyllodes compressed-rhombic to flat, c. 4 cm x 1.3-1.6 mm, with 1 nerve between midrib and marginal nerve ..... 7.3. *A. epedunculata*
   2. Heads pedunculate (peduncles 2-8 mm long); phyllodes with >1 nerve between midrib and marginal nerve
      3. Phyllodes flat, commonly 5-7 cm x 2-4 mm ..... 7.4a. *A. heteroneura* var. *heteroneura*
      3. Phyllodes angular-rhombic
         4. Phyllodes 3-6 cm x 0.7-1 mm, somewhat pungent ..... 7.4c. *A. heteroneura* var. *petila*
         4. Phyllodes some or all longer and/or wider
            5. Phyllodes 7-13 cm x 1-1.5 mm; heads widely ellipsoid to oblongoid ..... 7.4d. *A. heteroneura* var. *prolixa*
            5 Phyllodes 4-7 cm x 1-1.7 mm or, if longer, then heads globular ..... 7.4b. *A. heteroneura* var. *jutsonii*

7.1. **Acacia cylindrica** Cowan & Maslin, *sp. nov.*

Frutex 1.5-3 m altus, ad 2.5 m diametro effusus, ramulis apicaliter resinoso-costatis, inter costas sericeus. Phyllodia teretia vel quadrangulari-teretia, acicularia, grosse pungentia, 8-13 cm longa, 1-1.2 mm diametro, plus minusve rigida, erecta, inter nervos in sulcis appresso-puberula, 16-nervata nervis arcte parallelis, glande laminarum juxta basem. Pedunculi 1 vel 2 in quoque axilla, 0.5-1.5 mm longi, sericei, pedunculorum braceis persistentibus lanceolatis ciliolatis; spicae cylindricae, aureae, 10-11 mm longae, 5 mm diametro, bracteolis spathulatis, puberulis, ciliolatis. Flores 5-meri. Sepala longitudine 1/2 petali partes aequantia, 1/2-3/4-connata, puberula. Petala 1/2-connata, glabra. Legumina linearia, plana, supra semina leviter elevata et inter semina constricta, ad 6.5 cm longa, 2-2.5 mm lata, patentia, chartacea, recta, sparse et minute appresso-puberula. Semina longitudinalia, oblongo-elliptica, 3.5-4 mm longa, 1.5 mm lata, 0.8 mm crassitie, nitida, pallido-brunnea, non maculata, arillo longitudine ad 1/2 seminum aequantia.

Typus: 23 km NE of Bungalbin Hill, *c.* 68 km NNE of Koolyanobbing, Western Australia, 8 September 1984, *K. Newbey* 10826 (holo: PERTH 00652539; iso: CANB).

Spreading *shrub* 1.5-3 m tall, to 2.5 m diam. *Bark* grey and ± roughened at base of trunks, smooth and reddish on branchlets. *Branchlets* sericeous between the glabrous, resinous ribs. *Phyllodes* terete or quadrangular-terete, acicular, 8-13 cm long, 1-1.2 mm diam., rather rigid, erect, straight, light- to dark-green, glabrous except minutely sericeous in the shallow longitudinal grooves between the nerves; apex normally straight, coarsely pungent; nerves 16 although sometimes only 8 readily visible, the nerves closely parallel, slightly raised, sub-equally prominent, the broadest ones (*c.* 0.2 mm wide) on the four slight angles (and in the equivalent positions on terete phyllodes); gland indistinct, near base of blade. *Peduncles* 1 or 2 per axil, 0.5-1.5 mm long, sericeous; basal peduncular bracts persistent to anthesis, lanceolate, ciliolate; spikes cylindric, golden, 10-11 mm long, 5 mm diam., densely flowered; bracteoles spathulate, blade ± rhombic, acute, puberulous, ciliolate. *Flowers* 5-merous. *Sepals* 1/2 petal-length, 1/2-3/4-united, puberulous, lobes acute. *Petals* 1/2-united, glabrous, lobes acute and erect. *Ovary* sericeous. *Pods* linear, flat, slightly raised over and slightly constricted between seeds, to 6.5 cm long, 2-2.5 mm wide, patent, chartaceous, straight, light brown, sparsely and minutely appressed-puberulous, the narrow, paler margins with or without appressed, red, resin-hairs. *Seeds l*ongitudinally arranged in pods, oblong-elliptic, 3.5-4 mm long, 1.5 mm wide, 0.8 mm thick, ± shiny, pale brown with a darker peripheral nerve, not mottled; pleurogram U-shaped with the opening at hilar end; areole minute, *c.* 0.2 mm long; funicle/aril a series of loose loops, the aril to 1/2 as long as seed.

Other specimens examined. WESTERN AUSTRALIA: 6.9 miles [11.1 km] N of Southern Cross towards Bullfinch, *R. Cumming* 2386 (PERTH); 10.5 km N of Southern Cross towards Bullfinch, *B.R. Maslin* 2383 (PERTH) and 2384 (CANB, K, MEL, NSW, PERTH); 11 km S of Mount Correll, *c.* 45 km NNW of Bullfinch, *K. Newbey* 9591 (PERTH); 4 miles [6.4 km] E of Kulja on main road, 17 December 1971, *B.H. Smith s.n.* (PERTH 00657352).

Distribution. Most collections have been made between Southern Cross and Bullfinch (*c.* 35 km northwest of Southern Cross) but also found northwest as far as Kulja (*c.* 45 km north-northwest of Koorda), north to Mount Correll (*c.* 50 km north of Bullfinch) and Bungalbin Hill (*c.* 50 km north of Koolyanobbing), southwest Western Australia.

Habitat. In deep yellow sand or gravelly, well-drained sand on flat to gently undulating plains or on the sides of low hills. Locally frequent in *Acacia coolgardiensis* scrub and *Eucalyptus leptopoda* mallee open shrubland.

Flowering and fruiting periods. Flowering specimens have been collected in September and early October; pods with mature seeds in mid-December.

Affinities. The new species appears to be most closely related to *A. desertorum* Maiden which is most readily distinguished by its globular to oblongoid, sub-densely flowered heads, longer peduncles, narrower, ± quadrangular pods and mottled seed. Of the two varieties of *A. desertorum* only var. *nudipes* has 16-nerved phyllodes (the typical variety has 8-nerved phyllodes). There is a superficial resemblance to *A. sibina* Maslin which is distinguished by its indistinctly ribbed branchlets that are glabrous except for being tomentulose in the phyllode axils, its perfectly terete, sharply pungent phyllodes with more numerous, much narrower nerves and a sub-smooth, basally flared pulvinus, its wider (6 mm) pods which are clearly constricted between the seeds.

Conservation status. A Priority 3 taxon in the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The name is given in allusion to the cylindric spikes which distinguishes the species from other members of its group, from *cylindricus*, Latin for cylindrical.

7.2. Acacia desertorum Maiden & Blakely, J. Roy. Soc. Western Australia 13: 24, pl. 17, figs 1-7 (1928)

Typus: Victoria Desert, Elder Exploring Expedition, Camp 54 [lat. 29°S, long. 125°E], Western Australia, 17 September 1891, *R. Helms* 14 (holo: NSW; iso: K, MEL, PERTH 01160494, 00748382 and 00748404-fragments ex ?K).

Illustrations. J.H. Maiden & W.F. Blakely, *loc. cit.*; B.R. Maslin, Fl. Centr. Australia, 119 (1981).

Dense or open *shrubs* 0.6-2 m tall, rarely trees to 4 m. *Bark* grey and ± fissured at stem base, smooth and grading to reddish brown on branches. *Branchlets* yellow at extremities, sericeous between the glabrous, resinous ribs. *Phyllodes* terete to rhombic-terete, (5)7-13(15) cm long, 1-1.5 mm diam., rigid, ascending, straight to shallowly incurved, grey-green, glabrous or appressed hairy in grooves between nerves; apex acute to short-acuminate, shallowly curved, coarsely pungent; pulvinus 1.5-2.5 mm long; nerves 8 or 16, the nerves closely parallel, slightly raised (separated by shallow but discernible, often dark-coloured grooves), flat-topped or slightly rounded, ± equal or clearly unequal in width (the broadest ones to 0.3 mm wide and located on the slight angles of rhombic phyllodes), often ± resinous and slightly shiny; gland inconspicuous, near base of blade. *Peduncles* 1 or 2 per axil, 3-8 mm long, slender to stout (0.4-0.8 mm diam.), smooth or longitudinally ribbed when dry, resinous or not, glabrous or ± sparsely sericeous and sometimes with red, resin-hairs intermixed; basal peduncular bracts caducous, ovate, resinous; heads globular to widely ellipsoid or oblongoid, bright golden, 7-9 mm long, 6-8 mm diam., sub-densely flowered; bracteoles spathulate, resinous. *Flowers* 5-merous. Sepals 1/4-1/2 length of petals, 0.5-1.1 mm long, 3/4-united, somewhat puberulous. *Petals* 2/3-united, smooth, glabrous, obscurely 1-nerved to nerveless. *Ovary* villose or appressed puberulous. *Pods* linear, ± quadrangular in section with wide margins, neither raised over nor constricted between seeds, to 8.5 cm long, 1.5-2 mm wide, thinly coriaceous, straight to slightly curved, minutely sericeous on the dark brown faces, margins glabrous and paler coloured. *Seeds* (few seen) longitudinally arranged in pods, linear, 4-4.5 mm long, 0.8-1.2 mm wide, shiny, light brown, obscurely mottled darker brown; pleurogram obscure, U-shaped, open at hilar end; areole minute, 0.4-0.5 mm long; funicle/aril white, compressed-conic and ± equalling seed-length.

Distribution. Disjunct, occurring in the Southern Cross and Coolgardie areas and in the Great Victoria Desert, Western Australia.

Infraspecific taxa. Two allopatric varieties are here recognized in *A. desertorum*; however, future studies may indicate the need to treat these as separate species and/or to recognize more entities within this broadly circumscribed species (see discussion under var. *desertorum*). The typical variety which occurs around Coolgardie and in the Great Victoria Desert is recognized by its ± uniformly 8-nerved phyllodes; var. *nudipes* occurs further west, around Southern Cross, and has 16-nerved phyllodes with the nerves of unequal width. However, care must be exercised when interpreting this character because on some specimens of var. *nudipes* the young phyllodes at branchlet apices are 8-nerved, the 16-nerved condition only becoming evident on mature phyllodes.

Affinities. The chief difference separating *A. desertorum* from *A. heteroneura* is the form of the phyllodes, ± terete in *A. desertorum* and angular-rhombic to flat in *A. heteroneura,* with the exception of var. *petila* which has (small) commonly ± terete to rhombic-terete phyllodes. *Acacia desertorum* also appears closely related to *A. cylindrica* (see above).

7.2a. Acacia desertorum Maiden & Blakely var. **desertorum**

Phyllodes 8-nerved, nerves ± equal width, ± appressed hairy in the shallow, discrete grooves between the nerves. *Peduncles* commonly 2 per axil, sub-stout or rather slender (0.4-0.6 mm diam.), smooth or longitudinally ribbed, resinous or not, sparsely to sub-densely sericeous and with or without varying intermixture of red, resin-hairs. *Sepals c.* 0.5-0.8 mm long, 1/4-2/5 length of petals.

Selected specimens examined. WESTERN AUSTRALIA: Doney Lagoon, Adalong Station, *R.J. Cranfield* 7584 (MEL - distributed as *A. jutsonii*, PERTH); 19 km W of Coolgardie on Great Eastern Highway, *B.R. Maslin* 4822 (CANB, K, MEL, PERTH); 17 km N of Queen Victoria Rock on the road to Coolgardie, *B.R. Maslin* 4829 (NSW, PERTH); Great Victoria Desert, *c.* 60 km NW of Plumridge Lakes, *B.R. Maslin* 5717 (MO, NSW, PERTH); Great Victoria Desert, *c.* 2 km SW of Mount Luck on track to Laverton, *B.R. Maslin* 5732 (PERTH); 35.5 miles [57 km] SW of Kalgoorlie on Great Eastern Highway, *M.D. Tindale* 27 & *E.M. Bennett* (PERTH).

Distribution. Discontinuous, occurring near Coolgardie, Adalong Station (*c.* 150 km north of Coolgardie) and in the Great Victoria Desert from Mount Luck west to Plumridge Lakes, Western Australia.

Habitat. Populations around Coolgardie grow in yellow sand and red sandy loam in mallee and may form dense roadside communities; eastern populations grow in red sand in open mallee over *Triodia* sp. ("Spinifex").

Variation. There are appears to be two entities included within var. *desertorum* as defined here on the basis of its 8-nerved phyllodes. Specimens from the Great Victoria Desert (including the type) have peduncles similar to those of var. *nudipes* (see below) in being sub-stout (0.5-0.6 mm diam), not resinous, sparsely to sub-densely sericeous without resin hairs and slightly to obviously longitudinally ribbed when dry. In comparison the peduncles on specimens from around Coolgardie are rather slender (0.4-0.5 mm diam.), resinous, smooth or very obscurely longitudinally ribbed and sparsely sericeous with varying intermixture of red, resin-hairs; these specimens also have the shortest sepals (i.e. 0.5 mm long and 1/4-1/3 the length of the petals) and the more slender phyllodes. It is probable that future studies will determine that the Coolgardie populations should be afforded formal rank.

Discussion. Some specimens from the Queen Victoria Spring Nature Reserve (southwest extremity of the Great Victoria Desert) appear as though they may combine characters of *A. desertorum* var. *desertorum* and *A. heteroneura* var. *jutsonii* (see discussion under var. *jutsonii* below).

Conservation status. Probably poorly collected rather than rare or endangered.

7.2b. Acacia desertorum var. **nudipes** Cowan & Maslin, *var. nov.*

A var. *desertorum* phyllodiis inaequaliter 16-nervatis, pedunculis plerumque solitariis, glabris, 0.5-0.8 mm diametro, in sicco longitudinaliter porcatis sed non resinosis, sepalis longitudine circa 1/2 petali partes aequantiis differt.

Typus: W of Yellowdine towards Southern Cross [precise locality withheld for conservation reasons], Western Australia, 18 September 1982, *R.J. Cumming* 2470 (holo: PERTH 00657824; iso: MELU). Distributed as *A. desertorum* Maiden.

Phyllodes 16-nerved but often only 8 nerves visible when young, the nerves of unequal width, glabrous or appressed hairy between nerves. *Peduncles* normally solitary, rather stout (0.5-0.8 mm diam.), longitudinally ribbed when dry, not resinous, glabrous or subglabrous (no resin hairs). *Sepals* 1-1.1 mm long, *c.* 1/2 length of petals.

Other specimens examined. WESTERN AUSTRALIA: between Southern Cross and Boorabbin [precise localities withheld for conservation reasons], *J.S. Beard* 6238 (PERTH), *B.R. Maslin* 2388 (PERTH), *K. Newbey* 6022 (PERTH), *M.H. Simmons* 1203 (PERTH) and *F.G. Smith* 1509 (PERTH).

Distribution. Restricted to the area between Southern Cross and Boorabbin (*c.* 90 km east of Southern Cross), southwest Western Australia.

Habitat. Yellow sandplain and occasionally lateritic gravel in heath and tall open shrubland.

Discussion. The 16-nerved phyllodes of var. *nudipes* serve to distinguish it from the more easterly distributed typical variety. Future studies may show that var. *nudipes* is more appropriately treated as a distinct species.

Conservation status. A Priority 1 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The most obvious difference separating var. nudipes is the glabrous condition of its peduncles which gives it its name, from two Latin words, *nudus*, for bare or nude, and *pes*, for feet.

7.3. Acacia epedunculata Cowan & Maslin, *sp. nov.*

Frutex 0.5-0.65 m altus, 0.7-0.9 m effusus, ramulis apicaliter resinoso-costatis, inter costas versus apicem sericeis. Phyllodia linearia, compresso-rhomboidea ad plana, acuta et grosso-pungentia, 4-4.5 cm longa, 1.3-1.6 mm lata, ratione horum 25-35, valde patentia sed in sicco ascendentia, leviter incurvata ad fere recta, inter nervos sericea, cano-viridia, nervis 8. Capitula sessilia, solitaria, globularia, atro-aurea, circa 4.5 mm diametro, bracteolis spathulatis, villosis, ciliatis. Flores 5-meri. Sepala longitudine 1/2 petali partes aequantia, 2/3-connata, villosa. Petala 1/2-connata, valde uninervata,

glabra. Legumina linearia, inter semina leviter constricta, ad 6.5 cm longa, 2 mm lata, tenui-crustacea, minute argenteo-sericea, marginibus pallidioribus glabris exceptis. Semina longitudinalia, angusto-elliptica, 3.2-3.5 mm longa, 1.5 mm lata, 1 mm crassitie, nitida, pallido-brunnea et atratioribus brunnea maculata; pleurogramma V-formata, arillo terminali, conico, elongato.

Typus: near Bulla Bulling [precise locality withheld for conservation reasons], Western Australia, 8 August 1971, *B.R. Maslin* 1893 (holo: PERTH 00152773; iso: CANB, G, K, MEL, NSW, NY).

Low-spreading but becoming rounded, moderately dense, multistemmed *shrub* 0.5-0.65 m tall, spreading 0.7-0.9 m. *Branchlets* apically resin-ribbed, sericeous between the glabrous ribs. *Stipules* not seen. *Phyllodes* linear, compressed-rhombic to flat, 4-4.5 cm long, 1.3-1.6 mm wide, l:w= 25-35, quite spreading (± ascending when dry), shallowly incurved to almost straight, minutely sericeous in grooves between nerves, grey-green to silvery light green; apex acute, coarsely pungent; pulvinus 1-2 mm long, indistinct; 8-nerved in all, with 3 unequally wide nerves per face, the midnerve the widest (0.4 mm) and the most strongly raised with a weaker nerve on either side of it, marginal nerves broad; gland inconspicuous, *c.* 1 mm above pulvinus. *Heads* sessile, solitary, globular, dark golden, *c.* 4.5 mm diam., about 20-flowered; bracteoles spathulate, villose, ciliate, the lamina triangular-ovate, acute. *Flowers* 5-merous. *Sepals* 1/2 as long as petals, 2/3-united, villose. *Petals* 1/2-united, glabrous, strongly uninerved. *Ovary* sparsely puberulous. *Pods* linear, not raised over seeds, ± shallowly constricted between the somewhat widely spaced seeds, to 6.5 cm long, 2 mm wide, thin-crustaceous, minutely silvery sericeous on the dark brown faces, the broad, paler margins glabrous. *Seeds* longitudinally arranged in pods, narrowly elliptic, 3.2-3.5 mm long, 1.5 mm wide, 1 mm thick, glossy, light-brown mottled darker brown; pleurogram V-shaped; areole minute; aril terminal, conic, as long as or longer than seed.

Other specimen examined. WESTERN AUSTRALIA: near Bulla Bulling [precise locality withheld for conservation reasons], *K. Newbey* 8705 (PERTH).

Distribution. Very geographically restricted to near Bulla Bulling (*c.* 30 km west of Coolgardie), Western Australia.

Habitat. On moderately exposed, gently undulating plains in deep, yellow, well-drained sand in *Eucalyptus leptopoda* Very Open Shrub Mallee.

Affinities. The new species is distinguished from all other members of the "*A. heteroneura* Group" by its sessile, globular heads and, with the exception of *A. desertorum* var. *desertorum*, its 8-nerved phyllodes.

Conservation status. A Priority 1 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The specific epithet refers to the sessile heads of the taxon, from two Latin words, *e-* for lacking and *pedunculatus*, for pedunculate.

7.4. Acacia heteroneura Benth., Linnaea 26: 624 (1855)

Typus: southwest Western Australia, 1849, *J. Drummond* 2: 138 (holo: K; iso: MEL, PERTH 01160516-fragment ex K).

Shrubs normally 1-2.5 m tall, several-branched at or near base. *Bark* grey, smooth except somewhat fissured at base of main stems. *Branchlets* at first resinous-ribbed, later terete, white-sericeous between ribs. New growth often resinous. *Stipules* minute, caducous. *Phyllodes* linear, tapered to apex and to base, rhombic to compressed-rhombic or flat, sometimes (var. *petila*) ± terete, 3-13 cm long, 0.7-3.5 mm wide, rigid, ascending to erect, straight to shallowly incurved, sericeous when young but hairs often restricted to between nerves or sometimes absent with age (youngest phyllodes also invested with often few and obscure, appressed, red or light brown, ultimately caducous, resin hairs), (silvery-) green to grey-green, sometimes glaucous; apex acute, straight or curved, innocuous or coarsely pungent, occasionally sharply pungent (var. *petila*); nerves often resinous, those on the angles (of rhombic phyllodes) or the midrib and margins (of flat phyllodes) prominent and clearly wider (0.2-0.3 mm) than the intervening secondary nerves which are often obscured by pubescence at first; gland at or near base of phyllode-blade, inconspicuous. *Peduncles* 1 or 2 in each axil, 2-8 mm long, sparsely to densely sericeous with scattered, red or light brown resin-hairs variously intermixed, infrequently glabrous; basal peduncular bracts widely elliptic to ovate, minute, caducous; heads globular to widely ellipsoid or oblongoid, bright golden, 5-9 mm long, 5-8 mm diam., sub-densely flowered, often sparse on plants; bracteoles spathulate, more or less appressed-puberulous, lamina about rhombiform, ciliolate. *Flowers* 5-merous. *Sepals* 1/4-1/3 as long as petals, at least 3/4-united in somewhat puberulous cup. *Petals* 1/2-2/3-united, glabrous. *Ovary* appressed-puberulous or villose. *Pods* linear, quadrangular-terete in section, straight-edged or very shallowly constricted between seeds, not raised over seeds, to 10.5 cm long, 1.5-2.5 mm wide, normally ± erect, probably spreading to pendulous in var. *prolixa*, crustaceous or occasionally almost woody crustaceous, straight, acute at both ends, the faces minutely sericeous, the margins glabrous or occasionally papillate and narrow or ± equalling the valve width. *Seeds* longitudinally arranged in pods, narrowly oblong to narrowly elliptic, 3-5.5 mm long, 1-2 mm wide, 1 mm thick, subnitid, variously obscurely mottled; areole minute (0.2-0.3 mm long), U- or V-shaped; aril terminal, white, 1/3 to as long as seed.

Distribution. Widespread but scattered from Wubin (*c.* 20 km north of Dalwallinu) northeast to Wiluna and southeast to Lake King (*c.* 115 km east of Lake Grace) and Queen Victoria Spring Nature Reserve area (*c.* 200 km east-northeast of Kalgoorlie), southwest Western Australia.

Habitat. Sandy soils in a variety of vegetation types.

Infraspecific taxa. The morphological differences between the four varieties recognized here for *A. heteroneura* are found principally in their phyllode morphology. It could be argued that the recognition of infraspecific taxa is unwise at present, given our current state of knowledge of this very variable species. However, because the varieties have geographic integrity and can be keyed-out with reasonable confidence (see key above), it is considered best to treat them as formal entities to enable our taxonomic hypotheses to be tested and to facilitate the examination of the relationships of this species to other members of the "*A. heteroneura* Group".

Affinities. In the past there has been considerable confusion between *A. heteroneura* and *A. desertorum*. Our current treatment of these two species has not entirely resolved the problems, but it does provide a better taxonomic framework for future studies. The two species can normally be separated by the transverse sectional shape of their phyllodes: terete to slightly rhombic in *A. desertorum* and flat to angular-rhombic in *A. heteroneura* (except *A. heteroneura* var. *petila*). In *A. heteroneura* the phyllodes have four, broad, prominent main nerves (located on each angle when rhombic, or replaced by the midnerve and marginal nerves when flat) with the intervening nerves much narrower. *Acacia desertorum* on the other hand has eight broad nerves (of equal or unequal width) with intervening, narrower nerves developing in only var. *nudipes*. Future studies aimed at re-assessing these two species

will need to address the following main issues: (1) the taxonomic rank and position of *A. heteroneura* var. *petila* and *A. desertorum* var. *nudipes*, and (2) elucidation of the patterns of variation within *A. desertorum*. A detailed study of phyllode anatomy may well assist substantially in these studies.

7.4a. **Acacia heteroneura** Benth. var. **heteroneura**

Phyllodes flat to compressed-rhombic, 5-7(11) cm long, (1.5)2-4 wide, sericeous between the 3-7 nerves located on either side of the prominent midrib, the hairs sparse or sometimes absent with age. *Peduncles* 4-6 mm long, sparsely to densely sericeous with few reddish resin hairs intermixed; heads globular. *Pods* (few seen) to 5.5 cm long, 2 mm wide, the margins glabrous and narrow (*c.* 1/3 valve width). *Seeds* (few seen) narrowly oblong, 3-3.5 mm long, 1-1.3 mm wide, mottled yellowish brown and darker brown, aril *c.* 1/3 seed length.

Selected specimens examined. WESTERN AUSTRALIA: Tammin, *C.A. Gardner* 1140 (PERTH); 4 miles [6.4 km] E of Anketell, *J.W. Green* 1644 (PERTH); *c.* 18 miles [29 km] due NW of Bruce Rock, *B.R. Maslin* 1794 (AD, CANB, K, PERTH); 10.5 km N of Bungalla towards Wyalkatchem, *B.R. Maslin* 3395 (MEL, NY, PERTH); 13.5 km N of Tammin towards Korrelocking, *B.R. Maslin* 4424 (CANB, K, PERTH); 6.4 miles [10.5 km] N of Bungalla turn-off on Great Eastern Highway, *M.D. Tindale* 3714 (PERTH); Westonia, *E.H. Wilson & D.A. Herbert* 103 (PERTH).

Distribution. Mainly confined to the central wheatbelt from Tammin southeast to Bruce Rock and east to Westonia (*c.* 45 km east-northeast of Merredin), southwest Western Australia. There is a single collection from near Anketell (*c.* 350 km north of Westonia).

Habitat. In yellow sand and sandy loam in mixed scrub and thicket (the Anketell collection in red sand) growing with *Hakea multilineata* and *Eucalyptus leptopoda*.

Flowering and fruiting periods. Flowering mainly from August to January (flowers have also been collected in April and May); mature fruits have been collected in August.

Affinities. Somewhat arbitrarily separated from var. *jutsonii* which has narrower, clearly rhombic phyllodes. Variety *jutsonii* occurs within the geographic range of var. *heteroneura* but it is not known if the two are ever sympatric. Seemingly also related to *A. ampliata* (see above).

Conservation status. Not considered rare or endangered.

7.4b. **Acacia heteroneura** var. **jutsonii** (Maiden) Cowan & Maslin, *comb. et stat. nov.*

A. jutsonii Maiden (as 'jutsoni'), J. & Proc. Roy. Soc. New South Wales 51: 262 (1917). Lectotype (here selected): Comet Vale, Western Australia, December 1916, *J.T. Jutson* 49 (NSW; isolecto: NSW, PERTH 00761591-fragment ex NSW). Paralectotype: Comet Vale, Western Australia, *J.T. Jutson* 160 (NSW).

Dense *shrubs* 0.5-3 m tall, spreading to 3 m. *Phyllodes* angular-rhombic in section, mostly 4-7 cm long, infrequently to 10 cm, 1-1.7 mm wide, sericeous generally or only between nerves, oldest phyllodes sometimes glabrous, nerve at apex of each angle prominent and clearly wider than the 3 intervening secondary nerves. *Peduncles* 3-6 mm long, sericeous with red resin-hairs variously intermixed; heads globular to widely ellipsoid, 5-8 mm long, 5-7 mm diam. *Pods* to 8.5 cm long,

2-2.5 mm wide, the glabrous margins narrower than valve width. *Seeds* narrowly oblong to narrowly elliptic, 3.5-4.5 mm long, 1.5-2 mm wide, grey-brown or yellow-brown with darker brown mottlings, the aril 1/3 to equalling seed length.

Selected specimens examined. WESTERN AUSTRALIA: 9 miles [14.5 km] E of Lake King, 24 May 1955, *A.R. Main s.n.* (PERTH 00654620); 4.8 km from Hines Hill towards Nungarin, *B.R. Maslin* 2341 (AD, BRI, CANB, DNA, HO, K, MEL, NSW, PERTH); 8 km W of Bodallin on Great Eastern Highway, *B.R. Maslin* 2378 (AD, CANB, K, MEL, MO, NSW, PERTH); 37 km N of Mukinbudin towards Wialki, *B.R. Maslin* 3973 (B, NSW, PERTH); 20 km S of Beacon towards Bencubbin, *B.R. Maslin* 4141 (CANB, MEL, PERTH); 6 km W of Lake Cronin, *c.* 77 km E of Hyden, *K. Newbey* 6625 (PERTH): 8 km SE of Argus Corner, Queen Victoria Spring Nature Reserve, *D.J. Pearson* 121 (PERTH): Frank Hann National Park, *R.D. Royce* 10210 (PERTH); 30 km NE of Bandya Homestead, *c.* 120 km N of Laverton, *P.G. Wilson* 7352 (BRI, PERTH).

Distribution. Widespread but disjunct, occurring from Kalannie (*c.* 45 km east of Dalwallinu) southeast to Frank Hann National Park (located 30-110 km east-northeast of Lake King) and further inland at Comet Vale (*c.* 100 km north-northwest of Kalgoorlie), Bandya Station (*c.* 120 km north of Laverton) and Queen Victoria Spring Nature Reserve area, Western Australia. A 1940 collection by C.A. Gardner (PERTH 00655228), said to have come from the Hill River (*c.* 200 km west of Kalannie), is probably erroneously labelled.

Habitat. Populations in the western part of the range are found in yellow sand and gravelly sand, sometimes on laterite rises, in thickets, heath, open shrubland and woodland; eastern populations grow in red and yellow sand on plains and low dunes in open mallee over spinifex (*Triodia* sp.).

Flowering and fruiting periods. Flowering throughout the year, especially from June to January; collections of mature fruits have been made in May and June and also in December and January.

Typification. In the protologue, the authors name two collections by the same collector at the same locality. These collections represent the same taxon but to fix application of the name and bring about as much stability as possible in this difficult species-group, one of the sheets at NSW is chosen as lectotype.

Discussion. A number of collections from Queen Victoria Spring Nature Reserve appear as though they may combine characters of *A. heteroneura* var. *jutsonii* and *A. desertorum* var. *desertorum*. However, further studies of these populations are needed in order to ascertain their taxonomic status. Although var. *jutsonii* is recorded for the Queen Victoria Spring Nature Reserve, var. *desertorum* is not (but it is scattered in the Great Victoria Desert further to the northeast). Representative collections include *G.J. Keighery* and *J. Alford* 616 (PERTH), *D. Pearson* 69 & 519 (both PERTH), *R.D. Royce* 5502 (PERTH), *A.S. Weston* 14880 (PERTH, Z).

Conservation status. Not considered rare or endangered.

7.4c. Acacia heteroneura var. **petila** Cowan & Maslin, *var. nov.*

Ab *Acacia desertorum* var. *nudipes* et *A. heteroneura* var. *jutsonii* phyllodiis brevioribusque angustioribus, capitulis globularibus minoribusque et a var. nudipes pedunculis dense sericeis differt.

Typus: 5 km SW of Kulja towards Burakin, Western Australia, 9 January 1979, *B.R. Maslin* 4442 (holo: PERTH 00656216; iso: CANB, G, K, MEL, NY).

Phyllodes ± terete to rhombic-terete or sometimes angular-rhombic in section, 3-6 cm long, 0.7-1 mm diam., somewhat pungent, sericeous between the nerves or glabrous, the young phyllodes invested with minute, red resin-hairs (especially on the main nerves), nerve at apex of each (often slight) angle slightly or obviously wider than the 3 intervening nerves. *Peduncles* 2-6 mm long, densely sericeous with varying proportions of red resin-hairs; *heads* globular, golden, 5-6 mm diam. *Pods* to 8 cm long, 1.5-2 mm wide, 2-2.5 mm thick, the glabrous margins c. as broad as valve width. *Seeds* narrowly oblong to oblong-elliptic, 3.5-4 mm long, 1.5-2 mm wide, yellowish brown with ± sparse darker brown mottlings, aril 1/3-1/2 seed length.

Selected specimens examined. WESTERN AUSTRALIA: between Maya and Latham, *T.E.H. Aplin* 427 (PERTH); 6 miles [9.7 km] S of Wubin, *T.E.H. Aplin* 563 (PERTH-variant); between Pithara and Miling, *W.E. Blackall* 2889 (PERTH); 8.5 km from Wubin towards Wongan Hills, *E.M. Canning* WA/68 2920 (PERTH-variant); *c.* 13 km E of Wyalkatchem towards Trayning, *F. Lullfitz* L3058 (PERTH); about 10 km W of Cadoux on the road to Bencubbin, *B.R. Maslin* 5501 (B, MO, PERTH); Morawa, *K.W. McLean s.n.* (PERTH 00887285); between Wubin and Dalwallinu, *N. Perry* 322 (PERTH-variant); Korrelocking Nature Reserve, *P. Roberts* 278 (NSW, PERTH); Lackman Dam, 31° 6'S 117° 29'E, *B.H. Smith* 215 (PERTH); just W of Ballidu, *D.J.E. Whibley* 4776 (PERTH).

Distribution. Restricted to the area from Miling (*c.* 30 km southwest of Dalwallinu) southeast to Trayning (*c.* 60 km northwest of Merredin) with a variant from Morawa and near Wubin, southwest Western Australia.

Habitat. In yellow sand and gravelly sand in mixed thicket and scrub.

Flowering and fruiting periods. Flowering from May to January; mature fruits with seeds collected in December and January.

Discussion. The position of this taxon within the "*Acacia heteroneura* Group" needs further study because the transverse sectional shape and nervature of the phyllodes appear to combine characters of both *A. heteroneura* and *A. desertorum.* However, because its distinguishing characters (i.e. short, not flat, somewhat pungent phyllodes) do not seem significant enough to warrant species status it has been decided to include it *pro tem.* within *A. heteroneura.* Geographically var. *petila* occurs at the northwest extremity of the range of *A. heteroneura* var. *jutsonii* and at the western extremity of the range of *A. desertorum.*

Variants. Plants from Morawa and the Wubin area have slightly coarser phyllodes than those elsewhere (to 1.2 mm diam.).

Conservation status. A Priority 3 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The slender phyllodes of this variety are its most conspicuous feature and is the basis for the epithet, from *petilus*, Latin for slender.

7.4d. Acacia heteroneura var. **prolixa** Cowan & Maslin, *var. nov.*

A var. *jutsonii* phyllodiis longioribus, pedunculis solitariis, leguminibus lignoso-crustaceis et a var. heteroneura phyllodiis angustioribus, pedunculis longioribus, leguminum marginibus latioribus differt.

Typus: 17 km due NE of Wiluna, 8.5 km N of "Gunbarrel Highway" on road to Jundee Station, Western Australia, 4 September 1984, *B.R. Maslin* 5591 (holo: PERTH 00656224; iso: BRI, CANB, G, K, MEL, NSW, NY).

Phyllodes angular-rhombic in section but sometimes compressed, 7-13 cm long, 1-1.5 mm wide, sericeous generally (especially when young) or only between nerves, nerve at apex of each angle clearly wider than the 3, intervening fine secondary nerves. *Peduncles* commonly solitary, 5-8 mm long, sericeous with few, obscure, light brown resin-hairs intermixed; heads widely ellipsoid to oblongoid, 8-9 mm long, 7-8 mm diam. *Pods* (few seen) to 10.5 cm long, 2.5 mm wide, tapered to stipe, woody-crustaceous, the glabrous or minutely papillate margins about equalling valve width. *Seeds* (few seen) narrowly oblong, 4.5-5.5 mm long, 1 mm wide, tan mottled yellow, aril 1/3-2/5 seed length.

Other specimens examined. WESTERN AUSTRALIA: 30 miles [48.3 km] from Paynes Find towards Sandstone, *J.S. Beard* 6470 (PERTH); 11 miles [17.7 km] NW of Wonganoo Station, *J.S. Beard* 6546 (PERTH); Iona Station near Mount Magnet, *J.S. Beard* 6665 (PERTH); 70 miles [112.6 km] E to SE of Sandstone, *Dr Cole* 2/6 (PERTH); 2 km W of Yendang Rock, Walling Rock Station, *R.J. Cranfield* (PERTH, MEL - distributed as *A. jamesiana*); 10 km S of NE corner of Riverina Station, *R.J. Cranfield* 7539 (PERTH); 22 miles [35.4 km] NE of Laverton, *A.S. George* 2821 (PERTH); Wubin-Mullewa Road, 0.3 km N of Wubin, *N. Hoyle* 338 (PERTH); 113.4 km N of Sandstone along the road to Wiluna, *T.D. Macfarlane* 1129 (PERTH); 66 miles [106.2 km] N of Sandstone towards Wiluna, *R.D. Royce* 10386 (CANB, K, PERTH).

Distribution. Scattered from Wubin east to near Wiluna and Laverton, Western Australia.

Habitat. Red sand in open shrubland with spinifex (*Triodia* sp.) or in sand over laterite in shrubland.

Flowering and fruiting periods. Flowering in September and October; submature fruits collected in December.

Affinities. Most closely related to var. *jutsonii* which normally has shorter phyllodes (usually 4-7 cm long but occasionally reaching 10 cm) and ± globular heads with the flowers less densely arranged. The pods of var. *jutsonii* are often held ± erect while those of var. *prolixa* are probably spreading to pendulous and it also has smaller seeds; however, more fruiting samples of var. *prolixa* need to be examined to confirm these observations which are based on limited herbarium material. Variety *prolixa* occurs to the north of the geographic range of var. *jutsonii*.

Conservation status. Not considered rare or endangered.

Etymology. The long, lax phyllodes of this variety give it a different aspect and is the basis for the epithet, from *prolixus*, Latin for elongate.

8. Acacia levata Cowan & Maslin, *sp. nov.*

Frutex multicaulis 1-3 m altus, corona ad 5 m diametro, cortice griseo ad nigro, versus basem fissurato et fibroso, ramis levibus vel exasperatis, ramulis ad apicem leviter angularibus, appresso-puberulis sed glabrescentibus. Stipulae minutae, c. 0.75 mm longae, triangulares, sericeae. Phyllodia anguste elliptica vel oblong-elliptica, obtusa ad acuta, pulvino 1.5-3 mm longo, laminis 8-13.5 cm longis, 1-2 cm latis, crasso-coriaceis, subrigidis, minute sericeis (sub lente), 4-6 nervis principalibus distantibus elevatis cum nervis secondariis longitudinaliter anastamosantibus, nervo medio plerumque leviter manifestiore. Pedunculi 5-7 mm longi, glabri, spicis cylindricis, aureis, 20-25 mm longis, 6 mm diametro; bracteolarum unguiculo brevi, lamina concava triangulari acuta et valde uninervata. Flores pentameri, glabri. Sepala petalis 1/4-1/3 breviora, ovata, 1/2-connata; petala 1/3-1/2-connata, acuta. Legumina linearia, ad marginem anguste alata, 7-15 cm longa, 8-12 mm lata, pendentia, lignosa, glabra. Semina longitudinalia, lato-elliptica ad subcircularia, 5-5.5 mm longa, 4.5 mm lata, 1 mm crassitie, hebetato-brunnea, funiculo plano, arillo ornato, cristato, subterminali expanso.

Typus: SW of Marble Bar [precise locality withheld for conservation reasons], 20 May 1982, *B.R. Maslin* 5264 (holo: PERTH 00603279; iso: AD, BRI, CANB, K, MEL, MO, NSW, NY).

Spreading, multistemmed *shrub* 1-3 m tall, the crown to 5 m diam.; habit not unlike that of *A. xiphophylla. Bark* grey to black, fissured and fibrous at base of trunks, smooth or rough on branches. New growth pale citron-sericeous with a silvery sheen. *Branchlets* terete but slightly angular at extremities, appressed-puberulous, glabrescent, dark red-brown. Stipules minute, *c.* 0.75 mm long, triangular, sericeous. *Phyllodes* narrowly elliptic to oblong-elliptic, 8-13.5 cm long, 1-2 cm wide, thickly coriaceous, subrigid, patent to slightly ascending, straight to gently curved, minutely sericeous with the hairs not apparent to the unaided eye, subglaucous (green or glaucous on young plants); apex obtuse to acute, the tip sometimes ± uncinate; pulvinus 1.5-3 mm long; nerves raised, with 4-6, distant main nerves per face and longitudinally anastamosing secondary nerves between them, the central nerve normally slightly more prominent than the rest; glands 1-3, lowermost 1-4.5 mm above pulvinus. *Peduncles* 1 to several per axil, 5-7 mm long, glabrous; spikes cylindric, golden, 20-25 mm long, 6 mm diam.; bracteoles with a short stipe and more or less triangular, concave, acute, strongly uninerved lamina. *Flowers* 5-merous, glabrous. *Sepals* 1/4-1/3 as long as petals, ovate, 1/2-united. *Petals* 1/3-1/2-united, acute. *Ovary* sericeous. *Pods* linear, narrowly winged at the margins, not raised over or constricted between seeds, 7-15 cm long, 8-12 mm wide, pendent, woody, straight to slightly curved, glabrous, drying yellowish brown. *Seeds* longitudinally arranged in pods, widely elliptic to nearly circular, 5-5.5 mm long, 4.5 mm wide, 1 mm thick, dull, brown; pleurogram U-shaped, open at hilar end; areole darker than rest of seed; funicle ribbon-like, folded over end of seed then expanding into ornate, cristate, subterminal aril extending more than half along one side of seed, yellow(?).

Other specimens examined. WESTERN AUSTRALIA: S and SW of Marble Bar [precise localities withheld for conservation reasons], *P. Loeper s.n.*, 23 September 1988 (PERTH 00919713), *P. Ryan s.n.*, 17 October 1983 (PERTH 00606081), *L. Thomson* LXT 1158 (PERTH) and LXT 1161 (PERTH)

Distribution. Restricted to a relatively small area south and south-southwest of Marble Bar, northwest Western Australia.

Habitat. Grows in sand and sandy loam (pH 7-8.5) on hilltops and slopes with *Acacia hilliana* and *A. translucens.*

Flowering and fruiting periods. Flowering in May; fruits with mature seeds collected in October.

Affinities. Related to *A. cuthbertsonii* Luehm. (see above); in particular it may resemble subsp. *cuthbertsonii* which is most readily distinguished by its smaller, prominently sericeous phyllodes, smaller bracteoles, different pods and larger seeds with the terminal aril in the form of a scalloped pad of tissue.

Conservation status. A Priority 1 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The name refers to the more strongly raised nervature of the phyllodes than is characteristic of related taxa, from *levatus*, Latin for raised or elevated.

9. The "Acacia multispicata Group"

Acacia multispicata Benth., *A. sessilispica* Maiden & Blakely and *A. singula* Cowan & Maslin form an interrelated species complex whose taxonomy is not yet fully resolved. Although the latter two species are reasonably well demarked, *A. multispicata*, as currently circumscribed, remains perplexingly variable and further studies are needed to elucidate these patterns of variation. The three species are characterized by their glabrous or nearly glabrous branchlets, eight to numerous-nerved phyllodes and tetramerous flowers which are aggregated in sessile or short-pedunculate spikes. *Acacia acuminata* Benth. (which will include *A. burkittii* F. Muell. ex Benth. treated as a subspecies in the forthcoming "Flora of Australia" volumes) and *A. jibberdingensis* Maiden & Blakely appear to be closely related to the *A. multispicata* group.

Key to *Acacia multispicata* and its closest relatives

1. Sepals ± free to base; phyllodes terete, with 8 strongly raised nerves separated by deep furrows as wide or wider than the nerves ..... 9.2. *A. sessilispica*
1. Sepals 1/2-3/4 united; phyllodes terete to flat, normally not deeply furrowed between the nerves when terete
   2. Phyllodes flat, to 4.5 cm long, 1.5-4 mm wide, 1-3-nerved per face 9.3. .....*A. singula*
   2. Phyllodes terete OR if flat then more than 5 cm long or not more than 1.5 mm wide and 3 to many nerves on each face ..... 9.1. *A. multispicata*

9.1. Acacia multispicata Benth., Fl. Austral. 2: 400 (1864)

Lectotype (here selected): Hill River, Western Australia, *A. Oldfield s.n.* (MEL 719340; isolecto: PERTH 00765821). Paralectotypes: (1) Swan River, *J. Drummond s.n.* (K); (2) interior of SW Australia, *J.S. Roe s.n.* (K, PERTH 01027026-fragment ex K) = *A. sessilispica.*

[*A. microneura auct. non* Meissner: E. Pritzel in L. Diels & E. Pritzel, Bot. Jahrb. Syst. 35: 307 (1904).]

[*A. ephedroides auct. non* Meissner: G. Bentham, Fl. Austral. 2: 400 (1864), *pro parte*, as to *J. Drummond* 2: 149 (E, G, K, OXF, P); E. Pritzel in L. Diels & E. Pritzel, Bot. Jahrb. Syst. 35: 307 (1904), as to *E. Pritzel* 585 (B, E, G, K, L, LY, M, P, PR, US).]

[*A. multispicata non* Benth.: Fl. Austral. 2: 400 (1864), not as to lectotype but as to *J.S.Roe s.n.* (K, PERTH 00765821)]

Illustration. M. Simmons, Acac. Australia 1: 241 (1981).

Low, multi-branched, spreading to erect, more or less domed, dense to wispy *shrubs* 0.2-2.5 m tall, spreading 0.6-3 m diam., with smooth, grey bark. *Branchlets* terete to slightly angled by ribs from base of each phyllode, glabrous or sparingly appressed puberulous, sometimes tomentulose in phyllode-axils, grey or reddish-grey. *New shoots* white to grey, sometimes with golden tips. *Stipules* caducous to persistent, minute, triangular. *Phyllodes* terete to compressed, occasionally flat and linear, typically 2-7 cm long and 0.8-1.5 mm wide with l:w = 13-55, sometimes to 10 cm long with l:w = 40-100, somewhat rigid or only coriaceous, commonly spreading, occasionally erect, slightly curved to straight, glabrous, pale- to dark-green; apex acute to acuminate, straight to uncinate, cuspidate or occasionally obtuse and excentrically apiculate, innocuous; pulvinus 0.7-2.5 mm long, cylindric or slightly flared basally, glabrous or puberulous on adaxial surface; nerves 8-20, 3-to many-nerved per face when flat, slightly to strongly raised; gland small, inconspicuous, 4-10 mm above base of blade. *Peduncle* 0-2 mm long, 2 per node, glabrous to puberulous; receptacle puberulous; basal peduncular bracts caducous to persistent to anthesis, broadly ovate, acute or acuminate, concave, ciliolate, otherwise glabrous or appressed puberulous; heads loosely oblongoid to cylindric, light-golden or golden, 8-15(23) mm long, 3.5-5 mm diam.; bracteoles often caducous, broadly fan-shaped, sometimes auriculate, shortly stipitate, those at base of spikes larger and darker, ciliolate, somewhat puberulous. *Flowers* 4-merous. *Sepals* 1/4-1/2 as long as petals, 1/2-3/4-united, lobes broadly rounded, ciliolate, somewhat puberulous. *Petals* widely elliptic to elliptic, free, glabrous. *Ovary* appressed puberulous. *Pods* linear, strongly raised over and constricted between seeds, to 8 cm long, 3-4 mm wide, patent to deflexed, thin-crustaceous, commonly slightly curved, longitudinally wrinkled, glabrous, reddish-brown. *Seeds* longitudinally arranged in pods, elliptic, 3-4 mm long, 1.7-2.5 mm wide, 1.5-2.5 mm thick, dull to sub-nitid, surface smooth, pitted and/or verruculose, black; pleurogram U-shaped; areole small, pitted; aril terminal, *c.* 1/2 as long as seed, yellow (?), rarely lacking.

Selected specimens examined. WESTERN AUSTRALIA: 11 miles [17.7 km] W of Yealering, *E.M. Bennett* 615 (PERTH); 18.5 km due SSE of Peak Eleanora, *M.A. Burgman* 3782 (PERTH); 6.6 km NW of Wongan Hills towards Piawaning, *R. Coveny* 7835 & B.R. Maslin (CANB, K, NSW, PERTH); 6 km S of Kalbarri turn-off on North West Coastal Highway, *R.S. Cowan* A830 & *R.A. Cowan* (CANB, K, MEL, NY, PERTH, US); near Jarrahdale, *R.J. Cumming* 77 (PERTH); E of Mogumber, *L. Diels* 4049 (PERTH); Cranbrook, *L. Diels* 4415 (PERTH); near York, *C.A. Gardner* 13956 (PERTH); E of Carnamah on road to Bunjil, *B.R. Maslin* 736 (AD, BRI, CANB, PERTH); 2 miles [3.2 km] SW of Wongan Hills towards Calingari, *B.R. Maslin* 1655 (K, MEL, NSW, PERTH); *c.* 9.7 km SE of Mount Hampton, *B.R. Maslin* 1828 (CANB, PERTH); 1.5 km S of Korbel Siding, *B.R. Maslin* 2360 (HO, NSW, NY, PERTH); 12 km S of Wickepin towards Harrismith, *B.R. Maslin* 4796 (CANB, K, MEL, NSW, PERTH); Pony Hill, 18 km due SW of York, *B.R. Maslin* 6181 (MO, NY, PERTH); 18 km due S of Hyden, *B.R. Maslin* 6306 (CANB, K, PERTH); Needilup Hill, *K. Newbey* 392 (PERTH); 15 km SSW of Queen Victoria Rock, *K. Newbey* 5683 (PERTH); Frank Hann National Park, *R.D. Royce* 10206 (PERTH); 33 km E of Lake King at Number 1 Rabbit Proof Fence, *P.G. Wilson* 5747 (MEL, NSW, PERTH).

Distribution. Widespread from Ajana (*c.* 60 km east-southeast of Kalbarri) south to Cranbrook and east to near Queen Victoria Rock (which is *c.* 45 km south-southwest of Coolgardie) and Frank Hann National Park (located 30-110 km east-northeast of Lake King), southwest Western Australia. A specimen said to have been collected from 40 km south of Carnarvon (*I. Olsen* 584, PERTH) represents the northernmost record of the species. However, as this locality is *c.* 300 km north of Ajana and as the intervening area has been reasonably intensely collected it is possible that the locality on ths specimen is incorrect.

Habitat. Mostly on sand especially yellow sandplain; also on gravelly sand and other gravelly soils, sandy loam, sandy clay and loam, rarely on rocky hills and on granitic soils. Mostly in heath, thicket, scrub, open scrub and mallee shrubland.

Flowering and fruiting periods. The main flowering season is from August to October, though flowering specimens have been collected in March, April, June and July; pods with mature seeds have been collected from mid-November to mid-January.

Typification. Choice of a lectotype is necessitated by Bentham having cited three collections in the protologue, one of which *(J.S. Roe s.n.)* represents *A. sessilispica.* The lectotype of *A. multispicata* is an Oldfield specimen seen by Bentham, located at MEL (there appears to be no duplicate of this collection at K). This specimen has 8-nerved phyllodes and appears to represent the long-phyllode form of the species which is discussed below. The Drummond paralectotype cited by Bentham represents the same entity.

Affinities. Closely related to both *A. sessilispica* Maiden & Blakely and *A. singula* Cowan & Maslin which are treated below, including a discussion of differences separating them from the present species.

Discussion. Acacia multispicata is a variable species and is broadly circumscribed here. Attempts to define meaningful groupings based on the very considerable variation in phyllode length, correlated with length of the spikes or any other combination of characters have thus far been unproductive. Specimens with the longer phyllodes seem to have slightly longer pulvini and the young branchlets more often appressed puberulous but these are only tendencies which overlap with the more common short-phyllode forms. In flower parts, bracteoles, fruit dimensions and in details of the phyllodes one finds the same degree of variability. Although seed characters suggest a basis for subdividing the species into two entities the number of available fruiting samples are insufficient to permit us to derive conclusive results. Although all seeds are pitted in the region of the areole, some are verruculose as well. The number of nerves characterizing *A. multispicata* is unusually variable; although the basic number is eight, secondary nerves often develop equally strongly to produce a multinerved condition. Specimens of *A. multispicata* with long phyllodes could be confused with *A. sessilispica*; the characters separating these two species are discussed below under *A. sessilispica.*

9.2. Acacia sessilispica Maiden & Blakely, J. Roy. Soc. Western Australia 13: 23, pl. 16, figs 5-10 (1928)

Lectotype (here selected): Bruce Rock, Western Australia, August 1917, *F. Stoward* 163 (NSW; isolecto: MEL, NSW - both incorrectly labelled "Kununoppin Jan. 1917", and PERTH 01027050-fragment ex ?MEL), see discussion below. Paralectotype: Kununoppin, Western Australia, January 1917, *F. Stoward* 69 (NSW).

A. multispicata Benth., Fl. Austral. 2: 400 (1864), *pro parte*, not as to lectotype, as to paralectotype, interior of Southwest Australia, *J.S. Roe s.n.* (K, PERTH 01027026-fragment ex K).

A. aciphylla var. *leptostachys* E. Pritzel, Bot. Jahrb. Syst. 35: 306 (1904), *syn. nov. Typus:* Jacup Creek, Western Australia, 8 October 1901, *L. Diels* 4759 (iso: PERTH 00738891-fragment ex B).

Typification. Two collections were cited in the protologue, *F. Stoward* 163 (flowering, August), the other *F. Stoward* 69 (fruiting, January). There are three relevant Stoward sheets at NSW, labelled:

(1) "Kunonoppin/ Dr. F. Stoward 69, 1-17"; (2)"Kunonoppin/ Dr. F. Stoward 63, 1-17"; and (3) Bruce Rock, Merredin Distr., Dr. F. Stoward 163, 8/1917". The first sheet is in fruit and January would be about correct for the fruiting date; the second sheet may be a duplicate of the third sheet, *Stoward* 163, in flower, but with the date and locality of the first sheet; the third sheet is in flower and the date of August is probably correct for the flowering period. Although all specimens of the type collection represent the same species, we have selected a lectotype because two collections were cited by Maiden and Blakely without indicating either as type.

Discussion. Some collections from the southern end of the distribution, especially from the Ravensthorpe/Fitzgerald River region (e.g. 14 km SE of Mount Gibbs, *K. Newbey* 6577 (CANB, K, MEL) and Fitzgerald River Crossing, 34 km E of Jerramungup towards Ravensthorpe, *B.R. Maslin* 2582A, at PERTH) have pods somewhat constricted between the seeds but otherwise apparently this species.

Affinities. There is a close relationship between this species and *A. multispicata* Benth. with which it has been confused, even by Bentham (1864) in the protologue. Individuals of *A. multispicata* with long phyllodes especially resemble *A. sessilispica*, but the latter species is recognized by its terete, 8-nerved phyllodes (the nerves separated by deep grooves which are as wide or wider than the nerves), young spikes (in bud) which are discernibly tapered towards their apices (spikes not narrowed in *A. multispicata*), peltate bracteoles, glabrous receptacles, free (or basally connate) sepals and smooth seeds (not pitted or verruculose). *Acacia sessilispica* is also related to *A. jibberdingensis* Maiden & Blakely which is readily distinguished by its normally flat, much longer (15-32 cm) phyllodes and its spikes on peduncles 6-11 mm long. Although the phyllodes of *A. sessilispica* often have a superficial resemblance to those of *A. ephedroides* the two species are not closely related; *A. ephedroides* is readily distinguished by its ± pubescent phyllode-nerves, 5-merous flowers (not 4-merous as described by Bentham 1864: 399) and densely hairy pods.

9.3. Acacia singula Cowan & Maslin, *sp. nov.*

Frutex 0.35-2 m altus, cortice cano laevi, ramulis leviter angulatis, glabris praeter phyllodiorum axillas puberulas. Phyllodia plana, linearia ad lineari-oblanceolata, acuta ad subobtusa et excentrice arcuato-mucronata, aliquando plus minusve uncinata, pulvino 1-2 mm longo, cylindrico, luteo, super paginam adaxilem plus minusve minute puberulo, laminis 2.5-4.5 cm longis, 1.5-4 mm latis, ratione horum 7-23, semi-rigidis, ascendentibus vel interdum patentibus, rectis ad leviter incurvatis, glabris, 1-3 nervis in quoque pagina ± elevatis et distantibus, nervis marginalibus haud prominentibus, glande 2.5-7 mm supra pulvinam. Pedunculi solitarii, nulli vel usque ad 0.5 mm longi, receptaculo puberulo, capitulis lato-ellipsoideis vel oblongoideis, aureis, 6-9 mm longis, 4-4.5 mm diametro, bracteolis late oblato-ovatis, interdum auriculatis, sessilibus vel brevi-stipitatis, concavis, puberulis, ciliolatis. Flores tetrameri. Sepala longitudine 1/3-1/2 petali partes aequantia, 1/2-2/3-connata, plus minusve puberula, lobis rotundatis, plus minusve puberula concava, ciliolata. Petala elliptica, ad basim 1/4-1/3 cohaerentia, glabra. Legumina linearia, submoniliformia, supra semina valde elevata et inter semina valde constricta, ad 6.5 cm longa et 3.5 mm lata, crustacea, recta ad leviter curvata, glabra. Semina longitudinalia, lato-elliptica, 3 mm longa, 2 mm lata, 1.5 mm crassitie, hebetato-nigra, alveolato-verruculosa, arillo terminali.

Typus: Hatter Hill, *c.* 40 km NE of Lake King, Western Australia, 8 August 1979, *K.R. Newbey* 5442 (holo: PERTH 00154636; iso: CANB, G, K, MEL, NY,).

Shrub 0.35-2 m tall with smooth, grey bark lightly fissured at base of stems. *Stipules* persistent, triangular, minute. *Branchlets* slightly angled, glabrous except minutely puberulous in phyllode-axils. *Phyllodes* linear to linear-oblanceolate, 2.5-4.5 cm long, 1.5-4 mm wide, l:w = 7-23, semi-rigid, ascending or sometimes widely spreading at unequal angles, straight to slightly incurved, glabrous, light green, slightly shiny; apex acute to subobtuse, excentrically arcuate-mucronate, sometimes ± uncinate; pulvinus 1-2 mm long, cylindric, somewhat puberulous on adaxial surface, yellow; nerves 1-3 per face, clearly distant when more than one, slightly to strongly raised, the marginal nerves not prominent; gland one, 2.5-7 mm above blade-base. *Peduncles* solitary in phyllode-axils, 0-0.5 mm long, puberulous; receptacle puberulous; basal peduncular bracts persistent to anthesis, semicircular, concave, thick, ciliolate; heads widely ellipsoid to oblongoid, golden, 6-9 mm long, 4-4.5 mm diam.; bracteoles broadly oblate-ovate, sometimes auriculate, sessile or with short stipe, concave, puberulous, ciliolate. *Flowers* 4-merous. *Sepals* 1/3-1/2 as long as petals, 1/2-2/3-united, more or less puberulous, lobes rounded, concave, ciliolate. *Petals* elliptic, coherent in basal 1/4-1/3, glabrous. *Ovary* appressed puberulous. *Pods* linear, strongly raised over and constricted between seeds, submoniliform, to 6.5 cm long and 3.5 mm wide, crustaceous, straight to slightly curved, longitudinally wrinkled, glabrous, reddish-brown. *Seeds* longitudinally arranged in pods, widely elliptic, 3 mm long, 2 mm wide, 1.5 mm thick, dull, black, the surface alveolate-verruculose; pleurogram semi-circular; aril terminal, 2/3 as long as seed, yellow (?).

Other specimens examined. WESTERN AUSTRALIA: Varley Cross Roads, S of South Iron Cap, *K. Bradby* 28 (PERTH); 27.9 km S of Varley Cross Roads and 11.6 km N of Hatter Hill Townsite on main track, *K. Bradby* KLB 29 (PERTH); 42.7 km ENE of Muckinwobert Rock, *M.A. Burgman* 2185 & *S. McNee* (PERTH); 17 miles [27.4 km] W of Lake King, *J. Goodwin* 216 (PERTH); 13 miles [20.9 km] E of Lake Grace, *J.W. Green* 4442 (PERTH); Reserve No. 29023, 20 km SW of Newdegate, *J.M. Koch* N130 (PERTH); *c.* 2 km N of Lake King, *R.H. Kuchel* 1866 (PERTH); 0.5 mile [0.8 km] S of Lake King, *F. Lullfitz* L5527 (PERTH); 17.5 km E of Lake Grace towards Newdegate, *B.R. Maslin* 3428 (PERTH); Hatter Hill, *K. Newbey* 3482 (PERTH) and 6562 (PERTH); Lake Grace-Lake King road, *N. Perry* for *I. Armitage* 708 (PERTH); about 16 km from Lake Grace on road to Lake King, *N. Perry* 708 (PERTH); 10.8 miles [17.5 km] E of Lake Grace on the main road towards Newdegate, *M.D. Tindale* 3753A (NSW, PERTH) and 3754 (CANB, K, NSW, PERTH).

Distribution. Occurs from Lake Grace to near Hatter Hill (which is *c.* 145 km east-northeast of Lake Grace) and east to the Lake King area (which is *c.* 115 km east of Lake Grace), with one collection from near Muckinwobert Rock which is c. 100 km southeast of Lake King, southwest Western Australia.

Habitat. Grows mostly in gravelly sand over laterite, sometimes on rises and hilltops, in heath, scrub and mallee shrubland.

Flowering and fruiting periods. Flowers late August to early October; pods with mature seeds have been collected in December and January.

Affinities. Acacia singula is characterized, and distinguished from its close relative, *A. multispicata,* by its short, flat, 1-3-nerved, slightly shiny phyllodes. As discussed above *A. multispicata* is highly variable with respect to phyllode morphology and, although there are individuals with short, flat or few-nerved phyllodes, these characters do not occur in the combination which characterizes *A. singula.* For example, plants of *A. multispicata* with short phyllodes within the size range of *A. singula*, have terete to subterete, many-nerved phyllodes. In some respects the separation of these two species can be viewed as somewhat arbitrary. However, as the new species can be reliably distinguished from

A. multispicata and has geographical integrity we consider that species status is warranted. Furthermore, because some individuals of *A. singula* have 1-nerved phyllodes (a rare character for a species of section *Juliflorae*) it seems best not to conceal this characteristic by subsuming the taxon within the highly variable *A. multispicata*. Specimen records at herb. PERTH show *A. singula* as occurring within the geographic range of *A. multispicata*; however, it is not known with certainty whether they are sympatric. The following two specimens collected from "13 miles [20.9 km] east of Lake Grace" demonstrate that the two must grow very close to one another: *J. Goodwin* 206 (*A. multispicata*, collected on 11/9/1964) and *J.W. Green* 4442 (*A. singula*, collected on 27/9/1975). Field studies are needed to ascertain whether they are sympatric, parapatric or allopatric.

Conservation status. A Priority 3 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The specific epithet was chosen to call attention to one of the chief differences separating the species from its nearest relative, that is, the sometimes single nerve in the phyllodes, from *singulus,* Latin for one.

10. The "Acacia neurophylla Group"

This small group consists of three taxa that share the following characteristics: glabrous branchlets, phyllode nervature with widely spaced nerves generally without anastamoses, the gland near the junction of pulvinus and blade, more or less sessile spikes with a solitary basal peduncular bract, tetramerous flowers with free sepals, sub-peltate bracteoles and linear, firmly chartaceous pods.

Key to species of the *Acacia neurophylla* Group

1. Phyllodes 3-nerved on each face with the midnerve most prominent; spikes with loosely arranged, cream-coloured flowers; sepals 1/4 as long as 1/2-united petals; pods strongly raised over each seed on both sides, seeds with the areole ± 1/3 length of seed ..... 10.1 *A. incongesta*

1. Phyllodes 5-7-nerved on each face, nerves all equal or 3 more prominent; spikes with densely congested, golden flowers; sepals 2/3 as long as free petals; pods raised over seeds on alternate sides, seeds with minute areole

   2. Pulvinus strongly flared at base, smooth or scarcely transversely wrinkled, glabrous, 3-5 mm long; phyllodes commonly 10-18.5 cm long and with midnerve and two laterals more strongly raised than secondary nerves; peduncles (1)3-5 mm long ..... 10.2b. *A. neurophylla* subsp. *erugata*

   2. Pulvinus cylindric or scarcely flared at base, strongly wrinkled transversely, glabrescent, 1-2(3.5) mm long; phyllodes mostly 4.5-9(13) cm long, with the nerves equally prominent; spikes sessile, rarely with peduncles to 2 mm long ..... 10.2a. *A. neurophylla* subsp. *neurophylla*

10.1. Acacia incongesta Cowan & Maslin, *sp. nov.*

Frutex densus rotundatus 0.6-4 m altus, ramulis teretibus, initio plus minusve resinosis et resinosi-pilis dispersis, glabrescentibus; stipulae caducae ad persistentes, triangulares, 0.5 mm longae. Phyllodia angusto-elliptica, acuta, acute ad grosse pungentia, pulvino 1-1.5 mm longo, cylindrico, minute puberulo cum resinoso-pilis, glabrescenti, laminis 4-7 cm longis, 3-4.5 mm latis, ratione horum 11-18, semi-rigidis, ascendentibus ad erectis, leviter incurvatis; nervis 3, elevatis cum nervis marginalibus incrassatis et plus minusve resinosis; glande inconspicua, laminarum prope basem. Pedunculi binati 1-3 mm longi, minute puberuli; spicae cylindricae, cremeae, 15-25 mm longae, 3-4.5 mm diametro, laxe floribus; bracteolis subpeltatis. Flores 4-meri. Sepala longitudine 1/4 petali partes aequantia, discreta, spathulata, puberula. Petala 1/2-connata, glabra. Ovarium sericeum. Legumina linearia, supra semina valde elevata et inter semina leviter constricta, ad 10.5 cm longa, 4 mm lata, pendentia, tenui-coriacea, arcuata, laevia, resinoso-pilis dispersis, stipite ad 8 mm longo. Semina longitudinalia, lato-elliptica, 3-4 mm longa, 2-2.5 mm lata, 1.5 mm crassitie, subnitida, nigra, arillo terminali.

Typus: Peak Charles, Western Australia, 10 April 1971, *A.S. George* 10621 (holo: PERTH 0154601; iso: CANB).

Dense, rounded *shrub* 0.6-4 m tall. *Branchlets* terete, somewhat ribbed, glabrous or tips resinous and with scattered resin-hairs at first, glabrescent. New growth medium dark-green, resinous, shiny. *Stipules* caducous to persistent, triangular, 0.5 mm long, glabrous. *Phyllodes* narrowly elliptic, 4-7 cm long, 3-4.5 mm wide, l:w= 11-18, semi-rigid, ascending to erect, slightly incurved, at first somewhat appressed puberulous on midnerve and marginal nerves with minute, red resin-hairs, these sometimes persistent on midnerve; apex acute, sharply to coarsely pungent; pulvinus 1-1.5 mm long, cylindric, transversely wrinkled, minutely puberulous with red resin-hairs, glabrescent; midnerve and two weaker lateral nerves on each face strongly raised and more or less resinous, the marginal nerves obvious, thickened and rather resinous; gland small, inconspicuous, near base of blade. *Peduncles* binate, 1-3 mm long, minutely puberulous with red resin-hairs; basal peduncular bracts solitary, persistent, broad-ovate, concave, glabrous; spikes cylindric, cream-coloured, 15-25 mm long, 3-4.5 mm diam., loosely flowered; bracteoles subpeltate, the lamina widely elliptic, ciliolate, the stipe puberulous. *Flowers* 4-merous. *Sepals* 1/4 as long as petals, free, spathulate, puberulous. *Petals* 1/2-united, glabrous. *Ovary* sericeous. *Pods* linear, strongly raised over seeds on each side and slightly constricted between seeds, to 10.5 cm long, 4 mm wide, pendent, thin-coriaceous, distinctly curved, smooth, with numerous, scattered resin-hairs or glabrous, brown, darker over seeds, with stipe to c. 8 mm long. *Seeds* longitudinally arranged in pods, widely elliptic, 3-4 mm long, 2-2.5 mm wide, 1.5 mm thick, sub-glossy, black; pleurogram U-shaped; areole *c.* 1/3 as long as seed; funicle-aril terminal, yellow (?).

Other specimens examined. WESTERN AUSTRALIA: Peak Charles, *J.S. Beard* 5852 (PERTH); just E of Peak Charles, *N. Browne* 3 (PERTH); Peak Charles, *H. Demarz* 11988 (PERTH); base of E side of Peak Charles, *B.R. Maslin* 5435 (PERTH); Peak Charles, *K. Newbey* 6310 (CANB, PERTH); Peak Eleanora, Peak Charles National Park, *K. Newbey* 6338 (PERTH): Fitzgerald Peaks, 15 June 1929, *G.L. Throssell & C.A. Gardner* (PERTH 00154628).

Distribution. Restricted to Peak Charles National Park (*c.* 100 km southwest of Norseman), southwest Western Australia.

Habitat. Lower granitic mountain slopes and occasionally on nearby sandy clay flats; also locally frequent in patches in granite heath.

Flowering and fruiting periods. Flowering March to June; fruits with mature seeds collected in November.

Affinities. The new species is most similar in overall appearance to the southern element of the typical subspecies of *A. neurophylla* which differs by its 5-7-nerved phyllodes, dense golden spikes, longer sepals (relative to the length of the petals), free petals and seeds with a minute areole.

Conservation status. A Priority 2 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Eytmology. The specific epithet refers to the more or less loosely flowered spikes of this species, one of the characters separating it from its close relative, *A. neurophylla*; derived from the Latin word *incongestus*, meaning not congested.

10.2 Acacia neurophylla W. Fitzg., J. W. Austral. Nat. Hist. Soc. No. 1: 13 (1904)

Lectotype *(fide* Maslin & Cowan, 1994): Cunderdin, Western Australia, August 1903, *W.V. Fitzgerald s.n.* (NSW, flowering specimen; isolecto: NSW, PERTH 01116673 & 0116762). Paralectotype: Cunderdin, Western Australia, November 1903, *W.V. Fitzgerald s.n.* (NSW, PERTH 00765767 & 00765759, fruiting specimen).

Erect or low spreading *shrubs* or sometimes small *trees* 0.5-5 m tall. *Bark* light grey, smooth or fissured, dark-grey and rough at base. *Branchlets* terete, often with few low ribs, glabrous or with scattered, minute, dark resin-hairs, dark reddish-brown. New growth dark green, young phyllodes tinged brownish, slightly viscid, sometimes glaucous. *Stipules* caducous, *c.* 1 mm long, triangular or oblong-lanceolate, glabrous. *Phyllodes* narrowly oblong-elliptic, (4.5)10-16(18.5) cm long, (3.5)7-10(13) mm wide, l:w= (6)10-44, rigid, erect, straight to incurved, flat, glabrous or with minute, red resin-hairs on nerves, at least on new growth, pale to dark green, commonly bright green; apex acute, innocuous to coarsely pungent; pulvinus 1-5 mm long, cylindric or tapered to dilated base, erugose to rugose, glabrous to minutely puberulous; 5-7 nerves on each face coarse to fine and raised, the nerves all equally prominent or midnerve and 2 laterals more prominent, the marginal nerves thickened, anastamoses occasional to rare; gland small, inconspicuous, at or near base of blade. *Peduncles* 0-5 mm long, glabrous or somewhat puberulous; basal peduncular bracts caducous to persistent, broadly ovate, sometimes more or less gibbose, glabrous; spikes cylindric, golden, 2-5 cm long, 5-6 mm diam., the flowers densely congested; bracteoles dark-coloured, unilaterally subpeltate, the lamina elliptic, the stipe puberulous. *Flowers* 4-merous. *Sepals* 2/3 as long as petals, free or to 1/3-connate, spathulate to spathulate-linear, more or less villosulose. *Petals* elliptic, free, somewhat puberulous near base. *Ovary* white-strigulose. *Pods* linear, strongly raised over seeds on alternate sides, not regularly constricted, to 8 cm long, 2.5-6 mm wide, thin-coriaceous, straight, smooth, glabrous or with scattered, minute, dark resin-hairs, reddish-brown, darker over seeds, the stipe slender, 3.5-5 mm long. *Seeds* longitudinally arranged in pods, commonly widely elliptic to ovate, sometimes nearly circular, 2.5-3.5 mm long, 1.5-2 mm wide, 1-1.5 mm thick, glossy, dark-brown or black; pleurogram semicircular to U-shaped; areole minute, paler than rest of seed; funicle/aril subterminal, conspicuous, galeate, (?) white.

Distribution. Occurs from Cooloomia Homestead (*c.* 90 km north of Kalbarri) southeast to the Norseman-Moir Rock area (Moir Rock is *c.* 60 km south-southwest of Norseman), southwest Western Australia.

Infraspecific taxa. Two subspecies comprise this species: the typical subspecies is rather variable and as currently circumscribed may include more than one taxon; further study both in the field and laboratory are needed to elucidate the complex patterns of variation characterizing the species.

Subspecies *neurophylla* has short, cylindric (or only slightly flared basally) pulvini, equally prominent nerves and generally sessile spikes. Subspecies *erugata* occurs farther north but the two subspecies overlap in the middle of the overall species range on yellow sand, gravel or laterite in tall shrubby sandplains. At least the southernmost element of the typical subspecies seems to be on granite and granitic sands. The new subspecies has phyllodes with the nerves "coarser"-appearing than in the typical subspecies but this is a very subjective evaluation; it results at least in part by the fact that very often three of the nerves are more raised than the other four, making the greater distances between nerves more apparent than real.

Affinities. Acacia neurophylla is most nearly related to *A. incongesta.*

10.2a. Acacia neurophylla W. Fitzg. subsp. **neurophylla**

Diffuse, low spreading, domed or flat-topped *shrubs* 0.5-2 m tall and 1-3 m across. *Stipules* triangular. New growth often with minute, appressed, red resin-hairs on nerves. *Phyllodes* 4.5-9(13) cm long; pulvinus 1-2(3.5) mm long, cylindric or slightly flaring basally, strongly rugose transversely, 1-2 (3.5) mm long, at least at first minutely puberulous with red resin-hairs; nerves 5-7, equally prominent. *Spikes* sessile, rarely with glabrous or appressed-puberulous peduncle to 2 mm long.

Selected specimens examined. WESTERN AUSTRALIA: Swan River Colony, *J. Drummond* 16 (G, OXF, P, PERTH); Wongan Hills, 5 September 1924, *C.A. Gardner s.n.* (PERTH 00465135); Bonnie Rock-Wialki, 11 September 1957, *A.R. Main* (PERTH 00465011:southern variant); 5 miles [8 km] E of Coorow towards Latham, *B.R. Maslin* 94 (PERTH); Moir Rock, *c.* 60 km due SW of Norseman, *B.R. Maslin* 2488 (CANB, NY, PERTH:southern variant); 5.5 km N of Watheroo towards Three Springs, *B.R. Maslin* 3293 (PERTH); 11 km N of Watheroo on Geraldton Highway, *B.R. Maslin* 4493 (PERTH); Manners Valley, 15 km SE of Morawa, *B.R. Maslin* 6592 (PERTH); McDermid Rock, *c.* 100 km W of Norseman, *K. Newbey* 5263 (PERTH:southern variant); 6 km SSE of Mount Glasse, Bremer Range, *K. Newbey* 5596 (PERTH:southern variant); 12 km NW of Norseman, *K. Newbey* 8570 (MEL, PERTH:southern variant); Yorkrakine, *M.H. Simmons* 1264 (PERTH).

Distribution. Disjunct, occurring from near Morawa southeast to Cunderdin, with a southern variant occurring east of Beacon (which is *c.* 55 km northeast of Koorda), also from the Lake Johnston area (which is *c.* 100 km west of Norseman) east to Norseman-Moir Rock area, southwest Western Australia.

Habitat. From very limited data it appears that northern populations grow on sand and laterite and southern populations on sandy loam, often near granite, in thicket and scrub.

Flowering and fruiting periods. Flowers from July to September; pods with mature seeds have been collected in November and December.

Discussion. The typical subspecies varies considerably in several characteristics and the variation suggests that it may include two poorly defined entities; however, on the basis of currently available data, formal recognition of them is not warranted. One of these entities occurs in the southern part of the species range and the other one thoroughly overlaps with the new subspecies farther north. The

tendencies we have noted is for the northern element to have phyllodes with the tips often curved and the new shoots normally lack red resin-hairs. The southern element has phyllodes with straight tips and resin-hairs on new growth.

Conservation status. Not considered rare or endangered.

10.2b. Acacia neurophylla subsp. **erugata** Cowan & Maslin, *subsp. nov.*

Frutex erectus vel arbor parva; stipulae oblongo-lanceolatae; pulvinus versus basem attenuatus sed dilatatus ad basem, plus minusve transversaliter erugosus, 3-5 mm longus, glaber; laminae (7.5)10-18.5 cm longae, vulgo 3 nervis elevatioribus et 4 minoribus elevatioribus; spicae pedunculis glabris (1)3-5 mm longis.

Typus: 18.5 miles [29.6 km] E of Carnamah on road to Bunjil, Western Australia, 9 August 1970, *B.R. Maslin* 737 (holo: PERTH 00455814; iso: AD, BRI, CANB). Distributed as *A. neurophylla* W. Fitzg.

Erect *shrub* (or small *tree*) 1-5 m tall, branching from near base. *Stipules* oblong-lanceolate. *Phyllodes* (7.5)10-18.5 cm long; pulvinus flared at base, erugose to slightly rugose transversely, 3-5 mm long, glabrous; nerves commonly with 3 more prominent and 4 finer and less raised. *Spikes* on glabrous peduncles (1)3-5 mm long.

Selected specimens examined. WESTERN AUSTRALIA: Indarra, *G. Phillips* for *A.M. Ashby* 3851 (AD, BH, CANB, K, PERTH, S); 49 km SW of Coolgardie towards Southern Cross, *E.M. Canning* WA/68 2459 (PERTH); 24 km S of Mount Hampton, *c.* 85 km SSW of Southern Cross, *M.D. Crisp* 1102 (PERTH); Coolomia Nature Reserve, *S.D. Hopper* 1397 (PERTH); Caron Railway Siding, *N. Hoyle* 264 (AD, PERTH); 0.5 miles [0.8 km] N of Ballidu towards Pithara, *B.R. Maslin* 1656 (MEL, NSW, PERTH); 5 miles [8 km] due W of Merredin, *B.R. Maslin* 1748 (K, PERTH); 67.5 km S of Billabong Roadhouse on North West Coastal Highway, *B.R. Maslin* 2784 (AD, B, HO, PERTH, SP); 18 km S of Mukinbudin on the road to Kununoppin, *B.R. Maslin* 6390 (PERTH, Z): 7 miles [11.3 km] N of Bendering, *K. Newbey* 3239 (PERTH); *c.* 16 km W of Lake Deborah, *P.G. Wilson* 6188 (PERTH).

Distribution. Occurs from Cooloomia Homestead southeast to Kondinin and Bulla Bulling (*c.* 30 km east of Coolgardie), southwest Western Australia.

Habitat. Yellow sand and laterite in thicket and scrub.

Flowering and fruiting periods. Flowers from May to November, but especially in August and September; pods with mature seeds have been collected in December and January.

Conservation status. Not considered rare or endangered.

11. Acacia oncinophylla Lindley, Edwards' Bot. Reg. 23: Swan Riv. Append. xv (1839)

Typus: Swan River, Western Australia, *J. Drummond s.n.* (holo: CGE; iso: K, PERTH 01021729 ex CGE and 01021737-fragment ex K).

Illustration. W.J. Hooker, Bot. Mag. 74: pl. 4353 (1848).

Shrubs 1-2.5 m tall with red-grey "minnie-ritchie" bark. *Branchlets* flattened and angular towards apex, becoming angular-terete and ribbed, glabrous or with few appressed hairs mainly on ribs, sometimes pruinose or resinous-viscid. *Stipules* early caducous, lanceolate-linear, minute. *Phyllodes* linear or linear-oblanceolate, 4-13 cm long, 1-6 mm wide, thin-coriaceous to semi-rigid, ascending, straight to more or less incurved, glabrous or with few appressed hairs on nerves, resinous-viscid, dark green; apex acute to acuminate or rounded and mucronate or apiculate, abruptly separated from the blade or not, more or less curved; nerves 3, strongly raised and resinous with 3-4 less prominent, parallel secondary nerves; gland prominulous, 1.5-5 mm above base of blade, somewhat raised. *Peduncles* (1)2(3) per axil, (2)3-8 mm long, sericeous; basal peduncular bracts persistent to anthesis, 1-2 mm long, broadly ovate, sericeous or only sparsely appressed puberulous; spikes golden, 11-25 mm long, 5-6 mm diam., 50-97-flowered; bracteoles spathulate, sericeous, ciliolate, the lamina oblate, widely elliptic or triangular-ovate, the stipe short. *Flowers* 5-merous. *Sepals* 1/2-2/3 as long as the petals, 2/3-3/4-united, appressed puberulous, the lobes oblong, obtuse, ciliolate. *Petals* 1/2-2/3-united, glabrous. *Ovary* long-pilose. *Pods* linear, raised over but not constricted between seeds, to 6 cm long and 6 mm wide, crustaceous, straight to slightly curved, velvety with silvery or golden, erect hairs. *Seeds* (of subsp. *patulifolia*) oblique, widely elliptic, 3-3.5 mm long, 2 mm wide, 1.5 mm thick, glossy, brown-black; pleurogram double, continuous; areole widely elliptic, paler than rest of seed; aril terminal.

Distribution. Occurs along the Darling Range from Mogumber (*c.* 100 km north of Perth) south to Wagerup (*c.* 110 km south of Perth), southwest Western Australia.

Affinities. Acacia oncinophylla is closely related to *A. fauntleroyi* which, besides occurring farther inland, is distinguished by its obviously appressed hairy branchlets and phyllodes, often longer peduncles bearing shorter and broader oblongoid heads, caducous peduncular bracts, more completely united, sparingly puberulous petals and longer, subappressed pilose pods with the hairs more or less silvery.

Infraspecific taxa. Acacia oncinophylla is comprised of two subspecies which differ most markedly in the shape and dimensions of the phyllodes and length of the spikes.

Key to subspecies of *Acacia oncinophylla*

1. Phyllodes mostly 8-13 cm long and 1-2 mm wide, thinly coriaceous, tapering into acute to acuminate tip; branchlets not pruinose; spikes 11-13 mm long, 50-60-flowered ..... 11a. subsp. *oncinophylla*
1. Phyllodes 4-9 cm long and 3-6 mm wide, semi-rigid, abruptly rounded-obtuse and apiculate to mucronate; branchlets often ± lightly pruinose; spikes 15-25 mm long, 75-97-flowered ..... 11b. subsp. *patulifolia*

11a. Acacia oncinophylla Lindley subsp. **oncinophylla**

Branchlets glabrous or with ± sparse appressed hair mainly confined to ribs, not pruinose. *Phyllodes* linear, (6)8-13 cm long, 1-2(4) mm wide, 40-65 times longer than wide, thinly coriaceous; apex tapering, more or less curved, acute to acuminate. *Peduncles* 3-5 mm long; basal peduncular bract appressed-puberulous; spikes 11-13 mm long, 5-6 mm diam., 50-60-flowered.

Selected specimens examined. WESTERN AUSTRALIA: Hovea Falls, John Forrest National Park, *P. Armstrong* 84/171 (PERTH); Red Hill, *F.M. Bennett* 253 (PERTH); *c.* 34 km from Perth towards Toodyay, *E.M. Canning* WA/68 2795 (PERTH); Swan View, *L. Diels* 4519 (PERTH); Mogumber, August 1901, *L. Diels & E. Pritzel s.n.* (PERTH 00611832); Mogumber, September 1901, *L. Diels & E. Pritzel s.n.* (PERTH 00607568); Darlington, October 1939, *C.A. Gardner s.n.* (PERTH 00607495); Red Hill, Toodyay road, *A.S. George* 3041 (PERTH); Serpentine, Spring Valley Road, *B.R. Maslin* 4177 (PERTH); Wannamal, mid November 1984, *A. Popplewell s.n.* (PERTH 00607525); Darling Range, *E. Pritzel* 714 (K, M, P, Z); Helena Valley, *J. Seabrook* 275 (CANB, PERTH).

Distribution. Restricted to the Darling Range from Mogumber south to Serpentine (*c.* 50 km south of Perth), southwest Western Australia.

Habitat. Granitic soil in heath and open woodland.

Flowering and fruiting periods. Flowers from August to October. Immature pods have been collected in mid-November.

Conservation status. A Priority 3 taxon on the Department of Conservation and Land Management's Declared Flora and Priority Flora List. See end of this issue.

11b. Acacia oncinophylla subsp. **patulifolia** Cowan & Maslin, *subsp. nov.*

A var. *oncinophylla* ramulis saepe leviter pruinosis, phyllodiis lineari-oblanceolatis ad apicem obtusis et abrupte contractis apiculatis vel mucronatis, 4-9 cm longis, 3-6 mm latis, ratione horum 10-27, semi-rigidis, pedunculo (2)4-8 mm longo, spicis 15-25 mm longis, 75-97-floribus differt.

Typus: Barrington Quarry, Darling Range near Perth, Western Australia, 10 September 1972, *B.R. Maslin* 2827 (holo: PERTH 00611905; iso: AD, BRI, CANB, G, K, MEL, MO, NSW, NY, W, Z).

Branchlets often ± lightly pruinose. *Phyllodes* linear-oblanceolate, 4-9 cm long, 3-6 mm wide, 10-27 times longer than wide, semi-rigid; apex abruptly contracted to rounded tip, apiculate to mucronate. *Peduncles* (2)4-8 mm long; basal peduncular bract glabrous or sparsely appressed puberulous; spikes 15-25 mm long, 75-97-flowered.

Selected specimens examined. WESTERN AUSTRALIA: end of Rushton Road, Martin, Gosnells, *R.S. Cowan* A.860 and *R.A. Cowan* (AD, BM, BRI, CANB, G, K, MEL, MO, NSW, P, US); Mills Road, Gosnells, *R.J. Cranfield* 518 (PERTH, TLF) and 1003/79 (PERTH); Barrington Quarry, *H. Demarz* 1716 (PERTH), 1951 (KP, PERTH-fragment ex KP) and 7479 (CANB, PERTH); Crystal Brook, *S. Paust* 47 (PERTH); North Dandalup, Darling Range, *N. Perry* for *I. Armitage* 704 (PERTH); Wagerup, *E. & S. Pignatti* 483 (PERTH); Bickley Reserve, *E. Wittwer* W2294 (PERTH).

Distribution. Restricted to the Darling Scarp near Perth and from near Pinjarra south to Wagerup, southwest Western Australia.

Habitat. Grows mostly in granitic soil in open woodland.

Flowering and fruiting periods. Flowers from August to September with one collection in December; mature pods with seeds have been collected in November.

Conservation status. A Priority 2 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The name of the new subspecies is derived from two Latin words, *patulus* for spread out or broad, and *folium* for leaf, in reference to the broader phyllodes of this taxon.

12. Acacia repanda Cowan & Maslin, *sp. nov.*

Frutex rotundatus vel infundibularis 0.5-2 m altus, cortice in cirratis angustatis lemniscis cadentibus. Ramuli teretes plus minusve costati puberuli vel hirsutuli et puberuli. Stipulae caducae vel persistentes, subulatae, 2-3 mm longae, puberulae. Phyllodia teretia vel compressa ad plana, linearia ad linearioblanceolata, apice curvato vel recto et acuto vel rotundato et mucronato, laminis 3.5-6 cm longis, 1-3 mm latis, horum ratione 15-45(60), plus minusve incurvatis, plus minusve rigidis, in nervis appresso-pubescentibus et initio cum resinoso-pilis rubris sed mox glabrescentibus, ubi teretibus 8-nervatis sed ubi planis 3 nervis longitudinalibus valde elevatis saepe resinosis et a sulcis profundis separatis, glande inconspicua, 1-4.5 mm supra pulvinum. Pedunculi nulli. Capitula subglobularia ad lato-ellipsoidea, binata, 5-8 mm longa, 4.5-5 mm diametro, 20-25-floribus; bracteolis anguste ad late obtrullato-obovatis, adaxialiter subappresso-villosis, ciliatis. Flores 5-meri. Sepala longitudine 1/2-3/4 petali partes aequantia, 1/2-3/4-connata, subappresso-puberula, lobis etiam rubris resinosis pilis, ciliatis. Petala 1/2-2/3-connata, plus minusve sericea. Legumina anguste oblonga, supra semina elevata, ad 3 cm longa, 4 mm lata, coriacea, valde undulata, villosa et plerumque pilis rubris et resinosis. Semina longitudinalia, lato-elliptica ad oblongo-ovata, 2.5-3 mm longa, 1.8 mm lata, 1.5 mm crassitie, nitida, atrate brunneo-nigra vel obscure maculata, funiculo carnoso in plica supra arillum subterminalem.

Typus: Lake Hurlstone Nature Reserve, 9 km NW of Holt Rock on road to Hyden, Western Australia, 22 July 1989, *B.R. Maslin* 6375 (holo: PERTH 00999881; iso: K). Distributed as *A. ephedroides* Benth.

Rounded to obconic *shrub* 0.5-2 m tall, single-stemmed or much-branched at ground level. *Bark* "minni ritchie", the outer, exfoliating shavings grey, underbark dark red. *Branchlets* terete, somewhat ribbed, puberulous or puberulous and hirsutulous. *Stipules* caducous or persistent, subulate, 2-3 mm long, puberulous. *Phyllodes* terete to flat, linear to linear-oblanceolate, 3.5-6 cm long, 1-3 mm wide, l:w= 15-45(60), rather rigid, patent to ascending, shallowly to moderately incurved, uncommonly almost straight, grey-green, sparsely appressed pubescent on nerves but soon glabrous, young phyllodes often with minute red resin-hairs intermixed with the normal indumentum; apex curved or straight, acute or rounded and mucronate; pulvinus *c.* 1 mm long, puberulous; 8-nerved in all, 3 nerves on each face when phyllodes compressed or flat, the nerves strongly raised, separated by deep furrows and often ± resinous; gland 1-4.5 mm above base of blade, small, inconspicuous. *Peduncles* absent; basal bracts persistent to anthesis, oblong to broadly ovate, concave, puberulous to sericeous, ciliate. *Heads* subglobular to widely ellipsoid, 2 per axil, light- to mid-golden, 5-8 mm long, 4.5-5 mm diam., 20-25-flowered; bracteoles narrowly to broadly obtrullate-obovate, evident in buds, acute to subacute, subappressed villose adaxially, ciliate. *Flowers* 5-merous. *Sepals* 1/2-3/4 as long as the petals, 1/2-3/4-united, subappressed puberulous, the lobes with red resin-hairs, ciliate. *Petals* 1/2-2/3-united, more or less sericeous. *Pods* narrowly oblong, raised over seeds, to 3 cm long, 4 mm wide, coriaceous, strongly undulate, light golden or white villose and usually also with minute red resin-hairs intermixed, dark brown. *Seeds* longitudinally arranged in pods, widely elliptic to oblong-ovate, 2.5-3 mm long, 1.8 mm wide, 1.5 mm thick, flat on the lateral surfaces, glossy, dark brown-black and obscurely mottled yellow; pleurogram semicircular to shortly U-shaped; areole somewhat depressed; funicle fleshy, forming a large fold over the subterminal aril.

Other specimens examined. WESTERN AUSTRALIA: Reserve no. 29027, *c.* 1 km N of The Pimple, Nature Reserve 29027, *c.* 43 km due ESE of Hyden, 10 June 1986, *K. Atkins s.n.* (PERTH 00727539); The Pimple, Nature Reserve 29027, 40 km E of Hyden, *K.J. Atkins* 1582 (PERTH); 5 km S of Lake Carmody, *W.E. Blackall* 1387 (PERTH); 300 m E of Rabbit Proof Fence, 30 km S of Hyden-Norseman road, *K. Bradby* KLB51 (PERTH); Wongan Hills, August 1935, *E.H. Ising* (PERTH 00607703); 51 km due SE of Hyden, Pingaring Varley Road north, 1.5 km E of Kruppa Road, *B.R. Maslin* 6371 (CANB, PERTH, Z); 54 km due SE of Hyden, Pingaring Varley Road north, 4.5 km E of Kruppa Road, *B.R. Maslin* 6373 (PERTH).

Distribution. Disjunct, occurring in the Holt Rock area (Holt Rock is *c.* 100 km east-northeast of Lake Grace) with one collection from Wongan Hills (*c.* 300 km to the northwest), southwest Western Australia. This sort of disjunction is somewhat unusual but has been recorded for some other wheatbelt species of *Acacia*, e.g. *A. drewiana* subsp. *minor* Maslin (which occurs near Wongan Hills township and from Kukerin, *c.* 35 km northwest of Dumbleyung to Lake King, *fide* Maslin 1975) and *A. sulcata* var. *platyphylla* Maiden & Blakely (is known from one collection from near Wongan Hills township with all the other collections from much farther south, *fide* Cowan & Maslin 1993). The record of *A. repanda* at Wongan Hills is based on a 1935 collection by E.H. Ising who is known to have collected in that area; although this region has been rather thoroughly collected by many botanists in recent years (Kenneally 1977), the species has not been recollected, so it may have become extinct.

Habitat. Usually in loam or sandy loam near granite outcrops; in heath, scrub and shrubland.

Flowering and fruiting periods. Flowering in June-August; fruiting November-December.

Affinities. Closely related to *A. ephedroides* from which it is distinguished on the basis of a number of differences, the most obvious being its appressed pubescent branchlets, its longer and thinner phyllodes (6-16 cm long and 0.7-1 mm diam.) which are less rigid and terete to compressed, its non-undulate, longer pods (to 8 cm long) and its non-mottled, larger seeds (3-3.5 mm long).

Conservation status. A Priority 3 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The strongly undulate pods of *A. repanda* are the source of its name, from *repandus*, Latin for wavy.

13. Acacia stereophylla Meissner in J.G.C. Lehmann, Pl. Preiss. 2: 203 (1848)

Typus: Swan River, Western Australia, *J. Drummond* 2: 100 (holo: BM-Shuttleworth herb.; iso: CGE, MEL, OXF, P, PERTH 01026984-fragment ex MEL, W; see Maslin & Cowan 1994a).

Shrubs or *trees* 1.5-4 m tall, sometimes to 6 m, crown to 6 m diam. *Bark* fibrous, greyish-brown on surface, cinnamon-brown beneath. *Branchlets* terete, often reddish or red-purplish, glabrous except tomentulose in phyllode-axils, often floccose-resinous. *Stipules* commonly caducous, triangular. *Phyllodes* flat and linear or terete to sub-terete, (8)10-18 cm long, 1.3-6.5 mm wide, rigid, ascending to erect, straight to incurved, light green or grey-green; apex acute; pulvinus *c.* 2 mm long, flaring at base, smooth, with or without a distinct low rib on abaxial side (rib most obvious in var. stereophylla and often continuous with the branchlet rib), orange, densely puberulous on adaxial surface; nerves numerous, closely parallel, plane or slightly raised with the mid-nerve more prominent or all nerves

equally prominent, the marginal nerves (flat phyllodes) broad, yellow; gland 1, near apex of pulvinus. *Peduncles* 2 per node, 2-5(8) mm long, puberulous, rust-coloured resin-hairs sometimes present; basal peduncular bracts caducous; spikes cylindric, golden, (12)18-35 mm long, 6 mm diam., with loosely arranged flowers; bracteoles linear-oblanceolate or linear-spathulate, villosulose, curved or inflexed at junction of the blade and stipe. *Flowers* 5-merous. *Sepals* 2/3 as long as petals, 1/4-1/2-united, villosulose, especially basally, lobes linear or slightly expanded apically. *Petals* 1/-2/3-united, glabrous. *Pods* narrowly oblong, raised over and irregularly constricted between seeds, to 4 cm long, 4-5 mm wide, pendent, papery, straight, slightly reticulate-nerved, glabrous, pale grey-brown. *Seeds* longitudinally arranged in pods to slightly oblique, widely elliptic to elliptic, 2.8-3.2 mm long, 1-2 mm wide, 1 mm thick, glossy, tan; areole minute, c. semicircular, darker than rest of seed; aril subterminal.

Distribution. The species occurs from the Kalbarri National Park and Nerren Nerren Station (*c.* 90 km north-northwest of Kalbarri) southeast to Tammin and Boorabbin (*c.* 90 km east of Southern Cross), southwest Western Australia. Although the two varieties recognized within the species occur in the Murchison River district, they are not known to be sympatric.

Infraspecific taxa. The two varieties comprising the species are similar in most respects except that the widespread var. *stereophylla* has flat phyllodes whereas var. *cylindrata* (restricted to Kalbarri National Park) have terete or subterete phyllodes. Duplicates of var. *cylindrata* have been distributed in the past as *Acacia stereophylla*.

Key to varieties of *Acacia stereophylla*

1. Phyllodes flat, 3.5-6.5 mm wide ..... 13a. var. *stereophylla*
1. Phyllodes terete to subterete, 1.3-2 mm diam. ..... 13b. var. *cylindrata*

13a. Acacia stereophylla Meissner var. **stereophylla**

Phyllodes flat, linear, (8-)10-17 cm long, 3.5-6.5 mm wide, marginal nerves distinct; *pulvinus* commonly with abaxial rib.

Selected specimens examined. WESTERN AUSTRALIA: near Wyalkatchem, *W.E. Blackall* 3535 (PERTH); 8.5 km from Wubin towards Wongan Hills, *E.M. Canning* WA/68 2918 (PERTH); 30 km S of Billabong, *P.E. Conrick* 1620 (PERTH); 6.3 miles [10.1 km] S of Mullewa town centre towards Mingenew, *R. Cumming* 2178 (MEL, PERTH); 40 miles [64 km] from mouth of Irwin River, 1871, *J. Forrest s.n.* (PERTH 00470058); near Rock Well, c. 6.5 km W of Yuna towards Geraldton, *B.R. Maslin* 3098 (B, MO, PERTH); 16 km N of Murchison River on North West Coastal Highway, *B.R. Maslin* 3147 (BM, PERTH); 10 km N of Southern Cross towards Bullfinch, *B.R. Maslin* 3958 (PERTH); 13.5 km N of Tammin towards Korrelocking, *B.R. Maslin* 4423 (PERTH); 8 km N of Perenjori on the road to Morawa, *B.R. Maslin* 5068 (PERTH); Ebbano near Yandanooka, 26 September 1904, *A. Morrison s.n.* (PERTH 00469866); 2 km W of Yacke Yackine Dam, *c.* 75 km NNW of Bullfinch, *K. Newbey* 9129 (PERTH); between Tenindewa and Ardingly, *c.* 52 miles [83.7 km] E of Geraldton, *G. Phillips* for *A.M. Ashby* 4832 (CANB, K, PERTH); *c.* 89 km from Southern Cross towards Coolgardie, *M.E. Phillips* WA/68 677 (PERTH); 72.4-75.6 km S of Wannoo, *M.E. Phillips* WA/68 1169 (PERTH); Cullimbin Reserve, 13.3 km E of Manmanning, *J.H. Ross* 2903 (PERTH); 11.3 km SE of Morawa towards Perenjori, *M.D. Tindale* 2768 (K, NSW, PERTH).

Distribution. A widespread variety occurring from Nerren Nerren Station, southeast to Tammin and Boorabbin, Western Australia.

Habitat. Grows in sand, gravelly sand and loam, mostly on plains, in shrubland (where it is often common), thicket and woodland.

Flowering and fruiting periods. Flowering specimens have been collected from mid-August to October, with single collections in June and December; pods with mature seeds have been collected from late November to January.

Conservation status. Not considered rare or endangered.

13b. Acacia stereophylla var. **cylindrata** Cowan & Maslin, *var. nov.*

A var. *stereophylla* phyllodiis teretibus vel subteretibus, 1.3-2 mm diametro, nervis pariter distinctis, pulvino plerumque sine crista abaxiali differt.

Typus: Murchison River area, Western Australia, 31 August 1966, *A.C. Burns* 1003 (holo: PERTH 01026992; iso: CANB, G, K, MEL, NSW, NY, PERTH 00590460 and 00590452).

Phyllodes terete or subterete, 11-18 cm long, 1.3-2 mm diam., nerves equally distinct; *pulvinus* normally lacking abaxial rib.

Other specimens examined. WESTERN AUSTRALIA: Loop Gorge, Murchison River, *D.R. & B. Bellairs* 1629 (PERTH) and 18 January 1982, *s.n.* (PERTH 00470120); The Loop, *A.J. Cough* 217 (PERTH); Gorge Road from junction with Ajana-Kalbarri road to The Loop carpark, 26.7 km from Gorge Road turn-off, *R.S. Cowan* A817 & *R.A. Cowan* (NY, PERTH, US); "Z" bend Lookout, Kalbarri National Park, *N. Hoyle* 598 (PERTH); The Loop Lookout, Kalbarri National Park, *N. Hoyle* 619 (CANB, PERTH); Kalbarri, along the Murchison River near The Loop, *E. & S. Pignatti* 122 (PERTH); Kalbarri to the North West Coastal Highway, *M.H. Simmons* 458 (PERTH).

Distribution. Restricted to the Kalbarri National Park on the Murchison River, southwest Western Australia; the type collection was very likely collected in the Park which was not established until 1968 and consequently the label gives only "Murchison River area".

Habitat. Grows on sandstone cliffs and sand over sandstone in *Acacia* shrubland.

Flowering and fruiting periods. Flowering specimens have been collected from mid-August through September and pods with mature seeds have been collected in January.

Conservation status. A Priority 2 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The terete phyllodes are the basis for the epithet of the new variety, from *cylindratus*, a Latin word meaning in the shape of a cylinder.

14. Acacia xanthocarpa Cowan & Maslin, *sp. nov.*

Frutex rotundatus vel infundibularis, 2-3 m altus, truncis et ramis plus minusve contortis, ramulis teretibus sed ad apicem leviter angulatis, initio appresso-puberulis sed mox glabrescentibus, rubro-brunneis et nitidis. Phyllodia teretia, acuta, ad apicem saepe curvata, ad 1.5 mm longum versus basem expansum pulvinum attenuata, laminis 6-9.5 cm longis, 0.9-1 mm diametro, rectis ad leviter incurvatis, nervis numerosis, arcte parallelis. Pedunculi in quoque axilla solitarii vel binati, 2-7 mm longi, plus minusve appresso-puberuli; capitula subglobularia ad oblongoidea, aurea, circa 6 mm longa et 5 mm diametro, 18-20-floribus; bracteolis spathulatis, lamina concava, fimbriato-ciliolata. Flores pentameri. Sepala longitudine 1/3 petali partes aequantia, 1/4-1/2-connata, lobis oblongis, ad apicem rotundatis, fimbriato-ciliatis. Petala 1.8 mm longa, erecta, circa 2/3-connata, lobis ovatis, acutis. Ovarium papillato-puberulum. Legumina oblonga, undulata, supra semina elevata, 6-8 cm longa, 8-15 mm lata, crustaceo-coriacea, interdum plus minusve curvata, dense velutina, pilis longis, erectis, initio atro-aureis sed demum albis. Semina obliqua ad transversa, lato-elliptica ad circularia, ad centrum depressa, 6.5-9 mm longa, 6.5-8 mm lata, 3.5 mm crassitie, hebetate atro-brunnea, pleurogramma elliptica, continua, arillo terminali.

Typus: Norie Station, Western Australia, 2 August 1982, *A.A. Mitchell* 980 (holo: PERTH 00154164 and 02054515; iso: CANB, G, K, MEL, NY, PERTH 00153702).

Rounded or obconic *shrub* 2-3 m tall, the trunks and main branches somewhat contorted. *Bark* grey, fibrous, fissured on main trunks, slightly rough on branchlets. *Branchlets* terete, slightly angled at extremities, appressed puberulous at first but soon glabrescent, red-brown, shiny. *Phyllodes* terete, 6-9.5 cm long, 0.9-1 mm diam., erect, straight to slightly incurved, tapering basally, appressed puberulous at first but soon glabrescent or some hairs persisting in longitudinal grooves, green (somewhat glaucous when young); apex acute, the tip straight or more commonly curved to almost uncinate and to 1.5 mm long; pulvinus *c.* 1.5 mm long, flaring towards base; nerves numerous, closely parallel, slightly raised; gland near base of blade, small, inconspicuous. *Peduncles* solitary or paired, 2-7 mm long, ± appressed puberulous; heads (few seen) subglobular to oblongoid, golden, *c.* 6 mm long and 5 mm diam., 18-20-flowered; bracteoles spathulate, the blade concave, fimbriate-ciliolate. *Flowers* 5-merous. *Sepals* 1/3 as long as petals, 1/4-1/2-united, the lobes oblong, rounded apically, fimbriate-ciliate. *Petals* 1.8 mm long, erect, *c.* 2/3-united, the lobes ovate, acute. *Ovary* papillate-puberulous. *Pods* oblong, undulate, raised over seeds but not constricted between them, 6-8 cm long, 8-15 mm wide, crustaceous-coriaceous, sometimes somewhat curved, densely velvety, the ± long, erect hairs light golden on young pods but whitish on mature pods. *Seeds* oblique to transverse in pod, widely elliptic to circular, depressed in centre, 6.5-9 mm long, 6.5-8 mm wide, 3.5 mm thick, dull, dark brown; pleurogram continuous, elliptic, surrounded by band of light brown tissue sometimes extending to the areole; aril terminal, consisting of a small mound of (yellow?) tissue.

Other specimens examined. WESTERN AUSTRALIA: 60 miles [*c.* 96 km] SW of Wiluna, *J.S. Beard* 4775 (PERTH); Norie Station, *J. Bell* 846 (PERTH); Norie Station, 0.5 km W of homestead, *c.* 25 km due SW of Meekatharra, *B.R. Maslin* 5385 (CANB, K, PERTH); 42 km S of Neds Creek Station turn-off on Wiluna-Great Northern Highway road, *B.R. Maslin* 5389 (PERTH); Polelle Station near Shearing Shed, *A.A. Mitchell* 1044 (MEL, PERTH); Belele Station, *A.L. Payne* 82 (PERTH); S of Karalundi, *N.H. Speck* 1096 (PERTH).

Distribution. Restricted to a small area just west and south of Meekatharra from the Belele, Norie and Polelle Stations, extending to *c.* 120 km northeast to Doolgunna Station and Neds Creek Station, also to an area *c.* 120 km southeast of Meekatharra, west-central Western Australia.

Habitat. On rocky basalt hills and plains, commonly along drainage lines.

Flowering and fruiting periods. Flowers in July-August; one mature fruit with mature seeds collected in December.

Affinities. Resembles some of the "*A. aneura* Group" vegetatively but its true relationships are not known to us.

Conservation status. A Priority 2 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The specific epithet is chosen to call attention to the golden velvety pods, from the latinization of two Greek words, *xanthos*, yellow or golden, and *karpos*, fruit.

15. Acacia yorkrakinensis C. Gardner, J. Roy. Soc. Western Australia 27: 174 (1942)

Typus: Yorkrakine, Western Australia, August 1920, *C.A. Gardner s.n.* (holo: PERTH 00776831).

Spreading, often rounded, dense to ± open *shrubs* or *trees* 1-4 m tall, branching from near ground level. *Bark* grey, becoming fissured at base of trunks. *Branchlets* terete, pruinose, glabrous. *Phyllodes* linear to linear-elliptic or narrowly elliptic to narrowly oblong-elliptic, 3-16 cm long, 3-13 mm wide, l:w = (3)4-40, more or less coriaceous, not rigid, ascending, straight to somewhat incurved or slightly recurved, glabrous, grey-green to glaucous; apices acute to acuminate or caudate-acuminate, rarely obtuse, commonly curved; pulvinus 1.5-3(4) mm long; nerves numerous, fine, closely parallel, rarely a few anastamosing, the midnerve slightly raised and more evident than the rest, margins red to light brown. *Racemes* 2-30 mm long, commonly 2-18 mm long, 1-4-headed, glabrous, somewhat pruinose; peduncles 5-13 mm long; spikes dense, 10-22 mm long, 5-7 mm diam., golden; bracteoles peltate with a stipe *c.* 1 mm long, villose. *Flowers* 5-merous. *Sepals c.* 1/3 as long as the petals, 1/2-3/4-united in a puberulous cup, the lobes rounded-obtuse. *Petals* 1/4-2/3-united, glabrous. *Pods* linear, raised over seeds but not constricted between them, 6.5-11 cm long, 4-5.5 mm wide, crustaceous-coriaceous, straight, glabrous, more or less pruinose. *Seeds* longitudinally arranged in pods, oblong-elliptic, 4-5 mm long, 3 mm wide, glossy to sub-glossy, dark brown to ± black; pleurogram U-shaped, open at hilar end; aril terminal and folded.

Distribution. Extending from Perenjori and Wubin (*c.* 20 km north of Dalwallinu) southeast to near Coolgardie, Lake King (*c.* 115 km east of Lake Grace) and Peak Charles (*c.* 95 km south-southwest of Norseman), Western Australia. The typical subspecies is restricted to a small area near Yorkrakine; subsp. *acrita* has a much wider distribution (including a record of it from Yorkrakine).

Infraspecific taxa. Comprised of two closely related subspecies which differ principally in phyllode form (see key below). The new subspecies described here is the taxon that has been conventionally referred to as *A. signata.*

Affinities. Closely related to *A. signata* which differs largely by its commonly spindly habit, yellow-margined phyllodes and by its geographic distribution; although the ranges of the two species overlap in the Perenjori-Wubin area, the range of *A. signata* continues north to near Shark Bay in more coastal and near-coastal situations than *A. yorkrakinensis.*

Key to subspecies of *Acacia yorkrakinensis*

1. Phyllodes 3-9.5 cm long, (5)6-13 mm wide, l:w = (3)4-12, narrowly elliptic to narrowly oblong-elliptic, acute to obtuse ..... 15a. subsp. *yorkrakinensis*
1. Phyllodes 8-16 cm long, 3-6(7) mm wide, l:w = 15-40, linear to linear-elliptic, acuminate to caudate-acuminate ..... 15b. subsp. *acrita*

15a. Acacia yorkrakinensis C. Gardner subsp. **yorkrakinensis**

Phyllodes narrowly elliptic to narrowly oblong-elliptic, 3-9.5 cm long, (5)6-13 mm wide, l:w = (3)4-12, acute or sometimes obtuse, the tip straight to slightly curved.

Other specimens examined. WESTERN AUSTRALIA: 10 km N of Bungalla, *E.E. Conn* 2-82 (PERTH); 17.6 km N of Bungalla, 2 September 1936, *C.A. Gardner* (PERTH 00583359); 1.6 km S of Yorkrakine on road to Bungalla, *B.R. Maslin* 598 (PERTH); 10.5 km N of Bungalla towards Wyalkatchem, *B.R. Maslin* 3393 (CANB, K, PERTH); North Bungalla Reserve A17732, 17 km NW of Kellerberrin Townsite, *B.G. Muir* 297(3.3) (PERTH); Bruce Rock to Yorkrakine, *J.G. & M.H. Simmons* 365 (PERTH); just S of Yorkrakine, *M. Simmons* 374 (PERTH); Yorkrakine, *M.H. Simmons* 1266 (PERTH); 6.4 miles [10.5 km] N of Bungalla turn-off on Great Eastern Highway, *M.D.Tindale* 3711 (PERTH).

Distribution. Narrowly restricted to the Yorkrakine-Bungalla area (*c.* 30 km north to *c.* 10 km east of Tammin), southwest Western Australia. Subspecies *acrita* has a much wider distribution but there is one record of it occurring within the range of subsp. *yorkrakinensis* (see below).

Habitat. Grows in red or yellow sand or sandy clay in sandplain heath with *Eucalyptus* spp. and in *Acacia stereophylla* shrubland.

Flowering and fruiting periods. Flowers from July to September; data on fruiting times is unavailable due to the lack of fruiting collections.

Conservation status. A Priority 2 taxon on the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

15b. Acacia yorkrakinensis subsp. **acrita** Cowan & Maslin, *subsp. nov.*

A var. *yorkrakinensis* phyllodiis 8-16 cm longis et 3-6(7) mm latis, versus basem gradatim attenuatis, apice acuminato ad caudato-acuminato plerumque plus minusve curvato differt.

Typus: 10 km S of Merredin towards Bruce Rock, Western Australia, 27 August 1973, *B.R. Maslin* 3410 (holo: PERTH 00583707; iso: BH, BRI, DNA). Distributed as *A. signata* F. Muell.

A. acuminata var. *glaucescens* E. Pritzel, Bot. Jahrb. Syst. 35: 308 (1904). T: near Karalee, Western Australia, *L. Diels* 5579; *n.v.*

[*A. acuminata auct. non* Benth.: G.Bentham, Fl. Austral. 2: 404 (1864), *pro parte*, as to *J.Drummond* (?4:) 135 (K).]

[*A. signata auct. non* F. Muell.: J.H. Maiden, J. & Proc. Roy. Soc. New South Wales 51: 265 (1917).]

Illustration. M. Simmons (as *A. signata*), Acac. Australia 2: 249 (1988).

Phyllodes linear to linear-elliptic, 8-16 cm long, 3-6(7) mm wide, l:w = 15-40, attenuate towards base, acuminate to caudate-acuminate, the tip normally curved.

Selected specimens examined. WESTERN AUSTRALIA: 20 km E of Damboring, *T.E.H. Aplin* (NSW, PERTH); 1.6 km W of Bodallin, *N.T. Burbidge* 4930 (PERTH); 6.8 km E of Carrabin by road, *R. Coveny* 8355 & *B. Haberley* (CANB, K, L, NSW, PERTH, UC, US); 15.5 km W of Mukinbudin towards Bencubbin, *R.J. Cumming* 2288 (MELU, PERTH); Wubin, *H. Demarz* 6882 (PERTH, TLF); Yorkrakine, 27 July 1948, *C.A. Gardner s.n.* (PERTH 00584363); 4.8 km S of Perenjori, *J. Goodwin* 174 (PERTH); 33.6 km W of Coolgardie, *J. Goodwin* 280 (PERTH); Merredin, *M. Koch* 3014 (PERTH); 4.8 km W of Hines Hill on Great Eastern Highway, *B.R. Maslin* 588 (MEL, PERTH); *c.* 8 km due W of Merredin, *B.R. Maslin* 1747 (AD, PERTH); *c.* 4.8 km due W of Merredin, *B.R. Maslin* 1751 (CANB, NSW, PERTH); 52.4 km from Wubin towards Mount Magnet, *B.R. Maslin* 3536A (PERTH); 11 km WSW of Boorabbin, *K. Newbey* 5723 (BRI, PERTH); 20 km NE of Peak Charles, *c.* 40 km NW of Salmon Gums, *K. Newbey* 6485 (PERTH); Hines Hill, *F. Stoward* 504 (PERTH); 2.7 km W of Merredin, *M.D. Tindale* 3727 (BRI, CANB, K, MEL, PERTH, US); 150 km W of Kalgoorlie on Great Eastern Highway, *T. & J. Whaite* 4076 (CANB, K, PERTH).

Distribution. Widespread from the area around Perenjori and Wubin southeast to near Coolgardie, Lake King and Peak Charles, southwest Western Australia. If the locality given on the *Gardner s.n.* specimen cited above is correct then it is possible that subsp. *acrita* and subsp. *yorkrakinensis* are sympatric in the Yorkrakine area.

Habitat. Grows commonly in yellow sand but also in gravelly sand, gravel, sandy clay and sandy loam in mallee heath, open shrubland and mallee-wattle open scrub on flat-lands, gently undulating sandplains and gravelly or rocky rises.

Flowering and fruiting periods. Flowering mainly from August through September but some collections have been made as early as July and as late as December; pods with mature seeds are found from November to January.

Typification. The type of *A. acuminata* var. *glaucescens* has not been seen. However, because the type locality is within the range of subsp. *acrita* and because the (albeit very brief) original description is not at variance with the new subspecies, it seems reasonable to treat Pritzel's name in synonymy here.

Conservation status. Widely distributed, not known to be under threat.

Etymology. The name for the subspecies derives from the confusion that has existed between *A. signata* and this subspecies of *A. yorkrakinensis*, from a latinized Greek word for confused or mixed, *akritos.*

Acknowledgements

Diana Corbyn and Karina Knight provided valuable assistance in completing this study and we gratefully acknowledge the importance of their contributions. The Australian Biological Resources Study provided some financial support for the project.

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Acacia Miscellany 11. Miscellaneous taxa of northern and eastern Australia of *Acacia* section *Plurinerves* (Leguminosae: Mimosoideae)

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Abstract

Cowan, R.S. and B.R. Maslin. *Acacia* Miscellany 11. Miscellaneous taxa of northern and eastern Australia of *Acacia* section *Plurinerves* (Leguminosae: Mimosoideae). Nuytsia 10 (1): 63-84 (1995). Two new species (*A. kenneallyi* Cowan & Maslin and *A. manipularis* Cowan & Maslin) and one new subspecies (*A. retivenea* F. Muell. subsp. *clandestina* Cowan & Maslin) are described. *Acacia lanigera* Cunn. is distinguished from *A. venulosa* Benth. and is viewed as comprising three varieties, var. *lanigera*, var. *gracilipes* Benth. and var. *whanii* (F. Muell. ex Benth.) Pescott (syn. *A. whanii* F. Muell. ex Benth.). In addition, lectotypes for several taxa are designated herein: *A. subporosa* var. *linearis* Benth. (the base name for *A. cognata* Domin), *A. excelsa* Benth., *A. hemignosta* F. Muell., *A. lanigera* Cunn., *A. lanigera* var. *gracilipes* Benth., *A. leucophylla* Lindley (= *A. pendula* Cunn. ex Don), *A. praelongata* F. Muell., *A. subporosa* F. Muell., and *A. trinervata* var. *brevifolia*. A note concerning the binomial *A. sericata* Cunn. ex Benth. is also included and discussions are presented concerning *A. farinosa* Lindley, *A. latescens* Benth. and *A. trinervata* Sieber ex DC.

Introduction

In the course of the preparation of our contribution for the account of the genus *Acacia* for the "Flora of Australia", we have made many new observations, corrected earlier errors and re-arranged the taxonomy of numerous taxa, in addition to which we have recognized many altogether new entities. These are being published separately from the Flora and in this paper information is presented concerning several miscellaneous species, in addition to a number of new taxa, from the north and east of Australia.

Methods

The species included in this paper are presented under two headings: (1) new and revised taxa, and (2) miscellaneous lectotypifications and notes. In so far as has been possible the species are arranged alphabetically within these two groups.

Our approach to typification is discussed in Maslin & Cowan (in press) and our method of ranking taxa is discussed in Cowan & Maslin (1994).

The conservation status of Western Australian taxa is assessed using the criteria outlined on page 141 of this journal.

All measurements and observations were made from dried herbarium specimens unless specifically stated otherwise.

New and revised taxa

1. Acacia kenneallyi Cowan & Maslin, *sp. nov.*

Arbor vel frutex aperto-ramosus, debilis, 2-7 m altus. Cortex laevis. Ramuli teretes, glabri, pruinosi, atrati. Stipulae persistentes, circa triangulares, minutae. Phyllodia anguste elongato-elliptica ad linearia, attenuata versus apicem acutum, longo-attenuata versus pulvinum pruinosum, 5-7 mm longum, laminis 15-25 cm longis, 6-14 mm latis, tenuiter coriaceis, rectis ad leviter arcuatis, glabris, 1 nervo principali longitudinali elevato, nervis secondariis plus minusve reticulatis, indistinctis, nervis marginalibus incrassatis; glans principalis laminarum prope basem, magna, conspicua, lato-elliptica et in nervo marginalia 1—4 glandes secondaria inserta. Inflorescentiae racemosae, axillares vel terminales, aliquando pedunculis 1-4 in axilla, axibus 2-10 cm longis, glabris, plus minusve pruinosis; pedunculi 8-25 mm longi, 1 ad aliquot per nodum, graciles, glabri; capitula globularia, aurea, circa 5 mm diametro, 46-56-floribus, bracteolis unilateraliter peltatis, minutis. Flores 5-meri. Sepala petalis 2/3-3/4 breviora, 3/4-connata, inter lobos diaphana, lobis late ovatis, rotundatis et apiculatis vel acutis, puberulis. Petala 3/4-connata, inter petalas diaphana, lobis ovatis, puberulis. Staminorum filamenta discreta vel ad basem plus minusve connata. Ovarium glabrum. Legumina (submatura) angusto-oblonga, 9.5-11 cm longa, 10-11 mm lata, coriacea, recta, plana, aperto-reticulata, marginibus incrassatis. Semina (immatura) obliqua, funiculo lineari, rubro-brunneo, apicaliter in arillum conspicuum abrupte expando, arillo conspicuo, galeato, terminali.

Typus: on mainland 8.3 km E and across from Savage Hill on Bigge Island, Western Australia, 5 June 1987, *K.F. Kenneally* 10167 and *B.P.M. Hyland* (holo: PERTH 00870501; iso: CANB, K).

Openly branching, weak *tree* or *shrub* 2-7 m tall. *Bark* smooth. *Branchlets* terete, glabrous, pruinose, dark-coloured. *Stipules* persistent, more or less triangular, minute. *Phyllodes* narrowly elongate-elliptic to linear, 15-25 cm long, 6-14 mm wide, thin-coriaceous, straight to slightly arcuate, glabrous, light- to dark-green; apex tapering to acute tip; base attenuate to the pruinose pulvinus 5-7 mm long; blade with one prominent longitudinal main nerve, one weaker longitudinal nerve commonly present but disappearing in lower half of phyllode, the secondary nerves more or less reticulate, indistinct, the marginal nerves prominent, thickened; main gland conspicuous, situated on phyllode margin at or near base of blade, widely elliptic with raised margins and depressed centre, 1-4 smaller glands on upper marginal nerve. *Inflorescences* axillary or terminal racemes, or 1-4 heads in phyllode axils, the axes (when present) 2-10 cm long, glabrous, somewhat pruinose; peduncles 8-25 mm long, slender, glabrous; basal peduncular bracts persistent, minute, ± triangular; *heads* globular, golden, *c.* 5 mm diam., 46-56-flowered, congested; bracteoles unilaterally peltate, the lamina rounded and puberulous. *Flowers* 5-merous. *Sepals* 2/3-3/4 as long as petals, 3/4-united, tissue between sepals diaphanous, lobes broadly ovate, rounded and apiculate or acute, puberulous. *Petals* 3/4-united by

diaphanous tissue between the petals, lobes ovate, densely puberulous with white and pale golden hairs. *Stamen* filaments free or somewhat united basally. *Ovary* glabrous. *Pods* (slightly immature) narrowly oblong, flat, slightly raised over but not constricted between seeds, 9.5-11 cm long, 10-11 mm wide, coriaceous, straight, openly reticulate, glabrous, attenuate basally, apex acute, margins thickened. *Seeds* (slightly immature) obliquely arranged in the pods; funicle linear, red-brown, abruptly expanded into a conspicuous, terminal, dull brownish yellow (probably cream or white when fresh), helmet-shaped aril.

Other specimens examined. WESTERN AUSTRALIA: Naturalist Island, Prince Frederick Harbour, *M. Evans* 12B (PERTH), *K.F. Kenneally* 9919 (PERTH), 9931 (MEL, PERTH) and 9940 (PERTH); Boomerang Bay on W side of Bigge Island, Bonaparte Archipelago, *K.F. Kenneally* 10036 (CANB, PERTH); Heywood Island, Bonaparte Archipelago, *P.G. Wilson* 10901 (PERTH); Byam Martin Island, Bonaparte Archipelago, *P.G. Wilson* 11467 (PERTH).

Distribution. Restricted to the Bonaparte Archipelago area in the Kimberley area from Heywood Island northeast to Bigge Island and the mainland across from Bigge Island, northern Western Australia.

Habitat. Grows in sand over sandstone and also on dolermite, commonly in eucalypt woodland.

Flowering and fruiting periods. Flowers from late May to June; pods with mature seeds have not been collected.

Affinities. The one main longitudinal nerve in the phyllodes might suggest section *Phyllodineae* DC. as the group in which one should search for relatives of *A. kenneallyi*. However, the new species appears to be most closely related to *A. latescens* Benth. which has phyllodes with two longitudinal main nerves, the upper of which disappears well short of the apex. Similarly, *A. kenneallyi* commonly has a second, much weaker, longitudinal nerve which disappears in the lower half of the phyllode or, occasionally, fails altogether to develop. In addition to its phyllode nervature and the fact that it is endemic in Northern Territory, *A. latescens* differs from *A. kenneallyi* in the following ways: branchlets not pruinose, heads cream to pale yellow, petals glabrous to subglabrous, pods 12-15 mm wide and the aril smaller. Moreover, the inflorescences in *A. latescens* regularly are short (10-20 mm long), axillary racemes, whereas in *A. kenneallyi* they are generally much longer, sometimes axillary, sometimes terminal, and just as often non-racemose peduncles occur. The paucity of suitable flowering material of the new species makes it difficult to properly determine the nature of its flowering system.

Conservation status. A Priority 3 taxon in the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. We take pleasure in naming this species for the collector of most of the material known of it, Kevin F. Kenneally, an authority on the flora of the Kimberleys based on years of collecting and observing the plants of that region.

2. Acacia lanigera and **A. venulosa**

Acacia lanigera Cunn. and *A. venulosa* Benth. have been variously treated and are considered together here to clarify their obvious close relationship. They are most reliably distinguished on floral characters and, to a lesser extent, vegetatively; pods are also useful but are not known for all the taxa.

The bracteoles are particularly useful in distinguishing the two species: linear-spathulate with long claws and short, ± rounded (rarely apiculate) laminae in *A. venulosa*, and sessile to sub-sessile with large, acute to acuminate laminae in *A. lanigera*. The sepals in *A. venulosa* are free to shortly united at the base, or occasionally, especially specimens from New South Wales, they are free to 1/2-united; in *A. lanigera* the sepals are 2/3-3/4-united. Pods of *A. venulosa* are straight while those of *A. lanigera* are at least arcuate to once-coiled, insofar as they are known, for we have not seen the pods of var. *whanii*.

While indumentum in the two species is variable there are patterns in density, hair type and orientation, particularly on branchlets and peduncles, which make these useful secondary character for distinguishing the species (see descriptions below). The resin-hairs which are common in *A. venulosa* but infrequent in *A. lanigera* are similar to those found in *A. oswaldii* F. Muell. and many other species. They appear similar to the C-hairs Rutishauser and Sattler (1986) described in *A. longipedunculata* Pedley.

The two species replace each other geographically: *A. lanigera* occurs in southern Victoria to northern New South Wales; *A. venulosa* extends from central-eastern New South Wales north to southern Queensland.

Key to Taxa of *A. lanigera* and *A. venulosa*

1. Bracteoles with long, linear claws and short, rounded (rarely apiculate) laminae. Sepals free or shortly united at base, occasionally 1/2-united (in some N.S.W. specimens). Pods straight ..... 2.2. *A. venulosa*
1. Bracteoles sessile to sub-sessile and with large acute to acuminate laminae. Sepals 2/3-3/4-united. Pods (where known) curved to coiled.
   2. Peduncles 6-9 mm long; phyllode gland 0-2 mm above base of blade but often obscured by indumentum; branchlets with dense, ± spreading to sub-appressed hairs ..... 2.1b. *A. lanigera* var. *gracilipes*
   2. Peduncles 2-4 mm long, to 5 mm in fruit; phyllode gland mostly 3.5-13 mm above base of blade.
      3. Branchlets with ± sparse, clearly appressed hairs; phyllodes usually innocuous to scarcely pungent ..... 2.1c. *A. lanigera* var. *whanii*
      3. Branchlets with ± dense and spreading hairs; phyllodes sharply pungent ..... 2.1a. *A. lanigera* var. *lanigera*

2.1. Acacia lanigera Cunn. in B. Field, Geogr. Mem. New South Wales. 345 (1825)

Racosperma lanigerum (Cunn.) Pedley, Austrobaileya 2: 350 (1987). Lectotype (here selected): frequent on rocky barren ranges in interior of New South Wales [Bathurst region, ± September 1822], *A. Cunningham* [221] (K, flowering specimen with slip-on label; isolecto: BM, K, PERTH 01507915 - fragment ex K). Paralectotypes: See discussion of typification below.

A. lanigera var. *brachyphylla* Domin, Biblioth. Bot. 89: 250 (1926). Possible type: New South Wales, *W. Macarthur* (K, specimen annotated by Bentham as "lanigera Cunn. var. brevifolia", see discussion below).

Illustrations. R. Graham in Curtis's Bot. Mag., *n.s.*, 3: pl. 2922 (1829); L. Costermans, Nat. Trees Shrubs S.E. Australia 323 (1981); M.H. Simmons, Acac. Australia 1: 199 (1981).

Rigid, dense, erect *shrubs* 1-2 m tall. *Branchlets* apically angular, becoming terete but ridged, sparsely to densely hairy, the hairs straight to ± crisped and patent to appressed, resin hairs absent or few, old branchlets with obvious stem-projections at nodes after fall of phyllodes. *New shoots* often ± white- or greyish-woolly. *Stipules* persistent, narrowly triangular to subulate, 1-3 mm long, straight, appressed pilose or puberulous. *Phyllodes* narrowly elliptic, linear-elliptic or linear-oblanceolate, (1.8)3-5.5(7) cm long, 3-7(11) mm wide, coriaceous, patent to ascending, straight to shallowly recurved, somewhat villose on nerves at first, commonly glabrescent; apex acute to obtuse, sometimes shortly acuminate, mucronate or mucronulate, pungent to innocuous, the mucro brown, rigid, often excentric; pulvinus 0.5-2 mm long; stomata raised (x60 mag.); 3 or 4 main, raised, distant, longitudinal nerves per face, several secondary nerves nearly as strongly raised, anastomoses occasional to frequent; gland one, obvious or inconspicuous, at or near base of blade or up to 13 mm above the base, sometimes in a swollen area of adaxial margin of blade. *Peduncles* 1-4 per axil but commonly binate, 2-9 mm long, glabrous to moderately hairy; basal peduncular bract almost semicircular, ovate to lanceolate, acute or obtuse, puberulous or pilose, persistent through anthesis, 1.5-2 mm long; heads globular to subglobular, often distinctly oblongoid in bud, golden, 4.5-6.5 mm diam, 5-7 mm long, 20-30-flowered; bracteoles obovate, lanceolate or elliptic, sessile to sub-sessile, the laminae acute to acuminate, about 3 times as long as the claw, pilose, puberulous or glabrous, usually ciliolate, often persistent on receptacle after anthesis. *Flowers* 5-merous. *Sepals* 1/4-1/2 as long as petals, 2/3-3/4-united, lobes oblong or triangular, obtuse or acute, puberulous, ciliolate. *Petals* 1/2-2/3-united, lobes ovate, acute, glabrous, spreading. *Ovary* white-villose. *Pods* linear, raised over but not or only slightly constricted between seeds, 6-10 cm long, 4-6 mm wide, coriaceous, curved to openly once-coiled, villose-tomentose. *Seeds* longitudinally arranged in pods, oblong to widely elliptic, 4.5-5 mm long, 3 mm wide, 1.5-2 mm thick, dull, dark brown, verruculose; areole 3/4 length of seed; aril terminal, yellow or white. Woolly Wattle, Hairy Wattle.

Typification. Although Cunningham listed no collections in the protologue of *A. lanigera,* he cited the locality, "rocky barren ranges in the interior" [of N.S.W.]; the protologue included characters of both flowers and fruit. Several flowering and fruiting collections, labelled and unlabelled, are involved on a number of herb. K sheets. From study of Cunningham Specimen Lists in the archives at K, we have concluded that Cunningham collected flowering material of *A. lanigera* in the Bathurst region and northward around September 1822, to which he gave the number 221; on a return trip in December of the same year he collected fruiting material for which he used the same collection number. This phenology is borne out by modern collections. Because the lower (flowering) specimen on a herb. Hooker sheet at Kew is annotated (on a slip-on label in Cunningham's hand) with "Acacia lanigera C" and the locality given in the protologue, we here designate it as the lectotype. This specimen is un-numbered, but it is a very good match for another Kew specimen which has a Cunningham slip-on label that is annotated "221/1822". The lectotype is therefore assumed to be part of Cunningham's 221 collection gathered from the Bathurst region around September 1822. The fruiting material on the lectotype sheet is unlabelled, but may well represent the December gathering of the Cunningham 221 collection and is therefore treated as a probable paralectotype. There are duplicates of these two specimens on the other sheets at Kew. The only other specimen of relevance is Cunningham 19 (in flower) which is labelled as having been collected from near Bathurst in July 1823; we have treated this as a paralectotype.

Bentham (1864) gives a very odd description of the pods of *A. lanigera*, odd until one sees one of the other sheets of the species at K which Bentham would have seen. One of these bears two specimens,

one (lacking a label) which is *A. lanigera sensu lectotypico*, the other a branchlet and a detached pod valve of *A. oswaldii* with the following label data: "Acacia lanigera A. Cunn./Lachlan River/New South Wales, May 1817, A. Cunningham 422". It was this valve that Bentham described as the fruit of *A. lanigera*.

Synonomy. We have not seen specimens, either at K or PR, annotated by Domin as *A. lanigera* var. *brachyphylla*; this name was based on a Macarthur collection from N.S.W. However, there is a Macarthur specimen at K, annotated by Bentham as "lanigera Cunn. var. brevifolia", a name which was never published. As this specimen accords well with Domin's very brief protologue and as his epithet "brachyphylla" is the Greek equivalent of Bentham's "brevifolia", it is possible that the Macarthur specimen is the type of Domin's name, even though the author has not annotated the sheet.

Affinities. This species has been variously confused with *A. venulosa* which is indeed closely related but branchlets and peduncles of *A. venulosa* have many black resin-hairs intermixed with long ones, shorter stipules that have a thickened base, longer pulvini, velvety peduncles, linear-spathulate bracteoles, free or nearly free sepals and straight pods.

2.1a. Acacia lanigera Cunn. var. **lanigera**

Branchlets with dense, ± spreading hairs. *Phyllodes* narrowly elliptic or linear-elliptic, acute, sometimes shortly acuminate, sharply pungent,(1.8)3-5.5(7) cm long, 3-7(11) mm wide, gland mostly 3.5-13 mm above the pulvinus, sometimes in a swollen area of adaxial margin. *Peduncles* 2-4 mm long, to 5 mm in fruit, glabrous to moderately hairy; heads 6.5 mm diam, 6-7 mm long, globular to sub-globular.

Other specimens examined. NEW SOUTH WALES: Bumberry, near Parkes, *J.L. Boorman* 103858 (NSW); near The Rock, Milton, August 1965, *H. Boyd* (PERTH 01268228); Black Mountain, 12.8 km W of Queanbeyan, *R.H. Cambage* 3084 (NSW); 20.8 km from Bathurst on Fremantle road, *E.F. Constable* 4735 (NSW, PERTH); Bunbury [Bumberry] State Forest, 32 km E of Parkes, *E.F. Constable* 7296 (NSW, PERTH); Mullions Range, 22.4 km NNE of Orange, *R. Coveny* 4152 and 4160 (both NSW); 5.3 km SE of Baldry P.O. on Cumnock road, *R. Coveny* 12086 & *P. Hind* (NSW); 3.1 km from centre of Coonabarabran town towards Baradine, *N. Hall* H78/14 (PERTH); 1 km NE of Trunkey Creek on road to Bathurst, *B.R. Maslin* 5900 (PERTH); on Kandos-Glen Alice road, *W. McReaddie* AC/54 (NSW); Euchareena, *H.M.R. Rupp* (NSW 222621); Crokers Range, *H. Salasoo* (NSW 222602) and *T. Tame* 1536 (PERTH).
VICTORIA: beside Murray Valley Highway at base of north slope of Pine Mountain, *M.G. Corrick* 5984 (MEL, PERTH).

Distribution. Frequent in Parkes-Bathurst areas extending north to Pilliga in New South Wales and south to just inside the Victorian border between Pine Mountain (36° 01'S, 147° 49'E) and Mount Pilot near Beechworth (36° 15'S, 146° 40'E).

Habitat. Found in open eucalypt forest on shale and granite hills in shallow stony or sandy soils.

Flowering and fruiting periods. Flowering August-October; mature fruits with seed in December.

Discussion. A specimen collected from "near a granite hill between Tiltaldra & Walwa, Victoria" (*Anonymous*, 24 Feb. 1957, NSW 222600) has atypically wide phyllodes (8-11 mm) and as such

resemble those of *A. venulosa*. However, it is clearly var. *lanigera* on account of its strongly curved pods.

Conservation status. Not considered rare or endangered.

2.1b. Acacia lanigera var. **gracilipes** Benth., Fl. Austral. 2: 325 (1864)

Lectotype (here selected): Genoa River, Victoria, September 1860, *F. Mueller s.n.* (K; isolecto: MEL 235214, NSW 222549, PERTH 01507931 - fragment ex K).

Branchlets with dense, ± patent to sub-appressed hairs. *Phyllodes* narrowly elliptic, (1.8)3.5-4 cm long, 3-4(6) mm wide, acute, pungent to coarsely pungent; gland 0-2 mm above blade-base, not prominent and commonly obscured by dense indumentum which extends from the pulvinus. *Peduncles* 6-9 mm long, glabrous; heads about 5 mm diam., globular.

Other specimens examined. NEW SOUTH WALES: junction of Imlay Creek and Wallagaraugh River, *D.E. Albrecht* 3938 (MEL); Yambulla State Forest, Newtons Crossing picnic area, *M. Parris* 9867 (MEL).
VICTORIA: East Gippsland: Genoa River, *c.* 1 km downstream from the Tasker track crossing, Wangarabell area, *D.E. Albrecht* 4878 (MEL); upper Genoa River, *A.C. Beauglehole* 35088 & *K.C. Rogers* (MEL); Deddick Track, 1.2 km NW of Mount Joan, 13.8 km S Mount Deddick, *S.J. Forbes* 162 (MEL, PERTH); Genoa Gorge, northwest of Genoa, *N.A. Wakefield* 4071 (MEL); Genoa Gorge, 4.8 km above township, *N.A. Wakefield s.n.*(MEL 1500458); rocky island in Genoa River at Genoa, *N.A. Wakefield s.n.*(MEL 235213); Genoa River 0.5 km upstream from Yambulla Creek confluence, *N.G. Walsh* 585 (MEL 615237); Genoa Gorge, *c.* 9 km NW of Genoa township, *J.H. Willis* (MEL 1500456).

Distribution. Occurs in a restricted area from near Mountain Creek (south of Mount Deddick) and the Genoa River area in eastern Victoria, and the neighbouring Wallagaraugh River area in New South Wales.

Habitat. Usually grows among granite boulders in open forest or shrubland.

Typification. Bentham cited no collections in the protologue for this variety but a specimen at Kew from a Mueller collection at the Genoa River, Victoria, is annotated by the author as this variety. We have designated that specimen as the lectotype.

Conservation status. 1E, using the criteria of Briggs & Leigh (1988).

2.1c. Acacia lanigera var. **whanii** (F. Muell. ex Benth.) Pescott, Census Acacia 24 (1914)

A. whanii F. Muell. ex Benth., Fl. Austral. 2: 386 (1864). Type: near Skipton, Victoria, *W. Whan* (holo: K; iso: MEL 30577, NSW 222551, PERTH 01507966 - fragment ex K and 01507958 - fragment ex MEL).

Branchlets with ± sparse, appressed hairs. *Phyllodes* narrowly elliptic to linear-oblanceolate, (1.8)4-5.5 cm long, 6-7 mm wide, obtuse to sub-acute, usually innocuous to scarcely pungent by a

hard, commonly excentric mucro; gland 4-10 mm above blade-base. *Peduncles* 2-4 mm long, glabrous to sparsely hairy; heads sub-globular, about 5 mm long and 4.5 mm diam.

Other specimens examined. VICTORIA: on the Glenelg Highway, 24 km SW of Ballarat and just E of Linton, *T.B. Muir* 2148 (MEL); Glenluce Road, 10 km W of Malmsbury-Daylesford Road junction and *c.* 5 km S of Glenluce, *R.V. Smith* 76/43 (PERTH); Ballarat, *D.W. Spence* (MEL 30574 and 235215); Linton, *HBW* (MEL 235216); roadside at Basalt, W of Daylesford, *J.H. Willis* (MEL 504688, PERTH 01267655).

Distribution. Widespread in central Victoria from Skipton northeast to near Bendigo and east to Licola. A single collection made in 1922 labelled 'Grampians' requires confirmation.

Habitat. Shrubland with scattered trees, as far as known.

Variation. The Willis collection cited above is typical of this variety with respect to the branchlet indumentum but the phyllodes are shaped more like those of var. *lanigera,* as are the pungent phyllode tips.

Discussion. In a short paper Mueller (1890: 18) noted that *A. lanigera* "... includes A. venulosa and A. Whanii." and the sheet at MEL collected July 1889 by D.W. Spence is annotated by Mueller as "Acacia lanigera var. Whanii" in Mueller's handwriting. It was not until 1914, however, that E.E. Pescott validated the combination in his "A Census of the Genus Acacia in Australia". This little-known work was privately published by the author (A.B. Court, pers. comm.) but was overlooked by Chapman (1991). It was reviewed in the Gardner's Chronicle, ser. 3, 105: 205 (1914).

Conservation status. 1R, using the criteria of Briggs & Leigh (1988).

2.2. Acacia venulosa Benth., London J. Bot. 1: 366 (1842)

A. lanigera var. *venulosa* (Benth.) C. Moore & Betche, Handb. Fl. New South Wales 162 (1893); *A. lanigera* var. *venulosa* (Benth.) F. Muell. ex Maiden, Wattles & wattle-barks 3rd edn, 58, 78 (1906), *nom. illeg.*; *Racosperma venulosum* (Benth.) Pedley, Austrobaileya 2: 357 (1987). Type: "Liverpool plains. New Holland. 83 AC. see list 1829" [label details probably in error, see discussion below] (holo: K, sheet stamped Herbarium Hookerianum 1867; ?iso (labelled Dumaresq River): K - ex Herb. Bentham and ex LINN, PERTH 01469894 - fragment ex K).

Illustration. M. Simmons, Acac. Australia 2: 145 (1988); T. Tame, Acac. S.E. Australia 72, fig. 56, pl. 56 (1992).

Erect, sparingly branched *shrubs* 0.5-3 m tall. *Bark* smooth, grey. *Branchlets* angular and strongly ribbed at tips, older ones terete and slightly ribbed, indumentum dense but variable, the hairs straight to curved or ± crisped, patent to appressed and with intermixed red-brown to black resin-hairs, phyllode scars more or less projecting. *Stipules* persistent, triangular with thickened base, about 1 mm long, puberulous. *Phyllodes* narrowly elliptic, (3)5-9 cm long, 4-15 mm wide, rigid-coriaceous, ascending, straight to somewhat incurved, glabrous or sub-glabrous except margins sometimes with minute ± appressed hairs, black resin-hairs often persistent on phyllode faces; apex obtuse or occasionally acute, mucronate to mucronulate, innocuous to coarsely pungent by indurate mucro; pulvinus 2.5-3 mm long; 3 main nerves per face and numerous secondary nerves raised, anastomoses frequent; gland

one, distinct, 1-4 mm above blade/pulvinus junction in swollen area of upper margin of blade. *Peduncles* paired or more commonly in short 2-6-headed racemes with axes to 1 cm long, 3-10 mm long, indumentum similar to that of the branchlets; bract at base of racemes or base of peduncles caducous to persistent through anthesis, ovate to lanceolate, 2-3.5 mm long, densely puberulous; heads globular, golden, 6-9 mm diam., 30-40-flowered; bracteoles linear-spathulate, the laminae concave, rounded, or rarely minutely apiculate, about 1/2 as long as the linear, slender claws, puberulous and with many red resin-hairs, ciliolate. *Flowers* 5-merous. *Sepals* 1/2 as long as petals, free or shortly united at base, sometimes to 1/2-united in N.S.W. specimens, linear-spathulate, the tips somewhat cupulate, puberulous and with red resin-hairs, ciliolate. *Petals* 1/2-2/3-united, glabrous, lobes ovate, acute. *Ovary* densely white-villose. *Pods* linear, slightly raised over seeds, to *c.* 7.5 cm long and 6 mm wide, thinly crustaceous, straight, densely white-villose. *Seeds* longitudinally arranged in pods, 4.5 mm long, *c.* 3 mm wide, the aril terminal.

Other specimens examined. QUEENSLAND: Jolly's Falls near Stanthorpe, *I.B. Armitage* 787 (PERTH); 36 km NW of Stanthorpe on Amiens Road, *M.E. Ballingall* 2082 (PERTH); ridge above Mountain Station near Mount Tully Road, 10 km SSE of Stanthorpe, *M.E. Ballingall* 2411 (PERTH); Pyramids Road, Girraween National Park, *R.S. & R.A. Cowan* A-793 (CANB, K, PERTH).
NEW SOUTH WALES: Boonoo State Forest E of Tenterfield, *M.E. Ballingall* 2414 (PERTH); 9.6 km SW of Coaldale towards Copmanhurst, *R. Coveny* 2195 (NSW, PERTH); New England Highway, 70.4 km S of Tenterfield, *R. Coveny* 2247 (NSW, PERTH); Copmanhurst-Coaldale road, near Smiths Creek, *T. Tame* 1884 (PERTH); Boonoo Boonoo Falls road NE Tenterfield, *T. Tame* 2023 (PERTH); 12.8 km S of Wagga Wagga, 19 December 1951, *G. Withers* (NSW).

Distribution. Most common in the Stanthorpe region of southeast Queensland and adjacent parts of New South Wales; it also occurs further north on the Blackdown Tableland near Blackwater in central Queensland and to the south in the Warrumbungle Range and near Wagga Wagga, New South Wales.

Habitat. Grows in understorey of eucalypt woodland in sandy, gravelly and loam soils on granite hills, occasionally in heathland.

Flowering and fruiting periods. Flowers June-November; fruits with mature seeds December-January.

Typification. Pedley (1978: 207) cited Cunningham 85 [sphalm "25" in Pedley] collected in May 1827 from "Barren country lying north of the Dumaresq River, in 29°S" as the holotype of *A. venulosa.* This collection originated from Cunningham's herbarium and was donated to K in 1862; it comprises a large and a smaller branchlet, the latter with a Cunningham field tag annotated "85/1827". While the two branchlets described above are undoubtedly part of Cunningham's original collection of *A. venulosa* there are reasons to question whether Bentham actually used this material in drawing up the protologue: (1) in the lower right hand corner of the sheet Bentham has written "152 A. venulosa" which was probably added after publication because the "152" is the taxon number under which the species appeared in the original publication; (2) the collecting locality does not agree with that given in the protologue, namely, "Liverpool plains". Indeed, the only specimen we have seen with the locality given in the protologue and annotated "A. venulosa" in Bentham's hand, is the one originating from Hooker's herbarium at K and which we have listed above as the holotype. The specimen is labelled (in an unknown hand): "Acacia clavata"/ 83 AC. see list 1829"; this list is in the archives at K, entitled "Kew Collectors. A. Cunningham. Miscellaneous 1816-38 VI. Specimens of plants of NSW sent to Dr. W.J. Hooker 1829". In referring to number 83 in the list, one finds "Acacia clavata m/s. Allied to *A. falciformis* and *penninervis* Decandolle/ this spec^{s} of *Acacia* is frequent in barren forest-land in the north of Liverpool Plains / flowering in July." It is unlikely that Cunningham could have related

the material of *A. venulosa* to either of the listed species, for they are extremely unlike *A. venulosa*. Consequently, we conclude that this label is probably wrongly attached to this specimen, but this does not alter its status as holotype. The Cunningham 85/1827 specimens, plus the specimen stamped Herbarium Benthamianum, mounted on the same sheet, are regarded as probable isotypes, even though they are said to have been collected from north of the Dumaresque River.

Affinities. Closely related to *A. lanigera* var. *lanigera* (with which it has often been merged as a variety) which lacks black resin-hairs on the branchlets; its bracteoles are sessile or nearly so; its sepals are at least two-thirds united and the pod curved to coiled.

Discussion. Bentham (1842: 367) described *A. venulosa* var. *lanata* based on Cunningham 91 and 98, collected July 1827; later he wrote on the sheet bearing Cunningham 98: "A. ixiophylla Benth. var. / (A. venulosa ß lanata Benth. in Lond. Jour.)". Both specimens represent the same taxon and do indeed appear to be very young material of *A. ixiophylla* with somewhat more obtuse than usual, smaller phyllodes.

Conservation status. Neither rare nor endangered.

3. The "Acacia subternata Group"

At present there are three species in this "Group" (*A. delicatula* Tind., *A. manipularis* Cowan & Maslin *sp. nov.* and *A. subternata* F. Muell.), all very similar at first glance but differing substantially from each other. They have many characteristics in common: (1) resinous branchlets; (2) minute stipules; (3) fasciculate, terete or sub-terete phyllodes; (4) solitary, elongate peduncles bearing globular heads of pentamerous flowers having the sepals and petals joined to varying degrees among themselves; (5) flat, woody pods with a raised, longitudinally oblique, ± reticulate nervation originating from only one of the thickened margins; and (6) longitudinal to obliquely arranged seeds, having a large areole and a terminal, conic aril. The following key sets out some of the distinctions among the three species comprising this "Group".

Key to taxa of "*A. subternata* Group"
(only *A. manipularis* is described in this paper)

1. Youngest branchlets terete and obscurely ribbed. Phyllodes 20-30 mm long, terete. Bracteole laminae short-acute. Petals 1-nerve ..... 3. *A. manipularis*
1. Youngest branchlets angled by prominent ribs. Phyllodes less than 20 mm long.
   2. Phyllodes terete to subterete, 7-18 mm long, mostly 0.3-0.4 mm wide. Bracteole laminae long-acuminate. Petals 1-nerved ..... *A. delicatula*
   2. Phyllodes subterete to flat, 4-14 mm long, mostly 0.5-0.7 mm wide. Bracteole laminae short-acute to apiculate. Petals finely striate (central nerve often the most obvious) ..... *A. subternata*

3. **Acacia manipularis** Cowan & Maslin, *sp. nov.*

Frutex 0.75-1 m altus, ramulis teretibus, glabris, verruculosis, resinosis. Stipulae caducae, plus minusve 0.5 mm longae, saepe in resina absconditae. Phyllodia filiformia, teretia, fasciculata, 2-6 in quoque fasciculo, mucronulata, 20-30 mm longa, 0.5 mm diametro, flexibilia, plerumque patentia et

inclinata, glabra, nervis obscuris, ± 16, glande minuta, interdum nulla, ad 7 mm supra pulvinam. Pedunculi solitarii, 20-25 mm longi, resinosi; capitula globularia, aurea, 6 mm diametro, circa 38-floribus, bracteolis peltatis, stipitibus longis, laminis ovatis, acutis, papillatis. Flores 5-meri. Sepala longitudine 2/3 petali partes aequantia, linearia, 1/3-1/2-connata glabra, lobis apicaliter incurvatis. Petala 3/4-connata, partibus discretis concavis, patentibus, glabris, uninervata. Legumina anguste oblanceolata, plana, contracta ad basem et apicem, nec elevata supra semina nec constricta inter semina, ad 5.5 cm longa, 5-6 mm lata, lignosa, recta, longitudinaliter elevato-reticulata, glabra, resinosa, marginibus incrassatis, verruculosis. Semina obliqua, oblongo-elliptica, 4-5 mm longa, 2 mm lata, 1.2 mm crassitie, nitido-brunnea, areola magna, arillo terminali, parvo, conico-pileato.

Typus: Tableland Station, Kimberley Region [precise locality withheld for conservation reasons], Western Australia, 27 July 1959, *M. Lazarides* 6398 (holo: PERTH 00150819; iso: DNA, NSW).

Low, spreading, viscid *shrub* 0.75-1 m tall, branching from base. *Branchlets* slightly angular at first, soon terete, obscurely ribbed, glabrous, verruculose, resinous. *Stipules* often obscured by resin-masses, caducous,±- 0.5 mm long. *Phyllodes* filiform, terete, fasciculate, 2-6 in each fascicle, 20-30 mm long, 0.5 mm diam., soft, flexible, patent to inclined, straight to slightly curved, glabrous, very finely longitudinally wrinkled when dry; apex mucronulate; pulvinus distinct, not wrinkled transversely, ± 0.5 mm long; apparently *c.* 16-nerved but nerves not or scarcely evident superficially; gland minute, sometimes lacking, to 7 mm above blade base. *Peduncles* solitary, 20-25 mm long, glabrous, resinous; heads globular, golden, 6 mm diam., *c.* 38-flowered; bracteoles peltate, the claws long, slender, the laminae perpendicular to claw and ovate and acute. *Flowers* 5-merous. *Sepals* 2/3 as long as petals, linear, membranous, 1/3-1/2-united, obtuse apex incurved, glabrous. *Petals* 3/4-united, free portions concave, spreading, acute, glabrous, uninerved. *Pods* narrowly oblanceolate, flat, tapering to both ends, neither raised over nor constricted between seeds, to 5.5 cm long, 5-6 mm wide, woody, straight, reticulated with an open, irregular net of longitudinally oblique, raised nerves originating from only one margin, glabrous, strongly resinous-viscid, tan-coloured, dehiscing elastically from apex, the margins thickened, verruculose. *Seeds* obliquely arranged in pod and separated from each other by woody ridges, oblong-elliptic, 4-5 mm long, 2 mm wide, 1.2 mm thick, glossy-brown; areole nearly as long and wide as seed; aril a small terminal conic cap.

Other specimen examined. WESTERN AUSTRALIA: Mount House Station [precise locality withheld for conservation reasons], *J.S. Beard* 4199 (PERTH).

Distribution. Known only from Mount House and Tableland Stations in the Kimberley region of northern Western Australia.

Habitat. The type is recorded as co-dominant with *Melaleuca* sp. and *Eucalyptus brevifolia* over *Plectrachne pungens* in scrub. The Mount House Station specimen was collected from a shale plateau. No other information is available.

Flowering and fruiting periods. Flowering material with mature pods collected in July.

Affinities. The three species of the "*A. subternata* Group" are closely related and all have a similar appearance; they differ in details of the branchlet ribbing, phyllode and peduncle length, bracteole morphology, petal nervation and pod size, among others. *Acacia manipularis* and *A. delicatula* have uni-nerved petals while those of *A. subternata* are striate but with commonly the central nerve the most pronounced. *Acacia manipularis* is nearest *A. delicatula* which has ± crenulate-ridged branchlets,

smaller phyllodes (7-18 mm long and mostly 0.3-0.4 mm wide), shorter peduncles (mostly 8-15 mm long), proportionately shorter sepals (*c.* 1/3 as long as petals), much less united petals, long-acuminate bracteoles, smaller pods (1.2-4.4 cm x 3-4 mm) and seeds with an elongate-conic aril.

Discussion. Bentham (in Mueller 1859: 124) commenting on Mueller's *A. subternata* remarked: "The arrangement of the phyllodia (should it prove constant) is singular; they are neither verticillate ..... nor solitary at each node ....; but in most cases in fascicles of 2, 3, or 4 from each node ....". The arrangement of the phyllodes remains the best indicator of the group: from small protuberances (reduced branchlets?), often clothed in a resin-mass, arise several slender, terete phyllodes, each with its minute stipules. From the same knobs arise either fully developed branchlets, solitary peduncles or both.

In Tindale and Kodela (1992: 59) *A. manipularis* is referred to under an earlier manuscript name that we had applied to this species, namely, *"A. manipula"*.

Conservation status. A Priority 1 taxon in the Department of Conservation and Land Management's Declared Rare and Priority Flora List. See end of this issue.

Etymology. The new species takes its name from the fascicled arrangement of the phyllodes; the name is an adjectival form of *manipulus,* Latin for handful, sheaf or bundle.

4. Acacia retivenea F. Muell., Fragm. 3: 128 (1863)

Racosperma retiveneum (F. Muell.) Pedley, Austrobaileya 2: 354 (1987). Type: Short's Range, [Northern Territory], *J. Mcdouall Stuart* (holo: MEL; iso: K).

Erect, open, divaricately branching *shrubs* 1-3 m tall, rarely shorter. *Bark* dark brown or grey, exfoliating in large irregular flakes or smooth. *Branchlets* terete, crispate-villose or tomentose, rarely glabrous. *Stipules* more or less persistent, ovate to broadly ovate, rounded or cordate basally, 2-2.5 mm long, 1.5-5 mm wide, rather thick, acute, villose or tomentose. *Phyllodes* ± inequilaterally elliptic to widely elliptic, ovate or sub-rotund, 3.5-12 cm long, 2.8-5.8 cm wide, rigid, present only on upper part of branchlets, patent, upper margin more or less crenate, crispate-villose or tomentose, rarely glabrous and lucid, grey-green, sometimes glaucous; apex rounded to retuse with small, excentric mucro, the base rounded to sub-cordate; *pulvinus* 3-5 mm long, villose or tomentose; blade with 3 or 4, distant, strongly raised main nerves and numerous, prominent anastamoses,marginal nerves prominent; gland large, round or widely elliptic, at top of pulvinus, secondary glands present in adaxial margin crenations. *Inflorescences* initiated on new shoots with solitary peduncles arising from within axil of developing phyllodes, the phyllodes normally mature by anthesis but occasionally are suppressed so that raceme-like structures occur; peduncles 17-40 mm long, furrowed, crispate-villose to tomentose; heads globular, bright to dull deep golden-yellow, 10 mm diam., 71-105-flowered, densely congested; bracteoles exserted or not, fusiform to spathulate, the claws sometimes marginate, the laminae flat, thin, acute to acuminate or fleshy and more or less semicircular in cross-section, acute to often apiculate, sub-appressed villose and ciliate to sparsely puberulous or glabrous. *Flowers* 5-merous. *Sepals* 1/3-3/4 as long as petals, 1/2-3/4-united, sub-appressed villose to puberulous. *Petals* 2/3-3/4-united, sub-appressed villose to puberulous. *Ovary* densely pilose-sericeous to glabrous. Pods oblong, rounded at both ends, often apiculate, shallowly biconvex or flat and raised only over the seeds, 25-62 mm long, 12-20 mm wide, deflexed, thin- to thick-coriaceous or hard-crustaceous, straight or one margin curved, densely tomentose to crispate-villose, sometimes arachnoid-villose, sparsely hairy to sub-

glabrous at maturity in subsp. *clandestina,* reticulately nerved (nerves obscured by indumentum in subsp. *retivenea*), margins thickened, stipe 4-8 mm long. *Seeds* transversely arranged in pods, widely elliptic to oblong, 4.8-6 mm long, 3.2-4 mm wide, 2 mm thick, compressed, dull, brown-black; pleurogram U-shaped, open at hilar end; areole 2.5-4 mm long, 1.5 mm wide; aril small, terminal, scalloped marginally.

Nomenclature. The specific epithet has often been spelled *"retivenia"*, beginning with Bentham, but Mueller clearly intended the spelling adopted here, for he used this spelling in the protologue and in his subsequent publications. In our opinion, this is not one of the class of orthographic errors which may be corrected under the provisions of the "International Code of Botanical Nomenclature".

The species is widespread in inland northern Australia and comprised of two well-marked, mostly allopatric entities, which we consider distinct subspecies. The species is related to *A. auricoma* Maslin which has stellate pubescence on branchlets and inflorescences.

Key to subspecies of *A. retivenea*

1. Stipules 2-3 x 1.5-2 mm. Phyllodes widely elliptic to sub-rotund, densely tomentose (± felty to touch), rarely glabrous. Bracteole laminae thick and fleshy, exserted in bud. Pods very densely tomentose (unknown for glabrous variant) ..... 4a. subsp. *retivenea*
1. Stipules 3-5.5 x 3-5 mm. Phyllodes elliptic to ovate, indumentum normally less dense than above. Bracteole laminae thin, flat, not conspicuously exserted in bud. Pods sparsely hairy to sub-glabrous at maturity (indumentum denser when young) ..... 4b. subsp. *clandestina*

4a. Acacia retivenea F. Muell. subsp. **retivenea**

Illustration. M. Simmons, Acac. Australia 2: 139 (1988).

Stipules 2-3 mm long, 1.5-2 mm wide, ovate, rounded basally, densely tomentose. *Phyllodes* widely elliptic to sub-rotund, (35)40-50(65) mm long, (28)35-45(58) mm wide, densely tomentose, rarely glabrous and lucid; apex retuse, mucronulate with excentric mucro. *Peduncles* (17)20-30(32) mm long, tomentose; *bracteoles* conspicuously exserted in young buds, the laminae ellipsoid, often apiculate, thick, fleshy, ± semicircular in cross-section, glabrous or sparsely puberulous, the claws sometimes marginate. *Sepals* 2/3-3/4 as long as petals, 1/2-united, the lobes puberulous. *Petals* 2/3-united, sub-appressed villose, especially on lobes. *Ovary* densely pilose-sericeous. *Pod* often obtuse-apiculate, 25-40 mm long, 12-16 mm wide, more or less coriaceous, flat but raised over seeds, one margin curved, very densely tomentose.

Selected specimens examined. WESTERN AUSTRALIA: Macnamara Creek, 32 km N of Glenroy Homestead, *T.E.H. Aplin* 5110 (K, MEL, PERTH); 22 km N of Nicholson Homestead, *T.E.H. Aplin* 5393 (BRI, MPU, PERTH, TLF); Fitzroy Crossing, *Mrs Guppy* J3 (PERTH); between new Halls Creek and Carolyn Pool on site of Duncan Highway, *K.F. Kenneally* 7228 (CANB, K, MEL, PERTH); Durack Range, 24 km E of Tableland Station, *D.E. Symon* 10294 (PERTH); King Leopold Range, Inglis Gap, *I.R. Telford* 6447 (PERTH); SW of Lake Argyle, main CRA Exploration Camp, *A.S. Weston* 12247 (PERTH).

NORTHERN TERRITORY: Barkly Tableland, between Frewena and Queensland border, *A.S. Cudmore s.n.* (DNA 28590); 12 miles [19.3 km] S of Renner Springs, *N. Forde* 27 (PERTH); 28 miles [44.8 km] S of Wave Hill, *G. Chippendale* 2193 (PERTH); 70 miles [112.6 km] W of Gallipoli Station, *R.A. Perry* 1540 (PERTH); 6 km SSE of turn-off to "Helen Springs" on Stuart Highway, *L. Thomson* LXT 35 (PERTH).
QUEENSLAND: Settlement Creek, L.J. Brass 353 (PERTH); Lake Moondarra, Mount Isa, *R. Coveny* 479 (PERTH); 96.5 km ESE of Camooweal Township, *R.A. Perry* 762 (PERTH).

Distribution. Northern Western Australia from Fitzroy Crossing and King Leopold Range (*c.* 130 km north-northwest of Fitzroy Crossing) in the Kimberley area, across the Northern Territory to the Mount Isa area in northwest Queensland with outliers near Pine Creek (*c.* 190 km southeast of Darwin) and Reynolds Range (*c.* 150 km north-northwest of Alice Springs) in the Northern Territory and Torrens Creek in Queensland.

Habitat. Grows in shallow sandy soil and rocky ground in open low woodland and open shrubland, often associated with *Eucalyptus brevifolia* and *Triodia.*

Flowering and fruiting periods. Flowers from late May to early August; pods with mature seeds have been collected in February, August and October.

Variation. Although this subspecies is normally characterized by the dense, conspicuous indumentum on the phyllodes, a glabrous form has been recorded in a few localities in Queensland (e.g. *Perry* 762) and Northern Territory (e.g. *Cudmore s.n.*, DNA 28590). According to Pedley (1978: 207) the glabrous variant in Queensland occurs between Camooweal and Mount Isa and is sympatric with the normal form.

Conservation status. Not considered rare or endangered.

4b. Acacia retivenea subsp. **clandestina** Cowan & Maslin, *subsp. nov.*

Stipulae 3-5.5 mm longae, 3-5 mm latae, late ovatae, basaliter cordatae, suberecto-villosae sed marginaliter glabrescentes. Phyllodia elliptica ad ovata, ad apicem rotundata mucronulataque, villosa vel crispato-villosa, plerumque (45)50-65(120) mm longa et 25-40(55) mm lata. Pedunculi 20-40 mm longi, dense crispato-villosi vel villosi; bracteolae spathulatae, inconspicue exsertae, laminis tenuibus, ovatis, acuminatis, dense subappresso-villosis ciliatisque. Legumina oblonga, biconvexa, mucronulata, 43-62 mm longa, 15-20 mm lata, duro-crustacea, recta, parce vel sparse villosa, crispato-villosa vel arachnoideo-villosa.

Typus: upper Rudall River area, Western Australia, 5 September 1971, *B.R. Maslin* 2127 (holo: PERTH 00701874; iso: BRI, K, NSW, US).

Stipules 3-5.5 mm long, 3-5 mm wide, broadly ovate, cordate basally, suberect-villose, marginally glabrescent. *Phyllodes* elliptic to ovate, (45)50-65(120) mm long, 25-40(55) mm wide, villose to crispate-villose, indumentum normally less dense than in subsp. *retivenea;* apex rounded, mucronulate. *Peduncles* 20-40 mm long, densely crispate-villose or villose; bracteoles spathulate, inconspicuously exserted with the laminae appressed to surface of young buds, the laminae ovate, acuminate, thin, flat, densely sub-appressed villose and ciliate, the claws slender. *Sepals* 2/3-3/4 as long as petals, the lobes sub-appressed villose, 1/2-united. *Petals* 2/3-united, the lobes (at least) sub-appressed villose. *Pods*

oblong, shallowly biconvex, mucronulate, 43-62 mm long, 15-20 mm wide, hard-crustaceous, straight, crispate-villose, villose or arachnoid-villose, sparsely hairy to sub-glabrous at maturity.

Selected specimens examined. WESTERN AUSTRALIA: Christmas Pool, *D. Goble-Garrett* 297 (PERTH); 1.5 km E of Ardjorie Homestead ruins, Edgar Ranges, *K.F. Kenneally* 9157 (NSW, PERTH); 16 km NE of Bungle Bungle Outcamp, 5 km S of Mining Camp "Playground", *K.F. Kenneally* 9215 (BRI, PERTH); Old Woodbrook Station (probably introduced as ornamental), *B. Koch* 204 (PERTH); Little Sandy Desert, 22° 50' S, 121° 54' E, *A.S. Mitchell* 593 (PERTH); 10 km N of Mount Traine, *c.* 100 km ENE of Nullagine, *K. Newbey* 10347 (Karratha, MO, PERTH); 8 km S of Quarry Hill, *c.* 130 km WSW of Tom Price, *K. Newbey* 10759 (Karratha, PERTH); Googhenama Creek, *R.D. Royce* 1806 (PERTH); Barlee Range, Henry River, *R.D. Royce* 6548 (PERTH); 29 km E of Ranger's Residence, outside Hamersley Range National Park, *I. Solomon* 16 (BRI, CANB, PERTH); Rudall River district, *P.G. Wilson* 10432 (CANB, DNA, PERTH).

Distribution. Scattered occurrence across inland Pilbara from near Quarry Hill (*c.* 125 km west of Tom Price) and Barlee Range (*c.* 190 km southwest of Tom Price) east to Rudall River National Park and Paterson Range on the western edge of the Great Sandy Desert and also in the southern Kimberley area in the Edgar Ranges (*c.* 110-190 km southeast of Broome) and Bungle Bungle National Park (*c.* 120 km northeast of Halls Creek), Western Australia.

Habitat. Usually grows in rocky creek beds and on hillsides in tall shrubland. In the Pilbara often associated with *Grevillea wickhamii* and in the Kimberley with *Acacia tumida* or Pindan.

Flowering and fruiting periods. Flowering specimens collected from April to October; pods with mature seeds not yet collected.

Affinities. Subspecies *clandestina* is most easily distinguished from the typical subspecies by its less pubescent phyllodes, larger stipules, thin bracteoles which are appressed to the surface of young buds and larger, less hairy pods.

Conservation status. Not considered rare or endangered.

Etymology. The name for the subspecies is from *clandestinus*, Latin for secret or hidden, in reference to the long period the entity has gone unrecognized as a distinct taxon.

Miscellaneous lectotypifications and notes on species of northern and eastern Australia

1. Acacia cognata Domin, Biblioth. Bot. 89: 260 (1926), non Maiden & Blakely (1928)

Based on the following.

A. subporosa F. Muell. var. *linearis* Benth., Fl. Austral. 2: 382 (1864). Lectotype (here selected): Twofold Bay, *F. Mueller s.n.* (K, lower right-hand flowering specimen on sheet stamped Herb. Hookerianum 1867; isolecto: PERTH 01504738 - fragment ex K). Paralectotypes: (1) left-hand specimen on lectotype sheet (K - in immature bud). (2) upper right-hand flowering specimen on lectotype sheet (K) and a probable duplicate on MEL 1528769 and PERTH 01504746 (fragment ex K).

Typification. The type sheet of *A. cognata* at Herb. K supports three specimens which may possibly have been taken from three separate plants and consequently a lectotype has been selected from among them. According to the specimen label, these gatherings were made by F. Mueller at Twofold Bay on the south coast of New South Wales. The lower right-hand specimen has been designated as the lectotype because it best characterizes the taxon; that is, its phyllodes are very narrow, 3-nerved with the mid-nerve more prominent than the flanking nerves, its peduncles are short (3-4 mm long), and the heads have about 12 flowers. The left-hand specimen (paralectotype) is in immature bud and has phyllode nervature identical to that of the lectotype. The uppermost specimen (paralectotype) differs slightly from the other two in that its peduncles are 7-8 mm long and the phyllodes are up to 5-nerved (due to the coalescence of longitudinally trending lateral nerves); these two characters are within the range of variation of *A. subporosa*.

Affinities. *Acacia cognata* is very closely related to *A. subporosa* but is usually distinguished by its narrower, more elongate, usually 3-nerved phyllodes, usually shorter peduncles, fewer flowers per head and slightly narrower pods (see key below). Indeed, when Mueller described *A. subporosa* from material which he collected at Twofold Bay, he included within its circumscription specimens that were later segregated by Bentham as *A. subporosa* var. *linearis*, the basionym of *A. cognata* Domin. The fact that Mueller did not consider the taxa sufficiently distinct in the field to warrant their separation or even mention the two forms in his protologue, attests to their close relationship. The key below reveals that the quantitative differences between these two species are not great and that in some cases the ranges of variation overlap. Judging from herbarium material we have seen, other localities, apart from Twofold Bay, where the two may possibly be sympatric or parapatric are around Bega (New South Wales) and Mallacoota (Victoria) and it is suggested that field studies in these area may be instructive in trying to determine to what extent (if at all) the two taxa intergrade. Court (pers. comm.) has indicated that sympatry between the two is very limited. In the absence of personally conducted field work, we have followed recent authors, for example Court (1973) and Costermans (1981), in recognizing *A. cognata* as a distinct species.

Key to *A. cognata* and *A. subporosa*

1. Phyllodes narrowly linear to linear-elliptic, 1.5-3.5 mm wide (rarely some to 4.5 mm wide), l:w = 20-70, normally 3-nerved per face with the midrib clearly more evident than the very obscure flanking nerves (phyllodes often appearing 1-nerved per face). Peduncles usually 3-6 mm long. Flowers 10-17 per head. Pods 2-4 mm wide ..... *A. cognata*

1. Phyllodes very narrowly elliptic, 4-11 mm wide, l:w = 8-18, 2-5 main nerves per face with several weaker longitudinal nerves between. Peduncles 6-11 mm long. Flowers 20-25 per head. Pods 5 mm wide ..... *A. subporosa* (see # 9 below)

2. Acacia excelsa Benth. in T.L. Mitchell, Journ. Exped. Trop. Australia 225 (1848)

Racosperma excelsum (Benth.) Pedley, Austrobaileya 2: 348 (1987). Lectotype (here selected): subtropical New Holland [east bank of Nogoa River opposite Martins Range, Queensland], 6 July 1846, *T. Mitchell* "187" (K, lower branchlet on sheet). Paralectotypes: (1) subtropical New Holland, July 1846, *T. Mitchell* "171" (K - mounted with lectotype). (2) subtropical Australia, *T. Mitchell*, "7 Bidwill" (K).

A. daintreeana F. Muell., Fragm. 4: 6 (1863); *A. excelsa* var. *daintreeana* (F. Muell.) Domin (as '*daintreana*'), Biblioth. Bot. 89: 264 (1926). T: Clarke River, Queensland, *R. Daintree* (holo: MEL, *n.v., fide* Pedley 1978: 212; iso: K).

A. excelsa var. *glaucescens* Domin, Biblioth. Bot. 89: 263 (1926). T: Dividing Range near Jericho, Queensland, 1910, *K. Domin* (holo: PR, n.v., *fide* Pedley 1978: 212).

A. excelsa var. *polyphleba* Domin, Biblioth. Bot. 89: 263 (1926). T: savanna forest near Pentland, Queensland, 1910, *K. Domin* (holo: PR, *n.v., fide* Pedley 1978: 212)..

A. excelsa var. *typica* Domin, Biblioth. Bot. 89: 263 (1926), *nom. inval.*

Typification. There are two sheets of *A. excelsa* at herb. K that support specimens considered to be types. One sheet has two gatherings: the upper three twigs bear a Mitchell label with number 171 and July 1846 as the collecting date; the branchlet below has a similar label with the number 187 on it, as well as the complete date of collection - 6 July 1846. Pedley (1978) listed the latter collection as the holotype but we consider it better, and in keeping with the Code, to treat it as the lectotype. We here formalize that alternative. The second sheet also supports a Mitchell gathering with the annotation "7 Bidwill" appearing on the label.

3. Acacia farinosa Lindley in T.L. Mitchell, Three Exped. Australia, ed. 1, 2: 145 (1838)

Type: interior of New Holland [near Lake Charm, Victoria], 22 June 1836, T. Mitchell Exped. "189" (holo: CGE; iso: K, PERTH 01170961 - fragment ex K).

Type locality. No details were given in the protologue with regard to the precise place, date or number of the type collection; those given above come from the holotype (collection number and date) and from Mitchell's map and journal of the expedition on which the species was found. Lake Charm is not given on his map but his location on 22 June was certainly in that vicinity.

Morphological notes. The morphology of the inflorescence structures is most interesting and unusual. Each peduncle has a subtending basal bract and at or near the peduncle-apex there is an involucre-like ring of five ovate, acute, thickened structures which we have tentatively considered to be sterile bracteoles, i.e. bracteoles without a flower in their axils. All the flowers in the head have fertile bracteoles and these are quite different in shape and consistency. This ring of sterile bracteoles seems homologous with those in the same location in *A. dawsonii*, although in the latter species, the members of the ring subtend individual flowers because the heads usually have only four flowers and consequently no other bracteoles; in rare instances (*R. Carolin* 7268 from Curragh, west of Trunkey Creek Ridges above Abercrombie River, N.S.W.-PERTH) *A. dawsonii* has heads with 6-10 flowers, each one subtended by ordinary (for this group of species) spathulate bracteoles, in addition to the thick-fleshy, semicircular ones at the base of the head. An involucre of bracts joined margin-to-margin on the peduncles is one of the characteristics distinguishing *Acacia* subgenus *Acacia*; we do not, however, interpret these bracteolar structures as an homologous feature, at least not without much more evidence than we have.

4. Acacia hemignosta F. Muell., J. Proc. Linn. Soc., Bot. 3: 134 (1859)

Racosperma hemignostum (F. Muell.) Pedley, Austrobaileya 2: 349 (1987). Lectotype (here selected): "Point Pearce", mouth of Victoria River, Northern Territory, September 1855, *F. Mueller* 87 (K; isolecto: MEL, NSW). Paralectotype: [Albert River], Gulf of Carpentaria, [Queensland], *F. Mueller* 34 (K, MEL).

A. cloncurrensis Domin, Biblioth. Bot. 89: 262 (1926). Type: near Cloncurry, Queensland, 1910, *K. Domin* (holo: PR, *n.v., fide* Pedley 1978: 219).

Typification. In the protologue of *A. hemignosta* Mueller cited two of his own collections (no. 87, a flowering specimen from the Victoria River, N.T., selected above as lectotype and no. 34, fruiting specimen from the Albert River, Qld, cited above as a paralectotype). Mueller also listed two other localities (but did not cite specimens), namely, "Gilbert River, Roper River"; we have not found Mueller material of *A. hemignosta* from either of these localities at K or MEL. Although the specimens of Mueller 87 and 34 represent the same taxon it seems desirable to select one as a lectotype. Ordinarily, the material in the author's own herbarium would be a logical choice but the two type sheets at MEL (sheet nos. 117093 and 117094) bear only fragments and on the latter sheet there are bits of both Mueller 34 and 87 mixed. Consequently, we have selected the K sheet as lectotype because (1) it is a complete specimen; (2) its label gives a more precise type-locality; and (3) the sheet bears Bentham's annotation and it was he who shepherded Mueller's manuscript through to publication, often adding significantly to it by way of notes and observations. "Point Pearce" on the lectotype label cannot be located on present-day maps but the MEL 117094 sheet gives "Ad ostium fluminis Victoriae" which appears in the protologue and is in the Northern Territory; both Mueller 87 and 34 have Mueller's handwriting on the labels and his collection numbers.

5. Acacia latescens Benth., London J. Bot. 1: 380 (1842)

Racosperma latescens (Benth.) Pedley, Austrobaileya 2: 571 (1988). Lectotype (see Pedley 1974: 2): May Day Island, Van Dieman Gulf, [Northern Territory], May 1818, *A. Cunningham* 295 (K; iso: PERTH 00975559 - fragment ex K; ?isolecto: A, NY).

A. dineura F. Muell., J. Proc. Linn. Soc., Bot. 3: 130 (1859) Type: upper Roper River, Northern Territory, *F. Mueller* 31 (holo: MEL; iso: K, PERTH 00975567 - fragment ex MEL).

A. dissoneura F. Muell., S. Sci. Rec. 2(7): 151 (1882). Syntype (1): vicinity of Port Darwin, Northern Territory, *F. Schultz* 336 (MEL, K, PERTH 00748943 - fragment ex MEL). Syntype (2): near Liverpool River, Northern Territory, *B. Gulliver* (MEL, PERTH 00975540 - fragment ex MEL).

Typification. Although the protologue of *A. dineura* lists both the Roper and Limmen Bight rivers, the holotype at MEL is annotated with only the Roper River. In our experience it is sometimes difficult to reconcile fully the extant collections with what appears to be cited material in Mueller publications.

Morphology. As is the case with several other of the northern, tropical species, the filaments of *A. latescens* are joined irregularly to a level of about the base of the lobes of the corolla.

Note. Mueller (1859: 144) described *Acacia latescens* var. *grandifolia*, based on his collection no. 35 which was gathered from between the Dawson and Burnett Rivers. In the absence of having seen

this type it is not possible to determine with certainty the taxon to which this name should be applied. As the Dawson and Burnett Rivers are in Queensland it is not likely that this name is synonymous with *A. latescens* (which is endemic in the Northern Territory) as implied by G. Bentham in an editorial footnote to the protologue.

6. Acacia leucophylla Lindley in T.L. Mitchell, Three Exped. Australia, ed. 1, 2: 12 (1838), non Colvill ex Sweet, Hort. Brit. 1st edn, 101 (1826), *nom. nud.*

Lectotype (here selected): interior of New Holland [western side of Byrne's Creek near junction with Lachlan River, New South Wales], 24 March 1836, *T. Mitchell* "21" (CGE; isolecto: K). Paralectotype: subtropical New Holland, *T. Mitchell* "139" (CGE).

Typification. In spite of the fact that this name is a synonym of *A. pendula* Cunn. ex Don, lectotypification seems worthwhile. There is no collection mentioned in the protologue and there are parts of two collections on what is regarded as the type sheet at CGE (see discussion of type locality under *A. farinosa* above). The specimen selected here as lectotype is annotated "A. leucophylla m" by Lindley and appears to have been the more important source of data in the protologue.

7. Acacia sericata Cunn. ex Benth., London J. Bot. 1: 380 (1842)

Nomenclature. The binomial [Acacia] *"sericata* Ait. (ex Loudon)" in Steudel's Nomenclator Botanicus, ed. 2 (1840) antedates Bentham's use of the name; both names appear in A. Chapman (1991), Australian Plant Name Index, and must be taken into account. In spite of giving "N. Holl." as the place of origin, Steudel cites three *Acacia* names in synonomy, all of which apply to African species and two apparently to the same taxon (J.Ross, pers. comm.); these could be taken as representing an indirect reference to earlier validly published taxa and consequently *A. sericata* Ait. ex Steudel could be considered as having been validated thereby. However, the entry is so illogical that one may suspect some printing defect: it is possible that the three African species names should have been printed under the following entry [A.] *seyal* Delile, also an African species. If that had been Steudel's intent, then there is no problem with Bentham's name because the Steudel name is a *nomen nudum,* just as is [A.] *simsii* Ait. ex Steudel which appears as the fifth entry below *sericata* in the same column. We conclude that a printing error occurred and that both *A. sericata* Ait. ex Steudel and *A. simsii* Ait. ex Steudel are *nomina nuda.*

8. Acacia praelongata F. Muell., Australas. Chem. and Druggist 6: 32 (1883)

Lectotype (here selected): Adams Bay, Northern Territory, *A.C. Hulls* (MEL; isolecto: K, PERTH 01209221 - fragment ex MEL). Paralectotype: south of Port Darwin (near the Elizabeth River), Northern Territory, July 1883, *P.H.M. Foelsche* (MEL, PERTH 12109213 - fragment ex MEL). ?Paralectotype: "Ac. praelongata. Pt. Darwin" (in Mueller's hand; no other details) (MEL, PERTH 01209213 - fragment ex MEL).

Typification. The Hulls and Foelsche collections were cited in the protologue and they represent the same taxon. We have chosen as lectotype the one from Adams Bay which is more typical morphologically and is equally serviceable as a nomenclatural type.

9. Acacia subporosa F. Muell., Fragm. 4: 5 (1863); also in Pl. Indig. 2: 24 (1863), *nom. invalid.*, not effectively published (*fide* A.B. Court *et al.* 1994)

Lectotype (here selected): Twofold Bay, [N.S.W.], *F. Mueller s.n.* (MEL 1000861, left-hand flowering specimen on sheet; isolecto: K). Paralectotypes: (1) right-hand specimen (in bud) on lectotype sheet. (2) Twofold Bay, "Bark grey and brown variegated", *F. Mueller s.n.* (MEL 1000857); (3) "Forest gullies near Twofold Bay, Arbor 40 ft.", September [18]60, *F. Mueller s.n.* (MEL 1000860).

Typification. The specimens comprising the original material of *A. subporosa* are all referrable to this species but appear to represent at least three separate gatherings. The lectotype (in flower) and the paralectotype (in immature bud) which are both mounted on MEL 1000861, have broader phyllodes than the other two paralectotypes, i.e. 7-9 mm wide compared with 4-7 mm wide.

Affinities. Acacia subporosa is most closely allied to *A. cognata.* The differences between the two species are not great and our review of existing herbarium material suggests that they may intergrade (see *A. cognata* above for discussion).

10. Acacia trinervata Sieber ex DC., Prodr. 2: 451 (Nov. 1825)

Type: [New South Wales, 1823], *F.W. Sieber* 445 (holo: G-DC; iso: A, BM, FI, K, MO, NY, PERTH 01175637 - fragment ex G-DC, PR, STRAS, W).

A. taxifolia Cunn. in B. Field, Geogr. Mem. N.S.W. 344 (Apr. 1825), *non* Willd. (1806); *A. cunninghamii* Sweet, Hort. Brit. ed. 2, 164 (1830); also Don, Gen. Hist. 2: 404 (1832) and E. Steudel, Nomencl. Bot. ed. 2, 1: 4 (1840), all based on *A. taxifolia* Cunn. in Field. Type: eastern ascent of Blue Mountains, New South Wales, October 1822, *A. Cunningham* 215 (holo: K; iso: A, BM, K).

A. trinervata Sieber ex DC. var. *brevifolia* Benth., Fl. Austral. 2: 325 (1864), *synon. nov.* Lectotype (here selected): Blue Mountains, [New South Wales], no collector or date indicated (K, see discussion below).

A. trinervata var. *angustifolia* Benth., Fl. Austral. 2: 325 (1864), *synon. nov.*; *A. elongata* var. *angustifolia* (Benth.) Maiden & Betche in J.H.Maiden, Wattles & wattle-barks 3rd edn, 58, 73 (1906), as to name only (see discussion below). T: Blue Mtns., N.S.W., Miss [C.L.W.] *Atkinson;* holo: K; iso: NSW, fragment ex K, PERTH, fragment ex K.

[*A. genistifolia auct. non* Link: G. Bentham, London J. Bot. 1: 335 (1842).]

Nomenclature and synonomy. Although Cunningham's *A. taxifolia* is the earliest name for this species, the name had been used by Willdenow in 1806 and the next available name is *A. trinervata.* Apparently independently, R. Sweet, G. Don and E.J. Steudel recognized the homonomy and each renamed *A. taxifolia* as *A. cunninghamii.*

When Bentham (1864: 325) described *A. trinervata* var. *brevifolia* he provided only meagre descriptive details ("Phyllodia 1/2 to 3/4 in. long."), cited no specimens and listed *A. genistifolia* Link in synonymy. Bentham (1842: 336) had earlier expressed uncertainty about the identity of *A. genistifolia*, but this species is now known to be quite different from *A. trinervata* being easily

distinguished by its 4-merous flowers and its commonly quadrangular phyllodes (or if flat then only 1-nerved per face); *A. trinervata* has 5-merous flowers and flat phyllodes which are strongly 2-3-nerved per face.

There is a Herb. Hooker specimen at K bearing the notation "A. trinervata var. brevifolia" in Bentham's hand but no indication of who made the collection or when, only that it came from the Blue Mountains (in N.S.W.). The specimen is with immature pods and has phyllodes that are at the lower end of the length range for *A. trinervata* being 11-18 mm (1/2-3/4 inch) long. It is this specimen which was cited by Bentham (1842: 336) under *A. genistifolia* and was almost certainly before him when *A. trinervata* var. *brevifolia* was described. It is therefore regarded as a syntype of var. *brevifolia* (the type of *A. genistifolia* is the other syntype) and we have selected it as the lectotype of the name.

Bentham's var. *angustifolia* is a form with somewhat narrow phyllodes and small heads but within the range of variation for the species. The type at herb. Kew is labelled by Mueller as "Acacia trinervata var. tenuifolia" but this varietal name was not used when Bentham described the taxon. Maiden (1906) was unclear as to the application of Bentham's name (presumably since he had not seen the type) and incorrectly assumed it to be the same as the plant that occurred "in swampy localities in the Blue Mountains". Therefore, Maiden and Betche's combination under *A. elongata* is actually a misapplication of the name (Maiden and Blakely 1927: 190 subsequently described *A. elongata* var. *angustifolia sensu* Maiden & Betche as a new species, *A. ptychoclada*).

Acknowledgements

There are multitudinous tasks of all sorts that have to be completed in the course of the preparation of such a paper and those undertaken by technical staff greatly relieve the researcher and are deeply appreciated. In this instance we had the competent technical assistance of Diana Corbyn and Karina Knight and we thank them sincerely. The work was undertaken with some financial support from the Australian Biological Resources Study. We are especially indebted to Tim Entwistle for his assistance with our treatment of the *A. lanigera* and *A. venulosa* complex.

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Acacia Miscellany 12. *Acacia myrtifolia* (Leguminosae: Mimosoideae: section *Phyllodineae*) and its allies in Western Australia

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Abstract

B.R. Maslin. *Acacia* Miscellany 12. *Acacia myrtifolia* (Leguminosae: Mimosoideae: section *Phyllodineae*) and its allies in Western Australia. Nuytsia 10 (1): 85-101 (1995). Five new species and one new subspecies of *Acacia* from Western Australia are described, namely, *A. clydonophora* Maslin, *A. disticha* Maslin, *A. durabilis* Maslin, *A. heterochroa* Maslin (comprising subsp. *heterochroa* and subsp. *robertii* Maslin) and *A. pygmaea* Maslin. These taxa, together with four previously described species, *A. celastrifolia* Benth., *A. myrtifolia, A. nervosa* DC. and *A. obovata* Benth. comprise the informal "*Acacia myrtifolia* Group". A key to the species of this Group is presented. Brief notes on the variation in the Western Australian populations of *A. myrtifolia* are given. *Acacia pawlikowskyana* Ohlend. is treated as a synonym of *A. myrtifolia* (this name was formerly treated as a synonym of *A. celastrifolia*). *Acacia acutifolia* Maiden & Blakely is also regarded as conspecific with *A. myrtifolia*; it is likely that the type information published by Maiden and Blakely for this name was erroneous.

Introduction

The main purpose of this paper is to provide names for five new species and one new subspecies of *Acacia* from Western Australian to facilitate their inclusion in the forthcoming "Flora of Australia" treatment of the genus. These taxa, which all belong to *Acacia* section *Phyllodineae* DC., are related to *A. myrtifolia* (Sm.) Willd. and together with three other previously described close relatives comprise the informal, here-defined "*Acacia myrtifolia* Group". Species included in this Group are *A. celastrifolia* Benth., *A. clydonophora* Maslin *sp. nov.*, *A. disticha* Maslin *sp. nov.*, *A. durabilis* Maslin *sp. nov.*, *A. heterochroa* Maslin *sp. nov.* (comprising subsp. *heterochroa* and subsp. *robertii* Maslin *subsp. nov.*), *A. myrtifolia* (Sm.) Willd., *A. nervosa* DC., *A. obovata* Benth. and *A. pygmaea* Maslin *sp. nov.*

Species of the "*Acacia myrtifolia* Group" have a very characteristic floral structure. The relatively large, 4-merous flowers are neither numerous (2-12-flowered) nor densely aggregated in the heads. For the most part the flowers are glabrous, however, in *A. myrtifolia* the ovary is tomentulose. The gamosepalous calyx is truncate or only very slightly dissected (into rounded or broadly triangular lobes and these are separated by wide, very shallow sinuses). The apical rim of the calyx is not thickened and the calyx tube is nerveless and broad-based. In most species the ovary possesses a short yet distinct

gynophore (in *A. clydonophora, A. disticha, A. durabilis, A. heterochroa* and *A. pygmaea* the gynophore is 0.5-1 mm long; in the other species of the Group the gynophore is shorter or absent). To accommodate the very large numbers of stamens (which are among the most numerous of any species in the subgenus) the torus is commonly enlarged and it sometimes is supported on a distinct yet very short gynandrophore (e.g. *A. pygmaea*). Judging from Figures 2-4 in Robbertse (1974) the African species of subgenus *Aculeiferum* possess some of the characters described here for members of the "*Acacia myrtifolia* Group". Another seemingly unique feature for subgenus *Phyllodineae* is the multiple ovaries which are consistently found in *A. celastrifolia* (very rarely *A. durabilis* and *A. pygmaea* have 2 ovaries in a few flowers of the heads).

As discussed by Guinet *et al.* (1980) *A. gilbertii* Meissner, which is traditionally placed in section *Pulchellae* (Benth.) Taub. on account of its bipinnate foliage, is closely related to *A. myrtifolia* and *A. celastrifolia*. *Acacia urophylla* Benth. and *A. scalpelliformis* Meissner, which also have 4-merous flowers, are not far removed from the Group even though they have prominently 2-4-nerved phyllodes. Indeed, in the classification proposed by Vassal (1972) *A. myrtifolia* and *A. urophylla* were included in the one infrageneric category, namely, section *Pulchelloidea* subsection *Magniscutellae* (this subsection also included the phyllodinous species *A. extensa* Lindley and *A. willdenowiana* H.L.Wendl. (syn. *A. diptera* Lindley) as well as three species of section *Pulchellae*, *A. drummondii* Lindley, *A. pentadenia* Lindley and *A. pulchella* R. Br.).

With the exception of *A. myrtifolia* itself the members of the "*Acacia myrtifolia* Group" are confined to temperate and semi-arid areas of southwest Western Australia. *Acacia myrtifolia* occurs usually in coastal and near-coastal areas throughout Australia except Northern Territory and the Australian Capital Territory.

Key to taxa of the "*Acacia myrtifolia* Group"

(Numbered taxa are described in the present work below.)

1. Stipules persistent, 2-10 mm long; pod margins not undulate 2

1a. Stipules early caducous OR if persistent then less than 1 mm long; pod margins undulate or not 4

2. Branchlets not pruinose, often hairy ..... *A. obovata*

2a. Branchlets pruinose, glabrous 3

3. Phyllodes elliptic, 15-30 mm wide with l:w = 1.5-2; seeds longitudinal in the pods ..... 3. *A. durabilis*

3a. Phyllodes narrowly elliptic, 4-12 mm wide with l:w = 3-6; seeds transverse in the pods ..... *A. nervosa*

4. Phyllodes 2-nerved (the second nerve commonly less prominent than midrib); pod margins not undulate 5

4a. Phyllodes prominently 1-nerved; pod margins conspicuously undulat 6

5. Heads 3-4-flowered; peduncles 4-7 mm long; branchlets prominently ribbed (not flattened) ..... 6. *A. pygmaea*

5a. Heads 6-7-flowered; peduncles 7-11 mm long; branchlets clearly flattened with the phyllodes distichously arranged ..... 2. *A. disticha*

6. Ovaries 3-5 per flower, glabrous; phyllode gland prominent (1-2 mm long), 5-20 mm above pulvinus; heads bright light-golden, normally 2-3-flowered; branchlets pruinose ..... *A. celastrifolia*

6a. Ovaries 1 per flower (rarely a few flowers with 2), tomentulose or glabrous 7

7. Phyllodes with l:w = 1-2, gland inconspicuous (mostly 0.2-0.3 mm long), 0-10 mm above pulvinus; heads 5-12-flowered, bright lemon yellow; ovary glabrous 8

7a. Phyllodes with l:w = 2 or more, gland prominent (1-2 mm long, rarely 0.5 mm in *A. myrtifolia*); heads cream to creamy yellow, rarely bright lemon yellow (in *A. myrtifolia*), 2-12-flowered 9

8. Peduncles all or mostly single within axils of phyllodes; heads 8-12-flowered; phyllodes ± symmetrically elliptic to almost circular, some tending obovate or ovate ..... 4a. *A. heterochroa* subsp. *heterochroa*

8a. Peduncles all or mostly in racemes 1-3.5 cm long; heads 5-6-flowered; phyllodes inaequilaterally obtriangular to obdeltate ..... 4b. *A. heterochroa* subsp. *robertii*

9. Ovary glabrous; heads 5-7-flowered; gland 0-4(8) mm above pulvinus ..... 1. *A. clydonophora*

9a. Ovary tomentulose; heads normally 2-5-flowered; gland 5-20 mm above pulvinus ..... 5. *A. myrtifolia*

Taxonomy

1. Acacia clydonophora Maslin, *sp. nov.*

Frutex glaber apertus 0.7-1.5 m altus, ramulis manifeste striato-costatis. Phyllodia plus minusve obliqua, elliptica ad anguste elliptica sed aliqua quasi obovata ad oblanceolata et interdum lanceolata, ad basem inaequalia et ad apicem obtuso-mucronata ad acuta mucro indurato, 4-7(12) cm longa, 1.5-3 cm lata, 2-4(5.5)-plo longiora quam latiora, recta vel falcato-recurvata, leviter undulata, glauca ad subglauca, costa prominentia et normaliter cum margine abaxiale ad basem brevi-connivente, nervis marginalibus prominentibus sed nervis lateralibus obscuris, glande prominente et supra pulvinum 0-4(8) mm. Racemi (0.2)0.5-3 cm longi, 3-14 capitulis, pedunculis 5-7 mm longis; capitula globularia, cremea ad cremeo-lutea et sublaxe 5-7-floribus. Flores 4-meri, calyce gamosepalo 1/5-1/3 petalis obtegentia, truncato ad sinuolate lobato. Legumina linearia ad 7 cm longa et 4-5 mm lata, crustacea ad sublignea, erecta, curvata, nervo marginale crasso et undulato. Semina longitudinalia, anguste oblonga, 5-6 mm longa, nitida, atro-brunnea, arillo terminale.

Typus: summit of Mount Lesueur, Western Australia, 13 October 1974, *A.S. George s.n.* (holo: PERTH 00694290; iso: K, PERTH 01469371 - mounted with holotype).

Erect, openly branched, single-stemmed *shrubs* 0.7-1.5 m tall. *Bark* smooth, normally grey at base of stems and reddish brown or sometimes orange on branches and branchlets. *Branches* and *branchlets* terete, striate (ribs prominent and yellow or red brown, extending to old wood), glabrous, occasionally pruinose. *New shoots* red-brown at first but becoming purplish and lightly pruinose. *Stipules* early caducous. *Phyllodes* variable in shape and size, ± asymmetric with the adaxial margin normally more convex than the abaxial, elliptic to narrowly elliptic with some tending to obovate to oblanceolate, sometimes lanceolate, northern populations 4-7 cm long and 1.5-3 cm wide (to 9.5 x 4 cm on juvenile plants), to 12 cm long on southern populations, length to width ratio 2-4(5.5), straight, sometimes falcately recurved, patent to inclined, ± thinly coriaceous, slightly undulate when dry, glabrous, glaucous to sub-glaucous; *midrib* prominent, yellow to reddish, normally concurrent with the lower margin for 2-7 mm above the pulvinus; *marginal nerves* prominent, yellow or reddish; lateral nerves openly reticulate, normally obscure when dry (scarcely evident when fresh); *apex* obtuse-mucronate to acute, the mucro *c.* 1 mm long, thickened indurate and very coarsely pungent when dry; base unequal; pulvinus 2-4.5 mm long, terete, sometimes slightly dilated at the base, obscurely longitudinally ridged. *Gland* prominent, situated on the upper margin of the phyllode at distal end of the pulvinus or up to 1-4 mm (rarely to 8 mm) above it, oblong, 1.2-2 mm long, shallowly concave, the lip yellowish or red-brown and sometimes slightly raised, the orifice distinct, dark brown and slit-like. *Inflorescences* glabrous, predominantly racemose, rarely interspersed with a few simple, axillary heads, racemes solitary within phyllode axils towards the ends of the branchlets, (2)5-33 mm long, 3-14-headed, the axes slightly flexuose and prominently ribbed. *Peduncles* 5-7 mm long; basal peduncular bracts absent at anthesis. *Heads* cream to creamy yellow, globular, sub-loosely 5-7-flowered. *Bracteoles* sub-persistent, ovate, *c.* 1 mm long, sessile, concave, glabrous, brown. *Flowers* 4-merous, glabrous, torus slightly expanded; buds obtuse, quite large. *Calyx* 1/5-1/3 the length of the corolla, gamosepalous, ± truncate to very shallowly divided into broadly triangular lobes separated by sinuses, the lobes not thickened; calyx tube nerveless and broad-based. *Petals* divided almost to the base, elliptic, 3 x 1.5 mm, not reflexed at anthesis, very finely striate (the nerves submerged), apices thickened and bluntly acute. *Ovary* 1 per flower, deflexed at apex of a very short gynophore, glabrous. *Stamens* very numerous. *Pods* linear, to 7 cm long, 4-5 mm wide, sometimes ± twisted when young, erect, crustaceous to sub-woody, curved, glabrous, not reticulate, scarcely raised over the seeds, not or very slightly constricted between the seeds, thickened, apex acute and slightly uncinate; marginal nerves thick and undulate. *Seeds* longitudinal in the pod, narrowly oblong, 5-6 mm long, 2.5-3 mm wide, shiny, dark brown; areole open, 3.5-4 x 1 mm; funicle *c.* 1 mm long, abruptly expanded into an thick, short, curved aril situated at base of seed.

Selected specimens examined. WESTERN AUSTRALIA: Boonanarring Brook (proposed Nature Reserve), off Wannamal W Road, Gingin, *J.J. Alford* 236 (PERTH); Mount Lesueur, *J.S. Beard* 7820 (PERTH); Cataby, Reserve 27995, *D.K. Coughran* 0105(A) (PERTH); NE of Mount Lesueur, *R.J. Cranfield* 1232 (CANB, PERTH); Barletts Spring, 25 km N of Gingin, *G.J. Keighery* 8040 (CANB, PERTH); 4 km E of Brand Highway on Yandan Road, *c.* 2.7 km S of Cataby, *B.R. Maslin* 5358 (PERTH); proposed Mount Lesueur Nature Reserve, *c.* 3 km due NE of Mount Lesueur, *B.R. Maslin* 5361, 5362 and 5362A (all PERTH); 5.9 km E along Cadda Road from junction with Munbinea Road, *S. Patrick* and *A. Brown* SP 1317 (30° 23'S, 115° 17'E); [E of] Jurien Bay, *R.D. Royce* 7708 (PERTH).

Distribution. Southwest Western Australia in the Irwin and Darling Botanical Districts (1:250,000 maps H50-9; H50-10,14). Principally found at the northern end of the Gairdner Range in the vicinity of Mount Lesueur (*c.* 105 km due south-southeast of Dongara), also with scattered populations occurring to the southeast from near Cataby (*c.* 45 km due west of Moora) to the vicinity of Gingin, and an occurrence east of Jurien Bay.

Habitat. Laterite, or sand or loam over laterite on ridges or in gullies, in low *Eucalyptus* woodland or high open shrubland with an understorey of low open heath.

Flowering and fruiting periods. Flowers from April to November during which time developing pods are also present. Pods with mature seeds have been collected in October.

Variation. The phyllodes on specimens from the northern end of the range at Mount Lesueur are elliptic to narrowly elliptic with some tending to obovate or oblanceolate, 4-7 cm long, 1.5-3 cm wide (to 9.5 x 4 cm on juvenile plants) and ± straight. The southern populations, however, may differ slightly in that the phyllodes are commonly longer (to 12 cm) and falcately recurved, and sometimes lanceolate.

Affinities. The new species is most closely related to *A. celastrifolia* and *A. myrtifolia* but is distinguished by a combination of the following characters: shrubs to 1.5 m tall; ovary glabrous and one per flower; heads 5-7-flowered; gland 0-4(8) mm above pulvinus. *Acacia myrtifolia* is a shrub 0.5-3 m tall, its flowers have a single, tomentulose ovary, heads normally 2-5-flowered and glands 5-20 mm above the pulvinus; *A. celastrifolia* is a shrub 1-3 m tall with 3-5, glabrous ovaries per flower, normally 2-3-flowered heads and glands 5-20 mm above the pulvinus, it is further distinguished by its distinctly pruinose branchlets and its racemes which are normally 3-12 cm long with 10-20, bright light-golden heads. Although *A. clydonophora* has similar edaphic preferences to *A. celastrifolia* and is geographically close to this species, it appears to be more closely related to *A. myrtifolia* (especially to the short phyllode forms of *A. myrtifolia* that occur along the south coast of Western Australia to the east of Albany and extending into eastern Australia). Indeed it could be argued that *A. clydonophora* should be treated as an infraspecific taxon under *A. myrtifolia.* However, *A. myrtifolia* as currently defined in Western Australia is very variable and in the light of an analysis of the complex variation patterns the rank attributed to *A. clydonophora* may need to be re-assessed. *Acacia myrtifolia* occurs much further south than *A. clydonophora.*

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Four - Rare Taxa. See end of this issue.

Etymology. The epithet is derived from the Greek *klydon* - wave, and *phoras* - bearing or fruitful, and alludes to the characteristic undulate margins of the pods.

2. Acacia disticha Maslin, *sp. nov.*

Frutices glabri, 1(2) m alti. Ramuli superiores applanati, phylodiis distichis, demum spiraliter dipositis, ellipticis, leviter asymmetricis, 15-27(33) x 4-11(15) mm, in ramulis superioribus usque 43 x 22 mm, non pungentia, 1-nervia, nero secundario minus distincto; glans non prominens. Inflorescentiae normaliter racemosae, raro simplices. Pedunculi 7-11 mm longi. Florum capitula globularia, cremea, 6-7-flora. Flores 4-meri. Calyx c. 1/4 corollae longitudinis attingens, gamosepalus. Petala elliptica, c. 3 mm longa. Ovarium singulum, glabrum. Legumen anguste oblongum, ad 40 x 5 mm, subnutans, margine incrassatum, non undulatum. Semina (submatura) in legumine longitudinalia, obloidea, 4 x 2.5 mm, brunnea.

Typus: N end of Middle Mount Barren, Fitzgerald River National Park, 34° 03'S, 119° 40'E, Western Australia, 20 December 1970, *A.S. George* 10588(A) (holo: PERTH 00195715; iso: CANB, K, NY).

Shrubs normally to *c.* 1 m tall but reaching 2 m in sheltered situations, spreading, medium-dense, dividing just above ground level into 3-5 principal, rigid branches, phyllodes concentrated towards the ends of the branches and normally shed with age leaving the branches marked with scars on raised leaf bases. *Bark* on old wood light grey, more or less smooth. *Branchlets* flattened towards their apices but becoming terete with age, finely nerved, glabrous, apically greenish, not pruinose. *Stipules* frequently early caducous and leaving a dark brown scar at the base of the phyllode, depressed ovate to shallowly triangular, 0.5-0.7 mm long, *c.* 1 mm wide, glabrous, dark brown. *Phyllodes* distichous on the flattened, terminal portion of the branchlets but spirally arranged with age as the branchlet becomes terete, elliptic, slightly asymmetric, size variable even on a single specimen, 15-27(33) mm long and 4-11(15) mm wide with length to width ratio 2-4 on upper part of branchlets, seemingly normally shed with age but if persistent can reach 43 mm long and 22 mm wide lower down, not or very slightly undulate, thinly coriaceous, glabrous, bright medium green; *midrib* sometimes concurrent with the lower margin for a short distance above the pulvinus, curved upwards at about 1/3 the distance from the base, a minor second longitudinal nerve arising from the pulvinus on the adaxial side of the midrib and trending towards the apex but not reaching it, lateral nerves openly reticulate but not readily seen on small phyllodes; *apex* obtuse, minutely mucronulate; base slightly unequal; pulvinus *c.* 1 mm long, light brown. Gland not prominent, situated on upper margin of phyllode 2-5 mm above the pulvinus, rarely absent, concave, not raised, oblong, 0.4-1(1.7) mm long, 0.2-0.5 mm wide. *Inflorescences* glabrous, racemose but the racemes interspersed with a few simple heads, rarely the entire plant possessing simple inflorescences; raceme axes normally *c.* 4 mm long, 2(3)-headed, growing out as a leafy shoot with simple inflorescences sometimes arising within the axils of the young phyllodes. *Peduncles* 7-11 mm long; basal peduncular bracts deciduous or sometimes persistent, triangular, concave, *c.* 1 mm long, sessile, glabrous, brown. *Heads* globular, bright cream, loosely 6-7-flowered. *Bracteoles* triangular to elliptic, acute, *c.* 1 mm long, concave, sessile, glabrous. *Flowers* 4-merous, glabrous, stamens and ovaries situated on a swollen torus; flower buds ellipsoid, obtuse. *Calyx c.* 1/4 the length of the corolla, gamosepalous, ± truncate to very shallowly divided into broadly triangular lobes separated by sinuses, the lobes not thickened; calyx tube nerveless and broad-based. *Petals* elliptic, *c.* 3 mm long and 1.5 mm wide, free to base and not prominently reflexed at anthesis, very slightly thickened at apex, greenish yellow. *Ovary* 1 per flower, glabrous, deflexed at apex of a slender gynophore *c.* 1 mm long. *Stamens* very numerous. *Pods* (few seen) narrowly oblong, to 4 cm long, 5 mm wide, sub-nutant (the basal stipe ± deflexed), crustaceous to sub-woody, very slightly curved, glabrous, dark brown, not reticulate, very slightly twisted, very slightly raised over but not constricted between seeds, apex acute; margins not undulate, thickened. *Seeds* (almost mature) longitudinal in the pod within shallow depressions separated by transverse partitions, oblongoid but truncate along edge adjacent to the aril, 4 mm long, 2.5 mm wide, rather compressed (1.5 mm thick), slightly shiny, medium brown, with an obscure, dull, dark brown peripheral band; pleurogram very obscure, with a narrow opening towards the hilum; areole *c.* 3 mm long and 1.3 mm wide; funicle filiform, 1.5 mm long, scarcely dilated at the attachment to the pod, expanded into a once folded, yellowish (when dry dark brown near the hilum) aril.

Other specimens examined. WESTERN AUSTRALIA: Corackerup Creek, February 1934, *E.T. Bailey s.n.* (PERTH 00195642); creek line in tributary of Steere River, *c.* halfway between Kundip Mine and Elverdton Mine, Ravensthorpe Range, *G. Craig* 2011 (PERTH); Ravensthorpe district, November 1944, *C.A. Gardner s.n.* (PERTH 00195693, 00195707); 1 km N of Twin Bay, from SW slopes of Thumb Peak, Fitzgerald River National Park, *B.R. Maslin* 5553 (CANB, K, MO, PERTH); Thumb Peak, Fitzgerald River National Park, *K. Newbey* 2726 (PERTH) and 3419 (BRI, CANB, K, MEL, NY, PERTH); 2 km SW of Thumb Peak, *K. Newbey* 4894 (AD, CBG, NSW, PERTH).

Distribution. Southwest Western Australia in the Eyre Botanical District (1:250,000 maps I50-12; I51-5). Principally confined to the Fitzgerald River National Park (southwest of Ravensthorpe) in the

vicinity of Thumb Peak and Mid Mount Barren. Only two gatherings are known outside the Park, from Corackerup Creek (*c.* 34° 11'S, 118° 44'E), some 100 km to the west-southwest and from between Kundip Mine and Elverdton Mine, Ravensthorpe Range (*c.* 33° 50'S, 120° 09'E) some 40 km to the northeast.

Habitat. Grows along watercourses in well drained loamy clay or variably drained sand and silt. Sometimes occurs in rocky loam or limestone soil. Common in tall shrubland where it dominates the low shrub stratum, also frequent in patches of *Eucalyptus eremophila* closed scrub but is very rare in *E. lehmanii* low open forest.

Flowering and fruiting periods. Flowers from September to February during which time very young pods may also be present on the plants. It is uncertain whether one or two flowering flushes occur within this period. Pods with near-mature seeds have been collected in early November.

Variation. The phyllodes vary considerably in size, even on a single specimen. On upper branchlets they are generally 15-27 mm long and 4-11 mm wide, whereas lower down they may reach 43 mm long and 22 mm wide. These largest phyllodes are seemingly readily shed because they are often not present on herbarium specimens.

Affinites. The new species is perhaps most closely related to *A. pygmaea* which is restricted to the Wongan Hills, some 450 km to the north of the range of *A. disticha*. These species have very similar phyllodes (except that they are not distichously arranged in *A. pygmaea*) and similar carpological features. *Acacia pygmaea*, however, is a dwarf sub-shrub 0.3-0.5(0.7) m tall with ribbed, non-flattened branchlets, normally non-racemose inflorescences and 3-4-flowered, white heads on peduncles 4-7 mm long. *Acacia disticha* is sometimes sympatric with *A. myrtifolia* which is readily distinguished by its prominently ribbed, angular branchlets (not clearly flattened as in *A. disticha*), non-distichous, thicker, prominently 1-nerved phyllodes with a more prominent gland, and longer pods with clearly undulate margins.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two - Poorly Known Taxa. See end of this issue.

Etymology. The epithet is derived from the Latin *distichus*, arranged in two opposite rows, and refers to the phyllotaxy. The upper portion of the branchlets are flattened with the phyllodes arranged in two vertical ranks along each margin. With age the branchlets become terete and the phyllodes spirally arranged. This distichous arrangement is otherwise unknown in *Acacia* except for some members of section *Alatae* eg. *A. alata* R. Br. and *A. glaucoptera* Benth.

3. Acacia durabilis Maslin, *sp. nov.*

Frutices glabri, 0.7-2 m alti. Ramuli teretes, prominenter costati, pruinosi. Stipulae persistentes, (5)7-10(12) mm longi. Phyllodia elliptica, leviter asymmetrica, 1.5-4 cm longa, 1.5-3 cm lata, ± undulata, prominenter uninervia; glans prominens. Inflorescentia plerumque simplex. Pedunculi (12)17-25(27) mm longi. Florum capitula globularia, 6-9-flora. Flores 4-meri. Calyx 1/4-1/3 corollae longitudinis attingens, gamosepalus, ± truncatus. Petala c. 4 mm longa. Ovarium solitarium, glabrum. Legumina anguste oblonga, ad 6 cm longa, 6-8 mm lata, torta, margine non undulata. Semina in legumina longitudinalia, c. 4 mm longa, 2.5-3 mm lata, nitentia, atrobrunnea; funiculus ad insertionem leguminis dilatatus.

Typus: near Mount Desmond, *c.* 11 km S of Ravensthorpe, Western Australia, 20 December 1971, *B.R. Maslin* 2566 (holo: PERTH 00693669; iso: CANB, K, MEL, NY, PERTH 00150703).

Spreading, moderately open, single-stemmed *shrubs* 0.7-2 m tall. *Bark* smooth, green or brownish, striate. *Branchlets* terete, pruinose between the prominent reddish brown ribs, glabrous. *Stipules* persistent, prominent, (5)7-10(12) mm long, indurate, coarsely pungent, basally thickened, patent to ascending, ± straight. *Phyllodes* elliptic, slightly asymmetric, size variable, normally 1.5-4 cm long and 1.5-3 cm wide with length to width ratio 1.5-2, rather coriaceous, ± crowded towards ends of branches, slightly to moderately undulate, glabrous, olive green; *midrib* prominent, raised when dry, yellowish, marginal nerves thickened and pale red but turning yellowish with age; lateral nerves openly anastomosing, evident on large phyllodes but less so on smaller ones, diverging at an angle of *c.* 60° from the midrib but the lowermost one on the adaxial side of the midrib often diverging at *c.* 30°; *apex* obtuse, with a distinct yet minute, deflexed, subulate, coarsely pungent, apical mucro *c.* 1 mm long. *Gland* prominent, situated on the adaxial margin of the phyllode 2-4 mm above the base, circular or oblong, 1-1.9 mm long, lip surrounding a prominent but shallow orifice. *Inflorescences* simple, axillary, 1(2) per node, very rarely interspersed with 1-2-headed racemes having axes 1-3 mm long. *Peduncles* (12)17-25(27) mm long, glabrous, often light red when young but turning yellow with age, slightly dilated into a sub-capitate receptacle; basal peduncular bracts absent. *Heads* globular, cream to pale yellow, 6-9-flowered, flowers not densely arranged. *Bracteoles* somewhat deciduous, ovate, concave, *c.* 1mm long, sessile, glabrous, light brown. *Flowers* 4-merous, glabrous, stamens and ovaries situated on a swollen hemispherical torus; flower buds obtuse, obtusely quadrangular. *Calyx* 1/4-1/3 the length of the corolla, gamosepalous, ± truncate to very shallowly divided into rounded or broadly triangular lobes separated by wide sinuses, the lobes not thickened; calyx tube nerveless and broad-based. *Petals* elliptic, acute, *c.* 4 mm long, 2 mm wide, free to base at anthesis, thickened towards the apex, very obscurely 1-nerved. *Ovary* 1 (very rarely 2) per flower, glabrous, slightly deflexed at apex of a gynophore *c.* 1 mm long. *Stamens* very numerous. *Pods* narrowly oblong, to 6 cm long and 6-8 mm wide, with up to 9 seeds, crustaceous to sub-woody, wholly or partially spirally twisted once or twice, glabrous, dark reddish brown, not reticulate, very slightly raised over the seeds, insignificantly constricted between the seeds, apex abruptly acute and ± uncinate, basal stipe to 3 mm long; margins not undulate, thickened. *Seeds* longitudinal in the pod, in distinct depressions separated by transverse partitions, ellipsoid but truncate along edge adjacent to aril, *c.* 4 mm long, 2.5-3 mm wide, slightly compressed (*c.* 2 mm thick), glossy, brown; pleurogram obscure, narrowed and open towards the hilum; areole *c.* 2.5 x 1.5 mm; funicle *c.* 1 mm long, filiform and yellowish but flattened, dark brown and dilated at attachment to pod, this flattened portion often remaining attached at pod valve following dehiscence, distally expanded into a small yellowish aril which is dark brownish near the hilum.

Selected specimens examined. WESTERN AUSTRALIA: Ravensthorpe Range, behind Elverdton mine on lower track to Kundip, 1 December 1981, *E.M. Bennett s.n.* (PERTH 00150274); 11 km ESE of Ravensthorpe, 0.5 km E of Mount Desmond, *M.D. Crisp* 4954 (CBG, PERTH); Marra crossing over Pallinup River on Highway No. 1, October 1971, Superintendent *Daniels s.n.* (PERTH 00150649); Jerdacuttup River, *C.A. Gardner* 13755 (PERTH); E side of Mount Desmond, *c.* 7 miles [11.2 km] ESE of Ravensthorpe, *A.S. George* 3659 (NSW, PERTH); Mount Desmond, 10 km S of Ravensthorpe, *B.R. Maslin* 4050 (PERTH); Kundip, *K. Newbey* 2494 (K, PERTH); Ravensthorpe Range, 7 km NE of Ravensthorpe, K.R. Newbey 11799 (PERTH).

Distribution. Southwest Western Australia in the Eyre Botanical District (1:250,000 maps I50-12; I51-5). Most common in the Ravensthorpe Range from Mount Desmond south to Kundip also with a collection 7 km northeast of Ravensthorpe (*c.* 12 km northwest of Mount Desmond). A single collection has been made from the Jerdacuttup River (*c.* 10 km east of Ravensthorpe Range) and also

from the Pallinup River (*c.* 150 km due southwest of Ravensthorpe Range). The provenance of this last collection needs confirmation.

Habitat. Moderately exposed ridges or hillsides or occasionally near creeks in rocky or lateritic clay or sandy clay in open mallee scrub or low woodland.

Flowering and fruiting periods. Flowers from October to April at which time developing pods are sometimes present. It is not known whether there are one or two flowering flushes within this period. Mature pods have been collected in November and December.

Characteristic features. The species is recognized by its prominently ribbed, terete branchlets (the ribs remaining as obvious reddish brown striae on the old stems), prominent, persistent, indurate stipules, large, cream heads on long axillary peduncles, twisted pods with non-undulate margins and its funicle which is dilated at the point of attachment to the pod.

Affinities. Resembling *A. heterochroa* subsp. *heterochroa* with which it is sympatric in the Ravensthorpe Range. The distinguishing features of these two species are given below under subsp. *heterochroa.*

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three - Poorly Known Taxa. See end of this issue.

Etymology. The epithet is derived from the Latin *durabilis* - lasting or enduring, and refers to the persistent stipules which are prominent on the plant, especially where phyllodes have shed.

4. Acacia heterochroa Maslin, *sp. nov.*

Frutices glabri, 0.5-1.5(2) m alti. Cortex pallide griseus. Surculi juveniles pallide rubri. Ramuli teretes. Phyllodia 10-35 mm longa, (8)10-25(29) mm lata, ± undulata, 1-nervia, ± pungentia; glans obsoleta. Inflorescentiae simplices vel racemosae. Pedunculi 5-25 mm longi, basi ebracteati. Florum capitula globularia, citrina, 5-12-flora. Flos 4-merus; alabastra magna. Calyx 1/5-1/4 corollae longitudinis attingens, gamosepalus, ± truncatus. Petala 5 mm longa. Ovarium singulum, glabrum. Legumina linearia, ad 6.5 cm longa, 3-4 mm lata, erecta, margine manifeste undulata. Semina (subsp. *heterochroa*) in legumine longitudinalia, obloidea, 3.5-4 mm longa, 1.8-2.2 mm lata, nitida, pallide brunnea.

Typus: northern end of Ravensthorpe Range SE of Mount Short, Western Australia, 30 August 1980, *B.R. Maslin* 4766 (holo: PERTH 00196150; iso: CANB, K, PERTH 00196169).

Shrubs 0.5-1.5(2) m tall, spindly and open or sometimes dense. *Bark* light grey, slightly roughened. *Branchlets* glabrous, normally ± lightly pruinose, terete, ribbed, the ribs most evident immediately below insertion of the phyllodes. *New shoots* light red, frequently present at anthesis. *Stipules* early caducous, present only on youngest new shoots. *Phyllodes* elliptic with some tending obovate or ovate, sometimes broadly elliptic or almost circular (subsp. *heterochroa*), or inaequilaterally obtriangular to obdeltate (subsp. *robertii*), 10-35 mm long, (8)10-25(29) mm wide, length to width ratio (1)1.2-1.8, ± coriaceous, ± undulate (especially when dry), glabrous, grey-green to sub-glaucous; *midrib* prominent, yellow, frequently intersecting the adaxial margin and contiguous with it for about up to 3 mm below the apex, marginal nerves prominent and yellow (red when young), lateral nerves

seemingly absent or few and very obscure (more apparent on large phyllodes); apical point subulate, ± pungent, 1-3 mm long, straight or slightly curved, brown; pulvinar area *c.* 0.5 mm long, yellowish, a clearly differentiated and wrinkled pulvinus not developed. *Gland* insignificant, situated on the upper margin of the phyllode 0-10 mm above the base, not raised, oblong, 0.2-0.3(0.4)mm long, 0.1-0.2(0.3) mm wide. *Inflorescences* simple or racemose. *Racemes* 5-35 mm long and 2-8-headed. *Peduncles* 5-25 mm long, 1(2) per node, glabrous, reddish when young, finely longitudinally sulcate when dry; basal peduncular bracts absent at anthesis. *Heads* globular, bright lemon yellow, 7-10 mm diam., 5-12-flowered, flowers not densely arranged. *Bracteoles* ± persistent, oblong to ovate, shallowly concave, *c.* 1 mm long, dark brown. *Flowers* 4-merous, glabrous; buds ovoid to narrowly ovoid, obtuse, reddish when young. *Calyx* 1/5-1/4 the length of the corolla, gamosepalous, ± truncate to very shallowly divided into rounded or broadly triangular lobes separated by wide sinuses, the lobes not thickened; calyx tube nerveless and broad-based. *Petals* narrowly ovate, acuminate, apex thickened, *c.* 5 mm long and 2 mm wide, free to base and spreading but not reflexed at anthesis. *Ovary* 1 per flower, glabrous, slightly deflexed at apex of a thick, terete gynophore which is *c.* 0.6 mm long. *Pods* linear, to 6.5 cm long, 3-4 mm wide with 7-8 seeds, erect, coriaceous-crustaceous to sub-woody, curved, glabrous, purplish red and slightly pruinose when young (drying black), not reticulate, apex shortly and abruptly uncinate, neither constricted between nor obviously raised over seeds, dehiscing at first along the dorsal suture but the valves completely separating by splitting from the base; margins prominently undulate and sometimes thus giving the pod a twisted appearance, thickened, yellowish to light brown. *Seeds* (subsp. *heterochroa*) longitudinal in the pod, oblongoid, 3.5-4 mm long, 1.8-2.2 mm wide, somewhat compressed (1.3 mm thick), glossy, brown, greyish brown just prior to maturity, with a very obscure, dark brown peripheral line; pleurogram very obscure, narrowed and open towards the hilum; areole *c.* 2.5 mm long and 1 mm wide; funicle minute and filiform, abruptly expanded into a thick, curved, yellowish aril 2 mm long.

Distribution. Occurs in the Ravensthorpe and Holt Rock districts, southwest Western Australia.

Two allopatric subspecies are recognized (see key above).

4a. A. heterochroa Maslin subsp. **heterochroa**

Phyllodes elliptic with some tending obovate or ovate, sometimes broadly elliptic or almost circular, apical point ± pungent, 15-35 mm long, 10-25 mm wide. *Inflorescences* mostly simple and initiated on developing new shoots within axils of diminutive phyllodes, the subtending phyllodes commonly not fully expanded by anthesis, sometimes interspersed with a few short axillary racemes (5-17 mm long and 2-7-headed), occasionally falsely racemose at ends of branchlets apparently due to suppression of the subtending phyllodes. *Peduncles* 10-25 mm long, normally single in axils of reduced phyllodes at ends of branchlets, sometimes a few in short racemes 5-17 mm long; heads 8-12-flowered.

Selected specimens examined. WESTERN AUSTRALIA: 40 km due N of Ravensthorpe, *K.L. Bradby* 90 (PERTH); 21.25 km S of Coujinup Hill, *M.A. Burgman* and *S. McNee* MAB 2009 (PERTH); Ravensthorpe, *J. Goodwin* 231 (PERTH); Mount Desmond, *c.* 11 km S of Ravensthorpe, *B.R. Maslin* 2568 (K, PERTH); 0.5 miles [0.8 km] E of Elverdton Mine, *K.R. Newbey* 938 (K, PERTH); road to Mount Short, east of Lake King - Ravensthorpe road, *R.A. Saffrey* 375 (AD, BRI, MEL, NY, PERTH); 4 km SE of Ravensthorpe on hill 1 km E of main road to Hopetoun, *P.G. Wilson* 5519 (NSW, PERTH); Ravensthorpe Range, c. 8 km N of Ravensthorpe, *P.G. Wilson* 7975 (CBG, MO, PERTH).

Distribution. Southwest Western Australia in the Eyre Botanical District (1:250,000 maps I50-8, I51-5). Occurring predominantly in the Ravensthorpe Range from Mount Short southeast to the vicinity

of Elverdton Mine (*c.* 15 km southeast of Ravensthorpe) with two occurrences outside the Range, one about 20-30 km east of Ravensthorpe in the vicinity of the Rabbit Proof Fence north of Highway No. 1 (*c.* 33° 30'S, 120° 15'E) and another approximately 40 km north of Ravensthorpe (33° 07'S, 120° 05'E). Much of the land between the Range and the Fence has been cleared and it is likely that the species could have occurred in parts of this area prior to clearing (J. Lewis, pers. comm.). The species is common throughout its present range.

Habitat. The following notes are taken mostly from an unpublished report prepared by J. Lewis in 1982. The species is not highly specific for a particular vegetation and soil type. It occurs in tall dense to low open mallee scrub (e.g. *Eucalyptus conglobata, E. eremophila, E. falcata, E. goniantha, E. incrassata, E. platypus, E. tetragona,* and *E. transcontinentalis*) with a dense sclerophyllous understorey comprising species such as *Banksia laevigata, Allocasuarina humilis, Daviesia uniflora, Dryandra conferta* and *Grevillea concinna*. The preferred soil types range from grey-white to orange-brown gravelly sand to rocky laterite and ironstone on ridgelines or moderately exposed gentle slopes of hillsides.

Flowering and fruiting periods. Flower buds have been recorded from April to December and are probably present for most of the year. The main flowering flush is from July to December during which time new shoots and developing pods are frequently present, the latter particularly from August to October. Mature pods have been collected in December.

Affinities. Resembling *A. durabilis* with which it is often sympatric in the Ravensthorpe Range but *A. durabilis* is recognized by its more prominently ribbed branchlets, prominent, persistent stipules, phyllodes with a prominent basal gland and a shorter, deflexed, less pungent tip, cream to pale yellow heads, ± spirally twisted pods which do not have undulate margins and seeds with funicles that are dilated at the point of attachment to the pod.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Three - Poorly Known Taxa. See end of this issue.

Etymology. The epithet is derived from the Greek *hetero* - different, and *-chrous* - coloured, and refers to the contrasting colours of the stems, phyllodes, new shoots, heads and young pods.

4b. A. heterochroa subsp. **robertii** Maslin, *subsp. nov.*

A subsp. *heterochroa* phyllodiis inaequilateraliter obtriangularibus ad obdeltatis, margine adaxiale supra medium cum conspicuo angulo rotundato et puncto acute pungente, 10-25 mm longis et 10-15 mm latis, 0.8-1.5-plo longioribus quam latioribus, inflorescentiis praecipue racemosis sed interdum aliquot simplicibus capitulis in axillis, racemis 10-35 mm longis, 2-8 capitulis et plerumque aggregatis ramulorum versus apicem, pedunculo 5-10 mm longo, capitulis 5-6-floribus, seminibus maturis non visus differt

Typus: Digger Rock area, Western Australia, 24 July 1979, *R.F. Maslin s.n.* (holo: PERTH 00160830).

Differs from subsp *heterochroa* primarily in the following ways. Phyllodes inaequilaterally obtriangular to obdeltate, adaxial margin with a conspicuous rounded angle above the middle, apical point sharply pungent, 10-25 mm long, 10-15 mm wide, length to width ratio 0.8-1.5. Inflorescences predominantly racemose but sometimes interspersed with a few simple axillary heads, the racemes

10-35 mm long, 2-8-headed and mostly aggregated towards the ends of the branchlets; peduncles 5-10 mm long. Heads 5-6-flowered. Mature seed *n.v.*

Other specimens examined. WESTERN AUSTRALIA: Timber Reserve n. 20342, 32° 39'S, 119° 14'E, *K.J. Atkins* 1820 (CANB, K, PERTH); Varley, 8 km E of Rabbit Proof Fence on Carstairs Road, *B. & B. Backhouse* H/30 (PERTH) and *M. Pieroni* 90/2 (PERTH); Holt Rock, *A. Dirusse* 2 (PERTH); South Ironcap, *K.R. Newbey* 3356 (PERTH).

Distribution. Southwest Western Australia in the Roe Botanical District (1:250,000 map I50-4). Known only from the few localities listed above in the Holt Rock district, some 100 km north of the typical subspecies.

Habitat. Grows mostly on lateritic gravel occasionally with sand, or in rocky loam, appearing to favour hilltops or ridges in woodland or heath.

Flowering and fruiting periods. Flowering specimens recorded for July and September. Mature sterile pods have been collected in December.

Discussion. The superficial differences, particularly phyllode shape, between subsp. *robertii* and the typical subspecies seem quite large. However, in the absence of having seen pods of subsp. *robertii* it seems best that it not be afforded species rank at the present time.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two - Poorly Known Taxa. See end of this issue.

Etymology. Named in honour of Robert Frederick Maslin, my brother, who discovered the subspecies and collected the type.

5. Acacia myrtifolia (Smith) Willd., Sp. Pl. 4th edn, 4: 1054 (1806)

Mimosa myrtifolia Smith, Trans. Linn. Soc. London 1: 252 (1791); *Phyllodoce myrtifolia* (Smith) Link, Handbuch 2: 133 (1831); *Cuparilla myrtifolia* (Smith) Raf., Sylva Tellur. 120 (1838). *Typus:* cultivated at Sion Gardens, seed from New South Wales, flowered 1790, *T. Hoy (n.v.).* Note: A specimen at Kew, ex herb. Bishop Goodenough, labelled "Mimosa myrtifolia. Botany Bay - 1794" was cited as isotype by Pedley (1980: 258), however, this was seemingly collected three years after the publication of the name.

A. marginata R. Br. in W.T. Aiton, Hortus Kew. 2nd edn, 5: 462 (1813); *Mimosa marginata* (R. Br.) Poiret, Encycl. Meth. (Bot.) Suppl. 5: 530 (1817), *nom. inval.* (combination not actually made); *A. myrtifolia* f. *angustifolia* Benth., Fl. Austral. 2: 377 (1864); *A. myrtifolia* var. *angustifolia* (Benth.) Benth., Trans. Linn. Soc. London 30: 475 (1875). Lectotype *(fide* Maslin & Cowan,): "Mimosa." King George III Sound [Albany, Western Australia], Dec. 1801, *R. Brown* (BM - upper left hand fruiting specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4336).

A. trigona A.DC., Huitieme Not. Pl. Rar. Geneve 20 (1840); Mem. Soc. Phys. Geneve 9: 94 (1841). *Typus:* "Culta in hortis Genevensibus. Floret Maio." (*n.v.*). Note: The following specimen at G, collected one year after the original publication of this name, and annotated "trigona" by A.P. de Candolle, was likely to have come from the type plant "Acacia trigona Alph. DC.! h. genev. notii. Cult. Genev. 1841".

A. marginata var. *angustata* Meissner in J.G.C. Lehmann, Pl. Preiss. 1: 14 (1844). Lectotype *(fide* Maslin & Cowan, 1994): Mount Clarence [Albany], Western Australia, 30 September 1840, *L. Preiss* 927, *ex parte* (LD; isolecto: A, C, FI, G, GOET, HBG, K, M, MEL, NY, P, STR, W.)

A. pawlikowskyana Ohlend., Neue Allg. Deutsche Garten-Blumenzeitung 1: 369 (1845), *synon. nov. Typus:* between Cape Riche and Bald Head [Albany], Western Australia, collector not given (*n.v.*). See discussion below.

A. myrtifolia var. *major* Meissner in J.G.C.Lehmann, Pl. Preiss. 2: 203 (1848), *synon. nov. Typus:* Cape Riche, Western Australia, *L. Preiss* 2641 (*n.v.*). See discussion below.

A. marginata var. *brevifolia* Regel, Gartenflora 2: 196, t. 57 (1853), *synon. nov. Typus:* Cultivated in Hort. A.N. Baumann, Bollwiller, flowers in March-April (*n.v.*).

A. myrtifolia f. *normalis* Benth., Fl. Austral. 2: 377 (1864), *nom. inval.*

A. acutifolia Maiden & Blakely, J. Roy. Soc. W. Australia 13: 14, pl. 11, figs 1-4 (1928), *synon. nov. Typus:* Bruce Rock-Merredin district, Western Australia, December 1916, *F. Stoward* 14 [locality and other collecting details probably erroneous, see discussion below] (holo: NSW; iso: MEL - Fragment ex NSW).

[*A. amoena auct. non* H.L. Wendl.: F.M. Bailey, Queensland Fl. 2: 489 (1900), *fide* L. Pedley, Austrobaileya 1: 258 (1980)]

Illustrations: J.E. Smith, Spec. Bot. New Holland 53, t. 15 (1795); J.H. Maiden & W.F. Blakely, *loc. cit.*, as *A. acutifolia*; E.R. Rotherham *et al.*, Fl. Pl. New South Wales and S. Queensland 71 (1975); D.J.E. Whibley, Acac. S. Australia 121 (1980); L. Costermans Native Trees Shrubs S.E. Australia 314 (1981); B.A. Lebler, Wildfl. S.E. Queensland 2: 58 (1981); M. Simmons, Acac. Australia 1: 131, pl. 12 (1981); T. Tame, Acac. S.E. Australia 143, fig. 154, pl. 154 (1992).

Glabrous, bushy *shrubs* 0.5-3 m tall. *New shoots* often red. *Branchlets* angled, prominently ribbed, normally red. *Stipules* early caducous. *Phyllodes* ± oblique, commonly narrowly elliptic to oblanceolate, sometimes linear to linear-elliptic, acute or obtuse-mucronate, sometimes coarsely pungent, normally 2-13 cm long, 0.4-3(3.5) cm wide, usually thick and coriaceous, smooth, erect, green, midrib and marginal nerves prominent, lateral nerves absent or obscure. *Gland* prominent, mostly 5-20 mm above pulvinus. *Racemes* 1-6 cm long, rarely to 12 cm, 3-20-headed; *peduncles* 3-12 mm long, stout; heads ± globular, creamy yellow, less commonly bright lemon yellow, 2-5-flowered, sometimes to 8-flowered. *Flowers* 4-merous, large; calyx gamosepalous, truncate to very shallowly sinuately lobed; ovary tomentulose. *Pods* linear, to 9 cm long, 3-5 mm wide, crustaceous to sub-woody, erect, curved, marginal nerve thick and undulate. *Seeds* longitudinal, narrowly oblong, 3.5-4.5 mm long, shiny, brown or greyish brown, aril terminal.

Selected specimens examined. WESTERN AUSTRALIA: 9 miles [14.4 km] NW of Fitzgerald River Mouth, NE of Bremer Bay, *K.M. Allan* 315 (B, K, PERTH); Shannon Rock, 1 km W of Shannon River, Manjimup-Walpole road, *B.G. Briggs* 6535 (CANB, NSW, PERTH); 2 km east of Yallingup, *R.J. Cumming* 891 (PERTH); Margaret River, *C.A. Gardner* 5595 (PERTH); 43 miles [68.8 km] east of Esperance, *J. Goodwin* 249 (PERTH); 5 km west of Cape Riche, *G.J. Keighery* 8337 (PERTH); 25 km S of Hyden on the road to Newdegate, *B.R. Maslin* 5776 (BRI, CBG, NSW, PERTH); 5 miles [8

km] SE of Boyup Brook on the road to Cranbrook, *B.R. Maslin* 636 (MEL, NSW, PERTH); Bendering Reserve, *c.* 18 km due ENE of Bendering Siding, *B.R. Maslin* 5765 (CANB, K, MEL, NY, PERTH); 10 km SW of Ongerup, *K. Newbey* 9494 (PERTH); on road between Gairdner River and Bremer Bay Road, *S. Paust* 592 (PERTH); near Spencer's house [Strawberry Hill Farm, Albany], *L.Preiss* 920 (G, LD, MO, NY, P, STRAS); creek behind S end of Mylies Beach, near East Mount Barren, *A.N. Rodd* 5085 and *J. McCarthy* (NSW, PERTH); Warren, *F.M.C. Schock* 58 (PERTH); N and E of Brockmans stockyards, Warren district, 18 October 1916, *F.M. Schock s.n.* (PERTH 00191949); Torbay Inlet, adjacent to Mutton Bird Island, *P.S. Short* 2630, with *M. Amerena* and *B.A. Fuhrer* (MEL, PERTH); eastern base of Flinders Peak, Middle Island, *A.S. Weston* 8881 (PERTH).
SOUTH AUSTRALIA: Willunga, *c.* 50 km south of Adelaide, Mine road to Victor Harbour, *c.* 5 km S of Willunga, *J.Z. Weber* 560 (AD, PERTH); Manning Reserve near MacLaren Flat, *D.J.E. Whibley* 1331 (AD); Menglers Hill, near Tanunda, *c.* 60 km northeast of Adelaide, *D.J.E. Whibley* 3806 (AD, PERTH).
QUEENSLAND: Mount Ernest, McPherson Range, *P.I. Forster* and *G. Leiper, L.H. Bird* (BRI, CBG, K, NSW, PERTH); Kroombit Tops, *c.* 65 km SSW of Gladstone, *W.J.F. McDonald* 1014 (BRI). NEW SOUTH WALES: Bahai Temple, Ingleside, *R. Coveny* 11084 and *P. Hind* (NSW, PERTH); Blue Mountains, 0.3 km S along track which intersects Bells Line of Road, 4.6 km E of Bilpin, *B.R. Maslin* 5878 (NSW, PERTH); Belmont North, *T. Tame* 2039 (PERTH).
VICTORIA: Western Little Desert National Park, *A.C. Beauglehole* ACB 87701 and *L.W. Heubner* (MEL, PERTH); East Gippsland, Genoa Peak, *S. Forbes* 2911 (MEL, PERTH); Melbourne suburban area, Croyden, reserve between Exeter Road and Holloway Road, west of Neuparth Road, *B.R. Maslin* 5864 (AD, K, MEL); Dandenongs, Menzies Creek area, *J.H. Ross* 2791 (AD, BRI, CBG, HO, MEL, PERTH).
TASMANIA: Clarkes Island, Furneaux Group, *J.S. Whinray* 1692 (MEL).

Distribution. Widespread and common in temperate southern Australia, occurring in all states. Grows on sand or sand over laterite or granite, in forest, woodland, scrub or heath, often in coastal and near-coastal areas.

Flowering and fruiting periods. Flower buds have been recorded from May to November however the main flush of flowering is from August to October. Developing pods are present from September and reach maturation in November and December.

Variation. In Western Australia this is a somewhat variable species and is here broadly circumscribed because detailed analyses of variation patterns are needed to ascertain appropriate ranks for the variants noted below. Specimens from forest regions at the western end of the range (roughly west of Albany; also some specimens from Kangaroo Island, South Australia) have long, linear to very narrowly elliptic phyllodes with length to width ratio mostly >10 (elsewhere length to width ratio is <10). This variant has been described as *A. marginata, A. myrtifolia* var. *angustifolia* and *A. acutifolia* (see below). A specimen with especially large phyllodes (to 13 x 3.5 cm), collected from Cape Riche (i.e. *K. Newbey* 4466, PERTH), presumably corresponds to the entity described as *A. myrtifolia* var. *major* (however, the type of this name has not been seen). The most inland specimens in Western Australia have bright lemon yellow heads (e.g. *B.R. Maslin* 5765) but elsewhere in Western Australia the heads are creamy yellow; in eastern Australia the heads are also sometimes bright lemon yellow.

Typification and synonymy. Although the type of *A. myrtifolia* might be expected to be at The Herbarium of the Linnean Society in London (LINN; *fide* Stafleu and Cowan 1985) I was unable to locate it there in 1975. According to Stafleu and Cowan there is material from Smith's herbarium at

a number of other herbaria. Of those listed by them I have searched at BM, DBN, OXF and P without success; I have refrained from neotypifying the name without having searched the remaining herbaria.

The type of *A. pawlikowskyana* has not been seen, however, given that it was collected from between Cape Riche and Albany it is more likely that this name is synonymous with *A. myrtifolia* than with *A. celastrifolia* as was given by Seemann (1852: 28). On the same page of this work Seeman also included "A. Ludwigii Ohlendorf. Verz. 1844. p. 74." as a synonym of *A. celastrifolia*. However, I have not seen the Ohlendorf reference or type and am therefore following Seeman in treating this name as a synonym of *A. celastrifolia*.

Although the type of *A. marginata* var. *brevifolia* has not been seen, the protologue contains a good illustration enabling the identification of Regel's plant. It represents the common form of *A. myrtifolia* which occurs in eastern Australia and extends westward to near Albany in Western Australia.

Acacia acutifolia was described by Maiden & Blakely based on material supposedly collected by F. Stoward in 1916 from the Bruce Rock-Merredin district. However, nothing resembling the type has ever been located in that area despite a number of extensive surveys of the region by the author and others (the area is now extensively cleared for agriculture). Nevertheless there are two PERTH specimens which are excellent matches for the type of *A. acutifolia*. These were collected in 1916 by F.M.C. Schock from the Warren district which is a region about 400 km southwest of Bruce Rock and centred around Manjimup and Pemberton (well within the range of *A. myrtifolia*). As it is very unlikely that an *Acacia* species would have a natural distribution extending from the semi-arid, shrubland/woodland Bruce Rock-Merredin district to the mesic, densely forested Warren district, it seems that the locality (and probably also the other collecting details) given on the type of *A. acutifolia* are erroneous. Whether or not the material that Maiden & Blakely used in their description of *A. acutifolia* was indeed collected by Schock from the Warren district cannot be ascertained with certainty at the present time. The Schock specimens and the type of *A. acutifolia* all represent the long phyllode variant of *A. myrtifolia* from west of Albany.

Affinities. Acacia myrtifolia appears to be most closely related to *A. celastrifolia, A. clydonophora* and *A. heterochroa*. The most significant characters separating these species from the other members of the "*Acacia myrtifolia* Group" are their early caducous stipules and their long, linear pods with characteristically undulate margins.

Cultivation. Acacia myrtifolia is a fast growing and attractive ornamental and was one of the earliest Australian plants brought into cultivation in Europe.

Common names. Myrtle Wattle, Red Stem Wattle.

Conservation status. Widespread, not under threat.

6. Acacia pygmaea Maslin, *sp. nov.*

Suffrutex nanus 0.3-0.5(0.7) m altus. Ramuli teretes, costati. Stipulae c. 0.5 mm longae. Phyllodia elliptica usque obovata, 20-30 mm longa, 9-13 mm lata, glabra, 1-nervia, nervus secundus minus distinctus, nervi laterales obscuri; glans non prominens. Inflorescentiae simplices, axillares. Pedunculi 4-7 mm longi, glabri. Florum capitula globularia, alba, 3-4-flora. Flores 4-meri, glabri. Calyx 1/5 corollae longitudinis attingens, gamosepalus, truncatus. Petala enervia. Gynandrophorum 0.5 mm

longum, capitatum. Gynoecium 1(2) per florem, deflexum. Legumina anguste oblonga, ad 30 mm longa, 3-4 mm lata, glabra, margine incrassata, non undulata. Semina in legumine longitudinalia, obloidea, 4-5 mm longa, 2.5-2.8 mm lata, atrobrunnea.

Typus: Wongan Hills area, 200 km northeast of Perth [precise locality withheld for conservation reasons], Western Australia, 27 October 1980, *K.F. Kenneally* 7496 (holo: PERTH 00197602; iso: CANB, K).

Dwarf, erect single-stemmed *sub-shrubs* 0.3-0.5(0.7) m tall. *Bark* grey at base of stems, light brown at ends of branchlets. *Branchlets* prominently ribbed, ribs yellow, glabrous. *Stipules* shallowly triangular, *c.* 0.5 mm long, dark brown. *Phyllodes* elliptic to obovate, slightly asymmetric, 20-30 mm long, 9-13 mm wide, length to width ratio 2.1-2.5, not significantly undulate, thin, erect, crowded towards ends of branchlets, shed with age, glabrous, green; *midrib* prominent on each face, often slightly eccentric, normally a minor second longitudinal nerve arising from the adaxial side of the midrib near the pulvinus and extending for about 1/2 the length of the phyllode; marginal nerves yellow (pale red when young); lateral nerves few and obscure; apex obtuse, minutely apiculate; pulvinus *c.* 0.5 mm long, yellow, not rugose. *Gland* not prominent, situated on upper margin of phyllode 4-7 mm above the base, elliptic, 0.3-0.5 mm long, 0.2-0.3 mm wide. *Inflorescences* simple, axillary, 1(2) per node. *Peduncles* 4-7 mm long, glabrous; basal peduncular bracts absent. *Heads* globular, filaments white but turning orange with age, 3-4-flowered. *Bracteoles* persistent, sessile, ovate, concave, *c.* 0.6 mm long, yellowish but turning brown with age. *Flowers* 4-merous, glabrous; mature buds large, 3.5 x 1.5 mm, ovoid-ellipsoid, bluntly acute, ± 4-angled. *Calyx* 1/5 the length of the corolla, gamosepalous, truncate to very shallowly divided into broadly triangular lobes separated by wide sinuses, the lobes not thickened; calyx tube nerveless and broad-based. *Petals* elliptic, 3.3-3.5 mm long, 1.8-2 mm wide, free to base at anthesis, greenish. *Gynandrophore* 0.5 mm long, capitate. *Ovary* 1 (very rarely 2) per flower, prominently deflexed on a terete gynophore 0.5-1 mm long. *Pods* narrowly oblong, acute, to 30 mm long, 3-4 mm wide, (1)2-4-seeded, retrorse by a strongly recurved stipe, crustaceous, light reddish brown, glabrous, normally not constricted between seeds, very slightly raised over the seeds, dehiscing at first along the dorsal suture with the seeds remaining attached for some time, valves recurved following their complete separation; margins not undulate, marginal nerves prominently thickened. *Seeds* longitudinal in the pod, oblongoid to ellipsoid but narrowed towards the hilum, 4-5 mm long, 2.5-2.8 mm wide, turgid (2 mm thick), shiny, dark brown except for the areolar area which is grey-brown, with a very shallowly concave peripheral band; pleurogram fine, open towards the hilum, often bordered by a narrow band of yellow tissue; areole *c.* 3 mm long, 1 mm wide; funicle filiform, *c.* 1 mm long, expanded into a normally once folded, yellowish aril which is brown near the hilum.

Other specimens examined. WESTERN AUSTRALIA: all from the one population at the type locality, *K.F. Kenneally* 5891 (BRI, MEL, NSW, NY, PERTH) and 7194 (PERTH); *B.R. Maslin* 4804, 4550 and 4550A (all PERTH).

Distribution. Southwest Western Australia in the Avon Botanical District (1:250,000 map H50-10). Known only from the type locality where less than 50 plants are known to occur.

Habitat. The species is confined to three adjacent ridges composed of massive laterite; it does not extend down the lateritic scree slopes. It grows in association with *Eucalyptus ebbanoensis, Dryandra comosa, D. hewardiana, D. pulchella, Allocasuarina campestris* and *Persoonia divergens*.

Flowering and fruiting periods. Flowering from about November to March. Pods take nearly a year to mature. Seed has been collected in late October at which time mature buds were present.

Affinities. The new species is perhaps most closely allied to *A. disticha* (see above). It appears also related to *A. obovata* Benth. which is also a dwarf sub-shrub with phyllodes similar to those of *A. pygmaea* in shape and size; furthermore, both species have pale-coloured, 4-merous flowers, reduced calyces and pods which dehisce by first splitting along their dorsal suture. However, besides being more widespread and occurring further west (i.e. Jurien Bay area south to Augusta), *A. obovata* is distinguished from *A. pygmaea* by its multi-stemmed growth habit, narrowly triangular stipules which are 1.5-4 mm long, frequently hairy branchlets and phyllodes, undulate phyllodes with conspicuous lateral veins and a raised marginal gland, heads (5)7-9-flowered, extremely reduced racemose inflorescences and its pods which reach 110 mm long and 5-6 mm wide.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority R - Declared Rare Flora - Extant Taxa. See end of this issue.

Etymology. The name is derived from the Latin *pygmaeus* - dwarf, and refers to the diminutive height of this species.

Acknowledgements

Karina Knight and Suzanne Curry are gratefully acknowledged for their expert technical assistance. Both Richard S. Cowan and K.H. Rechinger are thanked for preparing the Latin descriptions included here. The research was undertaken with assistance provided by grants from the Australian Biological Resources Study.

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Alyxia tetanifolia (Apocynaceae), a new species from south-west Western Australia

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Abstract

Cranfield, R.J. *Alyxia tetanifolia* (Apocynaceae), a new species from south-west Western Australia. Nuytsia 10 (1): 103-105 (1995). A new species endemic to the Austin Botanical district of the Eremaean Botanical Province of Western Australia, namely *A. tetanifolia,* is described, illustrated and mapped. A key to Western Australian species of *Alyxia* is provided.

Introduction

A specimen collected in May 1992 during a Kalgoorlie mine site inspection carried out by an environmental scientist for Western Mining Corporation Limited was submitted to the Western Australian Herbarium for identification. Detailed examination showed the material to be a new species of *Alyxia* Banks ex R.Br. (Apocynaceae) a genus previously recognised as having only 2 species in Western Australia.

Taxonomy

Alyxia tetanifolia Cranfield, *sp. nov.* (Figure 1)

Alyxia tetanifolia ab *A. buxifolia* foliis acutis 9-15 mm longis differt.

Typus: NW of Kalgoorlie Nickel Smelter (30° 26'S, 121° 51'E), Western Australia (precise locality withheld), May 1992, *R. Spencer* K19 (holo: PERTH 03634671; iso: BRI, CANB).

Shrub to 2 m high, spreading to 2.5 m, glabrous to sparsely hairy when young; branchlets opposite or in whorls of 2 or 3. *Leaves* opposite, decussate, crowded, spreading horizontally, shortly petiolate; petioles 0.5-1 x 0.5-0.7 mm, hispid; lamina linear, 9-15 x 1.2-1.7 mm, sparsely puberulous adaxially, woolly abaxially, with a prominent sunken mid-rib adaxially; margins revolute; apex acute,with a pungent mucro. *Inflorescence* terminal, pedunculate, 1- or 2-flowered. *Pedicels* 0.5-1 mm long, hispid; bracteoles 2, basal, opposite, obovate, deciduous, 0.3-0.25 x 0.20-0.25 mm, pale brown, with woolly,

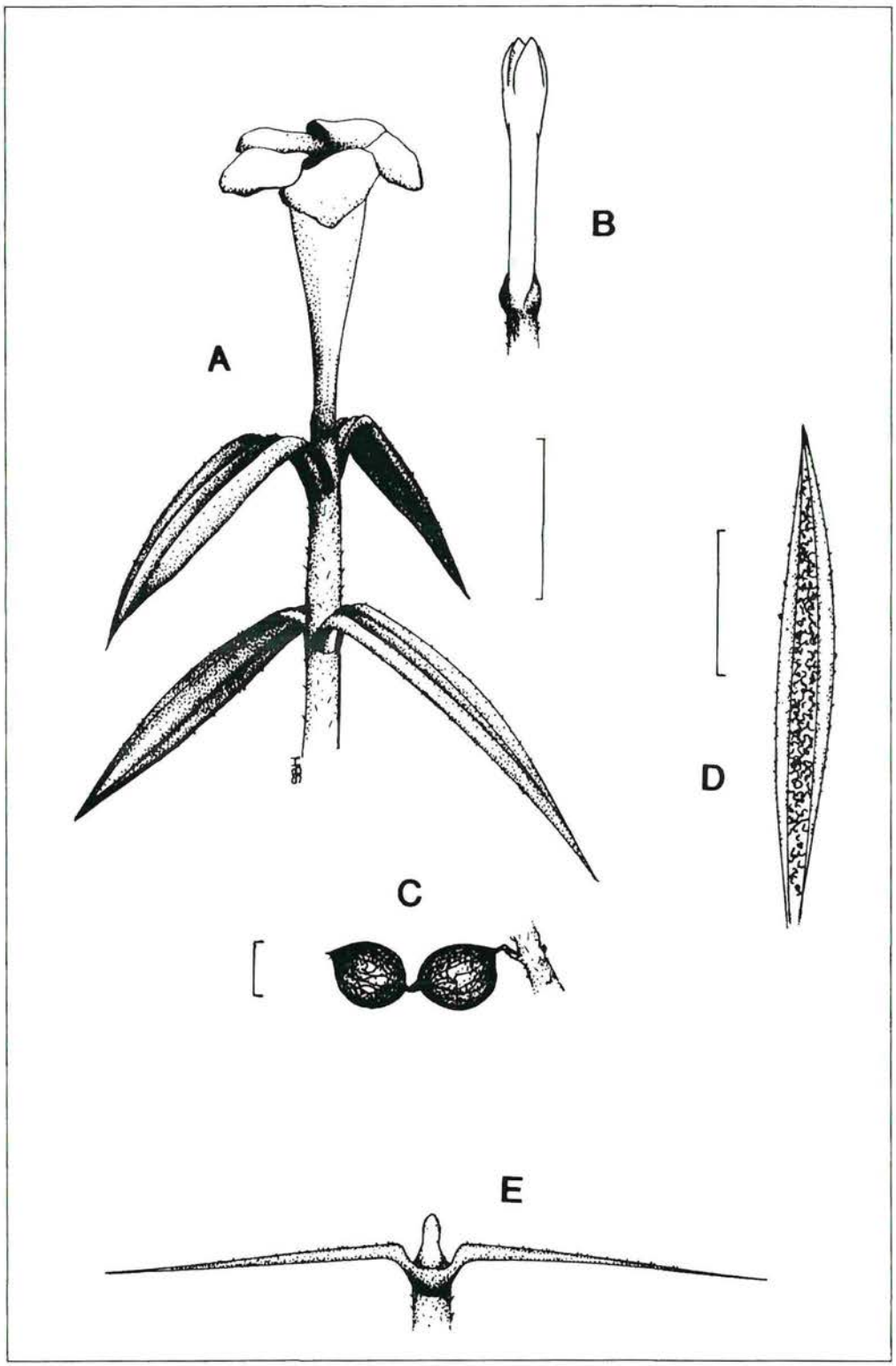

Figure 1. *Alyxia tetanifolia* A - adult leaves and flower, B - flower bud, C - fruit, D - undersurface of leaf, E - vegetative branchlet. Scale bars = 5 mm

ciliate margins and obtuse apex. *Flowers* pedicellate. *Sepals* 5, imbricate, ovate, 0.5-0.6 x 0.5-0.7 mm, glabrous, green; margins ciliate to eciliate; apex acute. *Corolla* white, glabrous externally; tube cylindric 6-6.5 mm long; throat thickened, with a band of simple reflexed hairs; lobes 5, triangular, 1.5 mm long, obtuse. *Stamens* 5, antisepalous, inserted 4-4.5 mm from base of tube; filaments linear, 0.05-0.07 mm long; anthers ovate, 1 x 0.5 mm, apiculate, longitudinally dehiscent, basifixed. *Ovary* ovoid, 1-1.25 x 0.4-0.5 mm, surrounded by basal ring of hairs; carpels 2, free, 1-locular; ovules 2 per locule, *c.* 0.1 x 0.1 mm; style filiform, *c.* 5.5 mm long. *Fruit* a drupe of 1 or 2 articles, sometimes superposed, ellipsoid, 7 x 4.5 mm, red. Seed ovoid, *c.* 4.5-5 x 3-3.5mm, red-brown, heavily textured, dorsally sutured.

Distribution. Endemic to the Austin Botanical District in the Eremaean Botanical Province of Western Australia, where it has been collected at two separate locations and recorded from a third, namely Cane Grass Swamp, 30° 01' 13"S, 121° 28' 06"E (A. Chapman pers. comm.).

Habitat. Interzone between chenopod shrubland fringing a lake and *Eucalyptus* woodland, on loamy sand.

Conservation status. This species is known from three scattered locations where it is frequent at each site. It thus warrants CALM Conservation Codes for Western Australian Flora: Priority Two - Poorly Known Taxa, and the category 2R of Briggs & Leigh (1988).

Etymology. The specific epithet is from *tetanus* and *folium*, Latin for rigid and leaf.

Other specimen examined. WESTERN AUSTRALIA: 'Diemals', W edge of Lake Barlee system, *anno* 1993, *H. Pringle* 30261 (PERTH).

Key to Western Australian species of *Alyxia*

1. Flowers terminal, solitary or clustered
   2. Leaves obtuse, 12-25 mm long ..... *A. buxifolia*
   2. Leaves pungent, 9-15 mm long ..... *A. tetanifolia*
1. Flowers axillary, inflorescence spike like ..... *A. spicata*

Acknowledgement

The latin description was kindly prepared by Dr R. Cowan.

Reference

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Robert Brown, the typification of his new *Acacia* names in edition 2 of Aiton's "Hortus Kewensis"

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Abstract

Maslin, B.R. and R.S. Cowan. Robert Brown, the typification of his new *Acacia* names in edition 2 of Aiton's "Hortus Kewensis". Nuytsia 10 (1): 107-118 (1995). Robert Brown published nine new species of *Acacia* in W.T. Aiton's second edition of "Hortus Kewensis". In the past, typification of these species has presented problems for two main reasons. Firstly, there were uncertainties regarding the material on which they were based, i.e. Brown's "wild" gatherings from Australia between 1801 and 1805, and/or from plants in cultivation in England. Secondly, it appears that there are no cultivated specimens extant which can be regarded as type material. There is, however, a collection by William McNab, a gardener at Kew, who made specimens of Brown's *Acacia* species from cultivated plants at Kew between 1806 and 1809; this collection is curated by the National Herbarium at Dublin (DBN). The following Brown species names are here lectotypified on the basis of Brown's "wild" material: *A. alata, A. biflora, A. marginata (=A. myrtifolia), A. melanoxylon, A. pulchella* and *A. sulcata;* a neotype for *A. acicularis (=A. brownii)* has been chosen from Brown's "wild" collections while *A. armata* is neotypified on a cultivated plant in the William McNab collection at DBN. One species, *A. ciliata (=A. browniana* var. *browniana)*, had been neotypified in a previous paper.

Introduction

Of the 53 species of *Acacia* presented by Robert Brown in edition 2 of Aiton's "Hortus Kewensis" nine species from Australia were described as new, namely, *A. acicularis, A. alata, A. armata, A. biflora, A. ciliata, A. marginata, A. melanoxylon, A. pulchella* and *A. sulcata*. Difficulties have been encountered in the past in typifying some of these names (*fide* Maslin 1975: 398, 425-426 and Maslin 1978: 291), mainly because it was not known on what material they were based. As "Hortus Kewensis" provided descriptions for plants in cultivation at the Royal Botanic Garden, Kew (and elsewhere in southern England, *fide* Mabberley 1985), it is reasonable to suppose that Brown used cultivated specimens to prepare his descriptions. However, as will be discussed below, it seems probable that, in some cases at least, he also used "wild" material which he collected during his visit to Australia from 1801 to 1805 (see Burbidge 1956, Stearn 1960, Mabberley 1985 and Vallance 1989 for details of Brown's Australian visit). Although Brown's "wild" specimens are preserved at the

Natural History Museum, London (BM) and elsewhere (*fide* Powell & Morley 1976), there seems to be no surviving cultivated material that can definitely be said to have been used by Brown for the "Hortus Kewensis". There is, however, a hitherto little-known collection of plants made by William McNab from the plants grown at Kew Gardens. The collection, which is housed at the National Herbarium, Glasnevin, Dublin (DBN), is valuable because it contains what appears to be the only specimens of the cultivated plants Brown described, and as such they help to identify the taxa, as well as being potentially available as neotypes.

The purpose of this paper is to determine what *Acacia* specimens Robert Brown used to compile his descriptions of new species in "Hortus Kewensis", and to select types from among them. This task has been facilitated by an examination of Robert Brown's unpublished manuscript descriptions at BM of both "wild" and cultivated plants, and his collection of "wild" specimens at BM, and McNab's cultivated material at DBN.

Robert Brown and the "Hortus Kewensis"

1. Brown's involvement in Aiton's "Hortus Kewensis" ed. 2

Aiton's "Hortus Kewensis" was published in two editions, the first in 1789 in three volumes and the second between 1810-1813 in five volumes. Britten (1912) remarked that the title, "Hortus Kewensis", was misleading because the work treated plants cultivated not only at the Royal Botanic Gardens at Kew, but also at Chelsea, Upton and Islington gardens. Indeed, as noted by Mabberley (1985), this work was really a guide to the plants in cultivation in southern England at that time. This is not at variance with the preface of edition 2, where the purpose is described as "an attempt .... to trace back, as far as possible, how long each plant has been cultivated in the British gardens and to fix ..... the epoch of its introduction."

The second edition of Aiton's "Hortus Kewensis" was edited initially by Dryander but after his death the task was assumed by Robert Brown. The nature of Brown's involvement was that of scientific editor, rather than the pre-printing sort of editing. In a letter to de Candolle in 1817, Brown wrote "I must take this opportunity of stating that I am neither deserving of praise or blame for any part of that work unless what I put my name to ... the Manuscript was prepared for publication before it came into my hands, and all I had time to do was to attempt to save it from very gross errors & to add a certain portion of original information in each of the 3 last volumes [i.e. commencing with page 175 of vol.3]." (Mabberley 1985).

2. Authorship of *Acacia* names published in "Hortus Kewensis"

Aiton, in a postscript on pages 531-532 of volume 5 of "Hortus Kewensis" ed. 2, stated that not all of Brown's contributions to this work are indicated in the volumes; however, those that are bear the notation "Brown mss". In the case of *Acacia*, this notation appears at the end of the descriptive text of each of the nine new species, as well as at the end of three of the four new combination that were effected, namely, *A. decipiens* (Koenig.) R. Br., *A. nigricans* (Labill.) R. Br. and *A. sophorae* (Labill.) R. Br. That Brown was indeed the author of the nine new *Acacia* species is supported also by the fact that in J.J. Bennett's (1867: 471-510) publication of Brown's miscellaneous contributions he included the descriptions of these species. Bennett was in a peculiarly good position to know precisely what Brown had contributed because he was Brown's long-time friend and personal assistant.

3. Brown's descriptions of *Acacia* in "Hortus Kewensis"

The descriptions of the nine new species of *Acacia* were very brief and, with the exception of *A. melanoxylon* and *A. sulcata*, seem to have been based solely on flowering material. Each description was followed by the notation "Brown mss" which, as already noted, indicates that the contribution was in fact that of Brown. The provenance of each species was given and, except for *A. acicularis*, followed by the notation "*Robert Brown*, Esq.". This is interpreted here to mean that Brown collected these species in the "wild"; Crisp (1990) adopted a similar interpretation. However, as will become evident in the species discussions below, Brown appears to have used information directly from his "wild" collections in the "Hortus Kewensis" treatments only infrequently. The difficulty comes in attempting to assess to what extent he did use data from his "wild" collections in preparing the protologues. While we can be reasonably certain that both "wild" and cultivated specimens were involved only in the description of *A. sulcata* and perhaps of *A. biflora*, both kinds of material must surely have contributed to his concept of the species. The four collecting sites given for the nine new species were: "South-west coast of New Holland" (for *A. alata, A. biflora, A. ciliata, A. marginata, A. pulchella* and *A. sulcata*), "South coast of New Holland (for *A. armata*), "Van Diemen's Island" (for *A. melanoxylon*) and "New South Wales. Colonel William Paterson" (for *A. acicularis*).

For each species the date of its introduction into cultivation was also given along with the name of the person responsible; in most cases this was 1803 by Peter Good but for *A. melanoxylon* it was "about 1808" by John Walker and for *A. acicularis* it was anonymously introduced in 1796. Other information in the protologue included the common name for the species, the flowering period, and symbols denoting that each was grown in a "Green House" and was "Shrubby".

Brown's manuscript descriptions of *Acacia*

During his travels in Australia Brown prepared descriptions of many of the species he collected and upon returning to England prepared another set of descriptions of what he believed to be the same taxa, based on cultivated plants grown from seed from the "wild". However, manuscripts at BM show that not all of Brown's nine new species of *Acacia* were represented in both sets of descriptions: for *A. alata, A. armata, A. marginata* and *A. sulcata* there are descriptions of both "wild" and cultivated plants; for *A. acicularis* only a "wild" plant description; for *A. biflora, A. ciliata* and *A. pulchella* only cultivated plant descriptions; while for *A. melanoxylon* it is equivocal as to whether the only known description refers to a "wild" or a cultivated plant.

Each description is usually dated (the date of collection for "wild" specimens and presumably the date of description for cultivated specimens) and includes a reference to the source of the material described. The taxa are treated as part of *Mimosa* and the species epithets are mostly either absent or are different from those in the published account. In many cases, someone (presumably Britten) has annotated the manuscript descriptions with the published species name. In instances where the published species names were not provided by either Brown or Britten it has been necessary for us to match Brown's manuscript descriptions with his published ones.

The specimens

1. Robert Brown's collection of "wild" specimens at BM

As already noted Robert Brown was in Australia from 1801 to 1805, during which time he collected assiduously in many parts of the continent. Although many of his best specimens from the south coast of Australia, and all the living plants, were destroyed with the sinking of the *Porpoise*, he reached England without having lost any one species altogether (Stearn 1960). Surviving specimens were studied by Brown at the BM and after his death were bequeathed to his successor, J.J. Bennett, who stipulated in his will that the first set should go to BM and duplicates to K and E. Edwards (1976) related that James Britten subsequently compiled a manuscript list of the species, arranged by the numbers which he assigned to each species; it is these numbers that are often erroneously cited as Bennett or Brown numbers.

2. Is there a collection of cultivated plants used by Brown?

Several authors have stated that a collection of cultivated plants was at BM on which the "Hortus Kewensis" was based: James Britten (1905) in discussing the important collections at herb. BM noted that "The most important collection of cultivated plants is, however, that from the Royal Gardens, Kew, which contains the types of the numerous species described by Banks' librarians Solander and Dryander (helped in the second edition by Brown) in Aiton's *Hortus Kewensis*; the MS. original descriptions of these and of a large number of other plants in the Sloane and Banksian herbaria are preserved in the Department of Botany." Lasegue (1845) in his classic compilation of information about collections then in existence stated (translation) "An herbarium composed of plants cultivated at the Royal Garden at Kew and described in the *Hortus Kewensis* is found in a special Aiton collection which is part of the Banks herbarium". Britten (1912), however, pointed out that Lasegue was not altogether accurate, "for Aiton did not possess a herbarium, it being his custom, as has been already stated (p.3), to 'carry his specimens and doubts to Banks' library, where they were examined and resolved by Solander." Furthermore, Stearn (1981) notes that "The plants raised at Kew from their seed needed identification, which could only be done by a botanist such as Solander with both Banks' herbarium and rich library at hand. Thus specimens grown at Kew likewise came into the Banksian herbarium." He also states: "The types of the Hortus Kewensis are not at Kew, as is often expected, but in the Department of Botany at the Natural History Museum, having come with the Banksian herbarium."

Notwithstanding the preceding comments, we have been unable to locate cultivated material at BM that originated from Kew Gardens and formed the basis of Robert Brown's treatment of *Acacia*.

3. William McNab's collection of cultivated specimens at DBN

An important and until recently, little-known collection of plants in the W.R. McNab collection at DBN has relevance to the typification of Brown's *Acacia* names (Nelson 1990). W.R. McNab was professor of botany to the Royal College of Science in Dublin and Scientific Superintendent of the National Botanic Gardens, Glasnevin. He was the grandson of William McNab who was a gardener at the Royal Botanic Gardens, Kew, from 1801 until 1810 (Nelson 1980). The *Acacia* specimens at DBN were collected by William McNab (Nelson 1990) between 1806 and 1809 from plants growing at Kew Gardens and included the following species, *A. alata, A. armata* (= *A. paradoxa*), *A. biflora, A. ciliata* (= *A. browniana* var. *browniana*), *A. marginata* (= *A. myrtifolia*), *A. pulchella* and *A. sulcata*. These plants were probably grown from seed supplied by Peter Good around 1803 and were the plants upon which Robert Brown based descriptions published in "Hortus Kewensis".

However, as will be discussed below, there is no evidence that Brown actually used the DBN specimens to prepare either the manuscript descriptions or the published descriptions of *Acacia* in "Hortus Kewensis". For this reason these specimens cannot be considered original type material. However, the DBN specimens do have historic value and in one case (that of *A. armata*) is selected as a neotype, as was done by Crisp (1990) for *Brachysema latifolium*.

Typification of Brown's names

The general principles governing our selection of types will be outlined in a forthcoming paper (Maslin & Cowan, in prep). However, in view of the above discussion, the following considerations particular to the present paper should be noted:

1. If an adequate "wild" specimen exists (at BM) that is annotated by Brown with the manuscript or published name of the taxon, and if this agrees with the protologue, we have selected it as the lectotype of the name. For the most part, Brown's "Hortus Kewensis" descriptions were based primarily on cultivated material but the fact that he cited his Australian collections is taken to mean that the "wild" material contributed materially to his taxonomic concept of most of the species.

2. If no "wild" material is known to exist, we have selected a neotype, usually from the McNab specimens at DBN.

The sheet numbers cited below are those affixed by James Britten, which, as noted above, have often been erroneously ascribed to J.J. Bennett (Edwards 1976).

Acacia acicularis R. Br. in W.T. Aiton, Hortus Kew. 2nd edn, 5: 460 (1813). Neotype (flowering specimen): "Mimosa ericaefolia", Port Jackson, N.S.W., Oct. 1803, *R. Brown* - central right hand specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4300 (BM).

In the protologue of *Acacia acicularis* Brown described a flowering specimen and appended the notation "Brown mss" to the description. He also referred to material that Colonel William Paterson had collected from "New South Wales" and said that the species had been introduced [into England, anonymously] in 1796.

We have not been able to locate any material collected by William Paterson at BM. However, there is a sheet at BM bearing specimens of Brown's "wild" gatherings of the species, a number in flower and one in very young fruit. This sheet is labelled by Brown as "Mimosa ericaefolia, Port Jackson, Oct. 1803". These specimens differ from the protologue only in having a very sparse indumentum of minute hairs which are confined to the branchlet apices (branchlets glabrous in the protologue). Unlike most other species of *Acacia* described by Brown in "Hortus Kewensis", specimens from plants of this species cultivated at Kew Gardens have not been located at DBN.

There is only one Robert Brown manuscript description of *A. acicularis* at BM and it is annotated "Mimosa acicularis. inter Sydney & Botany". This account of "wild" material is not dated and describes flowering specimen(s), but it does not appear to be the basis from which the published description was abstracted. This is not surprising because, as is indicated by our discussions of other *Acacia* species described in "Hortus Kewensis", Brown normally based the descriptive text of the protologue on his manuscript descriptions of cultivated plants.

In the absence of both Paterson specimens and of material from cultivated plants it is necessary to select a replacement type for the name *A. acicularis*. Accordingly, a neotype has been selected from among Brown's "wild" gatherings from the same general area cited in his manuscript description of "wild" material. The slight difference between the neotype specimen and the protologue can be explained by assuming that Brown overlooked the sparse, minute hairs at the apices of the branchlets.

Acacia acicularis is the base name of *A. brownii* (Poiret) Steud. and the complex nomenclature of this species and its very close relative, *A. ulicifolia* (Salisb.) Court, is discussed by Court (1957 & 1972: 155-156) and by Pedley (1980: 239-214).

Acacia alata R. Br. in W.T. Aiton, Hortus Kew. 2nd edn, 5: 464 (1813). Lectotype (here selected): "Mimosa platycaulis." Observatory Hill, Princess Royal Harbour [Albany, W.A.]. In collibus saxosis solo saxoso prope littorae Portus Regis Georgii III in ora australe Nova Hollandia, Dec. 1801, *R. Brown* - upper right hand flowering specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4314 (BM); isolectotypes: K, E. Paralectotypes: Sterile and fruiting specimens mounted on sheet with lectotype (BM, K, E).

Note: In the protologue Brown described flowering material and appended the notation "Brown mss" to the description; he also referred to material he had collected from the "South-west coast of New Holland", and said that the species had been introduced [into England] by Peter Good in 1803.

At BM the only Robert Brown specimens seen are those cited above which represent Brown's "wild" gatherings of the species. The specimens comprise flowering, fruiting and sterile elements and the sheet is labelled by Brown as *Mimosa platycaulis*. The DBN material of this species consists of flowering and fruiting specimens, both labelled *Acacia alata* by McNab. They were collected in 1808 from plants grown at Kew but there is no evidence that Brown actually saw this material. Both these "wild" and cultivated specimens represent the same taxon.

There are two Robert Brown manuscript descriptions of *A. alata* at BM, both under the name *Mimosa platycaulis*. One describes both flowers and fruits of the "wild" gatherings referred to above, while the other describes only a flowering specimen in cultivation at Kew in 1806.

From comparing the two manuscript descriptions with the protologue it seems probable that the "Hortus Kewensis" account was abstracted from Brown's 1806 description of the plant in cultivation at Kew. Although the DBN specimens are from plants grown at Kew (collected in 1808), there is no evidence that Brown actually used these to prepare his published description. Therefore, because there is no cultivated material which can be regarded as a type of *A. alata* we have selected the lectotype from among Brown's "wild" gatherings.

Acacia alata will be treated as comprising four varieties in the forthcoming "Flora of Australia" account.

Acacia armata R. Br. in W.T. Aiton, Hort. Kew. ed. 2, 5: 463 (1813). Neotype (here selected): "Acacia armata," Kew, 1809 [William McNab] (DBN, flowering specimen).

Note: In the protologue Brown described flowering material and appended the notation "Brown mss" to the description; he also referred to material he had collected from the "South coast of New Holland", and said that the species had been introduced [into England] by Peter Good in 1803.

At BM there are two sheets of *A. armata* (=*A. paradoxa*) which probably represent Brown's "wild" gatherings of this species; however, neither is labelled by Brown with either the manuscript or published name that he used for this taxon. The collecting localities are in Brown's hand on small slips of paper attached to "R. Brown Iter Australiense" labels, both of which are numbered "4313". One sheet is labelled "Bay IX" [Memory Cove, S.A., *fide* Burbidge 1956] and the other, although hard to decipher, appears to be "Kangar." [Kangaroo Island, S.A.]. The specimens on these two sheets apparently represent mixed gatherings of *A. armata*. The upper right hand specimen on the "Bay IX" sheet is a good match for the uppermost specimen on the "Kangar." sheet. These specimens are in very young bud and are distinguished from the remaining specimens by having coarsely ribbed branchlets, larger and more widely spaced phyllodes and coarser, fewer spiny stipules. The remaining four specimens on the "Bay IX" sheet and the lowermost specimen on the "Kangar." sheet are with buds, flowers and a single legume. Curiously, neither of the above localities is cited by Brown in his manuscript description of "wild" *A. armata* (as *Mimosa spinosissima*) which was based on material collected from "Anchorage VII" (i.e. Waldgrave and Flinders Islands, S.A., see below). However, the lowermost specimen on the "Kangar." sheet is quite a good match for this description and it seems possible that this specimen has been mounted on this sheet without a correct label. Some support for this interpretation is given by the fact that Peter Good's manuscript at BM lists seed of *Mimosa spinosissima* from "Anchorage VII" but not from Memory Cove or Kangaroo Island.

The DBN material of this species consists of a flowering and a fruiting specimen, both labelled *Acacia armata* by McNab. They were collected in 1809 from plants grown at Kew but there is no evidence that Brown actually saw this material. Both the "wild" and cultivated specimens represent the same highly variable species, *A. paradoxa* (syn. *A. armata*).

There are two Robert Brown manuscript descriptions of *A. armata* at BM, both under the name *Mimosa spinosissima*. One describes fruits (not including seeds) of "wild" gatherings from "Anchorage VII" [Waldgrave and Flinders Islands, S.A., *fide* Burbidge 1956] collected on 13 Feb. 1802. The other describes a flowering specimen and was prepared in April 1808 from a plant in cultivation at Kew. From comparing these two manuscripts with the protologue it seems likely that the "Hortus Kewensis" description was taken mainly from Brown's 1808 account of the plant in cultivation at Kew.

Because there are uncertainties regarding Brown's "wild" gatherings at BM and because none of these specimens is annotated by him as to the published or manuscript name, we consider it best to neotypify this name by one of the cultivated specimens at DBN. Accordingly, the flowering specimen annotated by William McNab (and assumed to have been collected by him) has been chosen.

Acacia biflora R. Br. in W.T. Aiton, Hort. Kew. ed. 2, 5: 463 (1813). Lectotype (here selected): "Mimosa scalena." Bay I [Lucky Bay, E of Esperance, W.A., *fide* Burbidge 1956], 7 Jan. 1802, *R. Brown* - upper right hand specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4309 (BM); isolectotypes: BM, K, E.

Note: In the protologue Brown described flowering material and appended the notation "Brown mss" to the description; he also referred to material he had collected from the "South-west coast of New Holland", and said that the species had been introduced [into England] by Peter Good in 1803.

There is only one sheet of type significance of this species at BM and this supports two flowering collections separated by a pencilled line. The specimen to the right of the line is *A. robinae* Maslin and is labelled simply "A. biflora R. Br." (not in Brown's hand). The other specimens, to the left of the line, are assumed to be Brown's "wild" gathering from Lucky Bay and represent *A. biflora, sensu*

lectotypico (see above). The label accompanying these specimens is annotated in Brown's hand. The DBN material of this species consists of flowering specimens, both labelled *Acacia biflora* by McNab; they were collected in 1809 from plants grown at Kew but there is no evidence that Brown actually saw this material. This material represents *A. robinae*.

There is only one relevant Robert Brown manuscript description at BM. This is annotated "Mimosa biflora" and describes a flowering specimen in cultivation at Kew in 1807, grown from seed collected at "Port King George's Sound" [Albany, W.A.]. Close scrutiny of this description leads us to the conclusion that the plant described by Brown was likely *A. robinae*, a conclusion supported by the fact that the DBN cultivated specimens are also this species. Moreover, the plant described and illustrated as *A. biflora* by Wendland (1820) also seems to be *A. robinae*, suggesting that the misapplication was prevalent in gardens in Europe at the time.

The published original description of *A. biflora*, however, seems unlikely to have been based exclusively on Brown's manuscript description of the plant cultivated at Kew. Indeed, following a careful examination of all relevant material we are of the opinion that elements of both *A. biflora* and *A. robinae* are included in the original description. As there is no cultivated material which can be regarded as type of *A. biflora* we have selected the lectotype from among Brown's "wild" gatherings.

Acacia ciliata R. Br. in W.T. Aiton, Hort. Kew. ed. 2, 5: 465 (1813). Neotype (*fide* B.R. Maslin 1975: 425): "Acacia strigosa Link" (not in Brown's hand and with no other details) - lower left hand flowering specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4321 (BM).

Note: In the protologue Brown described flowering material and appended the notation "Brown mss" to the description; he also referred to material he had collected from the "South-west coast of New Holland", and said that the species had been introduced [into England] by Peter Good in 1803.

As discussed by Maslin (1975: 425), the BM sheet on which the neotype is mounted is very inadequately labelled; there is no indication of the origin of the (mixed) specimens it bears and there is no direct indication that Robert Brown ever consulted the material (as evidenced by the absence of his handwriting). The material comprises a flowering specimen of *A. luteola* Maslin, four flowering specimens and a fruiting specimen of *A. browniana* H. Wendl. var. *browniana*; these two taxa occur sympatrically at Albany, a locality visited by Brown in 1801/02. The lowermost flowering specimen on the sheet was selected as the neotype of *A. ciliata* by Maslin (*loc. cit.*). The DBN material is mounted on a sheet of flowering specimens labelled *Acacia ciliata* by McNab; these are *A. browniana* var. *browniana* and were collected in 1808 from plants grown at Kew but there is no evidence that Brown actually saw this material.

There is one Robert Brown manuscript description at BM which accords well with the protologue of *A. ciliata*. It is simply annotated "*Mimosa*" by Brown and describes a flowering specimen in cultivation at Kew in May 1806. Although this description agrees quite well with the specimen selected previously as the neotype, it is impossible to determine with any degree of certainty whether this is cultivated or "wild" material.

From comparing the manuscript description with the protologue it seems probable that the "Hortus Kewensis" account was abstracted from Brown's 1806 description of the plant in cultivation at Kew. However, as there remains so many uncertainties regarding the origin and authenticity of specimens at BM we are not able to improve on the original neotypification.

Acacia ciliata is treated as conspecific with *A. browniana* var. *browniana* by Maslin (1975).

Acacia marginata R. Br. in W.T. Aiton, Hort. Kew. ed. 2, 5: 462 (1813). Lectotype (here selected): "Mimosa." King George III Sound [Albany, W.A.], Dec. 1801, *R. Brown* - upper left hand fruiting specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4336 (BM).

Note: In the protologue Brown described flowering material and appended the notation "Brown mss" to the description; he also referred to material he had collected from the "South-west coast of New Holland", and said that the species had been introduced [into England] by Peter Good in 1803.

The BM specimen selected as lectotype agrees very well with Brown's description of what we assume to be "wild" *A. marginata* (see below). However, the origin of the remaining two flowering specimens on the type sheet is uncertain. They are unlikely to be Brown's "wild" gatherings because his manuscript description of the plants growing at Albany refers only to fruits and seeds; while they may represent Brown's Hort. Kew material, it is not possible, judging from his manuscript description of the cultivated plant, to be definite about this. The DBN material of this species consists of a flowering specimen labelled *Acacia marginata* by McNab. They were collected in 1808 from plants grown at Kew but there is no evidence that Brown actually saw this material. Both the "wild" and cultivated specimens represent the same taxon, i.e. *A. marginata* R. Br. (= *A. myrtifolia* (Sm.) Willd.).

There are two Robert Brown manuscript descriptions at BM which probably refer to *A. marginata* and both are annotated by Brown simply as "*Mimosa*" (no species epithet given). One is based on Brown's "wild" gatherings from "Prope littora Portus Regis Georgii III .... Dec. 1801" and describes a fruiting specimen with seeds; the other describes flowering material based on a specimen cultivated at Kew in April 1807.

From comparing the two manuscript descriptions with the protologue it seems probable that the "Hortus Kewensis" account was based on Brown's 1807 description of the plant in cultivation at Kew. However, as there is no certain cultivated material which can be regarded as type of *A. marginata* we have selected a lectotype from among Brown's "wild" gatherings.

This species will be treated as conspecific with *A. myrtifolia* (Sm.) Willd. in the forthcoming "Flora of Australia" account of *Acacia*.

Acacia melanoxylon R. Br. in W.T. Aiton, Hort. Kew. ed. 2, 5: 462 (1813). Lectotype (here selected): "Derwent" [River, Tasmania, Feb. - July 1804], *R. Brown*, sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4364 (BM, fruiting specimen); isolectotype: E. Paralectotypes: (1) Flowering specimen mounted on sheet with lectotype (BM, E, also DBN but on an individual sheet). (2) "Mimosa cinerascens", Port Dalrymple, Tasmania, Jan. 1804, *R. Brown*, sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4364 (BM, specimen in young fruit).

Note: In the protologue Brown described fruits, seeds, and probably also flowers, and appended the notation "Brown mss" to the description. He also referred to material he had collected from "Van Diemen's Island" and said that the species had been introduced [into England] by John Walker in 1808.

There are two sheets at BM, both annotated [Bennett no.] 4364, which may have a bearing on the typification of this name. These specimens are labelled by Brown thus:

(1) "Derwent" but with no other details (specimens with mature seeds and near-mature flowers). In a manuscript at BM which lists the plants collected from the Derwent River between February and July 1804, Brown cites the following: "Mimosa cinerascens. In campis & ripas riviilor: frequens"; this entry may well be a reference to the collection cited above. There are duplicates of this collection at both E and DBN (ex herb. W.R. McNab).

(2) "Mimosa cinerascens. In campis non[?] longe a cult.[?]: Port Dalrymple, Jan. 1804" (specimen in young fruit).

There is only one Brown manuscript description of this species at BM. It uses the name *Mimosa cinerascens* and describes flowering material. Although there is no direct indication as to the origin of the plant described ("wild" or cultivated) it may possibly be based on a "wild" gathering because the plant is described as a small or medium tree.

It is difficult to determine the basis of the "Hortus Kewensis" description of *A. melanoxylon* because none of the specimens at BM or DBN is from a cultivated plant and the source of the manuscript description is equivocal. An examination of this description shows that the "Hortus Kewensis" account was not taken directly from it. Furthermore, it is a curious fact that there is no McNab material at DBN collected from Kew Gardens, as there is for most other Brown species discussed in this paper. However, because the protologue alludes to Brown's collections from Tasmania, we consider this material to be available for lectotypification. It is noted that Pedley (1978: 222) regarded Brown's Port Dalrymple, Jan. 1804, specimen (in young fruit) as the holotype of *A. melanoxylon*. However, in view of the fact that two collections of "wild" material are involved, a lectotype should have been selected. Because the "Derwent" collection, unlike the one from "Port Dalrymple", provides the seed characters contained in the original description and is represented by a duplicate at E, we consider it to be the better source of the lectotype.

Acacia pulchella R. Br. in W.T. Aiton, Hort. Kew. ed. 2, 5: 464 (1813). Lectotype (here selected): "Mimosa armata." King George III Sound [Albany, W.A.], *R. Brown* - lower right hand flowering specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4322 (BM); isotype: K. Paralectotypes: Sterile and fruiting specimens mounted on sheet with lectotype (BM).

Note: In the original description of *A. pulchella* Brown described a flowering specimen; he referred to his own manuscript and to material he had collected from the "South-west coast of New Holland" and he also stated that the species had been introduced [into England] by Peter Good in 1803.

There are two sheets at BM which may have a bearing on the typification of this name, one labelled (in an unknown hand) "Hort. Kew. New Holl. Mr Brown" and the other (in Brown's hand) "Mimosa armata. King George III Sound". The first sheet bears a single flowering specimen and the second bears four specimens (comprising both flowering and fruiting elements). The DBN material of this species consists of two sheets labelled *Acacia pulchella* by McNab; in each case the specimens were collected from plants grown at Kew. The flowering specimens were collected in 1806, the fruiting ones in 1808. There is no evidence that Brown actually saw this material. All specimens referred to above are *A. pulchella* var. *pulchella*.

The one relevant manuscript description of *A. pulchella* at BM is annotated by Brown as both "Mimosa congesta" and "M. microphylla". It describes a flowering specimen in cultivation at Kew in May 1806, grown from seed sent from "Port R. G. III" [Albany, W.A.].

Maslin (1975: 398) refrained from typifying *A. pulchella* because of insufficient data. It now seems quite probable that the original description of *A. pulchella* was taken from Brown's manuscript description of the plant in cultivation at Kew in 1806. However, it is unlikely that the BM specimen labelled "Hort. Kew. New Holl. Mr Brown" was used by Brown because it does not accord well enough with his manuscript description. Therefore, since there is no cultivated material that can be regarded as type, and as Brown's "wild" specimens are not at variance with either the original description or the manuscript description, the lectotype has been selected from among these. Mr A.B. Court annotated the same specimen as lectotype in 1967 but his choice was not published.

Maslin (*loc. cit.*) suggested that Brown's field label bearing the name *Mimosa armata* had been attached to the BM specimen in error because this name was not used in the original description. This was an erroneous suggestion because it is now known that Brown commonly altered epithets between those used in his manuscripts and those appearing in his published account.

Acacia sulcata R. Br. in W.T. Aiton, Hort. Kew. ed. 2, 5: 460 (1813). Lectotype (here selected): "Mimosa undata." In collibus sterilibus prope Princess Royal Harbour ad Portum Regis Georgii III [Albany, W.A.] in ora australi Nova Hollandia, Dec. 1801, *R. Brown* - upper right hand flowering specimen on sheet titled "Iter Australiense, 1802-5" and bearing [Britten no.] 4302 (BM). Paralectotypes: Five fruiting specimens mounted on sheet with lectotype (BM); ? paralectotype: E, K (labels lack the [Britten] number.

Note: In the protologue Brown described both flowering and fruiting material and appended the notation "Brown mss" to the description; he also referred to material he had collected from the "South-west coast of New Holland", and said that the species had been introduced [into England] by Peter Good in 1803.

At BM the only Robert Brown specimens seen are those cited above which represent Brown's "wild" gatherings of the species. The specimens comprise both flowering and fruiting elements and the sheet is labelled by Brown as *Mimosa undata*. The DBN material of this species consists of a sheet supporting two small flowering specimens, both labelled *Acacia sulcata* by McNab; they were collected in 1806 from plants grown at Kew but there is no evidence that Brown actually saw this material. Both these "wild" and cultivated specimens represent the same taxon.

There are two Robert Brown manuscript descriptions of *A. sulcata* at BM. One is under the manuscript name *Mimosa undata* and describes both flowers and fruits; it is based on Brown's "wild" material from King George Sound, Albany. The other is prepared as *Acacia sulcata* and describes flowering material based on a specimen from a plant cultivated at Kew in May 1806.

From comparing the two manuscript descriptions with the protologue it seems likely that the account of the flowers was derived primarily from Brown's 1806 description of the plant in cultivation at Kew; fruit characters probably came from his description of "wild" material. As there is no cultivated material which can be regarded as type of *A. sulcata*, we have selected the lectotype from among Brown's "wild" gatherings at BM.

As discussed by Cowan & Maslin (1993) *A. sulcata* comprises three varieties.

Acknowledgements

We are most grateful to David Mabberley, Paul Wilson and Gillian Perry for their critical review of the manuscript. The Directors of both the Natural History Museum (BM) and the National Botanic Gardens, Glasnevin (DBN) are thanked for allowing us access to their valuable Robert Brown material. We appreciate the assistance provided by Roy Vickery (BM) and Peter Weston, Australian Botanical Liaison Officer, Kew 1992-3. Charles Nelson is thanked for his useful discussions concerning the McNab collections. The work was conducted with financial support provided by the Australian Biological Resources Study.

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New and priority taxa in the genera *Spyridium* and *Trymalium* (Rhamnaceae) of Western Australia

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Abstract

Rye, B.L. New and priority taxa in the genera *Spyridium* and *Trymalium* (Rhamnaceae) of Western Australia. Nuytsia 10 (1) 119-140 (1995). The following new Rhamnaceae taxa are described and illustrated: *Spyridium glaucum* Rye, *S. minutum* Rye, *S. montanum* Rye, *S. mucronatum* Rye, *S. mucronatum* subsp. *multiflorum* Rye, *S. mucronatum* subsp. *recurvum* Rye, *S. riparium* Rye, *Trymalium densiflorum* Rye, *T. elachophyllum* Rye, *T. floribundum* subsp. *trifidum* Rye, *T. ledifolium* var. *lineare* Rye and *T. venustum* Rye. Half of these taxa are presently included on the Priority Flora List. Other species of *Spyridium* and *Trymalium* on this conservation priority list are also illustrated and two new combinations are made, namely *Spyridium majoranifolium* (Fenzl) Rye and *Spyridium polycephalum* (Turcz.) Rye.

Introduction

Most of the Rhamnaceae species of southern Western Australia have, at some stage, been placed in one or more of the five genera *Cryptandra*, *Pomaderris*, *Spyridium*, *Stenanthemum* and *Trymalium*. There is much uncertainty as to where the boundaries of these genera should fall, as well as problems in placing some species that do not fit readily into any of the existing genera. A detailed examination of the generic boundaries for Rhamnaceae throughout Australia, presently being undertaken by Kevin Thiele and Judy West (Australian National Herbarium, Canberra), may result in several new genera being recognized. To avoid further nomenclatural confusion, the publication of a paper (Rye in preparation) providing keys, distribution maps and other information for all the Western Australian Rhamnaceae will be delayed until the generic boundaries have been better established.

In the meantime, this paper deals with some Rhamnaceae species of clear generic affinity, with the aims of naming and describing the new taxa, indicating which taxa are most likely to be in need of conservation measures, and ensuring that illustrations are available to facilitate future work on the priority taxa. It covers only those *Spyridium* and *Trymalium* species having the vegetative characters, inflorescence, flower and fruit types that are typical of each genus. While they differ from one another in a number of morphological characteristics, *Spyridium* and *Trymalium* can be distinguished from other Rhamnaceae on the basis of some shared fruit characters. All of the species covered here differ from *Cryptandra* and *Stenanthemum* in having indehiscent fruitlets that are released with their enclosed

seed when the schizocarp dehisces, and they differ from *Pomaderris* in lacking a window on each fruitlet. In Western Australia, there are 15 such species in *Spyridium* and 11 in *Trymalium*. Most of these taxa are listed in this taxonomic treatment and the remainder are mentioned in relation to the listed species, except for *Spyridium tricolor* W.R.Barker & Rye, which was described and illustrated in an earlier paper (Barker & Rye 1993).

Materials and methods

Type specimens of *Spyridium* and *Trymalium* species were borrowed from LD, MEL, P and W and photographs of types housed at FI and KW were examined. Apart from these, all specimens cited in this paper were located at PERTH. Measurements, habitat information, flowering times and other data were obtained from herbarium specimens and entered into a DELTA database. Descriptions were generated through DELTA, then edited to a form suitable for publication. To avoid unnecessary repetition of characters in the descriptions of new taxa, a list of implicit characters was prepared, the individual descriptions only mentioning these characters if they differed from the usual state found in Western Australian members of their genus.

The conservation status of each taxon was assessed based on the available herbarium collections and some data from field surveys. Conservation codes were assigned according to the standards currently being used by the Western Australian Department of Conservation and Land Management for its Priority Flora List. Definitions of the conservation codes are provided at the end of this Nuytsia issue.

Results for *Spyridium* Fenzl

Implicit characters

Branchlets not spinescent. *Stipules* persistent, free. *Leaves* open (i.e. not conduplicate), entire, green on upper surface. *Inflorescence* cymose; bracts brown; flowers sessile or subsessile in close clusters. *Floral tube* adnate for most of its length but free for a short distance beyond the summit of the inferior ovary. *Disc* glabrous, either forming a rim at the summit of the floral tube or of apparently distinct lobes, distinctly lobed or undulate between the stamens. *Ovary* 3-celled. *Stigmatic lobes* 3. *Fruit* a schizocarp, splitting to release entire 1-seeded fruitlets; fruitlets inferior or largely inferior, membranous to chartaceous, white. *Seeds* with a dark base, uniformly coloured above, seated on a small aril; aril easily detached, succulent, entire (i.e. not lobed).

Spyridium glaucum Rye, *sp. nov.*

Bracteae indumento uniformi pilis brevibus adpressis. Flores pauci. Tubus floralis pilis persistentibus. Lobi disci triangulares.

Typus: Ravensthorpe Range, Western Australia, September 1979, *E.M. Bennett s.n.* (holo: PERTH 01542397).

Shrub erect or spreading, 0.5-1 m high. *Young stems* densely hairy; hairs appressed or antrorse, usually ferruginous at first but becoming white. *Petioles* 2-4 mm long. *Leaf blades* usually obovate,

sometimes oblong-elliptic, 12-16 x 5-9 mm, furrowed along the midvein on the upper surface, the margins recurved or revolute; lower surface pale green, with 4-6 lateral veins on each side of midrib, densely covered by fine appressed hairs; upper surface glabrous or subglabrous. *Involucral bracts* ovate, *c.* 3 mm long, shortly ciliate; outer surface uniformly hairy throughout, the hairs 0.1-0.2 mm long. *Flowers* few (usually 3-6), in clusters 3-6 mm wide. *Floral tube* 0.8-1 mm long, with a dense indumentum of ferruginous hairs *c.* 0.4 mm long. *Sepals* 0.5-0.8 mm long, densely hairy; hairs antrorse to spreading, 0.1-0.2 mm long. *Disc lobes* triangular. *Ovary summit* densely hairy; hairs 0.2-0.3 mm long. *Style* 0.7-1.2 mm long, stellate-hairy towards base. *Schizocarp c.* 2 x 1.6 mm, uniformly hairy; hairs antrorse to appressed, 0.4-0.5 mm long, ferruginous. *Seeds c.* 1.4 x 0.9 mm, dark red-brown. (Figure 1A-F)

Specimens examined. WESTERN AUSTRALIA: Ravensthorpe district, 11/1944, *C.A. Gardner*; Mt Short, 5/11/1968, *J.W. Wrigley* 68/5438 & 68/5451.

Distribution. Known only from the hills north-east of Ravensthorpe, southern Western Australia.

Habitat. Occurs in clay, no other details of the habitat recorded.

Flowering and fruiting period. September-November.

Derivation of name. From the Latin *glaucus* - bluish green or grey, referring to leaf colour. The leaves may vary in colour, but glaucous leaves are present on each specimen.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 1. First included as a priority taxon in 1991, under the phrase name *Spyridium* sp. *Ravensthorpe* (*E.M. Bennett s.n.*). It has not been recorded on any nature reserves and appears to have a very restricted distribution, its known range being certainly less than 20 km, and probably less than 10 km, in extent.

Notes. Belongs in the group of *Spyridium* species having triangular disc lobes but appears not to have any very close relatives. *Spyridium glaucum* can be distinguished by the uniform indumentum of short appressed hairs on its bracts, its small number of flowers and the persistent hairs on its floral tube.

Spyridium majoranifolium (Fenzl) Rye, *comb. nov.*

Trymalium majoranifolium Fenzl in Endl., Fenzl, Benth. & Schott, Enum. Pl. Hueg. 24: 21 (1837). - *Spyridium spadiceum* var. *majoranifolium* (Fenzl) Benth., Fl. Austral. 1: 428-429 (1863). Type: New Holland [Western Australia], *F. Bauer* (W).

Pomaderris commixta Steud. in Lehm., Pl. Preiss. 1: 184 (1845). - *T. majoranifolium* var. *velutinum* Reissek in Lehm., Pl. Preiss. 2: 281 (1848). Type: Mt Clarence, [Western Australia], 30 September 1840, *L. Preiss* 1673b (MEL, W).

Pomaderris subretusa Steud. in Lehm., Pl. Preiss. 1: 183 (1845). - *Trymalium majoranifolium* var. *calvescens* Reissek in Lehm., Pl. Preiss. 2: 183 (1848). - *S. majoranifolium* var. (?) *calvescens* (Reissek) Benth., Fl. Austral. 1: 429 (1863). Type: Baldhead, [Western Australia], 16 October 1840, *L. Preiss* 1687 (MEL).

Conservation status. A widespread and variable species, not considered to be at risk.

Notes. Closely related to *Spyridium spadiceum* and *S. villosum*, differing in its usually shorter and more rounded leaves, more hairy bracts, smaller inflorescences and more uniform sepal indumentum.

Spyridium minutum Rye, *sp. nov.*

A *S. cordato* petiolis brevioribus adpressis, foliis minutis crassis, floribus paucioribus, indumento florum magis persistenti differt.

Typus: Nature reserve, 100 m E of Neds Rd on Rollands Rd, Western Australia, 12 September 1992, *G.F. Craig* 2085 (holo: PERTH 03243567; iso: CANB).

Shrub erect or spreading, 0.1-0.25 m high. *Young stems* appressed-hairy but soon becoming glabrous. *Petioles* 0.3-0.5 mm long, appressed. *Leaf blades* appearing sessile, more or less touching the stem, broadly ovate or cordate, 1.3-1.6 x 1.1-1.6 mm, very thick, with the margins and apical region recurved; lower surface white owing to the dense white indumentum or hidden from view; upper surface tuberculate, hairy or glabrous. *Involucral bracts* almost circular, 1.5-2 mm long, prominently ciliate; outer surface hairy on midvein and base or sometimes with indumentum more widespread, the hairs *c.* 0.4 mm long. *Flowers* few (usually 2 or 3), in clusters 2-3 mm wide, white. *Floral tube* *c.* 1 mm long, very densely hairy; hairs 0.5-1 mm long, ferruginous or white. *Sepals* densely hairy; hairs antrorse to spreading, 0.2-0.5 mm long. *Disc lobes* triangular. *Ovary summit* densely hairy; hairs 0.3-0.4 mm long. *Style* *c.* 0.7 mm long, glabrous or with just a few basal hairs. *Schizocarp* 2.2-2.5 x 1.6-1.8 mm, with a fairly dense and uniform indumentum of long simple hairs. *Seeds* *c.* 1.4 x *c.* 1 mm, orange-brown, with black spots or markings. (Figure 1G-K)

Selected specimens examined. WESTERN AUSTRALIA: 529 miles Coolgardie-Esperance road [11 km S of Gibson], 15/5/1968, *E.M. Bennett* 2171; 5.2 km NE Melaleuca Rd on West Point Rd, 9/1984, *M.A. Burgman* 3891; nature reserve, 1.3 km SSW of Griggs Rd on Fields Rd, 14/9/1992, *G.F. Craig* 2125; 11 km N of Salmon Gums, 12/3/1980, *K.R. Newbey* 6718; 8 km SE of Mt Beaumont, 10/11/1980, *K.R. Newbey* 7931; 47 miles [75.7 km] from Esperance towards Norseman, 2/11/1968, *J.W. Wrigley*.

Distribution. Extends from the upper Young River east to near Mt Beaumont and north to the Salmon Gums area, southern Western Australia.

Habitat. Occurs on plains, usually recorded in sandy clay or sand over clay.

Flowering and fruiting period. March-May, September-November.

Derivation of name. From the Latin *minutus* - small, referring to the small size of the plant and all its parts.

Conservation status. Previously regarded as a priority species and listed in 1990 under the phrase name *Spyridium* sp. *Mt Beaumont* (*K.R. Newbey* 6718), but has been removed from the list as there are now known to be many populations, some of them very large and some on nature reserves (G.F. Craig pers. comm.).

Notes. Closely related to *Spyridium cordatum* (Turcz.) Benth., which has larger heart-shaped leaves with a more obvious petiole (0.7)1-3 mm long and more numerous flowers.

Spyridium montanum Rye, *sp. nov.*

A *S. globuloso* affinis sed caule juveni et floribus pilis ferrugineis ornatis, foliis supra semper pilosis differt.

Typus: The Arrows, near eastern end of Stirling Range, Western Australia, 11 October 1970, *A.S. George* 10425 (holo: PERTH 01533436; iso: CANB).

Shrub erect, 1-2.5 m high. *Young stems* with a dense indumentum of short white hairs, also with longer ferruginous hairs, which are common towards the apex but becoming more scattered below; ferruginous hairs spreading, 0.3-1 mm long. *Stipules* persistent but apex usually lost early, often before the leaves are shed. *Petioles* 5-12 mm long. *Leaf blades* elliptic or ovate (rarely narrowly so), 20-40 x 8-20 mm, the margins recurved; lower surface pale green, with 5 or 6 lateral veins on each side of midrib, often grey-green; upper surface densely hairy. *Involucral bracts* broadly ovate, 2-2.5 mm long; outer surface hairy throughout but much more densely so on base and midvein, with spreading simple hairs 0.8-1 mm long and much shorter stellate hairs. *Flowers c.* 10 to numerous, in a spreading branched terminal inflorescence 12-28 mm across, white or cream. *Floral tube* 1-1.2 mm long, densely hairy with simple spreading ferruginous hairs 0.6-1.2 mm long and minute white stellate hairs. *Sepals* 1-1.3 mm long, with a dense indumentum of white stellate hairs 0.2-0.4 mm long and longer simple ferruginous hairs. *Disc lobes* broadly oblong-elliptic, emarginate. *Ovary summit* with stellate hairs 0.1-0.2 mm long. *Style* 0.4-0.5 mm long. *Schizocarp* only seen when immature, densely hairy with a mixture of long ferruginous hairs and short white stellate hairs. (Figure 1L-O)

Specimens examined. WESTERN AUSTRALIA: Mt Toolbrunup, *anonymous*; Toolbrunup, 23/4/1923, *C.A. Gardner* 1428; Hopetoun [locality apparently inaccurate], 5/1924, *C.A. Gardner*; Ellens Peak, 22/7/1983 *G.J. Keighery* 6193.

Distribution. Restricted to Stirling Range, southern Western Australia.

Habitat. Recorded on sandstone or shale on mountains in the central and eastern part of the range, often in gullies high on the sides of the mountains.

Flowering period. April-July and October.

Derivation of name. From the Latin *montanus* - pertaining to mountains, referring to the species' restricted occurrence in a mountain range.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 2. Known only from an area *c.* 30 km long in one large national park.

Notes. Spyridium globulosum (Labill.) Benth., a common species occurring along the coast of south-western Australia, is very closely related. It differs from *S. montanum* in having only white hairs (no ferruginous hairs) on the young stems and flowers, leaves nearly always glabrous on the upper surface, and usually larger inflorescences.

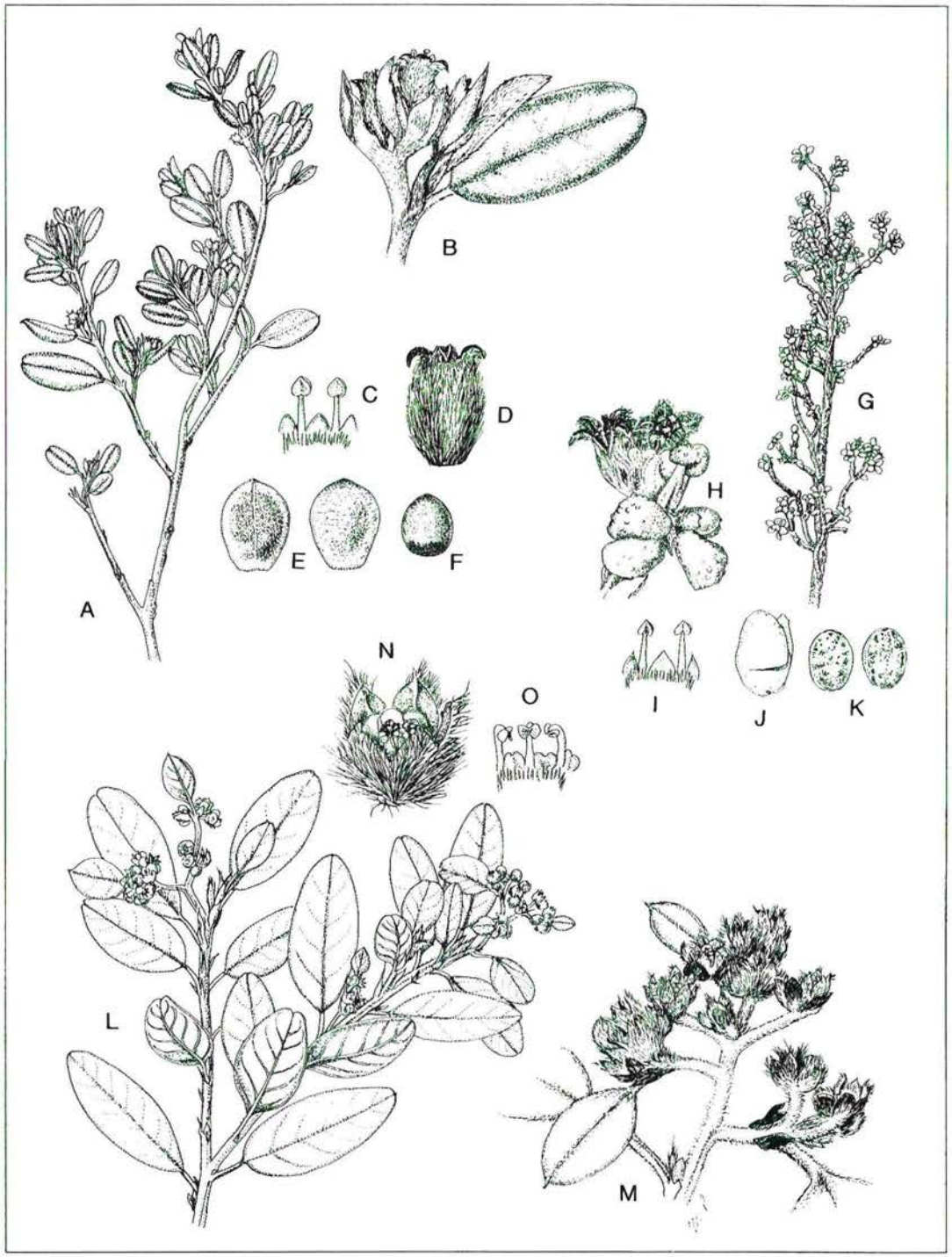

Figure 1.A-F *Spyridium glaucum* A - flowering branch (x1), B - flower cluster and leaf (x4), C - stamens and disc lobes (x10), D - schizocarp (x8), E - inner and outer surfaces of fruitlet (x8), F - seed (x8); G-K *S. minutum* G - flowering branch (x1), H - flower cluster and leaves (x7.5), I - stamens and disc lobes (x12), J - empty fruitlet (x6.5), K - inner and outer surfaces of seed (x6.5); L-O *S. montanum* L - flowering branch (x1), M - inflorescence (x2), N - flower (x5), O - stamens and disc lobes (x6). Drawn from *E.M. Bennett* 9/1979 (A-F), *G.F. Craig* 2081 (G-K) and *G.J. Keighery* 6193 (L-O).

Spyridium mucronatum Rye, *sp. nov.*

A *S. microcephalo* affinis sed foliis et inflorescentiis parvioribus, tubi florali pilis persistentibus ornato differt.

Typus: Nature reserve, 2.9 km W of Fields Rd on Griffiths Rd, Western Australia, 14 September 1992, *G.F. Craig* 2133 (holo: PERTH 03243753; iso: CANB).

Shrub erect or spreading, 0.15-0.6 m high. *Young stems* densely stellate-hairy or sometimes with a mixture of stellate and simple hairs. *Petioles* 0.5-1.3 mm long. *Leaf blades* usually narrowly oblong, rarely ovate, 2.5-4.3 x 0.6-1.6 mm, almost terete, the revolute margins usually meeting below except towards base of leaf, the apical mucro 0.1-0.3 or rarely less than 0.1 mm long; lower surface densely white-hairy but largely hidden; upper surface commonly minutely papillose, often minutely stellate-hairy or with simple patent hairs or a whitish coating, rarely glabrous although generally appearing so. *Involucral bracts* broadly ovate, 1-2 mm long, with prominent cilia 0.3-0.4 mm long; outer surface appearing glabrous but often with minute hairs concentrated along the midvein. *Flowers* in dense head-like clusters, usually 4-12 per cluster, white to yellow. *Floral tube* 0.9-1.3 mm long, densely or very densely hairy; hairs 0.5-1.2 mm long. *Sepals* 0.6-0.7 mm long, densely hairy; hairs antrorse to spreading. *Disc lobes* triangular. *Ovary summit* densely hairy. *Style* 0.5-0.7 mm long. *Schizocarp* 2-2.3 x 1.5-1.7 mm, with long spreading simple hairs and minute stellate hairs. *Seeds* 1.2-1.5 x 0.9-1.2 mm, pale brown or orange-brown.

Distribution. Extends from Borden east to Cape Arid National Park, not reaching the south coast, the northernmost locality being Frank Hann National Park.

Habitat. Occurs in mallee vegetation, on sandy soils or sand with clay.

Flowering and fruiting period. September-March.

Derivation of name. From the Latin *mucronatus* - pointed, referring to the shortly pointed leaves.

Notes. Related to *Spyridium microcephalum* (Turcz.) Benth., which differs in having deciduous hairs on the floral tube and longer ovary hairs. *S. mucronatum* has small leaves and few flowers per head. Three subspecies are recognized, each apparently with a distinct geographical area.

Spyridium mucronatum Rye subsp. **mucronatum**

Leaf blades narrowly oblong to ovate, 3-4.3 x 0.8-1.2 mm, the apical mucro 0.1-0.3 mm long; upper surface usually papillose, sometimes minutely stellate-hairy or simple-hairy, rarely glabrous but always appearing glabrous to the naked eye, rarely whitish. *Involucral bracts* 1.5-2 mm long. *Flowers* few (usually 3-6), in clusters 3-5 mm wide. *Sepals* with hairs 0.2-0.4 mm long. *Ovary summit* with hairs 0.2-0.3 mm long. (Figure 2A-C)

Selected specimens examined. WESTERN AUSTRALIA: 24.3 km due SSE of Peak Eleanora, 28/9/1984, *M.A. Burgman* 3827; 35 km due ENE of Muckinwobert Rock, 29/9/1984, *M.A. Burgman* 3897; 10.1 km N of Rollands Rd on Fields Rd, 13/9/1992, *G.F. Craig* 2104; Truslove Nature Reserve, 22/9/1992, *G.F. Craig* 2172; 30 km WSW Ponier Rock, 11/12/1990, *G.J. Keighery* 12644; Frank Hann

National Park, 3/8/1978, *D. Monk* 117; 3 km ENE Salmon Gums, 6/3/1980, *K.R. Newbey* 6672; 38 km NNE of Mt Ridley, 8/3/1980 *K.R. Newbey* 6688; 12 km SW of Mt Buraminya, 8/11/1980, *K.R. Newbey* 8212.

Distribution. Extends from Frank Hann National Park east to north of Cape Arid National Park, southern Western Australia.

Habitat. Occurs in mallee woodlands, often in the shade beneath *Eucalyptus uncinata* trees.

Conservation status. Previously regarded as a priority species and listed in 1990 under the phrase name *Spyridium* sp. *Frank Hann* (*K.R. Newbey* 6688), but a recent survey by G.F. Craig (pers. comm.) has shown that the taxon is reasonably common and widespread, including populations on nature reserves, so it has been removed from the list.

Spyridium mucronatum subsp. **multiflorum** Rye, *subsp. nov.*

A *S. mucronato* subsp. *mucronato* affinis sed foliis latioribus apice minus manifeste acuto, floribus multi numerosi differt.

Typus: About 15 miles [24.2 km] SW of Mt Ragged, Western Australia, 12 January 1966, *A.S. George* 7391 (holo: PERTH 01538675; iso: CANB, MEL).

Leaf blades ovate or narrowly so, 3-4.3 x 1.4-1.6 mm, the apical mucro *c.* 0.1 mm long; upper surface hairy or glabrous, sometimes white-scurfy. Involucral bracts 1.5-2 mm long. *Flowers* 7-14, in clusters 4-7 mm wide. *Sepals* with hairs *c.* 0.3 mm long. *Ovary summit* with hairs *c.* 0.3 mm long. (Figure 2D, E)

Specimens examined. WESTERN AUSTRALIA: 15 km S of Scadden, 13/11/1976, *Wittwer* 1869; 2 km NE of Bebenorin Rd on Muntz Rd, Reserve 32784, 10/1984, *M.A. Burgman* 4292.

Distribution. Known from three scattered collections, extending from north of Gibson east to near Mt Ragged, Cape Arid National Park, southern Western Australia. These localities are located south of the eastern part of the area where *S. mucronatum* subsp. *mucronatum* occurs.

Derivation of name. From the Latin *multus* - much and *floris* - flower, referring to the more numerous flowers than are found in the other two subspecies.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 2. This taxon is known from only three collections, but has a wide range of *c.* 160 km, with one of the known populations on a large national park and another on a nature reserve. Still, it appears to be the least common of the three subspecies and no populations have been located during a recent survey (Craig & Coates in preparation) of priority taxa in the region.

Notes. Distinguished from *Spyridium mucronatum* subsp. *mucronatum* mainly by the greater flower number per cluster, also tending to have broader leaves with a less pronounced apical point.

Spyridium mucronatum subsp. **recurvum** Rye, *subsp. nov.*

A *S. mucronato* subsp. *mucronato* affinis folius angustioribus apice manifeste recurvo, sepalis et ovario summo pilis brevioribus differt.

Typus: Borden, Western Australia, 2 October 1928, *C.A. Gardner* 2107 & *W.E Blackall* (holo: PERTH 01517066; iso: CANB).

Leaf blades narrowly oblong to ovate, 2.5-4.1 x 0.6-0.8(1) mm, apex distinctly recurved, the apical mucro *c.* 0.1 mm long; upper surface usually white-scurfy at least in younger leaves. *Involucral bracts* 1-1.5 mm long. *Flowers* 3-6, in clusters 2-5 mm wide. *Sepals* with hairs 0.1-0.2 mm long. *Ovary summit* with hairs 0.1-0.2 mm long. (Figure 2F-H)

Specimens examined. WESTERN AUSTRALIA: 19 km SW of Ravensthorpe on Moir Rd, 31/10/1992, *G.F. Craig* 2495; 39 miles [62.8 km] E of Pingrup, 5/11/1965, *A.S. George* 7323; 14 miles [22.5 km] SSW of Ravensthorpe, 3/11/1965, *A.S. George* 7265; 5 km N of Kybulup Pool, 21/10/1977, *K.R. Newbey* 5097.

Distribution. Occurs from Borden east to the Ravensthorpe area, southern Western Australia, occurring west of the range of *S. mucronatum* subsp. *mucronatum.*

Derivation of name. From the Latin *recurvus* - curved backwards, referring to the recurved leaf apex.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 3. A poorly collected taxon, known from three, rather widely separated areas, with a total of four or five populations. It is common in an area close to Ravensthorpe (G.F. Craig pers. comm.), but other parts of its range have not been surveyed.

Notes. Distinguished from *Spyridium mucronatum* subsp. *mucronatum* by its narrower leaves with a distinctly recurved apex and shorter hairs on the sepals and ovary summit.

Spyridium oligocephalum (Turcz.) Benth., Fl. Austral. 1: 433 (1863). - *Trymalium oligocephalum* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31: 460 (1858). Type: New Holland, [Western Australia], 1849, *J. Drummond* 5th coll. 236 (PERTH 01179802, KW photo seen).

Spyridium kalganense Diels in Diels & E.Pritzel, Bot. Jahrb. Syst. 35: 356 (1904). Type: Kalgan River, 4 October 1901, *L. Diels* 4607 (PERTH 01174045).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 3. Apart from the two type specimens cited above, the species is known from three collections, all made in 1970-72 from an area 30 km long in Fitzgerald River National Park. This species needs to be surveyed to determine whether it is more common than the few available collections would suggest and also to determine whether more than one variant should be recognized. (Figure 2I-N)

Notes. Bentham (1863: 433) cites the type locality of the Drummond specimen as Cape Riche, but no exact locality is specified in the Turczaninow's original description or on the type specimens examined. The Kalgan River type specimen appears to be the same species but may be of a distinct variant.

Spyridium polycephalum (Turcz.) Rye, *comb. nov.*

Trymalium polycephalum Turcz., Bull. Soc. Imp. Naturalistes Moscou 31: 460 (1858). Type: [Western Australia], *J. Drummond* 5th coll., suppl. 91 (KW photo seen, MEL).

Conservation status. A widespread, apparently common species.

Notes. Closely related to *Spyridium oligocephalum* and *S. subochreatum*, differing from both in its longer sepal indumentum, also differing from the former in bract colour and the latter in leaf characters. Judging from the few available specimens with mature seeds, *S. polycephalum* has uniformly orange-brown seeds, whereas the other two species have yellow-brown seeds with obvious dark spots or other small dark markings. Seed colouration sometimes varies within species of Rhamnaceae, so further material is needed to confirm the reliability of this character difference.

Spyridium riparium Rye, *sp. nov.*

Folia anguste ovata, 4-8plo longiora quam latiora, acuta. Lobi disci lati, emarginati.

Typus: Mitchell River, Western Australia, 18 August 1993, *B.G. Hammersley* 921 (holo: PERTH 03908542; iso: CANB, MEL).

Shrub erect, 1-1.5 m high. *Young stems* densely hairy with a mixture of numerous minute stellate hairs and more scattered simple patent hairs 1-1.5 mm long. *Petioles* 1.5-2 mm long. *Leaf blades* usually narrowly ovate, 8-17 x 1.5-3.5 mm, usually acute, the margins recurved; lower surface white to pale green, densely and minutely stellate-hairy, also with spreading simple hairs *c.* 1 mm long; upper surface glabrous (or with some minute simple hairs). *Bracts* transversely broadly elliptic, *c.* 1.2 mm long, glabrous outside, with cilia *c.* 0.5 mm long. *Flowers* fairly numerous, in branched spreading terminal inflorescences 10-18 mm across and in smaller groupings in the upper axils, white or cream. *Floral tube c.* 1.2 mm long, densely hairy; hairs 0.5-0.8 mm long. *Sepals c.* 1.2 mm long, rather densely hairy with minute stellate hairs over most of outside surface and with long simple hairs *c.* 0.4 mm long towards apex and on midvein. *Disc lobes* broadly oblong-elliptic or transversely so, emarginate. *Ovary summit* with hairs 0.2-0.3 mm long. *Style* 0.4-0.5 mm long. *Schizocarp c.* 1.5 x 1.3 mm, with long antrorse to spreading simple hairs and minute stellate hairs. *Seeds* not seen at maturity. (Figure 2O-S)

Specimens examined. WESTERN AUSTRALIA: White Gum Bridge, Denbarker Rd, 28/9/1984, *E.J. Croxford* 3892; White Gum Creek, Denbarker Rd, 12/9/1989, *E.J. Croxford*; Northumberland Rd, near Kent River, 23/8/1993 & 3/8/1994, *B.G. Hammersley* 934 & 1082.

Distribution. Occurs from Kent River east to Mitchell River, southern Western Australia.

Habitat. Grows on the banks of rivers, recorded mainly in sandy or gravelly soil overlying laterite.

Flowering and fruiting period. July-October.

Derivation of name. From the Latin *ripa* - the bank of a stream, referring to the habitat of the species.

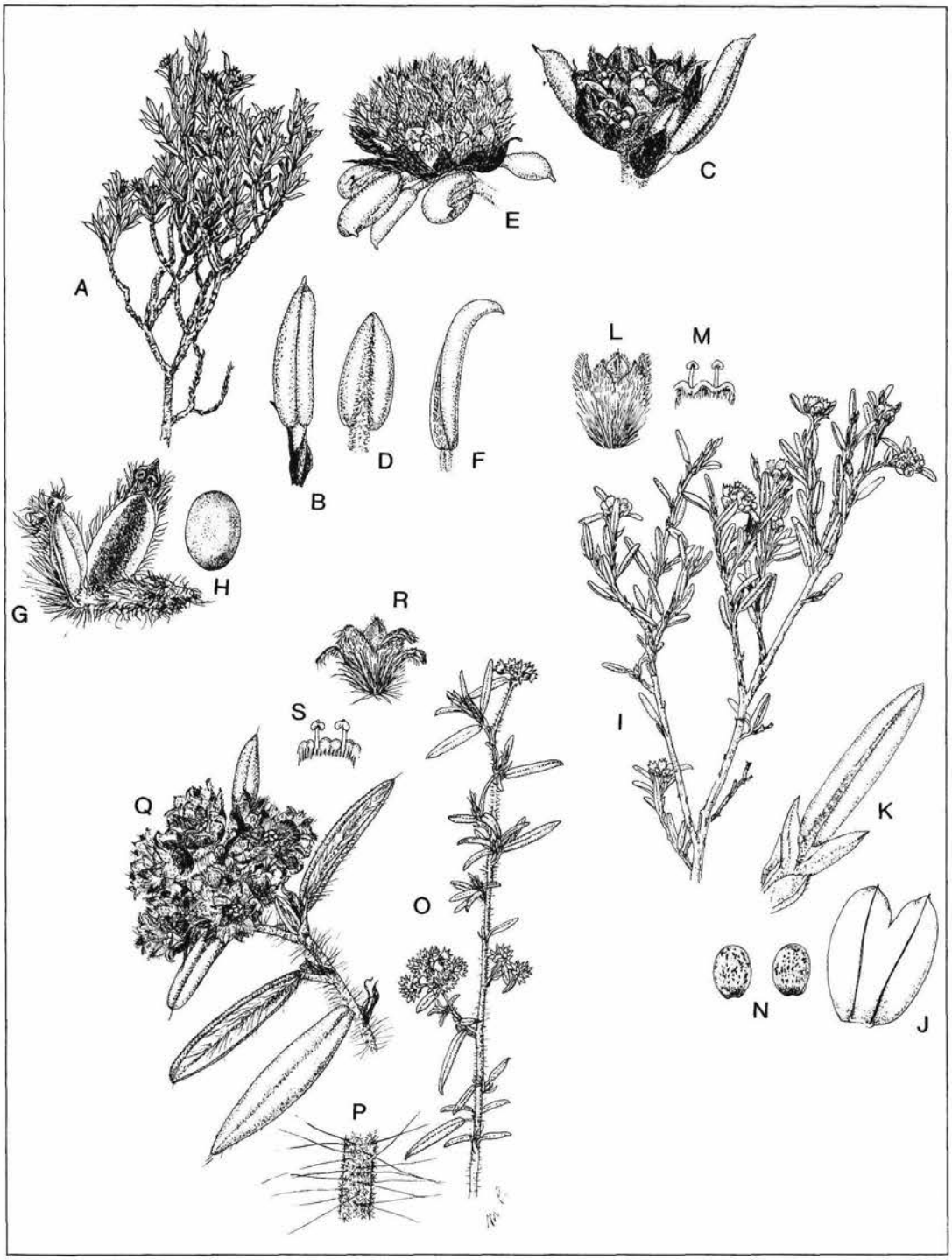

Figure 2. A-C *Spyridium mucronatum* subsp. *mucronatum* A - flowering branch (x1), B - leaf and stipules (x6), C - flower cluster (x6); D,E *S. mucronatum* subsp. *multiflorum* D - leaf (x6), E - flower cluster (x6); F-H *S. mucronatum* subsp. *recurvum* F - leaf (x6), G - dehisced schizocarp (x8), H - seed (x8); I-N *S. oligocephalum* I - flowering branch (x1), J - connate stipules (x7), K - lower surface of leaf (x4), L - flower (x7), M - stamens and disc (x8), N - inner and outer surfaces of seed (x4); O-S *S. riparium* O - flowering branch (x1), P - portion of stem (x4), Q - flower cluster and leaves (x3), R - flower (x6), S - stamens and disc lobes (x10). Drawn from *G.J. Keighery* 12644 (A-C), *M.A. Burgman* 4292 (D,E), *C.A. Gardner* 2107 & *W.E. Blackall* (F-H), *A.S. Weston* 6396 (I-N) and *E.J. Croxford* 3892 (O-S).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 2. Originally listed as a Priority 1 species, but recently two more populations have been located (B.G. Hammersley pers. comm.). Now known from populations on three rivers, with a range of *c.* 30 km. The populations are on vacant crown land but not on nature reserves.

Notes. Related to *Spyridium majoranifolium*, *S. spadiceum* and *S. villosum*, but differing in habitat and readily identified using leaf characters.

Spyridium spadiceum (Fenzl) Benth., Fl. Austral. 1: 428-429 (1863).- *Trymalium spadiceum* Fenzl in Endl., Fenzl, Benth. & Schott, Enum. Pl. Hueg. 21 (1837). - *Cryptandra spadicea* (Fenzl) F.Muell., Syst. Census Westral. Pl. 61. (1882-1883). Type: King George Sound, [Western Australia], *Huegel* (PERTH 01534971).

Pomaderris hirsuta Steud. in Lehm., Pl. Preiss. 1: 184 (1845). Type: Mt Clarence, [Western Australia], 30 September 1840, *L. Preiss* 1673b (MEL).

Trymalium thomasioides Turcz., Bull. Soc. Imp. Nat. Moscou 31: 459 (1858). Type: New Holland [Western Australia], 1849, *J. Drummond* 5th coll. 231 (PERTH 01534971).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 2. Apparently restricted to granite slopes in Porongurup National Park and to granite hills 35-40 km further south at Albany, both areas being nature reserves. Greg Keighery (pers. comm.) reported that a population of the species in the Porongurups had a very large number of plants in the years following a fire, where it had previously been much less common. (Figure 3A-D)

Spyridium subochreatum (F.Muell.) Reissek, Linnaea 29: 287-288 (1858). - *Trymalium subochreatum* F.Muell., Trans. Proc. Vic. Inst. 1: 122 (1855). - *Cryptandra subochreata* (F.Muell.) F.Muell., Syst. Census Westral. Pl. 61. (1882-1883). - *Pomaderris subochreata* Reissek *nom inval.*, Linnaea 29: 287 (1858). Type: Murray River, [South Australia], *F. Mueller* (MEL 710602, W).

Trymalium behrii F.Muell. ex Reissek, Linnaea 29: 274 (1858). Type: Murray, [South Australia], *F. Mueller* (MEL 710601, W).

Conservation Status. CALM Conservation Codes for Western Australian Flora: Priority 2. This species is common in South Australia but only just extends into Western Australia, where it is known only from Toolinna, on Nuytsland Nature Reserve. It is not considered to be at risk in its overall range but is listed as a priority species because of its rarity in this State. (Canning & Jessop 1986, Figure 430D)

Notes. Western Australian material is of *Spyridium subochreatum* var. *subochreatum*. The other variety, *S. subochreatum* var. *laxiusculum* J.Black, has a much smaller geographic range in South Australia and needs further study.

Spyridium villosum (Turcz.) Benth., Fl. Austral. 1: 432 (1863). - *Cryptandra villosa* Turcz., Bull. Soc. Imp. Nat. Moscou 31: 458 (1858). Type: New Holland [Western Australia], 1849, *J. Drummond* 5th coll. 232 (PERTH 01671979).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 1. Previously listed with a Priority 2 coding and its range given as the Mount Barker area as well as Stirling Range,

but specimens from the former region have now been redetermined as *Spyridium riparium*. *S. villosum* is known only from the type collection of unspecified locality and a single locality in the eastern part of Stirling Range National Park, where it occurs in sand over sandstone. When the latter collection was made in 1987, the species was rare, but the area had not been burnt for some time (G.J. Keighery pers. comm.) and it is possible this species is favoured by fires like its relative *S. spadiceum*. (Figure 3E-H)

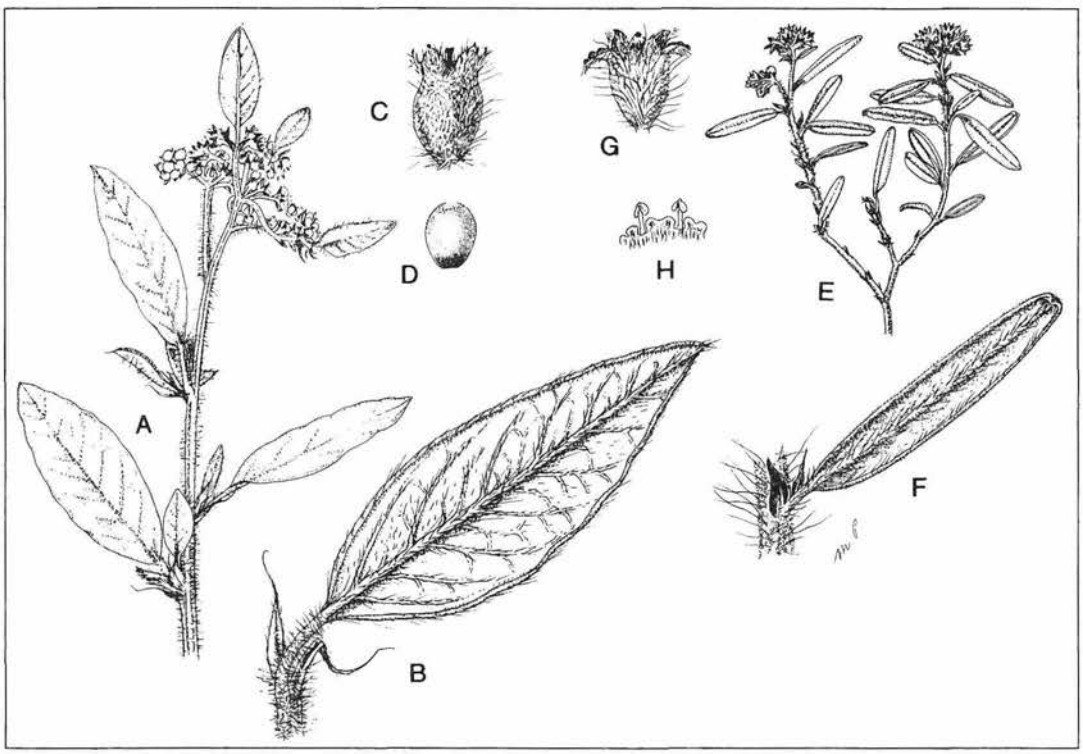

Figure 3. A-D *Spyridium spadiceum* A - flowering branch (x1), B - leaf and stipules (x2), C - schizocarp (x7), D - seed (x7); E-H *S. villosum* E - flowering branch (x1), F - leaf and stipules (x4), G - flower (x7), H - stamens and disc lobes (x10). Drawn from *G.J. Keighery* 12707 (A,B), *A.S. George* 11/12/1964 (C,D) and *G.J. Keighery* 4/11/1987 (E-H).

Results for *Trymalium* Fenzl

Implicit characters

Branchlets not spinescent. *Stipules* persistent, free. *Leaves* open (i.e. not conduplicate), entire, green on upper surface. *Inflorescence* cymose; bracts brown; flowers distinctly pedicellate on elongate 'panicles'. *Floral tube* short, adnate, terminating at or below the summit of the ovary. *Disc* glabrous, forming an annular thickened rim immediately surrounding the ovary, distinctly lobed or undulate between the stamens. *Ovary* 3-celled. *Stigmatic lobes* 3, spreading. *Fruit* a schizocarp, splitting to release entire 1-seeded fruitlets; fruitlets inferior or partially inferior, patterned and brown on inner surface. *Seeds* with a dark base, uniformly coloured above, seated on a small aril; aril easily detached, succulent, entire (i.e. not lobed).

Trymalium densiflorum Rye, *sp. nov.*

Pedicelli brevi. Flores dense fasciculati. Discus et ovarium stellato-pubescentes.

Typus: 8 km E of Trayning, Western Australia, 18 August 1974, *P.S. Valentine* T3 (holo: PERTH 01514075).

Shrub erect, *c.* 1 m high. *Young stems* with a mixture of simple and stellate hairs; simple hairs appressed, *c.* 0.4 mm long. *Petioles c.* 0.3 mm long. *Leaf blades* narrowly elliptic to oblong, *c.* 3 x 0.7 mm, the margins recurved to revolute; lower surface pale green, densely white-hairy; upper surface with stellate hairs *c.* 0.2 mm long. *Floral bracts* ovate or broadly ovate, acute, hairy outside. *Flowers* only shortly pedicellate, arranged in dense, usually 6-8-flowered clusters, those terminating the branchlets in panicles 7-13 mm long. *Pedicels* 0.2-0.3 mm long. *Floral tube c.* 0.5 mm long, densely hairy; hairs *c.* 0.2 mm long. *Sepals c.* 1 mm long, with appressed hairs 0.1-0.2 mm long. *Disc* stellate-hairy. *Ovary summit* densely stellate-hairy; hairs *c.* 0.2 mm long. *Style c.* 0.5 mm long; stigmatic lobes about as long as undivided portion of style. *Schizocarp* unknown. (Figure 4A-C)

Specimens examined. None other than the type.

Distribution. Recorded from near Trayning, southern Western Australia.

Habitat. Recorded in red soil in mallee-dominated vegetation.

Flowering period. August.

Derivation of name. From the Latin *densus* - crowded and *flos* - flower, referring to the dense arrangement of the flowers in comparison with other *Trymalium* species.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 1. Known from only one collection apparently on a road verge. This species urgently needs to be surveyed.

Notes. Similar to *Trymalium angustifolium* Reissek and *T. daphnifolium* Reissek in having small narrow leaves and a hairy ovary, but distinguished from these and other *Trymalium* species by its shorter pedicels and more compact inflorescence. It is also the only member of the genus that has stellate hairs on the disc, although *T. angustifolium* has a densely tuberculate disc.

Trymalium elachophyllum Rye, *sp. nov.*

Ramuli interdum spinescentes. Indumentum ex pilis simplicibus constans. Ovarium glabrum. Fructi dehiscentia regularis.

Typus: 5 km E of Ravensthorpe, Western Australia, 5 October 1966, *P.G. Wilson* 5529 (holo: PERTH 01528998; iso: CANB).

Shrub erect or spreading, 0.3-1.5 m high. *Branchlets* sometimes spinescent. *Young stems* with simple antrorse hairs 0.2-0.4 mm long. *Petioles c.* 0.5 mm long. *Leaf blades* usually elliptic or obovate, rarely linear, 1.7-4(5) x 0.7-1.4 mm, prominently recurved at apex, the margins recurved or revolute;

lower surface white or pale green, densely hairy; upper surface glabrous. *Floral bracts* dark red-brown to almost black, ovate or broadly ovate, acute, hairy or subglabrous outside. *Flowers* few (usually 5-10), in panicles 5-12 mm long, usually white to yellow, sometimes greenish. *Pedicels* 0.5-1.5 mm long. *Floral tube c.* 0.5 mm long, sparsely or densely hairy; hairs 0.2-0.3 mm long. *Sepals* 0.7-0.9 mm long, sparsely hairy or glabrous; hairs appressed, 0.2-0.3 mm long. *Ovary summit* glabrous. *Style* 0.3-0.4 mm long; stigmatic lobes prominent but shorter than remainder of style. *Schizocarp* three-fifths to three-quarters inferior, 1.9-2.2 x 1.4-1.6 mm, sparsely hairy on inferior portion, glabrous above, regularly dehiscent into 3 equal portions held together at the base. *Fruitlets* coriaceous to crustaceous; outer surface smooth, pale brown with red-brown spots; inner surface reticulate, medium red-brown. *Seeds c.* 1.3 x 0.8 mm, dark orange-brown with pale brown margins. (Figure 4D-G)

Selected specimens examined. WESTERN AUSTRALIA: Mt Short, 31/8/1968, *E.M. Bennett* 2500; Dunn Rock Nature Reserve, 15/4/1984, *D.J. Backshall* 8; Pingrup, 21/9/1933, *W.E. Blackall* 3021; 13.5 km NE of Muckinwobert Rock, 8/1983, *M.A. Burgman* 2070; lower Fitzgerald River, 12/7/1970, *A.S. George* 9924; *c.* 13 km NW of Newdegate on road to Lake Biddy, 21/9/1976, *L. Haegi* 1074; Phillips River, 30/8/1957, *E. Lindgren*; 16 km NE of Ongerup, 16/6/1974, *K.R. Newbey* 4210; Jacup, Ongerup-Ravensthorpe road, 28/9/1977, *K.R. Newbey 5086*; 3.2 km SW of gate in Rabbit Proof Fence, E of Lake King, 7/8/1968, *R.A. Saffrey* 333; 2 km SW of Mt Madden, 6/8/1968, *P.G. Wilson* 6816; by Young River, 4 km N of Esperance-Ravensthorpe road, 28/9/1968, *P.G. Wilson* 8034.

Distribution. Extends from Pingrup east to Young River, southern Western Australia.

Habitat. Recorded mainly in clay, sandy clay or gravelly soils.

Flowering period. Mainly July-September. Fruits mainly August-October.

Derivation of name. From the Greek *elachys* - small, short and *phyllon* - leaf, referring to the very small leaves.

Conservation status. This appears to be a common species, not currently at risk.

Notes. This species sometimes has spinescent branchlets, a characteristic unknown in other members of the genus except for one atypical specimen of *Trymalium myrtillus* S.Moore. Other relatively unusual characteristics of *T. elachophyllum* are the exclusively simple stem hairs and regularly dehiscent schizocarp.

Trymalium floribundum subsp. **trifidum** Rye, *subsp. nov.*

Differt a subsp. *floribundo* in floribus pluribus vel omnibus apice styli 3-lobo et ovario 3-cellulari, folius plerumque grandioribus acutioribus, sepalis plerumque magis pubescentibus.

Typus: Napier Creek, *c.* 22 km NNE of Albany, Western Australia, 19 September 1964, *P.G. Wilson* 3337 (holo: PERTH 01518968; iso: AD).

Shrub or tree erect, 1-9 m high. *Young stems* with a dense mixture of simple and stellate hairs; simple hairs antrorse or patent, 0.5-1.5 mm long, white or ferruginous. *Stipules* deciduous or shed about the same time as the leaves. *Petioles* 3-35 mm long. *Leaf blades* usually ovate to very broadly ovate, rarely narrowly ovate or circular, 30-130 x 9-80 mm, the margins flat or recurved; lower surface

pale green, with 3-7 lateral veins on each side of midrib, with a dense indumentum of simple patent hairs 0.5-1 mm long; upper surface usually glabrous but with a row of hairs along the impressed midvein and usually also along the lateral veins. *Flowers* usually white to pale yellow, rarely greenish. *Floral tube* hairy. *Sepals* densely to sparsely hairy. *Ovary* 3-celled. *Stigmatic lobes* 3. (Figure 4H, I)

Selected specimens examined. WESTERN AUSTRALIA: Porongurup Range, 20/10/1962, *T.E.H. Aplin* 2148; near Napier River, Porongurup-Albany road, 14/9/1966, *E.M. Bennett* 1046; 27 km N of Augusta on Boranup Drive, 26/10/1983, *M.G. Corrick* 8929; Pemberton, 28/11/1984, *H. Demarz* 10428; near Collie, 17/10/1962, *A.R. Fairall* 770; Mt Manypeaks, 5/9/1935, *C.A. Gardner* 3316; 200 yards W of Boggy Lake, 2/12/1956, *J.W. Green* 1107; 10 km S of Witchcliffe, 14/5/1980, *T.J. Hawkeswood* 205; William Bay National Park, 12/10/1989, *B.G. Hammersley* 214; 9 km SE of Yornup, 11/9/1981, *G.J. Keighery* 4012; 8 km W of Harvey, 3/8/1985, *G.J. Keighery* 7758; Mt Clare, Walpole, 12/11/1969, *V. Mann & A.S. George* 889; Ellens Peak, Stirling Range, 21/10/1900, *A. Morrison*; S of Princess Royal Harbour, Albany, 10/1966, *S.P. Pfeiffer* 1; Warren River Crossing, Wheatly Coast Rd, 10/11/1985, *A.N. Rodd* 4918 & *G. Fensom*; Catterick, Bridgetown district, 26/9/1948, *R.D. Royce* 2703; near Walpole, 17/9/1952, *F.W. Went* 121; near Waroona Dam, 15/10/1965, *P.G. Wilson* 3734.

Distribution. Extends from Waroona Dam south to Augusta and Mt Manypeaks, southern Western Australia.

Habitat. Occurs in varied soils, commonly in *Eucalyptus* forests, often along watercourses.

Flowering period. July-October. Fruits recorded September-December.

Derivation of name. From the Latin *trifidus* - three-cleft, referring to the 3 stigmatic lobes.

Conservation status. Common, not at risk.

Notes. The other subspecies, *Trymalium floribundum* Steud. subsp. *floribundum*, is atypical of the genus in having only 2 stigmatic lobes and ovary cells. One specimen, collected from Dwellingup (*A.P. Hansen* 4/10/1984) is intermediate between the two subspecies, having about equal numbers of 2-celled and 3-celled flowers.

In subsp. *trifidum*, the sepals tend to be more hairy than in subsp. *floribundum*, but vary from sparsely and shortly hairy to densely hairy, in some cases with hairs up to 0.6 mm long protruding from the apex. The leaves are also very variable, but are usually larger and more acute than in subsp. *floribundum* and are often serrate. Some specimens, especially in the Donnelly River-Denmark area, have small rounded hairy leaves, which may be juvenile or perhaps of a distinct variant.

Trymalium ledifolium var. **lineare** Rye, *var. nov.*

Differt a var. *rosmarinifolio* in foliis angustioribus, marginibus plus recurvis.

Typus: Off Dryandra Rd, Tutanning Flora and Fauna Reserve, Western Australia, 9 August 1966, *K.F. Kenneally s.n.* (holo: PERTH 01524240; iso: CANB).

Shrub erect, 0.4-2 m high. *Young stems* with a mixture of simple and stellate hairs or glabrous; simple hairs appressed or antrorse, 0.2-0.5 mm long. *Stipules* persistent or shed about the same time as the leaves. *Petioles* 0.5-1.5 mm long. *Leaf blades* linear, 14-38 x 0.7-2.5 mm, the margins revolute; lower surface hairy but often completely hidden by the recurved margins; upper surface glabrous but usually with a row of hairs along the impressed midvein. *Flowers* white or cream. (Figure 4J, K)

Selected specimens examined. WESTERN AUSTRALIA: W of Calingiri, 14/7/1960, *T.E.H. Aplin* 756; 5 miles [8 km] E of Wickepin, 18/9/1971, *R.A. Congdon* 31.1; Ferguson Farm road, 2/11/1976, *H. Demarz* 6216; about 9 km E of Popanyinning, 15/9/1984, *D.B. Foreman* 720; St Ronans Reserve, 18 km W of York, 27/7/1985, *G.J. Keighery* 7706; Wongamine Nature Reserve, 24/11/1983, *S. Patrick*; Dryandra State Forest, 3/8/1987, *D. Rose* 100.

Distribution. Extends from near Calingiri south-southeast to near Wickepin, southern Western Australia.

Habitat. Mainly recorded on gravelly soils or on lateritic ridges, but sometimes associated with granite.

Flowering period. July-October. Fruits recorded September-November.

Derivation of name. From the Latin *linearis* - of a line, referring to the leaf shape.

Conservation status. Does not appear to be at risk at present.

Notes. All varieties of *Trymalium ledifolium* Fenzl have an irregularly dehiscent inferior schizocarp with exceptionally hard fruitlets. The fruitlets are ferruginous to dark red-brown and very deeply pitted on the inner surface and pale brown with an undulate pattern of lines or shallow furrows on the outer surface.

T. ledifolium var. *lineare* differs from the two previously named varieties, var. *ledifolium* and var. *rosmarinifolium* (Steud.) Benth., only in its narrower leaf shape, but this gives it a striking difference in appearance. The differences between the three taxa seem too minor to warrant subspecies rank and are only evident because they are found in distinct geographical areas. Var. *lineare* is the variant occurring furthest inland.

Trymalium litorale (Diels) Domin, Vestn. Kral. Ceske Spolecn. Nauk. Tr. Mat.-Prir. 1921-1922, 2: 63 (1923). - *Trymalium billardierei* var. *litorale* Diels in Diels & E.Pritzel, Bot. Jahrb. 35: 352 (1904). Type: near Cape Riche, Western Australia, July 1901, *L. Diels* 3481 (n.v.).

Conservation Status. CALM Conservation Codes for Western Australian Flora: Priority 1. Recorded from Cape Riche in 1901 and Bremer Bay in 1957 on coastal granite, the two localities being *c.* 65 km apart. A poorly known species urgently in need of further study. (Figure 5A)

Notes. Closely related to *Trymalium floribundum*, differing in its leaves being densely hairy and whitish above and the flowers having a more uniform indumentum on the sepals and floral tube. Although the type specimen of *T. litorale* has not been found, a specimen with both the type locality and date, *L. Diels & E. Pritzel* 448 (PERTH 01518437), matches the description and presumably was collected either from the same population as the type or one very close by.

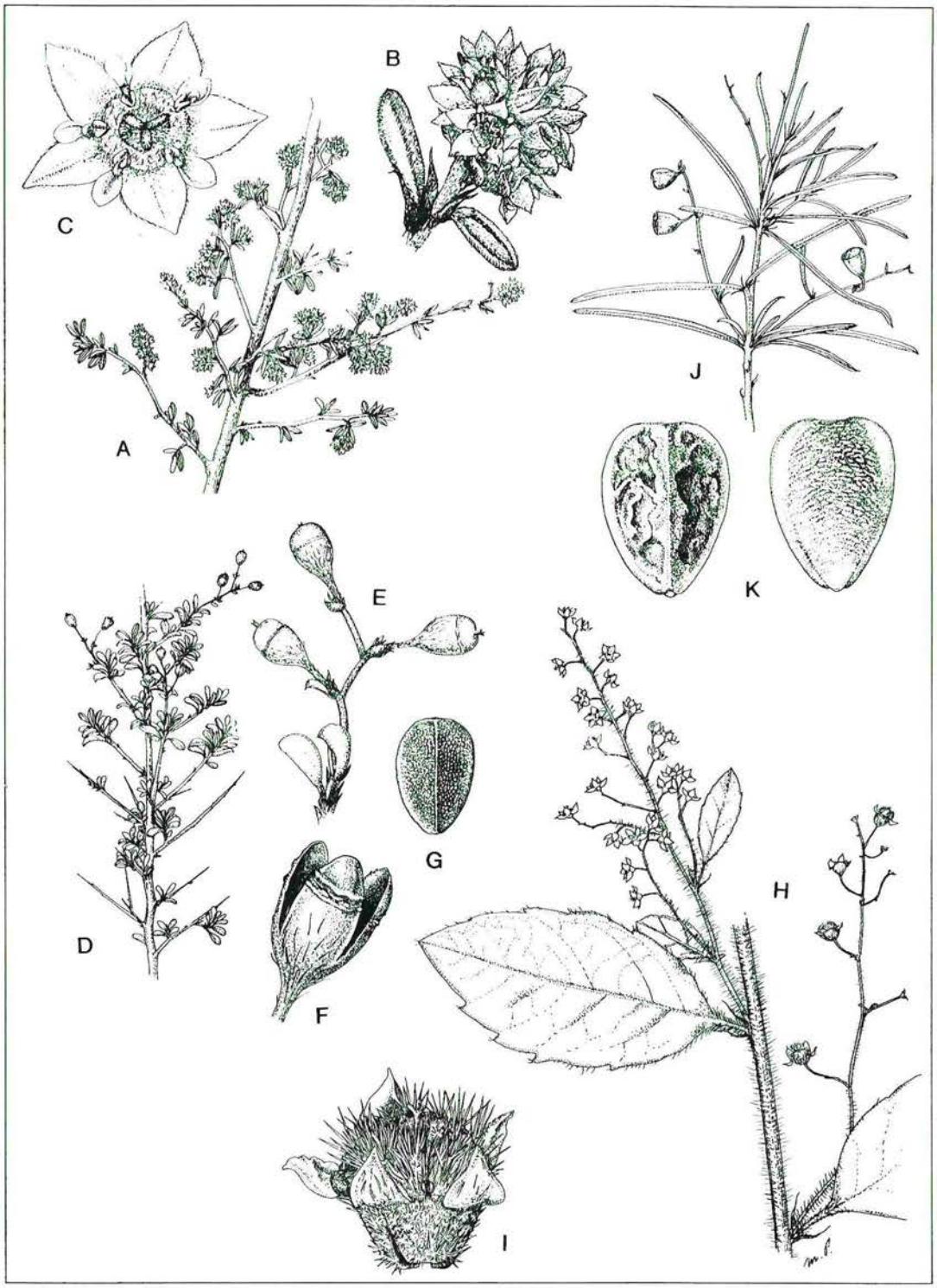

Figure 4. A-C *Trymalium densiflorum* A - flowering branch (x1), B - condensed cyme and uppermost leaves (x6), C - top view of flower (x18); D-G *T. elachophyllum* D - fruiting branch (x1), E - fruiting cyme and leaves (x4), F - dehisced schizocarp (x10), G - inner surface of fruitlet (x4); H,I *T. floribundum* subsp. *trifidum* H - flowering and fruiting branch (x1), I - dehiscing schizocarp (x9); J,K *T. ledifolium* var. *lineare* J - fruiting branch (x1), K - inner and outer surfaces of fruitlet (x10). Drawn from *P.S. Valentine* T3 (A-C), *P.G. Wilson* (D,E,G), *A.S. George* 9924 (F), *T.A. Halliday* 230 (H,I) and *H. Demarz* D6216 (J,K) .

Trymalium urceolare (F.Muell.) Diels in Diels & E.Pritzel, Bot. Jahrb. Syst. 35: 353-354 (1904). - *Trymalium billardierei* var. *urceolare* F.Muell., Fragm. Phyt. Austral. 9: 135 (1875). Type: near Toodyay, Western Australia, August 1901, *L. Diels* 3974 *(n.v.)*; [Western Australia], *J. Drummond s.n.* (MEL 56158).

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 2. This species was included in the 'presumed extinct' category in Leigh *et al.* (1984: 318), which gives a photograph of the type specimen. *T. urceolare* was rediscovered in the Bindoon area by Sue Patrick (pers. comm.) in 1986 and subsequent surveys have shown it to extend for *c.* 30 km, occurring in clayey soils, often with lateritic gravel. It has been recorded from more than 5 populations, at least one with over 200 plants, but is not known from any nature reserves. (Figure 6). Also illustrated in Diels & Pritzel 1904, Figure 44H, J.

Notes. A unique feature of this species is its urceolate fruit, with the neck consisting of a short free tube between the disc and the inferior ovary.

Trymalium venustum Rye, *sp. nov.*

A *T. floribundo* affinis sed foliis infra magis pubescenti, sepalis omnino villosis cum pilis terminalibus longis differt.

Typus: SE of Manjimup on South West Highway opposite Adam Rd, Western Australia, 6 July, 1979, *N.G. Marchant* 79/58 (holo: PERTH 01527517; iso: CANB).

Shrub erect, 1.5-4(6) m high. *Young stems* with a dense indumentum of simple and stellate hairs; simple hairs antrorse or patent, 1-1.5 mm long, white or ferruginous (the young stems always ferruginous). *Stipules* deciduous, densely ferruginous-hairy. *Petioles* 4-9 mm long. *Leaf blades* ovate, 35-65 x 12-35 mm, acute, very discolorous, the margins slightly recurved; lower surface pale green or ferruginous, with 5-9 lateral veins on each side of midrib, with a very dense long indumentum; upper surface glabrous but often with a row of hairs along the impressed midvein. *Floral bracts* deciduous, narrowly ovate to subulate, sparsely hairy outside. *Flowers* in small cymes arranged in terminal panicles 50-130 mm long and shorter panicles or racemes in the upper axils, with numerous flowers per panicle, white or creamy white. *Pedicels* 1.5-3 mm long, densely hairy; hairs patent, the largest ones 0.4-0.7 mm long. *Floral tube c.* 0.5 mm long, very densely hairy; hairs 0.4-0.6 mm long. *Sepals* 1-1.4 mm long, with a very dense white indumentum and often with one or more extra-large ferruginous hairs on each sepal apex; indumentum antrorse, the largest hairs 0.6-1.5 mm long. *Ovary summit* densely hairy; hairs 0.2-0.3 mm long. *Style* 0.3-0.6 mm long; stigmatic lobes prominent but shorter than remainder of style. *Schizocarp* only seen when immature. (Figure 5B-D)

Selected specimens examined. WESTERN AUSTRALIA: Ocean Beach Rd near bridge, 18/7/1979, *E.J. Croxford* 477; Kent River, 9/1936, *C.A. Gardner*; Parker Rd, 7.5 km N of South Coast Highway, 28/8/1994, *B.G. Hammersley* 1113; 10 km along Mt Shadforth Rd, W of Denmark, 31/8/1994, *B.G. Hammersley* 1115; *c.* 15 km NNW of Denmark on Stans Rd, 29/1/1987, *B. Hollingworth*; Owingup Creek, 31/7/1953, *R.D. Royce* 4286; Mitchell River, on Denmark-Mount Barker road, 30/7/1969, *J.A. Thompson* 7; Walpole-Nornalup National Park, 10 km E of Walpole, 21/8/1988, *G. Wardell-Johnson* D77.

Distribution. Extends from north-east of Northcliffe east to Denmark and Mitchell River, southern Western Australia.

Figure 5. A *T. litorale* flowering branch (x1); B-D *Trymalium venustum* B - flowering branch (x1), C - flower bud and open flowers (x7), D - immature schizocarp (x10). Drawn from *Diels & Pritzel* 448 (A) and *D. Myers* 8/1913 (B-D)

Habitat. Occurs in sandy soil, often on laterite or with lateritic gravel, in Jarrah or Marri forest or sometimes Karri forest, often along watercourses.

Flowering period. Mainly July-September, also recorded January-February. Fruits recorded August.

Derivation of name. From the Latin *venustus* - elegant, graceful, beautiful, referring to the attractive white sprays of flowers.

Conservation status. Listed as a Priority 2 species in the 1994 Priority Flora List, under the manuscript name *T. villosum* ms. However, it is now known from more populations, including some in national parks, and has been removed from the priority list. It has a distribution extending *c.* 130 km, and is more common in the eastern part of its distribution.

Notes. Closely related to *Trymalium floribundum*, which differs in its leaf indumentum, with most specimens having a very short dense stellate indumentum on the leaf undersurface, and shorter hairs on the sepals. There are also some specimens of *T. floribundum* with long hairs on both surfaces of the leaves, the short stellate hairs on the lower surface still visible. In *T. venustum* the leaves have virtually no hairs on the upper surface except along the midvein depression but are very densely hairy on the lower surface, and there are no obvious short stellate hairs on the lower surface. *T. floribundum* also tends to have more yellowish flowers than *T. venustum*.

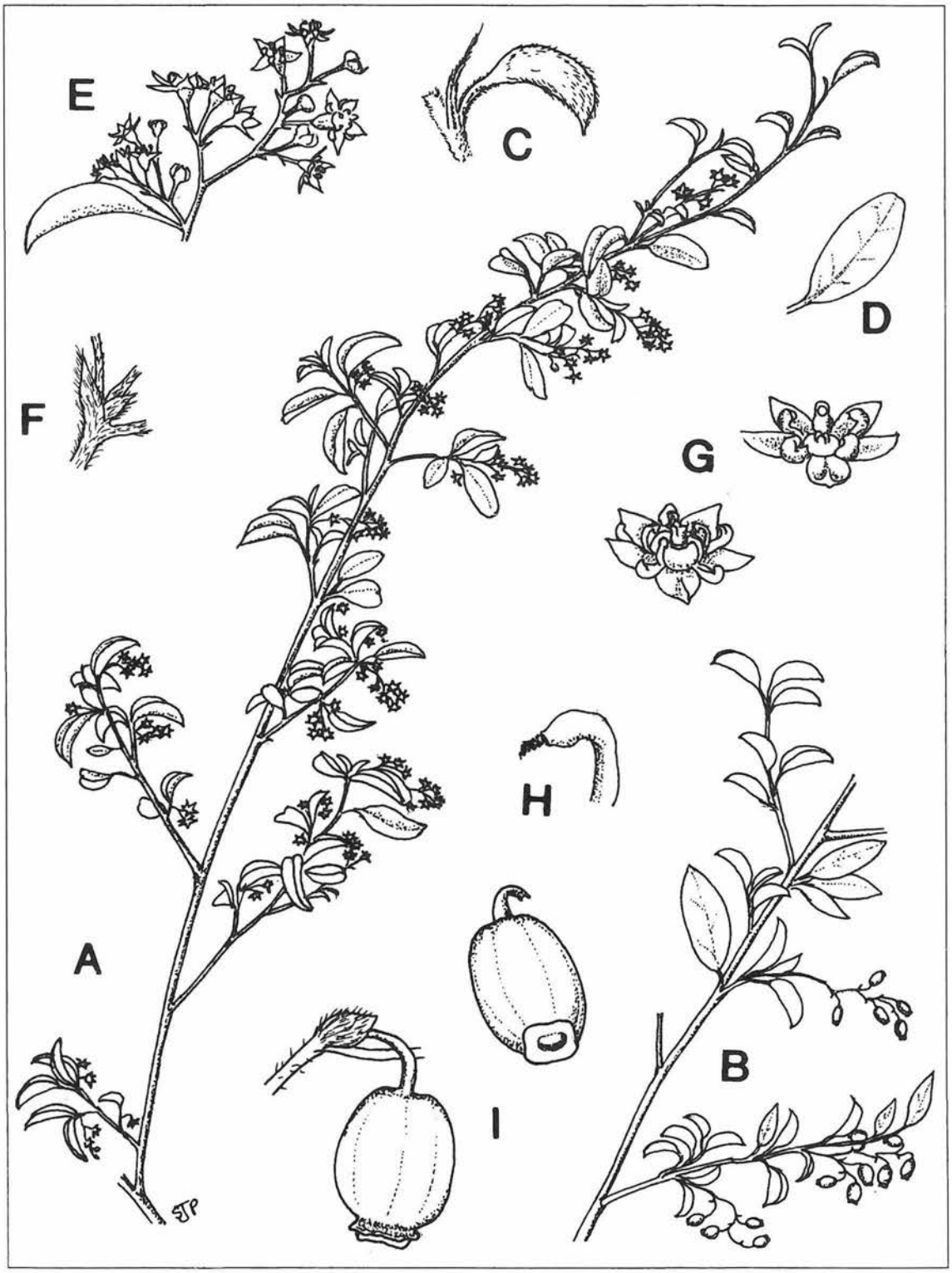

Figure 6. *Trymalium urceolare* A - flowering branch (x1), B - fruiting branch (x1), C - stipule and lower surface of folded leaf (x5), D - upper surface of leaf (x2), E - inflorescence (x4), F - bracts subtending branches of inflorescence (x15), G -flower, with and without stamens released from petals (x10), H - pollen release from enclosed stamen (x30), I - two views of schizocarp (x10). Drawn from the type specimen, *J. Drummond*, MEL 56158 (B,C & I) and from fresh material represented by *S. Patrick* 306 (A,D-H).

In the region where their ranges overlap, the two species tend to occur in different habitats, *Trymalium floribundum* as an understorey species in Karri forest and *T. venustum* more commonly in Jarrah or Marri forest. Occasionally they do occur in the same area, but are apparently reproductively isolated by a difference in flowering time, *T. venustum* flowering earlier than *T. floribundum* (T. Annels pers. comm.).

Another related species that has been confused with *T. venustum* is *T. spatulatum* (Labill.) Ostenf. The latter differs in its obovate leaves with the veins more prominently indented on the upper surface.

Discussion

As for many other plant groups in Western Australia, there is an urgent need to survey some members of *Spyridium* and *Trymalium* and determine which taxa are most in need of conservation measures to ensure their continued survival. Currently, 38% of the western species in these two genera are included on the Priority Flora List, as well as two subspecies. Only one of these taxa, *Trymalium urceolare*, has been surveyed in any detail. Two *Spyridium* species previously placed on the list have been removed as a result of field surveys, which have located many additional populations (Craig & Coates in preparation). The present priority list, based primarily on data from herbarium specimens, needs to be tested by field studies before a reliable list of endangered taxa can be drawn up for the two genera. Future surveys are likely to change the priority coding of some of the newly listed species and probably remove some from the list altogether.

Acknowledgements

I am grateful to Nicholas Lander and Bruce Maslin for helpful comments on the paper, Kevin Thiele for advice on the Rhamnaceae genera and Paul Wilson for preparing the Latin diagnoses. The line illustrations were expertly prepared by Margaret Pieroni (Figures 1-5) and Sue Patrick (Figure 6). I also thank Tony Annels, Gill Craig, Greg Keighery and Sue Patrick for information on the populations of *Spyridium* and *Trymalium* species they have surveyed.

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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.

CORRECTION

Correction to **"C.F. Meissner's species of *Acacia* (Leguminosae: Mimosoideae): typification of the names"** by B.R. Maslin and R.S. Cowan, Nuytsia 9 (3): 399-414 (1994).

In the above paper on page 410 under *Acacia nigricans* var. *subracemosa,* the holotype collection number should be *J. Drummond* 157 (not *J. Drummond* 97).

Publication date of Nuytsia Volume 9 Number 3: 14 June 1994

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. Descriptions and keys using manuscript or phrase names will not generally be accepted. 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.

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Great care with layout, spacing and typography must be exercised in the preparation of electronic manuscripts. In particular, note the following. Text is not to be right-justified. Where manuscripts are compiled with software other than MS-WORD all headings and paragraphs are to be left-justified. Within a paragraph two spaces are required between sentences; after colons, semicolons, commas and dashes a single space is required. Where MS-WORD is used, text should be italicised or emboldened where appropriate.

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**, noting particularly the following.

Title. Should include the family name of genera or species treated, but not authorities. New taxa should be named if not numerous. The geographic area of study should be given where appropriate.

Abstract. The paragraph (or paragraphs) should be indented and commence with bibliographic information. New taxa, combinations and names should be listed. The major contents of the paper should be summarised but no additional material given.

Headings. All headings should be in capitals and lower case, major headings being centred and minor ones left-justified.

Keys. May be either indented (e.g. Nuytsia 5: 277) or bracketed (e.g. Nuytsia 5: 84). Indented keys involving more than nine levels of indentation should be avoided.

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. Recommended headings which are italicised below, should be left-justified, followed by text on the same line.

(1) Taxon name, synonymy (if any), significant manuscript or phrase names currently in use and type details (for previously published taxa).
(2) Latin (for new taxa - indented).
(3) *Typus:* (for new taxa - not indented).
(4) English description (indented).
(5) *Other specimens examined* or *Selected specimens examined* as appropriate.
(6) *Distribution.*
(7) *Habitat.*
(8) *Flowering period.*
(9) *Fruiting period.*
(10) *Typification* (discussion).
(11) *Affinities* or *Relationships.*
(12) *Discussion* or *Comments* or *Notes.*
(13) *Conservation status.* (Department of Conservation and Land Management conservation codes for rare and threatened (Declared Rare Flora) WA taxa are given in each issue).
(14) *Etymology.*

Threatened species. It is the policy of CALM not to publish precise locality data for threatened species. Authors are therefore requested not to cite precise locality data when describing threatened species. Generalised localities should be given accompanied by the statement - [precise locality withheld].

Synonymy. The desired format is that used by P.G. Wilson, Nuytsia 4: 135-262.

Standard abbreviations. It is suggested that where possible the following standards be followed.

(1) Author abbreviations - Brummitt, R.K. & Powell, C.E. (1992). Authors of Plant Names. (Royal Botanic Gardens: Kew.)

(2) Book titles in literature citations - Stafleu, F.A. & Cowan, R.S. (1976-83). Taxonomic Literature. Edn 2. (I.A.P.T.: Utrecht) (but with capital initial letters.) - Green, J.W. (1985). Census of the Vascular Plants of Western Australia. Edn 2. Pp. 20-24. (Department of Agriculture: Perth.)

(3) Journal titles in literature citations and reference lists - Lawrence, G.H.M. *et al.* (1968). B-P-H (Botanico-Periodicum-Huntianum). - Green *loc. cit.*

Figures. Numbers should follow a single sequence including maps.

Structure of papers. Authors are encouraged to use the conventional structure of scientific papers when a complete study is being reported (e.g. a revision). A *Methods* section should include the method of drawing up the descriptions from specimens, extent of search for types, and discussion of concepts for choice of taxonomic categories. A *Discussion* section should be considered, which would include some or all of the following: a summary of the findings, emphasising 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.

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