Studies in the genus *Acacia* (Leguminosae:Mimosoideae)—12. Two new species from the eastern goldfields, Western Australia

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Abstract

Maslin, B. R. Studies in the genus *Acacia* (Leguminosae:Mimosoideae)—12. Two new species from the eastern goldfields, Western Australia. Nuytsia 4(1): 105-112 (1982). Two new species of *Acacia, A. kerryana (section Juliflorae) and A. warramaba* (section Plurinerves), are described and illustrated. Both taxa occur in the eastern goldfield area of Western Australia.

1. **Acacia kerryana** Maslin, sp. nov. (Figure 1)

Acacia filifolia Benth. et *A. merinthophora* E. Pritzel affinis a qua statura minore, phyllodiis decurrentibus in sicco teretibus et calyce minore differt.

Typus: 1 km S of Spargoville (c. 45 km S of Coolgardie) on the road to Norseman, Western Australia. "Shrub 0.6 m tall, dividing just above ground level into c. 4 slender, spreading-erect main branches; bark smooth, grey; branches somewhat flexuose on upper half; foliage soft and dense; phyllodes persistent upon dying, curved to serpentinous, light olive green; flower-heads light golden. Much regrowth here following a fire. Favours exposed areas and seems restricted to this low rocky hill." 16 February 1981, *B. R. Maslin* 4834 (holo: PERTH; iso: CANB, G, K, MEL, NY).

Low, spreading, rather dense *shrubs* 0.5-0.6(1) m tall and to 2 m diam., infundibular and flat-topped when young but amorphous with age, dividing just above ground level into about 4 slender spreading-erect stems. *Bark* smooth, grey except for the branchlet apices which are light brown to reddish brown. *Branches* somewhat flexuose especially towards their apices, terete, very obscurely nerved, apically very sparsely antrorsely strigillose, otherwise glabrous, apices slightly shiny. *Stipules* deciduous, triangular, c. 0.3 mm long. *Phyllodes* filiform-terete, 8-16 cm long, c. 0.5 mm diam., tortuous, cirrose, decurrent, persistent on branches upon dying, light olive green but upon dying turning first orange then grey, glabrous; *nerves* 8, fine, impressed when fresh, becoming slightly raised upon drying due to shrinkage of intervening tissue, distant (c. 0.2 mm apart); *gland* not prominent, situated on upper surface of the phyllode some distance above the base, lamina slightly swollen about the gland, circular, c. 0.2 mm diam., lip yellow to brown and slightly raised. *Inflorescences* simple and axillary, 2-3 per node. *Peduncles* 6-13 mm long, glabrous or very sparsely strigillose; *basal peduncular bract* ± ovate and shallowly concave, c. 1 mm long, glabrous. *Flower-heads* obloid, 6-7 mm long and c. 4 mm wide when dry, 12-15 flowered, flowers not very densely arranged, light golden; *bracteoles* c. 0.5 mm long, with minute claws and inflexed concave glabrescent brown laminae. *Flowers* 4-merous. *Calyx* cupular, 1/5-1/6 the length of the corolla, very shallowly divided into broadly triangular lobes. *Corolla* 1.5-2 mm long, readily

separating into elliptic petals which are very obscurely penninerved (apparently nerveless when dry). *Ovary* densely appressed white tomentose. Legumes seen only following dehiscence, valves twisted and coiled, to 8.5 cm long (expanded length), 2 mm wide, chartaceous, light brown, glabrous, obscurely longitudinally nerved; *margins* constricted between seeds, yellow. *Seeds* not seen.

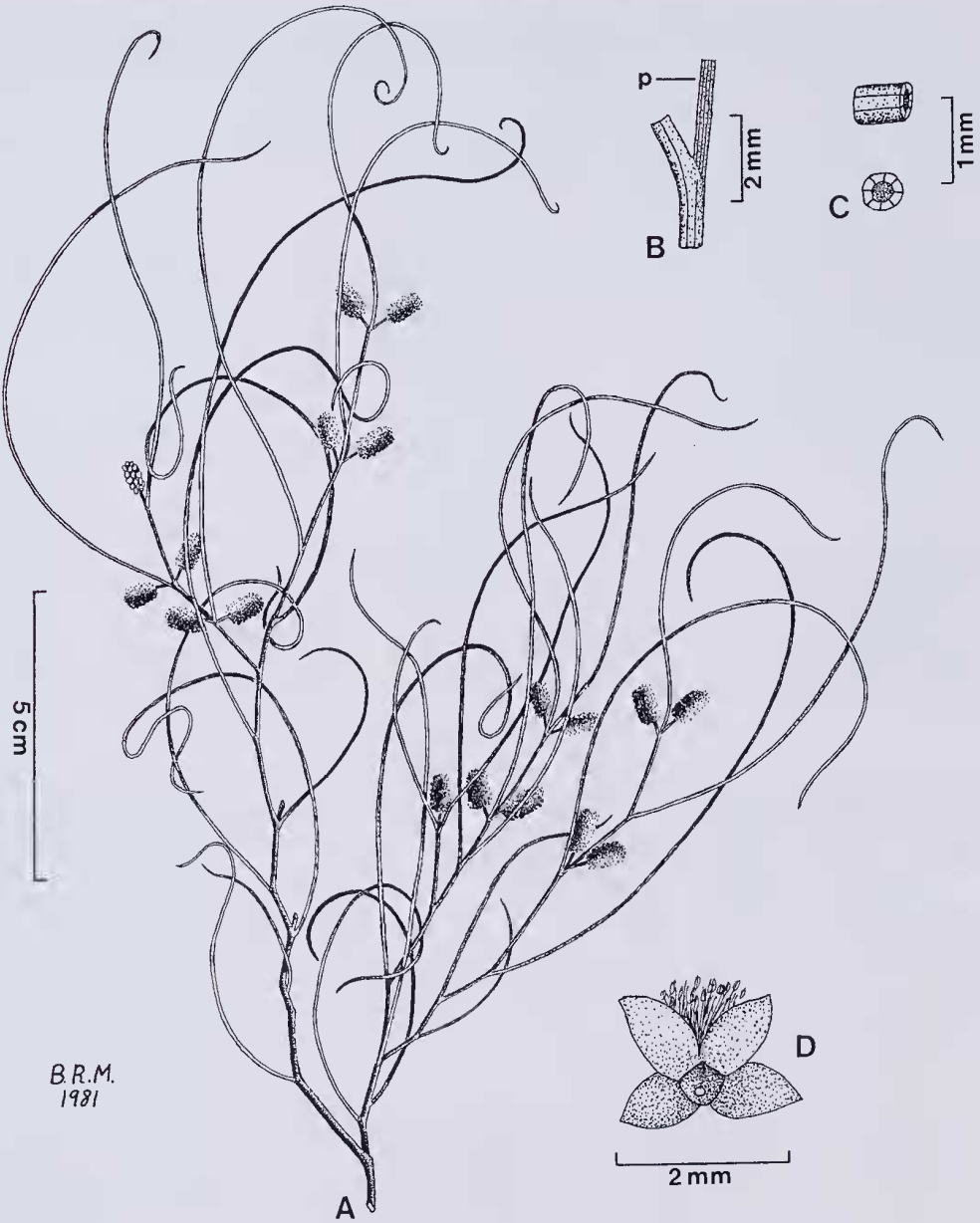

Figure 1. *Acacia kerryana*. A—Portion of branch showing tortuous phyllodes and obloid flower-heads. B—Node showing decurrent phyllodes (p). C—Phyllode, side view and transverse section showing position of nerves. D—Flower (viewed from below) showing cupular calyx and 4 petals.

A from fresh material collected by *B. R. Maslin* from the type locality; B and C from *K. Newbey* 8099; D from *B. R. Maslin* 4834 (the type).

Other collections examined. WESTERN AUSTRALIA: 9 km NE of Norseman, *K. Newbey* 7531 (PERTH); near Jimberlana Hill, 8 km NE of Norseman, *K. Newbey* 8099 (NSW, PERTH); 2 km NW of Lake Cronin, c. 45 km E of Hyden, *K. Newbey* 9177 (PERTH).

Distribution. (Figure 3) Of scattered occurrence in the eastern goldfield and southern wheatbelt areas of south-west Western Australia in the Coolgardie and Roe Botanical Districts (1:250 000 maps H51-13, I51-2; I50-4). *Acacia kerryana* is possibly more common than is indicated by current collections, but as the species is of low stature and flowers during the summer when generally little collecting is done, it may well have been overlooked in the past.

Habitat. Acacia kerryana seems always to be associated with low rocky hills. The Jimberlana Hill population occurs on a moderately exposed low stony ridge in shallow, well drained, granitic, loamy sand. The Spargoville population is restricted to a rocky hill and grows in shallow, red-brown loam in association with various species of *Acacia* (e.g. *A. erinacea, A. pachypoda, A. rendlei, A. warramaba*), *Casuarina campestris, Triodia scariosa* and mallee eucalypts. *Acacia kerryana* does not inhabit the taller scrub, dominated by *Acacia acuminata* and *Casuarina campestris,* occurring on deeper soil in a saddle adjacent to this hill. Near Lake Cronin the species grows in stony, red clayey loam on a moderately exposed slight slope.

Flowering and fruiting period. Based on herbarium label information the species is known to flower in late October and mid-February, suggesting a continuous season from late spring to summer. The fruiting period is uncertain.

On account of its obloid flower-heads and its plurinerved phyllodes *A. kerryana* is placed in section Juliflorae (Benth.) Maiden et Betche and seems most closely related to two reasonably common wheatbelt species, *A. filifolia* Benth. and *A. merinthophora* E. Pritzel. Besides being distributed further east (Maslin and Pedley, in press), *A. kerryana* is distinguished from both these species by its smaller stature, its decurrent phyllodes which are terete (not ± quadrangular) when dry and its smaller calyx.

Acacia kerryana is the second species with decurrent phyllodes recorded for section Juliflorae, the other being *A. aciphylla* Benth. (see Maslin, 1977). These two species are not particularly closely related to one another and neither is at all close to section Alatae (Benth.) Pedley, a heterogeneous group of species characterised by decurrent phyllodes and globular flower-heads.

Unlike the condition found in pulvinate species, the dead phyllodes of *A. kerryana* are persistent. Living phyllodes at branch apices are light olive green but upon dying they turn first orange then grey. The result of this progressive colour change was observed at the type locality in February 1981 when the plants were in full flower. In August 1981, however, plants from the same population lacked the intermediate, orange-coloured phyllodes. This suggests that phyllode death occurs seasonally at about the time of flowering.

I first encountered this new species in February 1981 while investigating populations of *A. warramaba* (see below) south of Spargoville. Unbeknown to me at the time, Mr Ken Newbey had already collected *A. kerryana* 5 months previously from near Norseman.

The species is named in honour of my good friend Ms Kerry Ward, librarian at the Western Australian Herbarium from 1975 until 1977 and presently deputy librarian at the W.A. Department of Agriculture.

2. **Acacia warramaba** Maslin, sp. nov. (Figure 2)

Acacia redolens Maslin affinis a qua ramulis nec resinoso-costatis, phyllodiis plerumque angustioribus longioribusque et nervis plus numerosis confertisque, nec anastomosantibus, differt.

Typus: Eyre Highway, 15.5 km E of Fraser Range, Western Australia. "Shrub 3 m tall with phyllodes concentrated towards ends of branches, 3-6-branched near ground level; hark smooth, grey; phyllodes spreading-erect, medium olive green, characteristically hooked at their apices. Red clay in *Casuarina, Cassia, Dodonaea* scrub with spinifex. Near top of rise just below a band of tall mallee eucalypts." 17 February 1981, *B. R. Maslin* 4843 (holo: PERTH; iso: CANB, K).

Shrubs to 3.5 m tall with 3-6 spreading-erect main branches (to 5 cm diam.) arising from near ground level, bushy and rounded (to 3 m diam.) when young but at maturity becoming infundibular and more open with the phyllodes concentrated towards the ends of the branches. *Bark* smooth except at base of mature main stems where it may become finely longitudinally fissured, grey except for the yellow or brown branch apices which are rarely glaucescent. *Branches* terete but somewhat angular towards their apices, finely ribbed (ribs most prominent immediately below insertion of the phyllodes), marked with distant scars of fallen phyllodes. *New shoots* arising from distal end of raceme axis, resinous. *Stipules* deciduous. *Phyllodes* variable, linear to very narrowly elliptic or very narrowly oblanceolate, (3)4-8(10) cm long, 3-6(10) mm wide, length to width ratio (6)8-20(40), flat, spreading-erect to distinctly ascending, not particularly rigid, straight to slightly curved, light to medium olive green, rarely glaucescent, glabrous or sometimes glabrescent; *nerves* numerous, parallel and not anastomosing, close together (interstices 0.1-0.2 mm apart), impressed but the central one very slightly more evident that the rest; *apices* characteristically hooked, acute, not pungent, brown; *pulvinus* terete, 1-2 mm long, finely transversely wrinkled, yellow; *gland* very obscure, situated on upper margin of phyllode at the distal end of the pulvinus. *Inflorescences* comprising short axillary racemes of 2(3-4) flower-heads, 1(2) per node, scattered along branches and not showy; *raceme axes* 2-5 mm long, terminated by a vegetative bud which grows out following anthesis, hoary or sometimes (especially when in fruit) glabrous. *Peduncles* 4-8 mm long, indumentum as on raceme axes; *basal peduncular bract* sub-persistent, triangular, c. 0.5 mm long, light brown. *Flower-heads* globular, light golden, c. 45-flowered, flowers densely arranged, small (c. 3.5 mm diam. just prior to anthesis), slightly resinous; *bracteoles* linear-spathulate, c. 1 mm long, glabrescent, the laminae observable (at x10 mag.) between flowers in inflorescence buds, ovate, inflexed, concave and brown. *Flowers* 5-merous. *Sepals* linear-spathulate, 2/3-3/4 length of petals, claws very narrow and translucent, laminae slightly concave brown and sparsely ciliolate. *Petals* 1.5 mm long, glabrous, nerveless. *Legumes* narrowly oblong, to 7 cm long, (5)6-8 mm wide, pendulous, chartaceous, straight or slightly curved, frequently slightly undulate, rarely semicircinate or tardily sigmoid, raised over seeds, slightly shiny, red-brown when mature, grey-brown prior to maturity, glabrescent, very obscurely transversely nerved, abruptly narrowed at apex, basal stipe 3-4 mm long; *margins* usually not or only slightly contricted between seeds however random deep constrictions may occur, marginal nerve narrow and yellowish brown. *Seeds* normally transverse to oblique within the legume, sometimes a few seeds are longitudinal, obloid-ellipsoid but truncate along margin adjacent to the aril, size variable, 3-4.5 mm long and 2-3 mm wide, somewhat compressed (1-1.5 mm thick), colour variable, light brown or grey-brown to blackish, slightly shiny;

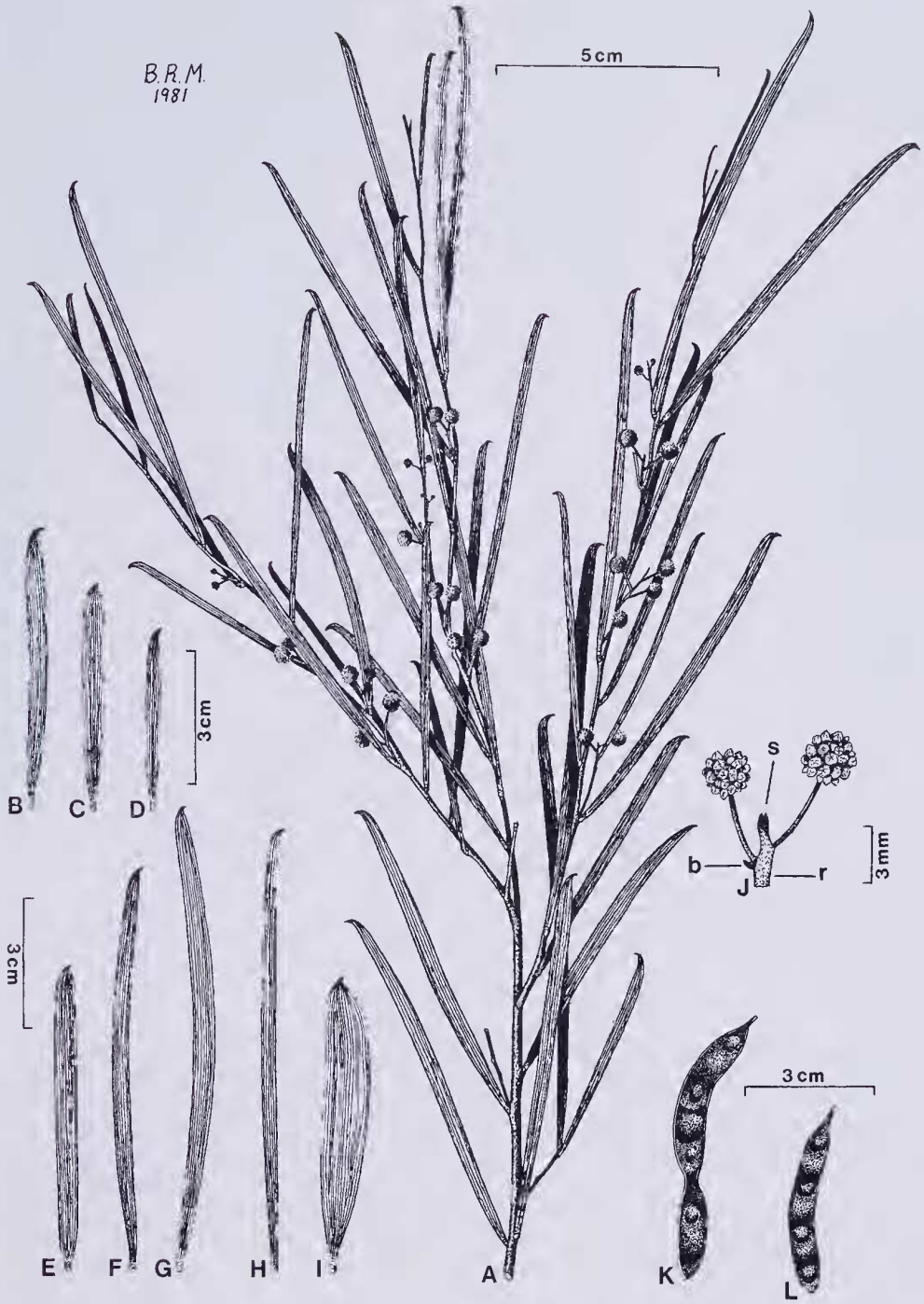

Figure 2. *Acacia warramaba*. A—Portion of branch. B to I—Phyllodes showing variability (D—an atypically small phyllode; I—an atypically broad phyllode; E to G—samples from separate plants in a single population). J—Inflorescence showing short raceme axis (r) with a dormant vegetative shoot(s) at its apex; note persistent bract (b) at base of one peduncle. K, L—Legumes showing variability.

A from *B. R. Maslin* 4843 (the type); B from *A. S. George* 8599; C from *B. R. Maslin* 2465; D from *A. S. George* s.n., 6 Feb. 1963; E from *B. R. Maslin* 4836B; F from *B. R. Maslin* 4836; G from *B. R. Maslin* 4836A; H and J from *M. J. D. White* s.n., 24 Feb. 1979; I from *K. Newbey* 6299; K from *A. E. Orchard* 4178; L from *M. J. D. White* s.n., 7 Feb. 1979.

pleurogram very obscure, "u"-shaped, open towards the hilum; *areole* 0.4-0.6 mm long, 0.2-0.5 mm wide; *funicle* filiform, 1.5-2 mm long, reflexed below and expanded into a yellowish clavate *aril* which extends down about 1/3-1/2 the length of the seed.

Other collections examined. WESTERN AUSTRALIA: Mt Day in the Bremer Range, *J. S. Beard* 3843 (PERTH); 56 mi (89.6 km) W of Eyre Highway, on Hyden-Norseman road, *A. S. George* 4343 (PERTH); 10 mi (16 km) E of Fraser Range on Eyre Highway, *A. S. George* 8599 (PERTH); ± 55 mi (88 km) W of Eyre Highway, on Hyden-Norseman road, 6 Feb. 1963, *A. S. George* s.n. (PERTH); 35 km N of Norseman towards Coolgardie, *B. R. Maslin* 2440 (CANB, K, PERTH); 9 km N of Daniell Siding towards Norseman, *B. R. Maslin* 2465 (PERTH); 1.5 km S of Spargoville (c. 45 km S of Coolgardie) on the Coolgardie-Esperance Highway, *B. R. Maslin* 4823 (AD, BRI, MEL, NSW, PERTH); 1 km S of Spargoville (c. 45 km S of Coolgardie) Coolgardie-Esperance Highway, *B. R. Maslin* 4836, 4836A and 4836B (all CANB, K, PERTH); 12.5 km E of Fraser Range on Eyre Highway, *B. R. Maslin* 4844 and 4844A (both PERTH); 34.5 km N of Norseman on Coolgardie-Esperance Highway, *B. R. Maslin* 4845 (PERTH); 30.5 km W of Norseman, *K. Newbey* 6299 (MEL, PERTH); Fraser Range, c. 115 km E of Norseman, 30°32′S, 122°58′E, *A. E. Orchard* 4178 (PERTH-ex AK); 27 mi (43 km) S of Coolgardie, *R. D. Royce* 6441 (PERTH); 1 km SE of Spargoville, near Coolgardie, *M. J. D. White* s.n. 7 Feb. 1979 (PERTH) and 24 Feb. 1979 (CBG, NY, PERTH).

Distribution. (Figure 3) The eastern goldfields area of south-west Western Australia in the Coolgardie Botanical District (1:250 000 maps H51-13, 14; I51-1, 2). Of scattered occurrence in an area bounded by Mount Day in the Bremer Range, Spargoville, Fraser Range and Lake Dundas.

Habitat. Found in undulating, low hilly country in red loam or clay which frequently has rock inclusions. The rocks at both the Mount Day and Fraser Range populations are recorded as being greenstones i.e. metamorphosed volcanic and sedimentary rocks. The species normally grows in mallee eucalypt woodland often with a ground cover of spinifex (*Triodia scariosa*). Species of *Acacia, Cassia, Casuarina* and *Dodonaea* are frequent associates of *A. warramaba.*

Flowering and fruiting period. Judging from herbarium label data, flowering occurs in summer between November and February. Bushes during this period frequently also bear legumes with mature seeds which are presumably from the previous years flowering.

On account of its plurinerved phyllodes and its globular flower-heads *A. warramaba* is placed in section Plurinerves (Benth.) Maiden et Betche. The new species seems most closely allied to *A. redolens* Maslin from which it can be distinguished by its branchlets which are not resin-ribbed, its phyllodes which are generally longer and narrower and with more numerous, closely arranged, non-anastomosing nerves and its legumes which are broader, flatter and less constricted between the seeds. Unlike *A. redolens, A. warramaba* is not a particularly fragrant shrub. The known geographical ranges of these two species do not overlap although only about 50 km separated them in the area south of Norseman between Daniell Siding and Salmon Gums.

Acacia warramaba has very variable phyllodes (Figure 2B-I). Young regrowth shrubs, especially following fire, tend to have longer and often narrower phyllodes than do mature shrubs from undisturbed sites. Likewise, there is considerable

variability in the size of legumes (Figure 2K and L) and seeds, the latter also showing variation in colour from light brown to almost black. Such extremes in seed colour are not common in *Acacia*.

This new species was first brought to my attention in 1975 by Professor M. J. D. White. It is one of the food plants for the parthenogenetic grasshopper *Warramaba virgo* (White, 1980; White and Contreras, 1981 and in press).

The specific epithet refers to the grasshopper genus *Warramaba*.

Acknowledgements

Special thanks are due to Professor Michael White for drawing my attention to *A. warramaba* and for accompanying me on a most enjoyable field excursion in February 1981 to inspect the species. During this trip *A. kerryana* was also located by the author. Ms Suzanne Curry is thanked for her very competent technical and field assistance and Mr Paul Wilson for preparing my Latin diagnoses. The project was conducted at the Western Australian Herbarium (PERTH) with financial assistance provided under an Australian Biological Resources Study grant from the Bureau of Flora and Fauna.

References

Maslin, B. R. (1977). Studies in the genus *Acacia* (Mimosaceae)—6. Miscellany. Nuytsia 2: 145-161.

Maslin, B. R. and Pedley, L. (In press.) The distribution of *Acacia* in Australia. Part 1. Species distribution maps. W. Austral. Herb. Res. Notes No. 6.

White, M. J. D. (1980). The genetic system of the Parthenogenetic Grasshopper *Warramaba virgo*. Roy. Ent. Soc. London. Symposium No. 10: 1-13.

White, M. J. D. and Contreras, N. (1981). Chromosome Architecture of the Parthenogenetic Grasshopper *Warramaba virgo* and its Bisexual Ancestors. Chromosomes Today 7:165-175.

White, M. J. D. and Contreras, N. (In press.) Cytogenetics of the parthenogenetic grasshopper *Warramaba virgo* and its bisexual relatives. VIII. Evolution of karyotypes and c-banding patterns in the clones of *W. virgo*. Cytogenetics and Cell Genetics.

Index to specimens studied

This index is arranged alphabetically according to the name of the collector. Numbers in parentheses refer to the corresponding numbered species in the text. Unless otherwise stated, the specimens are lodged at Western Australian Herbarium (PERTH).

Beard, J. S. 3843 (2).

George, A. S. 4343 (2); 8599 (2); s.n., 6 Feb. 1963 (2).

*Maslin, B. R.*2440 (2-CANB, K, PERTH); 2465 (2); 4823 (2-AD, BRI, MEL, NSW, PERTH); 4834 (1-Type, CANB, G, K, MEL, NY, PERTH); 4836, 4836A and 4836B (2-all CANB, K, PERTH); 4843 (2-Type, CANB, K, PERTH); 4844 and 4844A (2); 4845 (2).

Newbey, K. 6299 (2-MEL, PERTH); 7531 (1); 8099 (1-NSW, PERTH); 9177 (1).

Orchard, A. E. 4178 (2).

Royce, R. D. 6441 (2).

White, M. J. D. s.n. 7 Feb. 1979 (2) and 24 Feb. 1979 (2-CBG, NY, PERTH).

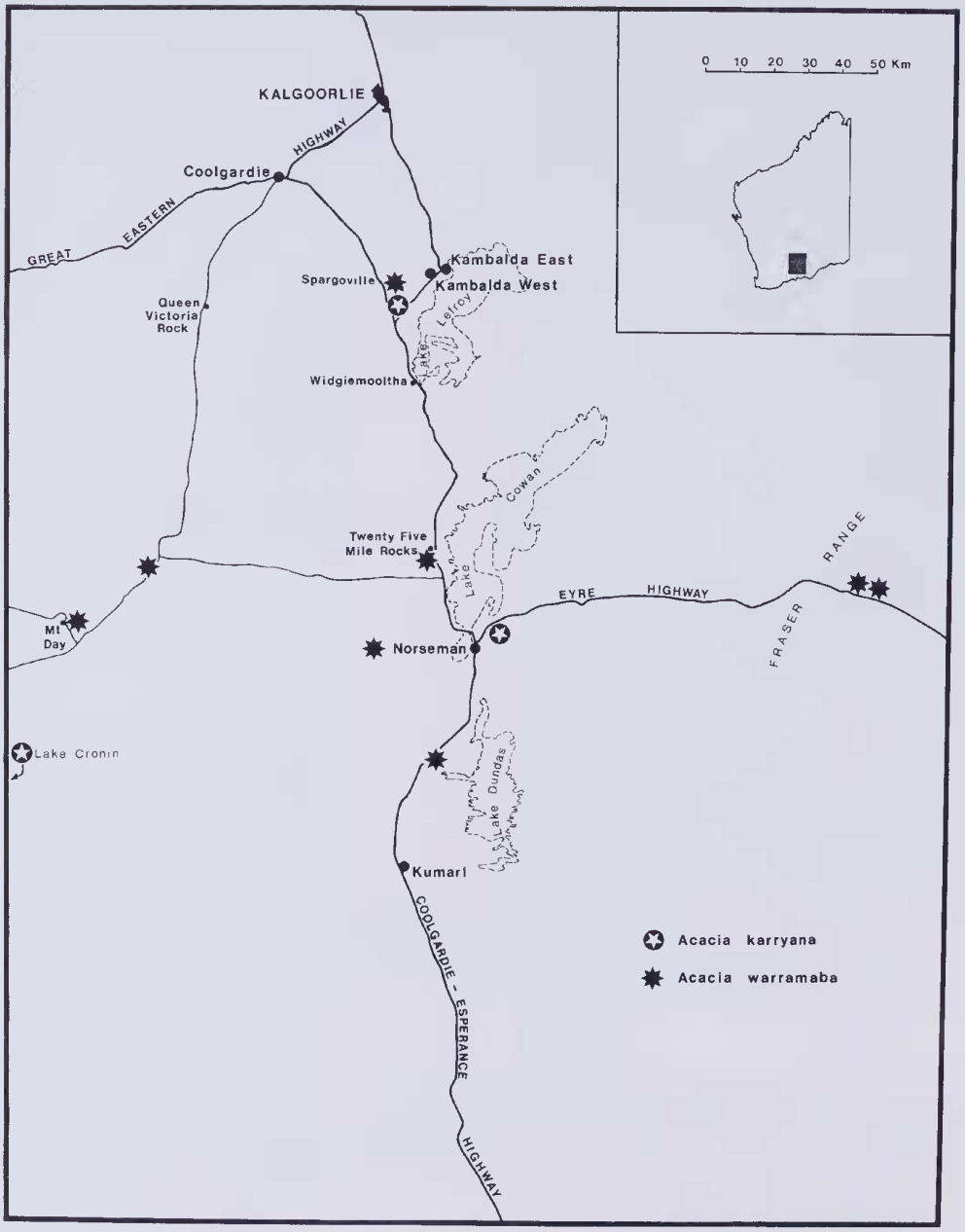

Figure 3. Distribution of *Acacia kerryana* and *A. warramaba*.