Studies in the genus Acacia—3
—The taxonomy of A. saligna (Labill.) H. Wendl.—

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Abstract

Confusion over the application of the two names *Acacia saligna* (Labill.) H. Wendl. (1820) and *A. cyanophylla* Lindl. (1839) is discussed. These two species are considered to be synonymous. *Acacia saligna* is lectotypified, a description is provided, and the morphological variation is discussed.

Introduction

The application of the two names *A. saligna* (Labill.) H. Wendl. and *A. cyanophylla* Lindl. has long been a source of confusion for taxonomists. Bentham (1837) regarded these species as synonymous, but in 1842 and 1864 he treated them as separate taxa (commenting on their similarity). Herbert (1920) discussed the differences between what he believed to be *A. saligna* and *A. cyanophylla*. It is worth noting that Herbert erroneously gave the type locality of *A. saligna* as King George Sound (which is Albany, 300 miles west of the actual type locality, Esperance). The state of confusion between these two species has been carried over to the present day.

Neither Bentham nor Herbert saw the type collection of *A. saligna*; had they done so they would have seen that it consisted of a mixture of two taxa (see below). The lectotype of *A. saligna* as here selected represents the same taxon that was later described as *A. cyanophylla*. Actually, what Bentham and Herbert thought to be two separate taxa are in fact the one variable species, *A. saligna*.

Type specimens

Acacia saligna (Labill.) H. Wendl. (1820) was based on *Mimosa saligna* Labill. (1807). At Florence (FI), where much of Labillardière's collection is housed, there are four sheets which could have been used for drawing up the description of *M. saligna* (see Figure 1). This possible syntype material is a mixture of two taxa: one sheet is *A. saligna* (sensu lectotypico—Figure 1B); one sheet is *A. ligulata* Cunn. ex Benth. (attached to this is Labillardière's manuscript description of *Mimosa saligna* and, in addition, this sheet is labelled " Typus ", which in view of the present lectotypification is incorrect—Figure 1C); while the two remaining sheets carry a mixture of these taxa (Figures 1A and 1D). The left hand specimen on the mixed sheet labelled " Herb. Webbianum. Ex Herb. Labillardière. Terra Diemen " (with no other details) is here selected as the lectotype of *A. saligna* (Figure 1A). This specimen represents the taxon later described as *A. cyanophylla* Lindl., which therefore becomes a taxonomic synonym of *A. saligna*. In order to preserve current usage, none of the specimens of *A. ligulata* were chosen as the lectotype of *A. saligna*. At Melbourne (MEL) there are two fragments (ex FI) from Labillardière's collection; these are *A. saligna* and *A. ligulata*.

The particular form of *A. ligulata* represented in the type collection differs (in part) from *A. saligna* in that its phyllodes are shorter, narrower, and have less prominent midribs, and its calyx is smaller and sinuate-toothed. Labillardière apparently recognized these differences but was unsure of their significance, for pinned to the *A. saligna* sheet (Figure 1B) is the following note in his hand " varietas ? fol. angustioribus, brevioribusque. in floribus omnia eadem, calyce tamen minori, dentibusque brevioribus.". Undoubtedly this note refers to *A. ligulata*, but it has erroneously been attached to the *A. saligna* specimen.

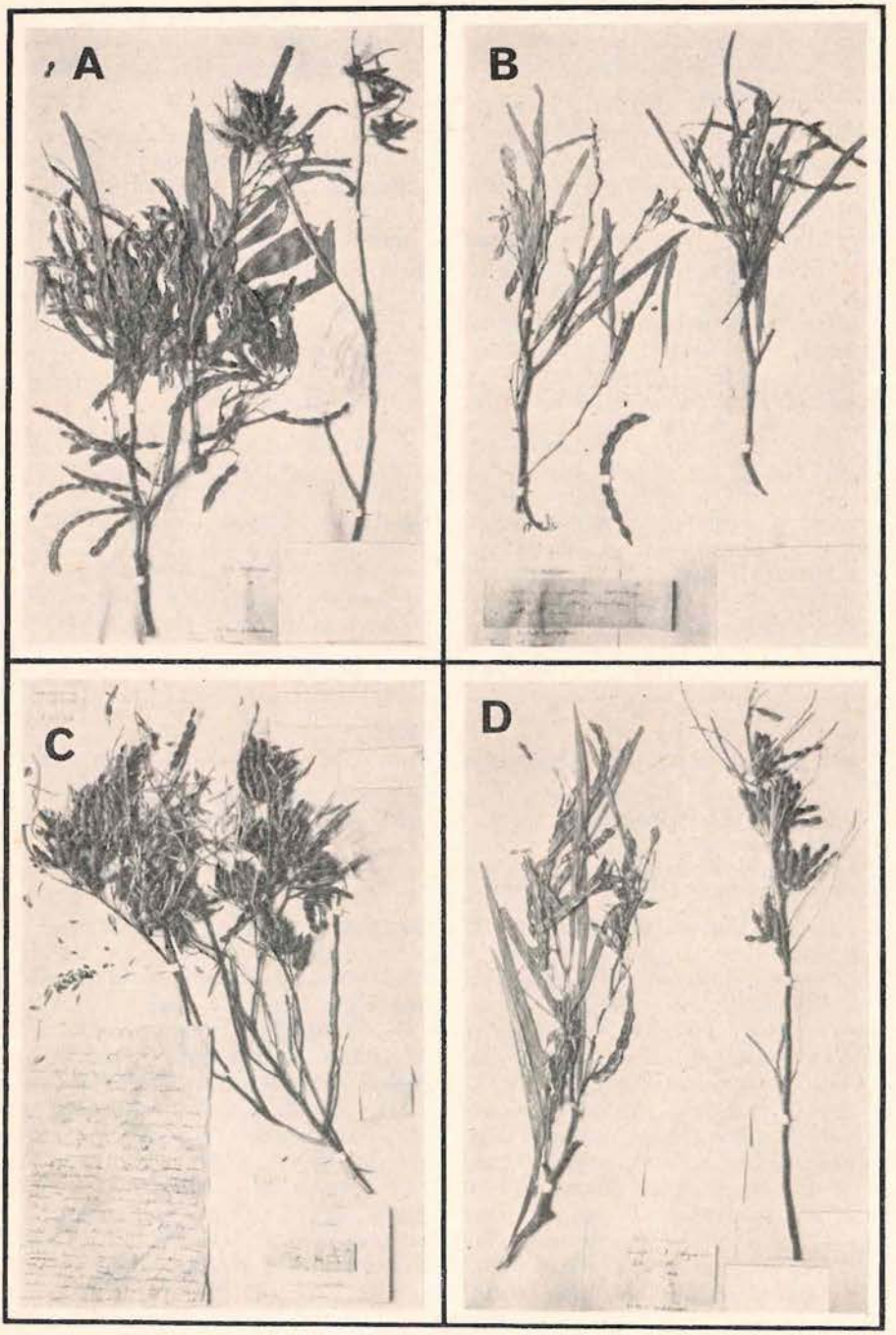

Figure 1—Type collection of *A. saligna* at Florence. A—*Acacia ligulata* (right hand specimen) and lectotype of *A. saligna* (left hand specimen). B—*Acacia saligna*. C—*Acacia ligulata* (incorrectly labelled " Typus "). D—*Acacia ligulata* (right hand specimen) and *A. saligna* (left hand specimen).

In the original description of *Mimosa saligna*, no mention is made of a narrow phyllode variety (although De Candolle, 1825, p. 450, did comment on this point). Labillardière apparently combined the characters of *A. saligna* and *A. ligulata* in his description, but the plate accompanying this text definitely depicts *A. saligna*.

The type of *A. cyanophylla* is at Cambridge (CGE), and a photograph of it has been seen by the author. It was collected by Capt. James Mangles from the Swan River (i.e. in the vicinity of Perth on the west coast of Western Australia).

Historical notes

Labillardière was one of the naturalists who accompanied the D'Entrecasteau expedition that landed in Western Australia at Esperance Bay* and again in Tasmania (Terre Van Diemen) in 1792–93 while searching for the lost La Pérouse expedition. Labillardière made collections from one of the islands in the Bay (perhaps Woody Island—see Willis, 1953) and also from the nearby mainland while searching for a lost member of the expedition.

Willis (1953 and 1959) does not list *A. saligna* for any of the Recherche islands that he visited. However, on the mainland, at least around Esperance, *A. saligna* and *A. ligulata* occur together, thus explaining the mixture of type material at Florence. Considering this, and also because neither *A. saligna* nor *A. ligulata* occurs in Tasmania, it is apparent that the locality " capite Van-Diemen " given in the original description (" Terra Diemen " on the lectotype) of *A. saligna* is an error. The correct locality should have been " terra Van Leuwin ", a name which Labillardière used to refer to Esperance Bay (see Stafleu, 1967 p. 24). A similar error in locality citation has occurred in *Leptospermum sericeum* Labill. (see Gardner, 1964, p. 61).

Taxonomy

Acacia saligna (Labill.) H. Wendl., Comment. Acac. 4, 26 (1820).—Figs. 2 & 3.

Mimosa saligna Labill., Nov. Holl. Plant. Specim. 2:86 t.235 (1807). Lectotype: " Terra Diemen. Herb. Webbianum. Ex Herb. Labillardière "—left hand specimen. (Fl—photograph seen.)

Acacia cyanophylla Lindl. Edward's Bot. Reg. 25: Misc. 45 (1839). Holotype: Swan River, *J. Mangles*. (CGE—photograph seen.)

Dense *shrub or small tree* 2–6(10) m tall; *trunk* solitary or dividing near base into a few main branches; *bark* smooth and grey to red brown on branchlets and juvenile plants, dark grey and fissured with age; *branchlets* often pendulous, terete but often flattened towards the apex, normally slightly flexuose, finely ribbed, glabrous, often glaucous when young. *Stipules* caducous. *Phyllodes* variable, linear to lanceolate, 8–25 x 0·4–2·0 cm (often much larger towards the base of the plant, 20–32 x (3)4–8 cm), straight or falcate, often pendulous, glabrous, green to glaucous, dull to shiny, midrib conspicuous, lateral veins fine (absent on very narrow phyllodes); *pulvinus* 1–2(3) mm long, rugose. *Gland* solitary, situated on upper margin of phyllode at (or near) distal end of pulvinus, oblong to circular, 1–2 mm diam. *Inflorescence* racemose (occasionally reduced to a single flower head), axillary but sometimes terminal; *axis* 0·3–3(6) cm long, glabrous; *peduncles* (1)2–10(13) per raceme, 5–15 mm long (to 25 mm when in fruit), glabrous. *Flower heads* bright yellow, globular, (5)7–8(10) mm diam. at anthesis, with 25–55(78) flowers. *Bracteoles* 1–1·5 mm long, sparsely pilose; claws linear; laminae inflexed. *Flowers* 5-merous; *calyx* 1/2–2/3 length of corolla, shortly lobed, lobes obtuse ± thickened inflexed and glabrous or minutely ciliolate, tube normally glabrous; *petals* (1·5)2–3 mm long, connate for 2/3–3/4 their length, glabrous, 1-nerved

* Esperance is situated on the south coast of Western Australia on Esperance Bay, into which the Recherche Archipelago extends.

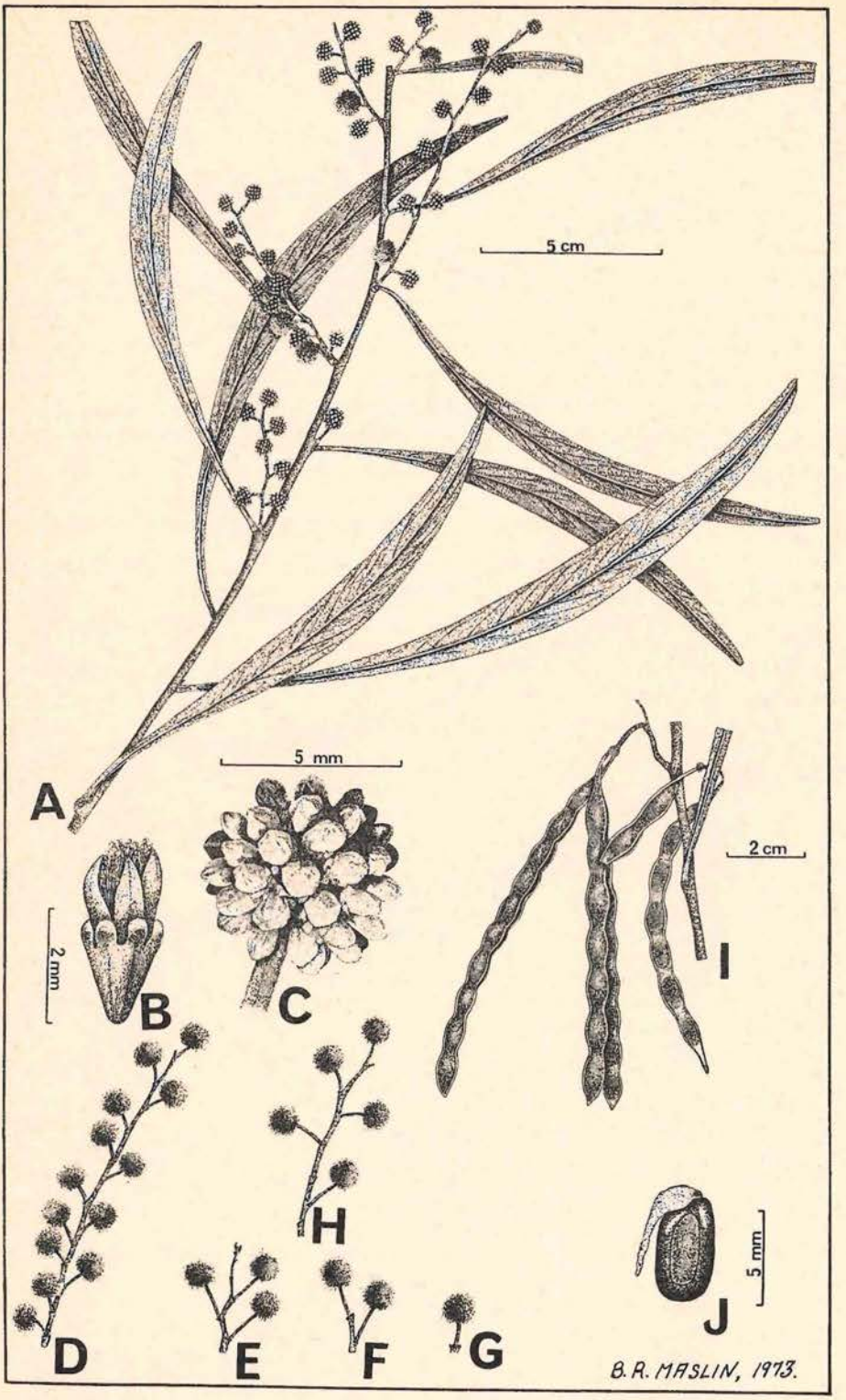

Figure 2—*Acacia saligna*. A—Portion of branch. B—Flower. C—Flower head. D to H—Inflorescence variability. I—Legumes. J—Seed.

A from C. Andrews s.n.; B-D from A. Morrison s.n.; E from T. E. H. Aplin 830; F-G from A. M. Ashby 3682; H from A. M. Ashby 3672; I from C. A. Gardner s.n.; J from B. R. Maslin 3204.

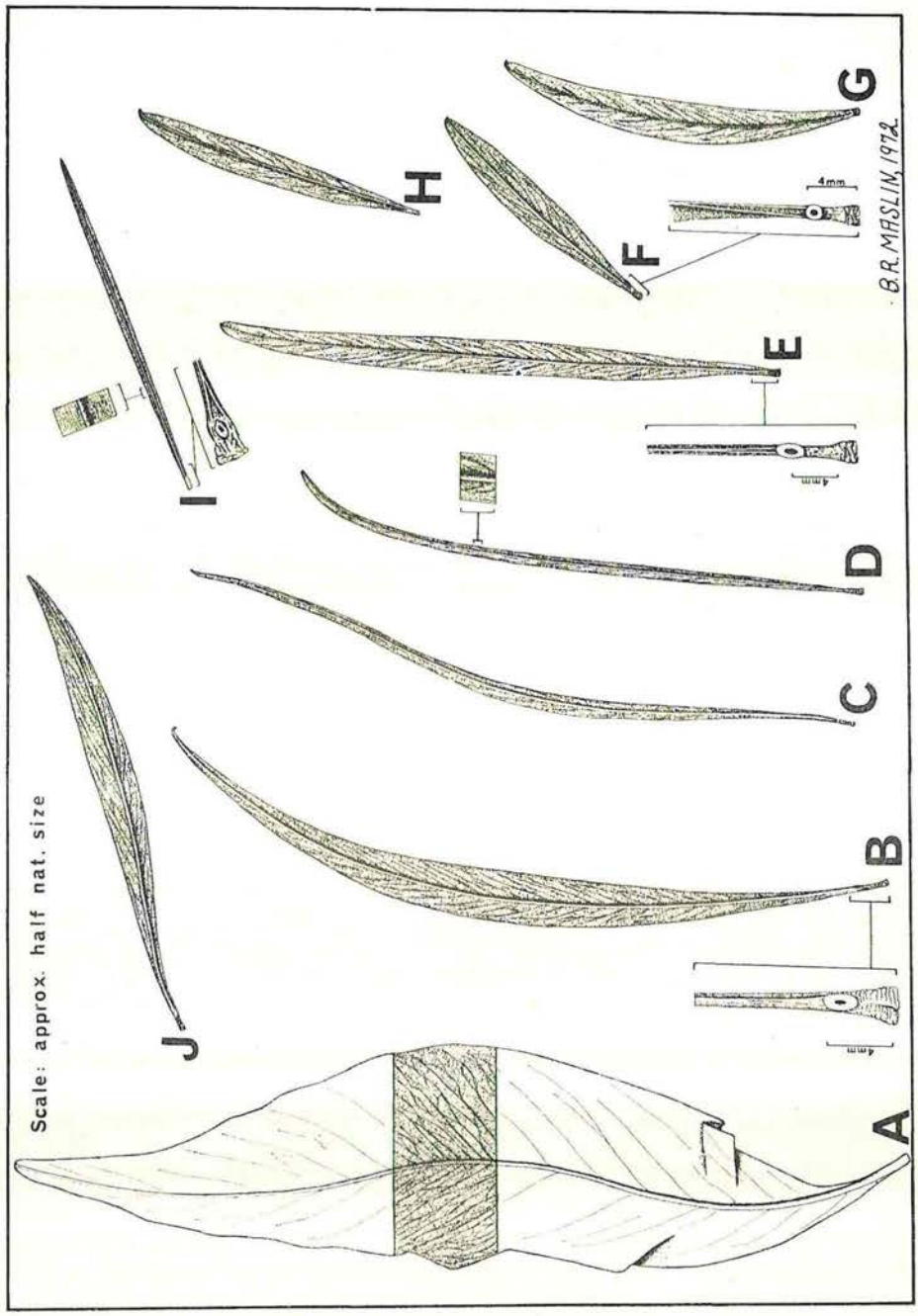

Figure 3—*Acacia saligna* showing phyllode and gland variability.
A from B. R. Maslin 1629; B from B. R. Maslin 1627; C from B. R. Maslin 1628; D from A. M. Ashby 3683; E from A. S. George 1555; F from Long 74; G from A. C. Burns 13; H from Gardner and Blackall s.n.; I from W. E. Blackall 1109; J. from Kimber 178.

(nerve often indistinct); *ovary* glabrous. *Legumes* linear, (3)8–12(14) x 0·4–0·6 cm, slightly contracted between seeds, surface slightly undulate, glabrous, brown; margins slightly thickened, yellow. *Seed* longitudinal, oblong to slightly elliptic, (4)5–6 x (2·5)3–3·5 mm, dark brown to black, shiny; *pleurogram* prominent, continuous, often bordered by light coloured tissue; *areole* 3–3·5 x 1–1·5 mm; *funicle* clavate, straight (occasionally folded), yellowish, narrowed and dark brown at the hilum.

Distribution and habitat: (Fig. 4) South-west Western Australia; in general terms, west of a line extending from the Murchison River (around Ajana) to Mount Ragged (which is about 150 km east north east of Esperance). This species is also cultivated in the Eastern States as well as abroad—see below. *Acacia saligna* is very common on the poor sandy soils of the Swan Coastal Plain from about Gingin southward to Busselton, and also on the heavier clayey soil around Geraldton. In many places, for example the sandplains north of Gingin, the Darling Range, and the Great Southern (from about Williams southward to Manjimup and Mount Barker), *A. saligna* is more or less restricted to creeks and rivers. It is quite common along the south coast from Albany to Esperance, but it is best developed in the deep sands and loams associated with the water courses throughout this area. In the wheatbelt (from about Kellerberrin to Lake King), *A. saligna* is restricted to the base of many of the large granite rocks which are common there, e.g. Jilakin Rock, Merredin Rock, Pallarup Rocks, and Mounts Hampton, Stirling, and Gibbs. In places, *A. saligna* occurs on the coastal dune system, here it often forms dense thickets in the hollows between the sand hills.

WESTERN AUSTRALIA: Gingin, *W. B. Alexander* s.n., Sept. 1919; Claremont, *C. Andrews* s.n., Aug. 1902; Pingelly, *T. E. H. Aplin* 830; Near Lake Muir, *A. M. Ashby* 3672 (dup. RSA); Near East Cranbrook, *A. M. Ashby* 3682 (dup. E); North of Cranbrook, *A. M. Ashby* 3683 (dup. NSW); Mount Gibbs, *J. S. Beard* 3710; Banks of Murchison River, Galena, *W. E. Blackall* 609; Gibsons Soak, *W. E. Blackall* 1109; 36 mi west of Dalwallinu, *M. I. H. Brooker* 1910; 3 mi north of Geraldton, *A. C. Burns* 13; Muntadgin, *E. T. Bailey* 147; Esperance, *C. A. Gardner* s.n., 18 Dec. 1940; Mount Stirling, *C. A. Gardner* 6527; Cape Le Grand, *C. A. Gardner* 14119; Banks of Gairdner River, *Gardner and Blackall* s.n., Oct. 1928; Pallarup Rocks, *A. S. George* 1555; Mount Barker, *Goadby* s.n., Oct. 1898; 14 mi west of Northam, *J. W. Green* 539; Yanchep National Park, *A. M. James* 287; Dwellingup area, *P. C. Kimber* 178; 30 mi east of Geraldton, *Long* 74; Wongan Hills, *Lullfitz* 1646; Jilakin Rock, *C. V. Malcolm* s.n., 24 Oct. 1959; Perth metropolitan area, *B. R. Maslin* 1627, 1628, 1629 (dups. NSW); Esperance, *B. R. Maslin* 3204; Mount Hampton, *N. L. McKenzie* 252; Cannington, *A. Morrison* s.n., 1 Aug. 1903; 1 mi east of Ongerup, *K. Newbey* 557; West Australia, *Oldfield* s.n. (ex MEL); Merredin, *R. D. Royce* 9051; Near Moora, *F. W. Went* 120; Mount Ragged, *P. G. Wilson* 10,090 (dup. K).

Flowering and fruiting periods: Flowers from August to October; mature legumes present from November to January.

Domin (1923) described *A. cyanophylla var. dorrienii* from material collected by A. A. Dorrien-Smith from Yallingup and Cape Naturaliste. Although I have not seen the type, I have made collections in the above region, and it appears as though *var. dorrienii* is in fact, *A. rostellifera.*

Bentham (1864) gave *A. leiophylla* Benth. as a synonym of *A. saligna.* Having examined photographs of the syntypes of *A. leiophylla* (" King George's Sound, Baxter "—in flower and in fruit), I think Bentham was incorrect when he effected this synonymy. However, until the types of *A. leiophylla* have been critically examined, the identity of this species remains in doubt.

As mentioned above, *A. saligna* is a polymorphic species and its range of variation includes *A. cyanophylla.* In general, previous authors have attempted to distinguish these two species by using habit, phyllode and funicle morphology, number of flowers per flower head, and petal nervation. However, these are variable characters and cannot be used to separate *A. saligna* and *A. cyanophylla.*

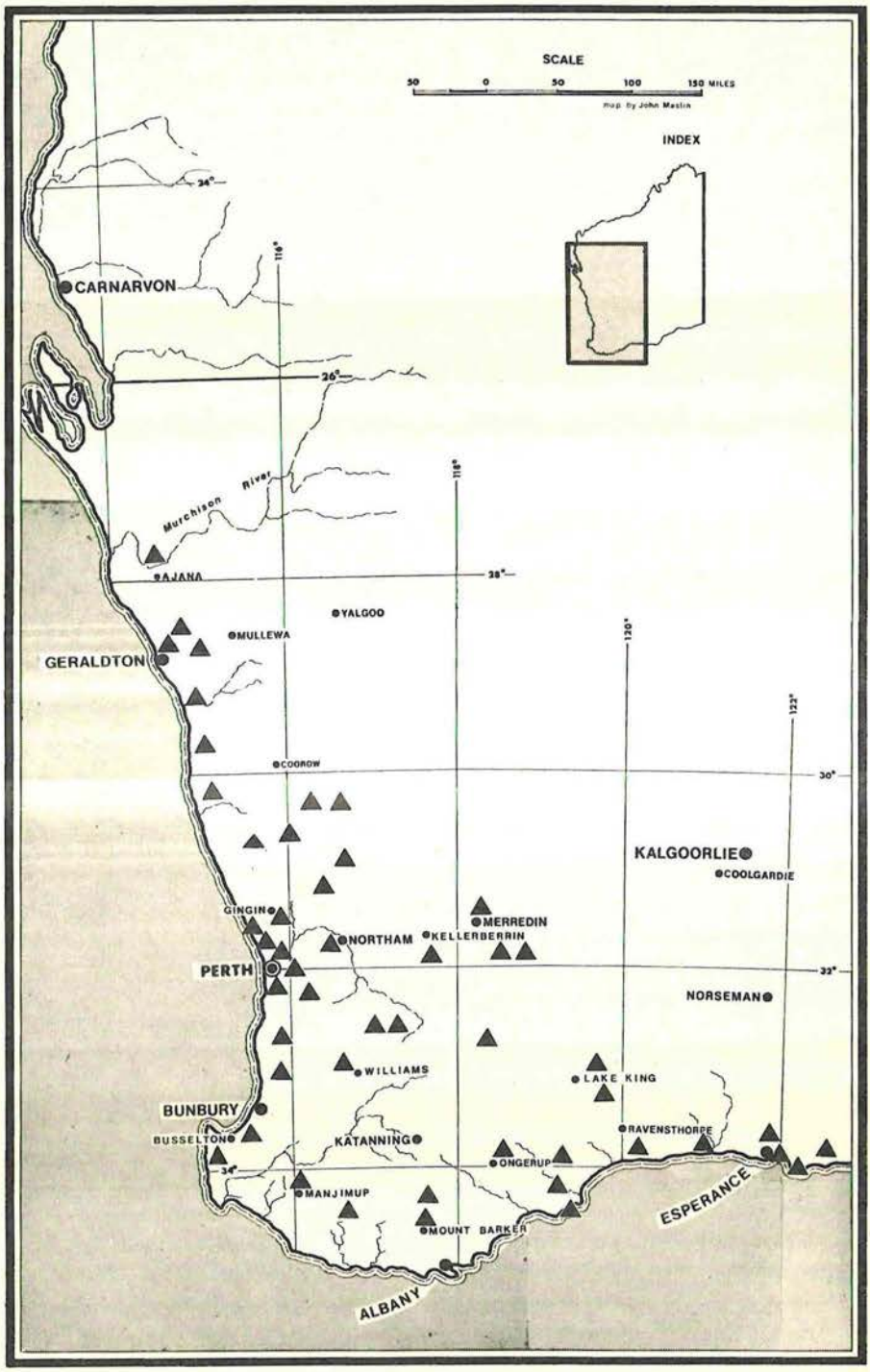

Figure 4—Distribution of *A. saligna*.

Acacia saligna is commonly a shrub, but it also grows into a small tree, especially in areas away from competition with other plants. The young shrubs, particularly on the Swan Coastal Plain, often have a dense glaucous foliage with conspicuously larger phyllodes towards the base of the plant. However, in other areas (e.g. around Geraldton) the larger basal phyllodes are absent and the foliage is not at all glaucous. As is evident from herbarium specimens as well as from field observations, the shape and size of the mature phyllodes vary considerably (Figure 3). The raceme axis ranges from 0·3 to 3(6) cm in length and bears (1)2–10(13) flower heads of 22–55(78) flowers. On a single specimen the axis can vary from 0·3 to 1·8 cm and the flowers from 26–42 per head. Sometimes the inflorescence is reduced to a single flower head with the peduncle articulated on a very short raceme axis (Figure 2G). Occasionally the apex of the raceme axis develops into a vegetative shoot: this has been observed on some individuals from the Geraldton and Wheatbelt regions. The funicle is normally clavate and yellowish with a brown coloured constriction at the hilum. Occasionally it is folded in the middle but has never been observed by the author to be thickened and folded at the hilar end as depicted by Herbert (l.c.) in figures 6 and 6a.

Acacia saligna appears to be closely related to *A. pycnantha* Benth. (an Eastern States species); however, the latter is distinguished by its stouter raceme axes and peduncles, its prominently tapered phyllode bases, its longer pulvinus, and its smaller glands.

In its growth habit, phyllode morphology, glabrous racemes, and large flower heads, *A. saligna* superficially resembles *A. ampliceps* B. R. Maslin (Nuytsia 1(4): 315). However, the flowers, legumes, and seeds of these two species are quite different.

Acacia saligna is occasionally confused with *A. microbotrya* Benth. and *A. rostellifera* Benth. but the legumes and seeds of these three species are different. In addition, *A. microbotrya* is distinguished by its smaller flower heads, its strigose raceme axes and peduncles, and its less prominent glands, while *A. rostellifera* differs in its truncate calyx and its phyllodes, which have a small gland near the apical mucrone as well as a marginal gland situated about 1 cm above the pulvinus.

Acacia saligna is an endemic Western Australian species, but it has been extensively cultivated (often under the name, *A. cyanophylla*) in the Eastern States as well as abroad, both for its horticultural value and as a source of tannin. As a young shrub it is normally quite attractive with its dense, sometimes glaucous, foliage and its bright yellow flower heads. As it matures, however, it often becomes openly branched and somewhat untidy; it is also susceptible to attack by the Gall Rust *Uromycladium tepperianum* (Sacc.) McAlpine (see Gathe, 1971).

Acacia saligna makes quick regrowth (both from suckers and from seedlings) after fire or clearing, especially along road verges. The robust seedlings are able to compete successfully with the introduced grasses that also commonly invade these disturbed areas. According to Newbey (1968 and pers. comm.) *A. saligna* is a good species for soil erosion control because it is quick growing and has an extensive root system. This species was introduced into South Africa around 1845 where it was used to stabilize sand in the Cape Flats area. It has since spread beyond the confines of the Flats and is now considered an undesirable plant in South Africa (Roux, 1961).

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