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All enquiries and manuscripts should be directed to:

The Editor – *NUYTSIA*
Western Australian Herbarium
Conservation and Land Management
Locked Bag 104 Bentley Delivery Centre
Western Australia 6983
AUSTRALIA

Telephone: +61 8 9334 0500
Facsimile: +61 8 9334 0515
Email: nuytsia@calm.wa.gov.au
Web: science.calm.wa.gov.au/nuytsia/

A taxonomic review of *Dicrastylis* sect. *Corymbosae* (Lamiaceae: Chloantheae), incorporating *Mallophora* as a new synonym

B.L. Rye

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

Abstract

Rye, B.L. A taxonomic review of *Dicrastylis* sect. *Corymbosae* (Lamiaceae: Chloantheae), incorporating *Mallophora* as a new synonym. *Nuytsia* 15(3): 445–455 (2005). Following a recent recommendation to conserve the name *Dicrastylis* Drumm. ex Harv. over *Mallophora* Endl., the two species previously included in the latter genus are here transferred to *Dicrastylis* sect. *Corymbosae* Munir. To achieve this, two new combinations, *Dicrastylis globiflora* (Endl.) Rye and *D. rugosifolia* (Munir) Rye, are made. The circumscription of *Dicrastylis* sect. *Corymbosae* is further altered by the removal of *D. nicholasii* F. Muell., and *D. glauca* is reduced to a synonym of *D. corymbosa*. A review of the section is presented. It is now comprised of five white-flowered species with cymes condensed into corymbosely arranged clusters, and is restricted to the south-west of Western Australia.

Introduction

In his revision of Chloanthaceae tribe Physopsidae, which is now regarded as part of Lamiaceae tribe Chloantheae, Munir (1978) divided the largest genus *Dicrastylis* Drumm. ex Harv. into five sections. Two of these sections are restricted to the south-west of Australia whereas the others are more widespread and predominantly in the arid zone. One of the south-western sections, *Dicrastylis* sect. *Dicrastylis* has recently been revised (Rye & Trudgen 1998). The other south-western group, *Dicrastylis* sect. *Corymbosae*, is reviewed here.

As envisaged by Munir (1978), *Dicrastylis* sect. *Corymbosae* consisted of the five species *D. corymbosa*, *D. glauca*, *D. nicholasii*, *D. reticulata* and *D. velutina*. One of these, the type species, *Dicrastylis corymbosa*, had originally been described under the older generic name *Mallophora* Endl. Bentham (1870) had already reduced the circumscription of *Mallophora* to a single species, *M. globiflora*, with 4-merous flowers. Munir (*loc. cit.*) maintained this circumscription but added a second 4-merous species, the newly described *M. rugosifolia*.

Recent studies (Munir 1991, Cantino 1992, Rye 1996 and Olmstead *et al.* 1999) have shed doubt on the separation of *Mallophora* from *Dicrastylis*, as discussed in Rye (2000), where it was proposed to unite the two genera by conserving *Dicrastylis* against the older name *Mallophora*. To have followed the normal rule of priority would have required many recombinations from the much more widely applied

and better known genus *Dicrastylis* to *Mallophora*. This would have been difficult to implement in view of the confused taxonomy in several species groups of *Dicrastylis* occurring in the arid zone, as these all need further study to determine how many taxa should be recognised. The proposal to conserve *Dicrastylis* has now been recommended by the Committee for Spermatophyta (Brummitt 2002: 796).

In the current review, *Dicrastylis* sect. *Corymbosae* still comprises five species, but not exactly the same five as recognised by Munir (1978). *D. nicholasii* is removed from this section and *D. glauca* is treated as a variant of *D. corymbosa*, reducing the original list to three species. The number of species recognised in section *Corymbosae* is restored to five by including *Mallophora globifera* and *M. rugosifolia* and by making the necessary recombinations to transfer them to *Dicrastylis*.

Methods

Since all of the taxa treated here have been revised by Munir (1978), new descriptions are not provided except for some additional information regarding plant height, the numbers of floral parts, distribution, habitat and flowering time. All recent collections, or a selection of them when numerous, are cited. Collections cited by Munir are not listed here unless their identification has recently been altered.

New distribution maps are provided incorporating the data from new collections and excluding any previously mapped localities that appear to be vague or inaccurate. They have been plotted on maps showing the interim biogeographic regions of Thackway & Cresswell (1995).

Placement of *Dicrastylis nicholasii* F. Muell.

One of the species included by Munir (1978) in *Dicrastylis* sect. *Corymbosae*, *D. nicholasii*, shows no close relationship to the other taxa he placed in this section, and does not match the original description of the section in its inflorescence. *Dicrastylis nicholasii* also differs from all other taxa that have been placed in sect. *Corymbosae* in being blue-flowered rather than white-flowered and in its distribution in a more arid part of Western Australia. It appears to be closely related to *D. flexuosa* (W.R. Price) C.A. Gardner, which it resembles in many characters including its inflorescence type and flower colour, and should certainly be placed in the same section as that species. Currently *D. flexuosa* is placed in *Dicrastylis* sect. *Verticillatae* Munir. However the delimitation of that section and two other sections of species occurring in the arid zone needs further study.

Descriptions and key

Dicrastylis sect. **Corymbosae** Munir (Munir 1978: 489). *Type: Dicrastylis corymbosa* (Endl.) Munir.

Mallophora Endl. *nom. rej.*, *Ann. Wien. Mus. Naturgesch.* 2: 206 (1838). *Type: Mallophora globiflora* Endl., lectotype, *fide* Munir (1978: 567) [= *Dicrastylis globiflora* (Endl.) Rye].

Lachnocephalus Turcz. *nom. rej.*, *Bull. Soc. Imp. Nat. Moscou* 22(2): 36 (1849). *Type: Lachnocephalus lepidotus* Turcz. [= *Dicrastylis globiflora* (Endl.) Rye].

Dwarf to medium-sized *shrubs*, all or most species producing multiple stems from a thick rootstock; stems with a dense indumentum of dendritic hairs. *Leaves* all or mostly opposite and decussate, dendritic-hairy at least on the veins of the lower surface. *Cymes* condensed into dense head-like or spike-like clusters, which are arranged in a terminal corymb or sometimes solitary and terminal on each branch. *Calyx* densely dendritic-hairy outside, glabrous inside; lobes 4 or 5(6), much longer than the tube. *Corolla* white, with long simple hairs inside on the base of the lobes and extending more than halfway down the tube, the base of the tube and most of the length of the lobes glabrous; lobes usually 4 or 5, rarely 6, more or less equal or the abaxial lobe somewhat larger than the rest, all shorter than the corolla tube, entire (not crenate). *Style* very shortly to deeply 2-branched.

Size and distribution. A section of five species from the south-west of Western Australia, occurring primarily in inland parts of the South West Botanical Province and extending slightly into adjacent parts of the South-western Interzone and Eremaean Botanical Province. Most of the species overlap in range. (Figure 1)

Notes. Sect. *Corymbosae* is similar to the other south-western group, sect. *Dicrastylis*, in having white flowers in a corymbose arrangement and with the margin of the petals entire. Unpublished molecular data (N. Streiber *pers. comm.*) indicate that these two groups are very closely related. Sect. *Corymbosae* can be distinguished from sect. *Dicrastylis* by its more condensed inflorescences and short corolla lobes in relation to the length of the corolla tube. In sect. *Dicrastylis* the corolla lobes are as long as or longer than the tube.

The three arid-zone sections of *Dicrastylis* need further study to reassess their boundaries, but can usually be readily distinguished from both of the south-western sections by their spike-like or pyramidal inflorescences as well as by their distribution patterns. They all occur in other states of Australia, and all of their Western Australian species are restricted to the arid zone except for one species that is associated with salt lakes in the south-west.

Key to species of *Dicrastylis* sect. *Corymbosae*

1. Flowers all 4-merous or with 5-merous flowers infrequent. Style divided for less than one third of its length, glabrous on upper half of the entire portion and on the branches
  2. Leaves ovate to narrowly obovate, 1.5–4 mm wide, usually densely hairy on upper surface at least at first, margins recurved. Flowers 6–7 mm long. Style branches 0.5–1 mm long at maturity. (Cadoux and Calingiri to Muntadgin.) ..... **D. globiflora**
  2. Leaves narrowly ovate or linear, 1–1.5 mm wide, largely glabrous on upper surface, margins revolute. Flowers 4–5 mm long. Style branches usually 0.2–0.3 mm long at maturity. (Mongers Lake to Bruce Rock to Die Hardy Range.) ..... **D. rugosifolia**
1. Flowers mostly 5-merous (rarely mostly 4-merous in *D. corymbosa*). Style divided for more than one third of its length, hairy throughout on the entire portion, with the hairs often extending onto the lower part of the branches
  3. Shrub *c.* 1 m high, occurring on granite outcrops. Leaves ovate or broadly ovate; undersurface with hairs restricted to the veins. (Pithara to Pingelly and Narembeen) ..... **D. reticulata**
  3. Shrub 0.1–0.6 m high, occurring on sandplains and other sandy habitats. Leaves ovate to oblong or (usually) narrowly so; undersurface hairy throughout

4. Leaves 4–12(15) mm long; upper surface usually grey-green, the revolute margins often green; undersurface with a dense, fairly uniform white indumentum. Bracts usually with pale to deep orange or purplish hairs. (Kirkalocka Station to east of Gnowangerup.) ..... **D. corymbosa**

4. Leaves 12–20 mm long; upper surface green; undersurface with a dense layer of minute white hairs and with much larger hairs (these may be lost from older leaves) scattered along the midvein and usually along other main veins. Bracts with white hairs. (Watheroo National Park to Yorkrakine.) ..... **D. velutina**

Dicrastylis corymbosa (Endl.) Munir, *Brunonia* 1: 500 (1978). – *Mallophora corymbosa* Endl., *Ann. Wien. Mus. Naturgesch.* 2: 207 (1838). *Type:* interior of south-western New Holland [Western Australia], *J.R. Roë* (*holo:* W, *n.v.*).

Dicrastylis stoechas Drumm. ex Harv., *Hooker's J. Bot. Kew Gard. Misc.* 7: 57 (1855). *Type:* south-west of Western Australia, *J. Drummond* coll. 5, suppl. 95 (*iso:* G *n.v.*, illustration seen).

Dicrastylis thomasiae S. Moore, *J. Linn. Soc., Bot.* 45: 209 (1920). *Type:* Western Australia, *Miss Thomas* (*holo:* BM, *n.v.*).

Shrubs usually 0.1–0.3 m high but one record of 0.6 m high. *Flowers* 4–6-merous, predominantly 5-merous or rarely predominantly 4-merous. For other characters see Munir (1978: 500–508).

Distribution and habitat. Occurs in the Avon Wheatbelt, Coolgardie, Jarrah Forest and Mallee biogeographic regions. Extends from an isolated record at Kirkalocka Station (north of Paynes Find) southwards to near Gnowangerup and inland to Barker Lake Reserve. Occurs in sandy habitats, recorded from tall shrublands, thickets and open woodlands, often dominated by mallee species. (Figure 1A)

Phenology. Flowers: September to April, especially October to February.

Notes. Dicrastylis corymbosa apparently tends to have a later flowering period than all other members of its section. It is very closely related to *D. velutina*, as discussed under that species.

Specimens of *D. corymbosa* from the northern part of the species range tend to have broader, more obviously hairy leaves than those from the southern part of the range, and more commonly have larger flowers that are very rarely 4-merous. A variant with extremely narrow leaves (including the type of *D. glauca*) is restricted to the Gnowangerup to Newdegate area and tends to have smaller flowers, sometimes with a high proportion of the flowers 4-merous. The narrow-leaved variant appears to intergrade completely with broader-leaved specimens, the intermediate specimens including *J.S. Beard* 3940 and *F.W. Humphries* 14 Nov. 1965. Munir (1978: 506) listed the former specimen as *Dicrastylis glauca*, but it has somewhat broader leaves than the other PERTH specimens listed and has some 6-merous flowers (rather than 4-merous ones) in addition to the usual 5-merous ones.

a. broad-leaved variant

Illustrations. Munir (1978: Figures B3, 18).

Selected specimens examined. WESTERN AUSTRALIA: 20 km SE of Biljahnie Rock on vermin fence, 3 Dec. 1997, *R.J. Cranfield* 11763 (PERTH); 1 mile [1.6 km] E of Lake Grace, 12 Oct. 1963, *K.R. Newbey* 1025 (PERTH); Pingaring Rock, 25 Nov. 1986, *K. White* 136 (PERTH); 5 miles [8 km] SW of Kulin, 18 Oct. 1974, *E. Wittwer* 1456 (PERTH).

Distribution. Occurring throughout the distribution of the species except in the far south where it is recorded only as far south as Pingrup.

Conservation status. Not considered to be at risk at present.

Notes. This variant includes the type of the species. Its flowers are predominantly 5-merous, but there are some specimens with a few 6-merous flowers and others with a few 4-merous flowers.

b. narrow-leaved variant

Dicrastylis glauca Munir, *Brunonia* 1 : 505–508 (1978). *Type:* Newdegate, December 1926, Western Australia, *C.A. Gardner* (*holo:* PERTH 01603132).

Illustrations. Munir (1978: Figures 16A, 19).

Selected specimens examined. WESTERN AUSTRALIA: Lakelands Nature Reserve, 17 Nov. 1998, *E. Bennett & A. Paton* LG 1.16 (PERTH); between Lake Grace and Hyden, 1 Oct. 1933, *W.E. Blackall* 3204 (PERTH 01082124, 03719081); E of Gnowangerup, 4 Jan. 1990, *Curtin University* SPA 283 (PERTH).

Distribution. Endemic to the Mallee biogeographic region, extending at least 130 km from Gnowangerup north-east to Newdegate and north of Lake Grace.

Conservation status. Conservation Codes for Western Australian Flora: Priority Three. This taxon may be at risk because it has a restricted distribution in the wheatbelt and is known from only one nature reserve.

Notes. Most of the few PERTH collections with very narrow leaves are listed above, including *W.E. Blackall* 3204. Munir (1978: 506, 575) cited one sheet (PERTH 01082124) of this collection as *Dicrastylis glauca* and a second sheet (PERTH 03719081) as *Mallophora rugosifolia*, although both specimens are clearly of the same taxon. This material is in bud, with the few flowers opened on the former sheet being 5-merous and the two open flowers of the latter sheet 4-merous. Without destroying the little material present on the latter specimen it was not possible to determine what proportion of the flowers are 4-merous but one of the more mature buds was dissected and found also to be 4-merous. This suggests that the majority of the flowers on the second sheet are 4-merous and that this specimen would not key accurately in Munir's key to genera (page 436), although its deeply divided style would allow it to be correctly keyed to *D. corymbosa* in the key provided here.

Dicrastylis globiflora (Endl.) Rye, *comb. nov.*

Mallophora globiflora Endl., *Ann. Wien. Mus. Naturgesch.* 2: 206 (1838). *Type:* interior of south-western New Holland [Western Australia], *J.R. Roë* (*holo:* W, *n.v.*, illustration seen).

Lachnocephalus lepidotus Turcz., *Bull. Soc. Imp. Nat. Moscou* 22(2): 36 (1849). *Type:* Swan River Colony [Western Australia], 1848, *J. Drummond* coll. 4: 235 (*syn:* KW *n.v.*); *Gilbert* 6 (*syn:* KW *n.v.*, photograph PERTH).

Illustrations. Diels & Pritzel (1905: Figure 55D,E), Munir (1978: Figures B3, 32).

Shrub usually 0.15–0.4 m high, possibly rarely to 0.5 m high. *Flowers* all 4-merous or mostly 4-merous with a few 5-merous. For other characters see description in Munir (1978: 569–574).

Selected specimens examined. WESTERN AUSTRALIA: along railway line NW of Wongan Hills township, 15 Sep. 1990, *D.E. Albrecht* 4477 *& B.A. Fuhrer* (PERTH); 3 km N of Cadoux, 20 Dec. 1984, *H. Demarz* 10535 (PERTH); *c.* 26 km N of Cunderdin on road to Wyalkatchem, 20 Oct. 1997, *B.J. Lepschi* 3608, *T.R. Lally & W.H. Treasure* (PERTH).

Distribution and habitat. Occurs in the Avon Wheatbelt and Yalgoo biogeographic regions. Extends from Cadoux south to Tammin National Park and from Calingiri and Northam east to Muntadgin. There are very few records of the vegetation, but the species appears to occupy the same habitat type as its close relative *D. rugosifolia*, apparently occurring in shrublands with a variety of associated species mainly of Myrtaceae, Proteaceae, *Acacia* or Casuarinaceae. (Figure 1B)

Phenology. Flowers: September to December.

Conservation status. Not considered to be at risk at present.

Notes. Based on old records with inaccurate localities, this species was erroneously included, as *Mallophora globiflora*, in the "Flora of the Perth Region" (Marchant *et al.* 1987). No members of the genus *Dicrastylis* are known from the region covered by that flora.

Dicrastylis rugosifolia is very closely related to *D. globiflora* but has smaller flowers in more elongate clusters, and has shorter, sometimes more revolute style branches. It also usually has narrower leaves distinguished by their less hairy and darker green upper surface with only 4 longitudinal rows of prominent bullae, whereas the more silvery upper surface of *D. globiflora* leaves has usually 6 or 8 rows of bullae that are often hidden by hairs.

Dicrastylis globiflora and *D. rugosifolia* overlap considerably in their distributions and a collection from east of Cadoux Siding (*C.A. Gardner* 2736) has mixed material of the two species. Some specimens from the Wongan Hills area have the inflorescence and floral characters that typify *D. globiflora* but have leaves with the upper surface more or less glabrous and dark green as in *D. rugosifolia*. These atypical specimens still appear to match *D. globiflora* because they mostly have 6 or 8 rows of bullae on the mature leaves.

Dicrastylis reticulata J.R. Drumm. ex Harv., *Hooker's J. Bot. Kew Gard. Misc.* 7: 57 (1855). *Type:* Western Australia, *J. Drummond* coll. 4: 94 (*lecto:* TCD, *fide* Munir (1978: 493), *n.v.*; *isolecto:* K *n.v.*, illustration seen).

Illustrations. Munir (1978: Figures A5, 15).

Shrub c. 1 m high. For other characters see Munir (1978: 492–496).

Selected specimens examined. WESTERN AUSTRALIA: 20 km W of Damboring, 26 Aug. 1971, *T.E.H. Aplin* 4857 (PERTH); Yorkrakine Rock Nature Reserve, Aug. 2001, *P. Roberts* (PERTH).

Distribution and habitat. Occurs in the Avon Wheatbelt and Mallee biogeographic regions. Restricted to granite outcrops, occurring in low shrublands amongst granite rocks or at the base of the granite, extending from near Pithara south to east of Pingelly and south-east to South Kumminin (near Narembeen). At one locality, the species was recorded growing with *Kunzea sericea*, whereas at another granite outcrop it was recorded with *Dryandra sessilis*, *Nuytsia floribunda* and *Allocasuarina humilis*. (Figure 1C)

Phenology. Flowers: late August to early December.

Conservation status. Conservation Codes for Western Australian Flora: Priority Three. A recent collection of this species, cited above, is perhaps the only one known from a nature reserve. There have been no other collections of this species since 1971, although its occurrence on granite outcrops suggests that it may be adequately protected.

Notes. This species is not particularly closely related to any other member of sect. *Corymbosae* and is the easiest one to identify. It is typically *c.* 1 m high, a larger shrub than all other members of the section, which are 0.1 to 0.6 m high. Perhaps the unique habitat of the species in the relatively mesic environment of granite outcrops could partially account for its greater size. *Dicrastylis reticulata* also has broader, greener (less hairy) leaves than the other species, and has more obvious, less densely hairy bracts.

The other four members of sect. *Corymbosae* are represented by whole plants on some of the herbarium sheets examined, and these invariably have multiple stems arising from the base. This habit is illustrated in Munir (1978: Figure 19A). Being a taller shrub, *D. reticulata* is always represented by cut branches on the herbarium sheets, and there is no information on the labels to indicate whether this species is single-stemmed or multi-stemmed at the base.

Dicrastylis rugosifolia (Munir) Rye, *comb. nov.*

Mallophora rugosifolia Munir, *Brunonia* 1: 574 (1978). *Type:* Wongan Hills, Western Australia, 6 November 1966, *A.M. Ashby* 2034 (*holo:* AD *n.v.*, illustration seen).

Illustrations. Munir (1978: Figures D6, 33).

Shrub 0.1–0.35 m high. For other characters see description in Munir (1978: 574–578).

Selected specimens examined. WESTERN AUSTRALIA: Bunjil Rd, 25.6 km E of Carnamah, 13 Oct. 1995, *A.R. Bean* 9050 (PERTH); Wubin, sign post N of town, 29 Sep. 1997, *B.A. Fuhrer* 97/67 (PERTH); Reserve 21601, Goodlands Rd, N of Kalannie, 31 Oct. 1995, *D.E. True* 10231 (PERTH).

Distribution and habitat. Occurs in the Avon Wheatbelt, Geraldton and Coolgardie biogeographic regions. Extends from near Mongers Lake and Marchagee south-east to Bruce Rock and east to Die Hardy Range. Occurs in shrublands with a variety of associated species, the predominant ones Myrtaceae, Proteaceae, *Acacia*, Casuarinaceae or *Actinostrobus* species. (Figure 1D)

Phenology. Flowers: August to December.

Conservation status. Not considered to be at risk.

Notes. Very closely related to *Dicrastylis globiflora* and differing as discussed under that species. See also the discussion under the narrow-leaved variant of *D. corymbosa*.

Dicrastylis velutina Munir, *Brunonia* 1: 496–500 (1978). *Type:* Bindi Bindi, *c.* 155 km north-north-east of Perth, Western Australia, 18 November 1964, *A.M. Ashby* 1363 (*holo:* AD, *n.v.*, illustration seen).

Illustrations. Munir (1978: Figures 16B–D, 17).

Shrub 0.3–0.6 m high. For other characters see Munir (1978: 496–500).

Selected specimens examined. WESTERN AUSTRALIA: E of farm block in centre of Watheroo National Park, 6 Dec. 1992, *E.A. Griffin* 8297 (PERTH); between Elphin and Piawaning, 21 Nov. 1961, *R.D. Royce* 6737 (PERTH).

Distribution and habitat. Occurs in the Avon Wheatbelt and Geraldton biogeographic regions. Extends from Watheroo National Park south-east to Yorkrakine (north of Tammin). Recorded on sandplains with low shrublands, the predominant species at the Watheroo National Park population being *Eremaea microphylla*, *Melaleuca seriata* and *Hakea brachyptera*. (Figure 1A)

Dicrastylis velutina was recorded from the Lake Grace area by Munir (1978) on the basis of two collections (*F.W. Humphreys* 14 Nov. 1965, *K.R. Newbey* 1025), both of which have now been redetermined as *D. corymbosa*.

Phenology. Flowers: recorded November and December.

Conservation status. Conservation Codes for Western Australian Flora: Priority Three. There has been only one recent collection of this species, but this fortunately is from a large national park.

Notes. Very closely related to *Dicrastylis corymbosa*, and more study is needed to determine how distinct these two taxa are. Their known ranges are allopatric, with *D. velutina* occurring north-west of the range of *D. corymbosa*. They may also differ in habitat, as *D. velutina* is recorded from low shrublands whereas *D. corymbosa* is recorded from taller shrublands and mallee woodlands. *D. velutina* tends to be a larger plant with coarser stem indumentum, broader leaves and longer basal peduncles on the inflorescences, but there is some overlap in these characters. According to Munir (1978), the two species differ in their

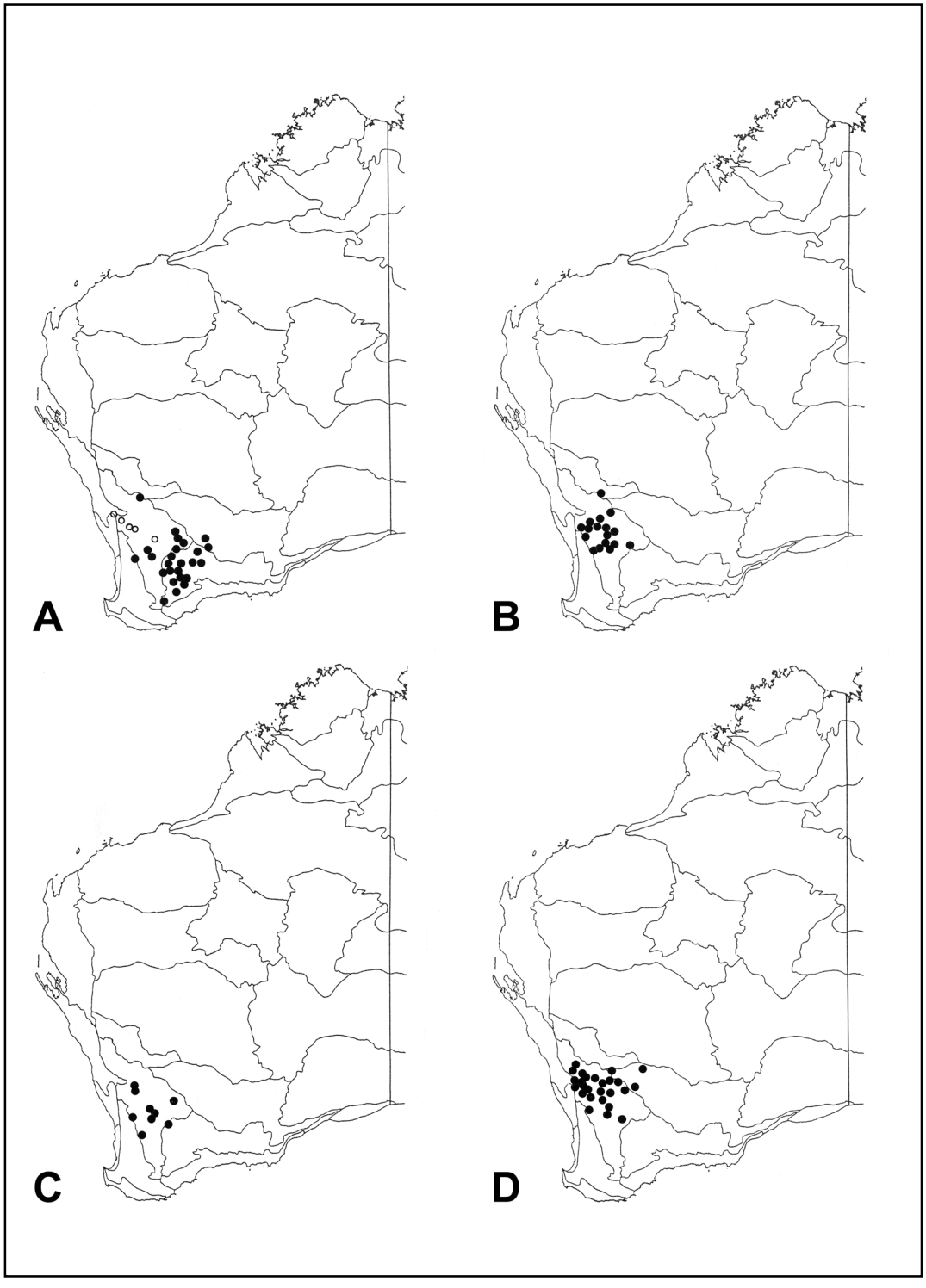

Figure 1. Distribution maps. A – *Dicrastylis corymbosa* ● and *D. velutina* ○ . B – *D. globiflora*; C – *D. reticulata*; D – *D. rugosifolia*.

ovary development such that *D. velutina* has four ovules in the mature ovary (Figure 17E,F) whereas *D. corymbosa* has two ovules aborting, resulting in only two ovules in the mature ovary (Figure 18F–H).

Discussion

Munir (1978: 444) separated *Mallophora* from *Dicrastylis* on the basis of its more condensed inflorescence, 4-merous flowers, and shorter style branches. The first of these three criteria is actually a valid reason to include *Mallophora* in *Dicrastylis* sect. *Cormybosae*, which is distinguished from other sections of *Dicrastylis* partly by having a similar inflorescence to that of *Mallophora*.

Munir gave undue weighting to the 4-merous character, using it also to delineate another small genus, *Physopsis* Turcz., and suggesting that *Mallophora* was more closely related to *Physopsis* than to the predominantly 5-merous *Dicrastylis*. Both the morphological evidence (Rye 1996) and molecular evidence (Olmstead *et al.* 1999, Streiber 2004) indicates, however, that *Mallophora* and *Physopsis* are not particularly close but are more closely allied to *Dicrastylis* and *Newcastelia* F. Muell. respectively.

In most *Dicrastylis* species, the numbers of floral parts vary not only between populations and individuals but also between flowers on the same individual. It is quite common for plants to produce a combination of 4- and 5-merous flowers or a combination of 5- and 6-merous flowers, and some specimens have been observed to vary from 4- to 6-merous. Much rarer in the genus are 7-merous flowers, and these have not been observed in sect. *Corymbosae*. Two species of *Dicrastylis* recently described by Munir (1991) appear to be predominantly 4-merous although they are not particularly closely related to the *Mallophora* species nor to one another. Even within sect. *Corymbosae* as delimited by Munir, the narrow-leaved variant of *D. corymbosa* may occasionally be predominantly 4-merous. It seems that taxa with predominantly 4-merous flowers have arisen independently in three sections of *Dicrastylis* as well as in several closely related genera. In view of the great variability in the numbers of floral parts, with some variation even occurring within *Mallophora sens. str.*, there is no justification in using this character to separate the two genera.

Similarly, the degree of branching of the style does not give a complete separation between *Mallophora* and *Dicrastylis*. *Mallophora rugosifolia* does have particularly short style branches, however *M. globiflora* has somewhat longer branches that show some overlap with relatively short-branched species of *Dicrastylis sens. str.* such as *D. cordifolia* Munir.

One alternative to disbanding *Mallophora* would be to expand its circumscription to include all members of *Dicrastylis* sect. *Corymbosae*, but this section does not appear to merit separation at the generic level any more than any other sections of *Dicrastylis*. In conclusion it appears that there are no good grounds for maintaining *Mallophora* as a separate genus and that *Dicrastylis s. lat.* (i.e. including *Mallophora*) is a natural, well defined genus.

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