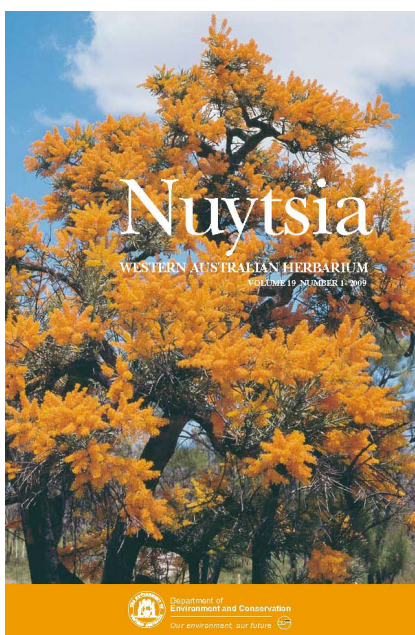


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Reinstatement of the Western Australian genus *Oxymyrrhine* (Myrtaceae: Chamelaucieae) with three new species

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## Reinstatement of the Western Australian genus *Oxymyrrhine* (Myrtaceae: Chamelaucieae) with three new species

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### Abstract

B.L. Rye. Reinstatement of the Western Australian genus *Oxymyrrhine* (Myrtaceae: Chamelaucieae) with three new species. *Nuytsia* 19(1): 149–165 (2009). The south-western Australian genus *Oxymyrrhine* Schauer is reinstated and the type species, previously known as *Baeckea polyandra* F.Muell., is restored to its earlier name of *O. gracilis* Schauer. A lectotype is selected for *B. polyandra* and three new species, *Oxymyrrhine cordata* Rye & Trudgen, *O. coronata* Rye & Trudgen and *O. plicata* Rye & Trudgen, are described. These four species make up a group described here as *Oxymyrrhine s. str.* and are distinguished from other members of *Oxymyrrhine s. lat.* and from all other genera of tribe Chamelaucieae by the broad cavity in the summit of their fruit. *Oxymyrrhine s. lat.* includes a particularly difficult species complex, which will be revised at a later time.

### Introduction

*Oxymyrrhine* Schauer is a south-western Australian genus belonging to tribe Chamelaucieae *s. lat.* of the Myrtaceae. The genus was named by Schauer (1843) based on the single species *O. gracilis*, which Mueller (1864) later redescribed as *Baeckea polyandra*. Schauer appears to have relied on the numerous stamens and the anther type to define *Oxymyrrhine*, while Mueller was the first to describe fruiting material, recording that the capsule was enclosed (not protruding) and the seeds were small, brown and trigonous-semicircular.

In *Flora Australiensis*, Bentham (1867) treated the genus as a section of his very broadly defined genus *Baeckea* L. Since the epithet of the type species of *Oxymyrrhine* had already been used in *Baeckea s. lat.*, it was necessary for the later-published name *Baeckea polyandra* to be accepted for the species. Bentham listed five south-western Australian species in *Baeckea* sect. *Oxymyrrhine*, adding *Baeckea crispiflora* (F.Muell.) F.Muell., *B. corynophylla* (F.Muell.) F.Muell. and two species closely allied to the latter. Niedenzu (1893) recognised six species within *Oxymyrrhine*, which he maintained as a section but included within his new group *Baeckea* subgenus *Hysterobaeckea* Nied. All members of the *Hysterobaeckea* group have a derived anther type with the connective gland united to other parts of the stamen.

DNA samples collected as part of the current study included the type species of *Oxymyrrhine* and a Darling Range species that was described as *Baeckea* sp. A in *Flora of the Perth Region* (Rye 1987). In unpublished analyses based on several chloroplast regions (the *matK* gene, the 5' *trnK* intron, part of

the *ndhF* gene and the *atpB-rbcL* intergenic spacer), these two species formed a well-supported clade (Peter Wilson pers. comm.). When the ETS nuclear region was examined, the two species remained together and formed part of a much larger clade comprising taxa with the *Hysterobaeckea* anther type, including members of the *Baeckea crispiflora* complex. The unpublished data suggest that additional genera including *Oxymyrrhine* should be recognised, but currently do not provide any strong support for the inclusion of the *B. crispiflora* complex within *Oxymyrrhine*.

*Oxymyrrhine* is reinstated in the current paper, and three new closely related species that were unknown to the nineteenth century botanists are named. These four species are referred to here as *Oxymyrrhine* s. str. Revisionary studies of other species groups that were included in section *Oxymyrrhine* by Bentham (1867) are not far enough advanced to estimate how many species should be recognised. The *Baeckea crispiflora* complex is particularly problematic, and the name *B. crispiflora* may have to be discarded as three earlier species epithets (*leptophylla*, *parvifolia* and *serpyllifolia*) published by Turczaninow (1852) apply to members of the complex.

## Methods

Descriptions are based on well-pressed dried material, using similar methods to those described in other recent papers on Western Australian Chamelaucieae such as Rye (2002). Holotypes for the new species have been lodged at PERTH. For those species with conservation priority, precise localities have been withheld for all specimens cited. The distribution map was compiled using DIVA-GIS freeware Version 5.2.0.2.

## Reinstatement of *Oxymyrrhine*

It has long been acknowledged that one or more genera with the *Hysterobaeckea* anther type should be reinstated (see Johnson & Briggs 1984, Rye 1987 and Lam *et al.* 2002), and the eastern Australian species of the *Hysterobaeckea* have already been removed from *Baeckea* (Bean 1997, Wilson *et al.* 2007). Despite this, not even the oldest available name, *Babingtonia* Lindl. (Lindley 1842), has been used since Bentham's time for members of the group in Western Australia. Shortly after *Babingtonia* was established, Schauer (1843) described three more genera belonging to the *Hysterobaeckea* group: *Oxymyrrhine*, *Harmogia* Schauer and *Tetrapora* Schauer. Since then, a number of additional generic names have been published, those currently in use being *Balaustion* Hook., *Kardomia* Peter G. Wilson, *Malleostemon* J.W.Green, *Sannantha* Peter G. Wilson and *Scholtzia* Schauer, and an additional genus, *Cheyniana* Rye, is published in the accompanying paper (Rye 2009).

## Comparison with *Babingtonia*, *Harmogia* and *Tetrapora*

For *Oxymyrrhine* to be reinstated it must first be established that the type species of *Babingtonia* and *Oxymyrrhine* are not congeneric, since the earlier name *Babingtonia* has priority. A paper (jointly authored with M.E. Trudgen) reinstating *Babingtonia* as a Western Australian endemic genus is currently in preparation. *Babingtonia* was previously treated by Bean (1997) as the sole generic name for eastern Australian species of the *Hysterobaeckea* group; however this very broad definition of the genus has not been supported by molecular data (Lam *et al.* 2002, Wilson *et al.* 2004) and most of the eastern species have now been placed in two new genera (Wilson *et al.* 2007). The type species of *Babingtonia*, *B. camphorosmae* Lindl., and its closest relatives occur in the south-west of

Western Australia and are readily distinguished from *Oxymyrrhine* by their more compressed stamen filaments, by their helmet-like anthers, which vary from compressed-obovoid to deeply divided into two divergent lobes and which often have two longitudinal lateral grooves, and by their longer and much thicker seeds with a more flattened base and more angled summit.

One of the two genera named concurrently with *Oxymyrrhine*, the monotypic eastern Australian genus *Harmogia*, has recently been reinstated (Wilson *et al.* 2007). Cladistic data presented in that paper suggest that *Harmogia* is most closely related to the eastern Australian taxa now placed in the new genus *Sannantha*. Bentham (1867) placed the members of these genera in *Baeckea* sect. *Harmogia* (Schauer) Benth. & Hook.f. *Harmogia* differs from *Oxymyrrhine* in having its seeds flattened at the base rather than curved at both ends like the segments of an orange as in *Oxymyrrhine* and has a testa of flat to concave cells which are much larger than the colliculate cells on seeds of *Oxymyrrhine*. It also shows subtle differences in its anther morphology, with its connective gland extending dorsally not only well beyond the anther loculi but also down beyond the top of the free part of the filament. A more obvious difference is its tendency to have very dense clusters of leaves on its lateral branchlets.

Unlike *Harmogia*, the other concurrently named genus, *Tetrapora*, has not yet been reinstated and its delimitation and morphology have not been fully determined. Bentham (1867) placed the members of the genera *Tetrapora* and *Babingtonia* in *Baeckea* sect. *Babingtonia* (Lindl.) Benth. & Hook.f., and molecular data (Wilson *et al.* 2004) place them in the same clade, together with species of *Malleostemon* and *Scholtzia*. *Tetrapora* can be distinguished from *Oxymyrrhine* s. str. by its tendency to have multiple flowers per axil, by its less numerous stamens (5 to 14 per flower), which are all antisepalous, and by its more tubular depression in the ovary summit. Establishing character differences between *Tetrapora* and *Oxymyrrhine* s. lat. is deferred until both groups have been studied further.

### **Delimitation of *Oxymyrrhine***

The type species of *Oxymyrrhine* and its three closest relatives, i.e. the members of the typical group referred to here as *Oxymyrrhine* s. str., are characterised by a deep and distally-expanded depression in the summit of the mature dried fruit, which remains fully or almost fully inferior. This broad cavity is also evident in the ovary summit of flowers in all dried material, exposing the part of the style that is below the summit of the ovary. Other genera of tribe Chamelaucieae either lack a deep cavity or have a tubular one closely surrounding the lower part of the style. In the typical group of *Oxymyrrhine* the base of the depression is sometimes contracted into a very short tubular portion closely surrounding only the extreme base of the style. At maturity, the style may either remain included within the cavity or become exerted from it. All of the species that were added to the *Oxymyrrhine* group by Bentham, such as the *B. crispiflora* complex, differ from the typical group in having the style base closely enclosed within a cylindrical depression.

A second character separating *Oxymyrrhine* s. str. from all other species placed in the group by Bentham is the arrangement of the stamens in a complete ring rather than just opposite the sepals. Although not fused to one another, the short thick stamens are arranged in a complete ring occupying all positions with little or no separation of the filaments. Other members of the *Hysterobaeckea* group differ from this, either by having the stamens in different arrangements, most often grouped opposite the sepals, or, if the stamens form a complete circle, by having longer stamens which may also differ in having either a more filiform filament or a more compressed one.

In 1994, Malcolm Trudgen allocated informal names to two of the new species of *Oxymyrrhine* s. str., treating both as subspecies of *Baeckea crispiflora*. This resulted (pers. comm.) from his desire

to recognise a relationship between these taxa and the *B. crispiflora* group although he was well aware that they were actually distinct species. Since then I have allocated another informal name, *Baeckea* sp. fine-leaved (C.M. Lewis 517), to a very distinct new species that had also been housed under the name *B. crispiflora*.

Members of the *Baeckea crispiflora* complex are like *Oxymyrrhine* s. str. in having solitary axillary flowers and persistent bracteoles that are often not strictly opposite, and they have a similar texture to the hypanthium. However, members of the *B. crispiflora* complex are distinguished by their longer and more exerted stamens, which are arranged opposite the sepals (i.e. none opposite the centre of each petal) with gaps between the filaments, their more or less sessile placentas, their red style with a very large peltate stigma, and their fruit with a convex summit extending slightly above the level of the adnate part of the hypanthium.

*Baeckea* sp. fine-leaved (C.M. Lewis 517), which was treated by Bentham (1867: 86) under the misapplied name *Baeckea pulchella* DC., is somewhat intermediate between *Oxymyrrhine* s. str. and the *B. crispiflora* complex in its stamens, which are short like those of the former but arranged opposite the sepals as in the latter. It differs from both groups in several vegetative characters, having sessile leaves, strictly opposite bracteoles, and a very prominent stem flange subtending both the leaves and bracteoles. Its pedicel is long in comparison with that of *Oxymyrrhine* s. str., and its placentas have a shorter stalk. Its seeds are smaller than in both *Oxymyrrhine* s. str. and the *B. crispiflora* complex, especially the latter. Its anther loculi are more closely fused than in *Oxymyrrhine* s. str. as there is no clear line of demarcation between them. In this respect *Baeckea* sp. fine-leaved seems to be closer to the *B. crispiflora* complex, which it certainly matches in having its style in a cylindrical rather than in a distally expanding depression. Another shared characteristic is the tetraploid chromosome number of  $n=22$  (Rye 1979) found in *B.* sp. fine-leaved (voucher specimen *B.L. Powell* 74108) and members of the *B. crispiflora* complex (many vouchers including *B.L. Powell* 74062 & 74068), but the chromosome numbers of the four species of *Oxymyrrhine* s. str. are unknown.

Members of the *Baeckea corynophylla* group, which Bentham (1867) also included in sect. *Oxymyrrhine*, show even greater differences from *Oxymyrrhine* s. str. than those discussed above, for example in their tendency to produce multiple flowers per axil. A key given in this paper shows only how to separate the four species of the typical group from one another and from the two taxa that appear to show the greatest morphological similarity, *Baeckea* sp. fine-leaved and the *B. crispiflora* complex.

Although the precise limits of *Oxymyrrhine* have yet to be determined, the three new species described here all clearly belong within it. Reinstatement of the genus is necessary to allow these species to be named under their correct generic name rather than in *Baeckea* s. lat.

### Morphology

*Habit and leaves.* The four species of *Oxymyrrhine* s. str. are small glabrous shrubs, up to a maximum height of 1 m, varying from very spindly and straggling plants growing through (and supported by) dense vegetation, to plants that are fairly dense and erect without any support. Oil glands are not particularly prominent on the vegetative organs, although they are sometimes prominent on the disc, hypanthium and style.



The leaves have a short but distinct petiole, the lamina varying from very thickened (but indented on the adaxial surface) to flat, and from linear in outline to obovate or cordate. Only *Oxymyrrhine cordata* has cordate leaves (Figure 1A); this is an uncommon leaf shape in the tribe Chamelaucieae as a whole and makes *O. cordata* relatively easy to identify from vegetative material.

*Inflorescence.* Flowers are solitary in the axils, with a peduncle up to 6 mm long below the pair of bracteoles. The hypanthium may be sessile within the bracteoles or separated from them by a short pedicel. Often the bracteoles are somewhat displaced from one another (e.g. Figure 1B) rather than strictly opposite. They are persistent at anthesis and tend still to be present when the fruit dehisces. The rather leaf-like sepals have the main protective function of the flower buds rather than the two bracteoles, which only cover a small proportion of the sides of the bud.

*Flowers.* In *Oxymyrrhine* the flowers are small, with a diameter usually between 5 and 10 mm. The hypanthium is obconic in young buds, but becomes more or less hemispheric in older buds and flowers, maintaining this shape or becoming more 3-lobed (the lobes formed by the swelling of the three loculi) in the fruits. It is dotted with oil glands and sometimes has antisepalous ribs in the flowering stage but tends to become smoothed out as the fruit expands. The sepals are generally folded and, for this reason, appear more ribbed than the hypanthium does.

The sepals are moderately large and are quite distinctive in each species of *Oxymyrrhine s. str.*, although all are stiff erect structures that persist as points above the fruiting hypanthium, giving the fruits a crown-like appearance (Figure 1B, H & O). *Oxymyrrhine cordata* differs from the other three species in having an erect dorsal horn that is much longer than the scarious incurved apex of the sepal (Figure 1C). The other three species have no horn, although their sepals may at first sight appear to be horned. *O. plicata* is distinguished from the other species in that its almost entirely herbaceous sepals are folded flat and tend to be somewhat spreading rather than erect (Figure 1P). In *O. coronata* the sepals are also folded, but not so closely so, and differ from those of the other three species in having the base of the folded part pinched in (Figure 1D–F & H). The sepals of the last species, *O. gracilis*, are more open still (Figure 1L) and so are broader than those of the other three species.

*Oxymyrrhine* has some minute filiform structures inserted between the petals and stamens. These are referred to in the generic description and accompanying paper (Rye 2009) as antipetalous processes.

*Androecium.* As illustrated in Figure 1E & K, the short stamens are indefinite and inserted in a single circular series, with the bases of the filaments either abutting each other or separated by only a short gap. The filaments opposite the petals tend to have broader and longer filaments than those opposite the sepals, with stamens that are intermediate in position being also intermediate in size. Occasionally one of the antisepalous stamens is reduced to a staminode, but most flowers lack staminodes.

All filaments are incurved in bud. Antipetalous stamens uncurl and extend inwards and then dehisce shortly after the flowers open and tend to be shed early in the fruiting stage. Antisepalous stamens, which extend inwards and dehisce at a later stage, are retained for longer as the fruit matures. Consequently, in the early fruiting stage only antisepalous stamens may be left, with long gaps where the antipetalous stamens have been shed.

The pale-coloured filaments are rather thick and fleshy-looking and their surface generally appears minutely textured in pressed specimens, perhaps as a result of shrinkage during drying. Mostly they

appear to be more or less terete but those opposite the petals sometimes appear to be somewhat flattened at the base. Sometimes a filament is very narrowed at its attachment to the anther while at other times, often in the same species, it is rather broadly attached to the anther. In both cases the anther seems to be firmly attached, not versatile.

*Anthers.* Each anther faces into the centre of the flower, with pollen shed from two slits on its inner surface and the filament attached at or near the base of its outer (dorsal) surface. Prior to dehiscence it is up to 0.4 mm wide and usually distinctly shorter than it is wide, with a swollen dorsal connective gland that is free from the filament but fused on each side to the two thecae (Figure 1G & M). Once the pollen and the oily contents of the connective gland have been shed, the gland is much less obvious and the structure of the anther as a whole becomes difficult to interpret. The anther is smaller and more or less subglobular after dehiscence.

The type species, *Oxymyrrhine gracilis*, differs from the other three species in its anther morphology, having a more obvious connective gland that forms a smooth pale lobe protruding beyond its very dark thecae (Figure 1M). The thecae have obvious long slits that diverge but do not meet at the centre of the anther. In the other three species, the anther has a more flattened connective gland that does not protrude beyond the top of the thecae and there tends to be less contrast in colour between the gland and the thecae. The slits are very widely divergent, not far from forming a straight line, and they more or less meet at the centre of the anther (Figure 1G).

*Gynoecium.* Each placenta is flat or concave on the inner surface and has a rather long and often closely appressed stalk attached at or just above the centre and extending to its base or just below the base. As it ages the placenta thickens on the outer surface, becoming ridged along the centre or shaped more like a pyramid. It also darkens, usually becoming medium to dark brown, and is then much darker than the stalk. The small, whitish attachment points for the ovules are located around the margin and at the apex, but there tends to be a slight gap in the attachments at the extreme base of the placenta. The ovules are attached right around the perimeter of the placenta and radiate from the centre of it. The centre of the placenta is bare prior to fertilization but post-fertilization enlargement results in the seeds of opposite sides of the placenta being in close contact with one another.

The ovary summit is deeply and broadly hollowed, being almost obconic or having the centre steep and the margins more curved. The style is light green with a capitate stigma that is either paler or similarly coloured. In most taxa the style is both short and sunken, and so is not visible from side view in the flower or fruit. However, *Oxymyrrhine plicata* has a longer style that is somewhat exerted.

*Fruit.* As previously noted (p. 3), the summit of the inferior fruit of *Oxymyrrhine* has a broad deep depression (Figure 1H), which distinguishes this group from other genera in the Chamelaucieae. The adnate part of the hypanthium is almost hemispheric to depressed cup-shaped, and is somewhat three-lobed, while the disc is rounded inwards over the three valves down to the deep base of the style. The fruit is inferior with the persistent free portion of the hypanthium forming a rim above it capped by the sepals (Figure 1B, H & O). Each of its three loculi has a curved valve that reaches just above the base of the free portion of the hypanthium but also sinks well below that level into the depressed centre of the fruit (Figure 1H). Seed set is generally fairly high, with about half or more of the ovules apparently developing into viable seeds, and with several to many seeds in each loculus.

*Seeds.* At maturity the seeds are uniformly coloured, either yellowish brown or medium brown, and are 0.6 to 0.8 mm long. They are faceted and fairly regular in shape, not nearly as variable as in some



other genera or species groups, and mostly resemble the segments of an orange (Figure 11) except that the inner edge is often somewhat flattened into a narrow face. The crustaceous testa is not very thick and has a reticulate pattern of usually slightly convex cells. The hilum is very small and more or less circular.

### Distribution and phenology

The four species of *Oxymyrrhine* s. str. occur in the southern part of the South West Botanical Province of Western Australia, from the Darling Range to Cape Arid National Park (Figure 2). *Oxymyrrhine cordata* and *O. plicata* may overlap slightly in the Kulin area, where their known ranges are separated by less than 50 km. However, there is some evidence that they occupy distinct habitats. The combined range of these two species is separated by a disjunction of over 200 km from *O. coronata* in the north-west and a disjunction of over 100 km from *O. gracilis* in the south-east. Flowering is mainly during summer, but in at least two of the species it begins in late spring.

### Descriptions and key

**Oxymyrrhine** Schauer, *Linnaea* 17: 240 (1843). – *Baeckea* sect. *Oxymyrrhine* (Schauer) Benth. & Hook.f., *Gen. Pl.* 1, 701 (1865). *Type*: *Oxymyrrhine gracilis* Schauer

*Shrubs* up to 1 m high, glabrous, with the leaf-bearing stems tending to be spindly; young branchlets leafy, with a loose, pale grey epidermis shed in strips or patches from darker layer which tends to disintegrate into numerous fibres. *Leaves* opposite, decussate, small, with a very short but well defined petiole; blade linear in outline to obovate or cordate, flat or if thick then with adaxial surface indented; abaxial surface shallowly to very deeply convex or more angled, with 1 to many main rows of oil glands on each side of midvein; adaxial surface concave or with a v-shaped indentation, with oil glands not very conspicuous. *Flowers* nearly always solitary in leaf axils, with 1 or several decussate pairs per branchlet. *Peduncles* short or long, terminated by two bracteoles. *Bracteoles* tending to be slightly to markedly separated rather than being strictly opposite, persistent at anthesis and often in fruit. *Pedicels* short or absent. *Hypanthium* adnate to ovary for most of its length, sometimes with 5 longitudinal antisealous ribs, dotted with fairly large oil glands; adnate portion broadly obconic (becoming cup shaped in fruit); free portion erect. *Sepals* 5, erect, persistent in fruit, moderately large, fully herbaceous in one species, in the other taxa with a scarious to petaline margin, denticulate to lacinate. *Petals* 5, widely spreading, shed before fruit matures, very shortly clawed, very broadly obovate or more or less circular, white or pink-tinged on inner surface, the portion of outer ones that is exposed in late bud often deep pink. *Antipetalous processes* often numerous, filiform, minute, pale. *Androecium* of 22–34 short stamens in a circle, usually more or less contiguous but occasionally with slight gaps between the antipetalous filaments, those closest to the centre of the petals usually longest and those closest to the centre of the sepals shortest; staminodes rare or absent. *Filaments* strongly incurved inwards and downwards at first, becoming raised to a more horizontal position prior to dehiscence, thick at base and for most of length, tapering at apex to form a slender attachment to the centre of the back of the anther (i.e. appearing to be versatile). *Anthers* small, broader than long, with the two cells closely fused to one another, their junction marked by a narrow groove, and also fused to a connective gland, opening by two slits that diverge basally, either meeting distally or separated on either side of the connective gland. *Disc* rounded on margin and deeply incurved at the centre, dotted with rather large and somewhat raised oil glands, green. *Ovary* 3-locular, fully inferior;

placentas axile, large, peltate, long-stalked, with well-spaced attachment points for the ovules; stalk appressed to placenta, pale; ovules 8–15 per placenta. *Style* terete, very short or of moderate length, in some taxa scarcely exerted from the large depression in the summit of the ovary, sometimes with the base closely surrounded by a very short cylindrical extension of the broad central depression; stigma capitate. *Fruit* dry, fully or largely inferior, with a broad and deep central depression, many-seeded; hypanthium broader than long and somewhat 3-lobed; valves 3, opening to an erect position. *Seeds* radially arranged on the placenta, faceted, usually almost semicircular from side view, with a large and rounded outer surface, two equal lateral surfaces and a small and narrow inner surface or angle, 0.6–0.8 mm long, 0.3–0.5 mm deep (depth greater than width), with a very small circular hilum; testa colliculate or almost so with a very fine pattern of slightly raised (convex) or level cells, brown, often somewhat shiny.

*Etymology.* Presumably derived from the Greek *oxy* (sharp) and the neo-tropical genus *Myrrhinium* Schott, perhaps because the leaves of the new genus seemed reminiscent of the small coriaceous leaves of *Myrrhinium* but are more acute.

### Key to species of *Oxymyrrhine* s. str. and closely related taxa

None of the three new species treated here is included in the key in Blackall & Grieve (1980). All of them would come out, in the combined key to species of *Astartea* s. lat., *Baeckea* s. lat. and *Scholtzia*, to Section 4 (page 78), which contains a miscellaneous assemblage of species including *Oxymyrrhine gracilis* [as *Baeckea gracilis*]. Right at the start of this section the three new species would be separated from *O. gracilis* because the first character used in the key differentiates between relatively flat-leaved taxa like them and thick- or narrow-leaved taxa such as *O. gracilis*.

The new key presented here is primarily to distinguish the four species described below, but also includes the two taxa with which they are most likely to be confused.

1. Stamens 22–35 in young flowers, in a continuous circle with some antipetalous, the antipetalous ones maturing early and often shed before the antisepalous ones.
2. Leaves linear in outline, thick, with a recurved apical point. Sepals acute and sometimes with a recurved apical point, not horned. Connective gland (before dehiscence) forming a lobe similar in size and shape to those of the 2 dark brown thecae. (Torradup River to Cape Arid National Park) ..... **O. gracilis**
- 2: Leaves narrowly obovate to cordate, not very thick, often mucronate. Sepals horned or folded and horn-like. Connective gland (before dehiscence) not prominent and often not obvious, more flattened than the thecae.
3. Leaves cordate, entire. Sepals prominently horned. (Corrigin to Toolibin to Kulin)..... **O. cordata**
- 3: Leaves narrowly obovate to broadly elliptic, with denticulate to laciniate margins. Sepals not horned but folded and often horn-like
4. Leaves 1.8–2.7 mm long, with laciniate margins. Sepals folded flat, not constricted, with very laciniate margins. Filament of longest stamens 0.7–0.8 mm long. Mature style 1.3–1.4 mm long. (Kulin to Frank Hann National Park) ..... **O. plicata**
- 4: Leaves 3.5–6 mm long, with denticulate margins. Sepals constricted towards base, folded but not flat, serrulate or entire. Filament of longest stamens 0.3–0.5 mm long. Mature style 0.7–0.9 mm long. (Darling Range)..... **O. coronata**
- 1: Stamens 10–25, in five antisepalous groups of 2–6, none strictly antisepalous.

5. Leaves sessile, thick, not narrowed at base. Stigma very small, capitate. Seeds 0.4–0.65 mm long. (Ballidu to south of Borden and Frank Hann National Park) ..... **B. sp. fine-leaved**
- 5: Leaves much broader than thick, narrowed at base; petiole poorly defined or up to 0.5 mm long. Stigma large, peltate. Seeds 0.8–1.2 mm long. (Yuna to Cheyne Bay to Kalgoorlie and to south of Balladonia) ..... **B. crispiflora complex**

### 1. *Oxymyrrhine cordata* Rye & Trudgen, *sp. nov.*

Species foliis cordatis et sepalis manifeste cornutis a congeribus diversa.

*Typus*: east of Toolibin, Western Australia, 20 December 1998, *P. Rose & G. Warren* 172 (*holo*: PERTH 05394090; *iso*: CANB, K, MEL).

*Baeckea crispiflora* subsp. Corrigin (A.S. George 14431), in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.: Descr. Cat.* p. 346 (2000); Western Australian Herbarium, in *FloraBase*, <http://florabase.dec.wa.gov.au> [accessed July 2007].

*Shrub* 0.3–1 m high, with widely spreading leaves that are usually not very dense. *Stipules* apparently absent. *Petioles* 0.35–0.6 mm long. *Leafblades* cordate, 2.5–3.5 mm long, 2.8–3.5 mm wide, not very thick, more or less acute, non-mucronate or with a mucro *c.* 0.1 mm long, margins entire, the keel thickened towards the apex into a ridge and sometimes incurved at apex; abaxial surface dotted with many rows of small oil glands; adaxial surface concave, dotted with numerous oil glands. *Inflorescence* of usually 2–9 pairs of flowers towards end of each branchlet. *Peduncles* 1.5–6 mm long. *Bracteoles* persistent in flower and usually to the mature fruiting stage, narrowly ovate to linear, 1.8–2.5 mm long, 0.3–0.5 mm wide, acute, herbaceous, green, entire. *Pedicels* 0.2–1 mm long. *Hypanthium* 1.5–2.3 mm long, 2–2.5 mm wide, somewhat 5-ribbed; adnate portion somewhat glandular-rugose; free portion *c.* 0.5 mm long. *Sepals* largely consisting of a very prominent horn but also with a very narrow, scarious and minutely laciniate portion orientated inwards at right angles to the horn, *c.* 1 mm long; horn erect, thick, green, with outer surface convex and inner surface concave. *Petals* *c.* 3 mm long, white. *Androecium* of 25–32 stamens; filaments terete, thick, tapering to a central attachment to the anther, the longest ones 0.6–0.8 mm long. *Anthers* (prior to dehiscence) transversely oblong to transversely broadly subreniform, much broader than long, *c.* 0.25 mm wide, with dark brown cells and a moderately large but not very obvious mid-brown connective gland closely united with the cells; slits meeting at apex, almost forming a line, basally very widely divergent, short. *Ovary* 3-locular; placentas with a pale stalk, becoming pyramid-shaped in fruit; ovules 9–11 per placenta. *Style* 0.8–1 mm long, entirely exposed but sometimes paler towards the base. *Fruit* *c.* 1.5 mm long excluding calyx and 2.3–2.5 mm long including calyx, 2–2.5 mm diam. *Seeds* rather pale brown but possibly not seen fully mature, *c.* 0.7 mm long, *c.* 0.3 mm wide, *c.* 0.4 mm thick. (Figure 1A–C)

*Other specimens examined.* WESTERN AUSTRALIA: SE of Corrigin, 7 Apr. 1977, *A.S. George* 14431 (PERTH); W of Jitarning, 13 Jan. 1978, *R.J. Hnatiuk* 780067 (PERTH); E of Toolibin, 1 Jan. 1988, *P. Hussey s.n.* (PERTH).

*Distribution and habitat.* Extends from near Toolibin north-east to about half way between Corrigin and Kulin (Figure 2). Occurs in sandy soils, recorded at one site over laterite in closed heath, at another site with lateritic gravel and at a third on sand with low kwongan.

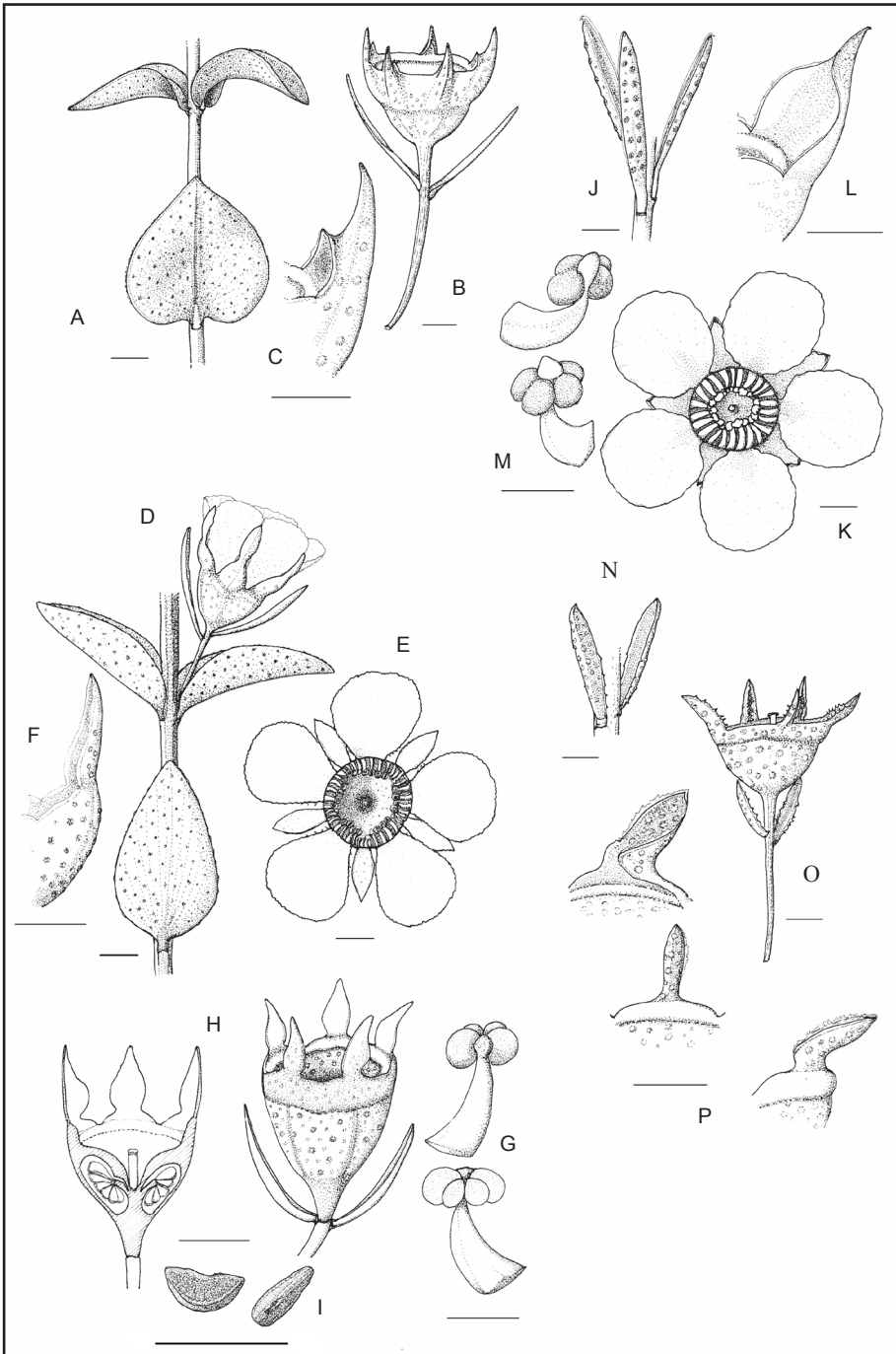


Figure 1. A–C. *Oxymyrrhine cordata*. A – leaves, B – bracteoles and young fruit, C – sepal from side view to show horn; D–I. *O. coronata*. D – leaves, bracteoles and side view of flower, E – top view of flower, F – side view of sepal, G – two views of stamen before dehiscence, H – fruit and LS of fruit, I – two views of seed; J–M. *O. gracilis*. J – leaves, K – top view of flower, L – oblique view of sepal, M – two views of stamen before dehiscence; N–P. *O. plicata*. N – leaves, O – bracteoles and fruit, P – three views of sepal. Drawn by Lorraine Cobb from P. Rose & G. Warren 172 (A–C), R.J. Cranfield 1983 (D–F), F. Hort 2233 (G,H), B.L. Rye 231229 (J–M), K.R. Newbey 10905 (N–P).

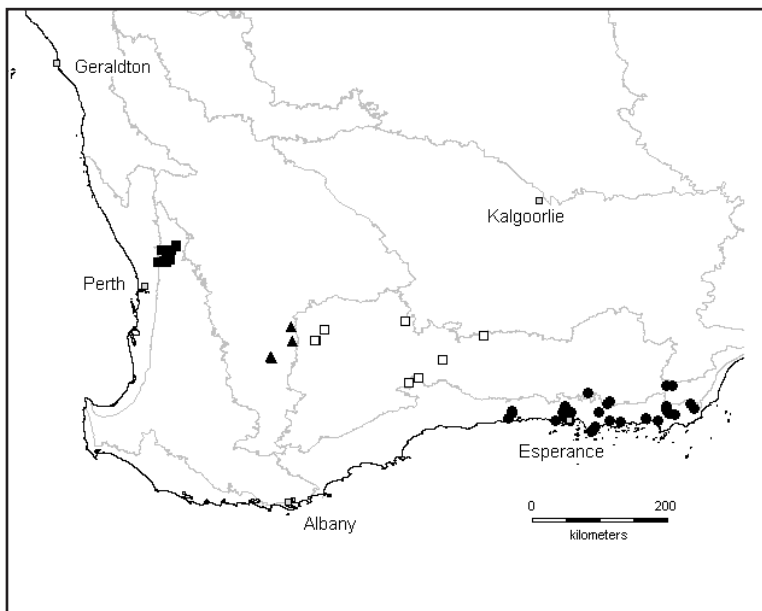


Figure 2. Distribution of *Oxymyrrhine* s. str. species: *O. cordata* (▲), *O. coronata* (■), *O. gracilis* (●) and *O. plicata* (□).

*Phenology.* Flowers mainly December to January. Mature seeds were collected in early April.

*Conservation status.* Conservation Codes for Western Australian Flora: Priority Two. There are currently only four collections of this taxon, two possibly from the same location, the known range c. 60 km long. At least one of the known localities has been cleared (Alex George pers. comm.).

*Etymology.* From the Latin *cordatus* (heart-shaped), referring to the heart-shaped leaves.

*Affinities.* This species is a very distinctive taxon, distinguished from other members of the genus by its cordate leaves and prominently horned sepals. It appears to be closer to *Oxymyrrhine coronata* and *O. plicata* than to *O. gracilis*.

## 2. *Oxymyrrhine coronata* Rye & Trudgen, *sp. nov.*

Species exigua constrictione versus basim sepalorum a congeneribus diversa, a *Oxymyrrhine cordata* sepalis incornutis, a *O. gracili* foliis anguste obovatis vel ellipticis, et a *O. plicata* stylo brevior differt.

*Typus:* Chittering Valley, Western Australia, 10 December 1981, R.J. Cranfield 1983 (*holo:* PERTH 03259951; *iso:* CANB, K, MEL).

*Baeckea* sp. A, in N.G. Marchant *et al.*, *Fl. Perth Region* 1: 384 (1987).

*Baeckea* sp. Chittering (R.J. Cranfield 1983), in G. Paczkowska & A.R. Chapman, *West Austral. Fl.: Descr. Cat.* p. 348 (2000); Western Australian Herbarium, in *FloraBase*, <http://florabase.dec.wa.gov.au> [accessed July 2007].

*Shrub* 0.4–0.8 m high, with antrorse to widely spreading leaves that are often dense on the young branchlets but are distant on rapidly growing shoots. *Stipules* apparently absent. *Petioles* 0.1–0.4 mm long. *Leaf blades* usually narrowly obovate to broadly elliptic, 3.5–7 mm long, 1.5–3 mm wide, not very thick, acute, with margins toothed; abaxial surface convex, the keel thickened towards the apex into a ridge and incurved at apex where there is often a subterminal mucro up to 0.3 mm long in addition to the acute or minutely mucronate apex, with 3–6 main rows of small oil glands on each side of the midvein; adaxial surface concave, oil glands smaller than on abaxial surface and inconspicuous. *Inflorescence* of usually 2–13 pairs of flowers towards end of each branchlet. *Peduncles* 1.5–4 mm long. *Bracteoles* persistent in flower and usually to the mature fruiting stage, linear to narrowly ovate, with incurved margins (i.e. deeply concave/arched adaxially), 2.4–4 mm long, 0.3–0.6 mm wide, herbaceous, green; apex with keel incurved, sometimes with a subterminal point up to 0.3 mm long, entire. *Pedicels* almost absent or up to 0.3 mm long. *Flowers* 5.5–8 mm diam. *Hypanthium* 1.7–2.1 mm long, 2.5–2.7 mm wide, with rather large oil glands, tending to be glaucous, sometimes somewhat 5-ribbed; adnate portion green; free portion 0.5–0.6 mm long, often purplish or tinged with dark pink. *Sepals* 1.6–2 mm long, somewhat folded or with incurved margins and often appearing ovate above a slight constriction, herbaceous throughout, the margins often somewhat serrulate; folded portion 0.3–0.5 mm thick, green towards base and centre with pinkish margins outside, usually deep pink inside. *Petals* 2.3–3.2 mm long, white or appearing pale pink inside, the pink colour not uniform, sometimes deep pink outside in bud. *Androecium* of 27–34 stamens; filaments terete, thick, tapering to a central attachment to the anther, the longest ones 0.3–0.5 mm long. *Anthers* 0.25–0.35 mm wide; slits meeting at the centre of anther, very widely divergent at base; connective gland often with 2–4 circular swellings above the attachment of the anther. *Ovary* 3-locular; placentas dark with a pale stalk, becoming prominently ridged along middle, with inner surface somewhat concave in fruit; ovules 8–14 per loculus. *Style* 0.7–0.9 mm long, with basal 0.2–0.3 mm pale and immersed; stigma broad. *Fruit c.* 1.5 mm long excluding calyx and 2.7–3.7 mm long including calyx, 2.5–3 mm diam. *Seeds* medium brown, 0.65–0.75 mm long, 0.35–0.5 mm wide, 0.4–0.5 mm thick. (Figure 1D–I)

*Selected specimens examined.* WESTERNAUSTRALIA: Bullsbrook, 9 Sep. 2004, *E.M. Bennett* 1017 (PERTH); Julimar area, 6 Dec. 1998, *M. Hislop* 1270 (PERTH); Moondyne State Forest, 12 Dec. 2001, *F. Hort* 1675 (PERTH); Avon Valley National Park, 9 Jan. 2002, *F. Hort* 1686 (PERTH); Julimar Conservation Park, Toodyay, 28 Dec. 2005, *F. Hort* 2762 (NSW, PERTH); Bindoon Training Area and Julimar Conservation Park, Toodyay, 7 Feb. 2006, *F. Hort* 2788 (PERTH); W of Avon Valley National Park, 28 Mar. 2004, *B.L. Rye* 240302 & *F. & J. Hort* (AD, BRI, PERTH); Chittering area, 5 May 2004, *F. & B. Hort* 2233 (PERTH).

*Distribution and habitat.* Occurs in lateritic habitats on the Darling Range north-east of Perth, from the Bindoon Army Training Area south to Avon Valley National Park, in eucalypt woodlands usually with Jarrah and/or Marri the dominant species (Figure 2).

*Phenology.* Flowers mainly late October to January. Mature seeds were collected from March to May.

*Conservation status.* Conservation Codes for Western Australian Flora: Priority Four. This geographically restricted species occurs in a national park, a conservation park and a few nearby locations. Its known range is c. 30 km long (Fred Hort pers. comm.).

*Etymology.* From the Latin *coronatus* (crowned), as the fruit topped by the erect sepals resembles a crown.



*Affinities.* The unnamed species noted by Rye (1987) as being closely related to *Oxymyrrhine coronata* [as *Baeckea* sp. A] is the one described below as *O. plicata*. The two species are similar in sepal morphology and leaf shape but are readily distinguished by the leaf and stamen characters used in the key and by other differences outlined under *O. plicata*.

*Notes.* In the brief description of this species for *Flora of the Perth Region* it was referred to as *Baeckea* sp. A, a name later changed to *Baeckea* sp. Chittering (R.J. Cranfield 1983) to suit altered guidelines for informal names at PERTH.

Occasionally a second flower occurs on one of the peduncles, produced in the axil of one of the displaced bracteoles and tending to open later than the main flower. Two-flowered peduncles have only been observed on a few specimens (e.g. *M. Hislop* 1270) and are very rare in comparison with the number of solitary flowers on the same specimen.

Ovule number seems extremely variable in this species. The number of stamens is also surprisingly variable for such a geographically restricted species. In most specimens the stamens directly opposite the petals are distinctly longer and have a thicker filament than those opposite the sepals, but in some specimens the antisepalous stamens are as long as or even slightly longer than the antipetalous ones. The filaments may be pale green or pink. Generally, the anther cells in this species are paler, being yellowish to medium brown, than in other members of the genus but they may have a dark pink border to the cells (where the cells are adjacent to the glandular area and closest to the attachment of the filament).

**3. *Oxymyrrhine gracilis*** Schauer, *Linnaea* 17: 240 (1843). – *Babingtonia gracilis* (Schauer) F.Muell., *Fragm. Phyt. Austral.* 4: 74 (1864). – *Baeckea gracilis* (Schauer) C.A.Gardner, *Enum. Pl. Austral. Occid.* 94 (1931). *Type:* Australia [presumably from Lucky Bay, Western Australia, January 1802], *F.L. Bauer s.n. (holo: n.v.)*.

*Baeckea polyandra* F.Muell., *Fragm. Phyt. Austral.* 4: 72 (1864). *Type:* on the coast east of Stokes Inlet, Western Australia, *G. Maxwell s.n. (lecto: MEL 72912, here chosen)*; inland from Orleans Bay, Western Australia, *G. Maxwell s.n. (lectopara: MEL 72911, 72913)*.

*Illustration.* Blackall & Grieve (1980: 79) [as *Baeckea gracilis*].

*Shrub* 0.2–1 m high, usually very spindly, often emergent from dense vegetation and supported by that, often multi-stemmed from the base, with antrorse to widely spreading leaves that are dense on the young branchlets but distant on rapidly growing shoots. *Stipules* present on young leaves, short, slender, brownish or reddish. *Petioles* 0.4–0.8 mm long. *Leaf blades* linear in outline, 4–9 mm long, 0.5–0.8 mm wide, 0.4–0.5 mm thick, with margins entire or denticulate, with a whitish apical point, which is recurved and 0.1–0.2 mm long; abaxial surface deeply convex and often flattened across the top, with 1–3 main rows of small oil glands on each side of the midvein; adaxial surface shallowly v-shaped in section, oil glands often as conspicuous as on abaxial surface. *Inflorescence* of usually 1–7 pairs of flowers towards end of each branchlet. *Peduncles* 0.7–4 mm long. *Bracteoles* persistent in flower and usually to the mature fruiting stage, narrowly ovate or ovate, folded into a shallow v shape or curved around hypanthium, 1.6–2.5 mm long, 0.5–0.8 mm wide, largely herbaceous or somewhat scarious, often tinged reddish, denticulate or shortly laciniate, often with an apical point up to 0.1 mm long. *Pedicels* absent or up to 0.8 mm long. *Flowers* 6–10 mm diam. *Hypanthium* 1.6–2.5 mm long, 2.3–2.5 mm wide, with rather large oil glands, sometimes distinctly 5-ribbed, green or reddish-tinged;

free portion 0.4–0.6 mm long. *Sepals* 1.3–1.6 mm long, 1.4–1.6 mm wide, keeled, ovate-triangular to almost square, usually tinged deep pink, the narrow to very broad hyaline margins lacinate or denticulate, often with a minute, recurved apical point. *Petals* 2.5–4 mm long, white or appearing pale pink inside, the pink colour not uniform, sometimes deep pink outside in bud. *Androecium* of 22–32 stamens; filaments pale, the longest ones 0.7–1 mm long. *Anthers* 0.3–0.4 mm wide, with dark brown cells contrasting with the yellowish connective gland, which is similar in size and shape to the cells prior to dehiscence; slits basally divergent, converging on either side of connective gland. *Ovary* 3-locular; placentas dark with a moderately long pale stalk (not reaching edge of ovules but reaching edge of placenta), becoming prominently ridged along middle, with inner surface somewhat concave in fruit; ovules 10–12 per loculus. *Style* 0.7–0.9 mm long, all or almost all exposed; stigma capitate. *Fruit* 1.8–2.3 mm long excluding calyx and 3–4 mm long including calyx, 2.5–3 mm diam. *Seeds* medium brown or slightly paler, 0.6–0.8 mm long, 0.35–0.4 mm wide, 0.45–0.5 mm thick. (Figure 1 J–M)

*Selected specimens examined.* WESTERN AUSTRALIA: Lucky Bay, 21 Jan. 1966, *A.S. George* 7467 (PERTH); Neds Corner Road, 1 km N of South Coast Highway, N of Stokes Inlet, 11 Dec. 1999, *M. Hislop* 1951 (PERTH); 16 km NW of Point Malcolm, c. 160 km E of Esperance, 6 Nov. 1980, *K.R. Newbey* 8059 (MEL, PERTH); Cape Arid National Park, 1 Dec. 1971, *R.D. Royce* 9936 (NSW, PERTH); high above W bank of Torradup River on Springdale Road, 9 Dec. 2003, *B.L. Rye* 231229 (PERTH); N of the lake in Lake Monjigup Reserve, 10 Dec. 2003, *B.L. Rye* 231235 (PERTH); Cape Le Grand National Park, by Thistle Cove, 3 Jan. 1983, *A. Strid* 21915 (PERTH); 2.8 km along the Wittenoom Hills Road from the Esperance–Israelite road, 12 Jan. 1976, *M.E. Trudgen* 1518 (AD, BRI, CANB, PERTH); Helms Arboretum, N of Esperance, 17 Nov. 1993, *C.D. Turley* 56/1193 (ESP, PERTH).

*Distribution and habitat.* Extends from Torradup River east to Cape Arid National Park (Figure 2). Occurs in a variety of shrubland types, often in very dense vegetation where it has weak spindly shoots emergent from the tops of bushy shrubs. Even in more open situations it is not a bushy species.

*Phenology.* Flowers mainly from late October to early January. Mature seeds were collected in late October and late November.

*Conservation status.* Not considered to be at risk. This commonly collected species occurs in two large national parks and a number of other reserves.

*Affinities.* *Oxymyrrhine gracilis* is a very distinctive species. It differs from the other three species described here in its anther morphology. Its anther has a very obvious gland that forms a smooth lobe of similar size and shape to each of the two thecae, resulting in a rounded triangular shape for the anther, and the thecae have obvious long slits that diverge but do not meet at the centre of the anther. The other species have a more flattened and less obvious connective gland that tends to have some rounded swellings near the attachment of the filament, the whole anther appearing more reniform in shape. In this case the slits are very widely divergent, not far from forming a straight line, and they more or less meet at the centre of the anther. The thecae are very dark-coloured in *O. gracilis* and are medium pink to fairly dark in other taxa except perhaps in *O. plicata*, which has paler anthers or the dark colour restricted to the margin.

*Notes.* The original collection of this species was probably made in January 1802 when the artist Ferdinand Bauer and other members of the Matthew Flinder's expedition on H.M.S. *Investigator* were

at Lucky Bay. Schauer (1943) described the hypanthium as 5-ribbed, a characteristic that was later used in the key of Blackall & Grieve (1980: 79). This would not always allow accurate identification of this species, however, as many specimens show no obvious ribbing of the hypanthium.

Mueller (1864) seemed unaware of any relationship between his new species *Baeckea polyandra* and the earlier-named *Oxymyrrhine gracilis*, which he cited later in the same paper. Presumably he had not examined type material of *O. gracilis* and simply relied on Schauer's (1843) brief description, which suggested minor differences in the peduncle length and anther shape and also incorrectly gave the flower colour as yellow.

*Oxymyrrhine gracilis* is a very variable species, for example in its peduncle length, bracteole and sepal morphology, but not readily divisible into infraspecific taxa. Variation in the stamens includes some specimens (e.g. *A. Strid* 21244) with the filament very narrowed at its attachment to the anther and others with the filament rather broadly attached to the anther.

#### 4. *Oxymyrrhine plicata* Rye & Trudgen, *sp. nov.*

Species sepalis arcte plicatis et stylo longiore a congeneribus diversa.

*Typus*: south-east of Kulin, Western Australia, 12 January 1978, *R.J. Hnatiuk* 780026 (*holo*: PERTH 03351076; *iso*: MEL).

*Baeckea crispiflora* subsp. Kulin (*R.J. Hnatiuk* 780026), in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.: Descr. Cat.* p. 346 (2000); Western Australian Herbarium, in *FloraBase*, <http://florabase.dec.wa.gov.au> [accessed July 2007].

*Shrub* 0.3–0.7 m high, with antrorse to widely spreading leaves that are dense on the young branchlets. *Petioles* 0.1–0.3 mm long. *Leaf blades* narrowly to broadly obovate, 1.8–2.7 mm long, 0.6–1.5 mm wide, not very thick, laciniate margins with shallow to deep scarious divisions, often with a mucro *c.* 0.05 mm long; abaxial surface convex, the keel thickened towards the apex into a ridge and incurved at apex where there is often a subterminal mucro similar in size to the terminal mucro, dotted with 2–4 rows of oil glands on each side of the midvein; adaxial surface concave, dotted with numerous oil glands. *Inflorescence* of usually 1–5 pairs of flowers towards end of each branchlet and sometimes with extra groups of flowers lower down on the larger branchlets. *Peduncles* 2–4 mm long. *Bracteoles* persistent in flower and usually to the mature fruiting stage, narrowly obovate to elliptic, with very incurved margins (i.e. deeply concave/arched adaxially), 1.5–2 mm long, 0.3–0.8 mm wide, acute, herbaceous, green. *Pedicels* 0.5–1.3 mm long. *Hypanthium* 1.5–2 mm long, 2–2.5 mm wide, with rather large oil glands; free portion 0.4–0.5 mm long, 5-ribbed. *Sepals* 1–1.6 mm long; folded portions 0.4–0.6 mm thick, green, with very narrow margins laciniate for their entire depth. *Petals* 1.7–2.3 mm long, white. *Androecium* of 25–31 stamens; filaments terete, thick, tapering to a central attachment to the anther, the longest ones 0.7–0.8 mm long. *Anthers* (prior to dehiscence) compressed-triangular to transversely broadly subreniform, 0.25–0.35 mm wide, with very dark brown cells and slightly paler brown connective gland closely united with the cells; slits meeting at apex, basally widely divergent, short; connective gland not prominent but sometimes slightly 2-lobed, moderately large but not very obvious, somewhat shiny. *Ovary* 3-locular; placentas dark with a moderately long pale stalk (not reaching edge of ovules but reaching edge of placenta), becoming prominently ridged along middle of a depressed pyramidal base, with inner surface somewhat concave in fruit; ovules 12–15 per placenta. *Style* 1.3–1.4 mm long, with basal *c.* 0.3 mm paler and immersed. *Fruit* 1.3–1.5 mm long excluding calyx and 2.5–3 mm long including calyx, 2.3–2.5 mm diam. *Seeds* golden brown but possibly not fully mature, 0.6–0.8 mm long, *c.* 0.3 mm wide, *c.* 0.5 mm thick. (Figure 1N–P)

*Other specimens examined.* WESTERN AUSTRALIA: E of Hyden, 13 Jan. 1965, *J.S. Beard* 3916 (PERTH); N of Reserve 26905, 17 Dec. 1994, *N. Casson & A. O'Connor s.n.* (PERTH); near Pallarup Rocks, 14 Dec. 1960, *A.S. George* 2262 (PERTH); Dunn Rock Nature Reserve, 28 Aug. 2002, *C. Godden & G. Woodman* FR 209.5 (PERTH); Hopkins Nature Reserve, S of Kondinin, 9 Sep. 1999, *G.J. Keighery & N. Gibson* 5411 (PERTH); SE of Kulin, 12 Jan. 1978, *R.J. Hnatiuk* 780048 (PERTH); NW of Ninety Mile Tank, 21 Jan. 1985, *K.R. Newbey* 10905; Frank Hann National Park, 10 Dec. 1971, *R.D. Royce* 10224 (PERTH); N of Hyden, 12 Jan. 2004, *B.L. Rye* 250102 & *M.E. Trudgen* (AD, CANB, NSW, PERTH).

*Distribution and habitat.* Extends from Kulin east to Frank Hann National Park, in sandy soils, mostly on gentle slopes or flat ground, in varied vegetation types including two records with *Allocasuarina* (Figure 2).

*Phenology.* Flowers recorded from December to January. Mature seeds were collected in January.

*Conservation status.* Conservation Codes for Western Australian Flora: Priority Three. Known from ten collections, including a national park and two nature reserves, this taxon occurs in an area extending c. 200 km.

*Etymology.* From the Latin *plicatus* (folded), in reference to the sepals.

*Affinities.* In *Flora of the Perth Region* (Rye 1987: 384), it was noted that the Darling Range species *Oxymyrrhine coronatum* [as *Baeckea* sp. A] was closely related to an unspecified inland species; the latter species is described here as *O. plicata*. See notes under *O. coronata*.

*Notes.* The hypanthium in *Oxymyrrhine plicata* is usually somewhat 5-ribbed for its full length at anthesis, with the free portion always fairly strongly ribbed and remaining so in fruit but the adnate portion tending to become smooth in fruit.

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