Vanguerieae A.Rich. ex Dum. (Rubiaceae) in Australia, 3.

Psydrax Gaertn.

Sally T. Reynolds and Rodney J.F. Henderson

Summary

Reynolds, S.T. & Henderson, R.J.F. (2004). Vanguerieae A.Rich. ex Dum. (Rubiaceae) in Australia, 3. *Psydrax* Gaertn. *Austrobaileya* 6(4): 817–889. The genus *Psydrax* Gaertn. (Rubiaceae, Vanguerieae), as it occurs in Australia, is revised. Several species of this genus have previously been included in *Canthium* Lam. but are now considered distinct from that genus. Of the twenty two Australian species currently recognised as belonging to *Psydrax*, thirteen are described here as new, namely *Psydrax ammophila* S.T.Reynolds & R.J.F.Hend., *P. banksii* S.T.Reynolds & R.J.F.Hend., *P. forsteri* S.T.Reynolds & R.J.F.Hend., *P. johnsonii* S.T.Reynolds & R.J.F.Hend., *P. laxiflorens* S.T.Reynolds & R.J.F.Hend., *P. lepida* S.T.Reynolds & R.J.F.Hend., *P. longipes* S.T.Reynolds & R.J.F.Hend., *P. pallida* S.T.Reynolds & R.J.F.Hend., *P. paludosa* S.T.Reynolds & R.J.F.Hend., *P. pendulina* S.T.Reynolds & R.J.F.Hend., *P. rigidula* S.T.Reynolds & R.J.F.Hend., *P. saligna* S.T.Reynolds & R.J.F.Hend. and *P. tropica* S.T.Reynolds & R.J.F.Hend. New combinations are made for six of the other nine species, namely *Psydrax attenuata* (Benth.) S.T.Reynolds & R.J.F.Hend., *P. graciliflora* (Merr. & L.M.Perry) S.T.Reynolds & R.J.F.Hend., *P. latifolia* (F.Muell. ex Benth.) S.T.Reynolds & R.J.F.Hend., *P. oleifolia* (Hook.f.) S.T.Reynolds & R.J.F.Hend., *P. reticulata* (C.T.White) S.T.Reynolds & R.J.F.Hend. and *P. suaveolens* (S.Moore) S.T.Reynolds & R.J.F.Hend., while *P. montigena* S.T.Reynolds & R.J.F.Hend. is provided as a new name for the plant previously known as *Ixora orophila* C.T.White, which belongs in *Psydrax* as well. New infraspecific taxa recognised here are *Psydrax attenuata* var. *myrmecophila* S.T.Reynolds & R.J.F.Hend. with *Psydrax attenuata* forma *myrmecophila* S.T.Reynolds & R.J.F.Hend. and *P. attenuata* forma *megalantha* S.T.Reynolds & R.J.F.Hend., *P. attenuata* var. *tenella* S.T.Reynolds & R.J.F.Hend., *P. lamprophylla* forma *latissima* S.T.Reynolds & R.J.F.Hend., *P. odorata* subsp. *arnhemica* S.T.Reynolds & R.J.F.Hend., *P. odorata* subsp. *australiana* S.T.Reynolds & R.J.F.Hend., with *P. odorata* forma *australiana* S.T.Reynolds & R.J.F.Hend., *P. odorata* forma *foveolata* S.T.Reynolds & R.J.F.Hend. and *P. odorata* forma *subnitida* S.T.Reynolds & R.J.F.Hend., and *P. saligna* forma *filiformis* S.T.Reynolds & R.J.F.Hend. *Canthium buxifolium* Benth. is reduced to a subspecies of *Psydrax odorata* (Forst.f.) A.C.Sm. & S.P.Darwin containing *P. odorata* forma *buxifolia* (Benth.) S.T.Reynolds & R.J.F.Hend. and *P. odorata* forma *parviflorifra* S.T.Reynolds & R.J.F.Hend., and *Canthium lineare* E.Pritz. is accepted as conspecific with *Psydrax suaveolens* (S.Moore) S.T.Reynolds & R.J.F.Hend. Lectotypes for *Canthium attenuatum* Benth. and *Canthium lamprophyllum* F.Muell., basionyms for *Psydrax attenuata* (Benth.) S.T.Reynolds & R.J.F.Hend. and *P. lamprophylla* (F.Muell.) Bridson respectively, are designated. Keys to the species and infraspecific taxa, distributional maps and illustrations of some of the species are provided. A list of currently accepted names of Australian taxa previously considered to belong in *Canthium* Lam. or *Plectronia* L., is given in Supplement A. New combinations are made in Appendix 1. for two related species occurring in New Guinea (but not in Australia) considered to belong in *Psydrax*, namely *Psydrax cymigera* (Valeton) S.T.Reynolds & R.J.F.Hend. and *P. suborbicularis* (C.T.White) S.T.Reynolds & R.J.F.Hend.

Key words: *Rubiaceae*, *Vanguerieae*, *Psydrax*, Australian flora, taxonomy, nomenclature

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Introduction

As stated previously (Reynolds & Henderson 1999, 2001), taxa of *Psydrax* Gaertn. and *Cyclophyllum* Hook.f., together with those of *Everistia* S.T.Reynolds & R.J.F.Hend., have, until comparatively recent times, been included in *Canthium* Lam. Following critical studies from the 1960s evaluating the genus *Canthium* in Africa, recognition of some of the subordinate taxa previously included in it as distinct genera has resulted. Cuparon (1969) proposed that many species of *Canthium* from Africa, Madagascar and Asia be transferred to *Psydrax* and this led Bridson (1985) to reinstate *Psydrax* and include in it African species previously included in *Canthium* and one from Australian she named *Psydrax lamprophylla* (F.Muell.) Bridson.

Most of the Australian species previously included in *Canthium* are referrable to *Psydrax*. In this country, species of this latter genus are

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very complex and most of them are difficult to delimit because they have similar flowers and fruits, and the leaves, which are used to distinguish most species, are very variable and sometimes vary on the one branchlet. Moreover, most species are poorly known, poorly represented by herbarium material or represented in herbaria by incomplete material, and specimens exist which appear to represent intergrades between them.

Three of the taxa Bentham (1867) accepted as species of *Canthium*, and dealt with under the names *C. attenuatum, C. lucidum* and *C. oleifolium*, were each found to contain more than one species. Some of these species were undescribed while duplicates of the one collection of others were found filed under different species names in various herbaria. Moreover, it was discovered that the application of *C. attenuatum* and *C. lamprophyllum* had been inconsistent from the time the species were described. Examination of the syntypes of *C. attenuatum* and *C. lamprophyllum* showed that in both cases they represent more than one taxon at species rank. This is discussed more fully under the relevant *Psydrax* species below. *Canthium attenuatum* had also been confused with *C. oleifolium*, probably because the species concerned are morphologically very similar and their protologue descriptions are scanty and not clearly diagnostic. Bentham (1867) added to the confusion when he cited a Ferdinand Mueller collection from the 'Burdekin river' (in Queensland) for both these species (once as a syntype of *Canthium attenuatum* Benth.). Consequently, matching specimens had been filed under either of these names in various herbaria. This had the effect of making the species concerned seem very variable and difficult to delimit. Moreover, although Bentham considered certain Australian specimens he included under the name *Canthium lucidum* (= *Psydrax odorata* in this paper) to be conspecific with those from the Pacific Islands with this name, Merrill & Perry (1945) and Bridson (1985) considered the Australian ones specifically distinct from those from the Pacific Islands and referable to *Canthium lamprophyllum* F.Muell. (former) or *Psydrax lamprophylla* (F.Muell.) Bridson (latter). We accept, in part at least, Merrill's, Perry's and Bridson's point of view that two species, not one as Bentham thought, are involved. However, we have found that both these species actually do occur in Australia.

This confusion in the nomenclature and taxonomy of these species, especially regarding the variability allowed in Australian specimens previously filed under the name *Canthium odoratum* in herbaria, began when Bentham (1867) combined *Canthium lamprophyllum* F.Muell. under *C. lucidum*. This was because the former, as Bentham conceived it, actually comprised two distinct taxa one of which is *Psydrax odorata* and the other is *P. lamprophylla* (F.Muell.)Bridson as delimited in this revision (see under *P. odorata* below).

Although the previous confusion in relation to *P. odorata* and most other *Psydrax* species in Australia has been clarified, and once-undescribed taxa allied to *P. odorata, P. attenuata* and *P. oleifolia* have been described (in this paper), many species still remain poorly known and specimens which cannot satisfactorily be placed in the taxa recognised here also exist. More collections of these species, especially of specimens with flowers, are needed to be made and more field studies undertaken before their affinities or dissimilarities can be fully understood. The variation accepted for some of the species recognised here is sometimes limited, mainly because they are insufficiently known, so their status may change as more material and more field observations become available.

Because most species are similar and often difficult to delimit, study of a combination of characters is often necessary before specimens can be identified. For this reason, lists of diagnostic attributes and the taxa that possess them are provided below to assist in identification of mainly sterile material. In addition, species which are closely related are grouped together and secondary keys to separate them from other group members are provided.

As before (Reynolds & Henderson 2001), this study was based mostly on herbarium material, but measurements given for leaves, inflorescences, flowers and fruits are based on dried, fresh or spirit material. Some measurements, such as heights for shrubs/trees, rely on notes

provided by the collector. In the list of specimens cited, only the herbaria from which specimens have been seen are recorded. These herbaria are indicated by acronyms following Holmgren *et al.*, 1990. State subdivisions (pastoral districts) are provided for Queensland collections only. The acronym 'dbh', used in the forestry industry sense for 'diameter at breast height' and provided by the collector with some specimens, is used in relation to the tree/shrub trunk in some descriptions. The taxonomic concepts accepted here are those of the first author and result from her many years of detailed herbarium studies.

Taxonomy

Psydrax Gaertn., *Fruct.* 1: 125, t.26, f.2 (1788); from Greek *psudros*, wrong, and *pseudein*, to lie, an allusion to the 'knobbly' seeds found in this genus and the belief that pimples grow on a liar's tongue. **Type**: *Psydrax diococcos* Gaertn.

Trees or shrubs; branches usually borne at right angles to the stem; branchlets occasionally spinescent. **Leaves** opposite or whorled, stipulate, petiolate; stipules interpetiolar, free or shortly confluent and sheathing at base, mostly triangular or lanceolate, keeled and attenuated into a folded lobe at apex (except in *P. lamprophylla*), persistent or sometimes caducous; blades entire, glabrous or hairy. **Inflorescences** axillary, pedunculate, of dichotomously branched cymes with bifurcate cymose branches, the flowers mostly secund on the rachis and usually with a comparatively long-stalked solitary (central) flower near forks of the dichotomous branches; bracts small, usually near the distal end of the main peduncle. **Flowers** usually bisexual, 4- or 5-merous, fragrant. Calyx tube short, obconical or broad ellipsoid, with limb short cupular, subtruncate or shallowly lobed with 4 or 5, usually minute lobes. Corolla white, cream or lemon yellow, with tube usually campanulate, glabrous abaxially and usually with a ring of retrorse hairs at throat adaxially; lobes as long as the tube, valvate in bud, erect, spreading or recurved in flower, elliptic-oblong or lanceolate, obtuse or acute, slightly incurved and ± hooded at apex. Stamens 4 or 5, inserted in throat of corolla tube; filaments comparatively short, slender, sometimes nearly obsolete; anthers exserted or ± included in corolla tube, oblongoid or ellipsoid, obtuse and mucronate at apex and often tailed at base, dorsifixed, extrorse. Disc annular, inconspicuous. Ovary 2-locular, with a solitary, ± pendulous ovule in each locule; style filiform, longer than corolla tube, usually much exserted; stigma attached to the style by its concave hollow base; stigmatic knob ovoid or oblongoid, usually bilobed at apex. **Fruit** a drupe, usually blackish coloured when dry, subglobose, ellipsoid or obovoid but laterally compressed, slightly fleshy; pyrenes 1 or 2 in each fruit, these usually thick and woody, slightly ellipsoid, broad ovoid or hemispherical, usually depressed distally, rugose or smooth externally, 1-seeded; seeds oblongoid, with testa membranous.

***Distribution*:** 100 species in the Old World Tropics according to Mabberley (1997); 22 species in Australia.

***Affinities*:** *Psydrax* is closely related to *Canthium* from which it was segregated by Cuparon (1969) primarily on the orientation of the cotyledons. In *Psydrax*, he accepted the cotyledons are aligned parallel to the ventral surface of the seed whereas in *Canthium* they are aligned perpendicular to the ventral face of the seed.

Cuparon provided additional diagnostic characters for each genus which Bridson, when reinstating *Psydrax* as a distinct genus, noted before providing more characteristics to distinguish this genus from *Canthium* (Bridson 1985, p.691). A synopsis of these is as follows.

Plants in habit erect small trees or shrubs, rarely scandent but never lianas; leaves usually restricted to new growth at the apex of stems; stipules with or without villous hairs adaxially; style equalling the corolla tube in length, shortly exceeding it or occasionally twice as long as it; stigmatic knob ± as long as wide, rarely longer; anthers partly or completely exserted from corolla tube, straight, never reflexed ..... **Canthium**

Plants in habit erect tall trees or shrubs or lianas; leaves dispersed along stems or restricted to apices in a very few species; stipules never with fine hairs adaxially; style exceeding the corolla tube in length by about twice or often much more; stigmatic knob distinctly longer than wide; anthers fully exserted from corolla tube, reflexed or straight ..... **Psydrax** (and **Keetia**, which is restricted to Africa)

Within the African species of *Psydrax*, Bridson recognised two subgenera namely *P.* subgen. *Psydrax* and *P.* subgen. *Phallaria* (Schum. & Thonn.)Bridson. Using her key, the Australian species are referrable to the former subgenus.

The Australian species of *Psydrax* agree morphologically with those from outside Australia, differing from them only in their erect or subpatent rarely reflexed corolla lobes and anthers, which are always reflexed in the African species (Bridson 1985, p.688, f.1; p.704, f.3; p.718, f.6; p.720, f.7), and by their spinescent branchlets or thorns on the branches of young plants in *P. oleifolia*.

***Notes*:** In the keys and descriptions that follow, the main peduncle is taken to be the main stalk of the whole inflorescence, and the central or solitary flower is the usually long-stalked solitary flower which is situated in/near the forks of the dichotomously branched cymes. The measurement of the style includes that of the stigma.

Key to species of *Psydrax* in Australia

1. Leaves whorled with 3–5 per node or opposite on the same branchlet, canescent or subglabrous; branchlets canescent; N NT & N QLD ..... **1. P. paludosa**
   Leaves opposite or clustered on brachyblasts; branchlets and leaves never canescent; hairs if present usually very fine and occurring on young parts and inflorescence axes only 2

2. Leaf blades linear or narrow elliptic, 2.5–4.0 (–5.5) mm wide, with margins recurved or revolute; central Australia (WA, NT & SA) ..... **3. P. suaveolens**
   Leaf blades variously shaped, usually more than 5.0 mm wide, with margins flat or rarely recurved 3

3. Leaves usually more than 10 cm long 4
   Leaves usually less than 10 cm long 9

4. Leaf blades broad elliptic or elliptic ovate, about twice as long as wide, up to 18 cm long and (3.1–) 4.0–8.7 cm wide; peduncles hairy 5
   Leaf blades mostly narrow elliptic or lanceolate, 2–3 times as long as wide, rarely up to 18 cm long and 0.6–2.7 (–3.0) cm wide; peduncles glabrous 6

5. Stipules with a prominent keel and a folded lobe at apex; leaf blades with prominent, finely reticulate veins forming a closely arranged network; peduncles slender, sparsely hairy; NE QLD ..... **9. P. tropica**
   Stipules without a keel and an apical lobe; leaf blades with prominent or obscure, loosely arranged reticulate veins; peduncles robust, densely hairy; E QLD & NE NSW ..... **7. P. lamprophylla**

6. Leaf blades 3–10 times as long as wide, 0.6–1.5 (–2.0) cm wide, obscurely veined; domatia present; inflorescences 5–15 (–22)-flowered; pedicel of solitary flower (5–) 10–18 mm long; branchlets dark green coloured; N NT & NE QLD ..... **17. P. saligna**
Leaf blades 3–4 times as long as wide, 1.4–3.0 cm wide, prominently veined; domatia present or absent; inflorescences more than 15-flowered; pedicel of solitary flower (3.5–) 8–10 mm long; branchlets reddish brown, brown or grey 7

7. Leaf blades narrow elliptic, subfalcate, 11.5–17.0 (–18.5) cm long, conspicuously nerved with lateral nerves ascending; domatia absent; young branchlets 4-angular, red coloured; N WA & N NT ..... **18. P. pendulina**
Leaf blades narrow elliptic or lanceolate, usually less than 11 cm long; lateral nerves oblique; domatia present or absent; young branchlets terete or slightly angular, brown, red brown or gray coloured 8

8. Leaf blades ± shiny on adaxial surface; domatia usually present on most leaves of a branchlet; flowers 5-merous; pedicels comparatively long (those of solitary flowers 8–17 mm long); bark of branchlets tessellated; NE QLD ..... **16. P. lepida**
Leaf blades dull or with a slight sheen on adaxial surface; domatia usually present only on some leaves of a branchlet, sometimes totally absent; flowers 4- or 5-merous; pedicels comparatively short (those of solitary flowers 8–11 mm long); bark of branchlets smooth; tropical WA, NT & QLD .. **15. P. attenuata**

9. Leaf blades up to twice as long as broad, with conspicuous raised nerves and close secondary reticulate venation (especially in dried specimens); main lateral nerves in (3 or) 4–8 pairs 10
Leaf blades not with the above set of characters, broad or narrow, with lateral nerves and reticulate venation prominent or obscure, or veins absent; main lateral nerves in 1–4 (–6) pairs 12

10. Leaves with petiole 0.2–0.3 cm long; base of blade usually narrow and attenuate into the petiole; domatia usually present on leaves; N QLD .... **14. P. pallida**
Leaves with petiole 0.2–1.3 cm long; base of blade usually subcordate, truncate or obtuse; domatia present or absent on leaves 11

11. Domatia absent on leaves; leaf blades broad elliptic or ovate or ± suborbicular, dull, glabrous, smooth or scrabridulous; petioles 0.2–1.2 cm long; arid WA, NT, SA, SW QLD & NW NSW ..... **11. P. latifolia**
Domatia usually present on leaves; leaf blades obovate or broad elliptic, shiny on adaxial surface, glabrous, smooth; petioles 0.2–0.6 cm long; Cape York, QLD ..... **13. P. reticulata**

12. Fruits obovoid, 1.3–2.0 cm long × 0.8–1.1 cm wide 13
Fruits obovoid or ellipsoid, 0.4–1.0 cm long × 0.3–0.9 cm wide 14

13. Inflorescences on slender peduncles 0.3–1.6 cm long; branching lax; branches ending in 3–7-flowered cymules; flowers 5-merous; leaf blades 6.0–9.0 cm long × 3.0–6.0 cm wide, shiny on adaxial surface; domatia present on leaves, conspicuous; fruits 1.3–1.5 cm long × 0.8–1.0 cm wide; NE QLD ..... **8. P. laxiflorens**
Inflorescence on long, stout, ± erect peduncles 2.0–6.0 cm long; branches and pedicels comparatively robust when dry; terminal cymes 8–12-flowered; flowers 4-merous; leaf blades usually 3.6–6.6 cm long × 1.5–3.3 cm wide, dull on adaxial surface; domatia on leaves small and inconspicuous or absent; fruits 1.5–2.0 cm long × 0.9–1.1 cm wide; NE QLD ..... **5. P. montigena**

14. Branchlets and peduncles finely hairy 15
Branchlets and peduncles glabrous 20

15. Leaves usually more than 5.0 cm long 16
Leaves usually less than 5.0 cm long 17

16. Leaf blades narrow elliptic or sublanceolate, 0.8–1.8 cm wide, dull on adaxial surface; reticulate veins inconspicuous; domatia absent; central WA ..... **4. P. rigidula**
Leaf blades elliptic, elliptic-ovate or subobovate, (2.2–) 3.0–4.4 (–5.2) cm wide, usually very glossy on adaxial surface; reticulate veins apparent; domatia usually present; N WA, N NT, E QLD & NE NSW ..... **6. P. odorata**

17. Domatia present on leaves, prominent; leaf blades narrow elliptic or elliptic, 2.6–4.5 cm long × 0.7–2.0 cm wide, dull on adaxial surface; lateral nerves indistinct; E QLD ..... **21. P. johnsonii**
Domatia absent from leaves or if present obscure; leaf blades elliptic, narrow elliptic, suborbicular or obovate, 0.8–5.0 cm long × 0.4–3.0 cm wide, usually shiny on adaxial surface; lateral nerves distinct 18

18. Inflorescences 5–21-flowered, comparatively small, slender; main peduncles slender, 0.15–1.0 cm long; corolla 4.5–5.5 mm long, ± chartaceous; leaf blades elliptic, (0.8–) 2.2–4.6 cm long × (0.4–) 1.0–1.8 cm wide, rarely more, slightly shiny on adaxial surface; NE QLD & PNG ... **2. P. graciliflora**
Inflorescences usually more than 21-flowered; main peduncles slender or stout, (0.3–) 0.8–4.6 cm long; corolla 4.0–7.5 mm long, chartaceous or fleshy; leaf blades elliptic or obovate, 1.5–5.0 cm long × 0.9–3.0 cm wide , usually very glossy on adaxial surface 19

19. Leaf blades obovate, 3.2–5.0 cm long × 1.6–3.0 cm wide, rarely more; primary veins and secondary, reticulate veins prominent; inflorescence with main peduncles 1.5–4.6 cm long, slender; corolla 6.0–7.5 mm long, chartaceous, drying straw coloured; corolla tube cylindrical; Cape York, QLD ..... **10. P. banksii**
Leaf blades elliptic or suborbicular, 1.5–5.0 cm long × 0.6–2.5 cm wide; primary veins prominent; secondary veins obscure; inflorescence with main peduncles (0.3–) 0.8–2.0 cm long, stout or slender; corolla 4.0–5.0 mm long, fleshy, drying brown; corolla tube broad campanulate; N WA, N NT, E QLD & NE NSW ..... **6. P. odorata**

20. Leaf blades 2.0–2.8 cm long × 1.1–1.3 cm wide; inflorescences 5–17-flowered; petioles and peduncles 0.2–0.4 cm long; central & NW QLD .. **22. P. forsteri**
Leaf blades more than 3.0 cm long and 1.3 cm wide; inflorescences more than 17-flowered; petioles and peduncles usually more than 0.4 cm long 21

21. Domatia present on leaf blades, prominent 22
Domatia absent from leaf blades or if present inconspicuous 24

22. Leaf blades 1.4–4.4 cm wide, usually up to twice as long as wide, mostly very glossy on adaxial surface; flowers usually crowded on the branches of the inflorescence; pedicels stout, comparatively short, those on branches of the cyme almost obsolete; flowers mostly 4-merous, corolla fleshy; N WA, N NT, E QLD & NE NSW ..... **6. P. odorata**
Leaf blades 0.6–2.7 (–3.0) cm wide, usually more than 3 times as long as wide, dull or slightly shiny on adaxial surface; flowers loosely arranged along branches of the inflorescence; pedicels comparatively long and slender; flowers mostly 5-merous, corolla chartaceous 23

23. Leaf blades 0.6–1.5 (–2.0) cm wide, (3–) 4–10 times as long as wide; nerves and veins usually indistinct; inflorescences 5–15 (–22)-flowered, branched once only; branchlets dark green; N NT & NE & central QLD ..... **17. P. saligna**
Leaf blades 1.0–2.7 (–3.0) cm wide, up to 4 times as long as wide; nerves and veins prominent; inflorescences (8–) 13–41-flowered, usually branched more than once; branchlets brown, reddish brown or grey; tropical WA, NT & QLD ..... **15. P. attenuata**

24. Leaf blades (0.7–) 1.7–2.4 (–3.3) cm wide, concolorous, with obscure or distinct nerves; reticulate veins and domatia very rarely present; inflorescences usually compact, the flowers closely arranged on branches; S QLD & N NSW ..... **19. P. oleifolia**
Leaf blades (1.6–) 2.4–4.8 cm wide, somewhat discolourous; nerves and reticulate veins prominent; domatia usually present on some leaves of a branchlet; inflorescences usually open, the flowers loosely arranged on branches 25

25. Leaf blades to 4.8 cm wide, with 3–6 pairs of conspicuous lateral nerves; flowers mostly 4-merous; corolla 5.0–6.5 mm long; pedicels comparatively short, that of solitary flowers 0.2–0.35 cm long; young branchlets usually stout, reddish brown coloured; central Australia (WA, NT & SA) ..... **12. P. ammophila**
Leaf blades 1.0–3.0 (–4.0) cm wide, with 2 or 3 pairs of prominent lateral nerves; flowers 4- or 5-merous; corolla 6.0–11.0 mm long; pedicels comparatively long, that of solitary flowers (0.3–) 0.5–1.0 cm long; young branchlets slender, reddish brown, brown or grayish coloured 26

26. Petioles (1.2–) 2.0–3.5 cm long; leaf blades 2.6–4.0 cm wide, rarely less, up to twice as long as wide; corolla 7.5–11.0 mm long; pedicel of solitary flowers (0.3–) 0.5–0.7 cm long; branchlets whitish coloured, or pale grey mottled with white; central & SE QLD ..... **20. P. longipes**
Petioles 0.5–2.2 cm long; leaf blades 1.6–2.7 (–3.0) cm wide, 3–4 times as long as wide; corolla 5.5–8.0 mm long; pedicel of solitary flowers (0.5–) 0.8–1.0 cm long; branchlets brown, yellowish brown, reddish brown or grayish coloured; tropical WA, NT & QLD ..... **15. P. attenuata**

A conspectus of some diagnostic attributes of *Psydrax* in Australia

Leaves usually in whorls and plants usually canescent: *P. paludosa*

Leaf blades linear with revolute or recurved margins: *P. suaveolens*

Leaf blades comparatively large, (8.5–) 10.5– 20 cm long; stipules without a keel or an apical lobe: *P. lamprophylla*

Leaf blades comparatively small, 0.9–8.3 (–9.3) cm long: *P. ammophila*, *P. banksii*, *P. forsteri*, *P. graciliflora*, *P. odorata*, *P. oleifolia*

Both leaf blades and inflorescences comparatively small (1.0–6.0 cm long): *P. ammophila*, *P. forsteri*, *P. graciliflora*, *P. odorata*

Leaf blades shiny or exceedingly glossy on adaxial surface: *P. banksii*, *P. lamprophylla*, *P. laxiflorens*, *P. lepida*, *P. odorata*, *P. tropica*

Leaf blades with a slight sheen on adaxial surface: *P. attenuata*, *P. johnsonii*, *P. lepida*, *P. montigena*, *P. odorata*, *P. saligna*

Leaf blades dull on adaxial surface: *P. ammophila*, *P. attenuata*, *P. johnsonii*, *P. oleifolia*, *P. rigidula*, *P. saligna*

Leaf blades concolorous: *P. oleifolia*

Leaf blades comparatively broad, less than 4 times as long as wide, with reticulate venation conspicuous: *P. latifolia*, *P. pallida*, *P. reticulata*, *P. tropica*

Leaf blades comparatively broad, less than 4 times as long as wide, with reticulate venation inconspicuous: *P. ammophila*

Leaf blades comparatively narrow, 4–10 times as long as wide: *P. attenuata*, *P. lepida*, *P. pendulina*, *P. saligna*

Leaves, branchlets and peduncles exceedingly stout in dried specimens: *P. montigena*

Domatia on leaves mostly prominent: *P. attenuata*, *P. johnsonii*, *P. lamprophylla*, *P. laxiflorens*, *P. lepida*, *P. montigena*, *P. odorata*, *P. pallida*, *P. reticulata*, *P. saligna*

Domatia on leaves mostly small and obscure: *P. ammophila*, *P. attenuata*, *P. banksii*, *P. longipes*, *P. montigena*, *P. tropica*

Domatia absent from leaves: *P. ammophila*, *P. attenuata*, *P. odorata*, *P. forsteri*, *P. latifolia*, *P. longipes*, *P. oleifolia*, *P. pendulina*, *P. rigidula*

Species Groups

Although species such as *Psydrax paludosa*, *P. suaveolens*, *P. lamprophylla*, *P. montigena* and *P. graciliflora* are very distinctive and readily recognisable as indicated in the key and conspectus above, others belong to groups of related somewhat similar species and are not so easy to distinguish. These groups are as follows.

(a) The ***Psydrax odorata*** group:

Psydrax odorata and its related species *P. banksii, P. lamprophylla, P. laxiflorens* and *P. tropica* are characterised by their glossy, coriaceous leaf blades with distinct nerves and veins and usually prominent domatia, their usually large, many-flowered inflorescences with short and stout or slender pedicels, and their flowers with fleshy or coriaceous corollas. These species may be distinguished as follows.

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1. Stipules neither keeled nor attenuated into a folded lobe at apex; leaf blades (8.5–) 10.5–18.0 (–20.0) cm long × (3.1–) 4.0–8.7 (–9.7) cm wide; main peduncles exceedingly robust, hairy ..... **7. P. lamprophylla**
   Stipules keeled and attenuated into a folded lobe at apex; leaves and peduncles not with above set of characters 2

2. Fruits obovoid, 1.3–1.5 cm long × 0.8–1.0 cm wide; inflorescences exceedingly loosely branched, with long slender branches and scattered, mostly 3–7-flowered cymules; domatia present on the leaves, conspicuous ..... **8. P. laxiflorens**
   Fruits obovoid or ellipsoid, 0.5–0.8 cm long × 0.3–0.9 cm wide; inflorescences more or less compact, usually with many-flowered short branches, the ultimate cymules mostly more than 7-flowered; domatia present or absent on leaves, prominent or obscure 3

3. Leaf blades 10.0–14.5 (–18.0) cm long × 5.2–7.0 (–8.0) cm wide, usually shortly acuminate or subcaudate at apex, with prominent reticulate veins fine and forming a closely arranged network; stipules usually broad ovate, acuminate, scarious along margins ..... **9. P. tropica**
   Leaf blades 1.5–8.3 (–9.2) cm long × 0.6–4.2 (–5.2) cm wide, obtuse, rounded or subacute at apex, with veins if visible, usually loosely reticulate; stipules ovate, with a long or short apical lobe, coriaceous 4

4. Leaf blades elliptic, elliptic-ovate, subrhombic or narrow elliptic, 5.0–9.3 cm long × 2.5–5.2 cm wide, rarely smaller; domatia usually prominent ..... **6. P. odorata**
   Leaf blades obovate, elliptic, suborbicular or narrow elliptic, 1.5–5.0 cm long × 0.6–2.5 (–3.0) cm wide, rarely larger; domatia prominent or obscure, or absent 5

5. Leaf blades obovate or subelliptic, rounded at apex, narrowed into petiole proximally; inflorescence on long slender stalks 1.5–4.6 cm long; pedicels slender; corolla scarious, tube narrow campanulate ..... **10. P. banksii**
   Leaf blades elliptic, narrow elliptic or suborbicular, obtuse or subacute at apex and base; inflorescence on stout or slender peduncles 0.3–2.0 cm long; pedicels usually stout and short, sometimes almost obsolete; corolla fleshy, tube broad campanulate ..... **6. P. odorata**

(b) The ***Psydrax latifolia*** group:

Psydrax latifolia and its related species *P. ammophila, P. pallida* and *P. reticulata* are characterised by broad, usually thick, rigid, conspicuously nerved and reticulate veined leaf blades especially in dried leaves. These species may be distinguished as follows.

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1. Petioles 2.0–3.0 cm long; leaf blade base subacute or acute and attenuate into the petiole; lateral nerves in 3–5 pairs; domatia present ..... **14. P. pallida**
   Petioles 0.2–1.3 cm long; leaf blade base broad obtuse, truncate, subcordate or rounded though sometimes subacute and attenuate into the petiole; lateral nerves in 4–9 pairs; domatia present or absent 2

2. Petioles 0.2–0.6 cm long; leaf blades obovate or broad elliptic, slightly shiny on adaxial surface; domatia usually present ..... **13. P. reticulata**
   Petioles (0.2–) 0.5–1.3 cm long; leaf blades elliptic, broad ovate or suborbicular, dull on adaxial surface; domatia absent or occasionally present 3

3. Domatia absent on leaves; leaf blades (3.0–) 4.2–6.0 (–8.7) cm wide, with apex slightly rounded or truncate and base subcordate or obtuse; lateral nerves in (4–) 5–9 pairs; reticulate veins prominent, usually closely arranged, raised in dried specimens, usually visible on abaxial surface ..... **11. P. latifolia**
   Domatia present on some leaves of a branchlet or absent; leaf blades 1.2–3.5 (–4.8) cm wide, with apex and base obtuse or subacute; lateral nerves in (3–) 4–6 pairs; reticulate veins obscure, openly arranged, usually not visible on abaxial surface ..... **12. P. ammophila**

(c) The ***Psydrax attenuata*** group:

Psydrax attenuata and its related species *P. lepida, P. pendulina* and *P. saligna* are characterised by narrow elliptic, lanceolate or elliptic leaf blades which are usually provided with domatia (though domatia are absent in *P. pendulina* and sometimes in *P. attenuata*) and prominent oblique ascending nerves (which are sometimes obscure in *P. saligna*), open, laxly branched inflorescences and chartaceous 4- or 5-merous flowers on long slender pedicels. These species may be distinguished as follows.

---

1. Domatia present on all leaves or only on one or two leaves on the one branchlet 2
   Domatia absent on leaves 4

2. Leaf blades 0.6–1.8 cm wide, 4–10 times as long as wide; nerves distinct or indistinct; veins indistinct; inflorescences comparatively small, 5–15 (–22)-flowered; branchlets dark reddish brown or blackish grey coloured ... **17. P. saligna**
   Leaf blades 1.0–3.0 (–4.2) cm wide, usually 3 to 4 times as long as wide; nerves and veins distinct; inflorescences comparatively large, to 50-flowered; branchlets reddish-brown, brown or greyish coloured 3

3. Domatia usually present on all the leaves of a branchlet; leaf blades shiny on adaxial surface; peduncle of inflorescence 1.0–1.5 cm long; flowers 5-merous, densely hairy at mouth of corolla tube; pedicel of solitary flowers 0.8–1.7 cm long ..... **16. P. lepida**
Domatia rarely present on all the leaves of a branchlet; leaf blades dull on adaxial surface; peduncle of inflorescence 0.3–0.6 cm long; flowers 4- or 5-merous, sparsely hairy at mouth of corolla tube; pedicel of solitary flowers (0.35–) 0.8–1.1 cm long ..... **15. P. attenuata**

4. Leaf blades usually 11.0 to 18.5 cm long, more than 5 times as long as wide, usually thin coriaceous; lateral nerves conspicuous, exceedingly oblique; young branchlets quadrangular distally, reddish coloured ..... **18. P. pendulina**
Leaf blades usually less than 11.0 cm long, about 3–4 times as long as wide, thick coriaceous; lateral nerves prominent, oblique or exceedingly oblique; young branchlets terete or slightly angular distally, greyish or brownish coloured ..... **15. P. attenuata**

(d) The ***Psydrax oleifolia*** group:

Psydrax oleifolia and its related species *P. forsteri, P. johnsonii* and *P. longipes* are characterised by dull or slightly shiny thick leaf blades with obscure or conspicuous nerves, with or without reticulate veins and usually without domatia (though domatia are present in *P. johnsonii* and sometimes in *P. longipes*), and usually 4-merous flowers (though 5-merous flowers occur in *P. forsteri* and sometimes in *P. longipes*). These species may be distinguished as follows.

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1. Axes of young branchlets and inflorescences hairy; domatia present on leaves, prominent ..... **21. P. johnsonii**
Axes of young branchlets and inflorescences glabrous; domatia absent on leaves or, if present, inconspicuous 2

2. Leaves and inflorescences comparatively small; leaf blades 2.0–2.8 cm long × 1.1–1.3 cm wide; inflorescences 5–17-flowered; peduncles 2–4 mm long ..... **22. P. forsteri**
Leaves and inflorescences usually comparatively large; leaf blades (3.5–) 5.5–10.0 cm long × (0.7–) 1.7–4.0 cm wide; inflorescences 15–39-flowered; peduncles usually longer than 4 mm 3

3. Petioles 0.6–1.2 cm long; leaf blades (0.7–) 1.7–2.4 (–3.3) cm wide, concolorous;domatia and reticulate veins usually absent; nerves obscure or distinct; inflorescences usually much smaller than leaves and compact; flowers with corolla 4.0–6.5 mm long; fruits 4.5–6.0 mm across ..... **19. P. oleifolia**
Petioles 1.2–2.5 (–3.5) cm long; leaf blades (1.7–) 2.6–4.0 cm wide, discolorous; domatia present on some leaves of a branchlet; nerves and reticulate veins distinct; inflorescences open; flowers with corolla 7.5–11.0 mm long; fruits (0.4–) 0.6–0.7 cm across ..... **20. P. longipes**

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1. Psydrax paludosa S.T.Reynolds & R.J.F.Hend., **sp. nov.** a speciebus Australiae omnibus ceteris generis foliis plerumque ternatis et oppositis et canescentibus differt. **Typus**: Queensland. Cook District: Weipa, track between Telegraph line and 20 Mile, S of Marmoss Creek, 12°41'S, 142°05'E, 4 January 1983, *A. Morton* AM1773 (holo: BRI; iso: MEL).

Canthium sp. (Weipa, A.Morton AM1773), S.T. Reynolds (1997, p.181), P.I. Forster & D.A. Halford (2002, p.174).

Canthium sp. (Wenlock River, J.R.Clarkson 8418+)*[1], S.T. Reynolds (1997, p.181).

Shrubs 2–8 m high, with branches horizontal; bark mottled; branchlets finely hairy or glabrous, dark reddish-brown, reddish coloured distally. **Leaves** whorled, with 3–5 leaves at each node, or opposite; stipules comparatively small, broad ovate with a short lobe at apex, hairy or glabrous abaxially, hairy at base adaxially; petioles 0.1–0.8 cm long; blades elliptic, narrow elliptic-subobovate or narrow obovate, (1.0–) 2.2–5.2 cm long × (0.4–) 1.2–1.7 cm wide, with apex obtuse and base acute or subacute, thin coriaceous; adaxial and abaxial surfaces finely white hairy or glabrous; lateral nerves consisting of 1 or 2 pairs, obscure, oblique to midrib and ascending distally, or absent; reticulate veins absent; domatia one on each side of midrib and obscure, or absent. **Inflorescences** 1.8–2.5 cm long × 1.8–2.5 cm wide, 8–30-flowered; peduncles hairy or subglabrous, the basal one 6.0–8.0 mm long with a pair of small ovate bracts at its distal end; axis branches 3.0–5.0 mm long. **Flowers** 4-merous; pedicel of solitary flowers 3.0–5.0 mm long, that of others 0.2–2.0 mm long; calyx 2.0–2.5 mm long, with tube campanulate and limb 4-denticulate; lobes ovate, 0.5–0.8 mm long × *c.*0.75 mm wide; corolla 3.5–7.0 mm long, cream or lemon yellow; tube inflated, ± campanulate, 1.5–3.5 mm long × 2.0–2.5 mm wide at top, densely hairy at throat; lobes elliptic, 2.0–4.5 mm long × *c.*1.5 mm wide, subacute or obtuse, erect or recurved; stamens exserted; filaments 1.5–2.0 mm long; anthers 1.5–2.0 mm long, erect; disc hairy; style (with stigma) 6.0–8.0 mm long; stigma ellipsoid, *c.*0.75 mm long, bifid at apex. **Fruits** (only immature ones seen) ellipsoid or obovoid, 1.0–1.2 cm long × 0.8–1.0 cm wide, smooth, exceedingly fleshy; pyrenes ellipsoid, smooth, thin, crustaceous; endosperm thick. (**Fig. 1**)

***Additional representative specimens*: Northern Territory.** Bing Bong Station (15°44'S, 136°20'E), Nov 1977, *Craven* 4694 (DNA). **Queensland.** Cook District: Archer River, 13°25'S, 142°10'E, Sep 1974, *Hyland* 7712 (BRI, QRS); ditto, Archer Bend, Sep 1974, *Tracey* 14355 (BRI, QRS); along road to Inkerman, from Burke Development Road, 16°24'S, 142°34'E, Jan 1987, *Dalliston* 52 (BRI); 4 km S of Dunbar Homestead, 16°04'S, 142°20'E, Jul 1987, *Dalliston* 18 (BRI); track to James Creek, 4 km N of Escott Homestead, 17°29'S, 139°14'E, Jul 1987, *Dalliston* 216 (BRI); 56 km W of Rokeby Homestead, 13°27'S, 142°16'E, Jul 1988, *Dalliston* 531 (BRI); 8.8 km S of Wenlock River on Peninsula Development Road, 12°31'S, 142°39'E, Apr 1990, *Clarkson* 8418 & *Neldner* (BRI)*[1]; 2.4 km W of Lydia Creek on Mission River Road, 12°33'S, 142°34'E, Apr 1990, *Clarkson* 8600 & *Neldner* (BRI)*[1]; Cape York, Edward River near Mitchell Downs, 14°46'S, 141°40'E, Apr 1990, *Taplin* CY26 (BRI); about 45 km due E of Kowanyama Aboriginal Community, 15°28'S, 142°13'E, Jun 1992, *Blackman* G33 (BRI).

***Distribution and habitat*:** Northern Australia from Arnhem Land, Northern Territory, to Cape York Peninsula, Queensland; usually in standing water on the edge of waterways and flooded drainage lines in *Eucalyptus tetrodonta* woodland and in swampy areas with *Melaleuca* species. (**Map 1**)

***Diagnostic attributes*:** *Psydrax paludosa* is readily distinguishable from other Australian species of this genus by its whorled (with usually 3–5 leaves at each node) and opposite leaves on the same branchlet, canescent branchlets and leaf blades, comparatively small inflorescences, and conspicuously fleshy fruits with thin crustaceous, smooth-surfaced pyrenes.

***Notes*:** Although most of the specimens seen have the typical canescent branchlets, a form with glabrous or subglabrous branchlets (as represented by specimens marked *[1] above) also exists.

***Etymology*:** The specific epithet *paludosus*, Latin for 'marshy, swampy or boggy', refers to the usual habitat of this species.

2. Psydrax graciliflora (Merr. & L.M.Perry) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Canthium graciliflorum* Merr. & L.M.Perry, *J. Arnold Arb.* 26: 230–231 (1945). **Type**: Papua New Guinea. Tarara, Wassi Kussa River, December 1936, *L.J. Brass* 8596 (holo: n.v.; iso: BRI, K).

Shrubs or small trees (1–) 2–8 (–10) m high; trunk 10–15 cm dbh, coppicing at base, fluted; bark whitish coloured; branchlets quadrangular and ridged distally, minutely hairy, dark greyish-brown, young ones often slightly zigzagged. **Leaves** opposite; stipules broad triangular, keeled, attenuated into a long, broad,

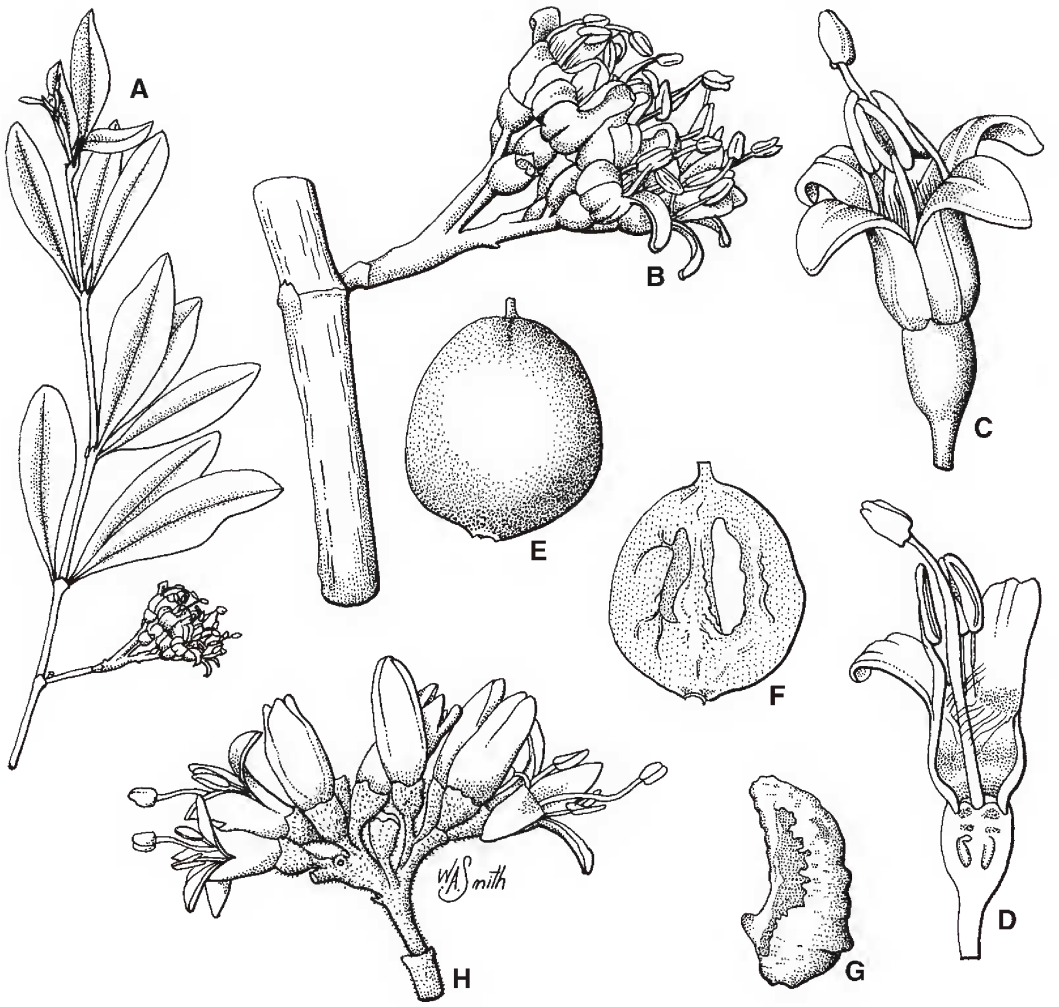

Fig. 1. ***Psydrax paludosa*** (typical form). A. flowering branch × 1. B. inflorescence × 3. C. flower × 6. D. LS of flower × 6. E. Fruit × 3. F. LS of fruit × 3. G. pyrene × 6. A–G, *Clarkson* 8600 & *Neldner* (BRI). ***Psydrax paludosa*** (hairy form). H. part of inflorescence × 3. H, *Morton* AM1773 (BRI).

lanceolate lobe or sometimes into a small and short lobe at apex, somewhat scarious, shiny; petioles (0.1–) 0.2–0.4 cm long, glabrous or sparsely hairy; blades elliptic or sometimes narrow elliptic, (0.9–) 2.2–4.6 (–5.2) cm long × (0.4–) 1.0–1.8 (–2.0) cm wide, with apex and base usually subacute, glabrous on both surfaces with adaxial surface bright green and slightly shiny, the abaxial one slightly darker and dull; lateral nerves in 3–5 pairs, slightly patent or suboblique and looping at margins, fine, obscure or absent on abaxial surface; domatia absent or rarely when present 1 or 2 on each leaf and inconspicuous. **Inflorescences** 1.2–1.4 cm long × 1.3–2.2 cm wide, 5–17 (–21)-flowered; peduncles and pedicels minutely hairy, terminating in 2 or 3 branched cymes, the main peduncle 1.5–10.0 mm long, with minute bracts at its distal end; axis branches 4.0–5.0 mm long, ultimate cymules usually 5-flowered. **Flowers** 4(or 5)-merous; pedicel of solitary flowers 4.5–7.0 mm long, that of others 2.0–5.0 mm long; calyx 1.75–2.0 mm long, with tube subturbinate and limb 4-denticulate; lobes ovate, 0.25–0.5 mm long × 0.75–1.0 mm wide; corolla 4.5–5.5 mm long, white or cream; tube campanulate, 1.0–1.75 mm long × *c.*1.5 mm wide at top, hairy at throat; lobes narrow

elliptic, 3.5–4.5 mm long × 1.0–1.5 mm wide, obtuse, erect or ± spreading; stamens as long as the corolla lobes; filaments 1.5–2.0 mm long; anthers 2–3 mm long, erect, ± recurved at anthesis; style (with stigma) 4–6 mm long; stigma oblongoid, *c.*1.5 mm long, bilobed at apex. **Fruits** subglobose or broad ellipsoid, 3.0–4.5 mm long × 3.0–6.5 mm wide, black when ripe; pyrenes ellipsoid, slightly rugose.

***Representative specimens*: Papua New Guinea:** Tarara, Wassi Kussa River, Dec 1936, *Brass* 8596 (BRI, K). **Australia: Queensland.** Cook District: Timber Reserve 14, Parish of Kesteven, 13°43'S, 143°19'E, Mar 1962, *Hyland* 11757 (BRI); Lankelly Creek, McIlwraith Range, Oct 1969, *Webb & Tracey* 9559 (BRI, QRS); Mt Tozer near Iron Range, 12°45'S, 143°12'E, Nov 1977, *Tracey* 14871 (BRI); near Lockerbie, 10°47'S, 142°28'E, Feb 1980, *Hyland* 10281 (BRI); Summit of Mt Tozer, 12°44'S, 143°12'E, Jun 1980, *Morton* AM847 (BRI); National Park Reserve 8, Parish of Weymouth, 12°37'S, 143°21'E, Mar 1982, *Hyland* 11739 (BRI); Endeavour River, 15°25'S, 145°15'E, Dec 1983, *Langford* s.n. (BRI, QRS); Crusher Creek, Moa Island, 10°15'S, 142°15'E, Apr 1987, *Budworth* 975 (BRI).

***Distribution and habitat*:** South coast of Papua New Guinea to Cape York Peninsula, Australia, including Torres Strait Islands; on ranges, ridges, creek and riverbanks, in evergreen or semi-deciduous notophyll vine forests. (**Map 2** - Queensland only)

***Diagnostic attributes*:** *Psydrax graciliflora* is characterised by small, thick, finely nerved, elliptic leaf blades and small, fragile inflorescences with small flowers on slender pedicels, hairy branchlets and inflorescences, and ± scarious stipules which are keeled and attenuated into a long broad (though sometimes short) lobe at the apex.

***Notes*:** A specimen recorded under the name *Canthium* sp. (Altanmoui Range D.G.Fell+ DGF2702) by Reynolds (1997, p.180) and others previously filed under that name in BRI have small leaves but they probably represent distinct forms of this species. However, as they are sterile it is not possible to be certain of this. These specimens are as follows.

Queensland. Cook District: Altanmoui Range, Cape Melville National Park, 7 km E of Wakooka Outstation, 14°34'S, 144°26'E, Oct 1992, *Fell* DGF2702 & *Stanton* (BRI). North Kennedy District: northern end of Little Ramsay Bay, Hinchinbrook Island, 18°20'S, 146°19'E, Aug 1975, *Sharpe* 1678 (BRI); Mulligan Bay, Hinchinbrook Island, 18°27'S, 146°20'E, Jan 1987, *Godwin & Stanton* C3013 (BRI); tributary of Mulligan Creek, Hinchinbrook Island, 18°26'S, 146°19'E, Sep 1994, *Cumming* 13353 (BRI).

If correctly placed, the Cape Melville collection by Fell & Stanton has the smallest leaves seen for this species whereas the Hinchinbrook Island collections have smaller and narrower leaves than are usual for it. Moreover, *P. graciliflora* has sofar not definitely been collected from as far south as these latter specimens were.

3. Psydrax suaveolens (S.Moore) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Canthium suaveolens* S.Moore, *J. Linn. Soc. Bot.* 34: 194 (July 1899). **Type**: Western Australia. Repperi juxta Mt Margaret, 1894–95, *S. Moore* s.n. (holo: BM).

Canthium lineare E.Pritz., *Feddes Repert.* 15(3): 359 (Dec 1918), *Plectronia linearis* (E.Pritz.) J.M.Black, *Trans. & Proc. Roy Soc. S. Aust.* 59: 261 (1935), **syn. nov. Type**: Northern Territory. Central Australia, Hermannsburg ad flumen Fincke, 1906–1908, *Strehlow* 88 (n.v.).

Slender shrubs 2–3.5 m high; bark smooth, light or bluish grey coloured; young parts and inflorescences hairy; branchlets greyish or reddish coloured, occasionally with a whitish bloom distally. **Leaves** opposite or sometimes clustered on brachyblasts; stipules ovate, slightly keeled, attenuated into a folded lobe at apex, with colleters present at the base adaxially; petioles 0.1–0.2 cm long; blades linear, very narrow elliptic or narrow oblong obcuneate, (2.1–) 4.0–6.2 cm long × 0.25–0.4 (–0.55) cm wide, with apex obtuse, base subacute and narrowing into the very short petiole, and margins revolute or recurved, rigid on drying; adaxial and abaxial surfaces glabrous; midrib deeply channelled above, raised below; nerves and reticulate venation not apparent. **Inflorescences** with main peduncles 2–5 mm long with minute bracts at its distal end, terminating in 2 branched cymes; axis branches *c.*2.0 mm long, cymules 2–5-flowered. **Flowers** 5-merous; pedicel of solitary flowers 3.5–5.0 mm long, of others 2.0–4.5 mm long; calyx 2.0–2.5 mm long, with tube cupular, flared to a 5-dentate limb; lobes ovate-acuminate or ovate; corolla 4.0–7.5 mm long, white or cream; tube ± cylindrical, 1.5–2.5 mm

long × 2.0–2.5 mm wide, sparsely hairy at throat; lobes elliptic, 3.0–6.5 mm long × 2.0–2.5 mm wide, subacute, erect; stamens slightly exserted; filaments 1.5–2.5 mm long; anthers 2.0–3.0 mm long, erect or patent; disc shorter than the calyx limb, glabrous; style (with stigma) 7.0–10.0 mm long; stigma oblongoid, bifid at apex. **Fruits** transversely ellipsoid or subglobose, 5.0–6.0 mm long × 6.5–8.5 mm wide, 2-celled, black and shiny when ripe, fleshy and juicy; pyrenes exceedingly rugose on abaxial surface. (**Fig. 2A–2E**)

***Additional representative specimens*: Western Australia**. Rawlinson Range, S of Sladen Water (24°5-'S, 128°1-'E), Feb 1935, *Finlayson* s.n. (AD); 24 miles (*c.*38.4 km) East Blackstone Ranges (25°56'S, 128°08' E), Jun 1958, *Chippendale* 4524 (DNA, PERTH); 60 miles (*c.*96 km) N of Paynes Find, Apr 1960, *George* 710a (PERTH); Yerilla Station (29°28'S, 121°41'E), Aug 1985, *Burnside* s.n. (PERTH); 1.4 km W of No 17 Bore, Berwidgie Station, Jun 1988, *Cranfield* 6845 (PERTH); West Angelas, Dec 1995, *Janicke* Ub6 (PERTH). **Northern Territory**. Napperby, about 100 miles (*c.*160 km) NW of Alice Springs, 22°35'S, 132°45'E, Jan 1930, *Everist* 4194 (AD, BRI); 11 miles (*c.*17.6 km) W of Ayers Rock along Ayers Rock and Docker Creek road (25°20'S, 130°49'E), Jan 1969, *Maconochie* 650 (AD, CANB, DNA); CSIRO Mulga enclosure (23°28'S, 133°48'E), Dec 1971, *Latz* 1867 (DNA); MacDonnell Ranges, Nov 1885, *Schwarz* s.n. (MEL); Mt Windsor (23°50'S, 130°51'E), May 1988, *Leach* 1993 & *Latz* (DNA). **South Australia**. about 19 km W of Tallaringa Well, 28°51'S, 133°05'S, May 1964, *Lothian* 2746 (AD, BRI, DNA); Everard Ranges between Boundary Bore and Gap Well (27°05'S, 132°3-'E), Dec 1981, *Kalotas* 1003 (AD, DNA).

***Distribution and habitat*:** Central Australia from Barker and Rawlinson Ranges to south of Leonora, Western Australia, ranges near Alice Springs, Northern Territory (Haast's Bluff to Palm Valley Chalet), and northwestern plains of South Australia (Everard Ranges to west of Tallaringa Well); on top of scree slopes of foothills and on sandy plains, usually with Mulga (*Acacia aneura* F.Muell. ex Benth.: Mimosaceae) in grassland, on red to red-brown, sandy to sandy-clayey soils. (**Map 2**)

***Diagnostic attributes*:** *Psydrax suaveolens* is readily recognisable by its narrow, usually linear leaves with revolute or recurved margins. It is related to *P. rigidula* with which it shares the hairy young branchlets and hairy, few-flowered inflorescences with 5-merous flowers, but that species differs from *P. suaveolens* in its broader, distinctly nerved leaf blades with flat or slightly recurved margins. There are, however, occasional specimens which appear to be intergrades between the two.

***Uses*:** The fruits of this species are reported by certain collectors to be edible.

4. Psydrax rigidula S.T.Reynolds & R.J.F.Hend., **sp. nov.** aemulans *P. suaveolens* (S.Moore) S.T.Reynolds & R.J.F.Hend. cujus flores habet sed folii lamina latiore et plusminusve rigida, marginibus recurvis constructis differt. **Typus.** Western Australia. 6 miles (*c.*9.6 km) N of Meekatharra, 6 November 1968, *H. Demarz* D591 (holo: PERTH).

Small trees or shrubs 2–3 m high; bark smooth, purplish grey coloured; branchlets slightly quadrangular distally; young parts and inflorescence axes finely hairy, reddish coloured. **Leaves** opposite; stipules ovate, keeled, attenuated into a long folded lobe at apex; petioles 0.25–0.6 cm long; blades narrow sublanceolate or elliptic, 5.2–7.5 cm long × 0.8–1.8 cm wide, with apex subacute or obtuse, base subacute and attenuate into the petiole, and margins slightly recurved, coriaceous, drying coriaceous, yellowish coloured adaxially, dark green abaxially; midrib sunken adaxially, raised abaxially; lateral nerves in 4–7 pairs, oblique, ascending; reticulate venation not apparent; domatia absent. **Inflorescences** 1.5–2.3 cm long × 2.8–3.5 cm wide, 17–45-flowered; main peduncle 4.5–6.0 mm long, provided with minute bracts medially; branches 2.5–4.5 mm long; cymes 8–22-flowered. **Flowers** 5-merous; pedicel of solitary flowers 3.5–4.5 mm long, of others 2.5–3.0 mm long; calyx 2.5–3.0 mm long × 1.5–2.5 mm wide, with tube cupular, puberulous and limb 5-dentate, flared, puberulous, sometimes ciliolate; lobes ovate, *c.*0.5 mm long × 0.5 mm wide; corolla 6–7 mm long, white or cream; tube cylindrical, 2.0–3.5 mm long × 2.0–2.5 mm wide, sparsely hairy at throat; lobes elliptic to lanceolate, 4.0–5.5 mm long × 1.5–2.0 mm wide, obtuse or subacute, slightly hooded and papillose at apex; stamens exserted; filaments 1.5–2.5 mm long; anthers 2.0–3.0 mm long, erect or ± patent; disc shorter than calyx limb, glabrous; style (with stigma) 7–10 mm long. **Fruits** broad ellipsoid, 5.0–7.0 mm long × 7.0–9.0 mm wide; pyrenes hemispherical, exceedingly rugose (especially on the abaxial side). (**Fig. 2F–2J**)

Fig. 2. ***Psydrax suaveolens***. A. flowering branch × 1. B. flower × 5. C. LS of flower × 5. D. fruit × 3. E. pyrene × 5. A–C, *Janicke* U6b (PERTH); D&E, *Symon* 9961 (AD). ***Psydrax rigidula***. F. flowering branch × 0.6. G. flower × 5. H. LS of flower × 5. I. fruit × 4. J. pyrene × 5. F–H, *Demarz* D591 (PERTH); I&J, *Gardner & Blackall* 122 (PERTH).

***Additional representative specimens*: Western Australia.** Kimberley, exact locality unknown, May 1874, *Forrest's Expedition* [MEL1538055] (MEL); N of Meekatharra, Jul 1931, *Gardner* s.n. (PERTH); Cue, between Mt Magnet and Meekatharra (27°27'S, 117°53'E), Jul 1931, *Gardner & Blackall* 122 (PERTH); Boolardy Station, Murchison River, May 1936, *Melville* 37 (K, PERTH); 483 miles (*c.*773 km) N of Meekatharra, Oct 1963, *Lullfitz* 2585 (PERTH); 10 miles (*c.*16 km) N of Callytharra, Oct 1972, *Demarz* 3968 (PERTH); 14 km SE of Leonora, Jul 1977, *Parker* 92 (PERTH); 2 km W of Midshinner Well, Milly Milly Station (25°48'S, 116°51'E), Apr 1986, *Cranfield* 5385 (PERTH).

***Distribution and habitat*:** Western Australia, from Mt Wendell to Warbuton and Robinson Ranges (between 21° to 30°S and 115° to 126°E); along water courses, dry creek beds, on lateritic soil. (**Map 3**)

***Diagnostic attributes*:** *Psydrax rigidula* is characterised by shortly stalked, thick, narrow, sublanceolate or elliptic leaf blades which dry a greenish yellow colour, and shortly stalked, comparatively small, hairy inflorescences with 5-merous flowers. This species is related to *P. suaveolens*, with which it has similar bark, leaf texture, inflorescence and flower attributes, but that species differs from *P. rigidula* by its narrow, linear leaf blades which usually have revolute margins.

***Uses*:** The leaves and fruits of *Psydrax rigidula* are reported by collectors to be edible to stock but the leaves are usually inaccessible to sheep.

***Etymology*:** The specific epithet *rigidulus*, Latin for 'somewhat rigid', refers to the more or less rigid leaves in this species.

5. Psydrax montigena S.T.Reynolds & R.J.F.Hend., **nom. nov.**; *Ixora orophila* C.T.White, *Proc. Roy. Soc. Qld* 53: 220 (1942), nom. illeg. non Bremek., *J. Bot. London* 75: 321 (1937). **Type**: Queensland. Cook District: Thornton Peak, 16°15'S, 145°25'E, alt. 4,500 feet, 14 December 1940, *H. Flecker* NQNC7110 (holo: BRI).

Canthium sp. (Thornton Peak H.Flecker NQNC7110), S.T. Reynolds (1997, p.181), P.I. Forster & D.A. Halford (2002, p.174).

Shrubs or small trees 2.5–12 m tall; trunk 10.0–18.3 cm dbh, usually buttressed; branchlets usually robust, ± angular distally, glabrous, lenticellate. **Leaves** opposite; stipules ovate, 4.0–6.0 mm long, keeled, attenuated into a long folded lobe at apex; petioles (0.2–) 0.4–0.7 cm long; blades elliptic, (3.6–) 4.5–6.6 (–7.2) cm long × (1.5–) 2.1–3.3 (–4.0) cm wide, with apex and base obtuse or apex shortly subacuminate, coriaceous, drying exceedingly thick; both adaxial and abaxial surfaces glabrous, the adaxial ones slightly glossy, the abaxial ones dull; midrib conspicuous on abaxial surfaces, drying paler than other parts of the blade; lateral nerves in 4–6 pairs, slender, obliquely arched from midrib; reticulate venation not apparent; domatia small, usually one on each side of midrib, sometimes absent. **Inflorescences** 6.5–8.0 cm long (including peduncle), 4.0–6.0 cm wide, 17–25-flowered; peduncles glabrous, the main one robust, more or less erect, 2.0–3.8 (–6.0) cm long; axis branches 0.8–1.2 cm long; cymes 8–12-flowered. **Flowers** 4-merous; pedicel of solitary flowers 6.0–9.0 mm long, of others 1.5–2.0 mm long; calyx 2.0–3.5 mm long, with tube ± urceolate and limb 4-denticulate; lobes ovate, *c.*0.5 mm long × 1.5 mm wide; corolla 5.0–9.0 mm long, white or cream; tube broad campanulate, 1.0–3.0 mm long, 2.0–3.5 mm wide at top, sparsely hairy at mouth; lobes elliptic to sublanceolate, 4.5–6.0 mm long × 1.5–2.5 mm wide, obtuse or subacute with apex incurved, fleshy, usually recurved; disc glabrous; stamens shorter than corolla lobes; filaments 1.5–2.0 mm long; anthers 3.0–3.5 mm long × 0.7–1.0 mm wide, exserted, erect; style (with stigma) 6.5–9.0 mm long, exserted; stigma 2.0–3.0 mm long. **Fruits** obovoid, 15.0–20.0 mm long × 9.0–11.0 mm wide, black when ripe; pyrenes exceedingly rugose.

***Additional representative specimens*: Queensland.** Cook District: Russell River, in 1892, *Johnson* [MEL1538182, MEL1538183] (MEL); N Mary Logging Area, Mt Lewis, Oct 1973, *Sanderson* 458 (QRS); Thornton Peak, Nov 1973, *Hyland* 7047 (BRI, K); Mt Hermet, Oct 1975, *Hyland* 3343 (BRI, K, QRS); Broken Nose, Mt Bartle Frere, Dec 1978, *Jago* 251 (QRS); Thornton Peak, Jan 1986, *Godwin* 2912 (BRI); Daintree National Park, Mt Sorrow track before razorback, 2.5 km W of Cape Tribulation, 16°04'S, 145°27'E, Dec 1997, *Forster* PIF21979, *Booth, Jago & Jensen* (BRI).

***Distribution and habitat*:** North Queensland, from Thornton Peak to Mt Bartle Frere; in montane rainforests bordering shrublands at altitudes of 1000–1500 m. (**Map 6**)

***Diagnostic attributes*:** *Psydrax montigena* is readily distinguishable by its compact habit, robust branchlets, exceedingly thick leaves, long robust suberect peduncles, fleshy flowers and comparatively large obovoid fruits with very rugose pyrenes.

***Notes*:** *Psydrax montigena* is a new name published here for the plant previously known as *Ixora orophila* C.T.White. White's name is illegitimate being a later homonym of Bremekamp's *Ixora orophila*, dating from 1937, which is applicable to a different species.

***Etymology*:** The specific epithet *montigena*, Latin for 'mountain-born', refers to the habitat of this species.

6. Psydrax odorata (Forst.f.) A.C.Sm. & S.P.Darwin, *Fl. Vitiensis Nova* 4: 230 (1988); *Coffea odorata* Forst.f., *Fl. Ins. Austr. Prod.* 16 (1786); *Canthium odoratum* (Forst.f.) Seem., *Fl. Vitiensis* 132 (1866). **Type**: Vanuatu. Tanna Island, date unknown, *J.R. & G.Forster* s.n. (lecto: BM, fide A.C. Smith & S.P. Darwin, *op. cit.* p.232).

Canthium lucidum Hook. & Arn., *Bot. Beechey Voy.* 65 (1832), nom. illeg. non R.Br.; *Canthium beecheyi* Steud., *Nomen. Bot.* ed.2, 1: 275 (1841); *Plectronia hookeriana* Domin, *Biblioth. Bot.* 89: 622 (1929). Type: Gambier Islands. collector unknown (holo: K n.v., fide A.C. Smith & S.P. Darwin, *op. cit.* p.232).

Shrubs or small trees 2–12 m high, with branches usually at right angles to the stem; bark smooth or rough, dark or pale creamy grey, mottled with white; branchlets, petioles, young leaf blades and inflorescence axes with fine minute hairs or glabrous; branchlets usually slightly quadrangular and resinous distally, pale brown or greyish white, drying brownish coloured, lenticellate. **Leaves** opposite, very variable; stipules triangular, 3.0–8.0 mm long, keeled, abruptly contracted and attenuated into a long folded lobe at apex, with the lobe either conspicuous, ± foliaceous, to 9.0 mm long or narrow and acuminate, hairy or glabrous, with colleters occasionally present at base adaxially; petioles 0.1–1.1 cm long; blades elliptic, elliptic-oblong, ovate-elliptic, suborbicular, narrow elliptic, slightly rhombic or subobovate, 1.5–8.3 (–9.3) cm long × 0.6–4.4 (–5.6) cm wide, with apex obtuse, subacute or shortly, usually bluntly, acuminate, and base obtuse or subacute and usually decurrent into petiole, thin or thick coriaceous; adaxial and abaxial surfaces glabrous, or hairy proximally along the midrib on the abaxial surfaces on young leaves; adaxial surfaces exceedingly glossy, green or ± bluish green with nerves pale green, or slightly matt then yellowish green with whitish coloured nerves, and abaxial surfaces pale green and dull, both drying brown with nerves and margins paler coloured adaxially, and pale brown abaxially, with both surfaces sometimes blotched; lateral nerves in 1–4 (–6) pairs, oblique with the angle to midrib usually between 30°–45°, or subpatent, looping near the margins, prominent or obscure on adaxial surfaces, usually obscure or not apparent abaxially; reticulate venation distinct or obscure on adaxial surface; domatia 1–4 on each side of the midrib, usually present in the axils of the middle pairs of nerves, or absent. **Inflorescences** 1.2–6.0 cm long × 2–6 cm wide, (2–) 12–93-flowered; peduncles stout or slender, finely hairy or glabrous, the main one 3.0–30.0 mm long provided with minute bracts proximally or near the middle and terminated by 2(or 3)-branched cymes; axis branches 1.0–11.0 mm long, usually branched at apex with ultimate cymes to 35-flowered. **Flowers** 4- or 5-merous, sweetly perfumed; pedicels slender or stout, hairy or glabrous, those of solitary flowers 3.0–9.0 mm long, of others 0.5–4.0 mm long; calyx 1.0–2.0 mm long with tube cupular and limb 4- or 5-denticulate; lobes broad ovate, *c.*0.5 mm long and wide, glabrous; corolla 3.0–7.0 mm long, fleshy, white or cream; tube 0.5–2.0 mm long, usually sparsely deflexed hairy at throat; lobes lanceolate or ± oblanceolate, 2.0–5.0 mm long × 0.75–1.5 mm wide, obtuse, thick coriaceous, papillose at apex and along margins, erect or slightly recurved; disc glabrous or puberulous; stamens exserted; filaments 1.0–3.0 mm long; anthers 1.5–3.5 mm long, ± sagittate at base, erect, rarely recurved; style with stigma 4.0–10.0 mm long, exserted; stigma 1.5–2.0 mm long. **Fruits** subglobose, broad ellipsoid or obovoid, slightly compressed, 5.0–6.0 mm long × 3.0–8.0 mm wide, black and glossy when ripe; pyrenes ellipsoid, subovoid or hemispherical, usually slightly rugose.

***Distribution and habitat*:** Pacific Islands, including Hawaii and Mariana Islands, Fiji, Vanuatu and New Caledonia, Papua New Guinea and Australia; in a wide variety of habitats including along beaches, along creeks, on hillsides, ridges and sandstone, mostly in dry rainforests.

***Diagnostic attributes*:** *Psydrax odorata* is readily distinguishable by its usually exceedingly glossy, sometimes vernicose, usually thick leaf blades which are mostly provided with domatia, its usually ovate-cuspidate, prominently keeled and lobed stipules, its pedunculate, usually many-flowered inflorescences with 4- or 5-merous flowers, short and stout or long and slender pedicels and flowers of branches of the cymes secund and sometimes subsessile, and by its fleshy corollas.

***Notes*:** *Psydrax odorata* was found to be one of the most variable and complex species of the genus *Psydrax* in Australia. Within the material broadly belonging to this species available for study, quite distinct taxa are distinguishable. One of these has keel-less, usually obtuse stipules, whereas the others have stipules with a distinct keel which is attenuated into a folded lobe at apex.

Some of the past confusion within this species started when Bentham (1867) combined *Canthium lamprophyllum* F.Muell. under *Canthium odoratum* (for which he used the illegitimate name *Canthium lucidum*) and cited many collections including syntypes of *C. lamprophyllum* F.Muell. (see under *C. lamprophyllum* below).

Although Bentham considered all the Australian specimens he called *Canthium lucidum* to be 'precisely' those of the Pacific Islands now know as *Psydrax odorata*, Merrill & Perry (1945) and Bridson (1985) considered the Australian specimens to be specifically distinct from the Pacific species and referrable to *Psydrax lamprophylla*. However, as indicated previously, we agree these species are distinct but consider that both occur in Australia.

The name *Plectronia hookeriana* was provided in 1929 by Domin for the Australian plants previously known as *Canthium lucidum* Hook. & Arn. (of which *C. lamprophyllum* F.Muell. was then considered to be a synonym). This was because when *Canthium* Lam. was transferred to the genus *Plectronia* L., the combinations *Plectronia lucida* K.Schum. & Krause (= *Psydrax horizontalis* (K.Schum. & Thonn.) Bridson) and *Plectronia lamprophylla* K.Schum. (= *Psydrax micans* (Bullock) Bridson) already existed for taxonomically different species from Africa thus inhibiting transfer of Hooker and Arnott's, and Mueller's epithets. The taxon Domin called *Plectronia hookeriana* var. *dietrichiae* Domin, however, belongs to *Tarenna* Gaertn. *sensu lato*, not *Psydrax*.

***Variability*:** *Psydrax odorata* varies greatly, both in Australia and in the Pacific Islands, in the shape, size, glossiness and texture of its leaf blades, the hairiness of branchlets and inflorescences, the size of its flowers, and in its habitat of occurrence. Specimens from Fiji and that from New Guinea examined for this study resemble the type specimen from Vanuatu and others from the latter country in their thin coriaceous, shiny, elliptic leaf blades, their regularly parallel lateral nerves, fine reticulate venation, very open fragile inflorescences with slender peduncles and pedicels, and their small, 4-merous flowers. Most of the collections of this taxon from other Pacific Islands and some from Vanuatu, particularly *Flower* s.n.(BM, BRI, K, PVNH), are usually provided with thick glossy leaf blades with either loose-flowered slender inflorescences or dense-flowered compacted inflorescences. Some of these approach the Australian collections either in attributes of their leaf blades or inflorescences, whereas some, especially collections from Hawaii, appear to be quite different from the Australian ones and the type. However, the variation observed in specimens from both Australia and the Pacific region suggests we are dealing with only local variants of one very variable species. However, till now, with the exception of *C. odoratum* var. *tiniantense* (Kanehira) Fosberg from Micronesia, none of this infraspecific variation has been formally recognised.

Since none of the Australian collections of this taxon match exactly the type of *Psydrax odorata*, they are treated here as belonging to

segregate subspecies of this species. Within the Australian material, three such subspecies are distinguishable. They are the newly recognised *P. odorata* subsp. *arnhemica*, a taxon from northern Australia which is most like the specimens from the Pacific regions in its leaf blades, loose inflorescences and slender pedicels, and *P. odorata* subsp. *australiana*, a taxon from eastern Australia which differs from the above by its compact glabrous inflorescences, short thick pedicels and small or medium-sized very glossy leaf blades, as well as *P. odorata* subsp. *buxifolia*, based on *Canthium buxifolium* Benth. These three subspecies may be distinguished from the typical subspecies as follows.

Key to Australian subspecies of *Psydrax odorata* and the extra-Australian *P. odorata* subsp. *odorata*

1. Leaf blades 1.5–4.2 cm long × 0.6–2.0 cm wide; inflorescences 2–22 (–49)-flowered 2
   Leaf blades usually more than 4 cm long × 2 cm wide; inflorescences 12–93-flowered 3

2. Young branchlets and inflorescence axes glabrous or subglabrous; domatia present on the leaves; leaf blades thick coriaceous .... **6c. P. odorata** subsp. **australiana**
   Young branchlets and inflorescence axes hairy; domatia usually absent on the leaves; leaf blades thick or thin coriaceous ..... **6d. P. odorata** subsp. **buxifolia**

3. Young branchlets and inflorescence axes usually glabrous; inflorescences usually compact, much-branched and densely flowered; flowers on branches of the cyme subsessile or on short stout pedicels; stems usually swollen (myrmecophilous) ..... **6c. P. odorata** subsp. **australiana**
   Young branchlets and inflorescence axes usually hairy; inflorescences usually open, laxly branched and flowered; flowers on branches of the cyme on slender pedicels; stems not myrmecophilous 4

4. Inflorescences (28–) 40–70-flowered, compact, much branched with flowers densely arranged on branches; flowers mostly 4-merous; corolla 3.0–5.0 mm long; disc glabrous; leaf blades thin or thick coriaceous; petioles 0.5–0.8 cm long ..... **6a. P. odorata** subsp. **odorata**
   Inflorescences 12–48-flowered, loose-branched and loose-flowered; flowers mostly 5-merous; corolla 5.0–7.0 mm long; disc hairy; leaf blades usually thick coriaceous; petioles 0.6–1.1 cm long ..... **6b. P. odorata** subsp. **arnhemica**

6a. P. odorata subsp. **odorata**

Branchlets finely hairy or glabrous. Leaf blades 4.5–8.3 cm long × 2.5–4.0 cm wide, with lateral nerves usually regularly parallel, subpatent or oblique, and looping at margins; domatia present or absent. Flowers 4.0–6.0 mm long, usually chartaceous, 4-merous; pedicel of solitary flower 2.5–10.0 mm long.

Representative specimens (typical form only)**: New Guinea**. Western Division: Mabaduan, Apr 1936, *Brass* 6539 (BRI). **Vanuatu**. Erromanga: Dillons Bay, Feb 1982, *Cabalin* 1455 (PVNH); ditto, Dec 1984, *Sam* 298 (PVNH). Éfaté: Ouen Tora Park, near the PVNH herbarium, Sep–Oct 1995, *Flower* s.n. (BRI). **New Caledonia**. Dothio River valley near Thio, Mar 1983, *McPherson* 5577 (BRI). **Fiji**. Macuata Coast, Jan 1924, *Greenwood* 555 (BRI).

***Distribution and habitat*:** Papua New Guinea, Vanuatu, New Caledonia and Fiji; chiefly coastal, on beaches, ridges and flats, in vine thickets.

***Diagnostic attributes*:** *Psydrax odorata* subsp. *odorata* is characterised by its finely hairy branchlets and inflorescence axes, usually thin coriaceous leaf blades, fragile inflorescences with usually very slender peduncles and

Fig. 3. ***Psydrax odorata*** subsp. ***arnhemica***. A. fruiting habit × 0.8. B. flower × 6. C. LS of flower × 6. D. fruit × 3. E. LS of fruit showing embryo × 3. F. pyrene × 3. A, *Dunlop* 7629 (CANB); B&C, *Byrnes* 2830 (DNA); D–F, *Dunlop* 3258 (BRI). ***Psydrax odorata*** subsp. ***buxifolia***. G. flowering branch × 0.8. H. flower × 6. I. fruit × 3. J. LS of fruit showing embryo × 3. K. pyrene × 3. G from Lebler 1978, p.530; H. *McDonald* 4131 & *Williams* (BRI); I–K, *Forster* PIF2492 *et al.* (BRI).

pedicels, and its comparatively small, 4-merous flowers.

***Notes*:** The *Flower* s.n. specimen cited above has slightly thicker leaf blades and peduncles and also more flowers in each inflorescence than do the other collections cited above.

6b. P. odorata subsp. **arnhemica** S.T.Reynolds & R.J.F.Hend., **subsp. nov.** a *P. odorata* subsp. *australiana* inflorescentiis laxis, paucifloris, ramis puberulentis, petiolis pedicellisque longioribus et floribus plerumque 5-meris differt. **Typus:** Northern Territory. Gunn Point, 12°10'S, 131°05'E, 20 December 1989, *J. Russell-Smith* 8171 & *Lucas* (holo: BRI; iso: DNA).

Young branchlets, stipules, petioles, young leaf blades and inflorescence axes finely hairy or sometimes glabrous. Petioles 0.6–1.1 cm long; leaf blades (4.5–) 6.3–8.7 (–9.0) cm long × (2.1–) 3.0–4.4 (–5.6) cm wide, with apex subacute or shortly acuminate and base subacute or abruptly obtuse and shortly attenuate and decurrent into the petiole, drying dark brown or red brown adaxially; lateral nerves in 4–6 pairs, exceedingly slender, at an angle of more than 45° to the midrib; domatia small, usually present along the midrib Inflorescences loosely branched, 12–48-flowered; main peduncle (0.8–) 2.0–3.0 cm long, the ultimate cymules 2–5-flowered. Flowers usually 5-merous; pedicel of solitary flowers 4.0–9.0 (–12.0) mm long, of the others (1.0–) 2.5–4.5 mm long; corolla lobes elliptic or lanceolate, 3.5–5.0 mm long, papillose at apex and margins, finely reticulate veined. Pyrenes depressed ovoid, usually rugose; fruiting pedicels to 15.0 mm long. (**Fig. 3A–3F**)

***Representative specimens*: Western Australia**. 4.5 km NW of Cliffy Point on Middle Island, Bonaparte Archipelago (14°19'S, 126°00'E), Jun 1987, *Kenneally* 10233 & *Hyland* (PERTH); 6.7 km SSE of Walsh Point (14°37'S, 125°51'E), Jun 1987, *Kenneally* 10340 & *Hyland* (PERTH); 9 km NNE of Meeloyoo Hill (14°46'S, 126°27'E), Jun 1987, *Kenneally* 10380 & *Hyland* (PERTH). **Northern Territory**. between Groote Eylandt & mainland, Jan 1803, *Brown* s.n. (CANB); Cannon Hill (11°58'S, 132°56'E), Dec 1972, *Byrnes* 2830 (DNA, K); ditto, Nov 1976, *Dunlop* 4300 (BRI, K); NE coast of Cape Van Diemen, Melville Island, 11°10'S, 130°15'E, May 1978, *Webb & Tracey* 12281 (BRI); 2 km N of Nabarlek airstrip, Apr 1979, *Rankin* 2106 (BRI, DNA, K); Waterfall Creek, 13°28'S, 132°26'E, Nov 1980, *Dunlop* 5605 (BRI, DNA); Nourlangie Rock, 12°52'S. 132°49'E, Dec 1983, *Russell-Smith* 920 (BRI, DNA); Yirrkala, Shady Beach (12°08'S, 136°55'E), Sep 1985, *Wightman* 2251 (DNA); Groote Eylandt, Angyowmanja Creek (13°59'S, 136°41'E), Jul 1987, *Russell-Smith* 2820 & *Lucas* (DNA); East Alligator River (12°50'S, 133°22'E), Dec 1987, *Dunlop* 7629 (CANB); Gunn Point (12°10'S, 131°05'E), Dec 1989, *Russell-Smith* 8171 & *Lucas* (DNA); ditto, Feb 1990, *Leach* 2697 & *Dunlop* (CANB, DNA); Wigram Island, English Company Islands (11°45'S, 136°37'E), Jul 1992, *Leach* 3065 (DNA); Craw Claw Island (12°42'S, 130°38'E), Dec 1993, *Egan* 2879 (DNA).

***Distribution and habitat*:** Northern Australia, including offshore islands, common in Arnhem Land; usually on sandstone, sandstone outcrops, lateritic cliff faces and gorges, in coastal vine thickets, on sandy soil. (**Map 4**)

***Diagnostic attributes*:** *Psydrax odorata* subsp. *arnhemica* is characterised by laxly branched, few-flowered inflorescences with long slender peduncles and pedicels, and by its usually finely hairy young branchlets, young leaves and inflorescence axes. It may be distinguished from *P. odorata* subsp. *australiana*, which has more or less similar leaves, by its open inflorescences, larger flowers and comparatively long slender pedicels.

***Note*:** The inclusion of the collections from Western Australia above is tentative because the specimens concerned are incomplete.

***Etymology*:** The subspecific epithet *arnhemica*, Latin for 'from Arnhem Land' (in the Northern Territory), refers to where this taxon is common.

6c. P. odorata subsp. **australiana** S.T.Reynolds & R.J.F.Hend., **subsp. nov.** a *P. odorata* subsp. *odorata* inflorescentiis plerumque glabris, pedunculis pedicellisque brevioribus crassioribus, foliis lamina crassiore adaxialiter pernitenti et floribus corollis carnosis non plerumque chartaceis differt. **Typus:** Queensland. Wide Bay District: Stony Creek, 4 km E of Didcot, 25°28'S, 151°51'E, 25 October 1993, *P.I. Forster* PIF14127 (holo: BRI; iso: A, CANB, DNA, K, L, MEL, NSW, QRS).

Canthium odoratum subsp. (Didcot P.I.Forster PIF14127), P.I. Forster & D.A. Halford (2002, p.174).

Young branchlets, peduncles and pedicels glabrous, rarely subglabrous. Petioles 0.25 – 0.6 cm long; leaf blades 3.5–8.3 (–9.3) cm long ×

Fig. 4. ***Psydrax odorata*** forma ***australiana***. A. flowering habit × 0.6. B. flower × 6. A&B from Lebler 1978, p.527. ***Psydrax odorata*** forma ***subnitida***. C. part of inflorescence showing calyx and pedicel × 2. D. flower × 6. E. LS of flower × 6. F. fruit × 3. G. pyrene × 3. C–E, *Forster* 14257 (BRI); F&G, *Batianoff* 900127 (BRI).

1.4–4.4 (–5.2) cm wide, with apex obtuse, acute, subacute or shortly acuminate and base subacute and attenuate into petiole, usually glossy on adaxial surface, dull and opaque below; lateral nerves in (1–) 2–4 pairs, slender, suboblique or oblique; domatia 1–3 on each side of midrib. Inflorescences with densely flowered branches, (15–) 53–93-flowered; main peduncle 0.5–2.5 cm long. Flowers 4(or rarely 5)-merous; pedicel of solitary flowers 3.0–7.0 mm long, of the others 0.5–3.5 mm long; corolla lobes sublanceolate, 3.5–5.0 mm long. Pyrenes broad depressed ovoid, slightly rugose.

***Diagnostic attributes*:** *Psydrax odorata* subsp. *australiana* is readily recognisable by its usually exceedingly adaxially glossy thick leaf blades, glabrous branchlets, glabrous many-flowered usually compact inflorescences, short thick pedicels with flowers on the lateral branches of the cyme often subsessile, and usually 4-merous flowers with fleshy corollas. It differs from the typical subspecies by its thicker leaves, compact, many-flowered inflorescences, subsessile flowers with short stout pedicels, and by its distended myrmecophilous stems and branches. The plants in Vanuatu belonging to the typical subspecies are reported to have a different growth form from the Australian ones and are without insect galls (P. Flower, pers. comm. to STR).

***Etymology*:** The subspecific epithet *australiana*, Latin for 'pertaining to Australia', refers to the distribution of this subspecies.

Variability: *Psydrax odorata* subsp. *australiana* varies considerably in attributes of its leaves. On this basis, several forms or subforms were distinguishable in the specimens of it available for study. Though only three forms are formally recognised here, they are sometimes connected by intergrading specimens.

Key to forms of *Psydrax odorata* subsp. *australiana*

1. Leaves with very conspicuous domatia; leaf blades broad elliptic-ovate, usually between 4.0–5.2 cm wide ..... **6c(ii). P. odorata** forma **foveolata**
   Leaves with usually small, inconspicuous domatia; leaf blades elliptic, elliptic-obovate, elliptic-ovate or subrhombic, 1.4–4.4 cm wide 2

2. Leaf blades pale or dark green, glossy on the adaxial surface; reticulate veins usually distinct on adaxial surface; domatia 1–3 on each side of the midrib, prominent or obscure ..... **6c(i). P. odorata** forma **australiana**
   Leaf blades pale or yellowish green, slightly shiny or dull on the adaxial surface; reticulate veins usually not apparent on the adaxial surface; domatia 1 or 2 on each side of the midrib, usually small ..... **6c(iii). P. odorata** forma **subnitida**

6c(i). P. odorata forma **australiana** S.T.Reynolds & R.J.F.Hend., **forma nov.** ab formis aliis *P. odoratae* subsp. *australianae* foliis adaxialiter nitidis et domatiis inconspicuis differt **Type:** As for **P. odorata** subsp. **australiana**.

Young branchets and inflorescences glabrous, rarely subglabrous; leaf blades elliptic, narrow elliptic, elliptic-ovate, elliptic-oblong or slightly rhombic; lateral nerves oblique or suboblique, in (1–) 2–4 (–6) pairs with usually 2 or 3 pairs more obvious than others and looping at margins. Inflorescences (15–) 53–92-flowered; main peduncles (5–) 15–25 mm long. **(Fig. 4A, 4B)**

***Additional representative specimens*: Queensland.** Cook District: Timber Reserve 14, Massey, 13°52'S, 143°23'E, Nov 1980, *Hyland* 10874 (BRI); Bakers Blue Mountain, Font Hills Station, 19 km S of Mt Carbine, 16°43'S, 143°10'E, Jan 1989, *Fell* 1591 (BRI); West Claudie River, 10.3 km WNW of Lockhart River, 12°44'S, 143°15'E, Mar 1994, *Fell* 4145 (BRI). North Kennedy District: Barrabas Scrub (20°10'S, 146°45'E), May 1972, *Hyland* 6076 (QRS)*[2]; Townsville Road, 14 km N of Bowen, 19°30'S, 147°57'E, Nov 1976, *Sharpe* 68 (BRI)*[2]; Bucks Gully Scrub (18°37'S, 142°08'E), May 1979, *Hyland* 9841 (QRS)*[2]; Jervoise Holding (18°34'S, 144°43'E), May 1979, *Hyland* 9937 (QRS)*[2]; 40 Mile Scrub National Park, 1.6 km north of Mt Surprise road junction on Kennedy Highway, 18°07'S, 144°49'E, Nov 1983, *Stocker* 1806 (BRI); ditto, Mar 1987, *Clarkson* 6886 & *McDonald* (BRI)*[2]; ditto, Feb 1990, *Hyland* 13989 (BRI); Whitsunday Island, 20°16'S, 148°56'E, Nov 1985, *Batianoff* 3020 & *Dalliston* (BRI);

Mt Stuart, 9 km S of Townsville, 19°21'S, 146°47'E, Dec 1991, *Bean* 3866 (BRI); Port Denison, date unknown, *Fitzalan* s.n. [MEL1538534 & MEL1538536](MEL). South Kennedy District: southern end of Lake Elphinstone, 21°33'S, 148°13'E, Nov 1987, *Champion* 322 (BRI); Hazelwood Gorge, 21°15'S, 148°27'E, 13 km SSW of Eungella, Dec 1992, *Bean* 5269 (BRI). Leichhardt District: Carnarvon Development Road, 80 km N of Injune, 25°05'S, 148°15'E, Nov 1988, *Schefe* CMW1147 (BRI); near Theodore, 24°55'S, 150°05'E, Dec 1989, *Phillips* s.n. (BRI). Port Curtis District: Mt Etna, 23°10'S, 150°25'E, Oct 1976, *Hyland* 9104 (BRI); ditto, Nov 1987, *Vavryn* 26 (BRI). Burnett District: about 20 miles (32 km) NNW of Monto, in 1983, *Barlett* s.n. (BRI); 1.5 km along Archookoora Road from Kingaroy–Cooyar road, about 18 km SSE of Kingaroy, Dec 1986, *Beesley* 975 & *Ollerenshaw* (CANB); Coominglah State Forest 28, 24°53'S, 151°00'E, Apr 1990, *Forster* PIF6702 (BRI). Wide Bay District: Coongara Rock, 18 km S of Biggenden, 25°35'S, 152°05'E, Dec 1977, *Young* 8 (BRI); Coast Range, 9 km E of N of Goomeri, 26°07'S, 152°06'E, Oct 1990, *Pedley* 5579 (BRI, NSW). Moreton District: Samford Range, Jan 1930, *Meebold & White* s.n. (BRI); Whiteside, North Pine River near Brisbane, 27°13'S, 152°57'E, Jan 1932, *Blake* 3196 (BRI, K); Bangaree Enviromental Park, 2 km ENE of Crows Nest, 27°16'S, 152°04'E, Apr 1993, *Halford* 1664, *Thomas & Thompson* (BRI); 10.5 km NW of Ballandean, 28°45'S, 151°45'E, Dec 1994, *Halford* 2361 (BRI); 10 km SE of Pittsworth, 27°46'S, 151°42 'E, Feb 1995, *Halford* 2394a (BRI), 2394b (BRI). **New South Wales.** Richmond River, in 1876, *Fawcett* [NSW193681](NSW); Lismore, Nov 1894, *Bauerlen* s.n. (NSW); Kerrabia via Rylstone, Nov 1895, *Dawson* s.n. (NSW); 9 miles (*c.*14.4 km) E of Aberdeen, Hunter Valley (32°09'S, 151°03'E), Aug 1959, *Storey* 6605 (CANB). (For specimens above marked *[2], see **40-Mile Scrub form** below.)

***Distribution and habitat*:** Eastern Australia, from Cape York Peninsula, Queensland, to Hunter River, New South Wales; along creeks and rivers, steep hillsides, stony ridges, rocky outcrops, rocky water courses, usually in dry rainforests, also on beach dunes, on sandy loamy, clay or stony soils. (**Map 4**)

***Note*:** The use of the epithet '*australiana*' in the name of this form follows Recommendation 26A.3. in the current International Code of Botanical Nomenclature (Greuter *et al.*, 2000).

***Variability*:** The leaf blades of *Psydrax odorata* forma *australiana* are variable and several ill-defined subforms exist. Specimens from along creek and river banks and usually from dry rainforests are typical of this form. They have very shiny, mostly medium-sized, elliptic, ovate-elliptic, subrhombic to subobovate leaf blades with prominent oblique nerves and reticulate venation, and large many-flowered inflorescences. Specimens from coastal areas, especially those from off-shore islands, usually have smaller or thicker leaves which are usually only slightly shiny on the adaxial surface. These are not unlike those of *P. odorata* forma *subnitida* except that they are larger and broader (broad elliptic or obovate) than what is allowed for in that form. Specimens from steep ridges and hillsides tend to have narrower, thicker and often more shiny leaf blades than those on other specimens. Moreover, some of the collections from north Queensland approach *P. odorata* subsp. *arnhemica* in their leaves, subglabrous or sparsely hairy branchlets and inflorescence axes, slender peduncles and pedicels but differ from that in their general aspect, compact inflorescences with greater numbers of flowers, shorter pedicels and smaller flowers. On the other hand, collections from south-eastern Queensland, which possess small, elliptic or narrow elliptic, thick coriaceous leaf blades and small inflorescences resemble some of the collections filed under *P. odorata* subsp. *buxifolia*, but that taxon differs from them by its pubescent branchlets and peduncles, and usually efoveolate leaf blades. However, these subspecies (*P. odorata* subsp. *australiana* and *P. odorata* subsp. *buxifolia*) are sometimes connected by specimens with hairy branchlets and inflorescences, and foveolate leaf blades.

40-Mile Scrub form: Collections from deciduous vine thickets in the 40 Mile Scrub (as indicated by *[2] in the list above) probably represent a distinct form or subform but they contain only fruiting material. Flowering material is necessary to be certain of this. However, these specimens differ from the other collections in their narrow infructescences and narrow, thick shiny leaves. These leaves usually have narrow elliptic blades with a subacute apex and base (or an acute base which is decurrent into the short petiole), which are dark green on the adaxial surface and pale green below. The lateral nerves are slender and obliqueand in 2 or 3 pairs. The reticulate veins are not apparent. One or two small domatia occur on each side of the midrib, or sometimes domatia are absent. The infructescences are 2.5–6.5 cm × *c.*3.0 cm, branched only towards the apex with the main peduncles usually to 4.5 cm long. Fruits are black when ripe. (**Map 1**)

6c(ii). P. odorata forma **foveolata** S.T.Reynolds & R.J.F.Hend., **forma nov.** *P. odoratae* formae *australianae* primo adspectu

maxime similis, sed foliis latioribus et domatiis valde conspicuis differt. **Typus:** Queensland. Cook District: Aeroglen, 16°55'S, 145°45'E, November 1978, *B. Jago* 221 (holo: QRS).

Leaf blades broad elliptic-ovate or elliptic, thick coriaceous, drying dark brown and glossy adaxially, pale brown abaxially; lateral nerves in 4 or 5 pairs, obliquely arched and looping at margins of blade; domatia usually conspicuous, few on each side of the midrib. Peduncles and pedicels glabrous or subglabrous. Flowers mostly 5-merous; pedicels slender; corolla lobes slender.

***Additional representative specimens*: Queensland.** Cook District: Endeavour River, in 1882, *Persieh* [MEL 1533874](MEL); Hartleys Creek (16°39'S, 145°34'E), Apr 1946, *Flecker* s.n. (QRS); ditto, Dec 1987, *Sankowsky* 791 & *Sankowsky* (BRI); 2 km from Cooktown along McIvor River Road (15°29'S, 145°14'E), Feb 1983, *Telford* 9398 & *Butler* (CANB); State Forest Reserve 607, Parish of Cairns, Shoteel Logging Area, 16°55'S, 145°36'E, Feb 1985, *Gray* 3909 (BRI); Lizard Island, Cook's Lookout, 14°47'S, 145°28'E, Oct 1988, *Batianoff* 10274 (BRI); Round Mountain, Embly Range, 13°33'S, 143°30'E, Jun 1992, *Forster* PIF10495 & *Tucker* (BRI); Jane Table Hill, Lakefield National Park, 46.6 km N of Lakefield homestead, 14°30'S, 144°07'E, Mar 1993, *Fell* 2925 & *Stanton* (BRI). North Kennedy District: Round Mountain, SSW of Townsville, 19°27'S, 146°42'E, Jan 1996, *Cumming* 14040 (BRI).

***Distribution and habitat*:** North Queensland, common around Cooktown; on open slopes, rocky creek banks and frontal dunes, in semi-deciduous vine thickets, woodlands and grasslands on sandy loamy soil. (**Map 3**)

***Diagnostic attributes*:** This form resembles *P. odotata* forma *australiana* in its leaves and inflorescences, but differs by its very prominent domatia and usually broader leaves.

***Etymology*:** The forma epithet *foveolata*, Latin for 'minutely pitted', alludes to the very conspicuous domatia on the leaves of this form.

6c(iii). P. odorata forma **subnitida** S.T.Reynolds & R.J.F.Hend., **forma nov.** a *P. odorata* forma *australiana* foliis brevioribus crassioribusque, folii laminae paginis leviter nitentibus, nervis lateralibus indistinctis venatione reticulata obscura praeditis differt. **Typus:** Queensland. Darling Downs District: near Texas on the road to Stanthorpe, 28°51'S, 151°14'E, 7 November 1993, *P.I. Forster* PIF14257 (holo: BRI).

Canthium oleifolium var. *pedunculatum* Maiden & Baker, *Proc. Linn. Soc. N.S.W.* 9: 460 (1894). **Type**: New South Wales. Palistan, 30 miles (*c.*48 km) NW of Condobolin, Feb. 1892, *Clements* s.n. (syn: NSW [NSW155950]); ditto, Dec 1893, *Clements* s.n. (syn: NSW [NSW155949]).

Canthium odoratum forma (Texas P.I.Forster PIF14257), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Leaves with petioles 0.2–0.5 cm long; blades elliptic or subobovate, 3.5–6.5 cm long × 1.4–2.6 cm wide, with apex obtuse and base narrowed and attenuate into the petiole, matt green or pale green or slightly yellowish-green, thick and stiff especially when dry; lateral nerves in 1 or 2(or 3) pairs; domatia small, 1 or 2 on each side of midrib. Inflorescences 20–36-flowered; main peduncles 0.4–1.2 cm long. (**Fig. 4C–4G**)

***Additional representative specimens*: Queensland.** Leichhardt District: 24 miles (*c.*38.4 km) E of Taroom, Jul 1963, *Lazarides* 6943 (BRI, K, NSW); Mt Britton Mine, Homevale Station, Nebo, Dec 1973, *Webb & Tracey* 13725 (CANB); Bull Creek Gorge, Castlevale Station, about 13 km SW of homestead, 24°33'S, 146°45'E, Sep 1990, *McDonald* 4664 & *Bean* (BRI); 7 km NE of Taroom, 25°33'S, 149°55'E, Nov 1996, *Halford* Q3008 & *Dowling* (BRI). Warrego District: W boundary of Chesterton Range National Park, N of Morven, 26°10'S, 147°16'E, Sep 1995, *Bean* 8987 & *Grimshaw* (BRI). Maranoa District: 4 km W of Euloral, 27°08'S, 148°44'E, May 1982, *Neldner* & *Thomas* 783 (BRI). Darling Downs District: Kindon Station, 54 miles (*c.*86 km) NNE of Goodiwindi, 28°05'S, 150°45'E, Dec 1938, *Smith* 593 (BRI); 'The Ranch', 7 miles (*c.*11.2 km) N of Tara, Aug 1946, *Everist* 2671 (BRI). **New South Wales.** Gunnedah, Oct 1886, *Betche* [NSW193693] (NSW); Lachlan River near Lake Cudgellico, Jun 1891, *Maiden* s.n. (NSW); Murrumbo Creek, Goulburn River, Sep 1895, *Baker* [NSW193707] (NSW); Condobolin, Euabolong Road, Aug 1897, *Maiden* [NSW 193705] (NSW)*[3]; Gunnedah, Oct 1899, *Forsyth* [NSW193691] (NSW); Terry Hie Hie District, May 1914, *Julius* s.n. (NSW); Gungal, Nov 1914, *Boorman* s.n. (K, NSW [NSW 193700]; Ticketty Wells, W of Wallangara, Jul 1917, *Julius* s.n. (NSW); Warialda, May 1932, *Vickery* s.n. (NSW); about 2 km S of Warialda, Dec 1963, *Williams* 28 (NSW); Waa Gorge, Mt Kaputar National Park, 68 km NE of Narrabri, Nov 1976, *Coveny* 8989 & *Roy* (BRI, K); 14 km from Narrabri on road to Mt Kaputar, 30°19'S, 149°54'E, Dec 1994, *Forster* PIF15934 (BRI).

***Distribution and habitat*:** Central and south western Queensland and western New South Wales; usually in dry scrubs, on sandy soil amongst rocks, on slopes, ridges and hill sides. (**Map 5**)

***Diagnostic attributes*:** This form is characterised by its thick, pale green or yellowish green, subobovate or elliptic usually small leaf blades which are slightly shiny on the adaxial surface and dull and opaque on the abaxial surface, which have 1 or 2 pairs of obscure lateral nerves and 1 or 2 domatia on each side of the midrib. This form can be confused with *P. oleifolia* which also has dull leaf blades with indistinct nerves and short small inflorescences, and the plants also often grow in the same general area. However, *P. oleifolia* differs from this by its much duller, concolorous, usually efoveolate leaf blades, usually smaller flowers and fruits and has very slender pedicels.

***Notes*:** *Canthium oleifolium* var. *pedunculatum* Maiden & Baker is included as a synonym here because its type, collected from the Condobolin area of New South Wales, belong to the same taxon as that of *P. odorata* forma *subnitida*. Maiden also collected specimens of this taxon from the Condobolin area (see specimen marked *[3] in the above list).

***Etymology*:** The forma epithet *subnitida*, from Latin *sub-*, 'somewhat', and *nitidus*, 'shiny', refers to the slightly shiny adaxial surface of the leaf blades of this form.

6d. P. odorata subsp. **buxifolia** (Benth.) S.T.Reynolds, **comb. & stat. nov.**; *Canthium buxifolium* Benth., *Fl. Austral.* 3: 422 (1867). **Type:** Queensland. Ad fluvium Burnett [et] Dawson, *Mueller* [MEL153843] (syn: MEL); Burnett River, *Mueller* s.n. (syn: K). ? New South Wales. exact locality unknown, *Leichhardt* s.n. (syn: MEL [MEL1538144]; ? isosyn: NSW [NSW193767]).

Branchlets, young leaves, petioles, peduncles, pedicels and calyx lobes minutely hairy. Stipules usually very conspicuous with a long (to 9.0 mm long), broad, more or less foliaceous, folded lobe at apex. Petioles 0.1–0.3 cm long; leaf blades elliptic, ovate or suborbicular, 1.5–4.2 (–5.0) cm long × (0.6–) 1.4–2.0 (–2.5) cm wide, with apex and base obtuse or subacute or with apex slightly rounded and both adaxial and abaxial surfaces glabrous or finely hairy towards the base, thin or thick coriaceous, the adaxial surface dark or pale green, drying dark brown but usually paler brown at the margin; lateral nerves in 1–3 pairs, exceedingly slender, indistinct; reticulate veins not apparent; domatia very rarely present Inflorescences (2*[4]–) 14–22 (–49)-flowered; peduncles pubescent, the main one (3–)8–20 mm long; branches 1.0–3.5 mm long; pedicels pubescent, slender in solitary flowers, 3.5–7.0 mm long, stout in others and nearly obsolete, 0.5–2.0 mm long; calyx lobes sparsely hairy distally; corolla 3.0–5.0 mm long; tube 0.5–1.25 mm long; lobes elliptic, 2.5–3.5 mm long × 0.75–1.0 mm wide; filaments of stamens 1.0–1.5 mm long; anthers erect, 1.5–2.0 mm long; style (with stigma) 4.0–5.2 mm long. Fruits broad ellipsoid or obovoid but retuse at apex, 5.0–7.0 mm long × 3.0–8.0 mm wide; pyrenes depressed ovoid, slightly rugose. (**Fig. 3G–3K**)

***Diagnostic attributes*:** *Psydrax odorata* subsp. *buxifolia* is readily recognisable by its comparatively small, very glossy leaves, hairy branchlets and small inflorescences. It resembles *P. odorata* subsp. *australiana*, especially the small-leaved form, in its leaves, inflorescences, 4-merous flowers on short stout pedicels and fleshy corollas. However, that subspecies differs from *P. odorata* subsp. *buxifolia* by its foveolate leaves, usually glabrous branchlets and inflorescences. Moreover, the leaves of that variety are usually borne at right angles to the main axis of the branchlet whereas in *P. odorata* subsp. *buxifolia* the leaves are borne in the same plane as the main axis of the branchlet. These subspecies, however, are connected by intergrading specimens, ones with thicker leaves with or without domatia and with hairy branchlets and inflorescences.

***Variability*:** The leaves and inflorescences are variable in this subspecies; based on these attributes, two forms are recognised here.

Key to forms of *P. odorata* subsp. *buxifolia*

1. Leaves and inflorescences comparatively small; blades narrow elliptic, 1.5–2.0 mm long × 0.6–0.9 cm wide, thick; inflorescences 2–5-flowered*[4]; main peduncles 0.3–0.5 cm long . . . **6d(ii). P. odorata** forma **parviflorifra**
   Leaves and inflorescence comparatively larger; blades narrow elliptic or suborbicular, 2.5–5.0 cm long × 0.7–2.5 cm wide, elliptic, thick or thin; inflorescences 14–22 (–49)-flowered; main peduncles 0.8–2.0 cm long . . . . . **6d(i). P. odorata** forma **buxifolia**

***Note*:** The character marked *[4] in the description and key above is uncertain because only the type material has been seen and the specimens concerned have only very old inflorescences with fruit on them.

6d(i). P. odorata forma **buxifolia** (Benth.) S.T.Reynolds & R.J.F.Hend., **comb. & stat. nov.**; *Canthium buxifolium* Benth, *Fl. Austral.* 3: 422 (1867). **Type:** as for *P. odorata* subsp. *buxifolia* above.

Most of the description of *P. odorata* subsp. *buxifolia* provided above applies to this form. Its leaves are variable though its broad elliptic, broad ovate or suborbicular, usually thin, efoveolate leaf blades, which are usually borne in a one plane along the branchlets, are typical of this form. However, specimens of it with thicker, often broader or larger leaf blades approach those of *P. odorata* subsp. *australiana*, but differ from the latter by their usually efoveolate leaves, and hairy branchlets and inflorescences.

***Additional representative specimens*: Queensland.** BURNETT DISTRICT: Mt Wooroolin near Kingaroy, 26°35'S, 151°45'E, Apr 1947, *Michael* 3002 (BRI); Munro's Camp, 26°—'S, 151°—'E, Dec 1954, *Smith* 6283 (BRI, K); Bunya Mountains State Forest (State Forest 151 Tureen), Maidenwell road, about 3.5 km NNE of Munro's Camp, 26°52'S, 151°38'E, Dec 1987, *McDonald* 4131 & *Williams* (BRI); N side of Bunya Mountains, 26°55'S, 151°35'E, Mar 1988, *Sterling* 1 (BRI). DARLING DOWNS DISTRICT: 2.5 km SSW of Gladfield, 28°06'S, 152°10'E, Jun 1986, *Forster* PIF2492, *Bird* & *Grimshaw* (BRI); MacKinnerny's Irvingdale–Moola road, 27°10'S, 151°31'E, Jan 1993, *Smith* 34 (BRI); 5.6 km along Linthorpe road, N of Pittsworth, 27°39'S, 151°39'E, Feb 1996, *Bean* 9947 (BRI). MORETON DISTRICT: Rosewood, May 1913, *White* s.n. (BRI); Hoya, Dec 1935, *Michael* 2267 (BRI); ditto, Mar 1936, *Michael* 2268 (BRI); Mt French, Jan 1936, *Smith* s.n. (BRI); Brisbane, Upper Brookfield, 27°25'S, 152°55'E, Feb 1978, *Jessup* 57 (BRI)*[5]; N of Boonah, Dec 1981, *Bird* s.n. (BRI); Indooroopilly, 27°31'S, 153°00'E, Nov 1982, *Wood* [AQ339614] (BRI); on Boonah–Ipswich road, 7 km N of Boonah, 28°00'S, 152°41'E, Feb 1989, *Williams* s.n. (BRI). **New South Wales:** Acacia Creek via Killarney, Dec 1905, *Dunn* [NSW193789] (NSW)*[5]; River Tree area, *c.*39 miles (62.4 km) E of Liston, *c.*25 miles (40 km) NW of Tabulam, Jul 1949, *Clark, Pickard & Coveny* 1780 (NSW); Sandy Hollow, Aug 1963, *Burgess* s.n. (CANB).

***Distribution and habitat*:** South-eastern Queensland and northern New South Wales; usually in semi-evergreen vine thickets on ridges and river banks. (**Map 6**)

***Notes*:** The collections marked *[5] in the above list have thick foveolate leaf blades and hairy inflorescences, and appear to be intergrades between *P. odorata* subsp. *buxifolia* and *P. odorata* subsp. *australiana*.

The use of the epithet *buxifolia* in the name of this form follows Recommendation 26A.3. in the current International Code of Botanical Nomenclature (Greuter *et al.*, 2000).

6d(ii). P. odorata forma **parviflorifra*** S.T.Reynolds & R.J.F.Hend., **forma nov.** a *P. odorata* forma *buxifolia* foliorum laminis minoribus, inflorescentiis minoribus paucifloris differt. **Typus**. Queensland. MORETON DISTRICT: 4.5 km WSW of Mt Alford, 28°05'S, 152°23'E, 27 April 1986, *L.H. Bird* [AQ408941] (holo: BRI; iso: BRI).

Canthium sp. (Mt Alford L.H.Bird AQ408941), S.T. Reynolds (1997, p.180).

Canthium buxifolium var. (Mt Alford L.H.Bird AQ408941), P.I. Forster & D.A. Halford (2002, p.174).

Stipules ovate; leaf blades elliptic or narrow elliptic, 1.5–2.0 cm long × 0.6–0.9 cm wide, with apex obtuse and base subacute and narrowed into petiole, glossy on the adaxial surface; lateral nerves slender, obscure; domatia absent. Inflorescences (remnant ones only seen)

* should be '***parviflorifera***' (PDB 2005)

2–5-flowered; pedicels slender, those of solitary flowers *c.*3.5 mm long, of others *c.*2.0 mm long. Fruits obovoid, 5.0–5.5 mm long × 3.0–5.0 mm wide, 2-lobed, bluish black; pyrenes rugose.

***Distribution and habitat*:** Known only from the type collection; in Araucarian microphyll vine forest. (**Map 8**)

***Etymology*:** The forma epithet *parviflorifra*, from Latin *parvus*, 'small', and *florifer*, 'flowerbearing', refers to the small inflorescences in this form.

6d(iii). Mundubbera form *Canthium buxifolium* forma (Brigooda P.I.Forster PIF5657), P.I. Forster & D.A. Halford (2002, p.174).

The collections of *P. odorata* from around Mundubbera, southeastern Queensland, listed below probably represent a distinct form of *P. odorata* subsp. *buxifolia* but as the specimens are without well-developed flowers, it is not possible to be certain of this.

Queensland. Burnett District: Monogorilby, Mundubbera Shire, 26°01'S, 151°00'E, Dec 1981, *Forster* 213B (BRI); 2.5 km E of Brigooda, 26°15'S, 151°26'E, Aug 1989, *Forster* PIF5657 (BRI); Fontainea Scrub, State Forest 172, Gurgeena Plateau, 25°26'S, 151°23'E, Mar 1994, *Forster* PIF15068 (BRI).

The taxon represented by these specimens may be described as having: Branchlets greyish coloured mottled with white; young branchlets, petioles, peduncles and pedicels finely pubescent. Stipules comparatively small, keeled and attenuated into an acuminate lobe at apex; petioles 0.15–0.3 cm long; leaf blades narrow elliptic or subobovate elliptic, 2.5–4.5 (–5.0) cm long × 0.9–1.5 (–2.5) cm wide, with apex subacute or obtuse and base cuneate, exceedingly glossy on adaxial surface, drying dark brown with usually paler coloured margins adaxially, pale brown or pale olive-green abaxially, thick coriaceous; lateral nerves in 3 pairs, obliquely arching, looping at margins; reticulate veins not apparent; domatia (1–) 2–4 on each side of midrib, prominent. Inflorescences 1.3–1.8 cm long × 1.0–2.0 cm wide, 11–19-flowered; main peduncle 4.0–10.0 mm long; flowers 4-merous; pedicel of solitary flowers 2.0–2.5 mm long, of others 0.5–1.0 mm long; calyx 1.0–1.5 mm long; corolla 4.5–6.0 mm long, corolla tube 2.0–2.5 mm long, sparsely hairy at throat; corolla lobes subacute at apex, 2.5–3.5 mm long; filaments *c.*1.0 mm long; anthers *c.*2.5 mm long. Fruits broad ellipsoid, *c.*6.0 mm long × 4.0 mm wide, black when ripe; pyrenes rugose.

***Distribution and habitat*:** Occurring around Mundubbera, southeastern Queensland; in semi-evergreen vine thickets in hilly rocky country. (**Map 1**)

***Diagnostic attributes*:** The above specimens resemble *P. odorata* forma *buxifolia* in their small very shiny leaves, dark brown adaxial surface of dried leaves (with paler margins), and small inflorescences, but differ from that form as follows:

Domatia present on the leaves, usually 2–4 on each side of the midrib ..... **P. odorata 'Mundubbera form'**

Domatia rarely present on the leaves but when so, only one on each side of the midrib ..... **P. odorata** forma **buxifolia**

The above specimens also resemble the small-leaved form of *P. odorata* forma *australiana*, but that form differs from them by its glabrous branchlets and inflorescences, less shiny and pale brown adaxial surface of dried leaves, and fewer domatia (only 1 or 2 domatia on each side of the midrib).

7. Psydrax lamprophylla (F.Muell.) Bridson, *Kew Bull.* 40: 724 (1985); *Canthium lamprophyllum* F.Muell, *Fragm.* 2: 133 (1861). **Type:** Queensland. Moreton District: near Brisbane River, in 1855, *F. Mueller* s.n. (lecto, here designated: MEL [MEL1538219]; isolecto: K, MEL [MEL1538225]).

Canthium sp. 1., Ross, E.M. in T.D. Stanley & E.M. Ross, *Fl. south-eastern Queensland* 2: 343 (1986).

[*Canthium lucidum* auct. non Hook. & Arn.: G. Bentham, *Fl. Austral.* 3: 421 (1867 '1866') quoad speciminibus Brisbane River, Moreton Bay, [leg.] *F. Mueller* et Tweed River, [leg.] *C. Moore*].

Trees 5–20 m high; trunk to *c.*30 cm dbh; bark dark brown, smooth or closely longitudinally fissured; young parts and inflorescence axes with short spreading hairs; branchlets quadrangular towards their apices, lenticellate, glabrous. **Leaves** opposite; stipules lacking a keel and an apical lobe, *c.*3.0 mm long × 2.0 mm wide, ± membranous, usually connate to above the middle, with broad ovate, obtuse lobes, or stipules slightly truncate and very rarely provided with a minute, obscurely keeled lobe, hairy outside, with colletors present at base adaxially; petioles (0.4–) 1.0–3.0 cm long, usually flexuose, deeply channelled above; blades elliptic, broad elliptic, elliptic-oblong, ovate-elliptic or ovate-oblong, (8.5–) 10.5–18.0 (–20.0) cm long × (3.1–) 4.0–8.7 (–9.7) cm wide, with apex and base acuminate or subacute, or apex abruptly shortly acuminate or obtuse and base obtuse, slightly rounded, subcordate or truncate and shortly decurrent into the petiole, coriaceous; both surfaces glabrous, the adaxial surface dark green, glossy, drying brown or with a yellowish tinge, sometimes dotted with insect galls, the abaxial surface pale or dull green; lateral nerves in 4–7 pairs, oblique or subpatent, the lower pairs ± acutely angled to the midrib and ascending distally; reticulate venation loosely arranged, fine, distinct or indistinct; midrib and nerves usually raised in dried specimens; domatia present or absent. **Inflorescences** robust, 2.5–8.0 cm long × 2.5–8.5 cm wide, 130–145-flowered; peduncles pubescent or puberulent, basal one 1.5–3.5 cm long, thickened towards the middle or base, provided with minute denticulate bracts usually about a third of its length from the base, usually terminated by 3 branches; branches usually thickened, bifurcate, 0.5–2.5 cm long, terminated by 23–45-flowered cymes. **Flowers** 4(or 5)-merous; pedicel of solitary flowers (1.5–) 4.0–6.0 (–9.0) mm long, of others 0.5–3.0 mm long; calyx *c.*1.0 mm long, minutely patent hairy, with tube cupular and limb 4(or 5)–denticulate; lobes ovate, minute; corolla 3.5–6.5 mm long with tube narrow or broad campanulate, 1.5–3.5 mm long × 1.5–3.0 mm wide, with sparse or dense reflexed hairs at the throat and puberulent abaxially; lobes elliptic or lanceolate, 2.0–3.5 mm long × *c.*1.0 mm wide, thick, papillose, obtuse and reflexed at apex, sparsely puberulous abaxially especially distally; disc usually sparsely minutely hairy; stamens included; filaments erect, about 1 mm long; anthers erect or ± recurved, 1.5–2.0 mm long, slightly papillose; style (with stigma) 5.0–10.0 mm long; stigmatic knob oblongoid, 2-lobed at apex. **Fruits** broad ellipsoid, divaricately 2-lobed, 0 5–1.0 cm long × 0.7–1.2 cm wide, usually with a red glandular layer under pericarp; pyrenes ellipsoid, usually exceedingly rugose.

***Diagnostic attributes*:** *Psydrax lamprophylla* is readily distinguishable from other species of *Psydrax* in Australia by its slightly membranous stipules which are neither keeled nor lobed at the apex. It resembles *Psydrax cymigera* (Valeton) S.T.Reynolds & R.J.F.Hend. from New Guinea in its large leaves and inflorescences, but the stipules in that species are keeled and attenuated into a folded lobe at the apex.

***Notes*:** The taxonomy and nomenclature of *Psydrax lamprophylla* and *P. odorata* have been confused since Bentham (1867) treated the species concerned as conspecific and used the name *Canthium lucidum* Hook. & Arn. for his taxon. He did not appreciate that that name is illegitimate, being a later homonym of *Canthium lucidum* R.Br., and was possibly unaware that *Canthium odoratum* (Forst.f.) Seem. should have been used for his species when treating it as belonging to *Canthium*.

Mueller cited several syntypes in his protologue for *Canthium lamprophyllum* F.Muell. Some of these, i.e. those from Rockhampton collected by Thozet (MEL), from between the Dawson and Burnett Rivers collected by Mueller (MEL) and from Port Molle and from Port Denison collected by Fitzalan (BM, MEL), have keeled stipules which are attenuated into a folded lobe at the apex, slender glabrous inflorescences and small to medium-sized glossy leaf blades. These resemble specimens of *Psydrax odorata* from the Pacific Islands and are therefore referred here to that species. The remainder of the

syntypes, i.e. Brisbane River and Pine River collected by Hill and Mueller, Brisbane River collected by Mueller (MEL, K), and Wide Bay collected by C. Moore (MEL), have stipules which are neither keeled nor lobed at the apex, robust hairy inflorescences and comparatively large leaf blades.

Thus, we believe two discrete taxa are represented by the syntypes of Mueller's *Canthium lamprophyllum*, namely (1) a taxon with stipules which are keeled and lobed at the apex, slender glabrous inflorescences and small or medium-sized shiny leaf blades, which is referrable to *Psydrax odorata*, and (2), a taxon with stipules which are without a keel and an apical lobe, robust hairy inflorescences and large leaf blades.

To fix the applicability of *P. lamprophylla* (F.Muell.) Bridson, Mueller's name is lectotypified here by the Mueller collection from near the Brisbane River, i.e., specimen MEL1538219 in MEL. An isolectotype is present in K and also in MEL (MEL1538225). The lectotype, which is in flower, is the best of the syntypes of Mueller's *Canthium lamprophyllum* seen in this study. It also has the hairy inflorescences described in Mueller's protologue (which is not the case in the syntypes referrable to *Psydrax odorata* which have glabrous inflorescences). Thus lectotypified, Mueller's name applies to the second taxon represented by the above syntypes which is, we believe, specifically distinct from *P. odorata*.

Variability: *Psydrax lamprophylla* varies consistently in its leaves and fruits. On this basis, two forms are formally recognised here.

Key to forms of *Psydrax lamprophylla*

1. Petioles 1.0–3.0 cm long; leaf blades usually narrow at base and attenuate into the petiole; lateral nerves usually oblique; reticulate venation prominent; corolla 3.5–4.5 mm long; fruits 5.0–5.5 mm long × (4.0–) 7.0–7.5 mm wide; pyrenes usually slightly rugose ..... **7a. P. lamprophylla** forma **lamprophylla**

   Petioles 0.4–1.8 mm long; leaf blades usually broad at base, with the base obtuse or subcordate; lateral nerves widely spaced, patent or suboblique; reticulate veins usually obscure; corolla 4.5–6.5 mm long; fruits 7.0–8.0 mm long × (0.8–) 1.0–1.2 cm wide; pyrenes usually exceedingly rugose ..... **7b. P. lamprophylla** forma **latissima**

7a. P. lamprophylla forma **lamprophylla**

Stipules truncate; leaf blades (8.5–) 10.5–13.5 cm long × (3.1–) 4.0–5.2 cm wide, usually narrowed at both ends, attenuate at base into a petiole up to 3.0 cm long, or the base obtuse; surfaces usually dotted with insect galls; lateral nerves usually exceedingly oblique, with prominent cross veins and reticulate veins between them; main peduncles 1.3–3.5 cm long; corolla tube 1.5–2.0 mm long × *c.*1.5 mm wide; fruits didymous, 5.0–5.5 mm long × 7.0–7.5 mm wide, or rarely 1-lobed then *c.*5.0 mm long × 4.0 mm wide, smooth; pyrenes rugose.

Additional representative specimens: **Queensland.** Port Curtis District: Bulburin State Forest, 24°3-'S, 151°2-'E, Apr 1980, *McDonald* 3162, *Fisher & Ryan* (BRI); Mount Atherton, 22°46'S, 150°45'E, Dec 1992, *Melzer* 63 (BRI); Brolga Mine, Glen Geddes, 23°01'S, 150°18'E, May 1993, *Batianoff* 930539, *Specht & Reeves* (BRI); State Forest 69, 24°38'S, 150°53'E, 33.9 km NW of Monto, Mar 1996, *Halford* Q2808 (BRI). Burnett District: Mill North Logging Area, State Forest 95, 3 km N of Kalpowar, Aug 1984, 24°4-'S, 151°1-'E, *Grant* s.n. (BRI). Wide Bay District: Kin Kin, 26°16'S, 152°53'E, Jan 1916, *White* s.n. (BRI); Dundowran, Jul 1928, *Tryon* s.n. (BRI); Fraser Island, 25°15'S, 153°20'E, May 1964, *Webb & Tracey* 6345 (BRI); Pine Mountain, S of Biggenden, 25°—'S, 152°—'E, Mar 1980, *Young & Randall* 342 (BRI); Vicinity of Fairlies Knob, 25 km E of Biggenden, 25°30'S, 152°18'E, Jul 1981, *Young & Randall* 392 (BRI); Kenilworth Bluff about 8 km N of Kenilworth, 26°32'S, 152°43'E, May 1987, *Sharpe* 4683 & *Bean* (BRI); 1 km N of Mt Mittarula, SW of Gympie, 26°18'S, 152°32'E, Oct 1993, *Bean* 6720 (BRI). Moreton District: Moreton Bay, in 1872, *Eaves* s.n. (MEL); Benarkin, Apr 1924, *Cameron* s.n. (BRI); Indooroopilly, Brisbane, Apr 1936, *Cribb* s.n. (BRI); Yarraman, Aug 1957, *McGillivray* [NSW193674] (NSW); Palen Creek State Forest near Mt Lindesay, 28°20'S, 152°45'E, Nov 1993, *Grimshaw* 102 (BRI). **New South Wales.** Ballina, Jul 1893, *Bauerlen* s.n. (NSW); ditto, Feb 1894, *Bauerlen* s.n. (NSW, K); Brunswick River, Pacific Highway, May 1964, *Schodde* 3552 & *Hayes*

(CANB, NSW); 3 km S of southern edge of Broken Head, Feb 1981, *Williams* s.n. (NSW); Tweed River, date unknown, *Moore* s.n. (MEL [MEL1538240], K, NSW).

***Distribution and habitat*:** Central and south-eastern Queensland to far northern New South Wales; usually in dry rain forests on hill crests, slopes, gullies and along creeks, on red brown soil. (**Map 7**)

***Notes*:** The specimens from Bulburin State Forest and Dundowran have broad leaves with a broad base, but short petioles as in *P. lamprophylla* forma *latissima*. However, they differ from that in their aspect and venation. Specimens which are sterile appear to represent young growth of this form.

7b. P. lamprophylla forma **latissima** S.T.Reynolds & R.J.F.Hend., **forma nov.** a *P. lamprophylla* forma *lamprophylla* foliorum laminis latis basi lata praeditis, petiolis brevioribus (12.0–18.0 mm longis) inflorescentiis robustioribus et pyrenis valde rugosis differt. **Typus**: Queensland. North Kennedy District: about 7 km W of Paluma, 19°0-'S, 146°0-'E, 20 July 1986, *G. Duff* 18 (holo: BRI).

[*Plectronia diococca* auct. non (Gaertn.) F.Muell.: F. Mueller, *Fragm.* 9: 185–186 (1875) quoad specimini Rockingham Bay, [leg.] *Dallachy*].

[*Canthium cymosum* auct. non Pers.: F. Mueller, *Fragm.* 9: 185 (1875), *Syst. census Austral. Pl.* 75 (1882) & *Second syst. census Austral. Pl.* 126 (1889)]

[*Canthium didymum* auct. non C.F.Gaertn.: F. Mueller, *Fragm.* 9: 185 (1875) et F.M. Bailey, *Qld Fl.* 3: 764 (1900) quoad specimini Rockingham Bay, [leg.] *Dallachy*.]

Stipules truncate or very rarely with a vestigial apical lobe; petioles (0.4–) 1.2–1.8 cm long; leaf blades (9.5–) 12.0–18.0 (–20.0) cm long × (5.1–) 6.0–8.7 (–9.7) cm wide, with apex abruptly short acuminate, subobtuse or obtuse, and usually truncate, subcordate, slightly rounded or obtuse and shortly attenuate into petiole proximally; lateral veins widely spaced with reticulate veins obscure; domatia 1 or 2 on each side of midrib, sometimes absent; main peduncles 1.5–3.0 cm long, hairy, robust, with minute denticulate bracts towards the middle or towards the base, thickened from the bracts to its base; inflorescences branches bifurcate, 8.0–12.0 mm long; cymes about 23-flowered; pedicels finely hairy, those of solitary flowers 3.0–6.0 mm long, of others 1.5–3.0 mm long; calyx finely puberulent; corolla tube broad campanulate, 2.5–3.5 mm long × 2.5–3.0 mm wide, puberulent abaxially, densely reflexed hairy at throat; lobes somewhat elliptic, 2.0–3.0 mm long, obtuse; fruits 2-lobed, transversely ellipsoid, slightly compressed, 7.0–8.0 mm long × 8.0–12.0 mm wide; endocarp slightly resinous, usually with a red glandular layer below the pericarp; pyrenes strongly rugose.

***Additional representative specimens*: Queensland.** Cook District: Leo Creek, upper Nesbitt River, 13°45'S, 143°25'E, Aug 1948, *Brass* 19899 (BRI, K); Upper Parrot Creek, Annan River, 15°45'S, 145°15'E, Sep 1948, *Brass* 20299 (BRI, K); Big Tableland Logging Area, about 27 km S by E of Cooktown, 15°45'S, 145°17'E, Sep 1960, *Smith* 11206 (BRI, K); Lankelly Creek (13°55'S, 143°20'E), Sep 1971, *Hyland* 5412 (BRI, K, QRS); State Forest Reserve 144, Windsor Tableland, 16°30'S, 145°05'E, Oct 1971, *Hyland* 5558 (BRI, K, QRS); State Forest Reserve 607, Bridle Logging Area, 17°00'S, 145°35'E, near Mareeba, Apr, 1972, *Irvine* 184 (BRI, K, QRS); Leo Creek Road, 13°40'S, 143°20'E, Jul 1972, *Hyland* 6365 (BRI, QRS); Timber Reserve 146, Tableland Logging Area, 15°45'S, 145°15'E, near Rossville, N of Mt Finnegan, Jul 1975, *Hyland* 8330 (BRI, QRS); State Forest Reserve 144, 16°17'S, 145°,05'E, W of Daintree, Apr 1976, *Hyland* 8732 (BRI, CANB, K, QRS); Moa Island, Torres Strait, 10°11'S, 142°15'E, May 1987, *Budworth* 1264 (BRI). North Kennedy District; Gregory Creek, near Proserpine, Dec 1993, *Perry* s.n. (BRI); Portello's Crossing, Dryander Creek, base of Mt Dryander, 20°16'S, 148°35'E, Feb 1994, *Forster* PIF14858 (BRI); Rockingham Bay, date unknown, *Dallachy* s.n. (MEL)*6. South Kennedy District: Finch Hatton Gorge, Eungella National Park, 21°09'S, 148°38'E, Jan 1991, *Pearson* 432 (BRI).

***Distribution and habitat*:** Northern Queensland, from Torres Strait, Cape York Peninsula to near Eungella; on steep slopes and gullies, near permanent water at altitudes of 400–1100 m, in wet or dry rainforests, usually with *Agathis robusta*, on soils derived from granite. (**Map 7**)

***Diagnostic attributes*:** *Psydrax lamprophylla* forma *latissima* may be distinguished from the typical form by the broad base of its leaf laminas which are very broad obtuse or truncate, widely spaced lateral nerves with obscure reticulate veins, robust peduncles, larger flowers and fruits with very rugose pyrenes.

***Notes*:** Dallachy's collection from Rockingham Bay cited above (*[6]) was included under *Plectronia diococca* (Gaertn.) F.Muell. by Mueller (1875), when making the new combination, and under *Canthium didymum* C.F.Gaertn. (as 'Roxb.') by Bailey (1900). These names are now considered synonyms and the species they relate to does not occur in this region (Bridson 1985, p.687).

***Etymology*:** The forma epithet *latissima*, Latin for 'very broad', refers to the broad leaf blades with a broad base present in this form of the species.

8. Psydrax laxiflorens S.T.Reynolds & R.J.F.Hend., **sp. nov.** quoad folia *P. lamprophyllae* (F.Muell.) Bridson simile sed stipulis carinatis inflorescentiis laxis, ramis paucioribus constructis, floribus fructibusque majoribus, pedicellis longioribus differt. **Typus:** Queensland. Cook District: Herberton Range, 17°30'S, 145°30'E, 19 November 1929, *S.F. Kajewski* 1377 (holo: BRI; iso: K, MEL, NSW).

Canthium sp. (Herberton Range S.F.Kajewski 1377), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Trees 10–20 m high; trunk to *c.*25 cm dbh, fluted and buttressed; bark flakey; branchlets glabrous, usually with ± globose or irregular shaped lenticels. **Leaves** opposite; stipules broad ovate, 2.5–4.0 mm long, abruptly acuminate with a long folded lobe at apex; petioles 0.6–1.5 cm long, flexuose, slightly channelled adaxially; blades elliptic or elliptic-ovate, (6.0–) 8.0–9.0 (–10.5) cm long × (3.0–) 4.0–6.0 (–6.3) cm wide, with apex and base obtuse or with apex abruptly shortly acuminate and base subacute or subtruncate, glabrous, thin coriaceous, shiny adaxially; lateral nerves in 3–5 pairs, very slender, arcuate, looping distally; reticulate venation very fine, open; domatia conspicuous, 1 or 2 on each side of the midrib, very rarely absent. **Inflorescences** open, very laxly branched and flowered, 2.5–4.0 cm long × 3.5–4.5 cm across, 6–20-flowered; peduncles glabrous, the basal one 3.0–16.0 mm long with small bracts near its distal end; axis branches 8.0–14.0 mm long, bifurcate, each terminated by a 3–7-flowered cymule, the solitary flower at forks of the dichotomous branches often absent. **Flowers** 5-merous, strongly scented; pedicel of solitary flowers 7.0–10.0 mm long, of others 5.0–7.0 mm long; calyx 2.0–2.5 mm long, glabrous, with tube ± turbinate and limb 5-denticulate; lobes ovate; corolla 6.0–8.0 mm long, cream-yellow or yellow; tube broad campanulate, 2.0–3.0 mm long, densely hairy at the throat; lobes elliptic, 4.0–5.0 mm long × *c.*1.5 mm across, obtuse and ± incurved at apex, thick, papillose at margins, longer than tube, recurved; stamens shorter than tube plus lobes; filaments erect, *c.*1.5 mm long; anthers erect or reflexed, *c.*3.0 mm long, apiculate; style (with stigma) 8.0–9.0 mm long; stigma oblong, 2-lobed at apex. **Fruits** obovoid, 13.0–15.0 mm long × 8.0–10.0 mm across; pyrenes ellipsoid, exceedingly rugose.

***Additional representative specimens*: Queensland.** Cook District: Davies Creek, Lamb Range, between Mareeba and Kuranda, 16°55'S, 145°35'E, in 1962, *Webb & Tracey* 7377 (BRI); State Forest Reserve 194, about 6 km WSW of Atherton, 17°17'S, 145°26'E, Nov 1974, *Hyland* 7868 (BRI, K, QRS); ditto, Mar 1976, *Moriarty* 2022 (BRI, QRS); ditto, Dec 1978, *Sanderson* 1601 (BRI, QRS); State Forest Reserve 607, Emerald Logging Area, SE of Mareeba, 17°05'S, 145°35'E, Apr 1979, *Gray* 1370 (BRI, NSW, QRS); Bartle Frere, Boonjie Logging Area, 17°23'S, 145°45'E, Nov 1991, *Hyland* 14312 (QRS). North Kennedy District: Paluma village, near police station, 19°00'S, 146°12'E, Dec 1984, *Jackes* 5 (BRI).

***Distribution and habitat*:** Northern Queensland from the Atherton Tableland to Paluma Range; mostly on ranges in mountainous country, in vine forests at altitudes of 720–1220 m. (**Map 5**)

***Diagnostic attributes*:** *Psydrax laxiflorens* is readily distinguishable by its comparatively large obovoid fruits, very loosely branched, sparsely-flowered inflorescences with slender branches and 2–7-flowered cymules with 5-merous flowers that are densely hairy at the mouth of the corolla tube, and prominent domatia on its leaf blades. In respect to leaves, it is similar to *P. lamprophylla* (F.Muell.) Bridson but differs from that with its keeled stipules, lax inflorescences with fewer branches and bigger flowers and fruits on longer pedicels. It is closely related to *P. odorata*, under which this taxon was previously included, but *P. odorata*, especially *P. odorata* subsp. *australiana* which occurs in the same area, differs from *P. laxiflorens*

in its compact inflorescences, ellipsoid fruits 5.0–6.0 mm long × 3.0–7.0 mm across, and usually 4-merous flowers which are only sparsely hairy at the mouth of the corolla tube.

***Etymology*:** The specific epithet *laxiflorens*, from Latin *laxus*, 'loose', and *florens*, 'flowering', refers to the laxly branched, open inflorescences in this species.

9. Psydrax tropica S.T.Reynolds & R.J.F.Hend., **sp. nov.** *P. lamprophyllae* (F.Muell.) Bridson simile sed stipulis acuminatis carinatis, petiolis brevioribus, foliorum lamina ± membranaceiore nervis et venis reticulatis pertenuibus praedita differt. **Typus:** Queensland. Cook District: State Forest Reserve 310, Upper Goldsborough Logging Area, 17 km SE of Little Mulgrave Township, 17°16'S, 145°47'E, November 1988, *L.W. Jessup* 1819, *G.P. Guymer & W.J. McDonald* (holo: BRI; iso: BRI).

Canthium sp. (Whitfield Range B.P.Hyland 1020); S.T. Reynolds (1997, p.181), P.I. Forster & D.A. Halford (2002, p.174).

Small trees to 10 m high; branchlets brown or reddish brown, quadrangular distally and usually resinous, glabrous. **Leaves** opposite; stipules conspicuous, broad ovate, 6.5–8.0 mm long, keeled, attenuated into a long folded lobe at apex, paler coloured and ± membranous at margins, those distal on branchlets resinous; petioles 0.3–0.7 (–0.9) cm long, slightly flattened, flexuose; blades elliptic, ovate-elliptic or elliptic-oblong, 10.0–14.5 (–18.0) cm long × 5.2–7.0 (–8.0) cm wide, abruptly narrowed at both ends, or the apex abruptly shortly acuminate (more or less caudate in young leaves) or subacute and the base obtuse or subacute and attenuate into short petiole; margins thick and slightly recurved; both adaxial and abaxial surfaces glabrous with the adaxial surface glossy, with prominent nerves and reticulate secondary venationed; lateral nerves in 4–8 (–9) pairs, obliquely arched and ascending and with a fine, delicate network of secondary veins between them, which is prominently raised in dried specimens; domatia present or very rarely absent. **Inflorescences** open with bifurcate branches, 4.0–5.0 cm long × 5.0–6.5 cm wide, (13–) 30–75-flowered; peduncles and pedicels sparsely short hairy, with main peduncles 1.5–2.3 cm long and secondary peduncles 4.0–11.0 mm long, bifurcate. **Flowers** 5-merous; pedicels slender, that of solitary flowers 2.5–5.0 mm long, of others 0.5–2.0 mm long; calyx 1.0–2.0 mm long, glabrous, with tube ± campanulate and 5-denticulate limb wider and paler coloured than tube, the lobes broad ovate; corolla 6.5–8.5 mm long; tube broad cylindrical, 1.0–3.5 mm long, to 1.5 mm wide at mouth, densely long hairy at throat; lobes erect or slightly spreading, elliptic, 2.5–5.0 mm long × 1.5–2.0 mm wide, obtuse but cucullate at apex, usually delicately reticulate veined; stamens usually as long as the corolla lobes; filaments erect, about 2.0 mm long, filiform; anthers 3.0–3.5 mm long, erect or sometimes ± recurved; style (with stigma) about 10.0 mm long; stigma oblong, 2-lobed at apex. **Fruits** transversely ellipsoid, about 8.0 mm long × 9.0 mm wide; pericarp verrucose when dry; pyrenes about 8.0 mm long × 5.0 mm wide, exceedingly hard and rugose.

***Representative specimens*: Queensland.** Cook District: Johnstone River, Mar 1916, *Michael* s.n. (BRI); The Boulders near Babinda, Jan 1967, *Rijkers* [NQNC14772] (BRI, QRS); Whitfield Range, Oct 1967, *Hyland* 1020 (QRS); Alexandra Creek, N of Thornton Peak, Jul 1973, *Webb & Tracey* 13220 (BRI, QRS); foot of MacAlister Range, 2.5 km ENE of Saddle Mountain, 16°49'S, 145°41'E, Dec 1987, *Lyons* 54 (BRI); State Forest Reserve 310, Upper Goldsborough Logging Area, 17 km SE of Little Mulgrave Township, 17°16'S, 145°47'E, Nov 1988, *Jessup* 1819, *Guymer & McDonald* (BRI).

***Distribution and habitat*:** North Queensland, from Thornton Peak to the Atherton Tableland; in vineforests, on gentle slopes, creek and river banks, usually on alluvium. (**Map 9**)

***Diagnostic attributes*:** *Psydrax tropica* is characterised by its usually large elliptic acuminate or subacute leaf blades with prominent, very fine, delicately arranged network of secondary veins, and by its ovate, keeled stipules with usually paler coloured thinner margins. It is related to *P. odorata* subsp. *australiana*, which has more or less similar attributes of the leaves and inflorescences, but that taxon differs from *P. tropica* by its usually smaller leaves which are up to 8.3 cm long and 4.4 cm wide, rarely more, and which have an obtuse or subacute apex and loosely arranged reticulate venation.

Etymology: The specific epithet *tropicus*, Latin for 'tropical', refers to the usual habitat of this species, namely the Wet Tropics of northern Queensland.

10. Psydrax banksii S.T.Reynolds & R.J.F.Hend., **sp. nov.** *P. suborbiculari* (C.T.White) S.T.Reynolds & R.J.F.Hend. arte simile sed foliorum lamina obovata ellipticave, basi anguste attenuata, venatione reticulata prominente, et inflorescentiarum pedunculis longioribus differt. **Typus**: Queensland. Cook District: Mouth of Jardine River, 10°56'S, 142°14'E, 2 February 1983, *A. Morton* AM1782 & *L. Hiddins* (holo: BRI; iso: MEL).

Canthium sp. (Friday Island L.J.Brass 18158), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Shrubs or small trees to 5 m high; branchlets ± angular and usually puberulous distally, lenticellate. **Leaves** opposite; stipules ovate or ± triangular, 4.0–6.0 mm long, keeled and attenuated into a long folded lobe distally; petioles (0.1–) 0.2.–0.4 cm long; blades obovate or subelliptic, 3.2–5.5 (–6.2) cm long × 1.6–3.0 (–3.6) cm wide, with apex rounded and base subacute or attenuate and decurrent into petiole, the margins flat or slightly recurved in dried specimens; adaxial and abaxial surfaces glabrous, the adaxial ones shiny, the abaxial ones dull, usually resin-dotted; lateral nerves in (2–) 4 or 5 pairs, oblique, ascending distally and looping at margins; reticulate veins loosely arranged, distinct or indistinct on adaxial surface; domatia small, usually few on each side of the midrib, sometimes absent. **Inflorescences** 6.0–9.0 cm long × 4.0–5.0 cm across, 27–59-flowered; peduncles slender, puberulous, the basal one (1.5–) 3.0–4.6 cm long; axis branches 7.0–14.0 mm long; cymes 12–15-flowered. **Flowers** 4(or 5)-merous; pedicels slender, puberulent, that of solitary flowers 4.0–8.0 mm long, that of others 1.0–4.0 mm long; calyx about 2.0 mm long; tube slightly turbinate, limb 4- or 5-denticulate; lobes broad ovate, minute; corolla 6.0–7.5 mm long; tube cylindrical or narrow campanulate, 2.0–2.5 mm long × *c.*1.0 across, sparsely hairy at throat; lobes recurved, sublanceolate, subacute or obtuse, 4.0–5.5 mm long × 1.0–1.25 mm across; stamens with filaments subulate, 1.0–2.5 mm long, erect; anthers 2.5–3.0 mm long; style (with stigma) 6.0–7.0 mm long, exserted; stigma oblong, shortly bilobed at apex. **Fruits** obovoid to ellipsoid, 0.9–1.0 cm long × 0.7–0.9 cm across, usually resin-dotted; endocarp thick, resinous; pyrenes ellipsoid or depressed ovoid, rugose. (**Fig. 5F–5K**)

***Additional representative specimens*: Queensland.** Cook District: Lizard Island, Aug 1770, *Banks & Solander* s.n. (BM); Torres Strait, Friday Island, 10°36'S, 142°10'E, Feb 1948, *Brass* 18158 (BRI); between Cape York and Galloway's Hill, Oct 1965, *Smith* 12540 (BRI); Olive River, 12°10'S, 143°05'E, Sep 1974, *Hyland* 7447A (BRI); Starke–Cape Flattery Road, Jul 1976, *Tracey* 14579 (BRI); Morgan River, 15°06'S, 145°14'E, Jan 1979, *Duke* 1209 (BRI); Torres Strait, Badu Island, Jan 1980, *Garnett* 344 & 356 (BRI); coast S of Thorpe Point, Shelburne Holdings, 11°55'S, 143°08'E, Nov 1985, *Gunness* 1961 (BRI); Porn 2V, Parish of Annan, 15°36'S, 145°19'E, Dec 1988, *Hyland* 13773 (BRI); 0.8 km N of Captain Billy Landing, 11°37'S, 142°51'E, Mar 1992, *Clarkson* 9269 & *Neldner* (BRI); Lakefield National Park, 32.5 km from Laura on road to New Laura Homestead, 15°18'S, 144°25'E, Jan 1993, *Forster* PIF12819 & *Bean* (BRI); Evans Bay, 26 km NE of Bamaga, 10°42'S, 142°32'E, Feb 1994, *Fell* 3917, *Stanton & Roberts* (BRI); Cape York, date unknown, *Hill* s.n. (K). North Kennedy District: Hinchinbrook Island, 18°1-'S, 146°2-'E, Dec 1978, *Thorsbourne & Travers* 492 (BRI, K).

***Distribution and habitat*:** North Queensland, from Torres Strait Islands and Cape York Peninsula to Hinchinbrook Island; in coastal woodlands, heaths and vine thickets, mostly on sand dunes or sand hills. (**Map 8**)

***Diagnostic attributes*:** *Psydrax banksii* is characterised by its usually small, shiny, obovate, finely reticulate-nerved leaf blades, hairy, long-stalked inflorescences, and delicate flowers with a narrow, ± cylindrical corolla tube.

***Affinities*:** *Psydrax banksii* is closely related to *P. suborbicularis* (C.T.White) S.T.Reynolds & R.J.F.Hend. from Papua New Guinea with which it shares the slender inflorescences and corollas, but that species differs from *P. banksii* in its broad suborbicular leaf blades as indicated in the key to distingish the two below.

Leaf blades suborbicular with base truncate or subcordate and reticulate veins indistinct; inflorescences with main peduncle 2.0–2.5 cm long; corolla with tube 3.0–3.5 mm long, densely hairy at throat, and lobes 2.0–2.5 mm long ..... **P. suborbicularis**

Leaf blades obovate with base narrowed and reticulate veins prominent; inflorescences with main peduncles (1.5–) 3.0–4.6 cm long; corolla with tube 2.0–2.5 mm long, sparsely hairy at throat, and lobes 4.0–5.5 mm long ..... **P. banksii**

***Notes*:** Though the majority of specimens of this species seen had the typical small obovate leaf blades, a few had somewhat larger leaves which approached those of *P. odorata*, but that species, especially in *P. odorata* subsp. *australiana*, which occurs in the same area as *P. banksii*, differs from *P. banksii* by its glabrous branchlets and inflorescence axes, short and stout pedicels, and fleshy corollas with a comparatively broad tube.

***Etymology*:** The specific epithet *banksii* honours Sir Joseph Banks for his valuable contribution to Australian botany. He, with Daniel Solander, was the first (according to our records) to collect this species when visiting Lizard Island, off the north Queensland coast, in August 1770 during Captain Cook's voyage in the Endeavour.

11. Psydrax latifolia (F.Muell. ex Benth.) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Canthium latifolium* F.Muell. ex Benth., *Fl. Austral.* 3: 421 (1867). **Type**: New South Wales. In the interior towards Barrier Range, date unknown, *Nielsen* s.n. (syn : MEL [MEL1538208]); NW interior, date unknown, *J. McDouall Stuart* s.n. (syn: n.v.).

Shrubs or small trees 2–5 m high with branches usually borne at right angles to the main stem; bark whitish to light or dark grey, usually finely fissured; branchlets reddish-brown and usually covered with a white bloom distally, sometimes swollen and galled (myrmecophilous); young branchlets and young leaves usually with short spreading hairs. **Leaves** opposite; stipules ± triangular, 5.0–7.0 mm long, keeled and attenuated into a long, apiculate, keeled lobe distally; petioles (0.2–) 0.5–1.2 cm long, stout, flattened, sometimes slightly winged by decurrent leaf blade; blades broad ovate or suborbicular, elliptic–ovate or elliptic, (3.6–) 5.0–7.0 (–8.5) cm long × (3.0–) 4.2–6.0 (–8.7) cm wide, with apex rounded, obtuse or truncate, base subcordate, obtuse or abruptly obtuse and attenuate into the petiole, and margins entire or slightly wavy (in young leaves), glabrous, or slightly scabrid on adaxial surface, coriaceous, usually exceedingly so and rigid, with the raised nerves and dense reticulate venation rendering the blade very stiff when dry, pale or dull green, drying yellowish-green, yellowish-brown or brown; lateral nerves in (4–) 5–9 pairs, conspicuous, obliquely arched and ascending, usually looping at margins; sceondary veins closely reticulate, usually conspicuous on both surfaces. **Inflorescences** shorter than leaves, 2.2–4.5 cm long × 2.5–4.5 cm wide, usually shortly stalked and trichotomously branched; peduncles glabrous or sparsely hairy, the basal one 3.0–12.0 mm long, with minute bracts towards its apex and terminated by 3 branched cymes; branches (3.0–) 9.0–25.0 mm long; flowering branches 3.0–6.0 mm long; cymules 14–41-flowered. **Flowers** 4(or 5)-merous; pedicel of solitary flowers 2.5–6.0 mm long, of others 1.0–3.0 mm long; calyx 0.5–2.0 mm long, with tube ± turbinate, 0.25–0.75 mm long, and limb thin, ± scarious, 4(or 5)-toothed; lobes ovate, to 0.5 mm long, glabrous or with tufts of hairs at the apex; corolla 5.5–8.0 mm long, with tube shorter than the lobes, ± campanulate, 1.5–3.0 mm long, sparsely hairy at throat; lobes subelliptic, 3.5–4.5 mm long, obtuse, occasionally papillose outside, erect or recurved; disc shorter than the calyx limb, glabrous; stamens nearly as long as the corolla lobes; filaments 0.5–2.0 mm long; anthers 2.0–3.0 mm long, usually erect; style (with stigma) 7.0–10.0 mm long, slightly exserted from corolla tube; stigmatic knob oblongoid, 2-lobed at apex. **Fruits** obovoid or broad ellipsoid, slightly laterally compressed, 0.5–0.9 cm long × 0.6–1.2 cm wide, black and shiny when ripe; pyrenes ellipsoid, very deeply rugose on the dorsal side. (**Fig. 5A–5E**)

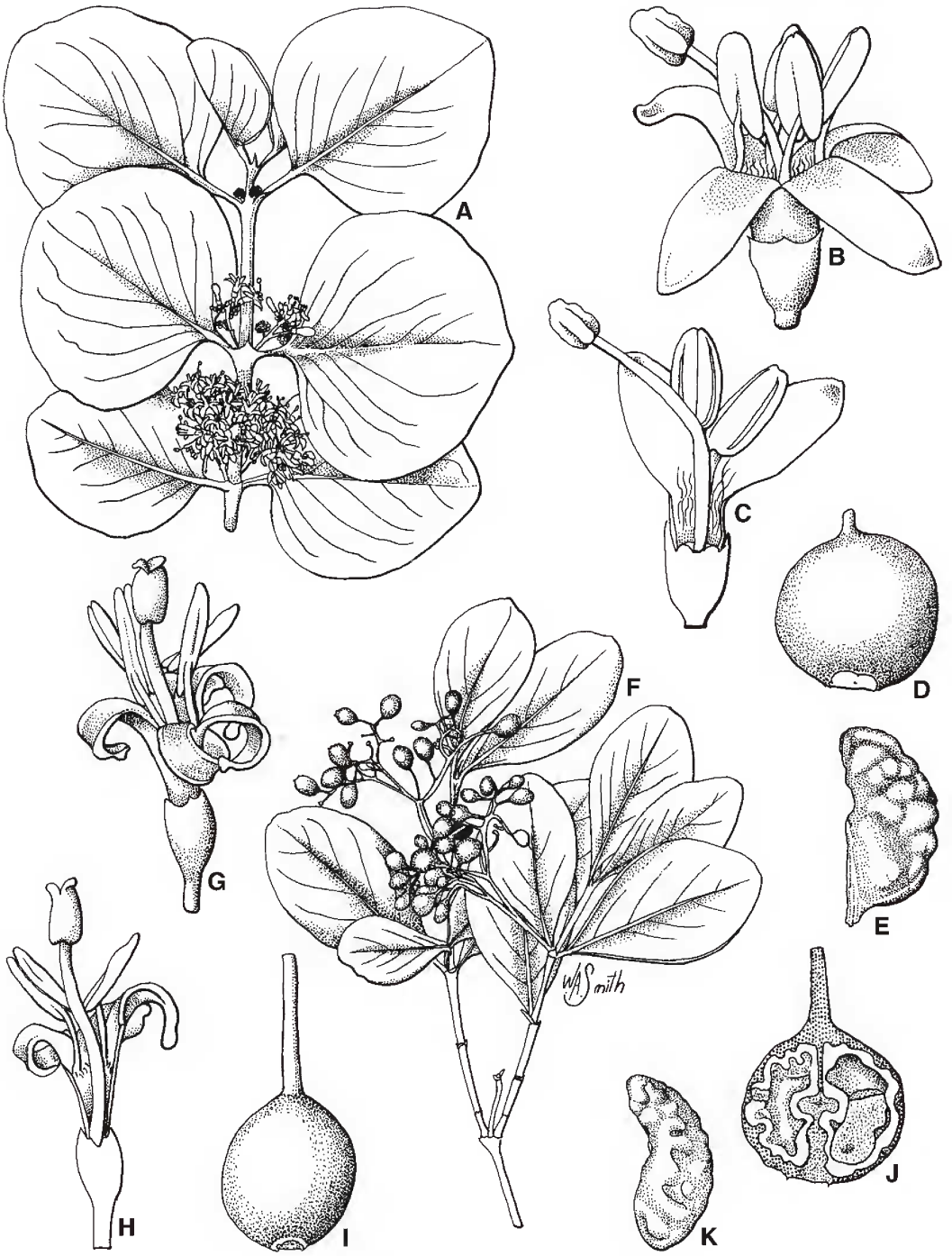

Fig. 5. ***Psydrax latifolia***. A. flowering branch × 0.6. B. flower × 6. C. LS of flower × 6. D. fruit × 3. E. pyrene × 4. A–C, *Nelson* 1818 (DNA); D&E, *Willis* [MEL 1538609] (MEL). ***Psydrax banksii***. F. fruiting branch × 0.6. G. flower × 6. H. LS of flower × 6. I. fruit × 3. J. LS of fruit showing embryo × 4. K. pyrene × 4. F,I&K, *Clarkson* 9649 & *Neldner* (BRI); G&H, *Morton* AM1782 & *Hiddins* (BRI); J, *Brass* 18158 (BRI).

***Additional representative specimens*: Western Australia.** 6 miles (*c.*9.6 km) E of Willenom Gorge, Apr 1952, *Broadway* s.n. (PERTH); 65 miles (*c.*104 km) E of Leonora (28°5-'S, 120°2-'E), May 1959, *Vollprecht* 16 (PERTH); 3 miles (*c.*4.8 km) S of Meekatharra, Oct 1965, *Blockey* 12 (PERTH); Dale's Gorge between Millstream and Willenom (21°—'S, 117°—'E), Nov 1968, *Young* 159 (CANB); Stony Creek, 1 mile (*c.*1.6 km) S of Meekatharra (26°36'S, 118°29'E), Aug 1976, *Demarz* 6088 (PERTH); Doolgunna Homestead (25°01'S, 119°13'E), Dec 1983, *Mitchell* 1179 (PERTH); 16 km N of Two Sisters about 130 km SE of Shay Gap (21°—'S, 121°—'E), Jul 1984, *Newbery* 10378 (PERTH). **Northern Territory**. 8 miles (*c.*12.8 km) E of Haast's Bluff, MacDonnell Ranges, May 1911, *Hill* 176 (MEL); Idracowra (25°00'S, 133°47'E), May–Sep 1920, *Basedow* s.n. (AD)*[7]; MacDonald Downs (22°25'S, 135°07'E), Aug 1933, *Ising* s.n. (AD)*[7]; 5 miles (*c.*8 km) NNE of Barrow Creek Township, Aug 1956, *Lazarides* 5820 (AD, BRI, DNA, K, PERTH); Reedy Creek, George Gill Range, May 1962, *Madden* 10372 (DNA); Bagot Springs, George Gill Range, Jul 1966, *Willis* s.n. (MEL); 60 miles (*c.*96 km) NW of Alice Springs, just outside Desert Block (23°00'S, 133°13'E), Jan 1967, *Latz* 34 (DNA); Stuart Highway, 5 miles (*c.*8 km) S of Tea Tree (22°12'S, 133°26'E), Feb 1968, *Maconochie* 573 (DNA); No 1 Desert Bore, Amburla Station (23°20'S, 133°10'E), Jan 1969, *Nelson* 1818 (DNA, K); Docker River, Nov 1970, *Woenne* 108 (PERTH); Marque Station (22°58'S, 137°40'E), May 1972, *Dunlop* 2597 (DNA); Ormiston Gorge (23°37'S, 132°43'E), Feb 1973, *Griffin* 346 (DNA); New Crown Station, Beddome Range (25°52'S, 134°28'E), Apr 1977, *Henshall* 1525 (CANB); Yuendumu, 5 km N of Ngana Outstaion (22°25'S, 131°30'E), Feb 1981, *Henshall* 3332 (DNA); The Granites Tenements, Tanami Desert (20°32'S, 130°18'E), Dec 1984, *Kalotas* 1771 (DNA). **South Australia**: Lake Eyre Basin, Alberga River, 20 miles (*c.*32 km) W of Todmorden, Apr 1950, *Black* s.n. (AD); Tomkinson Range, Mt Davies area (26°13'S, 129°16'E), Jan 1956, *South Australia Pastoral Board* (AD). **Queensland.** Gregory North District: Ardmore, 25 miles (*c.*40 km) W of Dajarra, 21°39'S, 139°11'E, Nov 1947, *Everist* 3218 (BRI); about 1 km W of Lark Quarry, 23°03'S, 142°20'E, Oct 1989, *White* s.n. (BRI); about 29 km N of Pathungra, 22°07'S, 140°34'E, May 1993, *Gunness* 2155 (BRI); 40 km E of Bedourie, date unknown, *Pulsford* 598 (BRI). Mitchell District: 17 km NW of Withywene Homestead, NW of Stonehenge, 23°44'S, 143°19'E, Apr 1986, *Neldner* 2345 & *Stanley* (BRI). Gregory South District: between Nockatunga and New South Wales border, Mar 1924, *Allison* s.n. (AD, BRI); Morney Station, 25°22'S, 141°28'E, Aug 1973, *Trapnell & Williams* 223 (BRI); Nockatunga, 27°43'S, 142°43'E, Apr 1977, *Hughes* s.n.(AD)*[7]; 50 km N of Orientos homestead, 24°4-'S, 141°1-'E, Oct 1980, *Bolton* 116 (BRI). Warrego District: Wittenburra Station, 36 miles (*c.*57.6 km) S of Eulo, 28°35'S, 144°45'E, Jan 1937, *Everist & Smith* 50 (BRI); Dynevor Downs, 28°05'S, 144°21'E, Apr 1941, *White* 11821 (BRI); about 30 km N of Thargomindah, Jun 1955, *Smith* 6348 (BRI); Grey Range, 79 km W of Thargomindah, 27°35'S, 143°15'E, Oct 1980, *Bolton* MPB64 & *Ashwell* (BRI). **New South Wales**. Main Barrier Range, Mootwingee, about 110 km NE of Broken Hill (31°17'S, 142°18'E), Aug 1962, *Jackson* 390 (AD)*[7]; Peery Hills, Wilcannia (31°34'S, 143°2-'E), Sep 1976, *Cunningham* 4824 & *Milthorpe* (NSW); Brindingabbe via Bourke (29°00'S, 144°54'E), Oct 1983, *O'Neill* s.n. (NSW).

***Distribution and habitat*:** Central Australia; in low woodlands with *Eucalyptus* spp. and/or Mulga (*Acacia aneura* F.Muell. ex Benth.: Mimosaceae) on a variety of soils but mostly in red sandy soil, on sandy plains, ridges and slopes. (**Map 9**)

***Diagnostic attributes*:** *Psydrax latifolia* is readily recognisable by its very stiff, broad ovate, suborbicular or elliptic leaf blades with very conspicuous nerves and reticulate veins, its comparatively small inflorescences, its usually 4-merous flowers, and by its hairy or glabrous, reddish brown usually robust young branchlets (which mostly turn pale to dark grey with age).

***Affinities*:** *Psydrax latifolia* is closely related to *P. ammophila*, with which it shares the branchlet colour and attributes of the inflorescences and flowers, but that species differs from *P. latifolia* in its usually narrow bases of its leaf blades which have a finer reticulate venation, and the presence of a small domatium on some leaves of the branchlet. These species, however, are connected by integrades so that more field collections and notes are necessary before the total variability of each of these species can be fully understood.

P. latifolia also intergrades into *P. attenuata* and *P. oleifolia* so that it is sometimes difficult to delimit those species as well.

***Notes*:** *Psydrax latifolia* varies greatly in the shape and size of its leaf blades and in the prominence of its reticulate venation. Two forms are distinguishable in the specimens available for study, but they are not formally recognised here because of the presence of so many intermediate specimens. However, these forms are generally as follows.

The 'large-leaved' form. The majority of specimens of this species from central Western Australia, Northern Territory and South Australia examined usually have comparatively large leaf blades which are broad elliptic, broad ovate or suborbicular in shape, are broad and truncate apically, and are subcordate or obtuse at base. These leaf blades have very conspicuous lateral nerves and secondary reticulate veins, are glabrous or slightly scabrid on both surfaces, and are exceedingly pale brown or yellowish brown when dry.

The 'Barrier Ranges' form. Specimens of this species from New South Wales and south-western Queensland examined usually have comparatively smaller, mostly elliptic leaf blades which are usually abruptly obtuse apically, and are narrowed proximally into the petiole. They have comparatively much finer lateral nerves and reticulate venation, and they dry a brownish color. These specimens, especially those indicated by *[7] in the list above, closely resemble the syntype of *P. latifolia* from the Barrier Ranges cited above.

Although both forms are recorded from a variety of habitats, the 'Barrier Ranges' form is found mostly in rocky situations, whereas the 'broad leaf' form usually occurs on sandy flats, plains or ridges usually in red loamy soil. However, both forms sometimes grow in the same area where they are connected by intermediate specimens, for example, ones with large, wide leaf blades but with much finer lateral nerves and secondary reticulate venation, or by specimens with comparatively smaller leaf blades with coarse conspicuous lateral nerves and secondary venation. The existence of such specimens indicates that these forms need futher study before they can be satisfactorily delimited.

The branchlets of this species are sometimes swollen due to insects living in their tissues.

***Uses*:** Fruits of *Psydrax latifolia* are reported by collectors to be edible.

12. Psydrax ammophila S.T.Reynolds & R.J.F.Hend., **sp. nov.** foliis latis nervatione prominenti ornata *P. latifoliae* (F.Muell. ex Benth.) S.T.Reynolds & R.J.F.Hend. simulans autem foliorum base angusta, venatione reticulata obscura differt. **Typus**: Queensland. Gregory North District: 17 miles (*c.*27.2 km) ENE of Headingly Station, 21°—'S, 138°—'E, 18 May 1948, *R.A. Perry* 848 (holo: CANB; iso: BRI, DNA, K, PERTH).

Canthium sp. (Headingly Station R.A.Perry 848), P.I. Forster & D.A. Halford (2002, p.174).

Shrubs or small trees 1–5 m high, sometimes multistemmed; bark light grey; branchlets glabrous, stout, terete, the young ones reddish brown, the older ones dark grey. **Leaves** opposite; stipules ovate-triangular, keeled and attenuated into a folded lobe distally; petioles (0.4–) 0.8–1.3 cm long, usually slightly winged by decurrent leaf blade; blades elliptic or elliptic-ovate, 5.2–7.0 (–8.5) cm long × 2.6–3.5 (–4.8) cm wide, with apex and base obtuse or subacute, thick coriaceous, rigid; both surfaces glabrous, dark green, drying yellowish green or pale brown with age; lateral nerves in (3–) 4–6 pairs, obliquely arched, usually looping at margins, prominent on adaxial surfaces; reticulate venation fine, loosely arranged, prominent on adaxial surfaces but not visible abaxially; domatia absent or if present, then only on one or two leaves of a branchlet where 1 or 2 occur on each side of the midrib, obscure. **Inflorescences** shorter than the leaves, 2.2–3.5 cm long × 2.2–3.5 cm wide, 26–32-flowered; main peduncle 7.0–12.0 mm long, with minute bracts towards the middle or at the distal end, terminated by 2 or 3 branched cymes. **Flowers** comparatively small, 4-merous; pedicels of solitary flowers 2.0–3.5 mm long, of others 0.5–2.0 mm long; calyx 1.5–2.0 mm long; limb denticulate; corolla 5.0–6.5 mm longwith tube campanulate, 1.5–3.0 mm long, sparsely or densely hairy at the throat; lobes subelliptic, 2.5–4.5 mm long, obtuse, more or less cucullate at apex, papillose abaxially near apex; stamens with filaments 0.5–2.0 mm long and anthers 2.0–3.0 mm long; disc usually puberulous; style (with stigma) 6.0–7.5 mm long. **Fruits** broad ellipsoid, 5–8 mm long × 6–8 mm wide; pyrenes rugose.

***Additional representative specimens*: Western Australia**. *c.*5 km W of Gahnda Rockhole, Gibson Desert (26°36'S, 125°49'E), Apr 1982, *Kalotas* 1127 (DNA, PERTH). **Northern Territory**. between Mt Olga and Ayers Rock, Jun 1953, *Symon* 9434 (AD); No.2 Desert Bore, Hamilton Downs (23°31'S, 133°16'E), Sep 1955, *Chippendale* 1695 (BRI, NSW); Palm Valley (24°04'S, 132°43'E), Sep 1958, *Chippendale* 4895 (DNA); Wallenby Gorge area, George Gill Range, 1 mile (*c.*1.6 km) NE of Reedy Rock Hole (24°20'S, 131°41'E), Jul 1968, *Beauglehole* 26483 (MEL); 90 km W of Stewart Highway, Victory Downs (25°58'S, 132°21'E), Jul 1982, *Conrick* 779 (AD, DNA); Edmirringee Rockhole (20°36'S, 134°51'E), Sep 1983, *Halford* 83934 (DNA); 5 km NW of Mt Olga (25°18'S, 130°44'E), May 1985, *Bates* 5606 (AD); 4 km S of Finke (Apatula) (25°35'S, 134°35'E), Jun 1988, *Smith* 1180 (DNA); 14 km W of Waterloo Bore, Ti-Tree Station (22°09'S, 133°04'E), Jul

1992, *Latz* 12400 (DNA); 8 km NW of No.14 Bore, Georgina Station (20°56'S, 137°04'E), Sep 1992, *Latz* 12738 (DNA); 26 km NW of Barkly Homestead, Alyawarr Desert Survey Site 15 (19°37'S, 135°37'E), Apr 1993, *Parsons* 392 (DNA); 100 km N of Annitowa Homestead, Wakaya Desert (20°24'S, 136°13'E), May 1993, *Latz* 13085 (DNA); 50 km NNW of Kantju Gorge, Uluru (25°21'S, 131°02'E), Jul 1995, *Nelson* 2905 (DNA). **South Australia**. Upper Arkaringa Valley, Wa Wa Waterhole (Elder Expedition), May 1891, *Helms* s.n. (K, MEL; NSW); Mulgrave Ranges, Mulgrave Park about 55 km WNW of Mt Woodroffe, Jan 1964, *Lange* s.n. (AD); about 105 km NNW of Coober Pedy, Jun 1984, *Badman* 1096 (AD); Mt Crombie approx. 60 km SSW of Amata (26°38'S, 130°48'E), 26 Sep 1985, *Copely* 1409 (AD). **Queensland**. Gregory North District: Oban Station, 60 miles (*c.*96 km) SW of Mt Isa, Woodend Bore, 21°—'S, 139°—'E, Nov 1938, *Everist* 1709 (BRI).

***Distribution and habitat*:** Central Australia, from Gibson Desert, Western Australia to western Queensland; on red sand plains or in rocky gullies or gorges, often near bores, on sandy soil. (**Map 14**)

***Diagnostic attributes*:** *Psydrax ammophila* is characterised by its usually broad, prominently nerved and finely reticulate-veined leaf blades which are sometimes provided with domatia, stout reddish coloured branchlets and comparatively small inflorescences with 4-merous flowers on short pedicels. However, this species is imperfectly known, it being represented in herbaria by mainly sterile collections with very variable leaves. Collection of more material is necessary to be certain of this species' characteristics.

***Affinities*:** *Psydrax ammophila* is related to *P. latifolia* and *P. attenuata* and some of the specimens cited above have previously been identified with those species or as an intergrade between them. It resembles the former species superficially in its leaves, branchlets, inflorescence and flowers, but *P. latifolia* differs from it by the usually broad base of its leaf blades, absence of domatia, much more conspicuous lateral nerves and reticulate venation and shorter petioles (see also the key to the *Psydrax latifolia* group above). These species however are sometimes connected by intergrades.

Psydrax attenuata may be readily distinguished from *P. ammophila* by its usually narrower leaf blades with fewer (2 or 3(or 4)) pairs of lateral nerves which are very oblique, longer petioles which are 7.0–22.0 mm long, slender reddish brown or grey branchlets, longer pedicels which are usually 8.0–11.0 mm long for solitary flowers, and 4- or 5-merous flowers.

***Notes*:** The following collections from south of Alice Springs were previously identified as *P. latifolia*, *P. attenuata* or as an intergrade between these species but are now considered to belong in *P. ammophila*. They differ from the former two species by their comparatively very small leaves, small inflorescences and small flowers. In addition, they are not typical of *P. ammophila* either and probably represent a distinct form of it or an intergrade between this species and *P. latifolia*. However, as the material available at present is too incomplete, it is not possible to be certain of the actual standing of these specimens. This taxon may be described as follows.

Branchlets stunted; leaf blades elliptic, *c.*3.2 cm long × 1.2 cm wide, subacute at both ends, efoveolate, finely reticulate-veined; inflorescences about 26-flowered with the main peduncle 3.0–7.0 mm long and with small bracts at its distal end; flowers 4-merous; pedicels 2.0–2.5 mm long (solitary flowers) or 0.5–1.5 mm long (other flowers); calyx *c.*1.5 mm long; corolla 5.0–6.0 mm long with tube 2.5–3.0 mm long, densely hairy at throat, and lobes 2.5–3.0 mm long, obtuse and slightly cucullate at apex, papillose above the middle; anthers 2.0–2.5 mm long on filaments 0.5–1.5 mm long; disc puberulous; and style with stigma 6.0–7.0 mm long.

Northern Territory: Deep Well Road, 23.5 miles (*c.*38 km) S of Alice Springs (24°05'S, 133°55'E), Oct 1964, *Nelson* 1366 (AD, BRI, NSW); *c.*37 km S of Alice Springs, Jul 1965, *Kuchel* 2285 (AD).

***Etymology*:** The specific epithet *ammophila*, from Greek *ammo-*, 'sand', and *-philus*, 'loving', refers to the sandy soil on which this species is usually found growing.

13. Psydrax reticulata (C.T.White) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Plectronia odorata* var. *reticulata* C.T.White, *Proc. Roy. Soc. Qd.* 50: 78 (1939). **Type**: Queensland. Cook District: Thursday Island, date unknown, *E. Cowley* 10 (holo: BRI).

Canthium sp. (Thursday Island E.Cowley 10), S.T. Reynolds (1997, p.181), P.I. Forster & D.A. Halford (2002, p.174).

Shrubs or small trees to 6 m high, usually stunted; bark grey, tessellated; branchlets brown or reddish brown, slightly 4-angular distally, glabrous. **Leaves** opposite; stipules subovate, 5.5–9.0 mm long, keeled and attenuated into a folded lobe distally; petioles 0.2–0.6 cm long; blades obovate or broad elliptic, (4.2–) 6.0–8.5 (–9.2) cm long × (3.0–) 4.4–6.2 (–7.3) cm wide, with apex and base slightly rounded, or apex retuse and base obtuse and shortly attenuate into petiole, coriaceous, slightly stiff when dry (due to prominent raised nerves and reticulate veins); both surfaces glabrous, the adaxial surface glossy, the abaxialy surface dull, usually slightly bullate between the nerves; lateral nerves in 4–8 pairs, obliquely arched and ascending, looping at margins, with secondary veins loosely reticulate, both lateral nerves and reticulate venation usually prominent on both surfaces (especially on dried specimens); domatia usually small, sometimes absent. **Inflorescences** 2.5–4.0 cm long × 4.5–6.0 cm wide, 24–44-flowered; peduncles stout, glabrous, the basal peduncle 1.0–2.0 cm long with minute bracts near its middle and terminated by 2-branched cymes; axis branches 0.8–2.5 cm long. **Flowers** 4-merous; pedicel of solitary flowers 2.5–6.0 mm long, that of others 1.0–3.0 (–4.0) mm long; calyx 1.5–1.7 mm long, with tube turbinate and limb 4-denticulate; corolla 4.0–5.0 mm long; tube broad campanulate, 2.0–2.5 mm long, with a ring of dense hairs at throat; lobes elliptic or ovate, 2.5–3.0 mm long × *c.*1.5 mm wide, obtuse and more or less cucullate distally, mostly recurved; stamens nearly as long as the corolla, exserted; filaments ± erect, *c.*1.0 mm long; anthers 2.0–2.5 mm long, erect or patent, slightly exserted; disc shorter than calyx limb, glabrous; style (with stigma) 6.5–8.0 mm long, exserted, ± sigmoid in younger flowers; stigma oblong with 2, small, slightly recurved lobes distally. **Fruits** (when didymous) transversely ellipsoid or (when 1-lobed) subglobose, 4.0–4.5 mm long × 4.5–7.5 mm wide, black when ripe; pyrenes hemispherical, rugose.

***Additional representative specimens*: Queensland.** Cook District: Prince of Wales Island, Feb 1975, *Cameron* 20270 (QRS); Moa Island, Aug 1985, *Budworth* s.n. (BRI); Mt Bremer, 26.0 km NE of Bamaga, 10°42'S, 142°31'E, Feb 1994, *Fell* 3920, *Stanton* & *Roberts* (BRI); 26.7 km NE of Bamaga, 0.7 km N of Mt Bremer summit, 10°41'S, 142°32' E, Feb 1994, *Fell* 4048 & *Stanton* (BRI); Hammond Island, date unknown, *Heatwole* & *Cameron* 254 (QRS).

***Distribution and habitat*:** North Queensland from Bamaga, Cape York Peninsula and Torres Strait Islands; chiefly on steep hill and gully slopes and creek banks close to the coast, on sandy soil at the fringe of semi-deciduous vine thickets (e.g. Pajinka Scrub near Bamaga). (**Map 6**)

***Diagnostic attributes*:** *Psydrax reticulata* is readily recognisable by its shortly stalked, comparatively broad, shiny, usually foveolate leaves with prominent nerves and reticulate venation. It resembles *Psydrax latifolia* in its leaves, but that species differs from it by having stiffer, dull leaves which lack domatia. It also resembles *P. suborbicularis* from Papua New Guinea because of its leaves, but that species usually has comparatively small leaves with a finer, less distinct reticulate venation, and hairy inflorescences.

***Notes*:** *Psydrax reticulata* is accepted here at specific rank because of its distinctive, comparatively large, broad, conspicuously reticulate-veined leaf blades which clearly distinguishes it from *P. odorata* under which (as *Plectronia odorata*) C.T. White described it at varietal level in 1939. In *Psydrax odorata*, the leaf blades are usually thicker, more glossy and have fewer primary nerves, and their reticulate venation is more open and less obvious.

14. Psydrax pallida S.T.Reynolds & R.J.F.Hend., **sp. nov.** foliis latis nervatione prominent reticulatoque ornatis *P. reticulatae* (C.T.White) S.T.Reynolds & R.J.F.Hend. simulans autem foliorum base angusta, petiolis longis differt. **Typus**: Queensland. Cook District: Dixie Station, 15°03'S, 143°27'E, 1 December 1994, *S.T. Garnett* 1545 (holo: BRI).

Canthium sp. (Dixie Station S.T.Garnett 1545), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Shrubs or small trees 3–5 m high; bark smooth, exceedingly pale grey or almost white

and blotched; branchlets greyish–white or very pale brown, usually with scattered small lenticels, the older ones with pale grey, finely tessellated bark. **Leaves** opposite; stipules deltoid, keeled and attenuate distally into a usually long, folded decurrent lobe; petioles 2.0–3.0 cm long, flexuose; blades broad elliptic, elliptic–obovate or elliptic, 5.0–9.0 cm long × 2.5–5.0 cm broad, with apex obtuse or slightly rounded and base subacute or acute and attenuate into the long petiole, coriaceous with both surfaces glabrous and often slightly rough, rigid, drying yellowish green; lateral nerves and reticulate veins very conspicuous (raised on adaxial surface in dried specimens); lateral nerves in 3–5 pairs, obliquely arched and ascending towards the apex and looping near the margins, or nerves sometimes very oblique and ascending; tertiary veins ± closely reticulate, obscure below; domatia small, usually a few occurring on each leaf. **Inflorescences** with spreading branches, 12–40-flowered; peduncles glabrous, sometimes slightly resinous, the basal one 3.0–15.0 mm long with small bracts and usually three branches at its distal end; branches 0.6–1.8 cm long, terminated by 5–18-flowered cymes. **Flowers** 4(rarely 5)-merous; pedicel of solitary flowers (4.0–) 7.0–10.0 mm long, that of others 2.0–4.0 mm long; calyx about 1.5 mm long; corolla 6.5–8.0 mm long, with tube campanulate, 2.5–3.0 mm long × *c*.2.0 mm wide, densely hairy at throat; lobes 4.0–5.0 mm long, obtuse; stamens exserted; filaments erect, 2.5–3.0 mm long; anthers 2.5–3.0 mm long; disc shorter than the calyx limb; style (with stigma) 7.0–8.0 mm long. **Fruits** subglobose or broad ellipsoid, 5.0–6.0 mm long × 5.0–7.0 mm wide; pyrenes exceedingly rugose.

***Additional representative specimens*: Queensland.** Cook District: Princess Charlotte Bay, Marrett River, 14°25'S, 144°15'E, May 1979, *Elsol & Stanley* 667 (BRI)[*8]; Dixie Station, Sugarloaf, 15°02'S, 143°27'E, Dec 1994, *Garnett* 1555 (BRI); Battle Camp Range, 15°23'S, 144°40'E, Mar 1995, *Garnett* 1578 (BRI); Dixie Station, Lower Emu Creek, 15°04'S, 143°32'E, Apr 1995, *Garnett* 1579 (BRI).

***Distribution and habitat*:** North Queensland; usually in sandy soil on sandridges and drainage flats, in open woodlands. According to collector Garnett, this species occurs at the base of mounds of the termite *Amitermes laurensis*, in low open woodlands dominated by *Eucalyptus papuana* F.Muell. and *E. clarksoniana* K.D.Hill & L.A.S.Johnson (Myrtaceae), and also with *Melaleuca viridiflora* Sol. ex Gaertn. (Myrtaceae). This species is known only from the above specimens. (**Map 14**)

***Diagnostic attributes*:** *Psydrax pallida* is characterised by its long petiolate leaves with broad, prominently nerved and reticulate, usually foveolate blades, and open inflorescences with flowers on slender pedicels.

***Affinities*:** In its broad leaf blades with prominent nerves and reticulate venation, *Psydrax pallida* most resembles *P. reticulata* but differs from that by having the base of the leaf blade acute and attenuate into a much longer petiole rather than rounded or obtuse and shortly attenuate into a comparatively shorter petiole. It also appears to be related to *P. latifolia* in its broad, prominently nerved leaf blades, e.g. in the collections from Dixie Station and Battle Camp Range cited above, and to *P. attenuata* in its inflorescences, flowers and colour of branchlets. It differs from *P. latifolia* in its long petioles, usually foveolate leaf blades with less dense reticulate venation, exceedingly pale brown branchlets and flowers on longer pedicels. It differs from *P. attenuata* in its comparatively long petioles, its broad leaf blades with prominent nerves and reticulate venation, and its very pale brown branchlets. However, *P. pallida* is imperfectly known and more specimens are necessary to be certain that it is constantly distinct from these species.

***Note*:** The Elsol & Stanley collection cited above (*[8]), which is in bud only, has a slightly different aspect due to its leaves and inflorescence. Its inclusion here as *Psydrax pallida* is therefore tentative.

***Etymology*:** The specific epithet *pallida*, Latin for 'pale', refers to the very pale grey or pale brown, almost whitish stems and very pale grey twigs in this species.

15. Psydrax attenuata (Benth.) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Canthium attenuatum* Benth., *Fl. Austral.* 3: 421 (1867). **Type:** [Queensland.] North Coast (Carpentaria islands 'a' (Sweers Island) and 'b' (Bentinck Island), Nov 25–28 1802), *R. Brown* [3443] (lecto, here designated: BM; isolecto: BM; K; MEL [MEL1538097]).

Small trees 3–7 m high; bark pale or dark grey, usually rough towards base, smooth distally; branchlets pale brown, reddish brown or grey mottled with white, but reddish brown, pale grey or brownish coloured distally, the older ones with somewhat rough bark, the younger ones smooth and angular or subterete. **Leaves** opposite; stipules ovate, prominently keeled and attenuate into an apical lobe; petioles 0.5–1.7 (–2.2) cm long, subterete; blades elliptic, narrow elliptic or lanceolate, 4.2–11.2 (–13.0) cm long × 1.0–3.0 (–4.2) cm wide, with apex acute, subacute or obtuse, and base acute or subacute, attenuate and decurrent into the petiole (usually to below middle of petiole), coriaceous; both surfaces glabrous, yellowish green or pale green, drying yellowish brown or brown; midrib slender, mostly ridged adaxially, raised abaxially; lateral nerves usually distinct on both surfaces, in 2 or 3 (or 4) pairs, the lower 2 pairs usually decurrent along midrib, opposite or alternate, slender, oblique and looping at margins, or acutely angled to the midrib; reticulate venation loosely arranged, usually prominent; domatia absent or present on all leaf blades or only on one or two of the one branchlet, when present 1–3 on each side of the midrib, usually small and inconspicuous and situated in the axils of the median pairs of nerves. **Inflorescences** 2.4–4.5 cm long × 3.5–5.5 cm wide, exceedingly open, (8–) 13–90-flowered; basal peduncles 0.2–1.0 cm long, with minute bracts distally and terminated by 2 or 3 branched cymes; branches slender, 0.6–1.5 cm long, terminated by 3–11-flowered cymes. **Flowers** 4- or 5-merous; pedicels slender, those of solitary flowers (3.5–) 8.0–10.0 mm long, that of others 1.5–9.0 mm long; calyx 1.0 –2.0 mm long, with tube somewhat turbinate and limb shallowly 4- or 5-denticulate, the lobes broad ovate; corolla 5.5–8.0 mm long; tube obconic, dilated to mouth, 1.5–3.5 mm long × 2.5–3.0 mm wide at mouth, usually sparsely hairy at its throat; lobes narrow ovate or elliptic, 3.0–5.5 mm long × 1.0–1.5 mm wide, acute or subacute, erect or subpatent; stamens erect, exerted; filaments 1.0–3.0 mm long; anthers 2.0–3.0 mm long; style (with stigma) 6.0–10.0 mm long; stigma broad and shallowly 2-lobed at apex. **Fruits** obovoid or ellipsoid, 0.4–0.7 cm long × 0.5–0.8 cm across, 2-lobed or sometimes 1-lobed, verrucose when dry; pyrenes broad ellipsoid, usually exceedingly rugose.

***Distribution and habitat*:** From Dampier Peninsula, Western Australia, to northern and central Queensland, and on offshore islands; in coastal vine thicket remnants or open woodlands, on creek banks, rocky slopes and ridges, on sandy, rocky or clay soils.

***Diagnostic attributes*:** *Psydrax attenuata* is characterised by its narrow elliptic or lanceolate, usually foveolate leaf blades which have domatia present on at least on some leaves of a branchlet, and which are narrowed proximally and decurrent into the petiole and have prominent nerves and reticulate venation, its open laxly branched inflorescences with fragile 4- or 5-merous flowers on long slender pedicels, and by its brownish, reddish brown or greyish coloured branchlets.

***Notes*:** *Psydrax attenuata* was found to be one of the most complex and variable of *Psydrax* species based on the many different-looking specimens filed under this name in various herbaria. However, on closer examination, some of these specimens were found to be identical with others filed as *P. oleifolia* (or *Canthium oleifolium*), while yet others represented undescribed taxa associated with the species concerned.

Bentham (1867) in describing what he took to be a single species Robert Brown in manuscript had called '*Pilidium attenuatum*', in effect cited ten syntypes for the name he gave it with his brief diagnosis. Although his description (especially with respect to measurement of leaves) covered the specimens he cited, three (possibly four) distinct species, two (possibly three) of which are undescribed, are distinguishable in these syntypes in addition to *Canthium attenuatum*. Moreover, one of the syntypes, namely Burdekin River, leg. *F. Mueller* (identified as *P. saligna* in this paper), was cited again by him under *Canthium oleifolium* (Bentham 1867, p.422). Consequently specimens which matched any of the specimens or came from any of the localities cited by Bentham were filed under the name *C. attenuatum* in herbaria, making this species seem extremely variable and very difficult to delimit.

To fix the application of Bentham's name, *Canthium attenuatum* is lectotypified here. Bentham (1867), as indicated above, cited ten

syntypes under his brief diagnosis of *C. attenuatum* namely "Brunswick Bay, N.W. coast, *A. Cunningham*; Victoria River and Arnhem's Land, *F. Mueller* (= 2 separate collections); N. coast, *R. Brown**[9]; Sweers Island, *Henne*; Burdekin and Burnett rivers *F. Mueller* (= 2 separate collections); Port Denison, *W. Hill*, *Bowman* (= 2 separate collections); St George's Bridge on the Balonne, *Mitchell*."

Considering that Bentham primarily intended to recognise the species that Brown named '*Pilidium attenuatum*' in manuscript, Brown's collection from the north coast of Australia Brown annotated with this manuscript name is here chosen as lectotype of *Canthium attenuatum*. This lectotype, housed in herbarium BM, agrees with Brown's manuscript description of this species (as "No.29 spec"; microfilm of manuscript held in BRI) and with Bentham's protologue. An illustration prepared contemporaneously with Brown by Ferdinand Bauer from relevant material has been published by Mabberley & Moore (1999).

The isolectotype at K and that at MEL are labelled "North Coast, leg. *Brown*", whereas the isolectotype at BM is labelled "Carpentaria island 'a' and 'b', Nov 25–28 1802, leg. *Brown* 3443", and is annotated '*Pilidium*' by Brown.

The other collections cited by Bentham (now lectoparatypes) are referred to the following species in this paper.

(a) The specimens from Brunswick Bay, Victoria River and Arnhem Land are *Psydrax pendulina*.

(b) The specimen from Sweers Island (K) is referrable to *Psydrax attenuata* as delimited in this revision (see under *P. attenuata* var. *attenuata*).

(c) The specimens from Burdekin River and Port Denison are referrable to *P. saligna*.

(d) The specimen from St George's bridge on the Balonne [River] is referrable to *P. oleifolia*.

(e) The specimen from the Burnett River was not seen in this study but probably belongs in *P. longipes*, which occurs in that area.

Since Brown did not suggest the name *Canthium attenuatum* in his manuscript, Bentham only should be cited as the author of that name in spite of what he said when publishing it.

***Affinities*:** *Psydrax attenuata*, in the sense accepted in this paper, may be distinguished from its close relatives *P. lepida, P. longipes, P. pendulina* and *P. saligna*, and from *P. oleifolia* as follows.

1. **P. attenuata** from **P. oleifolia**

Leaf blades discolorous, prominently nerved and reticulate veined; domatia usually present; inflorescences open, loosely branched; pedicel of solitary flowers usually 8.0–17.0 mm long; flowers 4- or 5-merous; corolla tube usually densely hairy at its mouth ..... **P. attenuata**

Leaf blades concolorous, usually without domatia and conspicuous reticulate venation; nerves obscure or distinct; inflorescences mostly small and compact with flowers congested on branches; pedicel of solitary flowers 3.5–5.0 (–7.0) mm long; flowers 4-merous; corolla tube sparsely hairy at its mouth ..... **P. oleifolia**

2. **P. attenuata** from **P. saligna**

Leaf blades 0.6–1.8 cm wide, 4–10 times as long as wide; reticulate veins indistinct; domatia always present on leaf blades; inflorescences branched once only, to 22-flowered; branchlets dark coloured ..... **P. saligna**

Leaf blades 1.0–3.0 (–4.2) cm wide, 3 or 4 times as long as wide; reticulate veins prominent; domatia not always present on leaf blades; inflorescences many-branched, to 50-flowered; branchlets reddish brown, brown or grey ..... **P. attenuata**

3. **P. attenuata** from **P. longipes**

Leaves with petioles 0.5–1.7 (–2.2) cm long and blades usually 1.4–3.0 cm wide, 3–4 times as long as wide; domatia present on most or only some leaves of a branchlet; pedicel of solitary flowers usually 8.0–11.0 mm long; corolla 5.5–8.0 mm long ..... **P. attenuata***[10]

Leaves with petioles 1.2–3.5 cm long and blades usually 2.6–4.0 cm wide, about twice as long as wide; domatia present only on some leaves of a branchlet; pedicel of solitary flowers usually 5.0–7.0 mm long; corolla 7.5–11.0 mm long ..... **P. longipes**

(For *[10] above, see in particular *P. attenuata* forma *megalantha* of this species.)

4. **P. attenuata** and **P. lepida** resemble each other in their leaves, but the latter differs from the former in its slightly shiny leaves which always have domatia, and its 5-merous flowers (see the key to the *Psydrax attenuata* group above).

5. **P. attenuata** and **P. pendulina** may readily be distinguished by the comparatively long, strongly nerved, efoveolate leaves and reddish coloured, 4-angular young branchlets of the latter species (see the key to the *Psydrax attenuata* group above).

***Variability*:** *Psydrax attenuata*, as circumscribed here, varies greatly in its general appearance, leaves (especially in the presence or absence of domatia) and branchlet colour, the presence or absence of galls on branchlets, the length of its petioles and pedicels and the type of cymule terminating each inflorescence branch. Though three varieties are recognised here, they are poorly known so that collection of more specimens with associated field information in the future may well result in a change of status of all or some of these taxa.

Key to varieties of *Psydrax attenuata*

1. Domatia usually present on most leaves of a branchlet, 1–3 on each side of the midrib; petioles usually 0.5–1.0 cm long ..... **15a. P. attenuata** var. **attenuata**
   Domatia absent or if present then only on one or two leaves of a branchlet and usually one on each side of the midrib; petioles usually 0.7–2.2 cm long 2

2. Pedicel of solitary flowers much longer than those of other flowers of the cyme; domatia usually present (at least on one or two leaves a branchlet); insect galls usually present on branchlets and stems ... **15b. P. attenuata** var. **myrmecophila**
   Pedicels of all flowers of the cyme equal or subequal in length; domatia rarely present on the leaves; insect galls usually absent on branchlets and stems ..... **15c. P. attenuata** var. **tenella**

15a. P. attenuata (Benth.) S.T.Reynolds & R.J.F.Hend. var. **attenuata**

Leaf blades elliptic, 4.2–6.0 cm long, decurrent into a comparatively short petiole; domatia 1–3 on each side of midrib, usually prominent.

***Additional representative specimens*: Northern Territory.** Bessie Springs, 8 km ESE of Cape Crawford (16°40'S, 135°52'E), Oct 1975, *Cardale* s.n. (CANB)*[11]; Calvert River mouth (16°16'S, 137°46'E), Jun 1987, *Thomson* 1862 (DNA); Vanderlin Island, 7 km SE of Lake Eames (15°43'S, 137°05'E), Aug 1988, *Latz* 11105 (DNA). **Queensland.** Burke District: Sweers Island, SE of resort near the currently used well, 17°07'S, 139°36'E, Nov 2002, *Pedley & Thomas* SWI153 (BRI); Sweers Island, date unknown, *Henne* s.n. (K); Gulf of Carpentaria (probably same as previous), date unknown, *Henne* s.n. (K).

***Distribution and habitat*:** Around theGulf of Carpentaria and on close-by offshore islands; usually in coastal scrubs. (**Map 11**)

***Note*:** *Psydrax attenuata* var. *attenuata* is poorly known and represented in this study by the lectotype of the species name and a few collections as indicated above. It is very similar to *P. attenuata* var. *myrmecophila* except for its leaves with comparatively shorter petioles and shorter blades. Collection of more specimens in the future may indicate that the latter variety is but a form of the former.

Of the specimens cited above, only the Cardale specimen (*[11]) is in flower (apart from the lectotype specimen) but its leaves are too young to be certain of their mature characteristics so its inclusion here is tentative.

15b. P. attenuata var. **myrmecophila** S.T.Reynolds & R.J.F.Hend., **var. nov.** a *P. attenuata* var. *attenuata* petiolis longioribus, foliis interdum foveolatis, ramulis plerumque myrmecophlis differt. **Typus:** Queensland. Burke District: Lawn Hill National Park, 18°34'S, 138°38'E, November 1986, *B. O'Keefe* 2 (holo: BRI).

Bark dark grey or grey, usually rough at base of stem and smooth distally; branchlets terete or angular distally (sometimes dilated at nodes), brown, reddish brown, yellowish brown or grey; stems and branchlets often with prominent insect galls. Leaf blades 4.7–13.0 cm long × 1.0–3.0(–4.2) cm wide, bright green, yellowish green, pale or dull green, drying yellowish brown or brown, dull or with a slight sheen on the adaxial surface; lateral nerves in (2), 3 or 4 pairs, the middle one more obvious and acutely angled to midrib and usually provided with a domatium in each axil (domatia present only on some leaves of a branchlet). Inflorescences 10–90-flowered; main peduncle 0.2–1.0 cm long; branches 0.3–0.7 cm long. Flowers 4- or 5-merous; pedicel of solitary flowers (3.5–) 8.0–11.0 mm long, of others (1.0–) 2.5–6.0 mm long; calyx 1.0–2.0 mm long; corolla 6.0–8.0 mm long, usually sparsely hairy at the throat; lobes narrow ovate, 4.0–5.5 mm long, obtuse. Fruits broad ellipsoid, 4.0–7.0 mm long × 5.5–7.0 mm wide, exceedingly pale brown or off-white and ribbed when dry; pericarp thin; pyrenes exceedingly rugose.

***Diagnostic attributes*:** *Psydrax attenuata* var. *myrmecophilia* is characterised by its long petiolate, narrow elliptic foveolate or efoveolate leaves and galled stems and branchlets. It appears to be scarcely distinct from *P. attenuata* var. *tenella*, with which it shares the same leaf-blade, domatia and long-petiole attributes, but that variety differs by its subumbelliform cymules and usually efoveolate leaves. More collections especially of flowering plants are necessary to be certain that these varieties are constantly different.

***Etymology*:** The varietal epithet *myrmecophila*, from Greek *myrmeco-*, 'pertaining to ants', and *-philus*, 'loving', refers to the insect galls, home to species of ants, found on stems and branchlets of this variety.

***Variability*:** The nature of the leaves, the colour of branchlets and the size of inflorescence and flowers are variable in specimens of this variety available for study and a number of forms are distinguishable within them. Two are considered distinctive enough to be formally recognised here.

Key to forms of *Psydrax attenuata* var. *myrmecophila*

1. Inflorescences (16–) 25–90-flowered; pedicel of solitary flowers 0.8.–1.0 cm long, of others usually 0.5.–0.75 cm long; corolla 6.0–7.5 mm long; branchlets usually reddish brown or brown ..... **15b(i). Psydrax attenuata** forma **myrmecophila**

   Inflorescences (8–) 12–21-flowered; pedicel of solitary flowers (0.5–) 0.8–1.1 cm long, of others 0.2–0.35 cm long; corolla 6.5–8.0 mm long; branchlets brown, yellowish brown or grey..... **15b(ii). Psydrax attenuata** forma **megalantha**

15b(i). P. attenuata forma **myrmecophila** S.T.Reynolds & R.J.F.Hend., **forma nov.** a *P. attenuata* forma *megalantha* inflorescentiis plerumque floribus 25–90, floris solitarii pedicello bis pedicellos ceteros in longitudine et floribus corolla 6.0–7.5 mm longa differt. **Typus:** As for **P. attenuata** var. **myrmecophila**

Branchlets usually reddish brown and dilated at nodes; leaf blades yellow brown when dry, with prominent nerves and reticulate venation; inflorescences (16–) 25–90-flowered.

***Additional representative specimens*: Northern Territory**. Larrimah to Darwin, Aug 1942, *Huang* s.n. (AD); 18.8 miles (*c.*30.08 km) W of Soudan (20°04'S, 136°30'E), Oct 1957, *Chippendale* 3830 (BRI, DNA, NSW); 10–12 miles (*c.*16–19 km) NW of Cleanskin Yards, Sep 1967, *Nicholls* 719 (DNA)*[12]; Cox River Station, Tanumbirini Creek (16°01'S, 134°47'E), Jul 1977, *Latz* 7311 (DNA); Gregory National Park (15°37'S, 131°08'E), Feb 1986, *Thomson* 1281 (DNA)*[12]; Barkly Stock Route (19°08'S, 136°46'E), Mar 1988, *Brock* 322 (DNA); Dunmarra (16°37'S, 133°19'E), Mar 1991, *Wilson* 107 (DNA). **Queensland.** Burke District: Carpentaria, in 1875, *Gulliver* 39 (MEL); Mt Isa, Oct 1930, *MacCallum* 95 (BRI); Adel's Grove, Jan 1946, *deLastang* 110 (QRS); 107 miles (*c.*172 km) NW of Mt Isa, on Barkly Highway, 19°45'S, 138°05'E, Jul 1974, *Ollerenshaw* PO1276 & *Kratzing* (BRI); 25 km N of Mt Isa, Mt Isa to Camooweal Road (20°33'S, 139°29'E), Jan 1987, *Russell-Smith* 1882 & *Lucas* (DNA); Lawn Hill National Park, Jan 1989, *O'Keefe* [AQ454831] (BRI); 34 km N of Barkly Highway on Thorntonia–Yelvertoft Road, 19°46'S, 138°48'E, Apr 1990, *Latz* 11624 (BRI); Mussellbrook section of Lawn Hill National Park, 42.5 km N of Mussellbrook Mining Camp, 18°21'S, 138°09'E, May 1995, *Thomas* 818 & *Johnson* (BRI); 8.9 km SE of Mussellbrook Mining Camp, 18°38'S, 138°11'E, May 1995, *Thomas* 991 & *Johnson* (BRI).

***Distribution and habitat*:** North-eastern Northern Territory to north-west Queensland, common on the Barkly Tableland; on ridges, slopes and along creeks, on sandy and rocky soil. (**Map 11**)

***Diagnostic attributes*:** *Psydrax attenuata* forma *myrmecophila* is characterised by its usually foveolate, green or greenish yellow, narrow elliptic leaf blades which attenuate proximally into the petiole and which have exceedingly oblique lateral nerves, and its laxly flowered, open inflorescences with long-stalked, usually 5-merous flowers.

This form resembles *P. attenuata* var. *tenella* and *P. attenuata* forma *megalantha* in its long, narrow leaf blades with very oblique nerves and its long petioles, but the former taxon differs by its subumbelliform cymules, whereas the latter one differs by its larger flowers.

***Variability*:** The leaves are quite variable in this form. Specimens from shallow soil on rocky slopes and ridges usually have narrow elliptic or elliptic, pale green or greenish yellow leaf blades with very oblique, fine lateral nerves and obscure domatia, whereas specimens from deeper soil on creek and river banks and lateritic plains have elliptic usually efoveolate leaf blades with often more conspicuous nerves. Plants from lateritic country are reported by collectors to be very green in colour with bright green leaves whereas the leaves of plants from other areas are reported as pale green or yellow green.

***Notes*:** The collections from Cleanskin Yards and Gregory National Park cited above (*[12]) are tentatively included here because in most respects they appear to be of this variety. However, as they are sterile, fertile specimens would be necessary to be certain of their placement.

The use of the epithet '*myrmecophila*' in the name of this form follows Recommendation 26A.3. in the current International Code of Botanical Nomenclature (Greuter *et al.*, 2000).

***Uses*:** Plants of *Psydrax attenuata* forma *myrmecophila* are reported by collectors to be readily eaten by stock; sheep especially are apparently very partial to it and graze foliage to as far up as they can reach.

15b(ii). Psydrax attenuata forma **megalantha** S.T.Reynolds & R.J.F.Hend., **forma nov.** aemulans *P. attenuata* forma *myrmecophila* S.T.Reynolds & R.J.F.Hend. a quo inflorescentiis plerumque floribus 12–21 floris solitarii pedicello plerumque plus quam ter pedicellos ceteros in longitudine et floribus corolla 6.5–8.0 mm longa differt. **Typus:** Queensland. North Kennedy District: Fletcher Creek, Hann Highway, 19°4-'S, 146°0-'E, November 1985, *E.M. Jackes* 19 (holo: BRI).

Bark dark or pale grey, usually finely tessellated proximally, smooth distally; branchlets brownish or greyish coloured mottled with white; stems and branchlets often galled;

branchlets, petioles and nerves drying brown or with a yellowish tinge. Leaves with blades narrow elliptic, 8.0–13.0 cm long × 1.4–2.5 (–2.8) cm wide, with apex obtuse, and base acuminate and attenuate into the comparatively long petiole; adaxial surface yellow green; abaxial surface bright green; lateral nerves prominent, in 3 pairs, acutely angled to the midrib, obscure or not apparent abaxially; veins finely reticulate, prominent on young leaves, indistinct on adult ones, not apparent on abaxial surface; domatia present, inconspicuous, one on each side of midrib, usually present only on one or two leaves of the one branchlet. Inflorescences (8–) 12–21-flowered; peduncles and pedicels often drying reddish brown. Flowers 5(rarely 4)-merous; pedicel of solitary flowers (5.5–) 8.0–11.0 mm long, of others 2.0–3.5 mm long; calyx 1.5–2.0 mm long; corolla 6.5–8.0 mm long. Fruits broad ellipsoid, 1- or 2-celled, 4.0–7.0 mm long × 5.0–7.0 mm wide; pericarp thin, shiny when dry; pyrenes rugose.

***Additional representative specimens*: Queensland.** Cook District: on Einasleigh–Lynd Roads near Einasleigh, 18°3-'S, 144°0-'E, Dec 1967, *Sankowsky* 736 & *Sankowsky* (BRI). North Kennedy District: approx. 45 miles (72 km) SE of Mt Garnett, 18°15'S, 145°25'E, Jan 1968, *Morain* 278 (BRI, K); Felspar, 10 km WNW of Charters Towers, 19°50'S, 145°15'E, Feb 1993, *Rolfe* 510 (BRI); Black Mountain, NW of Pentland, 20°23'S, 145°04'E, Jul 1993, *Fensham* 1040 (BRI). South Kennedy District: 3.5 miles (*c*.5.6 km) SE of Yarrowmere Station, 21°30'S, 145°55'E, May 1964, *Adams* 983 (BRI, CANB, K, PERTH); 8 km NNE of Carmichael Homestead, 21°54'S, 146°08'E, Apr 1992, *Thompson* 206 & *Simon* (BRI). Mitchell District: 2.9 km from turn-off to Cherhill, on road to Lake Dunn, 22°41'S, 145°31'E, Sep 1990, *Wilson* 526 & *Rowe* (BRI); about 42 km E of Aramac, Mailmans Gorge, 22°—'S, 146°—'E, Oct 1994, *Smyrell* 85 (BRI). Leichhardt District: 1 mile (*c*.1.6 km) E of Langley Homestead, 80 miles (*c*.128 km) NE of Emerald, 22°40'S, 148°59'E, Nov 1969, *Auldist* 24 (BRI, K); Junee Tableland, N of Dingo, 22°47'S, 149°03'E, Nov 1990, *Bean* 2589 (BRI).

***Distribution and habitat*:** Known only from the above collections from northern and central eastern Queensland; usually on sandy loam in open woodlands. (**Map 11**)

***Diagnostic attributes and affinities*:** *Psydrax attenuata* forma *megalantha* is imperfectly known as specimens of it available for study are mostly poor and variable in morphological attributes. More specimens, especially flowering ones, are needed to be certain of its characteristics and affinities. It is tentatively included under *P. attenuata* because it resembles *P. attenuata* forma *myrmecophila* in its long leaves, long petioles, domatia, lax inflorescences, usually 5-merous flowers and myrmecophilous branchlets. It has, however, a different aspect from that form in its branchlets and leaves, and also differs from that by its yellowish tinged dried branchlets, petioles and nerves, and larger flowers.

***Variability*:** The leaves of this form are quite variable. Specimens with shorter leaves approach some of the collections included here under *P. longipes* and are often difficult to distinguish from that species because they have the same general aspect, colour of dried inflorescences and large 5-merous flowers. However, *P. longipes* generally has leaves with wider blades and longer petioles, larger flowers and usually whitish coloured branchlets which are usually without insect galls. Specimens with small, narrow, indistinctly nerved leaf blades resemble those of *P. saligna* but in that species the leaf blades are usually foveolate and its branchlets are dark coloured.

***Etymology*:** The forma epithet *megalantha*, from Greek *mega*, 'large', and *anthos*, 'flower', refers to the comparatively large flowers found in this form.

15(c). Psydrax attenuata var. **tenella** S.T.Reynolds & R.J.F.Hend., **var. nov.** quoad folios et adspectum *P. attenuatam* var. *myrmecophilam* similem sed cymulis subumbelliformis (florum pedicellis subaequalibus), foliis plerumque efoveolatis et ramulis non myrmecophilis differt. **Typus:** Western Australia. Bobby Creek, 11 km ENE of Beagle Bay, Dampier Peninsula, 16°58'S, 122° 47'E, 23 April 1988, *B.J. Carter* 267 (holo: BRI, iso: PERTH).

Small, multistemmed trees; trunks with bark somewhat dark grey, deeply furrowed proximally, smooth distally; branchlets exceedingly pale grey or dark grey, terete, very rarely with insect galls. Leaves with blades 5.5–11.2 cm long × 1.7–2.5 cm wide, drying greyish green or brown; lateral nerves in 3 or 4 pairs, with reticulate veins fine; domatia absent or rarely present when 1 (rarely 2) on each side of midrib. Inflorescences 22–50-flowered;

cymules subumbelliform. Flowers 4-merous; pedicels slender, 0.5–1.0 cm long, those of solitary flowers more or less of the same length as those of other flowers; calyx 4-toothed; corolla 6.0–7.5 mm long, with tube 2.5–3.5 mm long and sparsely hairy at its mouth, and lobes narrow ovate, 3.0–4.0 mm long. Fruits broad ellipsoid, 6.5–7.0 mm long × 6.0–7.0 mm wide; pericarp thin, pale brown when dry; pyrenes rugose.

***Additional representative specimens*: Western Australia.** Emu Creek, Kununurra (15°45'S, 128°45'E), Dec 1982, *Done* 639 (DNA); Broome (17°58'S, 122°14'E), Jun 1984, *Kenneally* 9020 (PERTH); 3.2 km E of Bungle Bungle Outcamp on track to Osmond Valley Palms Yard (17°20'S, 128°22'E), Jul 1984, *Forbes* 2547 (CANB, MEL); ditto, *Scarlett* 84-296 (CANB, PERTH); 14.7 km S of campsite adjacent to Red Rock Creek, 10 km ENE of Bungle Bungle Outcamp, (17°26'S, 128°26'E), Jul 1984, *Kenneally* 9227 (K, PERTH); about 2 km SW of Broome (17°58'S, 122°13'E), Nov 1986, *Wilson* 12561 (PERTH).

***Distribution and habitat*:** Western Australia, from Dampier Peninsula to east Kimberley; usually along creeks on sandy and clay soils. (**Map 11**)

***Diagnostic attributes*:** *Psydrax attenuata* var. *tenella* differs from *P. attenuata* var. *myrmecophila* in its subumbelliform cymules terminating inflorescence branches and usually efoveolate leaves. However, as only two of the collections of it seen for this study are in flower, it is difficult to be certain of all its characteristics.

***Variability*:** The leaves on specimens available for study are variable. Their blades are lanceolate or elliptic, prominently nerved and finely reticulate-veined on the type specimen, but are shorter on those from Bungle Bungle Outcamp (which are probably only young leaves), and longer and narrower on the collection seen from Broome. The leaves of the latter approach those of *P. pendulina* which occurs in that area, but in that species the leaves are usually more elongate, thin coriaceous, and the young branchlets are quadrangular and reddish in colour.

***Etymology*:** The varietal epithet *tenella*, Latin for 'delicate, slender', refers to the delicate, subumbelliform cymules with flowers on long slender pedicels in the inflorescences of this variety.

16. Psydrax lepida S.T.Reynolds & R.J.F.Hend., **sp. nov.** *P. attenuatae* (Benth.) S.T.Reynolds & R.J.F.Hend. valde similis autem foliis foveolatis subnitentibus, inflorescentiis lepidis, pedicellis comparate longis et gracilibus, floribus 5-meris corolla tubo in orificio dense pubescenti differt. **Typus**: Queensland. Cook District: Cooktown, creek off Mc Ivor River, January 1981, *V. Scarth-Johnson* 1151A [AQ347294] (holo: BRI).

Canthium sp. (Cooktown V.Scarth-Johnson AQ314008), P.I. Forster & D.A. Halford (2002, p.174).

Small trees with bark greyish coloured and smooth; branchlets somewhat brown or usually somewhat red coloured and slightly 4-angular distally and dilated at nodes, the older ones with brown, rough, usually tessellated bark. **Leaves** opposite; stipules ovate, acuminate with a folded lobed at apex and keeled; petioles 0.5–0.8 (–1.0) cm long; blades elliptic or lanceolate, 4.2–8.0 (–9.5) cm long × 1.0–2.8 (–4.2) cm wide, attenuate at apex and base, or with apex subacute or obtuse, and base acute and attenuate into petiole, coriaceous, stiff when dry; adaxial surfaces slightly shiny somewhat dull abaxially, with both surfaces minutely resin-dotted; midrib prominent on both surfaces, raised when dry; lateral nerves in 1–3 pairs, prominent, the lower 2 pairs decurrent with midrib, alternate, oblique, erect and ascending, looping distally, (raised on adaxial surface, indistinct on abaxial one in dried specimens); reticulate veins distinct, fine, loosely arranged; domatia present on most leaves of a branchlet, small, with 1–3 on each side of the midrib. **Inflorescences** 2.5–4.5 cm long × 3.5–5.5 cm wide, eceedingly slender, laxly branched, (8–) 16–29-flowered; basal peduncle 1.0–1.5 cm long, terminated by 2 or 3 branched cymes, axis branches 1.3–1.5 cm long; cymes 6–10-flowered. **Flowers** 5-merous; pedicel of solitary flower 0.8–1.7 cm long, that of others (0.15–) 0.3–0.4 cm long; calyx 1.5–2.0 mm long, 5-toothed; corolla 5.5–7.0 mm long, fragile; tube 2.0–3.0 mm long, inflated, dilated to orifice where 2.0–2.5 mm wide, usually with dense long white hairs projecting from the orifice; lobes 3.5–5.0 mm long × *c.*1.5 mm

wide, subacute at apex; stamens with filaments 2.5–2.75 mm long, erect; and anthers 2.0–2.5 mm long; style (with stigma) 6.0–9.0 mm long. **Fruits** obovoid or ellipsoid, *c.* 7.0 mm long × 8.0 mm wide; pyrenes broad ovoid, depressed distally, exceedingly deeply rugose and verrucose all over. (**Fig. 6A–6E**).

***Representative specimens*: Queensland.** Cook District: Finch Bay, near Cooktown, 15°25'S, 145°15'E, May 1966, *Smith* 13100 (BRI); on road between Peach Creek and Leo Creek, approximately 30–40 miles (48–64 km) NE of Coen, approx.13°44'S, 143°15'E, Oct 1969, *Webb & Tracey* 9896 (BRI); 10 km NE of Silver Plains Homestead (13°54'S, 143°36'E), Aug 1978, *Paijmans* 2959 (CANB); Quarantine Bay, near Cooktown, Apr 1979, *Scarth-Johnson* s.n. (BRI); 19 km W of Peninsula Development Road, 7 km W of Emu Creek, on the track to New Dixie Station, 15°03'S, 143°27'E, Apr 1980, *Clarkson* 3132 (BRI, K)*[13]; Cooktown, creek off Mc Ivor River, 15°2-'S, 145°1-'E, Jan 1981, *Scarth-Johnson* 1151A (BRI); 1 km S of the Peninsula Development Road on the track to Honey Dam about 4 km WSW of Lakeland Downs Township, 15°52'S, 144°49'E, Jan 1986, *Clarkson* 6300 (BRI); Artemis Station, 15°00'S, 143°30'E, Dec 1994, *Garnett* 1553 (BRI); Flinders Island, 14°11'S, 144°15'E, May 1995, *Le Cussan* 506 (BRI). North Kennedy District: approx. 45 miles (72 km) SE of Mt Garnett, 18°15'S, 145°25'E, Jan 1968, *Morian* 278 (BRI); The Bluff E of Mingela, about 70 km S of Townsville, 19°53'S, 146°44'E, Jan 1990, *Cummings* 10302 (BRI)*[13]; Magnetic Island, date unknown, *Sandercoe* 311 *p.p.* (BRI).

***Distribution and habitat*:** Northern Queensland, from Cape York Peninsula to near Townsville; in remnant coastal vine thickets inland of mangroves, on sand ridges, along cliffs and creek banks, on sandy and rocky sandstone soils. (**Map 10**)

***Diagnostic attributes*:** *Psydrax lepida* is characterised by its shiny foveolate leaves, usually delicate inflorescences, 5-merous flowers usually with dense hairs projecting from the orifice of the corolla tube and red- brown or brown branchlets with tessellated bark.

***Affinities*:** *Psydrax lepida* is closely related to *P. attenuata* and may be found with further study to be conspecific with that species. It resembles *P. attenuata* var. *attenuata* in its leaves with oblique nerves and short petioles, but in that taxon domatia are usually present only on some leaves of a branchlet, the leaf blade surfaces are dull, and its flowers are 4- or 5-merous with only sparse hairs at the orifice of the corolla tube (see the key to the *Psydrax attenuata* group above).

***Notes*:** The majority of the specimens seen typically have narrow elliptic or lanceolate leaf blades with domatia on all leaves. A few specimens however have narrower leaf blades (for example, see specimens indicated by *[13] in the list above) which approach those of *P. saligna* but that species differs from *P. lepida* in its usually dull leaf-blade surfaces, small, few-flowered inflorescences and dark coloured branchlets.

The following collections from northern Queensland, which have been identified as *P. attenuata* or *P. odorata* in the past, though mostly incomplete are tentatively included here because in their branchlet and leaf characters they appear to be of this species. They differ, however, from the other collections of *P. lepida* by their wider, obscurely nerved leaf blades with usually a solitary obscure domatium, shorter petioles and few-flowered inflorescences.

Queensland. Cook District: 9 miles (*c.*14.4 km) S of Laura on main Mareeba–Coen Road, approx. 15°41'S, 144°34'E, Oct 1969, *Webb & Tracey* 9925 (BRI); Split Rock to Gugu Yelandji, S of Lake, Lakefield Downs–Laura road, 15°4-'S, 144°2-'E, May 1975, *Byrnes* 3374 (BRI); 31 km from the Peninsula Development Road on the Fairview to Fairlight Road, 15°36'S, 144°02'E, Nov 1983, *Clarkson* 5038 (BRI, K, QRS).

***Etymology*:** The specific epithet *lepida*, Latin for 'neat, fine or elegant', refers to the graceful inflorescences and dainty flowers found in this species.

17. Psydrax saligna S.T.Reynolds & R.J.F.Hend., **sp. nov.** ad *P. attenuatae* (Benth.) S.T.Reynolds & R.J.F.Hend. affinis sed foliis comparate angustis vel angustissimis, nervis lateralis obscuris tenuibus ornata, inflorescentiis brevioribus paucifloris differt. **Typus.** Queensland. South Kennedy District: off Range Road, approximately 4 km from Lake Elphinstone Turnoff, 21°32'S, 148°16'E, 14 November 1987, *I.G. Champion* 308 (holo: BRI).

[*Canthium attenuatum* auct. non Benth.: G. Bentham, *Fl. Austral.* 3: 421 (1867) quoad specimini Burdekin River, [leg.] *F. Mueller*] et Port Denison, [leg.] *W. Hill.*

Fig. 6. ***Psydrax lepida***. A. flowering branch × 1. B. flower × 4. C. LS of flower × 4. D. fruit × 4. E. pyrenes × 4. A–C, *Scarth-Johnson* 1151A (BRI); D, *Volck* 4418 (BRI); E, *Smith* 13100 (BRI). ***Psydrax saligna***. F. flowering branch × 0.6. G. flower × 4. H. LS of flower × 4. F–H, *Champion* 308 (BRI).

[*Canthium oleifolium* auct. non Hook.f.: G. Bentham, *Fl. Austral.* 3: 422 (1867) quoad specimini Burdekin River, [leg.] *F. Mueller*].

Small trees 2–6 m high; trunk with bark dark brown or dark grey, smooth or rough; branchlets dark grey or dark reddish brown, with finely tessellated bark, the young ones reddish brown especially distally. **Leaves** opposite; stipules triangular, keeled and attenuated into an apical acuminate lobe, to 5.5 mm long; petioles (0.2–) 0.5–1.4 cm long, subterete; blades narrow elliptic or lanceolate, sometimes somewhat linear, (6.0–) 7.5–11.5 (–14.5) cm long × 0.6–1.5 (–2.0) cm wide, with apex acuminate or obtuse and base narrowed and decurrent into petiole, coriaceous, drying dull and opaque; both adaxial and abaxial surfaces glabrous; lateral nerves in 1 or 2 (or 3) pairs, the lower pair usually acutely angled to the midrib, slender, usually indistinct on adaxial surface, not apparent on abaxial surface; reticulate veins obscure; domatia present, small, 1–3 on each side of midrib. **Inflorescences** 1.2–3.0 cm long × 1.2–3.5 cm across, 5–15 (–22)-flowered; basal peduncle 1.0–8.0 mm long, usually with minute bracts medially and terminated by 2 branched few-flowered cymes; axis branches 5.0–10.0 mm long. **Flowers** 5(rarely 4)-merous; pedicels very slender, that of solitary flowers (5.0–) 10.0–18.0 mm long, of others 3.0–5.5 mm long; calyx about 1.5 mm long, with tube turbinate and limb 4- or 5-toothed; corollas 6.0–8.0 mm long; tube campanulate, occasionally slightly inflated and obscurely striped, 2.0–3.5 mm long × 1.5–2.0 mm wide, densely hairy at the orifice; lobes elliptic or ± lanceolate, 3.0–5.0 mm long × 1.5–2.0 mm wide, obtuse, erect or slightly recurved distally; stamens with filaments 2.0–3.0 mm long and anthers about 2.5 mm long, erect or slightly patent; style (with stigma) 6.0–7.0 mm long. **Fruits** broad ellipsoid or obovoid, 4.0–5.0 mm long × 4.0–6.0 mm wide, black and shiny when ripe; pyrenes rugose. (**Fig. 6F–6H**)

***Distribution and habitat*:** Arnhem Land, Northern Territory, and northern and central Queensland; usually in sandy soil among sandstone rocks and granite boulders, crests of sandy ridges, sandstone escarpments, on steep slopes and granitic outcrops, in deciduous vine thickets.

***Diagnostic attributes*:** *Psydrax saligna* is readily distinguishable by its comparatively narrow, finely-nerved, foveolate leaves, its comparatively small, 5–15 (–22)-flowered inflorescences which have a short peduncle and axis branched only once, its 5-merous flowers on long slender pedicels, and its dark grey or dark reddish brown branchlets.

***Affinities*:** *Psydrax saligna* is closely related to *P. attenuata* and *P. oleifolia*. In the past, some of the specimens cited below have been included in those species but *P. saligna* may be distinguished from them as follows.

P. saligna and *P. attenuata* both have foveolate leaves and usually 5-merous flowers on comparatively long slender pedicels but *P. attenuata* differs from the former in its leaves with broader, prominently nerved and reticulate-veined blades and longer petioles, and its larger inflorescences with a greater number of flowers (see the key to the *Psydrax attenuata* group above).

P. saligna and *P. oleifolia* resemble each other in their leaves (especially in the typical form of *P. oleifolia*) and their comparatively small inflorescences, but *P. oleifolia* differs from the former by its usually efoveolate leaves, its many-flowered (to 39-flowered) compact inflorescences, its comparatively short pedicels (those of solitary flowers being 3.5–5.0 (–7.0) mm long) and its 4-merous flowers.

***Etymology*:** The specific epithet *saligna*, Latin for 'willow-like', refers to the leaves of this species which resemble those of a *Salix* species (Salicaceae).

***Variability*:** The leaves and inflorescences of *Psydrax saligna* are quite variable. Based on these attributes, two forms are recognised here.

Key to forms of *Psydrax saligna*

1. Pedicel of solitary flowers, filiform, 1.0–1.8 cm long; leaves with petioles 0.8–1.4 cm long and blades 6.0–10.0 cm long × 0.6–1.6 (–2.0) cm wide ..... **17(b). P. saligna** forma **filiformis**
   Pedicel of solitary flowers comparatively stout, 0.5–1.0 cm long; leaves with petioles 0.2–0.7 cm long and blades 7.5–12.5 (–14.5) cm long × 0.9–1.5 (–1.8) cm wide ..... **17(a). P. saligna** forma **saligna**

17(a). Psydrax saligna S.T.Reynolds & R.J.F.Hend. forma **saligna**

Canthium sp. (Charters Towers T.Stuart TWR116), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Small trees with usually smooth grey bark on the trunk. Leaves with blades narrow elliptic to almost linear, the lateral nerves and reticulate venation exceedingly fine, sometimes obscure, and domatia 1 or 2 on each side of the midrib. Inflorescences 7–15 (–22)-flowered; pedicel of solitary flowers 5.0–10.0 mm long, that of others 3.0–5.5 mm long; corolla 7.0–8.0 mm long with tube campanulate, not striped. (**Fig. 6B**)

***Additional representative specimens*: Queensland.** Cook District: Giant Horse Gallery, 15°40'S, 144°30'E, Mar 1975, *Hyland* 8102 (BRI, QRS); Mt Mulligan, about 40 km NW of Dimbulah, 16°51'S, 144°50'E, Apr 1985, *Clarkson* 5899 (BRI). Burke District: Georgetown (18°48'S, 143°48'E), Nov 1942, *Blake* 14722 (DNA); Pairie Gorge, 45 km NNE of Hughenden, 20°30'S, 144°30'E, Jun 1986, *Murray* 64 & *Morgan* (BRI)*[14]; Warang Holding, White Mountains, about 37 km NNW of Torrens Creek Township, 20°29'S, 144°44'E, Jul 1988, *Fell* 1310 & *Swain* (BRI)*[14]; Westmoreland Valley behind Little Amphitheatre, 17°24'S, 138°16'E, May 1997, *Forster* PIF21138 & *Booth* (BRI). North Kennedy District: Burdekin River, Oct 1856, *Mueller* s.n. (BM, K, MEL [MEL1537684])*[15]; Port Denison, in 1874, *Fitzalan* [MEL1537674] (MEL); Ewan, Nov 1930, *Miller* s.n. (BRI); 14 km N of Bowen, on Townsville Road, 19°27'S, 147°57'E, Nov 1971, *Sharpe* 57 (BRI); between Burdekin Dam and Ravenswood, 19°5-'S, 145°2-'E, Dec 1988, *Perry* 2 (BRI); Lucky Downs, Greenvale Area, 18°59'S, 144°58'E, Apr 1991, *Batianoff* 9104042 & *Franks* (BRI)*[14]; Round Mountain, 3 km W of Ross River Dam, Townsville, 19°28'S, 146°42'E, Jun 1991, *Bean* 3298 (BRI); Gloucester Island, southern end, 20°02'S, 148°27'E, Sep 1992, *Batianoff* 9209542 (BRI); Sally's Mesa, 34 km from Greenvale towards Charters Towers, 19°05'S, 145°14'E, Feb 1994, *Bean* 7461 & *Forster* (BRI)*[14]; Yahoo Waterhole, 500 m N of Warrang homestead, White Mountain National Park, 20°26'S, 144°49'E, Jan 1995, *Anchen* 176 (BRI); NW of Townsville, 19°15'S, 146°36'E, Sep 1997, *Fensham* 3327 (BRI). South Kennedy District: Moonoomoo Station, about 4 km N of homestead, 21°46'S, 146°05'E, Oct 1983, *Henderson* H2783, *Guymer & Dilleward* (BRI)*[14]. Leichhardt District: 7 km from Nebo on Nebo–Clermont Road, 22°15'S, 148°15'E, May 1962, *Johnson* 2375 (BRI); Taunton National Park, 23°30'S, 149°12'E, Dec 1996, *Stansk* T914 (BRI)*[14]. Port Curtis District: The Springs Grazing Trail, Livingstone Shire, 22°51'S, 150°17'E, Nov 1983, *Anderson* 3602 (BRI); Table Mt, Rockhampton, *O'Shanesy* 41 (MEL).

***Distribution and habitat*:** Northern and central Queensland; mostly on sandstone on escarpments, steep slopes and rocky outcrops, on sandy soil amongst boulders or in sandy rocky soil, in open forests. (**Map 12**)

Variability: The leaves of *Psydrax saligna* forma *saligna* are very variable. Specimens with leaf blades usually narrow elliptic, finely nerved and reticulately veined, and with one or two domatia on each side of the midrib are typical of it. However, specimens with shorter or longer or smaller leaves are also present. Those with shorter leaves, especially ones from central Queensland, are not unlike some of the collections included in typical *P. oleifolia* and consequently have been identified as that species in the past. Specimens with usually smaller, narrow elliptic leaf blades, which have a much duller adaxial surface and fainter nerves, for example, the collections from Mt Mulligan and Giant Horse Gallery above, and specimens with leaf blades 10.5–14.5 cm long and 0.6–0.8 cm wide that are acute or acuminate at the apex and base and occasionally have slightly recurved margins and stipules with a prominent long, folded lobe at the apex (indicated by *[14] in list above) probably represent distinct subforms of this form. However, since these specimens are mostly sterile or have young flower buds only, this cannot be ascertained at the present time.

***Notes*:** Ferdinand Mueller's collection from Burdekin River in October 1856, marked *[15] in the above list, was cited by Bentham (1867) under both *Canthium oleifolia* and *Canthium attenuatum* Benth. (and hence is one of the

syntypes of the latter name). Of the three sheets of this Mueller collection seen in this study, two of them (those at BM and MEL) are referrable to *Psydrax saligna*, whereas the sheet at K represents a mixed collection of *P. saligna* (the part with long, narrow, foveolate leaves) and *P. oleifolia* (the part with broader, efoveolate leaves).

17(b). Psydrax saligna forma **filiformis** S.T.Reynolds & R.J.F.Hend., **forma nov.** a *P. saligna* forma *saligna* florum pedicellis filiformis duplo saltem longioribus differt. **Typus**: Northern Territory. Echo Gorge, Wollogorang Station, 17°11'S, 137°43'E, November 1984, *B. Thomson* 795 (holo: BRI; iso: DNA, PERTH).

Small trees with smooth or rough bark on the trunk. Leaves with blades narrow elliptic, obscurely nerved and with domatia 1–3 on each side of the midrib. Inflorescences (5–) 7–9-flowered; flowers with pedicels filiform, that of solitary flowers (6.0–) 14.0–18.0 mm long, of others 2.0–4.0 mm long; corolla 6.0–7.0 mm long with tube broad campanulate, inflated, obscurely striped.

***Additional representative specimens*: Northern Territory**. Jabiru, Bukbukluk Lookout jumpup on Kakadu Highway, 13°35'S, 132°15'E, Nov 1991, *Brennan* 1614 (BRI)*[16]; Jabiru, Ranger U Mine lease, 12°55'S, 132°55'E, Nov 1994, *Brennan* 2953 (BRI)*[16]; Mt Gilruth area (12°58'S, 133°10'E), Jun 1978, *Dunlop* 4900 (DNA); Centre Island, Sir Edward Pellew Group (15°41'S, 136°46'E), Feb 1976, *Craven* 3787 (CANB); Caranbirini Waterhole, 33 km SW of Borroloola (16°16'S, 136°05'E), Nov. 1975, *Cardale* s.n. (CANB); Wollogorang Station, Echo Gorge, 17°11'S, 137°43'E, Nov 1984, *Halford* 841161 (BRI).

***Distribution and habitat*:** Known only from the above collections; usually on sandstone. (**Map 12**)

***Affinities*:** *P. saligna* forma *filiformis* differs from the typical form in its leaves with longer petioles, which are (0.4–) 0.8–1.4 cm long, its smaller, 5–9 (–15)-flowered inflorescences, and its flowers with a comparatively long filiform pedicel and usually broader corolla tube which is sometimes slightly inflated and obscurely striped.

***Notes*:** Collections from near Jabiru, marked *[16] in the above list, are only tentatively included here because they differ from the others in having very pale coloured smooth bark on the stems, wider leaf blades, which are 1.6–2.0 cm wide, and shorter pedicels, those of solitary flowers being (5.0–) 7.0–9.0 mm long, of others 2.0–3.0 mm long. However, in their aspect, leaves with short petioles which are 0.4–0.6 cm long, small inflorescences with 12–15 flowers on a very short basal peduncle 3.0–5.0 mm long, they belong with *P. salicina* forma *filiformis*.

***Etymology*:** The forma epithet *filiformis*, Latin for 'thread-like', refers to the comparatively long, very slender pedicels of the flowers of this form.

18. Psydrax pendulina S.T.Reynolds & R.J.F.Hend. **sp. nov.** aemulans *P. attenuatam* (Benth.) S.T.Reynolds & R.J.F.Hend. a qua foliis longioribus, lamina subfalcata, nervis lateralibus divergentibus (a costa ad angulum 40°–50°), efoveolata, ramulis 4-angulis, floribus 4-meris differt. **Typus:** Western Australia. Brunswick Bay, 3rd Voyage of the Mermaid, October 1820, *A. Cunningham* 178 (holo: BM; iso: K).

[*Canthium attenuatum* Benth., *Fl. Austral.* 3: 421 (1867) quoad specimenibus Brunswick Bay, [leg.] *A. Cunningham*; Victoria River and Arnhem Land, [leg.] *F. Mueller*; et Victoria River, [leg.] *F. Mueller*].

[*Canthium* sp. A, B.L. Koch in J.R. Wheeler, ed., *Fl. Kimberley Region* 906, 927, Fig. 285, A_1 & A_2 (1992), pro parte.

Shrubs or small trees 2–8 m high, usually with slender, drooping stems and leaves; bark dark grey, rough; young branchlets quadrangular distally, usually drying dark reddish brown and often covered with white thin flaky bark, the older ones usually blackish coloured and verrucose. **Leaves** opposite; stipules towards apex of branchlets subulate with a fine apical point, those proximally on branchlets smaller and ovate; petioles 1.0–1.7 (–2.0) cm long, flexuose, erect or subpatent, usually drying pale yellow or whitish (as pale as midrib); blades narrow elliptic though mostly wider below middle, usually subfalcate, (8.5–) 11.5–17.0 (–18.5) cm long × 1.5–2.2 (–2.7) cm wide, with

apex acuminate, subacute or rarely obtuse, base cuneate and attenuate into petiole, and both surfaces glabrous, usually thin coriaceous, drying brownish coloured with a pale yellow midrib and nerves; midrib ridged above; lateral nerves conspicuous, in 2 or 3 (–5) pairs, divergent, angled 40°–50° to the midrib, erect and ascending to near apex of leaf blade, looping at margins; reticulate venation very open, obscure; domatia absent. **Inflorescences** in axil of new leaves or above scar of fallen leaves, 2.4–3.5 cm long × 2.4–4.7 cm across, 12–23-flowered, glabrous; basal peduncle (2.0–) 4.0–8.0(–14.0) mm long, with 2 or 3 branched cymes and minute bracts at its distal end; axis branches 7.0–16.0 mm long; ultimate cymules 6–10-flowered. **Flowers** 4-merous; pedicels of solitary flowers (5.0–) 8.0–11.0 mm long, that of others 3.0–6.0 mm long, or occasionally the pedicels of all the flowers more or less equal when cymules are subumbelliform; calyx 2.0–3.0 mm long, with limb 4-toothed, the lobes broad ovate; corolla 6.5–7.5 mm long, with tube 2.5–3.0 mm long, dilated to the orifice, 1.5–2.0 mm wide at base, 2.0–4.0 mm wide at orifice, usually with dense hairs projecting from orifice; lobes ovate-oblong, 4.0–5.0 mm long × 1.5–2.0 mm wide, obtuse, erect to spreading; disc shorter than calyx limb, glabrous or subglabrous; stamens with filaments 1.0–2.0 mm long and anthers 2.0–3.0 mm long, erect or slightly recurved; style (with stigma) 7.0–10.0 mm long. **Fruits** obovoid or transversely ellipsoid, obscurely 2-lobed, 6.0–10.0 mm long × 7.0–10.0 mm across; pericarp drying soft and very thin; pyrenes hard, usually slightly rugose.

***Additional representative specimens*: Western Australia**. Drysdale River Mission, Kimberley, Aug 1921, *Gardner* 1049 (PERTH); Napier Broome Bay (14°02'S, 126°36'E), Aug 1921, *Gardner* 1549 (NSW); Bushfire Hill, Prince Regent River Reserve (15°28'S, 125°39'E), Aug 1974, *George* 12303 (PERTH); Phython Cliffs, Prince Regent River Reserve, W Kimberley (15°20'S, 124°56'E), Aug 1974, *Kenneally* 2184/B (CANB, PERTH); Ashton Range, Drysdale River National Park (15°16'S, 126°43'E), Aug 1975, *George* 13302 (PERTH); Hidden Valley, 3.2 km E of Kununurra (15°43'S, 128°48'E), Jul 1976, *Beauglehole* 54207 (PERTH); S of Ernest River (15°25'S, 127°27'E), Mar 1978, *Hartley* 14688 (PERTH); Dampier Peninsula, Djulanan, western-most inlet of Curlew Bay (16°24'S, 123°1-'E), Aug 1986, *Smith* 867 (PERTH); Dampier Peninsula, 8 km NW of One Arm Point (16°25'S, 123°01'E), Jan 1988, *Carter* 190 (PERTH); Dampier Peninsula, S of Hunter Creek, 7 km ESE of Cape Leveque (16°25'S, 122°59'E), Feb 1993, *Carter* 616 (PERTH); Koolan Island (16°07'S, 123°43'E), Feb 1993, *Keighery* & *Gibson* 16 (PERTH). **Northern Territory**. Victoria River (15°13'S, 129°48'E), Oct 1855, *Mueller* s.n. (K, MEL [MEL1537680 & MEL1537688]); Eva Valley Station, 14°15'S, 132°19'E, Oct 1973, *Dunlop* 3097 (BRI, DNA, K); 1 km N of Pine Creek–El Sharana Rd on Jim Jim road, 13°32'S, 132°19'E, Oct 1978, *Rankin* 1487 (BRI, DNA); above Moline Rock Pool (13°34'S, 132°16'E), Nov 1978, *Rankin* 1638 (DNA); El Sharana Road, E Pine Creek, 13°33'S, 132°17'E, Dec 1979, *Dunlop* 5215 (BRI, DNA, K, NSW); Katherine Gorge National Park (14°19'S, 132°27'E), Oct 1981, *Silvertsen* 624 (DNA); ditto, Apr 1987, *Purdie* 3389 (BRI, CANB); Kakadu National Park, near Kurundie Creek (13°34'S, 132°29'E), Apr 1990, *Cowie* 1166 & *Leach* (DNA); Nitmiluk, 14°19'S, 132°25'E, Dec 1990, *Evans* 3494 (BRI, K).

***Distribution and habitat*:** Northern Australia, from Dampier Peninsula, Western Australia, to Arnhem Land, Northern Territory; amongst sandstone rocks, on sandstone plateau, base of sandstone outcrops and hills, on sandy soil, in open forests. (**Map 13**)

***Diagnostic attributes*:** *Psydrax pendulina* is readily distinguishable by its 4-angular, reddish brown young branchlets, comparatively long, narrow elliptic, efoveolate leaf blades with conspicuous, suberect-divergent nerves (nerves acutely angled to midrib) and 4-merous flowers on comparatively long slender pedicels.

***Affinities*:** *Psydrax pendulina* is closely related to *P. attenuata* and specimens of the former have been included in that species in the past by Bentham (1867), namely the syntypes of *P. attenuata* from Victoria River and Arnhem Land collected by *Mueller*, and from Brunswick Bay collected by *Cunningham*. *P. attenuata*, however, differs from the former by its terete or slightly angular, brown, reddish brown or greyish coloured juvenile branchlets, and its comparatively smaller, thicker, usually foveolate leaf blades which are 4.7–11.0 (–13.0) cm long × 1.5–3.0 cm wide (see the key to the *Psydrax attenuata* group above).

***Variability*:** The majority of relevant specimens seen for this study are what are considered typical of this species. That is, they have thin, coriaceous, narrow elliptic, subfalcate leaf blades and usually expanded spreading inflorescences. However, one or two collections have either typical narrow long thin leaves but short inflorescences while others have thick or shorter leaf blades with expanded spreading inflorescences.

***Note*:** The following sterile collection from low open eucalypt woodland, on red sandy soil, is tentatively included here. It differs from the collections cited above by having broad elliptic leaf blades which are 12.5–13.5 cm long × 3.5–5.0 cm wide, but in its leaf texture, nervature and branchlet characters, it is of *P. pendulina*. This collection probably represents an aberrant form of this species because, according to the label, the plants sucker in groups and the specimens may have been taken from one of these suckers with, perhaps, juvenile foliage.

Western Australia. approximately 1 km N of Derby airport, 17°19'S, 123°39'E, *Tracey* 13977 (BRI, QRS).

***Etymology*:** The specific epithet *pendulina*, Latin for 'hanging down', refers to the usually more or less pendulous branchlets and leaves of this species.

19. Psydrax oleifolia (Hook.f.) S.T.Reynolds & R.J.F.Hend. **comb. nov.**; *Canthium oleifolium* Hook.f. in Mitchell, *Trop. Australia* 397 (1848). **Type**: New South Wales. Plains of the Gwydir (between the Gwydir and Barwon Rivers), December 1846, *T.L. Mitchell* 491 (holo: K; iso: K, NSW).

[*Canthium attenuatum* Benth., *Fl. Austral.* 3: 421 (1867) pro parte quoad specimini St. George's Bridge on the Balonne, [leg.] *Mitchell*].

Erect shrubs or small trees 4–7 m high, usually with straight, erect trunk and stiff, spreading, divaricate branches borne more or less at right angles to the main trunk, hispid and often provided with thorns in the juvenile or regrowth state; bark grey, smooth, or rough proximally and smooth distally; branchlets terete, usually resinous distally, glabrous, smooth or usually spinulose in the juvenile or regrowth state, pale brown or grey, with brownish or greyish coloured bark mottled with white distally. **Leaves** opposite or occasionally clustered on brachyblasts on lower part of branchlets but opposite distally, more or less erect; stipules comparatively small, ovate with a long, subulate lobe at apex, keeled, viscid in young growth; petioles 0.6–1.2 (rarely to 1.7) cm long, flexuose; blades elliptic, narrow elliptic, elliptic-ovate, elliptic-oblong or subobovate, (3.5–) 4.5–6.5 (–8.5) cm long × (0.7–) 1.7–2.4 (–3.3) cm wide, with apex obtuse, ± rounded, subtruncate or retuse and slightly recurved, base subacute, acute or subobtuse and abruptly narrowed and decurrent into petiole, and both surfaces dull, glabrous, smooth or hispid in juvenile or regrowth plants, usually concolorous, pale green and slightly glaucous, or yellowish green, thick coriaceous, drying thick and rigid, pale yellowish green to pale brown; midrib raised below, slightly flattened above; lateral nerves either obscure and subpatent, then in 2–4 (or 5) pairs, or distinct suboblique or oblique and sometimes looping near margins, then in 2 or 3 pairs with 2 pairs usually more obvious; nerves not visible on abaxial surface; reticulate venation not apparent; domatia absent or very rarely present when usually solitary and inconspicuous. **Inflorescences** usually exceedingly small, 1.0–2.6 cm long × 1.5–4.0 cm across, densely flowered with 23–39 flowers, with basal peduncle usually between 2.5–4.0 mm long, the flowers usually congested on the short branches which are 3.0–7.0 mm long and slender, or the inflorescences occasionally loosely flowered with basal peduncles to 10 mm long; peduncles, pedicels and calyces glabrous, usually drying reddish brown or brown. **Flowers** 4(rarely 5)-merous; pedicel of solitary flowers 3.5–5.0 (–7.0) mm long, that of others 0.5–2.5 (–4.0) mm long; calyx 1.0–2.0 mm long, with tube campanulate and limb 4(or 5)-lobed, the lobes ovate, minute; corolla 4.0–6.5(rarely 9.0) mm long; tube broad cylindrical or broad turbinate, 1.5–2.0 mm long, 1.5–2.0 mm wide at orifice, sparsely hairy at throat; lobes subelliptic or lanceolate, 3.0–5.0 (–6.5) mm long × 1.0–1.75 mm across, obtuse, erect or spreading; disc shorter than calyx limb, glabrous; stamens with filaments 1.5–2.5 mm long, erect, and anthers 2.0–2.5 mm long, erect or rarely patent; style (with stigma) 7.0–8.0 mm long, exserted; stigmatic knob oblongoid. **Fruits** obovoid or broad ellipsoid, 4.5–6.0 (–7.0) mm long × 4.5–7.0 mm across; pyrenes broad ovoid, depressed distally or slightly ellipoid, usually rugose distally and laterally. (**Fig. 7A–7F**)

***Additional representative specimens*: Queensland**. MITCHELL DISTRICT: Noondoo, 28°35'S, 148°25'E, Dec 1934, *Everist* 751 (BRI, K); Blackall, 24°25'S, 145°45'E, Sep 1937, *Brass & White* 5 (BRI); Warren Point Station, 26°32'S, 148°01'E, May 1968, *Martensz* s.n. (BRI)*[17]. LEICHHARDT DISTRICT: Blackwater, E of Emerald, 23°35'S,148°55'E, Mar

Fig. 7. ***Psydrax oleifolia***. A. fruiting branch (of typical form) × 0.6. B. branchlet (of juvenile growth form) × 1. C. flower × 6. D. LS. of flower × 6. E. fruit × 3. F. pyrene × 6. A,C–F, *Auldist* 10 (BRI); B. *Everist & Smith* 6 (BRI). ***Psydrax longipes***. G. flowering branch × 1. H. portion of leaf showing venation × 1. I. flower × 4. J. LS of flower × 4. K. fruit × 2. L. pyrene × 4. G&H, *Forster* PIF2765 (BRI); I&J, *Forster* PIF6142 (BRI); K&L, *Sankowsky* 460 (BRI).

1920, *Francis* s.n. (BRI)*[17]; 4 miles (*c.*6.4 km) S of Brigalow Research Station, 24°55'S, 149°47'E, Jun 1969, *Auldist* 10 (BRI, K); Banana Shire, about 1 km S of Brigalow Research Station, 24°50'S, 149°48'E, Nov 1984, *Anderson* 3886 (BRI); Springsure, 24°00'S, 148°00'E, Nov 1987, *O'Keeffe* 884 (BRI); Autumnvale, Bingle Shire, 25°51'S, 148°41'E, Dec 1991, *Schefe* 1157 (BRI); 4 km N of Springsure, 24°04'S,148°05'E, Mar 1995, *Fensham* 2650 (BRI); 3 km NE of Taroom, 25°37'S, 149° 49'E, Nov 1996, *Halford* Q3065 & *Dowling* (BRI). Warrego District: Cunnamulla, 28°04'S, 145°41'E, Jan 1937, *Everist & Smith* 6 (BRI)*[17]; Gilruth Plains, Dec 1940, *Allen* 20 (CANB)*[17]; 25 miles (*c.*40km) N of Augathella, 25°4-'S, 145°3-'E, Dec 1961, *Cull* s.n. (BRI). Maranoa District: Maranoa River, on range bearing SW of camp, Sep 1846, *Mitchell* s.n. (BM); Boorara near Yalleroi, 24°05'S, 145°35'E, Dec 1935, *Everist* 1461 (BRI); 20 miles (*c.*32 km) NE of Surat on Yuleba Rd, 26°55'S, 149°15'E, Aug 1956, *Everist* 5819 (BRI); 70 miles (*c.*112 km) SE of Charleville, 'Wheatleigh', Boatman, 27°10'S, 146°50'E, Jul 1962, *Ebersohn* E73 (BRI); 9 miles (*c.*14.4 km) W of Mitchell, in 1970, *Hanger* s.n. (BRI). Darling Downs District: about 40 km N of Goondiwindi along Leichhardt Highway (28°20'S, 150°17'E), Feb 1983, *Telford* 9515 & *Butler* (CANB); Broadwater Lagoon, Dalby, 27°21'E, 151°06'E, Nov 1985, collector unknown [AQ398749] (BRI); 15 km SE of Inglewood, 28°30'S, 151°11'E, Oct 1993, *Halford* Q1988 (BRI). **New South Wales**. Narran Swamps (29°—'S, 147°—'E), Mar 1846, *Mitchell* 50 (CGE, K); Lachlan River (33°13'S, 147°20'E), in 1881, *Ramsay* [MEL1537973] (MEL); Bourke to Barrington Road, Nov 1893, collector unknown [NSW193735] (NSW)*[17]; Bourke (30°05'S, 145°56'E), in 1896, *McDougall* [NSW193740] (NSW)*[17]; ditto, Dec 1939, *Beuzeville* s.n. (NSW)*[17]; Coolabah (31°05'S, 146°38'E), Dec 1898, *Peacock* s.n. (NSW)*[17]; Narrabri, Nov 1899, *Maiden* s.n. (NSW); Boppy Mountain, 28 miles (*c.*45 km) E of Cobar, towards Nyngan (31°32'S, 146° 17'E), Nov 1903, *Boorman* [NSW193727] (NSW); ditto, Oct 1972, *Sikkes* 169 & *Telford* (CANB)*[17]; Nyngan (31°39'S, 147°12'E), Jan 1905, *Rogers* s.n. (NSW)*[17]; Warialda (29°32'S, 150°35'E), Jul 1905, *Bowman* s.n. (NSW); Cobar (31°30'S, 145°50'E), in 1910, *Abrahams* [NSW193728] (NSW)*[17]; Barwon River, Narrabri (30°20'S, 149°47'E), Nov 1912, *Julius* s.n. (NSW); Moree (29°28'S, 149°51'E), Apr 1919, *Gilmour* s.n. (NSW); Narrabri–Gunnedah, Sep 1926, *Welch* s.n. (NSW); Pera Bore, about 10 miles (16 km) W of Bourke, Aug 1928, *Benton* s.n. (NSW)*[17]; 25 miles (*c.*40 km) W of Nyngan (31°33'S, 146° 46'E), Nov 1949, *Reik & Common* s.n. (CANB, K)*[17]; Yantabulla District (28°20'S, 145°—'E), Apr 1965, *McReadie* (NSW)*[17]; 30 km NNW of Cobar, 0.5 km N of Little Tank (31°15'S, 145°15'E), Sep 1978, *Crisp* 4232 (CBG); Castlereagh River (30°—'S, 147°—'E), date unknown, *Blake* [MEL1537974] (MEL).

***Distribution and habitat*:** In drier parts of western Queensland and New South Wales, from near Emerald, central Queensland to Lachlan River, New South Wales; on sandy plains, sandy ridges usually on red or yellow sand, or on clay or on hard ridges, in open woodlands, usually occurring in small groups. (**Map 13**)

***Diagnostic attributes*:** *Psydrax oleifolia* as circumscribed here is a very variable species which is characterised by thick, dull, obscurely or distinctly nerved, concolorous, elliptic or narrow elliptic leaves which are without reticulate veins and usually without domatia, and by its usually small, compact inflorescences with short peduncles and pedicels, and usually small flowers and fruits.

***Variability*:** The shape and size of leaf blades, inflorescences and flowers, and the distinctness of nerves on the leaf surface are all very variable in the specimens available for study. Two distinct forms and a number of subforms are distinguishable but, as they are all connected by intermediate forms throughout their range, they are not formally recognised here. The distinct forms are as follows.

(1) *Typical form:* Specimens with narrow, elliptic oblong or subobovate leaf blades, usually obscure, suboblique or subpatent nerves, shortly stalked, comparatively small inflorescences, usually comparatively small flowers and obovoid fruits, as represented by those indicated *[17] in the above list (which resemble the type specimen), are typical of this species. The majority of specimens from New South Wales seen, especially those from the north-west plains of that state, are of this form. It is usually found on sandy plains, undulating country or sandy ridges and hillsides, in red or yellow sandy soil.

(2) *Broad-leaved form:* The majority of specimens seen are of this form. They differ from the typical form by their usually comparatively broader, larger or longer, elliptic or elliptic-oblong leaf blades with distinct oblique nerves, usually larger inflorescences and larger flowers on longer stalks. This form usually occurs on heavy (clay) soils and hard ridges or sometimes on sandy ridges. It is reported to occur in association with Brigalow (*Acacia harpophylla* F.Muell. ex Benth.: Mimosaceae), whereas the typical form has not been reported as occurring in such a community.

However, as indicated above, these forms are connected by intermediates, namely specimens with larger or broader leaf blades with indistinct nerves and large open or small

congested inflorescences, or specimens with the small or narrow leaf blades of the type specimen but with distinct nerves and often larger inflorescences. In addition, these forms also sometimes grow sympatrically making it extremely difficult to delimit them.

In addition, the broad-leaved form often intergrades into *P. attenuata* and *P. longipes*, and is, therefore, often difficult to delimit from those species as well.

***Notes*:** *Psydrax oleifolia* is related to *P. forsteri, P. johnsonii, P. longipes* and *P. saligna* and some of the specimens cited under those species here were previously filed under the names *P. oleifolia*, *P. attenuata* or *P. buxifolia* (now applicable to a subspecies of *P. odorata)* in various herbaria. *P. oleifolia* may be distinguished from all these species as indicated below.

(1) *P. oleifolia* and *P. attenuata* may be distinguished using the key under the latter species above.

(2) *P. oleifolia* and *P. forsteri* may be distinguished by the comparatively small leaves and the 5–17-flowered inflorescences of the latter species (see the key under *P. forsteri*).

(3) *P. oleifolia* and *P. johnsonii* have similar leaves, inflorescences and flowers, but the latter differs from *P. oleifolia* in its foveolate leaves and hairy branchlets and inflorescence axes (see the key under *P. johnsonii*).

(4) *P. oleifolia* and *P. longipes* may be distinguished by the long petioles, the usually broader, often foveolate leaf blades with prominent lateral and reticulate nervation, and the larger flowers of the latter species, as in the key to the *Psydrax oleifolia* group above. However, specimens of *P. oleifolia* with wider elliptic leaf blades or longer or larger leaves which are distinctly nerved with oblique nerves are often difficult to separate from *P. longipes*, except that in *P. oleifolia* the petioles are relatively shorter, the lateral nerves do not extend to the apex of the leaf as in *P. longipes*, and both reticulate veins and domatia are usually absent on the leaf blades. The species are also connected by intergrades, for example specimens with narrow leaf blades, obscure nerves and prominent domatia, or specimens with wide leaf blades, prominent nerves and domatia but without obvious reticulate venation.

(5) *P. oleifolia* and *P. odorata* subsp. *buxifolia* may be distinguished using the following key.

Leaf blades shiny, discolorous; branchlets and inflorescence axes hairy; pedicels stout; corolla fleshy ..... **P. odorata** subsp. **buxifolia**

Leaf blades dull, concolorous; branchlets and inflorescence axes glabrous; pedicels slender; corolla thin ..... **P. oleifolia**

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(6) *P. oleifolia* and *P. saligna* may be segregated using the key under the latter species above.

***Common names*:** wild lemon, native orange or myrtle tree.

***Uses*:** *Psydrax oleifolia* is reported by collectors as being a good fodder for stock and that sheep are partial to it.

20. Psydrax longipes S.T.Reynolds & R.J.F.Hend., **sp. nov.** *P. oleifoliae* (Hook.f.) S.T.Reynolds & R.J.F.Hend. affinis a qua imprimis differt foliorum petiolo longiore lamina majore latiore nervis prominentibus, venatione reticulata ornatis, floribus majoribus pedicellis longioribus. **Typus**: Queensland. Port Curtis District: Larcom Gully, Calliope Shire, 23°44'S, 150°53'E, 24 November 1987, *N. Gibson* 1057 (holo: BRI).

Canthium sp. (Larcom Gully N.Gibson 1057), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Shrubs or small trees 3–7 m high; trunk with bark greyish, slightly blotched, rough and tessellated proximally, smooth distally; branches usually divaricate; branchlets terete or subterete, whitish or greyish coloured mottled with white. **Leaves** opposite; stipules ovate, keeled, attenuated into a short or long

folded lobe distally; petioles 1.2–2.5 (–3.5) cm long; blades elliptic, obovate or subobovate, (6.0–) 8.0–10.0 cm long × (1.7–) 2.6–4.0 cm wide, with apex obtuse, rounded or subacute and base acute or subacute and attenuate and decurrent into the petiole, thick coriaceous, with adaxial and abaxial surfaces glabrous, pale green or yellowish green when fresh, drying yellowish green or brownish coloured; lateral nerves in 2 or 3 pairs, arched and ascending, or acutely angled to the midrib, ascending to near apex of the lamina, the adaxialmost pairs usually forming a distinct loop, prominent on adaxial surface, usually indistinct abaxially; reticulate venation fine, open, usually distinct; domatia present at least on one or two leaves of a branchlet with one or few on each side of the midrib, inconspicuous, or domatia absent. **Inflorescences** open, 2.0–2.6 cm long × 2.4–3.8 cm across, 12–28 (–39)-flowered with peduncles and pedicels drying pale yellow or reddish-brown; basal peduncle 4.0–9.0 mm long with minute bracts at its distal end; axis branches 5.0–7.0 mm long. **Flowers** 4- or 5-merous; pedicel of solitary flowers (3.0–) 5.0–7.0 mm long, that of others 1.0–3.0 (–4.0) mm long; calyx 1.0–2.0 mm long, with tube turbinate and limb 4- or 5-denticulate; corolla 7.5–9.0 (–11.0) mm long; tube campanulate, 2.0–3.5 mm long, *c.*2.5 mm wide at orifice, densely or sparsely hairy in its throat; lobes ovate-oblong or elliptic, 5.0–6.5 (–8.0) mm long × 1.0–2.0 mm wide, subacute or obtuse, erect or slightly recurved; stamens with filaments 2.0–2.5 mm long, erect, and anthers 2.0–5.0 mm long, erect; disc shorter than calyx limb, glabrous; style (with stigma) 7.0–12.0 mm long. **Fruits** ellipsoid, obscurely 2-lobed, (4.0–) 6.0–7.0 mm long × 5.0–7.0 mm across; pericarp usually exceedingly wrinkled when dry; pyrenes hemispherical or depressed ovoid, usually exceedingly rugose distally and laterally. (**Fig. 7G–7L**)

***Additional representative specimens*: Queensland**. PORT CURTIS DISTRICT: Rockhampton, Nov 1865, *Dietrich* 2074 (MEL); Dawson Highway, Calliope Shire, 24°—'S, 151°1-'E, Jan 1983, *Gibson* 494 (BRI); The Springs, Livingstone Shire, 22°51'S, 150°17'E, Nov 1983, *Anderson* 3602 (BRI). BURNETT DISTRICT: 12 km W of Mundubbera near Burnett River, 25°35'S, 151°15'E, Jun 1984, *Kent* s.n. (BRI). WIDE BAY DISTRICT: Nora Creina, Didcot, Biggenden Shire, 25°58'S, 151°53'E, Dec 1981, *Forster* 138B (BRI); Mt Perry, 25°27'S, 151°52'E, Dec 1986, *Forster* PIF2765 (BRI); 1 km NE of Didcot, 25°28'S, 151°52'E, Feb 1994, *Forster* PIF14809 (BRI). MARANOA DISTRICT: Roma, 26°3-'S, 148°4-'E, Feb 1938, *Blake* 13284 (BRI). DARLING DOWNS DISTRICT: 7.5 km W of Chinchilla on Warrego Highway, 26°44'S, 150°34'E, Dec 1994, *McKenzie* s.n. (BRI).

***Distribution and habitat*:** Central and southeastern Queensland; usually on rocky hill slopes, gravelly ridges and rocky creek banks, in eucalypt woodlands on rocky or sandy-clay loamy soils. (**Map 10**)

***Diagnostic attributes*:** *Psydrax longipes* is characterised by its comparatively long petiolate leaves with elliptic or subobovate blades which are sometimes provided with a small domatium, its large, usually 5-merous flowers in loosely branched inflorescences, and by its very pale brown or whitish coloured branchlets.

***Affinities*:** *Psydrax longipes* is related to *P. oleifolia* and *P. attenuata* and some of the specimens cited above have been included in herbaria under either of those species names. It resembles the former species in its leaves, general aspect, whitish coloured terete branchlets, and in the colour of dried inflorescences, but *P. oleifolia* differs form it by its efoveolate, usually narrower leaves, obscure or distinct nerves without any reticulate veins between them, and usually compact, comparatively small inflorescences, small flowers and fruits (see the key to the *Psydrax oleifolia* group above). However, specimens of *P. oleifolia* with larger or wider leaf blades with distinct oblique nerves are sometimes difficult to delimit from some of the collections included here under *P. longipes*, but the latter species differs from the former by its leaves with blades with distinct reticulate veins and the usual presence of domatia on at least some leaves of a branchlet, and longer petioles. These species, however, are connected by intergrades and further study of more specimens in the field may indicate that *P. longipes* represents the extreme of the range of variation of the very variable *P. oleifolia*. Until more collections of *P. longipes* are seen, however, these species are kept distinct here because their extremes are very diverse.

Psydrax attenuata may be distinguished from *P. longipes* by its leaves with usually narrower blades, which are usually provided with domatia, and shorter petioles, its smaller

flowers with longer pedicels, its brown or reddish brown usually angular young branchlets, and by its usually galled branchlets and stems (see under *P. attenuata* above). However, *P. longipes* can sometimes have narrow leaf blades approaching those of *P. attenuata* forma *megalantha*, which also has large flowers and occasional domatia on its leaves, but differs from that form by its larger flowers with shorter pedicels, shorter leaves and pale grey branchlets.

***Etymology*:** The specific epithet *longipes*, from Latin *longus*, 'long', and *pes*, 'foot', refers to the long petioles of the leaves in this species.

21. Psydrax johnsonii S.T.Reynolds & R.J.F.Hend., **sp. nov.** quoad faciem foliorum inflorescentiarumque *P. oleifoliae* (Hook.f.) S.T.Reynolds & R.J.F.Hend. maxime similis sed foliis foveolatis, inflorescentiis pubescentibus in pedunculis brevioribus portatis, floribus plerumque 5-meris differt. **Typus:** Queensland. LEICHHARDT DISTRICT: Duaringa Shire, Berrigurra Station, about 6 km N of Tolmies, 23°32'S, 148°44'E, 9 Dec 1981, *E.R. Anderson* 2829 (holo: BRI).

Canthium sp. (Berrigurra Station E.R.Anderson 2829), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Small trees 3–8 m high, usually much branched with numerous divaricate branches; trunk with bark grey brown mottled with white, dark grey or blackish coloured, rough proximally, smooth distally; branchlets terete, dark or pale grey, drying ± yellowish coloured distally, the young branchlets minutely puberulous. **Leaves** opposite; stipules ovate, keeled, attenuate into a extended lobe distally; petioles 0.4–1.1 cm long, minutely puberulous when young; blades elliptic, narrow elliptic or subobovate, 2.6–4.5 cm long × 0.7–1.5 (–2.0) cm wide, with apex obtuse or more or less rounded, and base usually cuneate and attenuate into the petiole, thick coriaceous, glaucous, drying thick and rigid; adaxial and abaxial surfaces glabrous, or sparsely hairy in young leaves, slightly shiny to somewhat dull on adaxial surfaces, pale green to olive-brown or yellow green; lateral nerves in 2 or 3 (or 4) pairs, oblique, arched and looping at margins, obscure; reticulate venation not apparent; domatia 1–3 on each side of the midrib, usually prominent, or very rarely absent. **Inflorescences** open, 2.0–2.8 cm long × 2.0–2.8 cm wide, 22–25-flowered; peduncles slender, the basal one 12.0–15.0 mm long, usually with minute bracts towards the middle, minutely puberulous when young; axis branches divaricate, 1.0–3.0 mm long, minutely puberulous when young. **Flowers** (4 or) 5-merous; pedicel of solitary flowers 3.0–5.0 (–6.5) mm long, of others 1.0–1.5 (–2.5) mm long, minutely puberulous when young; calyx 1.0–1.5 mm long, minutely puberulous when young, with tube somewhat urceolate and limb denticulate; lobes 4, minute; corolla 5.0–6.0 mm long; tube somewhat cylindrical, 1.5–1.7 mm long, with dense long hairs at orifice; lobes elliptic or sublanceolate, 3.5–4.0 mm long × 1.0–1.5 mm wide, obtuse or subacute, erect or recurved; stamens with filaments 1.5–2.0 mm long, erect, and anthers *c.*2.0 mm long, erect or slightly recurved; disc shorter than calyx limb, glabrous; style (with stigma) 7.0–8.0 mm long, exserted; stigma oblongoid, 2-lobed distally. **Fruit** broad ellipsoid, depressed proximally and distally, 4.0–6.0 mm long × 4.5–6.5 mm across, slightly rugose when dry; pyrenes usually slightly rugose on the dorsal side. (**Fig. 8A–8E**)

***Additional representative specimens*: Queensland.** NORTH KENNEDY DISTRICT: Foot Print Scrub, Fanning River Station, 19°42'S, 146°26'E, Jan 1993, *Fensham* 632 (BRI). SOUTH KENNEDY DISTRICT: Exmoor, 21°00'S, 148°04'E, Dec 1992, *Fensham* 640 (BRI); Mount Blackjack, 21°01'S, 147°56'E, Jan 1993, *Fensham* 639 (BRI); Bluegrass Creek, Ceitah, 21°14'S, 147°38'E, Jan 1993, *Fensham* 643 (BRI). LEICHHARDT DISTRICT: Nogoa River, in 1890, *Foot* [MEL 1538093] (MEL); Scott's Peak, 22°51'S, 149°13'E, Jun 1951, *Everist* 4425 (BRI); 20 miles (*c.*32 km) S of Banana, 24°45'S, 150°09'E, May 1964, *Speck* 1996 (BRI, CANB, K, NSW); Cabbage Creek Crossing, 35.6 km from Cracow, 25°29'S, 150°13'E, Jul 1990, *Forster* PIF7046 (BRI); Lotus Creek, 22°24'S, 149°07'E, Feb 1993, *Fensham* 665 (BRI); 38 km NE of Taroom, 25°27'S, 150°07'E, Oct 1996, *Halford* Q3066 & *Dowling* (BRI). PORT CURTIS DISTRICT: Callide Valley, Apr 1917, *White* s.n. (BRI); Biloela, 24°24'S, 150°30'E, Oct 1947, *Smith* 3544 (BRI, K). BURNETT DISTRICT: Narayan, 25°3-'S, 150°5-'E, Nov 1969, collector unknown (BRI); Murgon–Kingaroy area, 26°—S, 151°—E, Dec 1995, *Haager* s.n. (BRI).

***Distribution and habitat*:** Eastern Queensland, from Fanning River to Burnett River; in dry

Fig. 8. ***Psydrax johnsonii***. A. flowering branch × 1. B. flower × 6. C. LS of flower × 6. D. fruit × 3. E. pyrene × 6. A, *Fensham* 643 (BRI); B–E, *Everist* 4425 (BRI). ***Psydrax forsteri***. F. flowering branch × 1. G. flower × 6. H. LS of flower × 6. I. fruit × 3. J. pyrene × 6. F, *Speck* 1819 (BRI); G&H, *Anderson* 3604 (BRI); I&J, *Kerswell* [AQ424459] (BRI).

rainforests usually on rocky hills and rocky creek beds, usually in association with Brigalow (*Acacia harpophylla* F.Muell. ex Benth.: Mimosaceae). (**Map 14**)

***Diagnostic attributes*:** *Psydrax johnsonii* is distinguishable by its foveolate, elliptic, obscurely nerved, thick, more or less dull leaf blades with prominent domatia, hairy peduncles and branchlets, and usually 5-merous flowers. It is closely related to *P. oleifolia* of which it has more or less the aspect, leaves and flowers, but differs from that species by the prominent domatia on its leaves, and hairy branchlets and inflorescence axes. Moreover, *P. johnsonii* is reported mostly as growing in a Brigalow community, usually on rocky hills or creek beds, whereas *P. oleifolia* is usually found on sandy plains and ridges, not in association with Brigalow.

***Variability*:** The leaves of *Psydrax johnsonii* are variable in the specimens available for study. Specimens with narrow, elliptic-obovate leaf blades are typical of this species whereas specimens with broader or shorter leaves (mostly from rocky situations) probably represent a distinct form of it. As many specimens are incomplete, more material, especially specimens with flowers and/or fruit, is necessary to ascertain this.

***Etymology*:** This species is named *P. johnsonii* in honour of Dr Robert William (Bob) Johnson, a former Director of the Queensland Herbarium. He was particularly interested in the '*Canthium*' species growing in association with brigalow (*Acacia harpophylla*) while studying the ecology of brigalow scrubs in central Queensland over many years.

22. Psydrax forsteri S.T.Reynolds & R.J.F.Hend., **sp. nov.** *P. oleifoliae* (Hook.f.) S.T.Reynolds & R.J.F.Hend. valde similis sed foliis minoribus, inflorescentiis paucifloris minoribus in pedunculis brevioribus portatis, floribus 5-meris differt. **Typus:** Queensland. North Kennedy District: Yahoo Waterhole, 500 m N of Warang Homestead, White Mountains National Park, 20°26'S, 144°49'E, 16 January 1995, *G. Anchen* GA174 (holo: BRI; iso: BRI).

Canthium sp. (Duaringa N.H.Speck 1819), S.T. Reynolds (1997, p.180), P.I. Forster & D.A. Halford (2002, p.174).

Shrubs or small trees 2–4 m high; trunk with bark greyish white or brown, smooth or rough; branches usually at an angle to the main axis, or more or less intricately branched; branchlets terete, whitish coloured, somewhat reddish distally when dry, glabrous. **Leaves** opposite; stipules usually ovate, keeled, attenuated into an apical lobe; petioles 0.2–0.4 cm long; blades narrow obovate or obovate-elliptic, 2.0–2.8 cm long × 1.1–1.3 cm wide, with apex obtuse, slightly rounded or ± truncate and base acute or obtuse, thick coriaceous; adaxial and abaxial surfaces glabrous, the adaxial one glossy dull green, the abaxial one pale green and dull; lateral nerves in 1 or 2 pairs, obscure adaxially, not apparent abaxially, the proximal pair arched and ascending; reticulate venation not apparent; domatia absent, or very rarely present when 1 or 2 on each leaf and inconspicuous. **Inflorescences** much shorter than the leaves, 1.0–1.7 cm long × 1.8–2.0 cm across, 5–17-flowered, with basal peduncle 0.2–0.4 cm long, terminated by 2 branched cymes and ciliated ovate bracts; cymes 2–5-flowered. **Flowers** 5-merous, strongly perfumed; pedicel of solitary flower 2.0–3.0 mm long, that of others 0.5–2.0 mm long; calyx 1.5–2.0 mm long, with tube ± cupular and limb 5-toothed; corolla 6.0–7.0 (–8.0) mm long; tube ± campanulate, 2.5–3.0 mm long, densely hairy at orifice; lobes sublanceolate, 3.0–3.5 mm long, subacute or obtuse, erect or recurved; stamens with filaments 1.5–2.5 mm long, erect; anthers 2.0–2.5 mm long, erect or ± patent; disc shorter than calyx limb, glabrous; style (with stigma) 7.0–7.5 mm long; stigma oblongoid, 2-lobed distally. **Fruits** obovoid or broad ellipsoid, 0.5–0.7 cm long × 0.55–0.6 cm across; pyrenes depressed ovoid or subellipsoid, ± deeply rugose on lateral sides, slightly rugose distally. (**Fig. 8F–8J**)

***Additional representative specimens*: Queensland.** Cook District: Gilbert River, date unknown, *Daintree* [MEL1538145] (MEL). Burke District: Warang Holding, White Mountains, about 37 km NNW of Torrens Creek Townships, 20°29'S, 144°49'E, Aug 1988, *Fell* 1378 & *Swain* (BRI); 55 km NE of Hughenden, at Porcupine Gorge National Park Lookout, 20°24'S, 144°26'E, Nov 1992, *Thompson* 68 & *Turpin* (BRI). North Kennedy District: Black Rock, 16 miles (*c.*25.6 km) S of Lynd Junction on Hann Highway between Hughenden and Mt Garnet,

*c.*19°05'S, *c.*144°21'E, May 1970, *Webb & Tracey* 10260 (BRI); Doongara, S of Homestead, SSE of Charters Towers, 20°33'S, 146°29'E, Nov 1986, *Stuart* 117 (BRI); ditto, Mar 1989, *Forster* PIF3725 & *Bolton* (BRI); Sally's Mesa, 34 km from Greenvale on Charters Towers Road, 19°05'S, 145°14'E, Feb 1994, *Forster* PIF14972 & *Bean* (BRI). SOUTH KENNEDY DISTRICT: 61 km N of Clermount, 22°14'S, 147°08'E, Dec 1986, *Jackes* 8622 (BRI). MITCHELL DISTRICT: Enniskillen, 24°35'S, 146°05'E, Nov 1943, *White* 12358 (BRI, US). LEICHHARDT DISTRICT: 7 miles (*c.*11 km) E of Mantuan Downs, Tambo–Springsure Road, 24°25'S, 147°25'E, Apr 1946, *Everist* 2548 (BRI); 9.1 miles (*c.*14.6 km) W of Duaringa, Oct 1963, *Speck* 1819 (BRI, CANB, K, NSW); Duaringa Shire, Berrigurra Station, about 20 km NW of Blackwater, 23°32'S, 149°42'E, Nov 1983, *Anderson* 3604 (BRI, CANB, NSW); St Peter, NNW of Springsure, Sep 1984, *O'Keefe* 750 (BRI); Novrindilla homestead, 25 km NE of Dingo, 23°30'S, 149°32'E, Oct 1989, *Anderson* 4803 (BRI); Humboldt, S of Blackwater, 24°13'S, 148°57'E, Jan 1997, *Fensham* 3001 (BRI).

***Distribution and habitat*:** North and central Queensland; on sandy ridges, low hillsides, sandstone slopes, rocky outcrops, in open Eucalypt forests on red sandy loam. (**Map 8**)

***Diagnostic attributes*:** *Psydrax forsteri* is characterised by its comparatively small leaves with usually obovate-elliptic, thick, more or less dull, obscurely nerved leaf blades, and short petioles, and its 5–17-flowered inflorescences on exceedingly short peduncles. It differs from other small-leaved species of *Psydrax* in Australia by the above set of characters.

***Notes*:** *Psydrax forsteri* is related to *P. oleifolia* and *P. odorata* subsp. *buxifolia*, and some of the specimens cited above have previously been included under the names *Canthium oleifolium* or *C. buxifolium* in various herbaria. This species may be distinguished from the latter ones as follows:

1. Leaf blades exceedingly glossy on the adaxial surface; branchlets and inflorescence axes hairy; corolla coriaceous; petioles stout ..... **P. odorata** subsp. **buxifolia**
   Leaves somewhat shiny or dull on the adaxial surface; branchlets and inflorescence axes glabrous; corolla chartaceous; petioles slender 2

2. Leaves with blades 2.0–2.8 cm long × 1.1–1.3 cm wide; inflorescence with axis not branched, 5–17-flowered; flowers 5-merous; petioles 0.2–0.4 cm long ..... **P. forsteri**
   Leaves with blades 3.5–6.5 (–8.5) cm long × 0.7–2.4 (–3.3) cm wide; inflorescence with axis branched, 23–39-flowered, the flowers congested on short branches; flowers mostly 4-merous; petioles 0.6–1.2 (–1.7) cm long .. **P. oleifolia**

The leaves of *Psydrax forsteri* are variable. Specimens with usually comparatively small, obovate-elliptic or narrow obovate leaf blades are typical of this species. However, specimens with narrower leaves, namely the collections from Porcupine Gorge, White Mountains and Sally's Mesa cited above, possibly represent a distinct form of it but more material and field observations/notes would be necessary to be certain of this.

Etymology: This species is named *P. forsteri* in honour of Mr Paul Forster, a botanist on the staff of the Queensland Herbarium. His collections of various '*Canthium*' species from throughout Queensland have been most valuable in gaining an understanding of some of the *Psydrax* species complexes. Most of the illustrations provided in this paper are drawn from his collections housed in BRI.

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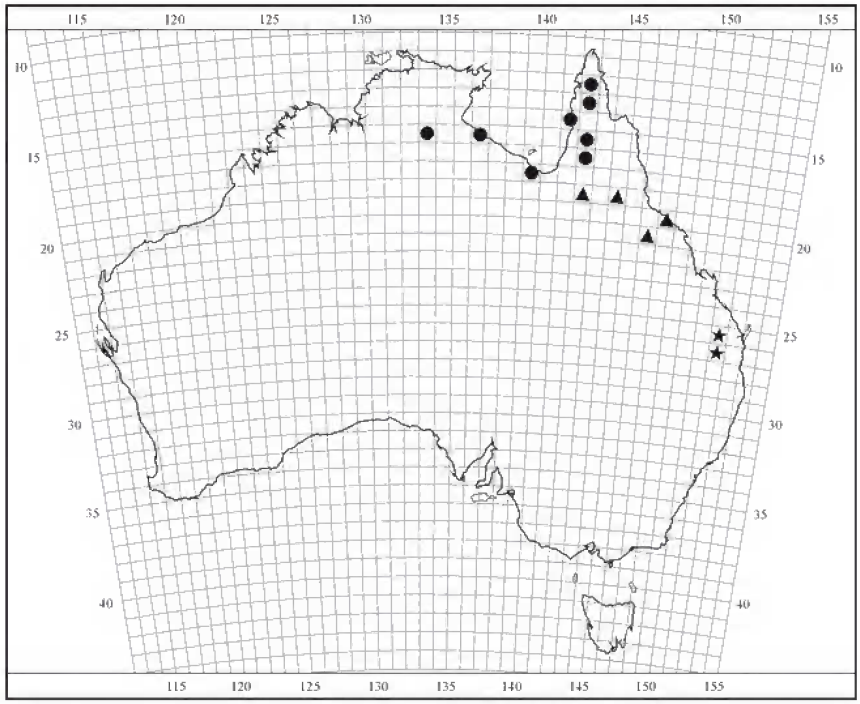
Supplement A

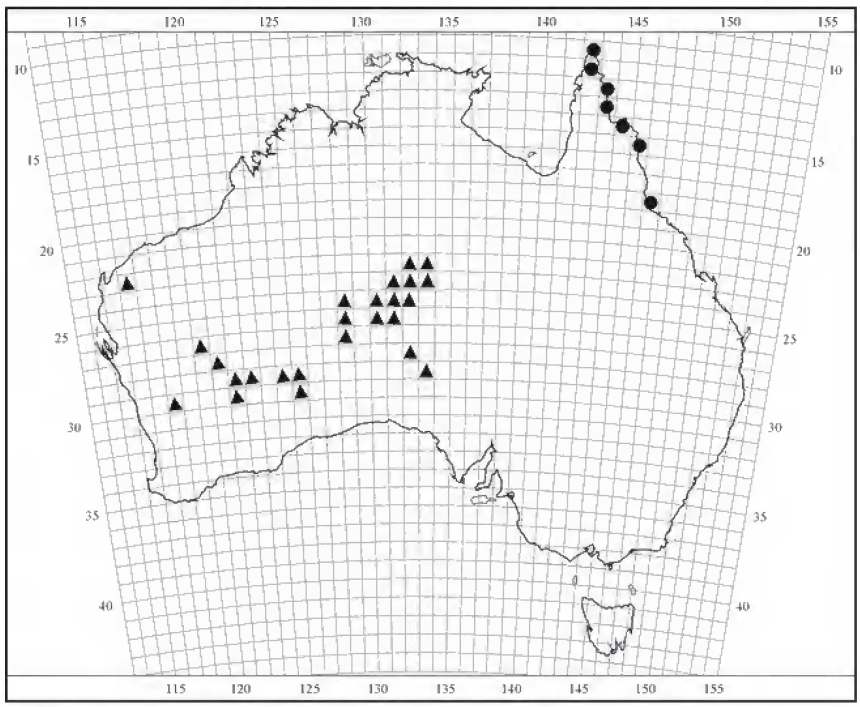
Currently accepted names for Australian taxa previously considered to belong in *Canthium* Lam. or *Plectronia* L. are as follows. Numbers (and letters) where given with the currently accepted name refer to the relevant position of the taxon concerned in the above revision. Accounts of *Everistia* or *Cyclophyllum* taxa may be found in Reynolds & Henderson (1999 or 2001).

Previous identification	**Currently accepted name**
Canthium attenuatum Benth.	15. **Psydrax attenuata**
Canthium attenuatum sensu G. Bentham (1867) pro parte	18. **Psydrax pendulina**
Canthium attenuatum sensu G. Bentham (1867) pro parte	17. **Psydrax saligna**
Canthium attenuatum sensu G. Bentham (1867) pro parte	19. **Psydrax oleifolia**
Canthium brevipes Merr. & L.M.Perry	**Cyclophyllum brevipes**
Canthium buxifolium Benth.	6d. **Psydrax odorata** subsp. **buxifolia**
	6d(i). **Psydrax odorata** forma **buxifolia**
Canthium buxifolium forma (Brigooda P.I.Forster PIF5657)	6d(iii). **Psydrax odorata** subsp. **buxifolia 'Mundubbera form'**

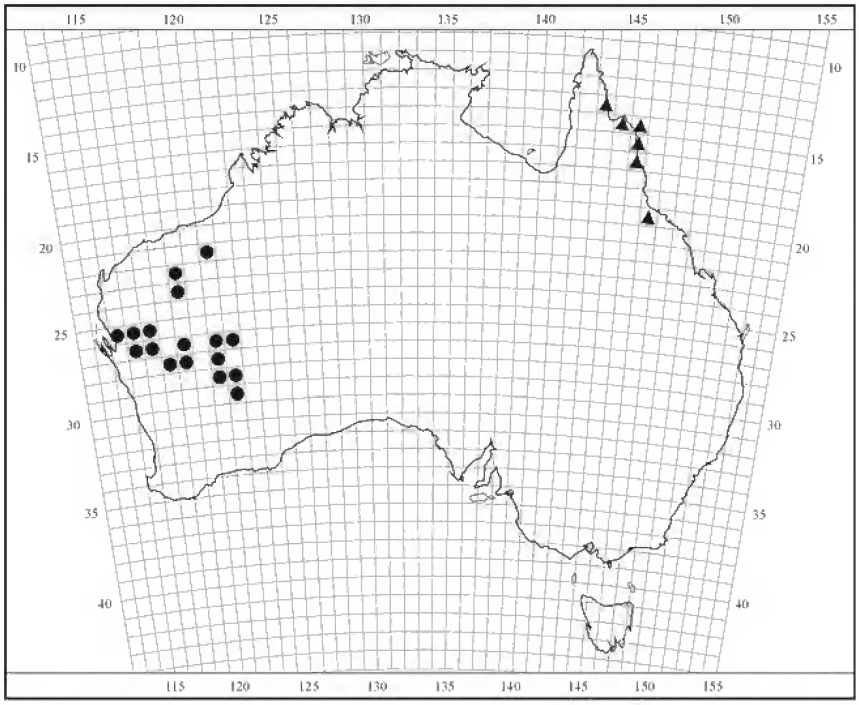
Canthium buxifolium var. (Mt Alford L.H.Bird AQ408941) . . 6d(ii). **Psydrax odorata** forma **parviflorifra**
Canthium coprosmoides F.Muell . . . . . **Cyclophyllum coprosmoides**
Canthium costatum C.T.White . . . . . **Cyclophyllum costatum**
Canthium cymosum sensu F. Mueller (1875, 1882 &1889) . . . . . 7b. **Psydrax lamprophylla** forma **latissima**
Canthium didymum sensu F. Mueller (1875) & F.M. Bailey (1900) pro parte . . . . . 7b. **Psydrax lamprophylla** forma **latissima**
Canthium graciliflorum Merr. & L.M.Perry . . . . . 2. **Psydrax graciliflora**
Canthium lamprophyllum F.Muell . . . . . 7. **Psydrax lamprophylla**
Canthium latifolium F.Muell. ex Benth . . . . . 11. **Psydrax latifolia**
Canthium lineare E.Pritz . . . . . 3. **Psydrax suaveolens**
Canthium lucidum Hook. & Arn., nom. illeg. non R.Br. . . . . 6. **Psydrax odorata**
Canthium lucidum sensu G. Bentham (1867) pro parte . . . . . 7. **Psydrax lamprophylla**
Canthium microphyllum F.Muell . . . . . **Everistia vacciniifolia** var. **nervosa**
Canthium odoratum subsp. (Didcot P.I.Forster PIF14127) . . . . . 6c. **Psydrax odorata** subsp. **australiana**
Canthium odoratum forma (Texas P.I.Forster PIF14257) . . . . . 6c(iii). **Psydrax odorata** forma **subnitida**
Canthium oleifolium Hook.f. . . . . 19. **Psydrax oleifolia**
Canthium oleifolium sensu G. Bentham (1867) pro parte . . . . . 17. **Psydrax saligna**
Canthium oleifolium var. *pedunculatum*Maiden & Baker . . . . . 6c(iii). **Psydrax odorata** forma **subnitida**
Canthium schultzii (O.Schwarz) Chippendale . . . . . **Cyclophyllum schultzii**
Canthium sp. (Altanmoui Range D.G.Fell+ DGF2702) . . . . . 2. **Psydrax graciliflora**
Canthium sp. (Berrigurra Station E.R.Anderson 2829) . . . . . 21. **Psydrax johnsonii**
Canthium sp. (Cooktown V.Scarth-Johnson AQ314008) . . . . . 16. **Psydrax lepida**
Canthium sp. (Cooroy S.T.Blake+ 15507) . . . . . **Cyclophyllum longipetalum**
Canthium sp. (Copper-Lode Falls C.H.Gittins 2211) . . . . . **Cyclophyllum protractum**
Canthium sp. (Dixie Station S.T.Garnett 1545) . . . . . 14. **Psydrax pallida**
Canthium sp. (Duaringa N.H.Speck 1819) . . . . . 22. **Psydrax forsteri**
Canthium sp. (Friday Island L.J.Brass 18158) . . . . . 10. **Psydrax banksii**
Canthium sp. (Headingly Station R.A.Perry 848) . . . . . 12. **Psydrax ammophila**
Canthium sp. (Herberton Range S.F.Kajewski 1377) . . . . . 8. **Psydrax laxiflorens**
Canthium sp. (Kuranda G.Sankowsky+ 680) . . . . . **Cyclophyllum multiflorum**
Canthium sp. (Larcom Gully N.Gibson 1057) . . . . . 20 **Psydrax longipes**
Canthium sp. (Lizard Island R.L.Specht+ LI181) . . . . . **Cyclophyllum maritimum**
Canthium sp. (Massy Creek P.I.Forster+ PIF10568) . . . . . **Everistia vacciniifolia**
Canthium sp. (Mt Alford L.H.Bird AQ408941) . . . . . 6d(ii). **Psydrax odorata** forma **parviflorifra**
Canthium sp. (Mt Rose A.R.Bean 1978) . . . . . **Cyclophyllum rostellatum**
Canthium sp. (Thornton Peak H.Flecker NQNC7110) . . . . . 5. **Psydrax montigena**
Canthium sp. (Thursday Island E.Cowley 10) . . . . . 13. **Psydrax reticulata**
Canthium sp. (Weipa, A.Morton AM1773) . . . . . 1. **Psydrax paludosa**
Canthium sp. (Wenlock River, J.R.Clarkson 8418+) . . . . . 1. **Psydrax paludosa**
Canthium sp. (Whitfield Range B.P.Hyland 1020) . . . . . 9. **Psydrax tropica**
Canthium sp.A, Koch, B.L. in J.R. Wheeler (1992) pro parte . . . . . 18. **Psydrax pendulina**
Canthium sp. 1., Ross, E.M. in T.D. Stanley & E.M. Ross (1986) . . . . . 7. **Psydrax lamprophylla**
Canthium suaveolens S.Moore . . . . . 3. **Psydrax suaveolens**
Canthium vacciniifolium F.Muell. . . . . **Everistia vacciniifolia**
Plectronia attenuata (Benth.) C.A.Gardner . . . . . 15. **Psydrax attenuata**
Plectronia barbata sensu F. Mueller (1875) . . . . . **Cyclophyllum coprosmoides**
Plectronia coprosmoides var. *spathulata* O.Schwarz . . . . . **Cyclophyllum coprosmoides** var. **spathulatum**
Plectronia diococca sensu F. Mueller (1875) pro parte . . . . . 7b. **Psydrax lamprophylla** forma **latissima**
Plectronia hookeriana Domin . . . . . 6. **Psydrax odorata**
Plectronia hookeriana var. *dietrichiae* Domin . . . . . **Tarenna** sp.
Plectronia linearis (E.Pritz.) J.M.Black . . . . . 3. **Psydrax suaveolens**
Plectronia odorata var. *reticulata* C.T.White . . . . . 13. **Psydrax reticulata**
Plectronia schultzii O.Schwarz . . . . . **Cyclophyllum schultzii**



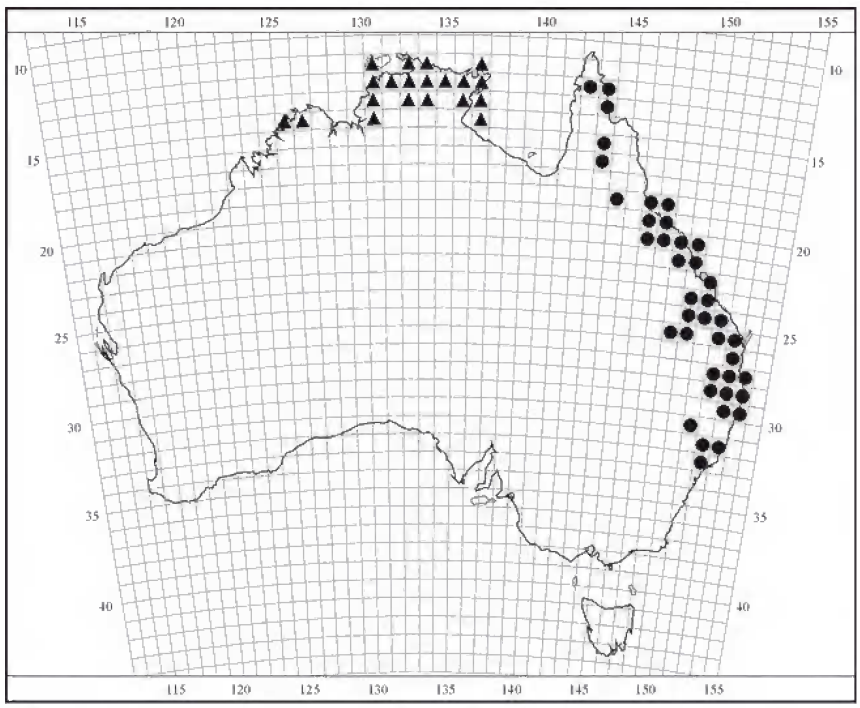
Map 1. Distribution of *Psydrax odorata* subsp. *australiana* (40 Mile Scrub form) ▲ , *Psydrax odorata* subsp. *buxifolia* (Mundubbera form) ★ and *Psydrax paludosa* ● .



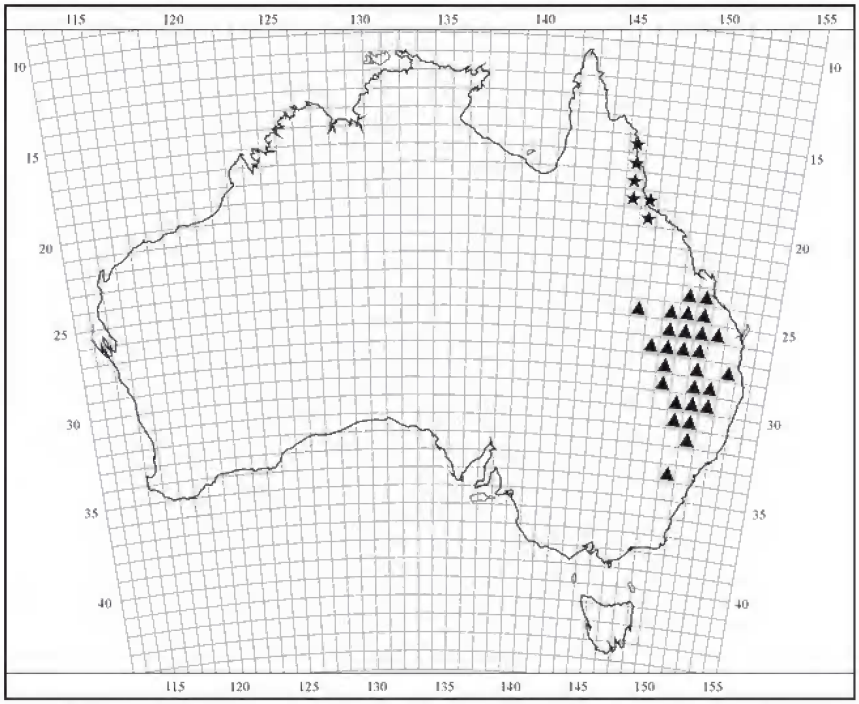
Map 2. Distribution of *Psydrax graciliflora* ● *and Psydrax suaveolens* ▲ .



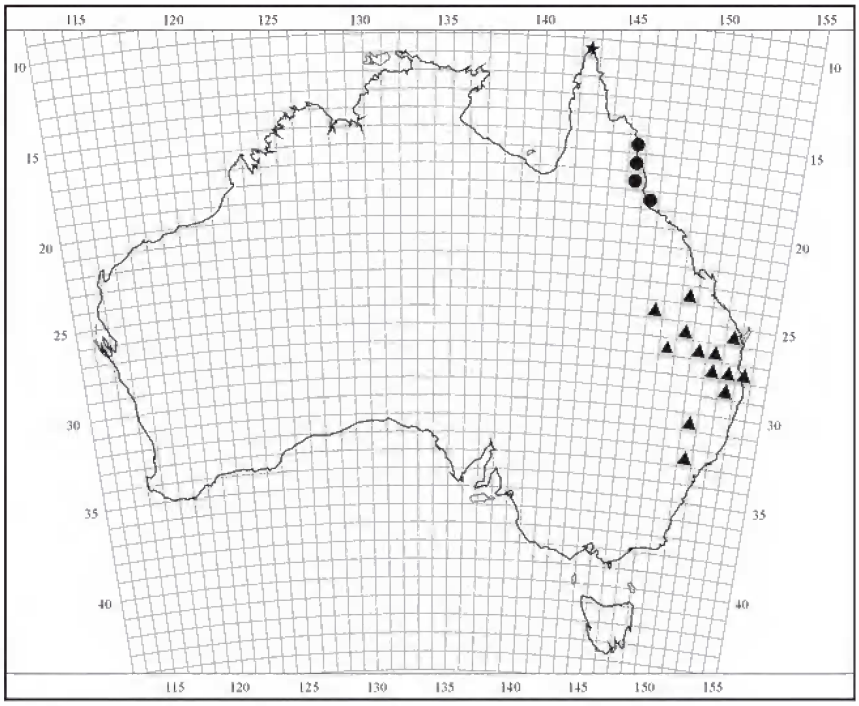
Map 3. Distribution of *Psydrax odorata* subsp. *australiana* (*P. odorata* forma *foveolata* ▲) and *Psydrax rigidula* ● .



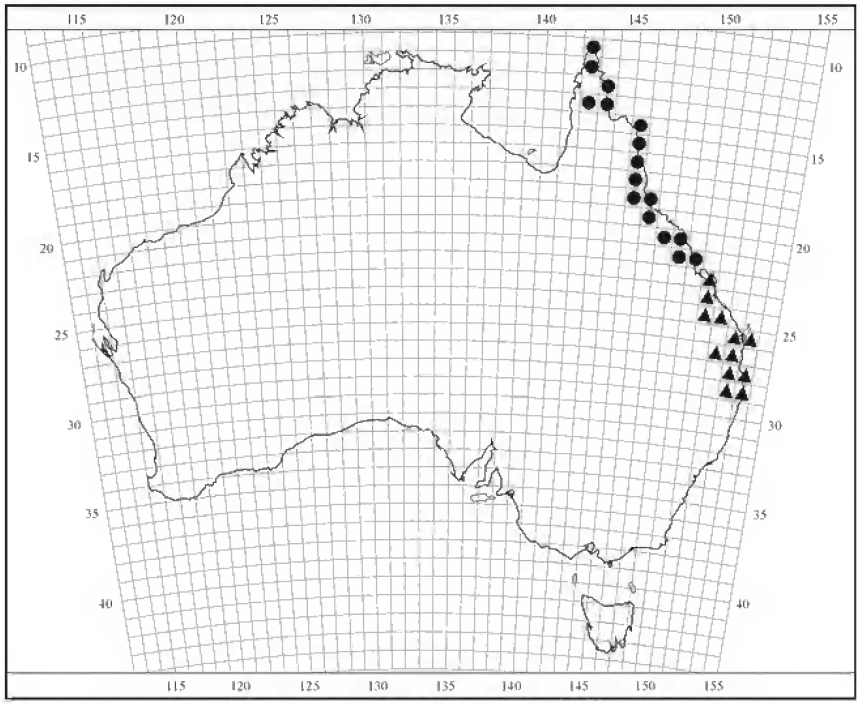
Map 4. Distribution of *Psydrax odorata* subsp. *arnhemica* ▲ and *Psydrax odorata* subsp. *australiana* (*P. odorata* forma *australiana* ●).



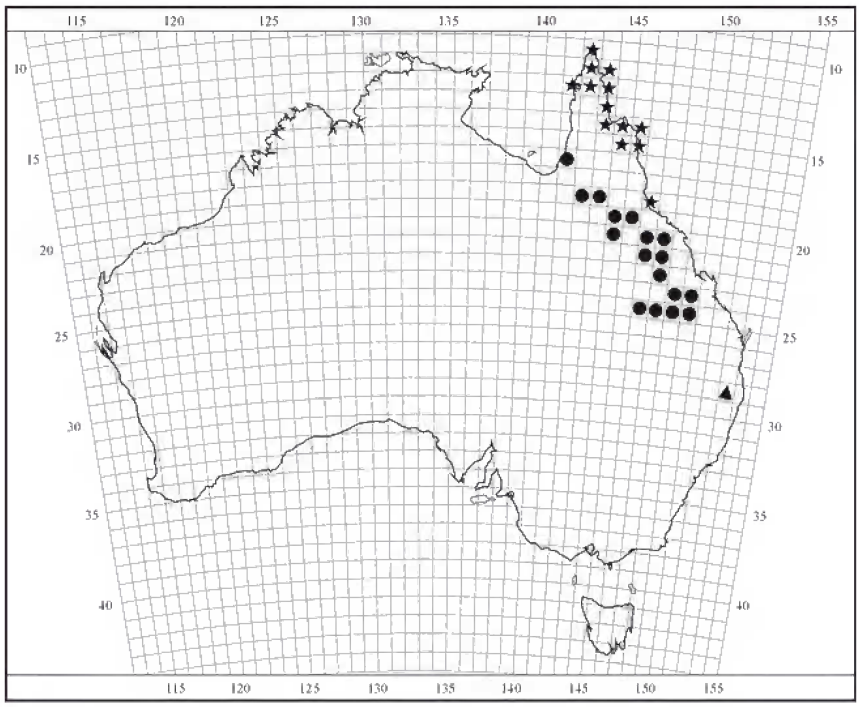
Map 5. Distribution of *Psydrax laxiflorens* ★ and *Psydrax odorata* subsp. *australiana* (*P. odorata* forma *subnitida* ▲).



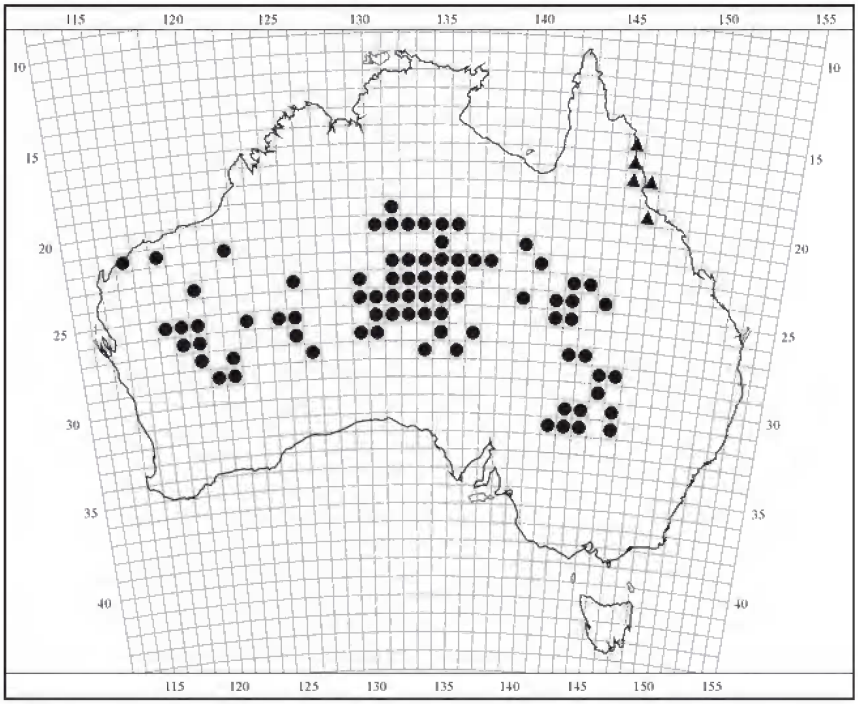
Map 6. Distribution of *Psydrax montigena* ● , *Psydrax odorata* subsp. *buxifolia* (*P. odorata* forma *buxifolia* ▲) and *Psydrax reticulata* ★ .



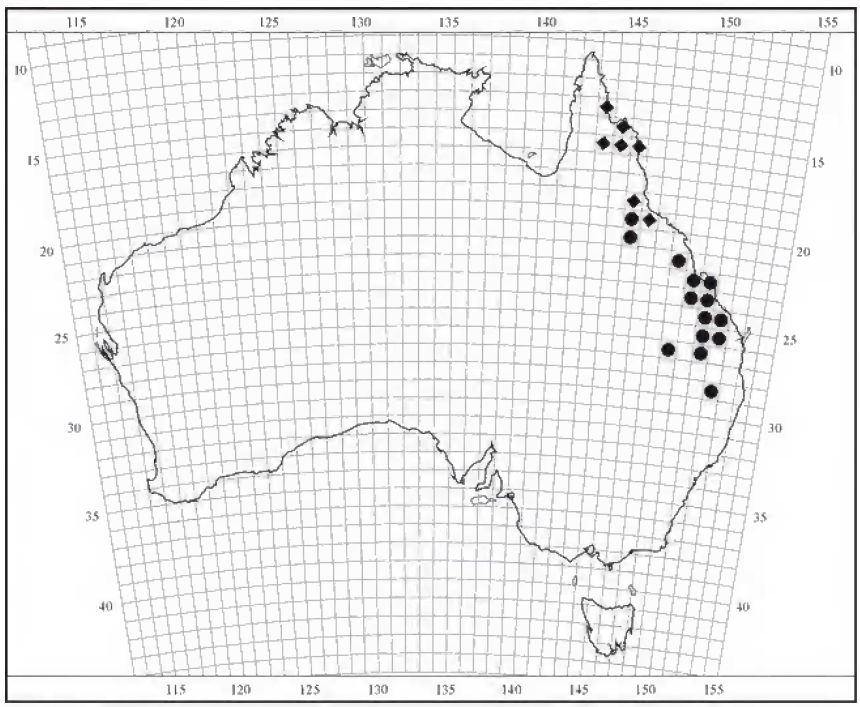
Map 7. Distribution of *Psydrax lamprophylla* (*P. lamprophylla* forma *lamprophylla* ▲ and *P. lamprophylla* forma *latissima* ●).



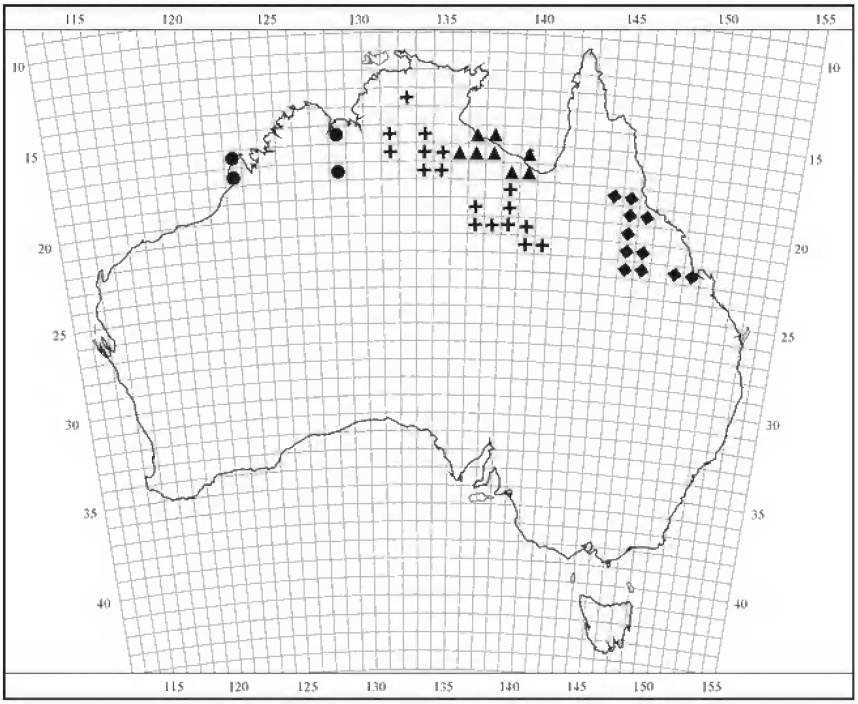
Map 8. Distribution of *Psydrax banksii* ★ , *Psydrax forsteri* ● and *Psydrax odorata* subsp. *buxifolia* (*P. odorata* forma *parviflorifra* ▲).



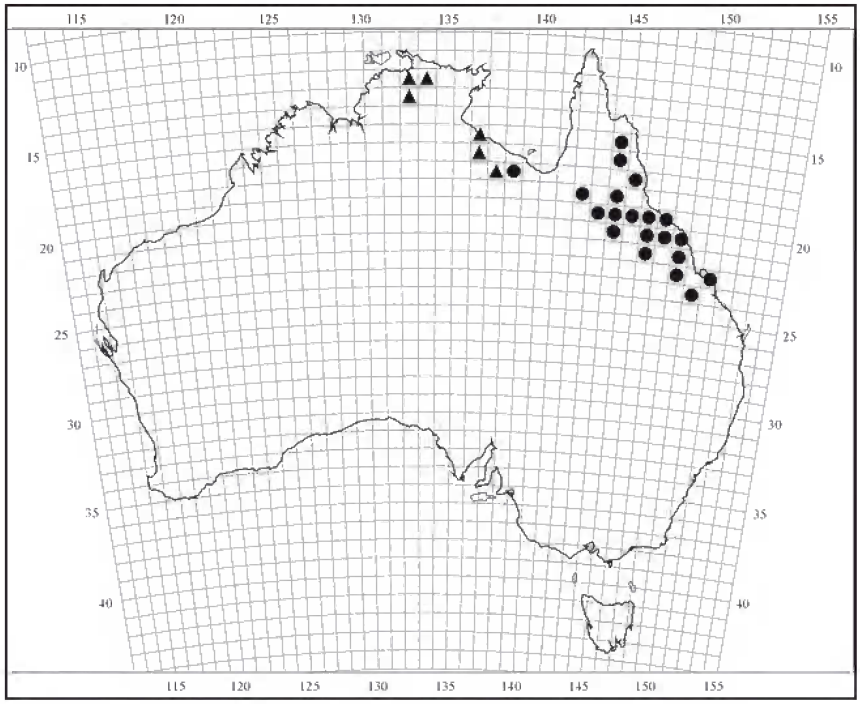
Map 9. Distribution of *Psydrax latifolia* ● and *Psydrax tropica* ▲ .



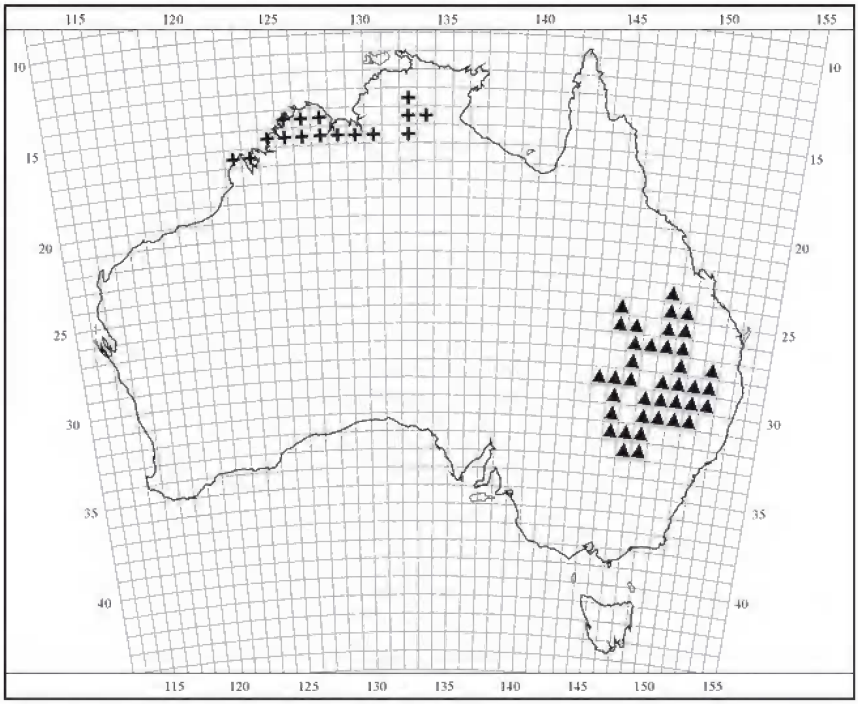
Map 10. Distribution of *Psydrax lepida* ◆ and *Psydrax longipes* ● .



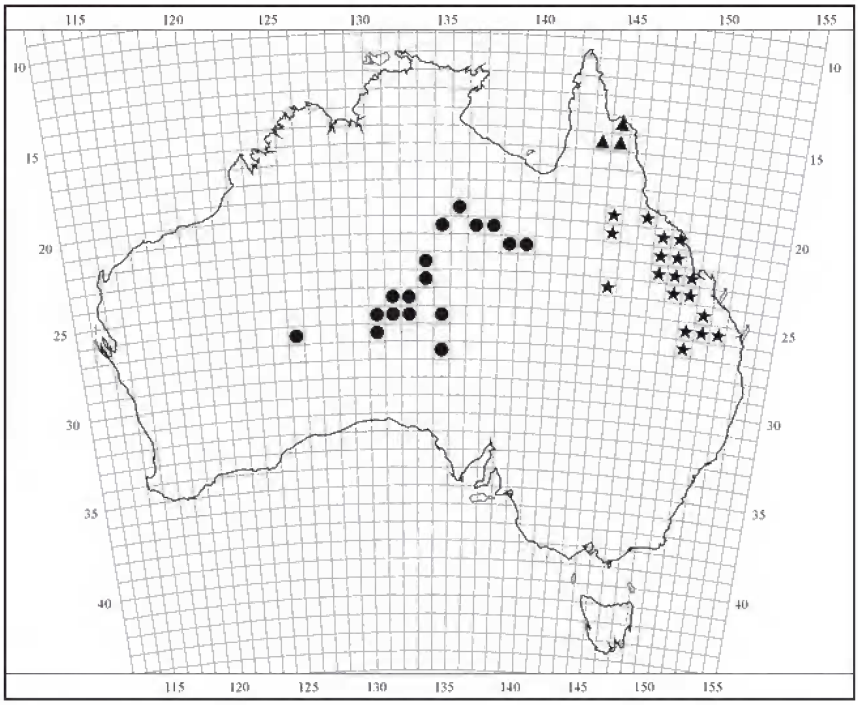
Map 11. Distribution of *Psydrax attenuata* var. *attenuata* ▲ , *Psydrax attenuata* var. *myrmecophila* (*P. attenuata* forma *megalantha* ◆ and *P. attenuata* forma *myrmecophila* ✚) and *Psydrax attenuata* var. *tenella* ● .



Map 12. Distribution of *Psydrax saligna* (*P. saligna* forma *filiformis* ▲ and *P. saligna* forma *saligna* ●).



Map 13. Distribution of *Psydrax oleifolia* ▲ and *Psydrax pendulina* ✚ .



Map 14. Distribution of *Psydrax ammophila* ● , *Psydrax johnsonii* ★ and *Psydrax pallida* ▲ .

Appendix 1

There are two species related to those dealt with in the above account of *Psydrax* in Australia which do not occur on this continent but which are referred to in our account for comparison purposes. As we consider these species also belong in this genus but they lack a name under *Psydrax*, we provide the following new combinations for them.

Psydrax cymigera (Valeton) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Plectronia cymigera* Valeton, *Engl. Bot. Jahrb.* 61: 54 (1927); *Canthium cymigerum* (Valeton) B.L.Burtt, (*Kew*) *Bull. Misc. Information* 1936: 463 (1936). **Type:** Northeast New Guinea. In den Wälden des Maboro, May 1909, *Schlechter* n.17513 (?19513) (holo: n.v.; iso: ?A., fide Merrill & Perry (1945), ?K, fide B.L.Burtt, *loc. cit.*).

The situation regarding the numbering (or possible mis-numbering) of parts of the type collection has been commented upon by Merrill and Perry (1945). *Psydrax cymigera* is related to *P. lamprophylla*.

Psydrax suborbicularis (C.T.White) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Plectronia suborbicularis* C.T.White, *Proc. Linn. Soc. N.S.Wales* 51: 296 (1926); *Canthium suborbiculare* (C.T.White) Merrill & Perry, *J. Arnold Arb.* 26: 230 (1945). **Type**: Papua New Guinea. Rigo District, *R. Lister Turner* (holo: BRI).

Psydrax suborbicularis is related to *P. banksii* and *P. reticulata*.