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Western Australian plant taxa not collected for more than 50 years

Neil Gibson

Science and Conservation Division, Department of Parks and Wildlife,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
School of Plant Biology, Faculty of Science,
The University of Western Australia, Crawley, Western Australia 6009
email: Neil.Gibson@dpaw.wa.gov.au

Abstract

Gibson, N. Western Australian plant taxa not collected for more than 50 years. *Nuytsia* 27: 139–164 (2016). An analysis of the Western Australian Herbarium collections generated a list of 29 endemic taxa last collected between 1888 and 1965, which are not currently on the Presumed Extinct schedule. On review, four of these taxa are not of immediate concern. The remaining 25 taxa are predominantly shrubs, generally known from very few collections, and are concentrated in heavily cleared bioregions, particularly the Avon Wheatbelt. Two taxa, *Ptilotus sericostachyus* subsp. *roseus* (Moq.) Benl and *Darwinia divisa* Keighery & N.G.Marchant, are recommended for immediate nomination as Presumed Extinct, while the remaining taxa will require further survey and/or taxonomic work to resolve their conservation status. Further survey will be challenging given the general lack of specific geographical and habitat information available for these taxa.

Introduction

In Western Australia a nomination for listing of a taxon as Threatened or Presumed Extinct is made to the Western Australian Threatened Species Scientific Committee, which makes a recommendation to the Minister for Environment. Any person may submit a nomination via forms available on the Department of Parks and Wildlife website (Department of Parks and Wildlife 2014).

Species that have been adequately searched for and for which there is no reasonable doubt that the last individual has died can be listed under the *Wildlife Conservation Act 1950* as Presumed Extinct. This listing gives immediate Ministerial protection to these taxa if they are subsequently relocated in the wild, and is binding on both the public and the Crown. While lists of presumed extinct taxa in Western Australia had been published earlier (e.g. Briggs & Leigh 1988) these gave no legal protection. The first gazettal of Presumed Extinct taxa was in the *Wildlife Conservation (Rare Flora) Notice* of May 1991 and has since then been regularly reviewed and updated. In 1991, 53 taxa were listed as Presumed Extinct (Western Australian Government Gazette 1991); however, over the next two decades, this number rapidly declined as a result of both increased taxonomic research and biological survey (Hopper 2004). The most recent schedule lists 15 taxa as Presumed Extinct (Western Australian Government Gazette 2015).

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To help focus future survey effort in Western Australia, a review was undertaken to determine taxa that may be candidates for nomination as Presumed Extinct. A list of endemic Western Australian taxa that have not been collected for 50 years was compiled using the collections database (> 700,000 records) at the Western Australia Herbarium (PERTH), and then refined to exclude taxon names for which subspecific ranks were available, or taxa with more recent collections housed at other herbaria (AVH 2016). The list was then discussed with colleagues and updated as necessary.

This process resulted in a list of 29 candidate taxa for consideration for listing as Presumed Extinct. A brief synopsis of the available information for these taxa is given below. For definitions of conservation codes used in the text, see Department of Parks and Wildlife (2015). Bioregions follow the Interim Biogeographic Regionalisation for Australia (IBRA) 7.0 (Department of Environment 2013).

Candidate taxa for listing as Presumed Extinct

AMARANTHACEAE

Ptilotus sericostachyus subsp. **roseus** (Moq.) Benl, *Mitt. Bot. Staatssamml. München* 5: 564 (1965).

Type location. Nova Hollandia, Swan River [Western Australia].

Illustrations. Figure 1.

Description. J.R. Wheeler, in *Fl. Perth Reg.* 1: 98 (1987).

Diagnostic features. Both *P. sericostachyus* subsp. *roseus* and *P. sericostachyus* (Nees) F.Muell. subsp. *sericostachyus* have two fertile stamens; however, subsp. *roseus* has fewer hairs on the basal half of the tepals (*cf.* silky dense hairs), and bracts 7.5–8 mm long (*cf.* 5.5–6.5 mm). *Ptilotus stirlingii* (Lindl.) F.Muell. subsp. *stirlingii* can be confused with *P. sericostachyus* but has a glabrous staminal cup (*cf.* hairy) and three fertile stamens (R. Davis pers. comm.).

Most recent collection. 1906 (PERTH 00321346).

Distribution. Swan Coastal Plain and Jarrah Forest bioregions. Restricted to the Darling Scarp from Perth to Pinjarra (Wheeler 1987).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Notes. Potential habitat on the eastern side of the coastal plain and scarp has been extensively surveyed from 1992–2000 (Keighery & Trudgen 1992; Gibson *et al.* 1994; Markey 1997; Government of Western Australia 2000). It is recommended that this taxon be nominated for listing as Presumed Extinct.

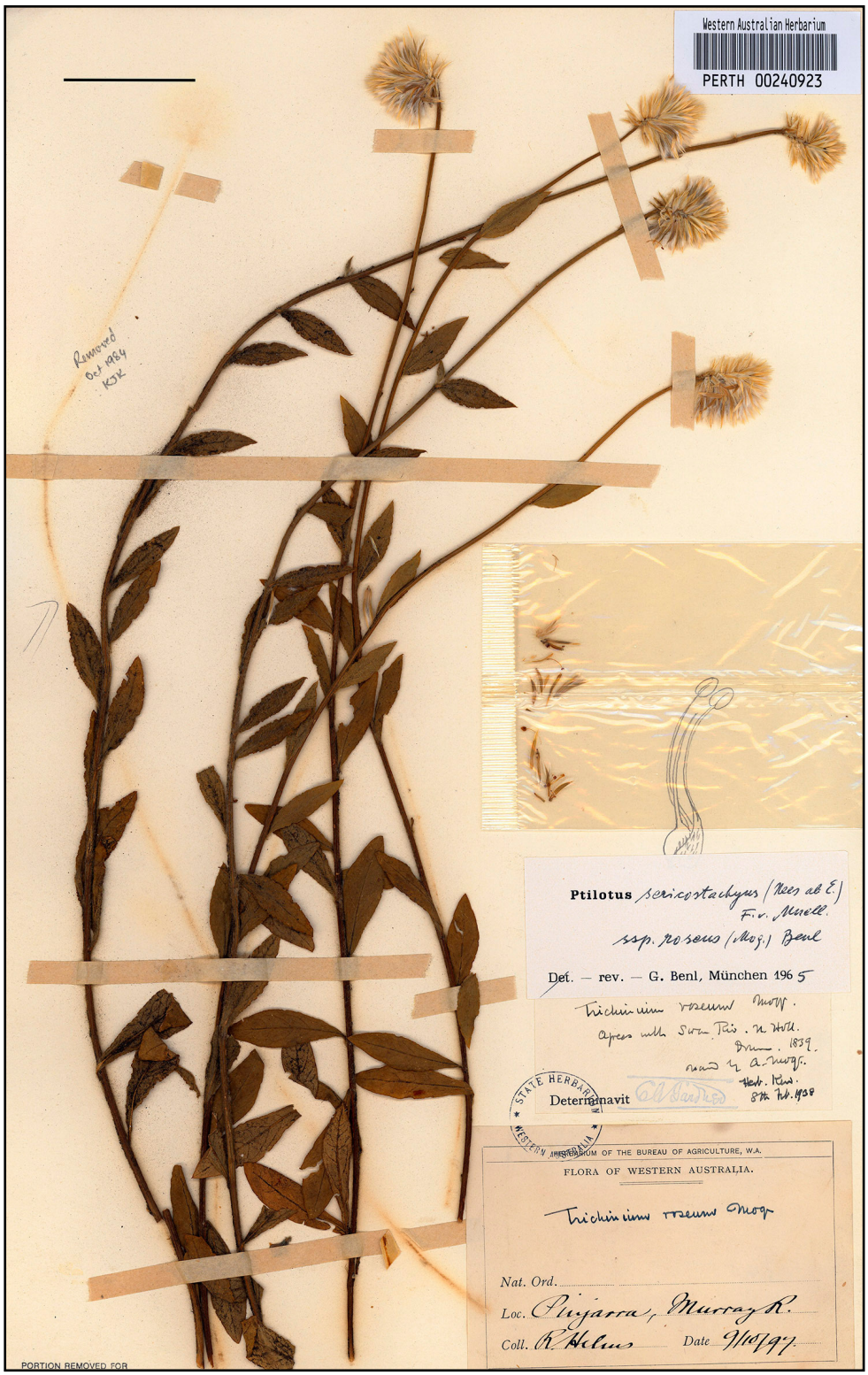

Figure 1. *Ptilotus sericostachyus* subsp. *roseus* (Moq.) Benl (*R. Helms s.n.* PERTH 00240923). Scale bar 4 cm.

ASTERACEAE

Neotysonia phyllostegia (F.Muell.) Paul G.Wilson in J.W. Green, *Census Vasc. Pl. W. Australia* 2nd edn., p. 6 (1985).

Type location. Near the upper Murchison River [Western Australia].

Illustrations. Figure 2.

Description. F. Mueller, *The Chemist and Druggist of Australasia* 11: 215 (1896).

Diagnostic features. Small annual herb. Headlets of flowers depressed-globular or almost hemispheric, involucre consisting of 3–6 leaf-like almost ovate bracts. Flowers numerous, all bisexual, each supported by a large, tender, transparent, almost ovate or elliptic bract. Pappus absent or rudimentary (Mueller 1896).

Most recent collection. 1910 (PERTH 00528161).

Distribution. In north of Murchison bioregion (near Mt Narryer and upper Murchison River).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Notes. Requires targeted survey in good seasons; was not recorded in recent survey of banded iron formations in this area (Meissner & Owen 2010).

Rhodanthe fuscescens (Turcz.) Paul G.Wilson, *Nuytsia* 8: 394 (1992).

Type location. Nova Hollandia [Western Australia].

Illustrations. B.J. Grieve & W.E. Blackall, *How to Know W. Austral. Wildfl.* 4: 825, as *Podotheca fuscescens* (1982).

Description. Grieve & Blackall, *op. cit.*

Diagnostic features. Similar to *R. oppositifolia* (S.Moore) Paul G.Wilson but has leaves that subtend the capitula and very short, brown involucral bracts (Wilson 1992).

Most recent collection. 1901 (PERTH 00750743).

Distribution. Southern boundary of Avon Wheatbelt bioregion (near Cranbrook).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Habitat is recorded by Diels and Pritzel (1905) as '*in loci depressi nudis glareoso-argillaceis subnitrosis copiosa*' [abundant in certain local depressions with bare gravelly clay and minor calcrete].

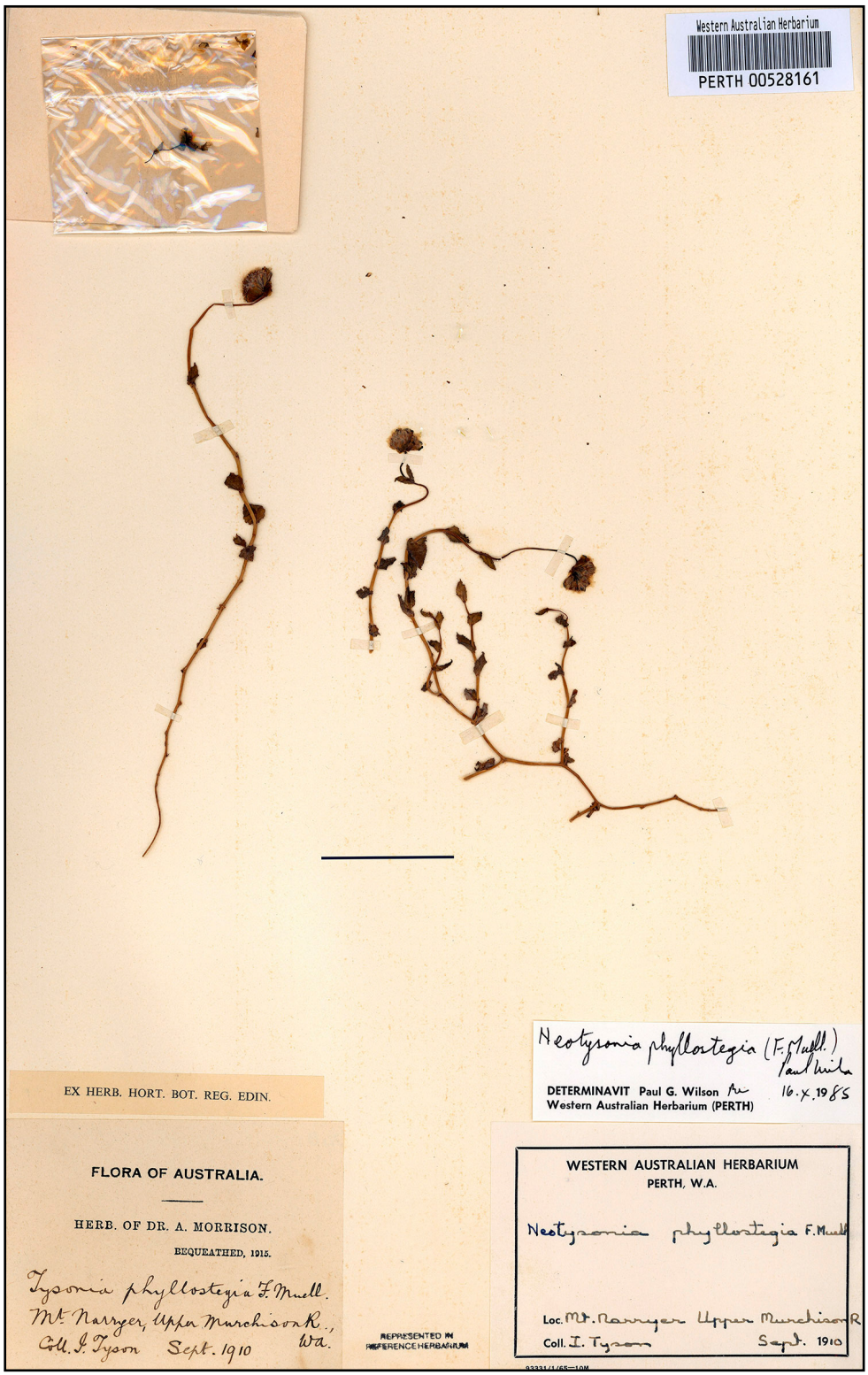

Figure 2. *Neotysonia phyllostegia* (F.Muell.) Paul G.Wilson (*I. Tyson s.n.* PERTH 00528161). Scale bar 4 cm.

An anomalous collection (*K.R. Newbey* 9650) from some 450 km north of Cranbrook is currently databased as *Helipterum fuscescens* Turcz. (a synonym of *R. fuscescens*); however, its identification could not be confirmed as the collection could not be located at PERTH. It is likely to be referable to *R. oppositifolia*. Further survey in the Cranbrook area is required.

Senecio pinnatifolius var. **leucocarpus** I.Thomps., *Muelleria* 21: 58–59 (2005).

Type location. Middle Mount Barren, Dempster Inlet, Western Australia.

Illustrations. Thompson, *op. cit.* p. 59, Figure 15.

Description. Thompson, *op. cit.*; I. Thompson, in *Fl. Australia* 37: 295 (2015).

Most recent collection. 1948 (PERTH 00543942, 00543969).

Distribution. Esperance Sandplains bioregion (Dempster Inlet, Middle Mount Barren, Fitzgerald River National Park).

Diagnostic features. Has small, crowded, fleshy leaves and long, densely hairy achenes (Thompson 2005).

Conservation status. Recently listed as Priority Two under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. Only known from the type location; requires further survey in type location and similar habitats along south coast.

Vittadinia cervicularis var. **oldfieldii** N.T.Burb., *Brunonia* 5: 40 (1982).

Type location. Murchison River, Western Australia.

Illustrations. Burbidge, *op. cit.* p. 66, Plate 4D; p. 70, Plate 8A.

Description. Burbidge, *op. cit.*

Diagnostic features. Plants scabrid to hirsute; intermediate and inner involucres without attenuate apices; cypsela faces with 5–7 ribs; cypselas narrowed above but not beaked (Burbidge 1982).

Most recent collection. 1931 (PERTH 00522341).

Distribution. Carnarvon, Geraldton Sandplains, Swan Coastal Plain, Avon Wheatbelt and Murchison bioregions (widespread from Shark Bay to east of Kalgoorlie and south to Narembeen and upper Swan River).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. A member of a taxonomically complex group in need of further study.

FABACEAE

Labichea deserticola J.H.Ross, *Muelleria* 6: 32–33 (1985).

Type location. Victoria Desert Camp 44, Western Australia.

Illustrations. Ross, *op. cit.* p. 33, Figure 4.

Description. Ross, *op. cit.*; J.H. Ross, in *Fl. Australia* 12: 150 (1998).

Diagnostic features. Differs from *L. lanceolata* Benth. in having consistently 3-foliolate leaves, the central leaflet being only slightly larger than lateral two; also differing in shape and presence of markedly reticulated veins (Ross 1985).

Most recent collection. 1891 (PERTH 04103297, 04097327).

Distribution. Great Victoria Desert bioregion (Camp 44 (27°44′S, 126°33′E) of the Elder Scientific Exploration Expedition is *c.* 40 km east of Connie Sue Highway).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from the type location. Requires resurvey, the site apparently not revisited since the Elder Expedition.

Labichea obtrullata J.H.Ross, *Muelleria* 6: 40–42 (1985).

Type location. Gabyon Station, west of Yalgoo, Western Australia.

Illustrations. Ross, *op. cit.* p. 42, Figure 8.

Description. Ross, *op. cit.*; J.H. Ross, in *Fl. Australia* 12: 154 (1998).

Diagnostic features. Readily distinguishable from *L. lanceolata* by its distinctive lateral leaflets which are mostly ± broadly obtrullate (Ross 1985).

Most recent collection. 1963 (PERTH 01023969).

Distribution. Yalgoo bioregion (Gabyon Station).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Searched for by Ross in spring of 1982 (Ross 1985). Requires further survey; type location in area of heavy goat grazing.

GYROSTEMONACEAE

Gyrostemon sp. **Bolgart** (C.A. Gardner 8700), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Illustrations. Figure 3.

Distribution. Avon Wheatbelt bioregion (west of Bolgart).

Diagnostic features. Readily separated from other species by its short leaves and male flowers with *c.* 35 anthers in multiple whorls. Female plants not known.

Most recent collection. 1947 (PERTH 03295508).

Conservation status. Recently listed as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Notes. Only known from a single collection of a male plant; requires further survey and location of female plants to enable taxonomic description.

LAMIACEAE

Hemigenia sp. **major** (C.A. Gardner 2677), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Illustrations. Figure 4.

Most recent collection. 1931 (PERTH 01071750).

Distribution. Avon Wheatbelt and Yalgoo bioregions (between Koolanooka Hills and Kadji Kadji).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Notes. Requires further survey; not located in surveys of banded iron formations in this area (Meissner & Caruso 2008).

Teucrium sp. **Hutt River** (W.H. Butler 54), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Illustrations. Figure 5.

Most recent collection. 1964 (PERTH 03248453).

Distribution. Geraldton Sandplains bioregion (Hutt River).

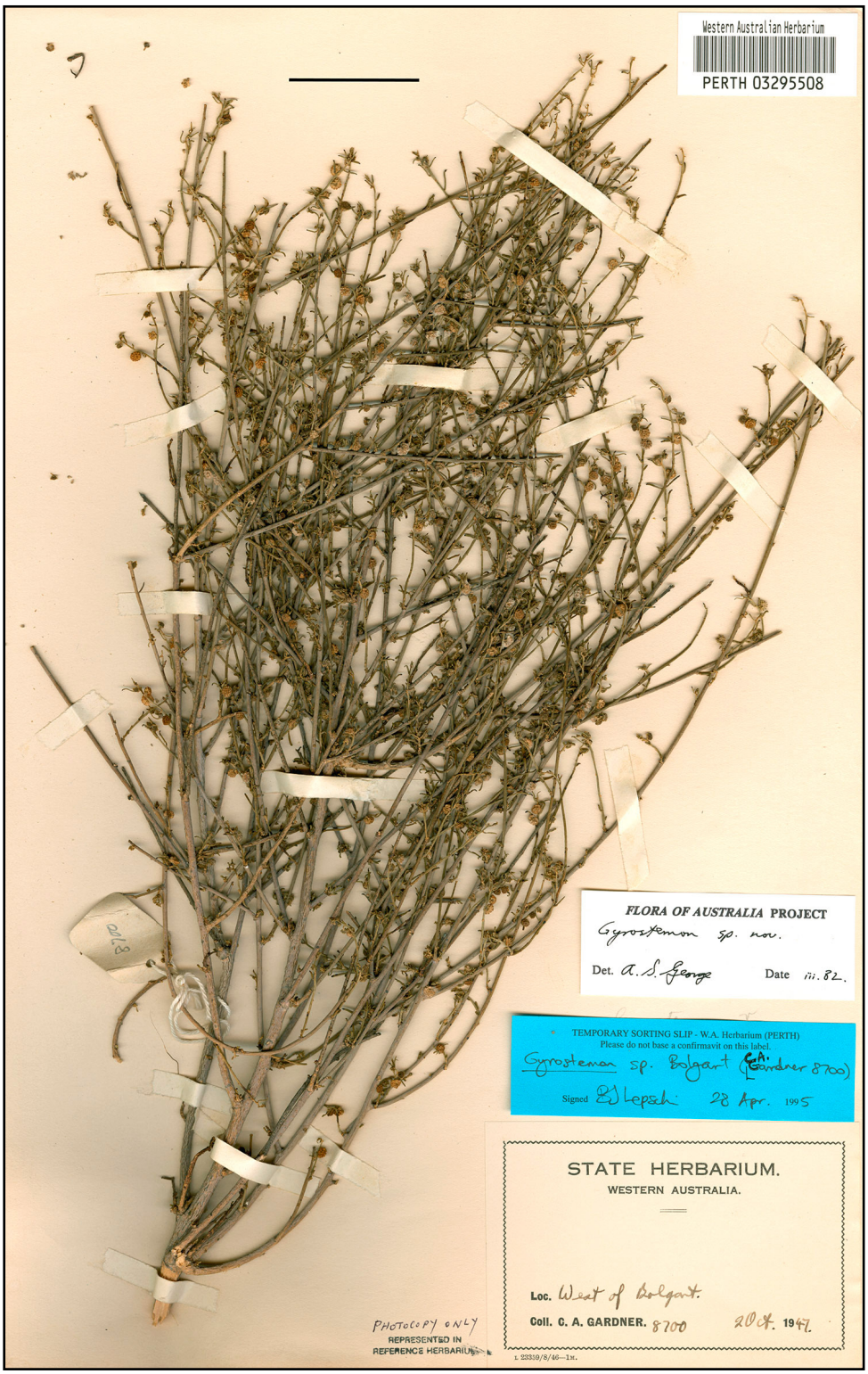

Figure 3. *Gyrostemon* sp. Bolgart (C.A. Gardner 8700) (*C.A. Gardner* 8700 PERTH 03295508). Scale bar 4 cm.

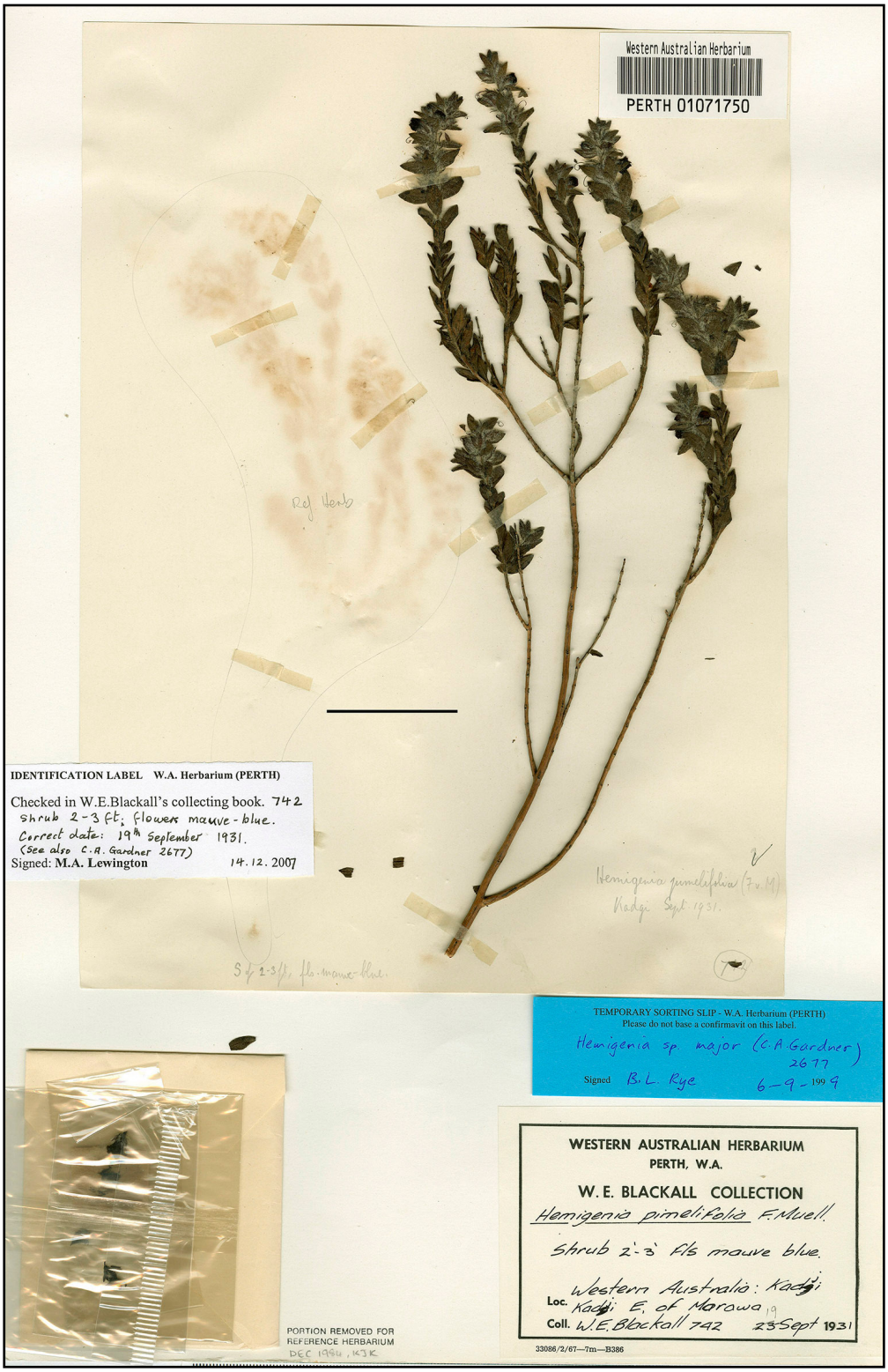

Figure 4. *Hemigenia* sp. major (C.A. Gardner 2677) (*W.E. Blackall* 742 PERTH 01071750). Scale bar 4 cm.

Figure 5. *Teucrium* sp. Hutt River (W.H. Butler 54) (*W.H. Butler* 54 PERTH 03248453). Scale bar 4 cm.

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Notes. Only known from a single collection; requires further survey.

MALVACEAE

Lasiopetalum cenobium K.A.Sheph. & C.F.Wilkins, *Nuytsia* 25: 173–176 (2015).

Type location. New Norcia, Western Australia.

Illustrations. Shepherd & Wilkins, *op. cit.* p. 174, Figure 1.

Description. Shepherd & Wilkins, *op. cit*.

Diagnostic features. This species is distinguished from all other rostrate-anthered species of *Lasiopetalum* Sm. by the following unique combination of characters: large, ovate leaves 17.5–43 mm long and 12.5–28.5 mm wide with a distinctive rugose surface, strongly recurved margin and persistent, scattered to moderately dense, stellate hairs on the adaxial surface; entire outer surface of calyx covered in stellate hairs with 6–12 arms up to 1 mm long at the base; ovary outer surface covered in small, papillose glands and inner surface with stellate hairs (Shepherd & Wilkins 2015).

Most recent collection. 1918 (PERTH 01298348, 01298321).

Distribution. Avon Wheatbelt bioregion (New Norcia).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from type location; requires further survey in New Norcia area.

MYRTACEAE

Baeckea sp. **Lake Brown** (E. Merrall s.n. 1889), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Most recent collection. 1889 (PERTH 06707483, 06707491).

Distribution. Avon Wheatbelt bioregion (Lake Brown–Mt Moore).

Conservation status. Recently listed as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. Only known from a single gathering, requires further survey.

Baeckea sp. **Stirling Range** (H. Steedman s.n. 03/1933), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Most recent collection. 1933 (PERTH 07202717).

Distribution. Western end of Esperance Sandplains bioregion (Stirling Range).

Conservation status. Recently listed as Priority Two under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. Only known from a single collection; requires further survey.

Baeckea sp. **Upper Swan** (Miss M. Eaton s.n. 1888), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Most recent collection. 1888 (PERTH 06901018).

Distribution. Swan Coastal Plain bioregion (Upper Swan).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from a single collection; requires further survey.

Baeckea sp. **Yorkrakine** (C.A. Gardner s.n. 09/1933), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Most recent collection. 1933 (PERTH 03378284).

Distribution. Avon Wheatbelt bioregion (Yorkrakine).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from a single collection; requires further survey.

Darwinia divisa Keighery & N.G.Marchant, *Nordic J. Bot.* 22: 45–47 (2002).

Type location. Bendering [Western Australia].

Illustrations. Keighery & Marchant, *op. cit.* p. 46, Figure 1.

Description. Keighery & Marchant, *op. cit*.

Diagnostic features. Unusual in *Darwinia* Rudge in having a pilose calyx tube and divided calyx lobes (Keighery & Marchant 2002).

Most recent collection. 1965 (PERTH 02625067, 02625075, 02625083, 02625091, 02625105, 02625113, 02625121, 07994877).

Distribution. Avon Wheatbelt bioregion (Bendering).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from the type location, this taxon was extensively searched for during wheatbelt surveys during 1997–2000 at the type location and surrounding remnants (Gibson *et al.* 2004). It is recommended that this taxon be nominated for listing as Presumed Extinct.

Hypocalymma connatum Strid & Keighery, *Nordic J. Bot.* 22: 572 (2002).

Type location. Unknown [Western Australia], Wildflower Show Perth.

Illustrations. B.L. Rye, P.G. Wilson & G.J. Keighery, *Nuytsia* 23: 308, Figure 6 (2013).

Description. Strid & Keighery, *op. cit.*; Rye *et al.*, *op. cit.* pp. 306–309.

Diagnostic features. Separated from most *Hypocalymma* (Endl.) Endl. spp. by young stems 3-angled, leaves in whorls of 3 with oil glands in 2 or 3 main, irregular rows on each side of the midvein, and flowers solitary; distinguished from the similar *H. verticillare* Rye by leaf blades *c.* 7 × 1–1.5 mm, petals 3.5–4 mm long persistent in fruit, and multiple ovules in each loculus (Rye *et al.* 2013).

Most recent collection. 1935 (PERTH 04231457).

Distribution. Unknown.

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from the type specimen, which appeared at the Perth Wildflower Show in 1935. Gardner later acquired the specimen for PERTH. While the origin of that collection is unknown, Rye *et al.* (2013) suggest it may have come from high rainfall areas of the south-west given its morphological similarities and close relationships to *H. verticillare*. Further effort to relocate this taxon is required.

Scholtzia sp. **Nolba** (E. Place s.n. Jan. 1964), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Most recent collection. 1964 (PERTH 03628132).

Distribution. Geraldton Sandplains (Nolba).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from a single collection; requires further survey.

Thryptomene sp. **Coolgardie** (E. Kelso s.n. 1902), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Most recent collection. 1920 (PERTH 02193736).

Distribution. Coolgardie bioregion (Coolgardie).

Conservation status. Recently listed as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. Two collections in PERTH list location as 'Coolgardie' and 'Coolgardie district', with no habitat information; further survey required.

Verticordia sp. **Dundas** (C.A. Gardner 2848), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Illustrations. Figure 6.

Diagnostic features. Habit of *V. penicillaris*, diffuse, horizontally branched; bark grey, deeply fissured; leaves very glaucous; flowers yellow (or light yellow with greenish tinge); bracteoles pink; style-end red (M. Lewington *in sched.*).

Most recent collection. 1931 (PERTH 01946781, 01946803, 01946773).

Distribution. Coolgardie bioregion (Lake Gilmore–Dundas).

Conservation status. Recently listed as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. The Gardner sheets (PERTH 01946781, 01946803) give habitat as red granitic soil and loamy granitic soil. Further survey in Lake Gilmore area required; there are large tracts of intact bushland in this area.

ORCHIDACEAE

Prasophyllum gracillimum Nicholls, *Vict. Naturalist* 64: 175 (1948).

Type location. Yarloop, Western Australia.

Illustrations. Nicholls, *op. cit*. p. 173, Figure G, H, I; A. Brown, P. Dundas, K. Dixon & S. Hopper *Orchids of W. Austral.* Plate opposite p. 256 (2008).

Description. Nicholls, *op. cit.*; Brown *et al.*, *op. cit.* p. 256.

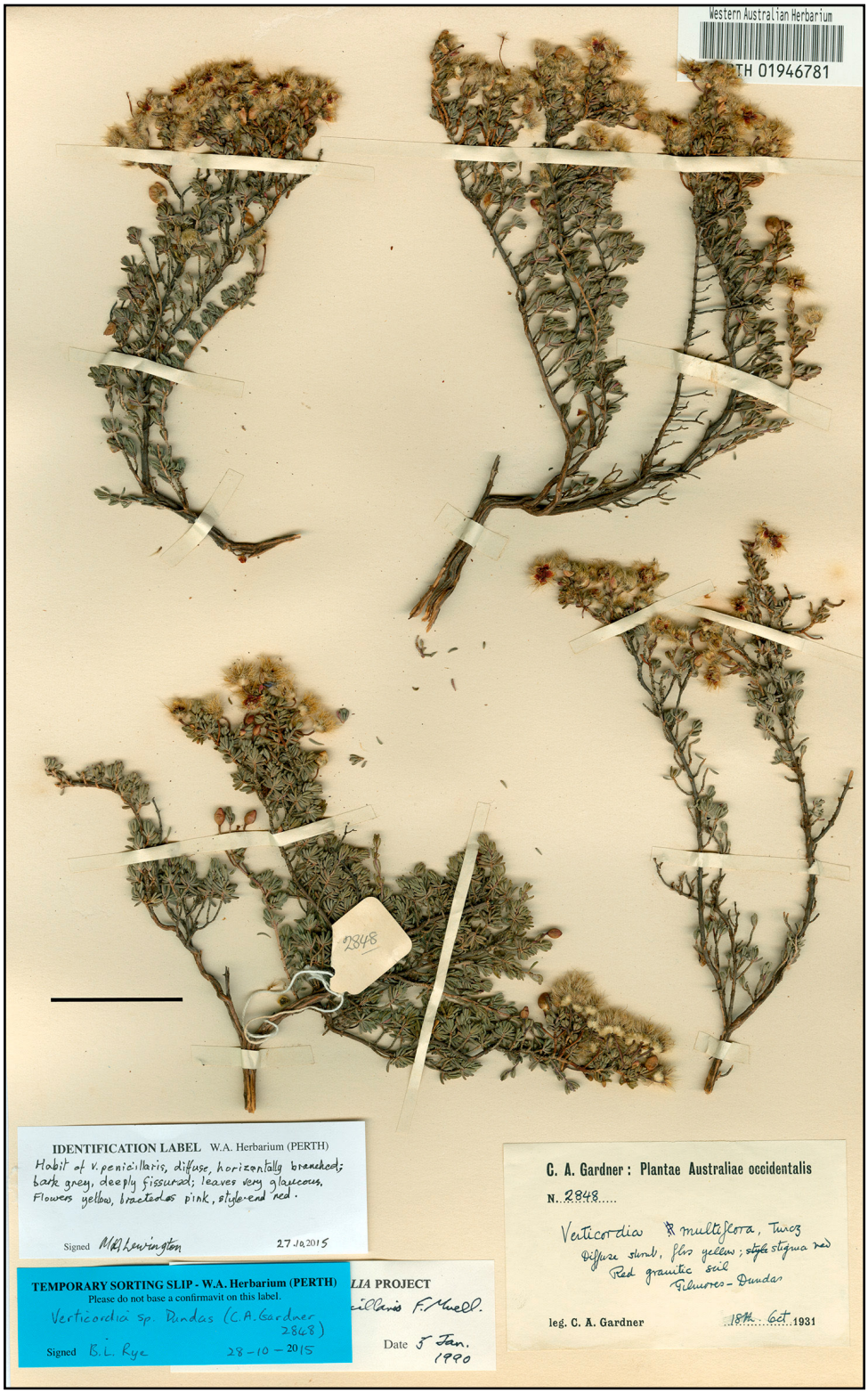

Figure 6. *Verticordia* sp. Dundas (C.A. Gardner 2848) (*C.A. Gardner* 2848 PERTH 01946781). Scale bar 4 cm.

Diagnostic features. Clements (1989) considers that it differs from *P. fimbria* Rchb.f. in its more slender flower spike and widely separated flowers.

Most recent collection. 1944 (PERTH 01596365).

Distribution. Swan Coastal Plain bioregion (Yarloop).

Conservation status. Not listed, pending taxonomic review.

Note. The only gathering of this taxon is the holotype in MEL and an isotype in PERTH. It was considered by George (1971) to be synonymous with *P. fimbria* and accepted as such by Rye (1987). Clements (1989) disagreed and considered it a good species. Hoffman and Brown (1992) followed Clements and state that it is common in burnt winter-wet swamps across the lower south-west from Perth to Albany. Brown *et al.* (2008) consider it elusive and suggest it is a slender form of *P. fimbria* but requires further study. Recent field guides (Brown *et al.* 2013; Brundrett 2014) also consider it to be a slender form of *P. fimbria.* Further collections especially from the type location would assist in determining its taxonomic and conservation status.

POACEAE

Sorghum plumosum var. **teretifolium** Lazarides, *Austral. Syst. Bot.* 4: 629 (1991).

Type location. 14 km south-east of Bedford Downs Station East Kimberleys, Western Australia.

Illustrations. None found.

Description. Lazarides, *op. cit.*; M. Lazarides, F. Quinn, J. Palmer, in *Fl. Kimberley Reg.* p. 1221 (1992).

Diagnostic features. This variety is distinguished by its unique blade, which is 1–2 mm wide and terete except for its flattened apex. It consists of an enlarged, pithy midvein with much-reduced, adnate or closely appressed lamina. This, together with its extreme length (60 cm or more), is its only distinguishing feature from var. *plumosum* (Lazarides 1991).

Most recent collection. 1959 (PERTH 00401064).

Distribution. Central Kimberley bioregion (Bedford Downs Station).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from the type location. Spangler (2003) combined *Sorghum plumosum* (R.Br.) P.Beauv. and several related species into a more broadly-defined *Sarga plumosum* (R.Br.) Spangler. This taxonomy is not followed by the Australian Plant Census (APC 2016). Further survey work is required to resolve its taxonomic and conservation status.

Triodia prona Lazarides, *Austral. Syst. Bot.* 10: 463–464 (1997).

Type location. 40 miles (64.5 km) south-east of Kununurra, Carr Boyd Range, near Thompson's Springs, Northern Province, Western Australia.

Illustrations. M. Lazarides, C.M. Weiller & A. McCusker, in *Fl. Australia* 44B: 235, Figure 36 A–B (2005).

Description. Lazarides, *op. cit.*; Lazarides *et al.*, *op. cit.* p. 248.

Diagnostic features. This species is distinguished by its procumbent flowering stems, which are unique in the genus. In spikelet morphology it resembles *T. salina* Lazarides, which has more heavily resinous foliage and much longer lemma lobes and awns (Lazarides *et al.* 2005).

Most recent collection. 1963 (PERTH 04959841).

Distribution. Victoria Bonaparte bioregion (near Thompson Springs).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from the type location; requires further survey.

PROTEACEAE

Grevillea sp. **Shark Bay** (N.H. Speck 24/09/1953), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au [accessed 28 January 2016].

Illustrations. Figure 7.

Diagnostic features. An annotation in pencil on the lower left of the PERTH sheet reads 'persistent floral bracts and smooth fruit suggest a relationship with *G. vestita* [(Endl.) Meisn.], probably a new species'.

Most recent collection. 1953 (PERTH 01900609).

Distribution. Carnarvon bioregion (Shark Bay).

Conservation status. Recently listed as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. Only known from a single gathering with duplicates in CANB and PERTH. Review of other collections made by Speck in September 1953 suggests he travelled north on the North West Coastal Highway then turned west off the highway north of Nerren Nerren and approached Hamelin Pool from the south. He later proceeded north to the vicinity of Carnarvon via North West Coastal Highway. None of his other collections are labelled Shark Bay. It appears likely that he made this collection between Hamelin Pool and Carnarvon, as there are no collections from further west or north of Hamelin Pool.

Figure 7. *Grevillea* sp. Shark Bay (N.H. Speck 24/09/1953) (*N.H. Speck s.n.* PERTH 01900609). Scale bar 10 cm.

Further surveys are required to resolve taxonomic and conservation status.

RHAMNACEAE

Stenanthemum bilobum Rye, *Nuytsia* 10: 281–282 (1995).

Type location. 262 km from Mt Magnet on Geraldton road, Western Australia.

Illustrations. Rye, *op. cit.* p. 283, Figure 7 A–E.

Description. Rye, *op. cit.*

Diagnostic features. The leaves of this species are very distinctive and immediately distinguish it from all other members of the genus. It could be confused with *S. notiale* Rye, which differs in having stipules connate for about a quarter to half their length, flat or less prominently recurved leaf margins and either an entire or acutely toothed leaf apex (Rye 1995).

Most recent collection. 1963 (PERTH 01539698).

Distribution. Geraldton Sandplains bioregion (near Tenindewa).

Conservation status. Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. Only known from the type collection; requires further survey.

Stenanthemum cristatum Rye, *Nuytsia* 10: 284 (1995).

Type location. Near East Mt Barren, Western Australia.

Illustrations. Rye, *op. cit.* p. 283, Figure 7 F–K.

Description. Rye, *op. cit.*; B.L. Rye, *Nuytsia* 13: 502 (2001).

Diagnostic features. This species could be confused with *S. intricatum* Rye and *S. notiale*, which differ in having shorter floral hairs and a shallowly scooped disc (Rye 1995).

Most recent collection. 1931 (PERTH 01541900, 01541897, 01541889, 01541870).

Distribution. Esperance Sandplains bioregion (East Mt Barren and Mid Mt Barren, Fitzgerald River National Park – considered unlikely, see note below).

Conservation status. Priority Two under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015).

Note. The four sheets of this taxon were all collected on the same day. Three are duplicates of a Gardner number (*C.A. Gardner* 2947) and one represents a Blackall and Gardner collection (*W.E. Blackall & C.A. Gardner* 1406) that was originally in Blackall's personal herbarium. On this sheet (PERTH 01541870) the location is given as 'Plains near Mid Mt Barren' both in pencil and on the label. However Blackall's collecting book gives the location as 'Between Ravensthorpe and Hopetoun' (M. Lewington *in sched.*). This latter location appears correct as the other 37 collections made by Gardner on that date were all from the Ravensthorpe–Hopetoun area. Gardner is known to have referred to the entire Barren Range system as the Mid Mt Barren Range. The Gardner sheets from East Mt Barren give the habitat as gravelly soil. Requires further survey.

SCROPHULARIACEAE

Eremophila glabra subsp. **Morawa** (C.A. Gardner 7521), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Illustrations. A. Brown & B. Buirchell, *A Field Guide to the Eremophilas of W. Austral.*, p. 132 (2011).

Description. Brown & Buirchell, *op. cit.*

Diagnostic features. Prostrate habit; bright green leaves; yellow corolla (Brown & Buirchell 2011).

Most recent collection. 1945 (PERTH 07355599).

Distribution. Northern Avon Wheatbelt bioregion (near Morawa).

Conservation status. Recently listed as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. Only known from a single collection, however Brown and Buirchell (2011) illustrate this taxon with recent photographs. Further collections would assist in determining its taxonomic and conservation status.

Eremophila glabra subsp. **Rason Lake** (R.D. Royce 5582), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Illustrations. A. Brown & B. Buirchell, *A Field Guide to the Eremophilas of W. Austral.*, p. 133 (2011).

Description. Brown & Buirchell, *op. cit.*

Diagnostic features. Similar to typical subspecies but has a lower, bushier habit and green rather than grey leaves (Brown & Buirchell 2011).

Most recent collection. 1956 (PERTH 02403765).

Distribution. Coolgardie bioregion (near Zanthus).

Conservation status. Not listed.

Note. Only known from a single collection, however Brown and Buirchell (2011) illustrate this taxon with recent photographs and a distribution map which indicates it extends along the Trans-Australian railway line. Their text indicates it occurs from Rawlinna north to Laverton. Further collections would assist in determining its taxonomic and conservation status.

Eremophila sp. **Murgoo** (S.J.J. Davies s.n. 15/8/1960), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 28 January 2016].

Illustrations. A. Brown & B. Buirchell, *A Field Guide to the Eremophilas of W. Austral.*, p. 309 (2011).

Description. Brown & Buirchell, *op. cit.*

Diagnostic features. Grey-green, soft felty leaves 40–70 mm long; light green hairy sepals 15–20 mm long × 7–9 mm wide, with mauve-purple or bluish corolla 30–35 mm long; related to *E. clarkei* A.F.Oldfield & F.Muell. (Brown & Buirchell 2011).

Most recent collection. 1960 (PERTH 06039294).

Distribution. Murchison bioregion (Mileura Station).

Conservation status. Recently listed as Priority Three under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–).

Note. Only known from a single collection, however Brown and Buirchell (2011) illustrate this taxon with recent photographs. Their text and distribution map indicates it occurs between Murgoo and Yuin Stations. Further collections would assist in determining its taxonomic and conservation status.

Discussion

From this review four taxa appear not to be of immediate concern. The three unnamed *Eremophila* spp. are apparently extant but with no recent collections in PERTH. The taxon currently determined as *Prasophyllum gracillimum* is likely to be a variant of the widespread *P. fimbria*, but this needs taxonomic confirmation.

Most of the remaining 25 taxa are shrubs (Table 1) with distributions concentrated in the Avon Wheatbelt, adjacent coastal bioregions and the southern sandplains, all of which have been heavily cleared for agriculture (Figure 8). Only two taxa (*Darwinia divisa* and *Ptilotus sericostachyus* subsp. *roseus*) have had sufficient recent survey to fulfil the requirements for proposing as Presumed Extinct. Five taxa (*Labichea deserticola*, *Senecio pinnatifolius* var. *leucocarpus*, *Sorghum plumosum* var. *teretifolium*, *Triodia prona*, *Verticordia* sp. Dundas) occur in remote and/or largely intact landscapes with a good chance of relocation. Two further taxa (*Labichea obtrullata*, *Lasiopetalum cenobium*) have a much bleaker outlook given their only known collections come from heavily grazed or cleared areas, and both species have had specific targeted surveys that have failed to relocate plants. The taxonomic and conservation status of *Vittadinia cervicularis* var. *oldfieldii* is unclear, as it belongs to a complex taxonomic group in need of further revisionary work. The remaining 16 taxa have little specific geographical or habitat information available (Table 1), which will will make the required targeted surveys for these taxa challenging. Progress on formal description of the phrased named taxa has also been significantly hampered by the lack of collections.

Table 1. The 29 candidate species for listing as Presumed Extinct categorised by lifeform, habitat (where available), bioregion, last collected and number of sheets in PERTH and other herbaria. * indicates only known from type location; ** indicates only known from type collection with no location information.

Taxon	Last Collection	PERTH sheets	Other herbaria	Lifeform	Habitat	Bioregion
Baeckea sp. Lake Brown	1889	2	-	Shrub	-	AVO
Baeckea sp. Stirling Range	1933	1	1	Shrub	-	ESP
Baeckea sp. Upper Swan	1888	1	-	Shrub	-	SCP
Baeckea sp. Yorkrakine	1933	1	-	Shrub	-	AVO
**Darwinia divisa*	1965	8	-	Shrub	-	MAL
Eremophila glabra subsp. Morawa	1945	1	-	Shrub	Sandy soil around salt lakes[1]	AVO
Eremophila glabra subsp. Rason Lake	1956	1	-	Shrub	Sandy soils[1]	COO
Eremophila sp. Murgoo	1960	1	-	Shrub	Seasonally wet areas[1]	MUR
Grevillea sp. Shark Bay	1953	1	-	Shrub	-	CAR
Gyrostemon sp. Bolgart	1947	1	-	Shrub	-	AVO
Hemigenia sp. major	1931	3	-	Shrub	-	AVO, YAL
***Hypocalymma connatum*	1935	1	-	Shrub	-	?
**Labichea deserticola*	1891	2	5	Shrub	Sandstone ridge	GVD
**Labichea obtrullata*	1963	2	2	Shrub	-	YAL
**Lasiopetalum cenobium*	1918	2	-	Shrub	-	AVO
Neotysonia phyllostegia	1910	2	6	Annual herb	-	MUR
**Prasophyllum gracillimum*	1944	1	1	Geophyte	-	SCP
Ptilotus sericostachyus subsp. *roseus*	1906	4	5	Perennial herb	-	JF, SCP
Rhodanthe fuscescens	1901	2	4	Annual herb	Clayey depressions	AVO
Scholtzia sp. Nolba	1964	1	-	Shrub	-	GER
**Senecio pinnatifolius* var. *leucocarpus*	1948	2	-	Annual/ perennial herb	-	ESP
**Sorghum plumosum* var. *teretifolium*	1959	1	2	Perennial grass	-	CK
**Stenanthemum bilobum*	1963	1	-	Shrub	-	GER
**Stenanthemum cristatum*	1931	4	3	Shrub	Gravelly soil	ESP
Teucrium sp. Hutt River	1964	1	-	Shrub	-	GER
Thryptomene sp. Coolgardie	1920	2	-	Shrub	-	COO

Taxon	Last Collection	PERTH sheets	Other herbaria	Lifeform	Habitat	Bioregion
**Triodia prona*	1963	1	7	Perennial grass	Lower sandstone slopes	VB
Verticordia sp. Dundas	1931	3	-	Shrub	Red granitic soil	COO
Vittadinia cervicularis var. *oldfieldii*	1931	2	14	Annual herb	?Red alluvial soil	AVO,GER, ?SCP, MUR

1) Habitat information from Brown and Buirchall (2011).

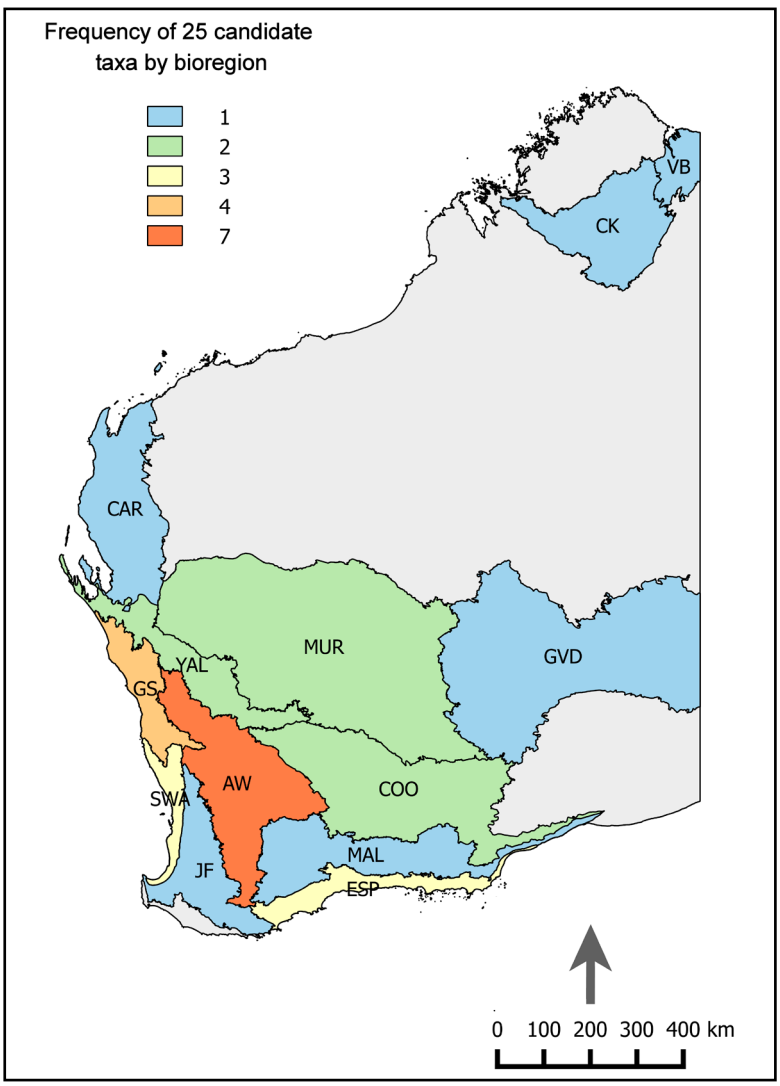

Figure 8. Frequency of the 25 candidate taxa by bioregions. The three extant *Eremophila* spp. and *Prasophyllum gracillimum* not included. Bioregion codes: AVO, Avon Wheatbelt; CAR, Carnarvon; CK, Central Kimberley; COO, Coolgardie; ESP, Esperance Plains; GER, Geraldton Sandplains; GVD, Great Victoria Desert; JF, Jarrah Forest; MAL, Mallee; MUR, Murchison; SCP, Swan Coastal Plain; VB, Victoria Bonaparte; YAL, Yalgoo.

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