



## ***Spiridium longicor*, a new species from Western Australia (Rhamnaceae: Pomaderreae)**

Jürgen Kellermann<sup>a,b</sup> & Catherine Clowes<sup>c</sup>

<sup>a</sup> State Herbarium of South Australia, Botanic Gardens and State Herbarium, Hackney Road, Adelaide, South Australia 5000

Email: juergen.kellermann@sa.gov.au

<sup>b</sup> The University of Adelaide, School of Biological Sciences, Adelaide, South Australia 5005

<sup>c</sup> School of Biosciences, The University of Melbourne, Parkville, Victoria 3010

**Abstract:** A molecular analysis of the genus *Spiridium* Fenzl has shown that the phrase name taxon *Spiridium* sp. Jerdacuttup (A. Williams 332) WA Herbarium is distinct. It is described here as the new species *Spiridium longicor* Kellermann & C.Clowes. Illustrations and a distribution map are provided, as well as amendments for the Key to *Spiridium* in Western Australia.

**Keywords:** *Spiridium*, Rhamnaceae, Pomaderreae, new species

### **Introduction**

For many years, a long-leaved form of *Spiridium cordatum* (Turcz.) Benth has been known from the Ravensthorpe area in south-west Western Australia, which was thought to be an intergrade between *S. cordatum* and *S. microcephalum* (Turcz.) Benth. Following a survey of the Ravensthorpe Range in 2007 (Kern *et al.* 2008), where this entity was collected from the upper slopes of Bandalup Hill, herbarium collections were re-examined and subsequently this taxon recognised with the phrase name *Spiridium* sp. Jerdacuttup (A. Williams 332) WA Herbarium. Since then, more collections from this southern coastal region of Western Australia have been made and the taxon has been accepted in several publications and survey reports (e.g. Markey *et al.* 2011, 2012; Rathbone 2013; Wilkins *et al.* 2011; Woodman Environmental 2020).

Clowes *et al.* (2022) assembled an extensively sampled phylogeny of *Spiridium* Fenzl, including two accessions of *Spiridium* sp. Jerdacuttup. While the results of nrDNA data (including ITS and partial ETS sequences) placed the two accessions into a polytomy with *S. cordatum*, *S. microcephalum*, *S. majoranifolium* (Fenzl) Rye and other Western Australian species of *Spiridium*, the analysis of cpDNA (full chloroplast) data clearly placed the two samples of *Spiridium* sp. Jerdacuttup into one clade with full support, which was positioned within a larger clade of WA species, similar to the results from nrDNA. The two samples were collected from localities that were over 100 km apart (as indicated in the specimen list below).

Herbarium and field assessment has shown that *Spiridium* sp. Jerdacuttup can be consistently distinguished from *S. cordatum* and *S. microcephalum*

morphologically, and we here describe it as the new species *Spiridium longicor* Kellermann & C.Clowes. Wilkins *et al.* (2011) provided a description of the species; this is here expanded with data from more recently collected specimens, including new information on fruit and seed characters.

### **Taxonomy**

#### ***Spiridium longicor* Kellermann & C.Clowes, sp. nov.**

*A Spiridio cordato* (Turcz.) Benth. *similis*, sed *foliis longioribus angustioribusque, inflorescentibus grandioribus et floribus longioribus differt.*

**Holotypus:** 11.45 km N along West Point Rd from Ravensthorpe-Esperance Rd, 13 Sep. 2008, R. Butcher RB 1288 & A. Markey (PERTH8023476). **Isotypi:** AD, B, CANB.

*Spiridium* sp. Jerdacuttup (A. Williams 332) WA Herbarium, FloraBase: W. Austral Fl. (2007) [online] <https://florabase.dpaw.wa.gov.au/browse/profile/31916> [accessed: 14 Oct. 2021].

Perennial, sprawling to erect, dwarf shrubs to 0.4 m high and c. 1 m wide; young stems densely pubescent. Hairs on vegetative parts (unless otherwise mentioned) straight to flexuous, too entangled to discern if they are stellate or simple (but probably a mixture of both), ± matted, rusty when young, soon becoming white or grey, often looking dirty grey. Leaves alternate: stipules triangular to narrowly triangular, 1.7–3.5 mm long, free but overlapping, reddish brown with a long tip when very young, soon becoming grey, quite hairy especially in the middle, persistent after the leaves are shed; petiole 1–2.8 (–3) mm long, densely pubescent; lamina ovate

## Key to species

The identification key in Rye (1996) should be amended, as follows:

- 7:** Leaves linear to broadly ovate or cordate, not folded, with distinctly recurved or revolute margins; bracts 1.5–3 mm long
- 8:** Leaves cordate or broadly ovate, 2–5 mm long, usually as wide as long; petioles often indistinct; flower-heads 2.5–5.5 (–7) mm diam.; overall length of a single flower (base to sepals) < 2 mm [shrub to 0.5 m high; stipules and bracts hairy outside; petiole to 2 (–2.2) mm long; petals shortly clawed] . . . . . *S. cordatum*
- 8:** Leaves usually linear to oblong or ovate, sometimes elliptic or ovate, 4–9 mm long, longer than wide; petioles indistinct to distinct; flower-heads 4–6.5 (–9) mm diam.; overall length of one flower > 2 mm
- 8a.** Shrubs to 1.5 m high; leaves usually < 1.5 mm wide, very narrowly ovate to linear or oblong, straight; base truncate to cuneate; apex acute to mucronate or obtuse (especially in the Cape Arid area); lower surface usually obscured by revolute margins with only the midrib visible; petioles obscure, to 2 mm long; stipules and bracts outside with few hairs; petals with a distinct claw to 0.2 mm long . . . . . *S. microcephalum*
- 8b:** Prostrate to erect shrublets to 0.4 m high; leaves > 1.5 mm wide, ovate to narrowly ovate, leaf blade often recurved; base truncate; apex obtuse; lower surface usually visible; petioles obvious, to 3 mm long; stipules and bracts quite hairy outside; petals with a very short claw to 0.1 mm long . . . . . *S. longicor*

to narrowly ovate or elliptic, (2.5–) 3–8 mm long, 1.5–2.5 mm wide, tip often recurved; base obtuse to truncate; margins strongly recurved to revolute, apex obtuse, rarely acute or slightly emarginate, upper surface smooth to muricate with midrib impressed, sometimes with a few thin stellate hairs when young; lower surface usually visible, densely pubescent. White felty *floral leaves* absent, the inflorescence-subtending leaves similar to vegetative ones. *Inflorescence* a dense, axillary or terminal head of 17–25 cymosely arranged, ± sessile flowers, 4–7.5 mm diam. (expanding in fruit), when young often rusty in appearance; inflorescence axis 1–2 mm long, densely pubescent; *bracts* ovate to orbicular, 1.8–2 mm long, rusty to brown, densely hairy especially in middle, the margins ciliate. *Flowers* white to cream, sometimes rusty when very young. *Hypanthium tube* 0.5–0.8 mm long, 0.9–1.5 mm diam., moderately to densely pubescent with long, ± loosely appressed hairs; base similarly pubescent. *Sepals* 0.8–1.2 mm long; lobes erect to spreading, with a similar indumentum, but denser towards the tips. *Petals* c. 0.5 mm long, cucullate, enclosing the anthers, often yellow, indistinctly clawed (the claw to 0.1 mm long). *Stamens* subequal to the petals, c. 0.45 mm long, erect to incurved; *anthers* c. 0.15 mm long. *Disc* smooth, glabrous, comprising triangular lobes between the stamens and positioned almost at the summit of the hypanthium tube. *Ovary* inferior, carpels 3, ovary summit pubescent with dense erect hairs; *style* 0.9–1.1 mm long, entire, slightly 3-lobed at apex, with a few hairs in bottom third. *Fruit* an obovoid to ellipsoid schizocarp 2–2.5 mm long, c. 1.8 mm wide, releasing 3 white papery fruitlets of which usually only 1 or 2 develop fully, torus in upper third, fruit wall sparsely hairy, dark brown to black; *aril* thin, white to yellow, translucent, easily detached from seed and often remaining in fruitlet when it breaks open;

seeds flattened-obovoid to -ellipsoid, 1.4–1.6 mm long, c. 1 mm wide, fawn to light brown with a few dark mottles, the base dark brown. **Fig. 1.**

**Illustrations:** A. Markey *et al.*, Rep. Conserv. Status 74 Taxa Ravensthorpe Range 197 (2011); C. Wilkins *et al.*, Rare Poorly Known Fl. Ravensthorpe Range & Bandalup Hill 149 (2011); both photos.

**Distribution & habitat.** *Spyridium longicor* occurs in the Esperance and Mallee Bioregions (SEWPAC 2013), scattered from near Gairdner and Jerramungup townships, in Fitzgerald River National Park (N.P.) and eastwards to Bandalup Hill, Cheadanup Nature Reserve (N.R.), Wittenoom Hills (Mt Burdett N.R.) and with easternmost populations near Condingup (Fig. 2). It grows in shallow white sand over lateritic clay and yellow-grey to reddish brown sandy clays, sometimes with lateritic gravel, on plains and on upper hillslopes, mainly in low open mallee over a dense myrtaceous and proteaceous shrub understorey.

**Phenology.** Flowering Aug.–Nov. (–Dec.).

**Affinities.** *Spyridium cordatum* differs from *S. longicor* in having shorter and broader leaves (usually as wide as long) with cordate bases, and smaller flower-heads with shorter flowers. *Spyridium microcephalum* differs in being a larger shrub with narrower, linear to oblong leaves to 1.5 mm wide, the lower surface usually obscured by the margins, and stipules and bracts with fewer hairs outside. See the identification key for further differences.

**Conservation status.** The species is not listed as threatened in Western Australia, having been delisted



**Fig. 1.** *Spyridium longicor* at the type locality, West Point Road, c. 60 km east of Ravensthorpe. **A** Habitat, with the species growing directly at the base of the tree; **B** habit (small prostrate shrub); **C** branches with leaves, flowering and fruiting inflorescences; **D** close-up of flower-head. — Photos: A, C A. Markey; B, D R. Butcher.

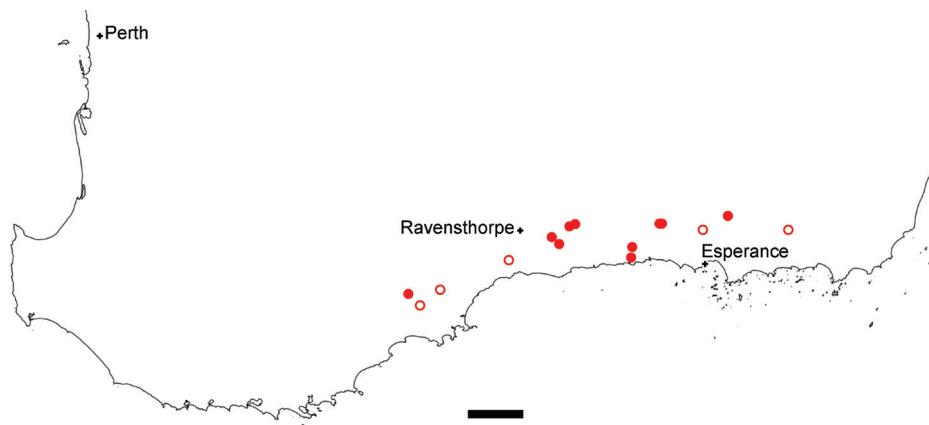
in 2010 from priority status under the Conservation Codes for Western Australian Flora (Wilkins *et al.* 2011; Markey *et al.* 2012; Smith & Jones 2018). It is conserved in Fitzgerald River N.P. and in some smaller reserves, such as Cheadanup and Speddingup (A36183) N.R. Some populations have been impacted by recent mining activities (i.e. Bandalup Hill) and others are likely to have been impacted by historical clearing for agriculture.

**Etymology.** From the Latin *longior* (long) and *cor* (heart), in reference to the leaves that are longer than in *Spyridium cordatum*. It is to be treated as a noun in apposition.

#### Specimens examined

WESTERN AUSTRALIA. 11.45 km N along West Point Rd from Ravensthorpe-Esperance Rd, 13 Sep. 2008, R. Butcher RB 1287 & A. Markey (AD, PERTH); West Point Rd, rise S of Oldfield River, N of Coujinup Tk on both sides of the road, 16 Oct. 2017, C. Clowes CC533 & M.W. Pratt (AD, MEL, MELU; DNA voucher); 11.45 km N of Ravensthorpe-Esperance Hwy on West Point Rd, 30 Aug.

1992, G.F. Craig 1997 (PERTH); c. 5 km NW of Young River crossing on Ravensthorpe-Esperance main road (Young River is c. 70 km W of Esperance), 25 Sep. 1968, E.N.S. Jackson 1290 (AD, CANB, PERTH); South Coast Hwy, 20 km S of Jerramungup, roadside reserve W of Hwy, 1 Oct. 2001, J. Kellermann 394 (AD, B, MEL); Ravensthorpe Range, survey site R193, 30.1 km ESE of Ravensthorpe, located on E slope of Bandalup Hill, c. 800 m E of Mason Bay Rd, 9 Oct. 2007, S. Kern & R. Jasper LCH 18194 (AD, BM, PERTH); Speddingup N.R. (A36183), road verge on causeway on Robins Rd, 11 Oct. 2016, E. Massenbauer 786 (PERTH); Speddingup N.R., 460 m E of SW corner, 55 km NW Esperance, 2 Apr. 2017, K.R. Mills KR738 (AD, K, MELU, MO, NSW; DNA voucher); 4.5 km from West Point Rd along Rawlinson Rd, Cheadanup N.R., 26 Sep. 1985, L.J. Nunn 303 (PERTH); Wittenoom Hills, c. 3 km W of Mount Burdett (Wittenoom Hills is c. 50 km NE of Esperance), 4 Oct. 1968, A.E. Orchard 1349 (AD, PERTH; GZU, GOET n.v.); c. 32 km NNE of the coast at Stokes Inlet, 18 Oct. 1968, A.E. Orchard 1627 (AD, CANB; L, OSH, PERTH n.v.); Jerdacutup Rd, S boundary of Oldfield Loc. 779, 54 km SE of Ravensthorpe, 16 Dec. 2001, A. Williams 332 (PERTH).



**Fig. 2.** Distribution of *Spyridium longicor* in southern Western Australia. Specimens examined indicated as full circles; locations of other specimens at PERTH determined as *Spyridium* sp. Jerdacuttup as open circles. Scale bar = 50 km.

## Acknowledgments

Kat Ticli (AD) is thanked for scoring the vegetative characters and mapping the new species. We thank Barbara Rye (PERTH) for encouraging us to write this paper. Adrienne Markey and Ryonen Butcher (PERTH) provided images of *Spyridium longicor*. The project “A new phylogeny of the Australian Rhamnaceae, revision of *Cryptandra* and *Spyridium*, and completion of the *Flora of Australia* treatment of the family” is supported through funding from the Australian Government’s Australian Biological Resources Study (ABRS) National Taxonomy Research Grant Programme. Catherine Clowes was supported by a Holsworth Wildlife Research Endowment (The Ecological Society of Australia), and the Hansjörg Eichler Scientific Research Fund (Australasian Systematic Botany Society).

## References

- Clowes, C., Fowler, R.M., Fahey, P., Kellermann, J., Brown, G.K. & Bayly, M.J. (2022). Big trees of small baskets: Phylogeny of the Australian genus *Spyridium* (Rhamnaceae: Pomaderreae) focusing on biogeographic patterns and species circumscriptions. *Australian Systematic Botany* 35: 95–119.
- Department of Sustainability, Environment, Water, Population and Communities [SEWPAC] (2013). *Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (Regions)*.
- Bioregional Assessment Source Dataset. <http://data.bioregionalassessments.gov.au/dataset/70bb7ab7-e8a9-4be5-aa73-85bb22c2cb88> [accessed: 10 Jan. 2022].
- Kern, S., Jasper, R. & True, D. (2008). *Floristic Survey of the Ravensthorpe Range 2007*. (Western Botanical: Perth).
- Markey, A., Kern, S. & Gibson, N. (2012). Floristic communities of the Ravensthorpe Range, Western Australia. *Conservation Science Western Australia* 8(2): 187–239.
- Markey, A., Wilkins, A., Allen, J., Kern, S. & Rathbone, D. (2011). *Report on the conservation status of 74 taxa from the Ravensthorpe Range*. (Department of Environment and Conservation, Western Australia: Perth).
- Rathbone, D.A. (2013). *Flora Survey of the Coastal Catchments and Ranges of the Fitzgerald River National Park*. (Department of Environment and Conservation, Western Australia, South Coast Region: Albany).
- Rye, B.L. (1996). A synopsis of the genera *Pomaderris*, *Siegfriedia*, *Spyridium* and *Trymalium* (Rhamnaceae) in Western Australia. *Nuytsia* 11: 109–131.
- Smith, M.G. & Jones, A. (2018). *Threatened and Priority Flora list 16 January 2018*. (Department of Biodiversity, Conservation and Attractions: Perth). <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants> [accessed: 01 Dec. 2021].
- Wilkins, C., Kern, S., Rathbone, D. & Markey, A. (2011). *Rare and poorly known flora of the Ravensthorpe Range and Bandalup Hill*. (Department of Science and Conservation: Perth).
- Woodman Environmental (2020). *Munglinup Graphite Project: Detailed flora and vegetation assessment*. Report for MRC Graphite Pty Ltd., MRC19-48-02 REV 1. (Woodman Environmental: Perth).



With the exception of images and other material protected by a trademark and subject to review by the Government of South Australia at all times, the content of this publications is licensed under the Creative Commons Attribution 4.0 Licence (<https://creativecommons.org/licenses/by/4.0/>). All other rights are reserved.  
© 2022 Board of the Botanic Gardens and State Herbarium (Adelaide, South Australia)