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Styphelia capillaris (Ericaceae: Epacridoideae: Styphelieae), a formal name for a Critically Endangered species from Wandoo National Park

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SHORT COMMUNICATION

The rare species described below, which was first collected by Fred and Jean Hort in December 1999, is one of many new taxa discovered in the last 25 years by this intrepid husband-and-wife team of botanical explorers. Despite extensive surveys, the population they came across south-west of York remains the only one from which the species is known. Consequently, it was added to the Western Australia's list of Threatened flora in December 2014, and is currently ranked by Smith and Jones (2018) as Critically Endangered under the name *Leucopogon* sp. Flynn (F. Hort, J. Hort & A. Lowrie 859).

All Western Australian drupaceous epacrids with sessile, hairy, white flowers and anthers partially enclosed within the corolla tube were once considered to belong in *Leucopogon* R.Br.; however, the circumscription of this genus has recently been narrowed to those taxa with terminal inflorescences and (usually) sterile anther tips (Puente-Lelièvre *et al.* 2016). Taxa with strictly axillary inflorescences and anthers lacking sterile tips have recently been transferred to *Styphelia* Sm. (Crayn *et al.* 2020), a large and diverse group to which *L.* sp. Flynn belongs.

Styphelia capillaris Hislop & Puente-Lel., *sp. nov.*

Type: south-west of York, Western Australia [precise locality withheld for conservation reasons], 15 December 1999, *F. Hort, J. Hort & A. Lowrie* 859 (*holo*: PERTH 05510449; *iso*: CANB, K, MEL, NSW).

Leucopogon sp. Flynn (F. Hort, J. Hort & A. Lowrie 859), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 24 January 2018].

Dense, spreading *shrubs* to *c.* 80 cm high and 150 cm wide, multi-stemmed at the base, but with a fire-sensitive rootstock. Young *branchlets* with a sparse to moderately dense indumentum of ± patent hairs to *c.* 0.15 mm long. *Leaves* spirally arranged, mostly steeply antrorse; apex an acute but innocuous callus; base cuneate to rounded; petiole rather poorly defined, 0.1−0.3 mm long, sparsely hairy on the adaxial surface and margins, glabrous abaxially; lamina discolorous, narrowly ovate to narrowly elliptic, 2.0−4.2 mm long, 1.2−2.2 mm wide, from slightly concave adaxially to slightly convex;

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longitudinal axis usually ± straight, from slightly incurved to slightly recurved; adaxial surface slightly shiny, usually with a few hairs towards the base, venation not or barely evident; abaxial surface paler, matt or slightly shiny, glabrous, with 5−7 primary veins, broadly and shallowly grooved between the veins; margins minutely ciliolate with hairs < 0.05 mm long. *Inflorescence* erect, axillary, the subtending leaves unmodified; axis usually 1- or occasionally 2-flowered, 0.3−0.5 mm long when 1-flowered, 0.8−1.2 mm long if 2-flowered, ± terete, with a moderately dense indumentum, bud-rudiment present only in 2-flowered inflorescences (i.e. inflorescences terminate at the flower in 1-flowered inflorescences); flowers erect, sessile. *Fertile bracts* present only in 2-flowered inflorescences, narrowly ovate, 1.0−1.4 mm long, 0.5−0.6 mm wide, sterile bracts absent. *Bracteoles* narrowly ovate to ovate, 1.2−1.5 mm long, 0.5−0.6 m wide, acute to acuminate; abaxial surface glabrous; margins ciliolate. *Sepals* narrowly ovate, 2.0−2.7 mm long, 0.6−0.8 mm wide, attenuate or more often long-attenuate; abaxial surface pale greenish to straw-coloured, glabrous, venation rather obscure; adaxial surface glabrous; margins ciliate with hairs to *c.* 0.1 mm long. *Corolla tube* white, ellipsoid, *c.* equal to or a little shorter than the sepals, 1.5−2.0 mm long, 1.2−1.5 mm wide, glabrous externally, internal surface glabrous or with a few hairs at the very top of the tube. *Corolla lobes* white, *c.* equal to or more often longer than the tube, 1.8−2.3 mm long, 0.5−0.7 mm wide at base, erect in the lower 1/2, spreading and recurved distally, glabrous externally, internal surface with a dense indumentum of terete, slightly ornamented hairs. *Anthers* partially exserted from the tube (by *c.* 1/2 of their length), 0.8−1.2 mm long, apex and base minutely emarginate. *Filaments* terete, 0.2−0.3 mm long, attached to anther 2/3−3/4 above anther base, adnate to tube just below sinuses. *Nectary* partite, the scales 0.3−0.4 mm long, 0.2−0.3 mm wide, glabrous. *Ovary* yellow-green, narrowly ovate in outline, 0.7−0.8 mm long, 0.3−0.4 mm wide, glabrous, 2-locular, slightly compressed. *Style* 1.5−2.3 mm long, minutely scabrous in upper half, glabrous below, arising from a depression at ovary apex (the base tightly enveloped by ovarian tissue), exserted from corolla tube to a point a little above the anther apices within the erect bases of the corolla lobes; stigma greatly expanded. *Fruit* narrowly obovate to narrowly elliptic in outline, 4.0−5.0 mm long (inclusive of gynophore), 1.6−1.8 mm wide, much longer than the sepals, strongly compressed (linear to very narrowly elliptic in T.S.), with a glabrous gynophore; surface dry, with 3−7 raised longitudinal veins; style early-deciduous. (Figure 1)

Diagnostic characters. Distinguished from all other species of *Styphelia* by the following combination of characters: fruit strongly compressed and prominently veined with a glabrous gynophore; leaves narrowly ovate to narrowly elliptic, with an acute but innocuous apex; sepals glabrous, attenuate to long-attenuate, at least as long as the corolla tube.

Other specimens examined. WESTERN AUSTRALIA: [locality withheld for conservation reasons] 27 Dec. 1999, *F. Hort* 876 (PERTH); 28 Feb. 2000, *F. Hort* 953 (PERTH); 22 Jan. 2001, *F. Hort* 1263 (PERTH); 6 Sep. 2001, *F. Hort* 1422 (PERTH).

Distribution and habitat. Restricted to a small area of the eastern Darling Range south-west of York, in the Jarrah Forest bioregion, where it occurs in heath or open Jarrah/Banksia woodland on white sand. Associated species include *Stirlingia latifolia*, *Allocasuarina humilis*, *Conospermum stoechadis*, *Patersonia occidentalis*, *Phyllota gracilis* and *Conostephium hortiorum*.

Phenology. Appears to have an extended flowering period with a peak between October and December. Like its relatives in Group XI, *sensu* Puente-Lelièvre *et al.* (2016), flowers or fruit, or both, are likely to be present for much of the year.

Etymology. From the Latin *capillaris* (hair-like or thread-like), a reference to the very fine sepal apices.

Figure 1. *Styphelia capillaris*. A – habit; B – flowering branchlet. Photographs by F. & J. Hort.

Vernacular name. Horts' Styphelia is the suggested common name. Fred and Jean Hort are the discoverers of this species, and indeed its only collectors to date.

Conservation status. This species is listed as Critically Endangered under State and Commonwealth legislation under the name *Leucopogon* sp. Flynn (F. Hort, J. Hort & A. Lowrie 859) (Smith & Jones 2018; Threatened Species Scientific Committee 2019). Since its discovery, this species has been the subject of a sustained search effort for additional populations that has thus far proven fruitless. Given that it occurs in an area of the State that is largely covered by natural vegetation, there may still be some hope of finding additional populations; however, it seems very unlikely that any new finds would be of sufficient size to warrant a change to its conservation status.

Affinities. *Styphelia capillaris* is the fifth member of the small Group XI (*sensu* Puente-Lelièvre *et al.* 2016) to be formally described, after *S. flavescens* (Sond.) F.Muell., *S. blepharolepis* F.Muell., *S. densifolia* Hislop, Crayn & Puente-Lel. and *S. ciliosa* Hislop & Puente-Lel. Group XI is one of the most morphologically distinctive of the 12 groups delineated by Puente-Lelièvre *et al.* (2016). It is characterised by a strongly compressed, prominently veined fruit (see Hislop & Puente-Lelièvre 2017: 98, Figure 1B) that has a rather leaf-like appearance, especially when immature. The inflorescence also has some features that are very unusual in the genus. Several species in the group, including *S. capillaris*, have inflorescences of two kinds co-occurring on individual plants. Where the inflorescence is 1-flowered, the axis terminates at the flower (i.e. there is no bud-rudiment) and both fertile and sterile bracts are absent; however, if it is 2-flowered, fertile bracts and bud-rudiments are both present.

The recently described *S. ciliosa* (Hislop & Puente-Lelièvre 2017) is the only other member of Group XI that occurs as far north as the greater Perth region, but it is found to the west of *S. capillaris* in the neighbouring Swan Coastal Plain bioregion. *Styphelia capillaris* is easily distinguished from this species by the following differences: sepals 2.0−2.7 mm long, attenuate to long-attenuate and equal to or longer than the corolla tube (*cf.* sepals 1.4−1.8 mm long, acute and much shorter than the corolla tube in *S. ciliosa*); glabrous nectary scales (*cf.* nectary scales long-ciliate in *S. ciliosa*); sessile flowers (*cf.* pedicellate above the bracteoles in *S. ciliosa*). In addition the leaves of *S. capillaris* are noticeably shorter (2.0−4.2 mm long *cf.* 3.5−9.0 mm in *S. ciliosa*), the inflorescence is usually 1-flowered (*cf.* usually 2-flowered) and its internal corolla tube is glabrous or with a few hairs immediately below the lobes (*cf.* manifestly hairy in *S. ciliosa*, with the hairs often extending as far as the anther bases).

Styphelia sp. Tarin Rock (W.E. Blackall 1315) is the only other member of Group XI with comparably fine sepal apices. It differs from *S. capillaris* in having thicker, rather longer (to 6 mm long) and obovate leaves, hairy sepals, and inflorescences largely restricted to the axils of caducous, vegetative ‘bracts’ (bract-like pherophylls *sensu* Powell *et al.* 1997: 16) rather than mature leaves. *Styphelia* sp. Tarin Rock, which is only known from a single collection made almost 90 years ago by William Blackall from west of Lake Grace (Western Australian Herbarium 1998–), was added to the State’s vascular plant census in 2018 following its discovery among material that had been on loan to NSW for more than 30 years. It has been listed as Priority One under Conservation Codes for Western Australian flora (Smith and Jones 2018); targeted surveys are urgently required since it is likely to be very rare, or possibly even extinct.

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References

Crayn, D.M., Hislop, M. & Puente-Lelièvre, C. (2020). A phylogenetic recircumscription of *Styphelia* Sm. (Ericaceae, Epacridoideae, Styphelieae). *Australian Systematic Botany* #: #–#.

Hislop, M., & Puente-Lelièvre, C. (2017). Five new species of *Styphelia* (Ericaceae: Epacridoideae: Styphelieae) from the Geraldton Sandplains, including notes on a new, expanded circumscription for the genus. *Nuytsia* 28: 95−116.

Powell, J.M., Morrison, D.A., Gadek, P.A., Crayn, D.M. & Quinn, C.J. (1997). Relationships and generic concepts within Styphelieae (Epacridaceae). *Australian Systematic Botany* 10: 15–29.

Puente-Lelièvre, C., Hislop, M., Harrington, M., Brown, E.A., Kuzmina, M. & Crayn, D.M. (2016). A five-marker molecular phylogeny of the Styphelieae (Epacridoideae, Ericaceae) supports a broad concept of *Styphelia*. *Australian Systematic Botany* 28: 368−387.

Smith, M.G. & Jones, A. (2018). *Threatened and Priority Flora list 5 December 2018*. Department of Biodiversity, Conservation and Attractions. https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants [accessed 18 September 2019].

Threatened Species Scientific Committee (2019). Conservation Advice Leucopogon sp. Flynn (F. Hort, J. Hort & A. Lowrie 859) . Department of the Environment and Energy, Canberra. http://www.environment.gov.au/biodiversity/threatened/species/pubs/86385-conservation-advice-11052018.pdf [accessed 10 January 2020].

Western Australian Herbarium (1998–). *FloraBase—the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/ [accessed 16 July 2018].