South west shrubs get naming rights

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Ryonen Butcher looking at a potentially new species Synaphea sp. Argyle from the Argyle Forest block, SE of Capel. Credit: WA Herbarium

Botanists have formally identified four rare and threatened native species, with efforts now turning to the shrubs' future management and conservation.

Western Australian Herbarium research scientist Ryonen Butcher has already described six species of Synaphea as part of her PhD studies and is investigating the status of an additional 13 potential taxa.

Synaphea are small shrubs with yellow flowers and tough highly-divided

leaves belonging to the family Proteaceae.

They only occur in south-west Western Australia with a number of rare taxa restricted to the Swan Coastal Plain.

The Pinjarra Plain land system in which these taxa occur has been substantially cleared for grazing and irrigation agriculture since European settlement.

"Many populations occur outside the conservation reserve system along railways and road verges, so it's very important to locate, identify them and signpost areas where they occur so they can be preserved," Ms Butcher says.

The genus was described by Brown in 1810, revised by Bentham in 1870, and the number of recognised taxa increased from 8 to 54 by Alex George in 1995.

Ms Butcher has since raised the number of recognised taxa to 73; however, only 60 are formally named.

"We have many specimens that we're pretty sure represent new species of Synaphea, so we give them informal names until we can do the grunt work to determine for sure that they are," she says.

Two of the undescribed, threatened species S. sp. Fairbridge Farm and S. sp. Serpentine growing together in a very narrow patch of rail reserve near Serpentine. Credit: WA Herbarium

Previous descriptions in Flora of Australia were limited to 150 words which proved inadequate for distinguishing between similar taxa.

Additionally, once samples are pressed for preservation at the herbarium, key characteristics can be lost.

WA Herbarium curator Dr Kevin Thiele says Synaphea have subtly different characteristics, so they used a powerful analytical method for assessing these variation patterns to understand how different specimens and different taxa are related.

Ms Butcher spent many months in the herbarium collection measuring a variety of features on the specimens.

She then input the data into a computer program that found patterns not

apparent to the naked eye due to the complexity in this group.

"This work has allowed four rare informally-named taxa to be confirmed as distinct species of Synaphea," Ms Butcher says.

"Interestingly, genetic analysis is now needed to investigate the distinctness of two described species that this morphological study couldn't distinguish."

Ultimately, the aim is to accurately characterise the species of Synaphea in order to recognise and conserve them. Interim recovery plans are already in place for all the threatened taxa.

More information: "An investigation of taxon boundaries in rare and range-restricted Synaphea (Proteaceae: Conosperminae) species from south-west Western Australia." *Australian Systematic Botany* 27(2) 119-144 dx.doi.org/10.1071/SB14015

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