Department of Environment and Conservation
Our environment, our future

Information Sheet 59 / 2012
Science Division

New discoveries amongst the tiny triggerplants

by Juliet Wege, DEC Science Division, Juliet.Wege@dec.wa.gov.au

Background

There are about 300 different species in the triggerplant genus *Stylidium* (Stylidiaceae), most of which occur in Australia. Over the past 10 years, the genus has been the subject of sustained taxonomic research at the Western Australian Herbarium, resulting in the discovery of a suite of new species, many of which are rare or poorly known. A recent focus has been to improve the taxonomy of the tiny triggerplants from the *Stylidium petiolare* and *S. despectum* groups. These species are usually less than 10 cm high and grow in seasonally-wet habitats or moist pockets of soil at the fringes of granite outcrops. Several different species can grow together at any given site and in good seasonal conditions they can form spectacularly colourful swards comprising 1000s of individuals.

Left to Right – a granite outcrop in the Darling Range following good winter rains in 2011, with a spectacular carpet of herbs dominated by triggerplants; a bee fly pollinates *Stylidium emarginatum*, receiving a whack on the top of the head by the pollen-depositing trigger. Photographs: J. Wege.

Although these two groups of small herbs have similar habitat requirements, they have markedly different life history strategies. *Stylidium petiolare* and allies (a group that is restricted to south-western Australia) are microgeophytes that die back each summer to a tiny, desiccation-tolerant corm. In contrast, *S. despectum* and allies (a group that occurs across southern Australia) survive the hot summer months as dormant seed.

Prior to the present study, both groups contained undescribed species of conservation significance and several poorly defined species. In some cases, different scientific names were being used in different States for the same species. Furthermore, herbarium collections were very poorly resolved, partly because of the absence of a clear taxonomic framework, but also due to their small size and the inherent difficulty in identifying pressed triggerplants.

Left to Right – *Stylidium utricularioides*, an annual herb from the *S. despectum* group; *S. longitubum* growing intermixed with the smaller *S. despectum*; *S. decipiens*, a microgeophyte that has previously been widely confused with *S. petiolare*; *S. pulchellum*, a common microgeophyte. Photographs: J Wege.

Findings

A taxonomic review of *S. petiolare* and allies doubled the number of known species from 7 to 14 (see Wege 2012: *Australian Systematic Botany* 25: 138–169). This included the description of the following three new species:

Stylidium cornuatum Wege (Little Wildebeest)

> This species was opportunistically discovered by the author and is named for the shape of the upper corolla lobes, which resemble the horns of wildebeest. It is known from just a few populations in the Eneabba to Mt Lesueur area.

Stylidium scintillans Wege (Glistening Triggerplant)

> This threatened species was discovered in 2007 by Woodman Environmental Consulting Ltd. following surveys of mining leases in the Yalgoo region. It is the only microgeophytic triggerplant in this region and has a distinctive corolla shape and unusual, shimmering appendages in the throat of the flower.

Stylidium xanthellum Wege (Little Yellow Triggerplant)

> Colonial botanist James Drummond first collected this species more than 170 years ago but it has, until now, been overlooked as distinct. It has a distribution centred on the Perth hills, demonstrating that there are new botanical discoveries to be made right on our back door step.

A taxonomic review of *S. despectum* and allies recognised 12 species (see Wege 2011: *Australian Systematic Botany* 24: 375–404). Following examination of the original collections made in the early 1800s, herbarium collections from across southern Australia, and field research, *S. inundatum* and *S. despectum* were redefined, resolving considerable confusion in the taxonomic literature and the discrepancies between State floras. It was established that *S. inundatum* is endemic in south-western Australia and that two (rather than three) species from this group occur in south-eastern Australia (namely *S. despectum* and *S. beaugleholei*). The following new species was also described:

Stylidium asymmetricum Wege (Asymmetric Triggerplant)

> This new and apparently rare species from the wandoo woodlands south-west of York has very distinctive flowers. Feral pig activity and inappropriate off-road vehicle use may pose a threat to this species.

Top to Bottom – The newly described W.A. species *Stylidium cornuatum*, *S. scintillans*, *S. xanthellum* and *S. asymmetricum* [photographs J Wege];

Management Implications

Taxonomic assessment of more than 1400 herbarium collections along with field studies have together achieved a vastly improved knowledge of the distribution and conservation status of members of the *S. petiolare* and *S. despectum* groups. Nine species have been added to the *Declared Rare and Priority Flora List for Western Australia*, including the threatened species *S. scintillans*. Half of the species from these two groups are now listed as being of conservation concern in this State, the majority of which require further survey to ascertain their precise conservation status.

The new taxonomic frameworks and identification guides will assist users identifying these tiny species and enhance survey efforts in Western Australia. This is also the case in south-eastern Australia, where past taxonomic confusion has hampered efforts to survey and manage *S. despectum* and *S. beaugleholei*, particularly in Tasmania, where both species are listed under the *Threatened Species Protection Act*.

DEC Senior Research Scientist Juliet Wege has spent much of the past three years on her hands and knees studying the tiny triggerplants [photograph: R Butcher].

Produced and published by the Science Division, Department of Environment and Conservation, Western Australia,
Locked Bag 104, Bentley Delivery Centre, WA 6983