THE RETURN OF *EUPHRASIA SCABRA*

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THE DISCOVERY

Since the early 1990s I have been a volunteer botanist for the Threatened Species Section of the Department of Primary Industries and Water, working on recovery projects of threatened plants. During this time, I have found various new populations of several species but perhaps the most exciting was when I extended the known range of *Euphrasia scabra* (yellow eyebright) so close to home.

Our team, headed by botanist, Dr Wendy Potts, was studying what triggered germination in *Euphrasia* and how the plants were being distributed. This involved experimenting with fire, smoke water and various disturbance techniques to establish the plants' behaviour and perhaps to encourage recruitment.

January 15th 2002 was the memorable day of my discovery of a new population of *Euphrasia scabra* near Algona Heights on the skyline of Mt Nelson. Having previously visited three other populations of *Euphrasia scabra* in Tasmania (at Dukes Marsh and Hockeys Marsh in the northeast and at Lenah Valley in the south) I was familiar with the species and its habitats.

The discovery of this new population was when Grant, my then husband and I, walked from our house in Taroona up to the skyline south of Mt Nelson. While stopping to admire the view of Mt Wellington from the skyline, I stepped onto a boulder and from there, surveyed the vegetation below. My eye fell on a tiny flowering plant and immediately I realised what I was looking at. The tiny plants with the pale yellow flowers could only be *Euphrasia scabra*. I swore profusely and then became extremely excited. When I had calmed down a little, Grant and I did a wider search of the area. Scattered amongst the vegetation and rocks were a few more plants thus establishing that it was a sizeable population (Plates 1-3).

Plate 1. Colony of *Euphrasia scabra* growing at the Algona Heights sites (Photo: Tom Moser) showing the grassy understorey.

As I had an authority to take plants for scientific purposes, one plant was picked and taken straight to the Tasmanian Herbarium where Alex Buchanan confirmed the identification, and registered the specimen. I then rushed into the office of the Threatened Species Unit to share the excitement with my fellow botanists.

Our small team subsequently visited the site and counted over a hundred plants. Wendy registered the site on the web and obtained permission from the landowner to continue monitoring the population.

Plate 2. Inflorescences of *Euphrasia scabra* (Photo: Tom Moser).

A few days later, I visited the site with a young neighbour, Tom Moser, who took some close up shots of the flower and some pictures of their habitat. Since then, I have visited the site annually and counted the plants. Despite the drought, they seem to be surviving and flowering as of January 2008.

EUPHRASIA SCABRA

Euphrasia scabra is presently listed as Endangered on the Tasmanian *Threatened Species Protection Act 1995* because of its severely restricted range, area of occupation, continuing decline in the number of populations and fluctuations in numbers of mature individuals (TSU 2002). The species is now known from only six extant populations: Dukes Marsh, Hockeys Marsh, Black Marsh, Lake Sorell, Lenah Valley near Hobart and the recently discovered population at Algona Heights (TSU 2002). There are several historically known sites from around the State, now considered to be extinct.

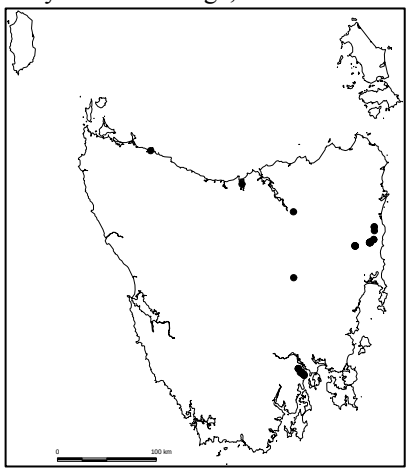

Figure 1. Distribution of *Euphrasia scabra* in Tasmania (note that several of the sites shown are now considered to be extinct).

Interestingly, the species was recorded at several other locations around Hobart, with plants last being seen at their respective colonies in the 1930s, 1940s and 1970s. All populations are now considered extinct despite regular searches by botanists at suitable sites (Figure 1).

The species is also known from South Australia (where probably extinct) and New South Wales (where listed as endangered in 1999 after being "lost" since1899 and now known from very few populations), Victoria (where poorly known) and Western Australia (with only one extant population) (TSU 2002).

Euphrasia scabra belongs to the family Scrophulariaceae (although recent taxonomic revisions place the parasitic Scrophulariaceae species into the Orobanchaceae) and is the only annual and the only yellow-flowered eyebright in Tasmania. It looks similar to *Parentucellia viscosa* (sticky bartsia), an introduced plant from the same family, which is common on roadsides and pastures. However, yellow eyebright has smaller, paler flowers and smaller leaves.

Yellow eyebright is an annual herb. Populations may be transient and dependent on gap creating disturbance such as fire to stimulate germination of soil stored seed. Species of *Euphrasia* are semi-parasitic and are not fussy about their hosts. Yellow eyebright flowers from December to February and can be difficult to find when not flowering.

The following description is taken from TSU (2002) but see also Plates 1 and 2. *Euphrasia scabra* has an erect stem that can be unbranched though in good growing conditions branches will develop from the base up. Plants are generally 15-35 cm tall, sometimes reaching up to 50 cm. The stems are reddish-brown to yellow-brown and are usually covered by short white hairs, particularly in the upper parts. The leaves are green, sometimes reddened in parts and occur in opposite pairs with alternate pairs arising from the stem at right angles to each other. The leaves just below the first flower are generally 7.5-14 mm long and 2.5-6.5 mm wide, with usually no more than three teeth along each margin. The leaves appear semi-succulent. Dense scabrous hairs cover the upper side of leaves and the underside has characteristic patches of glands typical of most eyebrights.

Plate 3. Close-up of *Euphrasia scabra* (Photo: Tom Moser).

The branches terminate in an inflorescence generally consisting of up to sixteen pairs of flowers, sometimes more, with the flowers arranged similarly to the leaves. The flowers consist of a hood of two fused petals and a skirt of three fused petals. The petals are creamy yellow. Yellow eyebright flowers are relatively small and squat for Tasmanian eyebrights, being about 9-12 mm long and 8 mm wide.

CONCLUSION

In conclusion, it is very important to continually scan the vegetation just in case you identify something new or different. If you are familiar with our local plants, chances are you will recognise something unusual and it is worth keeping an up-to-date collecting permit and to check plants with the Herbarium if you are unsure. In the case of *Euphrasia scabra*, discovering new populations around Hobart may still be possible because it was historically known from at least five other sites around Taroona, Ridgeway, the Waterworks and Mt Nelson. The main threat to threatened species is habitat loss. If habitat is left relatively undisturbed or is managed in such a way as to encourage recruitment of particular species, there is a chance that plants that were presumed extinct, can return from the brink!

Note: In June 2008 Wendy Potts made a personal comment that there has been a recent breakthrough in the understanding of recruitment processes of *Euphrasia scabra* that may help to explain why the species is declining throughout its range. Seed germination testing at the Tasmanian Seed Conservation Centre at the Royal Tasmanian Botanical Gardens confirmed Wendy's observations that when wetted and exposed to light, all seed germinates, unlike most other Tasmanian *Euphrasia* species tested where a fraction of the seed remains dormant. This means that if all the seed germinates and fails to survive, the plant is lost. Unless some seed becomes buried through water movements or animal diggings, for example, and thus remains dormant for at least one year, the original annual population will not be replaced. This may explain why *Euphrasia scabra* disappears from known population sites if there is a drought or other unfavourable conditions. Wendy also noted that the population at Hockeys Marsh no longer seems to be present as searches in 2002 and 2008 failed to locate any specimens and is now likely to be locally extinct.

ACKNOWLEDGEMENTS

Wendy Potts, botanist with the Threatened Species Section (Resource Management and Conservation Division, Department of Primary Industries and Water) commented on the manuscript and ecology of *Euphrasia scabra*. Tom Moser kindly provided photographs of the Algona Heights populations. James Wood (Tasmanian Seed Conservation Centre, Royal Tasmanian Botanical Gardens) undertook seed germination trails (ongoing at time of publication of this article).

REFERENCES

Threatened Species Unit (TSU) (2002). *Listing Statement Yellow eyebright* Euphrasia scabra. Department of Primary Industries, Water and Environment, Tasmania.

Note: grey-scale embedded images in this article are shown in full colour and enlarged in the central pages of this volume.

EDITOR'S NOTE

I can't help but comment on this article and how it relates to other recent fascinating rediscoveries of rare plants in Tasmania. In a recent edition of *The Tasmanian Naturalist*, we related the stories of several rediscoveries of plants thought to be extinct (Wapstra *et al*. 2006), mostly spotted in a manner very similar to that of Els' discovery of *Euphrasia scabra* (right place, right time, keen observation of something different). And this year's volume of *The Tasmanian Naturalist* also has another article about plants being rediscovered: *Corunastylis nudiscapa*, not seen since the 1850s, perhaps even rediscovered at the site of its original (and only) collection near Hobart is reported by Kevin Bonham (Bonham 2008).

Wapstra, M., Duncan, F., Buchanan, A. & Schahinger, R. (2006). Finding a botanical Lazarus: tales of Tasmanian plant species 'risen from the dead'. *The Tasmanian Naturalist* 128: 61-85.

Bonham, K. (2008). Rediscovery of *Corunastylis nudiscapa* (Hook.f.) D.L.Jones & M.A.Clem. in Tasmania. *The Tasmanian Naturalist* 130: 100-102.