

Dwarf Milkwort  
(*Polygala amarella*)

Results from first two years of project  
(2013 - 2014).

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# 1 Summary

This report describes the results of the work undertaken during the first 2 years of the Dwarf Milkwort project. During this period, annual surveys have been undertaken at two of the three remaining sites for this species in the North Downs of Kent, and habitat conservation work has been undertaken at the smallest and most vulnerable colony. Ten of the sixteen historic sites in the North Downs have also been visited and assessed for habitat suitability. The steering group met for the first time in October 2013 and discussed the status of the remaining populations and the potential for conservation work at each of the sites. Seed was collected from the largest colony at Godmersham in June 2014 and sent to the Millennium Seedbank at Kew with the intention of cultivating for a potential reintroduction project.

The colony at Godmersham Down currently holds a healthy population with 163 flowering plants recorded in 2013 and 91 flowering plants recorded in 2014. However, the population at Purple Hill is much more vulnerable with only single flowering plants recorded in both 2013 and 2014. No plants were found at any of the historic sites visited although a degree of suitable habitat was identified at a few of these.

## Recommendation for future work

- Annual monitoring of Godmersham and Purple Hill populations.
- Control of grazing at Purple Hill to ensure plants are able to flower and set seed but also to keep scrub under control (undertake further scrub clearance if necessary).
- Continue to survey former sites and identify a suitable site for re-introduction.
- Discuss possibility of habitat restoration at Blackbush Shaw with Woodland Trust.

# 2 Introduction

Dwarf milkwort (*Polygala amarella*) is a perennial herb of open calcareous grassland. In the UK it has a very disjunct distribution, occurring in four distinct areas: the North Downs in Kent (and Greater London), the Craven district of Yorkshire, near Orton in Cumbria, and Upper Teesdale in County Durham. It is listed as Endangered in the most recent version of the Vascular Plant Red Data List for Great Britain (Stroh *et al.* 2014, Walker 2015).

There are some morphological differences between the populations that occur on chalk in the North Downs, and those that occur on limestone in Northern England, and previously these populations have been ascribed to separate species (*P. austriaca* and *P. amara* respectively). In particular, northern populations have purple-blue, sky-blue and occasionally pink flowers, whilst North Downs populations have paler mauve to white flowers. Currently, it is thought best to consider these two geographical races as belonging to separate subspecies: subsp. *austriaca* in Kent and subsp. *amarella* in Northern England (Rumsey 2009).

Recent surveys have suggested a severe decline across the species' range but particularly so in the North Downs where it is now confined to just three populations which in 2010 held just 81 flowering plants between them. Much of this decline is due to the invasion of scrub and rank grassland on its downland sites, probably caused by the cessation of grazing. Some sites have also been lost to ploughing and agricultural improvement. However, it has also been lost from some sites that still possess some suitable habitat. Due to this decline it has been suggested that North Downs populations (*P. amarella* subsp. *austriaca*) should be assessed at the threat status of Critically Endangered (Rumsey 2009).

## Project aims

- Survey the remaining extant sites in the North Downs to assess their population size and habitat condition.
- Identify threats to the remaining populations and conservation work to be undertaken.
- Survey historical sites to identify any suitable habitat, particularly with potential for a reintroduction.
- Collect seed for a reintroduction project.

## 3 Scope of report

This report describes the results of the work undertaken at the North Downs *P. amarella* sites in the first 2 years of the project (between January 2013 and January 2015). This includes the findings of the surveys at both extant and former sites, a report on attempts to collect seed for the Millennium Seed Bank at Kew, and a description of the conservation work undertaken at the smallest and most vulnerable colony at Purple Hill.

## 4 Methodology

Contact was made with the landowners of the 3 surviving sites for *P. amarella* in the North Downs in Kent. A positive response was received from the owners of the sites at Purple Hill and Godmersham Down. The owners of the site at Magpie Bottom were already working closely with Kent Wildlife Trust (who have since purchased part of the downland adjacent to the *P. amarella* colony) and so survey and conservation work was not considered to be a priority at this site during the first two years of the project.

In 2013 the sites at Godmersham and Purple Hill were surveyed on the 20<sup>th</sup> and 24<sup>th</sup> June respectively. *P. amarella* usually flowers from May to July, with the optimum time for surveying usually occurring in late May and early June. However, due to the very late Spring in 2013, the flowering period of *P. amarella* was some 3 – 4 weeks later than normal, and so surveys were undertaken in the latter third of June.

Data on the number of plants present at each site was collected. All plants that were recorded were seen flowering. It is likely that some plants do not flower every year and thus the number of plants recorded is unlikely to be the total population at the site. However, it should give an indication of the status of the colony. The condition of the sites and any potential threats were also recorded.

## 5 Appendix

### Site accounts

#### Godmersham



Figure 1: *Polygala amarella* habitat at Godmersham (Hotspot 3: TR05848 50092) showing mosaic of patches of short grassland and longer tussocks of *Brachypodium pinnatum* 06/06/2014.

2013 survey:

Date visited: 20/06/2013  
Number of flowering plants: 163  
Grid references: 1 flowering plant north of small coombe at TR 05914 50298. The rest of the population was scattered between TR 05889 50229 and TR 05845 50088. Hotspots at (1) TR 05890 50222, (2) TR 05886 50192 and (3) TR 05848 50092.

The grassland was found to be in very good condition and the number of flowering plants recorded was the highest for several years. There is very little scrub on the downland slope and there is no risk of scrub encroachment at present. Sheep currently graze the downland although cattle have also been used in the recent past. There is no requirement for any habitat management work at present.

The sward length has increased in places in recent years but this has coincided with a substantial increase in the number of flowering Dwarf Milkwort plants. Nevertheless it is worth keeping a close eye on the extent and length of Tor Grass *Brachypodium pinnatum* as it can rapidly swamp less vigorous species especially if there is a relaxation of the grazing regime. This is likely to have been a factor in the loss of Dwarf Milkwort from several of its former sites.

At present *B. pinnatum* is mostly confined to ridges along the terracettes between which are extensive patches of short herb-rich grassland. The milkwort favours these patches of shorter grass where it often grows in association with Horseshoe Vetch *Hippocrepis comosa* and Spring Sedge,

*Carex caryophyllea*. However, some plants do occur on the edge of the *B. pinnatum* stands perhaps where there has been some recent disturbance and the *B. pinnatum* provides some protection from grazing animals.

Proposed action:

Survey again in 2014.  
Collect seed for reintroduction project.

2014 survey:

Date visited:	03/06/2014, 06/06/2014 and 28/06/2014
Number of flowering plants:	92
Grid references:	As 2013: 1 flowering plant north of small coombe at TR 05914 50298. The rest of the population was scattered between TR 05889 50229 and TR 05845 50088. Hotspots at (1) TR 05890 50222, (2) TR 05886 50192 and (3) TR 05848 50092.

Godmersham was visited on three occasions during the flowering season. A full survey was undertaken on 06/06/2014 when 84 plants of *P. amarella* were recorded. When the site was visited on 28/06/2014, with the primary intention of collecting seed, a further 8 plants were found that were not recorded on the earlier survey. All plants recorded were found on the same parts of the site as in 2013.

It was observed that the sward height had increased over much of the site since the 2013 survey. As the number of *P. amarella* plants recorded in 2014 was lower than in 2013 (although still higher than 2008 - 2012), it may be that the sward height is starting to exceed the optimum for *P. amarella*. The extent of patches and tussocks of coarse grass species (mainly *Brachypodium pinnatum* and *Bromopsis erecta*) had also increased, and it was noted that this could also become a problem if left unchecked.

Proposed action:

Survey again in 2015.  
Recommend heavier grazing to check sward height and the extent of coarse grasses.



## Purple Hill



Figure 2: *Polygala amarella* site at Purple Hill 10/06/2014. The plants recorded in 2013 and 2014 were found in the centre foreground part of this photograph.

### 2013 survey

Date visited: 24/06/2013  
Number of flowering plants: 1  
Grid reference: TQ 81288 62097

The sward was very short (no more than 1 cm high across much of the slope) when the site was surveyed on 24th June 2013. Only a single plant was found near the bottom of the slope close to the path and it is likely that the site had been grazed more than is beneficial for this species. When the site was surveyed by Fred Rumsey in 2010 19 plants were recorded, 14 at TQ 8129 6209, 2 at TQ 8128 6212, 1 at TQ 8217 6213 and 1 at 8129 6213. Geoffrey Kitchener also recorded 12 plants in 2011. Both Geoffrey Kitchener and Fred Rumsey recall the grass being a longer length when they undertook their surveys.

However, the principle threat to this colony is the encroachment of scrub, principally from *Cotoneaster horizontalis* and hawthorn *Crataegus monogyna*. Photographs from the 1980s show that the extent of scrub was considerably less in the past than it is today particularly in the disused chalk pit. Scrub clearance was undertaken in February 2014 (see 'Conservation Work')

Proposed action:

Survey again in 2014.  
Undertake scrub clearance in winter 2013/2014.

Limit grazing during spring and early summer to ensure milkwort plants are able to flower and set seed.

#### 2014 survey

Date visited: 10/06/2014  
Number of flowering plants: 1 in bud and 6 non-flowering rosettes.  
Grid reference: TQ 81288 62097

The sward was found to be approximately 1 cm longer than in 2013 across most of the site (no horse grazing had been undertaken in the intervening 12 months). A single plant was found in bud about 20 cm from the location of the flowering plant located in 2013. 6 non-flowering rosettes were also found close by. The lack of a recovery in the number of flowering plants of *P. amarella* was thought to be due to the sward still being on the short side for this species.

The scrub clearance undertaken during the work party in Feb 2014 has removed the threat of scrub encroachment in the immediate future. However, it was noticed that this is already starting to regrow and more work will probably need to be undertaken within the next 5 years.

Proposed action:

Survey again in 2015.

Limit grazing for a second season to allow the sward to recover further.

### Survey of historic sites

*P. amarella* has been recorded from at least nineteen sites on the North Downs in VC15 East Kent and VC16 West Kent (one of which is in Greater London). This had declined to five sites by the 1990s (Black Bush Shaw, Magpie Bottom, Purple Hill, Godmersham and the western edge of Warren Wood near Crundale) and to the still extant 3 sites by the 2000s. Of the 16 former sites of *P. amarella*, agricultural improvement (fertiliser application, herbicide use and ploughing) may have led to the species' loss from at least five sites, but the main cause of decline at most sites is probably lack of/cessation of grazing leading to the sward becoming too long and rank, and eventual colonisation of scrub and woodland.

Surveys of ten historic sites in 2013/14 found that some suitable habitat survives at five of these although not necessarily at the precise locations where the plant formerly occurred. These include 3 sites in the Wye/Crundale area in East Kent (including the milkwort's former station on Wye NNR), Queendown Warren (where *P. amarella* was perhaps only intermittent in its occurrence), and at Blackbush Shaw near Cudham (which held a healthy population until the 1990s).

### Seed collection and reintroduction

Attempts to collect seed from the Godmersham colony in 2013 were unfortunately not successful. When the site was visited on 25/07/2013, very few of the plants that were seen on 20/06/2013 were located; the sward had become much shorter after a spell of warm, dry weather and it is likely that many of the plants had been grazed off by sheep or rabbits, or had already dropped their seed.

Fortunately seed was successfully collected from Godmersham in June 2014. 10 seed capsules were collected on 03/06/2014, 33 seed capsules were collected on 06/06/2014 and a further 36 seed capsules were collected on 28/06/2014. It was observed that the seeds on the lowermost flowers often start to ripen and drop whilst the uppermost flowers have yet to open. Seed that was collected was sent to the Royal Botanical Gardens at Kew.



Figure 3. Seed capsules of *Polygala amarella*, Godmersham.

## Conservation work

A volunteer task to reduce the amount of scrub on Purple Hill took place on 27/02/2014. This was organised with the consent of Natural England and advice from Kent Wildlife Trust, and focussed on removing the cotoneaster and hawthorn in the immediate vicinity of the milkwort colony. A small area on the western edge of the chalk pit that was starting to scrub over and formerly supported the milkwort was also cleared. This has significantly reduced the risk of the colony being lost to scrub encroachment within the next 2 - 3 years although the situation will need to be carefully monitored and it might be beneficial to undertake follow up scrub clearance in winter 2015/16. It is hoped that the milkwort colony will increase with the scrub clearance and a recovery in the sward condition.



Figures 4 & 5: Before and after view of the scrub cleared at the *Polygala amarella* colony at Purple Hill on 27/02/2014.

## References

- Rumsey, F. 2009 *A Survey of Kentish Milkwort (Polygala amarella Crantz subsp. austriaca (Crantz) Dostal) with Recommendations for management*. Unpublished Report.
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The Species Recovery Trust is a charity set up to tackle the loss of some of the rarest species in the UK.

There are over nine hundred native species in the UK that are classed as under threat, with several hundreds more currently widespread but known to be in significant decline. The countryside is now bereft of many species that were a familiar sight a mere generation ago.

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