



SOUTH EAST DEVON
HABITAT REGULATIONS
PARTNERSHIP

South East Devon Habitat Regulations Executive Committee

*Monitoring Petalwort at Dawlish Warren –
conservation assessment and prognosis*

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July 2019



Exeter
City Council



Legal comment/advice:

There are no legal implications identified which require comment.

Finance comment/advice:

The costs arising from the recommendations that relate to the responsibility of this Committee (costs relating to habitat mitigation) can be met from existing budgets approved.

Public Document:	Yes
Exemption:	None
Review date for release	None

Recommendations

It is proposed that the Executive Committee:

1. Notes the conservation assessment and prognosis report and the recommendations set out therein.
2. Recommends that Teignbridge District Council liaise with Natural England to urgently address the potential risk of losing Petalwort from Dawlish Warren.
3. Receives an update from Teignbridge District Council at the next meeting.
4. Subject to (2) and (3) above, receives another report on the conservation assessment of Petalwort in 2022.

Equalities impact: Low

Risk: High.

The attached report, included here as Appendix A, suggests that without management intervention there is a high risk that Petalwort may disappear from Dawlish Warren entirely.

1. Summary

1.1 Petalwort is a small, pale green plant which is one of the special interest features for which Dawlish Warren Special Area of Conservation (SAC) is designated. It is nationally scarce in the UK, being widely but sparsely distributed. Dawlish Warren is one of seven sites in England where the plant is recorded.

1.2 Petalwort was originally identified at Dawlish Warren in 1997 by Dr David Holyoak in two general areas of Dawlish Warren, one population close to the Visitor Centre and the second broadly spread across the Greenland Lake grassland (see Appendix B for a rough indication of these areas). Subsequent surveys took place in 1999, 2001, 2003 and 2012.

1.3 Following the Beach Management Scheme, completed by the Environment Agency in 2017, it is likely that a dynamic dune system will redevelop in parts of the site. If the dunes erode as predicted by the Environment Agency, the second area may become inundated with seawater, destroying the existing population and decreasing the chance of natural regeneration through spore dispersal.

1.4 Teignbridge District Council (TDC) Green Spaces Rangers at the Warren have already undertaken some experimental translocations of Petalwort and habitat creation to areas behind the newly constructed wall near the Visitor Centre (most likely to be protected from any inundation by the sea), under licence from Natural England.

1.5 Monitoring of the success/failure of these translocations and the status of the plant onsite was approved by HREC in June 2016. As reported in regular updates to HREC, this monitoring has been delayed due to related proposals which included habitat creation to create suitable conditions for translocation. This necessitated disturbance of other habitat within the SAC and therefore consideration of the Assessment of Likely Significant Effect (ALSE) was required by Natural England (NE).

1.6 The previous survey of Petalwort at the Warren in 2012 developed a baseline dataset to enable identification of population trends and the overall condition of the plant across the site. This survey recorded two areas where populations of the plant could be found, referred to as the Greenland Lake Slack (a dune slack is a low lying area which is seasonally flooded and has low nutrient levels) and the area to the west of the visitor centre.

2.0 The survey

2.1 Following a competitive tendering process, the botanist Richard Lansdown was awarded the contract to carry out the survey and report work. Mr Lansdown had previously surveyed the site in 2012.

2.2 Main objectives of the survey were:

- Establish a baseline mapping survey of Petalwort in the Visitor Centre slack and the Greenland Lake slacks at Dawlish Warren NNR.
- Identify suitable locations for the establishment of scrapes to create early successional stage habitat for colonisation by Petalwort. This will identify areas that are currently free from Petalwort, but where Petalwort can colonise naturally.
- A survey of both the Visitor Centre slack and Greenland Lake slacks is required.
- The report should include discussion about the distribution of Petalwort and any potential issues which could affect its future distribution and numbers
- This report and survey will feed into an ongoing programme of monitoring to assess the impact of visitor pressure on this species and its habitat, the rate of successional change colonisation within the scrapes and timing/location of further habitat creation works.
- A detailed mapping study the distribution of Petalwort thalli at Dawlish Warren is required. 20cm x 20cm quadrats should be used and Petalwort and associated species recorded. A suitable scale map should be used e.g. 1:5000 OS map % cover estimates or similar measure should be used. This should also indicate bare ground and general physical parameters (aspect, hydrology, human impacts)

2.3 Included here as Appendix A, the report survey uses an identical method to that employed in 2012, informed by previous mapping of potentially suitable habitat (Lansdown 2012) enabling more specific targeting of low-lying areas or hollows. Each hollow within Greenland Lake Slack (see Page 2 of Appendix A) was inspected thoroughly on hands and knees, with small plants confirmed using a x8 hand-lens. The sex of fertile plants was noted once per gender per hollow, to indicate fertility of the population. Hollows were numbered using the same numbering system as presented by Lansdown (2012).

3. Monitoring results

3.1 Populations of Petalwort were found in Greenland Lake Slack in seven hollows, with a total of 1301 thalli (the main body of the plant) counted, although hollow No. 9 (which had supported 300-400 thalli in 2012) was not surveyed because it was inundated due to heavy rain the night before. Both sexes were recorded in three hollows and female plants only in another two. Including an estimate of up to 400 thalli in hollow No. 9, the total population of Petalwort in Greenland Lake Slack in 2019 is estimated to be 1300-1700 thalli

3.2 Comparison of the results of counts from previous years, although not directly replicated, suggests that when surveys were considered reliable (1999, 2003, 2012, 2019), the number of thalli recorded fell between 2003 and 2012 and has since remained stable.

3.3 The overall distribution of thalli has remained fairly consistent, with much local variation, although there appears to be a trend for the shallower hollows to become less suitable as they become overwhelmingly dominated by grass and sedges.

3.4 Unfortunately, despite intensive searches, no thalli were found in either of the slacks where plants had been introduced to the west of the visitor centre or in the Visitor Centre Slack. This suggests that transplanting was unsuccessful and that the Visitor Centre Slack population may now be extinct.

3.5 Survey indicates that it is likely that the difference in the distribution of thalli in different hollows may be at least partly related to the height of the hollow above the groundwater table. If correct, then it would appear likely that groundwater-table helps to suppress other vegetation. Thus, the higher the hollow is above the maximum groundwater level, the less able Petalwort is to compete against other plants.

3.6 As the groundwater table drops relative to ground level within Greenland Lake Slack, fewer areas remain suitable for Petalwort. If correct, then this has significant implications for any attempt to create suitable habitat for the plant in the area around the visitor centre.

3.7 The other important factor from the survey is that the distribution of Petalwort in hollows is very patchy. For this reason, it is not realistic to count the number of thalli in a small part of a hollow and then extrapolate up to derive an estimate of the total population within the hollow.

4. Discussion

4.1 Precise comparison between data collected in 2019 and previous surveys appears to be impossible because it is not possible to be certain that all thalli are found, as some may be very small or obscured by dense vegetation, as well as because of the difficulty in precisely re-locating the boundaries of specific hollows.

4.2 Simple interpretation of the data suggests that there has been a decline in the population since 2003, including a reduction in the area occupied, both as the number of populations and the area over which thalli occur. This is probably due to successional change within Greenland Lake Slack, possibly linked to a lowering of the water table, as the hollows in which it was not found are now too dry and densely vegetated with other plants for Petalwort to survive.

4.3 The 2019 survey enabled a comparative test of the efficacy of the condition assessment method proposed in the 2012 survey. As there is no other formal method available, there is no way to tell if any of the criteria put forward are valid measures of the condition of populations at the Warren. That being said, the methods used and refinement of the assessment over time is considered to be the best available approach.

5. Prognosis

5.1 The report warns that the failure of attempts to establish Petalwort in areas to the west of the Visitor Centre means that if the Greenland Lake Slack population continues to decline, there is no reliable way of ensuring the survival of the plant at Dawlish Warren.

5.2 It goes on to suggest that it is known that work which resulted in excavation of sand from part of Greenland Lake Slack in the past led to colonisation by Petalwort. Therefore, it determines, it is clearly possible to increase the population by scraping or removing substrate – and that the only way to identify a reliable method by which populations could be established to the west of the Visitor Centre is by experimental work on existing populations.

5.3 The report states that if the organisations responsible for the management of Dawlish Warren are committed to conservation of Petalwort (and other species) to mitigate the likely impact if sea incursion to Greenland Lake Slack, then they need to actively support on experimental work to try to ensure the future of the species in areas which will remain after relaxation of the sea defences.

5.4 It suggests that most of the remaining population could actually be lost as a result of a single sea incursion event. It concludes that the prognosis for Petalwort at Dawlish is very poor without an extensive and imaginative translocation programme.

5.5 This programme, it is recommended, must include experimental translocation, combined with habitat management. Recognising that the entire population of Petalwort (and other species) is likely to be lost, the report goes on to say that there should be no constraint on potential for experimental manipulation of populations within Greenland Lake Slack.

6. Visitor pressure

6.1 Understanding the impact of increasing visitor pressure is somewhat complicated. On one hand, if not inundated by saltwater, predicted increases in visitor pressure on Greenland Lake Slack could actually benefit Petalwort by increasing pressure on other plants and thereby maintaining bare habitat.

6.2 However, heavy visitor pressure in the area around the Visitor Centre could compromise any further attempts to establish notable species in this area, unless visitor access is very carefully managed. An approach could be to minimise access in the most vulnerable areas but leave unrestricted in less sensitive areas.

6.3 The result could serve to maintain habitat for species which would otherwise be lost to natural succession. Thus, it is argued, the potential effects of increased visitor pressure are more dependent upon management than numbers or seasonality.

7. Conclusion

7.1 The report concludes that not enough is known about the ecology of Petalwort to undertake conservation measures and be confident of success. However, the report also makes clear that the survival of the plant at Dawlish Warren is in clear jeopardy if and/or when the dunes are breached by the sea.

7.2 A number of suggestions are made in the report for potential methods to preserve the species onsite. These all involve disruption to other SAC habitat and therefore would require discussion, cooperation and licensing with Natural England. They are:

- Extensive excavation of areas in the land around the visitor centre, taking levels down to those which currently support Petalwort in Greenland Lake Slack.
- Translocating individual plants of Petalwort, digging down to locate the parent plant of thalli on the surface.
- Propagating Petalwort using methods applied elsewhere to enable extensive planting of very high numbers of plants into potentially suitable habitat.
- Transplantation of turves within Greenland Lake Slack to study colonisation patterns. Turves should be removed and introduced to potentially suitable habitat created through management, the holes created should be filled with bare sand from nearby areas to create a bare surface for colonisation. This may help to establish why previous translocation attempts have been unsuccessful.
- Transplantation of fertile plants of both sexes should also be tested to establish whether this may have a better chance of success.

7.3 In the event that any of the works above are successful, it is noted that transplanted populations are likely to be subject to much higher pressure from tourism. In particular, if the area of the warren is reduced by the sea, then remaining areas are likely to be subject to much greater pressure and may be compromised because of this.

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Natural England comment:

We note the findings of the report and the recommendations made.

Natural England is supportive of management measures to encourage creation of suitable habitat within the SAC.

We note that the report identifies a risk of heavy visitor pressure around the Visitor Centre compromising further attempts to establish petalwort in this area, unless access is carefully managed. This is precisely what the mitigation strategy and measures within the strategy are intended to address.

We suggest that the Environment Agency should also be involved in discussions and funding regarding future measures as they also have a duty with regard to their activities and statutory remit to avoid impacts upon the special features of the site and may be planning further changes in response to the erosion which has occurred following the implementation of their scheme. This is particularly relevant in light of the report's observations that heavy visitor pressure around the visitor centre