

Report under The Conservation of Habitats and
Species Regulations 2017 (as amended),
Regulation 9A

2019-2024

Conservation status assessment for the species:

S1528 - Marsh saxifrage

(Saxifraga hirculus)

England



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Important note - Please read

- The information in this document represents the England Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural England, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the [JNCC website](#).

Assessment Summary: Marsh saxifrage

Distribution Map



Range Map



Figure 1: England distribution and range map for S1528 - Marsh saxifrage (*Saxifraga hirculus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1528 - Marsh saxifrage (*Saxifraga hirculus*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Unfavourable-inadequate (U1)

Breakdown of Overall Conservation Status

Range (see section 5)

Favourable (FV)

Population (see section 6)

Unfavourable-inadequate (U1)

Habitat for the species (see section 7)

Favourable (FV)

Future prospects (see section 10)

Favourable (FV)

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National Level

1. General information

1.1 Country	England
1.2 Species code	S1528
1.3 Species scientific name	<i>Saxifraga hirculus</i>
1.4 Alternative species scientific name	
1.5 Common name	Marsh saxifrage
Annex(es)	II, IV

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2010-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Complete survey or a statistically robust estimate

2.5 Additional information

The time period 2010-2024 has been used to provide a more representative current distribution for all plant species in this reporting round. This is because the national dataset of botanical records (BSBI) could show a dip in records post 2019 for many species, which is an artefact of the relaxation in recording effort post production of the Plant Atlas 2020.

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property

b) Temporary or local prohibition on the taking of specimens in the wild and exploitation

c) Regulation of the periods and/or methods of taking specimens

d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

Other measures description

3.3: Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs ATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²) 1,050

5.2 Short-term trend; Period 2013-2024

5.3 Short-term trend; Direction Stable

5.4 Short-term trend;
Magnitude

a) Estimated minimum

b) Estimated maximum

c) Pre-defined range

d) Unknown

e) Type of estimate

f) Rate of decrease

5.5 Short-term trend; Method used Complete survey or a statistically robust estimate used

5.6 Long-term trend; Period 2000-2024

5.7 Long-term trend; Direction Increasing

5.8 Long-term trend;
Magnitude

a) Minimum

b) Maximum

c) Rate of decrease

5.9 Long-term trend; Method used Complete survey or a statistically robust estimate used

5.10 Favourable Reference Range (FRR)**a) Area (km²)**

b) Pre-defined increment Current range is between 2% and 10% smaller than the FRR

c) Unknown No

d) Method used Reference-based approach

e) Quality of information high

5.11 Change and reason for change in surface area of range

a) Change Yes

b) Genuine change No

c) Improved knowledge or more accurate data Yes

d) Different method No

e) No information No

f) Other reason No

g) Main reason Improved knowledge/more accurate data

5.12 Additional information

The UK surface area of range was reported as 1846km² in 2019 but, as there was no surface area range value at the England only level in the 2019 reporting round, assessing England only change in range is problematic. If JNCC's bespoke alpha hull model was run on the country distribution data at that time, it would provide a baseline to more definitively compare the change in range between 2019 and 2024, other than comparing the maps. By a visual comparison of the maps for 2019 and 2024, it appears that the range has remained stable. Further, the range model was run using hectad data from the BSBI (10km² records) - the hectad range in England has not seen a genuine change between 2013 and 2024, nor indeed between 2000-2024. New populations have been discovered in northern England as a result of targeted survey in the past 20 years.

These populations are thought to have been ones previously overlooked rather than an expansion in range, and fall within occupied hectads and the previously calculated range (Taylor 2020).

6. Population

6.1 Year or period 2010-2024

6.2 Population size (in reporting unit)

a) Unit number of localities

b) Minimum

c) Maximum

d) Best single value 48

6.3 Type of estimate Best estimate

6.4 Quality of extrapolation to reporting unit moderate

6.5 Additional population size (using population unit other than reporting unit)

a) Unit

b) Minimum

c) Maximum

d) Best single value

e) Type of estimate

6.6 Population size; Method used Complete survey or a statistically robust estimate

6.7 Short-term trend; Period 2010-2024

6.8 Short-term trend; Direction Stable

6.9 Short-term trend; Magnitude

a) Estimated minimum

b) Estimated maximum

c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
6.10 Short-term trend; Method used	Complete survey or a statistically robust estimate
6.11 Long-term trend; Period	2000-2024
6.12 Long-term trend; Direction	Stable
6.13 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
6.14 Long-term trend; Method used	Complete survey or a statistically robust estimate
6.15 Favourable Reference Population (FRP)	
ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is between 5% and 25% smaller than the FRP
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate
6.16 Change and reason for change in population size	
a) Change	No
b) Genuine change	

c) Improved knowledge or more accurate data

d) Different method

e) No information

f) Other reason

g) Main reason

6.17 Additional information

The population size of 48 locations equates to the 48 colonies reported in Taylor (2020). Although new colonies have been discovered within the short-term (2010-24) and long-term (2000-24) these are previously overlooked sites rather than a true increase, so a trend of Stable has been concluded. The population unit has changed from individuals in the previous round of reporting to number of localities (taken as corresponding to the 'colonies' in Taylor 2020 mentioned above). This partly addresses the issues highlighted by O'Reilly 2018 and Taylor 2020 around the censuses of 'individuals' (e.g. the discrepancy between counts of ramets (identifiable separate shoots) between surveys has previously been thought to be due to differences in technique between surveyors (O'Reilly 2016, 2018a, 2018b)). Further, recent research on genetic diversity of Scottish populations found that population size counts via traditional means for *S. hirculus* (e.g. ramets) is not a good proxy for the number of genotypes in a population (genets) (Finger et al. 2024).

6.18 Age structure, mortality and reproduction deviation Yes, strongly deviating from normal

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient? Yes

b) Is quality of occupied habitat sufficient? Unknown

c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality? Unknown

7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used Complete survey or a statistically robust estimate

b) Sufficiency of quality of occupied habitat; Method used Complete survey or a statistically robust estimate

7.3 Short-term trend; Period 2013-2024

7.4 Short-term trend; Direction Stable

7.5 Short-term trend; Method used Complete survey or a statistically robust estimate

7.6 Long-term trend; Period

7.7 Long-term trend; Direction

7.8 Long-term trend; Method used

7.9 Additional information

There is a large and stable population which equates to or slightly exceeds the FRV and the occupied habitat appears to meet the needs of this population. However, the quality of the habitat could be questioned with regards to grazing levels which suppress flowering, genetic exchange, seed set and recruitment. Further, there is uncertainty around pollen and seed vector dynamics and the concomitant gene flows, especially in the context of climate change (although, as Taylor 2020 notes, evidence around the exact impact of climate change is at present lacking) (Taylor 2020).

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PA05: Abandonment of management/use of grasslands and other agricultural and	Ongoing and likely to be in the future	High (H)

agroforestry systems (e.g. cessation of grazing, mowing or traditional farming)		
PA07: Intensive grazing or overgrazing by livestock	Ongoing and likely to be in the future	High (H)
PA08: Extensive grazing or undergrazing by livestock	Ongoing and likely to be in the future	Medium (M)
PL02: Drainage (mixed or unknown drivers)	In the past but now suspended due to measures	High (H)

8.2 Sources of information

See section 14 References

8.3 Additional information

No additional information

9. Conservation measures

9.1: Status of measures

a) Are measures needed? Yes

b) Indicate the status of measures Measures identified and taken

9.2 Main purpose of the measures taken Maintain the current range, population and/or habitat for the species

9.3 Location of the measures taken Only inside National Site Network

9.4 Response to measures Medium-term results (within the next two reporting periods, 2025–2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
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MA05: Adapt mowing, grazing and other equivalent agricultural activities (e.g. burning)	High (H)
MA04: Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures	Medium (M)
MA13: Manage agricultural drainage and water abstraction (incl. the restoration of drained or hydrologically altered habitats)	Medium (M)

9.6 Additional information

Flowering is infrequent in England as a result of the palatability and early availability of the vegetation in the mineral-rich flushes and rills with which this species is associated leading to heavy grazing (by sheep) even when the grazing pressure on the land generally is moderate to low. Whilst *Saxifraga hirculus* appears capable of surviving vegetatively under this constant grazing pressure, it flowers infrequently (due to predation of flowering stems) and fruits rarely. To combat this temporarily excluding populations from grazing has been achieved at most sites through the erection of exclosures which can be opened to allow grazing when the competing vegetation is judged to be too rank. Exclosures have been erected at many sites and flowering was improved although the competing vegetation became rank within 5 to 10 years and many of the sites have been opened up to sheep grazing again. The future prospects are good if the right balance can be achieved between overgrazing (with its suppression of flowering and seed set) and undergrazing (and the rank vegetation which results causing excessive competition for the *Saxifraga hirculus*). Infrastructure is in place such that this balance is now achievable at many sites and indications are that populations are now stable (O'Reilly, 2018) and are likely to be so for the foreseeable future. There has been no attempt to extend the range as little evidence is available to suggest that populations have been lost in England in recent years. The measures are designed to improve genetic turn-over to give better resilience in the face of predicted climatic shifts. Whether further interventions to improve genetic diversity (e.g. translocations as advocated in Scotland by Finger et al. 2024) might be necessary is uncertain in England owing to lack of data, but may well be warranted and requires investigation.

10. Future prospects

10.1a Future trends of parameters

ai) Range	Overall stable
bi) Population	Overall stable

ci) Habitat for the species	Overall stable
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10.1b Future prospects of parameters

a ii) Range	Good
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b ii) Population	Good
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c ii) Habitat for the species	Good
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10.2 Additional information

The Future Prospects parameters have been as Overall Stable and Good, following the findings and conclusions of Taylor 2020 on Favourable Conservation Status gives future prospects for this species as acceptable, if, crucially, the balancing of grazing levels in a manner favourable to reproduction is maintained. However, there is considerable uncertainty about the numbers of genetic individuals (genets) our populations hold and concerns around the problems this may cause (e.g. via inbreeding depression) in the future (Finger et al. 2024). This situation in England is not clear. It is also unknown what the impact of climate change will be on this Circumpolar Boreo-arctic Montane species.

11. Conclusions

11.1 Range	Favourable (FV)
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11.2 Population	Unfavourable-inadequate (U1)
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11.3 Habitat for the species	Favourable (FV)
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11.4 Future prospects	Favourable (FV)
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11.5 Overall assessment of Conservation Status	Unfavourable-inadequate (U1)
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11.6 Overall trend in Conservation Status	Stable
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11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

The change in Overall Conservation status is owing to the Population changing from Favourable (at the UK level) to Unfavourable-inadequate because, following the reporting guidelines, this is the conclusion to be reach as the reproduction, mortality and age structure of populations deviates from normal.

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit	number of localities
b) Minimum	
c) Maximum	
d) Best single value	45
12.2 Type of estimate	Best estimate
12.3 Population size inside the network; Method used	Complete survey or a statistically robust estimate
12.4 Short-term trend of population size within the network; Direction	Stable
12.5 Short-term trend of population size within the network; Method used	Complete survey or a statistically robust estimate
12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	Stable
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Complete survey or a statistically robust estimate

12.8 Additional information

Of the 48 just 3 locations/colonies fall outside SACs (Harthope Fell; Red Mea, Swaledale; Mud Beck, Arkengarthdale). These represents, at the last count/estimate (see Taylor 2020), just 0.1% of the number of individuals in the English population.

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

BSBI Distribution database (Accessed January 2025) Finger, A., Macdonald, I., & Hollingsworth, P. M. 2024. "Genetic monitoring for effective plant conservation: An example using the threatened *Saxifraga hirculus* L. in Scotland". *Plants, People, Planet*, 6(2): 381–398. <https://doi.org/10.1002/ppp3.10456> JNCC, 2019a European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) 2019 "Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018, Conservation status assessment for the species: S1528 - Marsh Saxifrage (*Saxifraga hirculus*) ENGLAND". <https://jncc.gov.uk/jncc-assets/Art17/S1528-EN-Habitats-Directive-Art17-2019.pdf> JNCC, 2019b European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) 2019 "Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018, Conservation status assessment for the species: S1528 - Marsh Saxifrage (*Saxifraga hirculus*) UNITED KINGDOM". <https://jncc.gov.uk/jncc-assets/Art17/S1528-UK-Habitats-Directive-Art17-2019.pdf> O'Reilly, J. 2016. Monitoring Survey of *Saxifraga hirculus* (Marsh Saxifrage) in Yorkshire Dales National Park - an unpublished report to the Yorkshire Dales National Park Authority O'Reilly J. 2018. *Saxifraga hirculus* (Marsh Saxifrage) Population Monitoring 2017 - an unpublished report to Natural England O'Reilly, J. 2018. *Saxifraga hirculus* (Marsh Saxifrage) Population Monitoring and Ecological Investigations at Moor House NNR - an unpublished report to Natural England O'Reilly, J., 2022 "The Status of Rare Plants in Upper Teesdale" Pytix Ecology, unpublished report, Natural England. Roberts, F.J. 2010. Marsh Saxifrage, *Saxifraga hirculus*: Status of English Sites in 2009 - an unpublished report for Natural England Stroh, P.A., Humphrey, T.A., Burkmar, R.J., Pescott, O.L., Roy, D.B., & Walker, K.J., 2023 *Saxifraga hirculus* L. in BSBI Online Plant Atlas 2020, <https://plantatlas2020.org/atlas/2cd4p9h.w14> (Accessed January 2025) Taylor, I., 2020 Definition of Favourable Conservation Status for Marsh Saxifrage *Saxifraga hirculus* Defining Favourable Conservation Status Project, Report number RP2930, ISBN 978-1-78354-629-9, Natural England.

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
2.1: Sensitive species	Despite its restricted distribution there is no evidence of collection or other targeted damaging activity with this species, therefore, not considered sensitive.
2.2: Year or Period	The time period 2010-2024 has been used to provide a more representative current distribution for all plant species in this reporting round. This is because the national dataset of botanical records (BSBI) could show a dip in records post-2020 for many species, which is an artefact of the relaxation in recording effort post production of the Plant Atlas 2020. All (but one) of the sites were visited and counted between 2015 and 2017. The remaining site (Little Fell), which is thought to account for only 0.6% of the English population, was last visited in 2009. These combined data have been used to generate the map.
5.7: Long-term trend; Direction	New populations have been discovered in northern England as a result of targeted survey in the past 20 years. These populations are thought to have been ones previously overlooked rather than an expansion (Taylor 2020). A direction of stable has been concluded.
6.2: Population size	The population unit has changed from individuals in the previous round of reporting to number of localities (taken as corresponding to the 'colonies' in Taylor 2020 mentioned above). This partly addresses the issues highlighted by O'Reilly 2018 and Taylor 2020 around the censuses of 'individuals' e.g. the discrepancy between counts of ramets (identifiable separate shoots) between surveys has previously been thought to be due to differences in technique between surveyors (O'Reilly 2016, 2018a, 2018b). Further, recent research on genetic diversity of Scottish populations found that population size counts via traditional means for <i>S. hirculus</i> (e.g. ramets) is not a good proxy for the number of genotypes in a population (genets) (Finger et al. 2024).

6.18: Age structure, mortality and reproduction

History of heavy sheep-grazing has greatly suppressed flowering, seed set, and recruitment for decades or even centuries. Whilst vegetative reproduction is increased by hard grazing, this is at the expense of flowering and limits genetic exchange and has likely led to reduced genetic diversity within and between sites. Livestock exclosures improve flowering but reduces the clonal maintenance of populations. To allow a full expression of age structure and reproduction it has been recommended that, in the current land use situation, management will be required to periodically allow flowering.

7.1: Sufficiency of area and quality of occupied habitat

There is a large and stable population which equates to or slightly exceeds the FRV and the occupied habitat appears to meet the needs of this population. However, the quality of the habitat could be questioned with regards to grazing levels which suppress flowering, genetic exchange, seed set and recruitment. Further, there is uncertainty around pollen and seed vector dynamics and the concomitant gene flows, especially in the context of climate change (evidence around this is at present lacking) (Taylor 2020).

9.2: Main purpose of the measures taken

Flowering is infrequent in England as a result of the palatability and early availability of the vegetation in the mineral-rich flushes and rills with which this species is associated leading to heavy grazing (by sheep) even when the grazing pressure on the land generally is moderate to low. Whilst *Saxifraga hirculus* appears capable of surviving vegetatively under this constant grazing pressure, it flowers infrequently (due to predation of flowering stems) and fruits rarely. To combat this temporarily exclosing populations from grazing has been achieved at most sites through the erection of exclosures which can be opened to allow grazing when the competing vegetation is judged to be too rank. Exclosures have been erected at many sites and flowering was improved although the competing vegetation became rank within 5 to 10 years and many of the sites have been opened up to sheep grazing again. The future prospects are good if the right balance can be achieved between overgrazing (with its suppression of flowering and

	<p>seed set) and undergrazing (and the rank vegetation which results causing excessive competition for the <i>S. hirculus</i>). Infrastructure is in place such that this balance is now achievable at many sites and indications are that populations are now stable (O'Reilly, 2018) and are likely to be so for the foreseeable future. There has been no attempt to extend the range as little evidence is available to suggest that populations have been lost in England in recent years. The measures are designed to improve genetic turn-over to give better resilience in the face of predicted climatic shifts. Whether further interventions to improve genetic diversity (e.g. translocations as advocated in Scotland by Finger et al. 2024) might be necessary is uncertain in England owing to lack of data, but may well be warranted and requires investigation.</p>
9.3: Location of the measures taken	<p>The most recent assessments (see Taylor 2020) suggest that 99.9% of the English population lies within Natura 2000. All grazing pressure manipulation work has taken place within these SACs.</p>
9.4: Response to the measures	<p>At present population levels appear approximately stable and the measures are primarily targeted at improving the genetic structure of the English population. There has to date been no attempt to assess the effectiveness of this approach but it is hoped that techniques will become available in the short-term which will enable an objective assessment of the value of the measures in the medium term.</p>
10.1: Future trends and prospects of parameters	<p>Range, population and habitat have all remained constant over a long period of focussed recording for this species (1987 to 2024), the vast majority of plants lie within Natura 2000 and there is no reason to predict significant changes - recovery work is aimed at maintenance rather than expansion. However, there is considerable uncertainty around the numbers of genetic individuals (genets) the populations hold and concerns around the problems this may cause (e.g. via inbreeding depression) in the future (Finger et al. 2024). This and the unknowns of climate change for this Circumpolar Boreo-arctic Montane species,</p>

and that non-vegetative propagation relies on the management regimes (outlined in Taylor 2020), should be taken into account when considering the conclusions drawn under the Regulation 9a reporting criteria.

11.2: Population

The change in Overall Conservation status is owing to the Population changing from Favourable (at the UK level) to Unfavourable-inadequate because, following the reporting guidelines, this is the conclusion to be reached as the reproduction, mortality and age structure of populations deviates from normal.