

**European Community Directive
on the Conservation of Natural Habitats
and of Wild Fauna and Flora
(92/43/EEC)**

**Fourth Report by the United Kingdom
under Article 17**

on the implementation of the Directive
from January 2013 to December 2018

Supporting documentation for the
conservation status assessment for the species:

S1528 - Marsh saxifrage (*Saxifraga hirculus*)

ENGLAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this species is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- 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; (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species) and/or (iv) the field was only relevant at UK-level (sections 9 Future prospects and 10 Conclusions).
- For technical reasons, the country-level future trends for Range, Population and Habitat for the species are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, <https://jncc.gov.uk/article17>, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	UK (England information only)
1.2 Species code	1528
1.3 Species scientific name	<i>Saxifraga hirculus</i>
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Marsh saxifrage

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2015-2017
2.3 Distribution map	Yes
2.4 Distribution map Method used	Complete survey or a statistically robust estimate
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No
	c) regulation of the periods and/or methods of taking specimens	No
	d) application of hunting and fishing rules which take account of the conservation of such populations	No
	e) establishment of a system of licences for taking specimens or of quotas	No
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No
	g) breeding in captivity of animal species as well as artificial propagation of plant species	No
	h) other measures	No

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

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

TAYLOR, I 1987 A Survey of Nationally Rare Plant Species in North-West England. An unpublished report to the Nature Conservancy Council
HALLAM, C.J., KELLY, P., SYDES, C. and TAYLOR, I 2005 Effects of Grazing on Flower Production and Fruit Survival in a Rare Plant Species, Marsh Saxifrage, Saxifraga hirculus, in Upland Britain. An unpublished typescript.
VITTOZA, P., WYSSA, T. & GOBATB, J-M., 2006 Ecological conditions for Saxifraga hirculus in Central Europe: A better understanding for a good protection
Biological Conservation 131: 594-608
ROBERTS, F.J. 2010 Marsh Saxifrage, Saxifraga hirculus: Status of English Sites in 2009 - an unpublished report for Natural England
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

5. Range

5.1 Surface area (km²)

5.2 Short-term trend Period

5.3 Short-term trend Direction

Stable (0)

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5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used		
5.6 Long-term trend Period		
5.7 Long-term trend Direction		
5.8 Long-term trend Magnitude	a) Minimum	b) Maximum
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km ²)	1300
	b) Operator	
	c) Unknown	
	d) Method	2007 value
5.11 Change and reason for change in surface area of range	Improved knowledge/more accurate data	
	The change is mainly due to:	Improved knowledge/more accurate data
5.12 Additional information		

6. Population

6.1 Year or period	2015-2017	
6.2 Population size (in reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	
	c) Maximum	
	d) Best single value	772235
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 Type of estimate		
6.6 Population size Method used	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2007-2018	
6.8 Short-term trend Direction	Stable (0)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Complete survey or a statistically robust estimate	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	

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6.14 Long-term trend Method used

6.15 Favourable reference population (using the unit in 6.2 or 6.4)

- a) Population size
- b) Operator
- c) Unknown
- d) Method

6.16 Change and reason for change in population size

Improved knowledge/more accurate data
Use of different method

The change is mainly due to: Improved knowledge/more accurate data

6.17 Additional information

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat

a) Are area and quality of occupied habitat sufficient (to maintain the species at FCS)?

Yes

b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?

7.2 Sufficiency of area and quality of occupied habitat Method used

Complete survey or a statistically robust estimate

7.3 Short-term trend Period

2007-2018

7.4 Short-term trend Direction

Stable (0)

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

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	H
Intensive grazing or overgrazing by livestock (A09)	H
Drainage (K02)	M
Threat	Ranking
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	H
Intensive grazing or overgrazing by livestock (A09)	M

8.2 Sources of information

8.3 Additional information

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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 Natura 2000

9.4 Response to the measures

Medium-term results (within the next two reporting periods, 2019-2030)

9.5 List of main conservation measures

Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures (CA04)

Adapt mowing, grazing and other equivalent agricultural activities (CA05)

Manage drainage and irrigation operations and infrastructures in agriculture (CA15)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters

- a) Range
- b) Population
- c) Habitat of the species

10.2 Additional information

11. Conclusions

11.1. Range

11.2. Population

11.3. Habitat for the species

11.4. Future prospects

11.5 Overall assessment of Conservation Status

11.6 Overall trend in Conservation Status

11.7 Change and reasons for change in conservation status and conservation status trend

a) Overall assessment of conservation status

No change

The change is mainly due to:

b) Overall trend in conservation status

No change

The change is mainly due to:

11.8 Additional information

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12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)

a) Unit number of individuals (i)
b) Minimum
c) Maximum
d) Best single value 771519

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 (0)

12.5 Short-term trend of population size within the network Method used

Complete survey or a statistically robust estimate

12.6 Additional information

13. Complementary information

13.1 Justification of % thresholds for trends

13.2 Trans-boundary assessment

13.3 Other relevant Information

Distribution Map

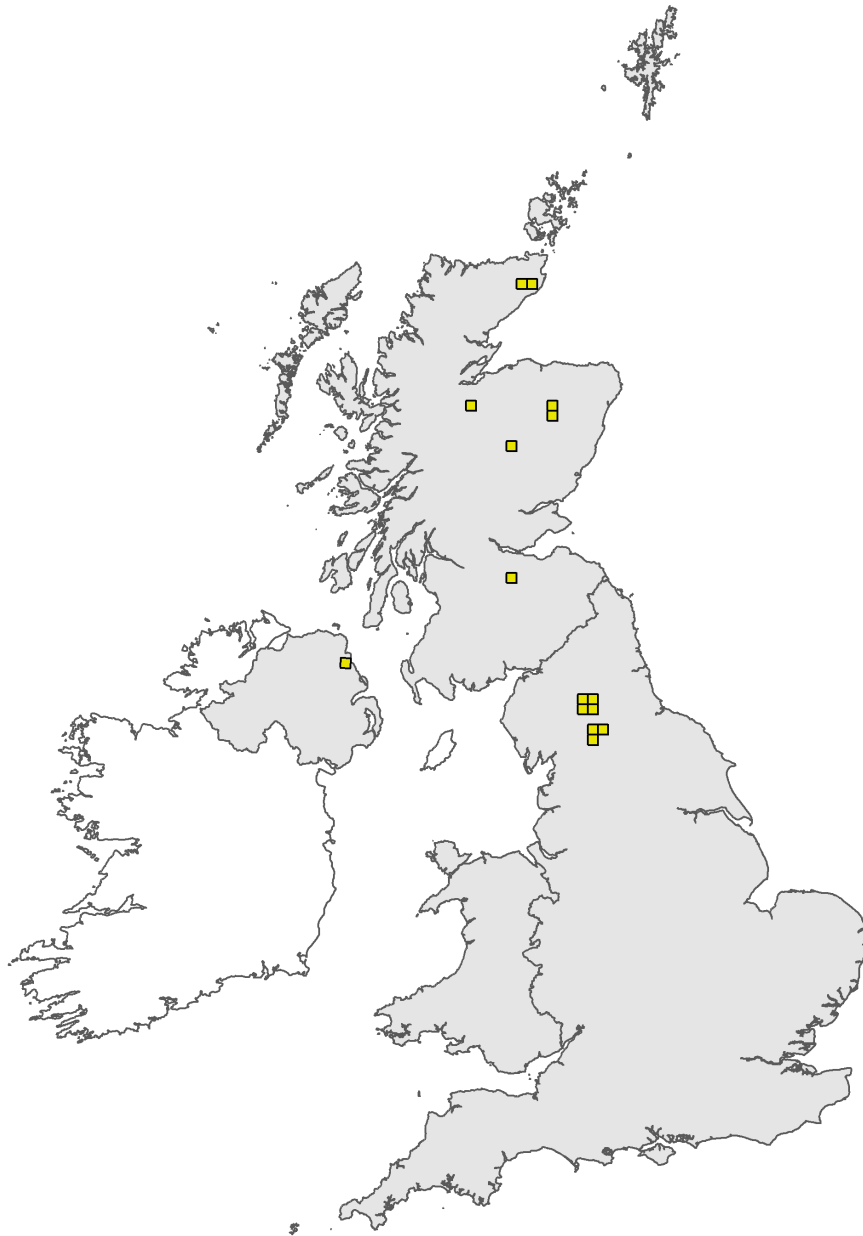


Figure 1: UK distribution map for S1528 - Marsh saxifrage (*Saxifraga hirculus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

Range Map

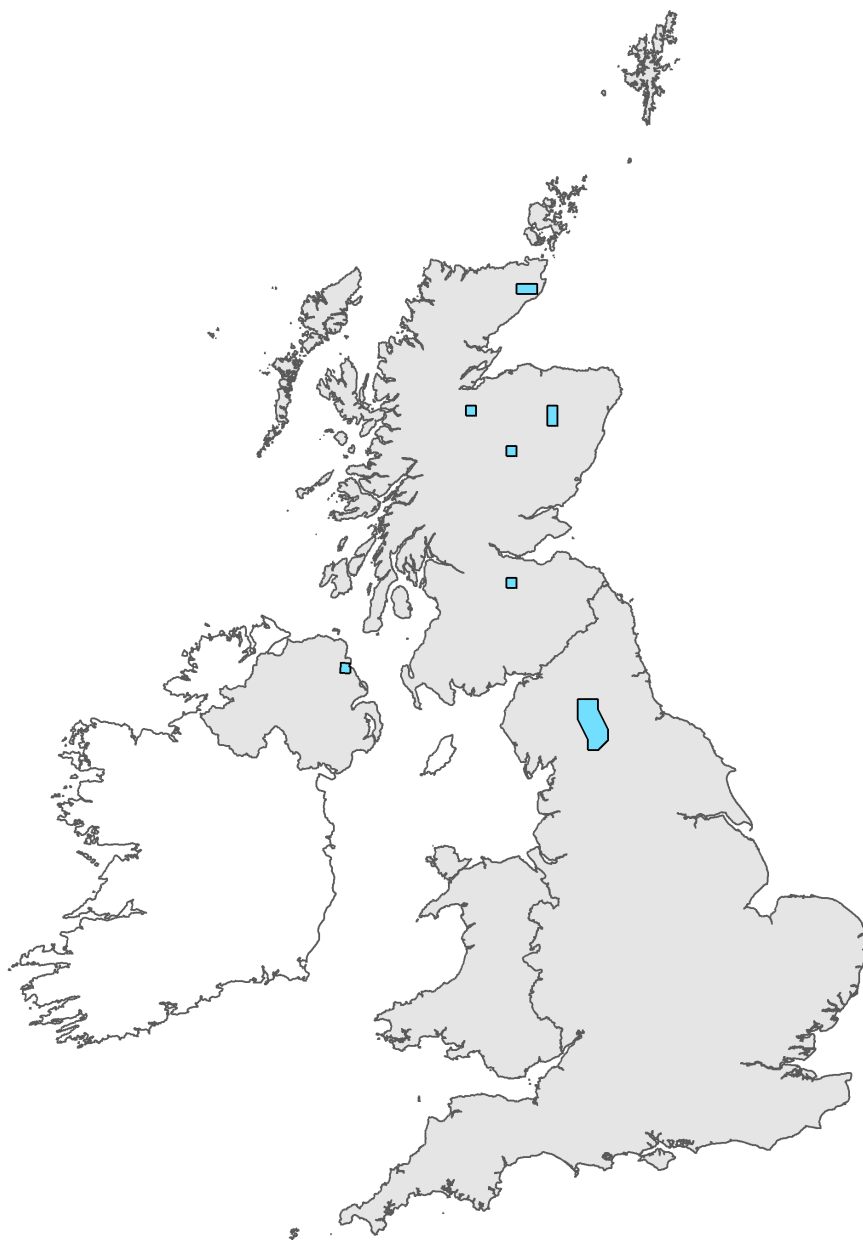


Figure 2: UK range map for S1528 - Marsh saxifrage (*Saxifraga hirculus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 20km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Species name: *Saxifraga hirculus* (1528)

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. It is, therefore, not considered sensitive.
2.2 Year or Period	All (but one) sites were visited and counted between 2015 and 2017. The remaining site (Little Fell), which accounts for only 0.6% of the English population was last visited in 2009. These combined data have been used to generate the map.
2.3 Distribution map	Full resolution data sent to George Hinton 23/08/18
2.4 Distribution map; Method used	99.4% of the population was surveyed across the Pennine sites between 2015 and 2017: O'REILLY 2016, O'REILLY 2018 (a&b). The remaining data come from 2009: ROBERTS, F.J. 2010

Species name: *Saxifraga hirculus* (1528) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	Two sites were discovered in 2012 but these appear to be previously overlooked sites rather than genuinely new populations. O'REILLY 2016
5.10 Favourable reference range	This is the FRV set in the 2007 report.
5.11 Change and reason for change in surface area of range	Two sites were discovered in 2012 but these appear to be previously overlooked sites rather than genuinely new populations. O'REILLY 2016
6.1 Year or Period	99.4% of the population was surveyed undertaken across the Pennine sites between 2015 and 2017: O'REILLY 2016, O'REILLY 2018 (a&b). The remaining count comes from 2009: ROBERTS, F.J. 2010
6.2 Population size	The unit counted is ramets - identifiable separate shoots - it should be noted that this is not necessarily the same as genetic individuals - in fact it is likely that the number of genetically distinct individuals is much smaller.
6.8 Short term trend; Direction	A small increase in number of ramets found on previously known sites in the most recent surveys is thought (by the report author) to be due to small differences in technique when compared to the results of survey work in 2009 (O'REILLY 2016, 2018a, 2018b). In addition two sites were discovered in Yorkshire in 2012 but combined these account for less than 0.1% of the total English population.
6.16 Change and reason for change in population size	A small increase in number of ramets found on previously known sites in the most recent surveys is thought (by the report author) to be due to small differences in technique when compared to the results of survey work in 2009 (O'REILLY 2016, 2018a, 2018b). In addition two sites were discovered in Yorkshire in 2012 but combined these account for less than 0.1% of the total English population.
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.

8.1 Characterisation of pressures/ threats

Levels of grazing pressure are critical if the population is to flower and set seed. Under most levels of grazing at the landscape scale sheep will focuss their attention on the flushes in which *Saxifraga hirculus* grows and few if any seed will survive their depredations (KELLY et al 2005). To address this problem exclosures have been erected at many of the larger sites but it has been found that rank competing vegetation can begin to have a negative impact on populations in only a few years (ROBERTS 2010). To counter this, gates have been included in or retro-fitted to the exclosures and at present many exclosures are open to 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. Drainage has been a concern in the recent past and it is known that the last site to be destroyed (1975) was a result of drainage. The risk of drainage in the future is much reduced as almost all plants now lie within Natura 2000. This moderate pressure is, therefore, not considered a significant future threat.

9.1 Status of measures

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 (TAYLOR 1987). To combat this KELLY et al 2005 suggested temporarily exclosing populations from grazing and this 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.

9.2 Main purpose of the measures taken

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.

9.3 Location of the measures taken

The most recent assessments suggest that 99.9% of the English population lies within Natura 2000. All grazing pressure manipulation work has taken place within these SACs.

9.4 Response to the measures

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.

9.5 List of main conservation measures	<p>The conservation measures taken are essentially the corollary of the threats and pressures: Levels of grazing pressure are critical if the population is to flower and set seed. Under most levels of grazing at the landscape scale sheep will focuss their attention on the flushes in which <i>Saxifraga hirculus</i> grows and few if any seed will survive their depredations (KELLY et al 2005). To address this problem exclosures have been erected at many of the larger sites but it has been found that rank competing vegetation can begin to have a negative impact on populations in only a few years (ROBERTS 2010). To counter this, gates have been included in or retro-fitted to the exclosures and at present many exclosures are open to 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 <i>Saxifraga 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. Drainage has been a concern in the recent past and it is known that the last site to be destroyed (1975) was a result of drainage. The risk of drainage in the future is much reduced as almost all plants now lie within Natura 2000. This moderate pressure is, therefore, not considered a significant future threat.</p>
10.1 Future prospects of parameters	<p>Range, population and habitat have all remained very constant over a long period of focussed recording for this species (1987 to 2017), most plants lie within Natura 2000 and there is no reason to predict significant changes - recovery work is aimed at maintenance rather than expansion.</p>
12.1 Population size inside the pSCIs, SCIs and SACs network	<p>Surveys undertaken across all English sites between 2009 and 2017 indicate that 99.9% of the population (771,519 out of a total of 772,235 plants) lies within Natura 2000.</p>
12.2 Type of estimate	<p>Individually recognisable shoots (termed ramets as most are believed to be independent with their own roots but many are thought to have been derived clonally from vegetative ramification) are counted at all sites (all except Little Fell which is a military firing range have been counted between 2015 and 2017. Little Fell was last counted in 2009).</p>
12.3 Population size inside the network; Method used	<p>Surveys undertaken across all English sites between 2009 and 2017 indicate that 99.9% of the population (771,519 out of a total of 772,235 plants) lies within Natura 2000.</p>
12.4 Short term trend of the population size within the network; Direction	<p>O'REILLY 2018 found a significant increase in ramet number over the figure given in ROBERTS 2010 (up from c.450,000 to 771,519). However, this is generally believed to be the result of relatively small changes in the way in which ramets are found and counted and it is not believed to represent much, if any, genuine increase.</p>