

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

**Second Report by the United Kingdom under
Article 17
on the implementation of the Directive
from January 2001 to December 2006**

Conservation status assessment for :
S1528: *Saxifraga hirculus* - Marsh saxifrage

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

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S1528 *Saxifraga hirculus* Marsh saxifrage

Audit trail compiled and edited by JNCC and the Plant Conservation Working Group

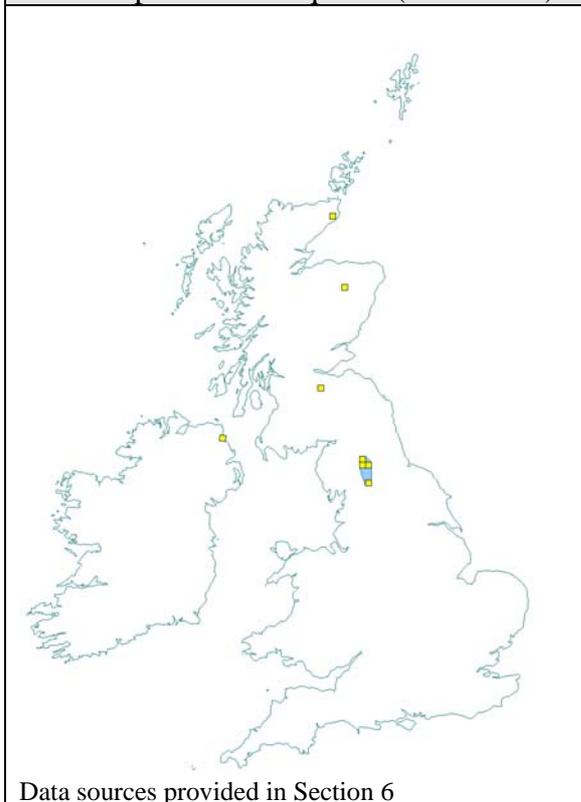
This document is an audit of the data and judgements on conservation status in the UK's report on the implementation of the Habitats Directive (January 2001 to December 2006) for this species. Superscript numbers accompanying the headings below, cross-reference to headings in the corresponding Annex B reporting form. This supporting information should be read in conjunction with the UK approach for species (see 'Assessing Conservation Status: UK Approach').

1. Range Information^{2,3}

1.1 Surface area of range^{2,3,1} 1,189km²

The above estimate was calculated within Alpha Hull software, using extent of occurrence as a proxy measure for range (see Map 1.1). The value of alpha was set at 20 km to reflect the dispersal capacity of this species. The alpha hull (range area) was clipped to include terrestrial habitat only. An introduced site has not been included.

Map 1.1. Current extent of occurrence and occupied 10-km squares (1987-2006)



1.2 Date of range determination^{2,3,2} 1987 – 2006

The range estimate was calculated using records from Preston *et al.* (2002), in which the most recent date class is 1987-1999; an additional more recent record was provided by Plantlife for

the Munsary Reserve in Caithness. These records provide the best representation of current range, as it is understood by experts.

1.3 Quality of range data^{2.3.3}

Good

Preston *et al.* (2002) provides a complete inventory for the whole of the UK, and because this species is localised, it has been well-surveyed.

1.4 Range trend^{2.3.4} & Range trend magnitude^{2.3.5}

Stable

Since the Habitats Directive came into force in 1994, expert opinion is that the range has remained relatively stable. The largest declines occurred in northern England during the 1950s and 1960s, due to heavy over-grazing.

1.5 Range trend period^{2.3.6}

1994 – 2006

1.6 Reasons for reported trend in range^{2.3.7}

3. Direct human influence (restoration, deterioration, destruction)

4. Indirect anthropo(zoo)genic influence

1.7 Favourable reference range^{2.7.1}

1,300km²

The decision tree in Note 1 has been used as a guide in determining the favourable reference range estimate (see 'Assessing Conservation Status: UK Approach').

The current range is stable, although this is in large part due to site management being used to maintain the species. In the absence of favourable site management, it is more likely that the species would have declined since the Habitats Directive came into force; the magnitude of this potential decline is difficult to quantify, but can be informed by the historic decline. The second map shows the historic extent of occurrence (calculated using records dated from 1930 to 1969). Using Alpha Hull software and with an alpha value of 20 km, this was calculated at 1,797 km². A comparison of the historic and current extent of occurrence (1,189 km²), suggests a decline of 34% since the 1930s. Therefore, this suggests that without favourable site management, there might have been a decline of less than 1% per annum. This implies that the 1994 range might not have been viable, and the favourable reference range should be set as higher than this, although within 10% of this.

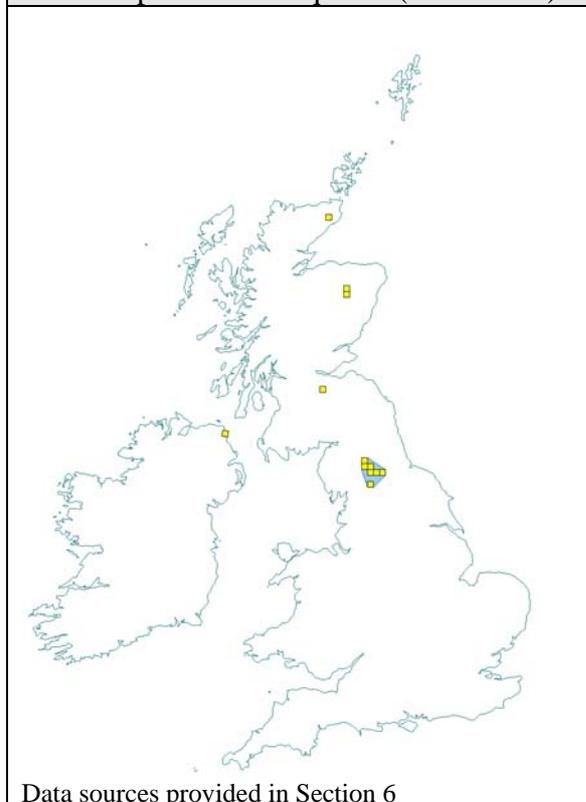
The current range is also fairly restricted, and can be considered to be at low risk from stochastic events. This might also suggest that the 1994 range was not viable. The favourable reference range should be at least as large as when the Habitats Directive came into force in 1994, this is equal to the current range. However, since the historic decline, the current management for the species, and the restricted range suggest that the 1994 value might not have been viable, the favourable reference range has been set at slightly greater than the current range.

1.8 Range conclusion^{2.8}

Unfavourable – Inadequate

At present, the range is fairly stable, but the current range is not equal to the favourable reference range, and hence the conclusion is that it is Unfavourable – Inadequate.

Map 1.2. Historic extent of occurrence and occupied 10-km squares (1930-1969)



2. Population of the species^{2.4}

2.1 Population estimate^{2.4.1}

16 localities

The current estimate stands at 614,343 plants (Kelly 1999) at 16 localities (2005 UK Biodiversity Action Plan reporting round).

Table 2.1. 2005 National Status

| | Year Assessed | Value | Units |
|-------------------------|-------------------------------|-------|-------------------------|
| UK | 2003 | 16 | Site(s) / population(s) |
| England | 2005 | 11 | Site(s) / population(s) |
| Northern Ireland | 2005 | 1 | Site(s) / population(s) |
| Scotland | 2003 | 4 | Site(s) / population(s) |
| Wales | Not relevant for this country | | |

From: www.ukbap-reporting.org.uk

2.2 Date of population estimate^{2.4.2}

2003 – 2005

2.3 Method of population estimate^{2.4.3}

3 = from comprehensive inventory

All known sites have been well-surveyed.

2.4 Quality of population data^{2.4.4}

Good

Because this species is localised, it has been well-surveyed, and thus quality of data is good.

2.5 Population trend^{2.4.5} & Population trend magnitude^{2.4.6}

Stable

Historically, this species was known at 22 sites (Kelly 1999; Scottish Natural Heritage (SNH), unpublished data), suggesting a decrease of 27%. However, it appears to have remained stable since the late 1990s; although the number of known occupied sites has increased by one in recent years, this is attributed to increased survey effort.

2.6 Population trend period^{2.4.7}

1999 – 2005

2.7 Reasons for reported trend in population^{2.4.8}

Not applicable

2.8 Justification of % thresholds for trends^{2.4.9}

Not applicable

2.9 Main pressures^{2.4.10}

810 Drainage

161 Planting

140 Grazing

2.10 Threats^{2.4.11}

140 Grazing

2.11 Favourable reference population^{2.7.2}

18 localities with viable populations

The decision tree in Note 1 has been used as a guide in determining the favourable reference population estimate (see 'Assessing Conservation Status: UK Approach').

The current trend is stable. However, this is in large part due to site management for the species. Without this management work it is likely that the species would have continued its historic decline. This suggests that the current value may not be viable, although it may be within 25% of the favourable reference population. Also, the current population structure strongly deviates from normal; this aspect of the plant biology cannot be captured within the favourable reference population value. The favourable reference population should really be understood as being 18 localities with normal population structures, and this is not the current situation.

2.12 Population conclusion^{2.8}

Unfavourable – Bad but improving

The current population is not more than 25% below the favourable reference value in terms of size. However, the current estimate is reflective of a high ramet population only. Low

flowering success in England and south Scotland, resulting from heavy grazing pressure, has resulted in low genet populations.

In accordance with Annex C, the assessment is therefore Unfavourable – Bad, on the basis that ‘reproduction, mortality and age structure strongly deviating from normal’ but improving, because active management has slowed (and in some cases reversed) this negative aspect of population structure.

3. Habitat for the species in the Biogeographic region or sea^{2.5}

This species is found in base-rich flushes. It is now considered an upland species because its favoured habitats in the lowlands have been destroyed.

3.1 Surface area of habitat^{2.5.2}

Unknown

3.2 Date of estimation^{2.5.3}

Not applicable

3.3 Quality of data on habitat area^{2.5.4}

Poor

Although the habitat requirements of *Saxifraga hirculus* are now understood, this knowledge is not extensive, and variations between localities are not known.

3.4 Habitat trend^{2.5.5}

Stable

Historically, habitat has declined in both quality and area as a result of overgrazing and agricultural drainage. More recently, grazing has reduced at the four English sites, and habitat seems to be relatively stable, if not slightly increasing.

3.5 Habitat trend period^{2.5.6}

1990 – 2006

3.6 Reasons for reported trend in habitat^{2.5.7}

Not applicable

Historic declines have been attributed to overgrazing and agricultural drainage, and in some areas, afforestation has also been a problem. Improved management in more recent years is thought to have curbed this decline.

3.7 Suitable habitat for the species (in km²)^{2.7.3}

Unknown

3.8 Habitat conclusion^{2.8}

Unfavourable – Inadequate but improving

Habitat quality remains a problem for this species, particularly the impact on the population structure. Management measures mean that this quality is now improving, although it is still considered to be Unfavourable – Inadequate.

4. Future Prospects^{2.6}

Good prospects

“Species expected to survive and prosper”.

S. hirculus is the subject of a Species Action Plan under the UK Biodiversity Action Plan. (It is also included on the revised UKBAP list.)

Prospects for improving the genet/ramet ratio are relatively good. In England (the focus of most UK populations), grazing pressures are being reduced at both local and landscape scales; populations in Grampian are not overgrazed; the Munsary population is managed within a Plantlife reserve; and the Antrim Mountains site is being actively managed. Only the population in the Scottish southern uplands remains under pressure. Therefore, although prospects for range restoration are fairly limited, overall, the outlook for this species is good. Climate change impacts are uncertain, although the predictions made by the Biodiversity Requires Adaption in Northwest Europe under a Changing climate (BRANCH) project suggest that in the long-term the range might decrease in the UK.

4.1 Future prospects conclusion^{2.8}

Favourable

Apart from the uncertainty over the impacts of climate change, the pressures and threats to this species are not significant.

5. Overall Conclusion^{2.8}

Unfavourable – Bad but improving

Overall the conclusion is Unfavourable – Bad, principally due to the population structure strongly deviating from normal due to the impact of poor habitat quality. Management measures have been put in place to rectify this problem, and hence it has been classified as improving.

Table 5.1. Summary of conclusions

| Parameter | Judgement | Grounds for Judgement (in accordance with Annex C) | Reliability* |
|--------------------|---|--|--------------|
| Range | Unfavourable – Inadequate | Current range is less than 10% below the favourable reference range | 1 |
| Population | Unfavourable – Bad but improving | Reproduction, mortality and age structure strongly deviating from normal (if data available) | 1 |
| Habitat | Unfavourable – Inadequate but improving | Any other combination Habitat quality is poor, not allowing long term survival of the species | 2 |
| Future Prospects | Favourable | Main pressures and threats to the species not significant; species will remain viable in the long-term | 2 |
| Overall Assessment | Unfavourable – Bad but improving | One or more Unfavourable – Bad | 1 |

*1=High, 2=Moderate, 3=Low

High – Expert opinion is that the concluding judgement accurately reflects the current situation based on a professional understanding of the species. For range, population, and habitat, quality of data used to establish the current estimate has been identified as “good”; data used to inform trends is comprehensive and up to date.

Moderate – A greater understanding of the feature, or the factors affecting it, is required before a confident concluding judgement can be made by experts. For range, population, and habitat, the current estimate and/or trend are based on recent, but incomplete or limited survey data; or alternately, a comprehensive, but outdated (pre-1994) review.

Low – Judgements, and comprising estimates, are based predominately on expert opinion.

N/A – Assessment conclusion is “unknown”, on the basis of insufficient reliable information.

6. References

KELLY, P. 1999. *Survey of the historic localities of Saxifraga hirculus*. Report to English Nature.

PRESTON, C. D., PEARMAN, D.A. & DINES, T.D. 2002. *New Atlas of the British and Irish Flora*. Oxford University Press

Map Data Sources.

Vascular Plant Database maintained at the Biological Records Centre and an additional record from Plantlife (D. Price, *pers. comm.*)