

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 :
S1833: *Najas flexilis* - Slender naiad

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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S1833 *Najas flexilis* Slender naiad

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}

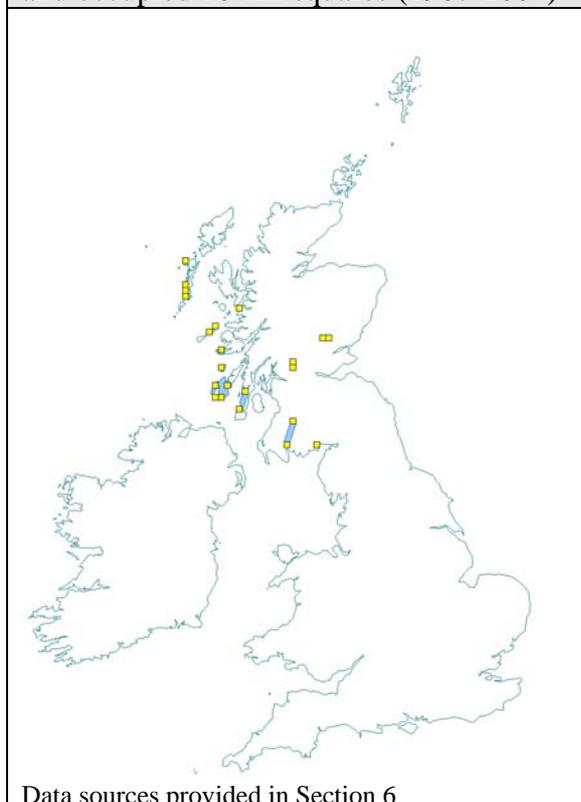
All remaining UK sites are in Scotland. Its main sites are the machair lochs in the Western Isles, with other mainland lochs in Argyll, Dumfries, Perthshire, Stirlingshire and Westerness (Preston *et al.* 2002).

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

2,468km²

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 and freshwater habitats only.

Map 1.1. Current extent of occurrence and occupied 10-km squares (1987-2004)



1.2 Date of range determination^{2.3.2}

1987 – 2004

Current range was calculated using records from the most recent recording date class (1987-1999) in Preston *et al.* (2002), and data from Wingfield (2004). 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

This species has been subject to extensive survey (Wingfield 2004).

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

Stable

As far as it is understood, the range has remained stable since the Directive came into force in 1994.

1.5 Range trend period^{2.3.6}

1994 – 2004

1.6 Reasons for reported trend in range^{2.3.7}

Not applicable

1.7 Favourable reference range^{2.7.1}

2,468km² (Equal to 1994 range)

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 believed to be stable, and is not so restricted as to be at risk from stochastic events. It is therefore appropriate to set the range in 1994 as the favourable reference range.

1.8 Range conclusion^{2.8}

Favourable

Current range is equal to the favourable reference range and there is no evidence of a decline. Hence, in accordance with Annex C, range is assessed as favourable.

2. Population of the species^{2.4}

2.1 Population estimate^{2.4.1}

39 localities

Most of the 40 recent Scottish sites have been surveyed for the first Site Condition Monitoring (Common Standards Monitoring) cycle between 1999 and 2006. With the exception of Tangy Loch in Kintyre, *Najas flexilis* was found at all sites. Therefore, the current population is 39 localities.

2.2 Date of population estimate^{2.4.2}

1999 – 2006

2.3 Method of population estimate^{2.4.3}

2 = extrapolation from surveys of part of the population, sampling

Most of the sites have been recently surveyed, many of them by snorkelling.

2.4 Quality of population data^{2.4.4}

Moderate

As mentioned above, most of the sites were surveyed between 1999 and 2006. However, since this cannot be considered a full inventory, data quality is moderate.

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

Stable

The Biodiversity Action Plan (BAP) lead partner holds a "master list" of all UK *Najas* sites derived from various sources, and there are 41 sites with post-1980 records for this species (105% of the current population). Esthwaite Water in England has since become extinct. The remaining 40 sites (all in Scotland) have all been surveyed at least once since 1982 (39 since 1994, 38 since 1998). A 2002 survey of Tangy was negative.

The 2002 Biodiversity Action Reporting System reports just 35 sites in the UK. This represents a decline since the 1980s. However, with the 2005 estimate standing at 39 sites, populations appear to have re-covered in more recent years.

Therefore, overall the population is probably stable at the 'site' scale since 1982.

2.6 Population trend period^{2.4.7}

1982 – 2006

2.7 Reasons for reported trend in population^{2.4.8}

Not applicable

Historically, localised losses have been attributed to restrictions on light penetration, that have resulted from heavy weed growth and nutrient enrichment (sources include sewage effluent and fertiliser run-off from surrounding agricultural land and from nutrient enrichment from fish farms).

The increases noted in more recent years are thought to be a direct result of increased survey effort.

2.8 Justification of % thresholds for trends^{2.4.9}

Not applicable

2.9 Main pressures^{2.4.10}

701 water pollution

952 eutrophication

Restrictions on light penetration due to heavy weed growth and nutrient enrichment from sources such as sewage effluent and fertiliser run-off from surrounding agricultural land and from nutrient enrichment from fish farms ((Wingfield, 2004) and personal observations, Lynne Farrell).

2.10 Threats^{2.4.11}

701 water pollution

952 eutrophication

953 acidification

954 invasion by a species – *Elodea* is in some of the lochs in southern Scotland and it blankets out the light, so potentially can be very damaging to *N. flexilis*.

2.11 Favourable reference population^{2.7.2}

39 localities

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’). Based on this and professional opinion, the current population is sufficiently large to be considered viable for the foreseeable future. The favourable reference population has therefore been set at 39 extant sites in Scotland.

2.12 Population conclusion^{2.8}

Favourable

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

This aquatic plant is an annual found in deep, clear mesotrophic lochs, and where the water receives some base-enrichment from nearby basalt, limestone or calcareous dune-sand (other associated rocks are Old Red Sandstone and Lewisian Gneiss). The majority of its sites are in the machair lochs of the Western Isles, where there are strong populations, and there is little change in the traditional land management practices.

3.1 Surface area of habitat^{2.5.2}

Unknown

The area of lochs supporting *Najas* is unknown.

3.2 Date of estimation^{2.5.3}

Not applicable

3.3 Quality of data on habitat area^{2.5.4}

Poor

Although *N. flexilis* habitat is relatively well understood, there is currently insufficient information on sandy bottomed lochs to estimate habitat area.

3.4 Habitat trend^{2.5.5}

Decreasing

The lochs are located in basins with gentle rolling hills. Surrounding land is used predominantly agriculturally and therefore run-off has (and in some areas this continues) reduced habitat quality. In recent years, management of Lunuan Lochs has started to address this decline in habitat quality. However, the land-use pressures continue to be a problem.

3.5 Habitat trend period^{2.5.6}

1994 – 2006

3.6 Reasons for reported trend in habitat^{2.5.7}

4 = Indirect anthropo(zoo)genic influence

Eutrophication

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

Unknown

3.8 Habitat conclusion^{2.8}

Unfavourable – Inadequate but improving

The habitat is assessed as Unfavourable – Inadequate since the habitat continues to decline and the habitat quality is poor in some areas. It is improving since management measures are slowing the decline and improving habitat quality, particularly in the Lunan Lochs area.

Although most of the sites in the islands are in good condition, there is concern over the inland lochs, which are suffering from eutrophication, largely due to agricultural run-off from the surrounding land.

4. Future Prospects^{2.6}

Good prospects

“Species is expected to survive and prosper.”

N. flexilis is the subject of a Species Action Plan under the UK Biodiversity Action Plan, and is included on the revised UKBAP list.

Following recent research, there is now more ecological information about the species, and the particular conditions it requires. Adverse effects from the invasive *Elodea* species have been identified as a possible future problem as these non-native species are beginning to spread throughout many water bodies in Scotland. However, most of the sites in Scotland are secure in that they are in Sites of Special Scientific Interest (SSSIs) and in areas where there are non-intensive agricultural practices *e.g.* machair areas in the Western Isles. These areas all have management plans, and schemes are in progress to address the problems in most areas where the species is known to be suffering from run-off.

An exception is Tanga Loch, Kintyre, where no action has been taken. However, *N. flexilis* has not been seen here for over ten years, and it is thought unlikely that the condition of water quality can be reversed in the immediate future.

Reintroduction to some of its former sites has been proposed, but before this can be undertaken successfully, the loch environment must be in a suitable condition.

4.1 Future prospects conclusion^{2.8}

Favourable

5. Overall Conclusion^{2.8}

Unfavourable – Inadequate but improving

Range, population and prospects have all been assessed as Favourable. However, with habitat having been assessed as Unfavourable – Inadequate, in line with Annex C, the overall conclusion is Unfavourable – Inadequate but improving.

Table 5.1. Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Favourable	No evidence of a decline, and current range is not smaller than the favourable reference range	2
Population	Favourable	Current population is not lower than favourable reference population	2
Habitat	Unfavourable – Inadequate but improving	Any other combination Habitat continues to decline and habitat quality is poor in some areas	2
Future Prospects	Favourable	Main pressures and threats to the species not significant; species will remain viable on the long-term	2
Overall Assessment	Unfavourable – Inadequate but improving	One or more Unfavourable – Inadequate, no Unfavourable – Bad	2

*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

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

WINGFIELD, R. 2004. The Ecology of *Najas flexilis*. *Scottish Natural Heritage Commissioned Report No. 017*.

Map Data Sources

Vascular Plants Database, Botanical Society of the British Isles, via the National Biodiversity Network (NBN) Gateway.

Wingfield (2004) survey data.