

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 :  
**S1903: *Liparis loeselii* - Fen orchid**

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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## S1903 *Liparis loeselii* Fen orchid

*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<sup>2.3</sup>

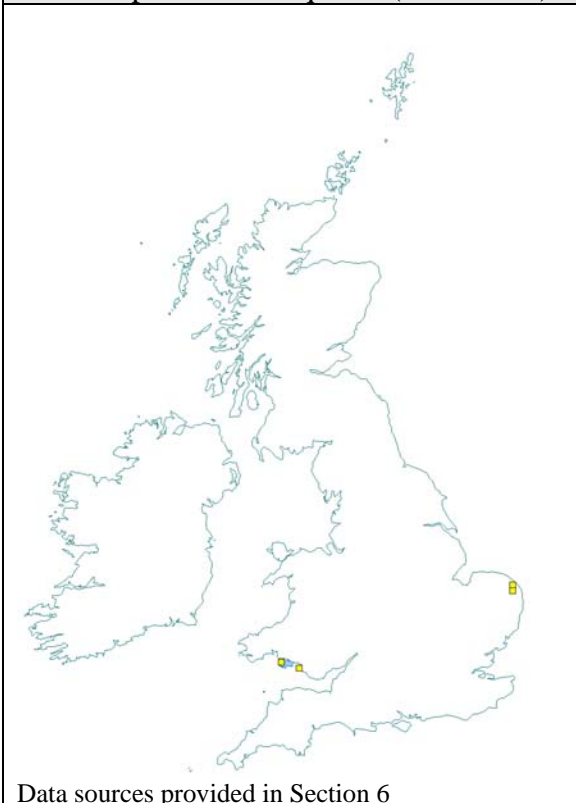
This species is now found only in the Norfolk Broads and in the dune systems of south Wales.

#### 1.1 Surface area of range<sup>2.3.1</sup>

**409km<sup>2</sup>**

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.

**Map 1.1** Current extent of occurrence and occupied 10-km squares (2005-2006)



## **1.2 Date of range determination<sup>2.3.2</sup>**

**2005 – 2006**

The current range estimate includes data from both 2005 and 2006. Most sites are monitored annually, and it is therefore possible to provide a very recent estimate of range. One of the two remaining Welsh sites had no plants in 2006. Whilst this may reflect the loss of the species, it was decided to include the 2005 data in the range estimate, since it is not yet certain that the site has been lost.

## **1.3 Quality of range data<sup>2.3.3</sup>**

**Good**

There is annual monitoring for this species. The range estimate derives from a complete inventory.

## **1.4 Range trend<sup>2.3.4</sup> & Range trend magnitude<sup>2.3.5</sup>**

**-41%**

The current trend is one of large decline. Indeed, it is possible that there is only one site left in Wales, and hence that this trend has been even greater over the period. The calculated range area for 1994 was 690 km<sup>2</sup>, and hence there has been a decrease of at least 41% over the period.

Within Wales there have been losses throughout the twentieth century, however the decline in range has become more marked in recent years.

## **1.5 Range trend period<sup>2.3.6</sup>**

**1994 – 2006**

Good data exist for *Liparis loeselii*. The range trend has been calculated for the period since the Directive came into force.

## **1.6 Reasons for reported trend in range<sup>2.3.7</sup>**

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

**4. Indirect anthropo(zoo)genic influence**

Reported trends have been largely attributed to the loss of habitat in wetlands and dune slacks due to continued lowering of water tables; inappropriate grazing; forestry; foreshore stabilisation; and decline of traditional management (reedcutting and winter grazing). This decline has continued into the last ten years in the case of the Bristol Channel range.

## **1.7 Favourable reference range<sup>2.7.1</sup>**

**790km<sup>2</sup>**

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 favourable reference range must be at least the level that it was at in 1994, this value was calculated as 690 km<sup>2</sup>. Additionally, the current range is insufficiently large for long-term species survival, as it is at high risk from stochastic events and other direct threats. An extra 100 km<sup>2</sup> has been added to the 1994 value to take account of this need: this would represent the addition of a single disjunct site somewhere within the historic eastern England range.

Historically there were large declines in eastern England, with many losses from the eighteenth century onwards as the fens were drained. The eastern range is now fairly stable,

although there have been losses within the last 30 years, and very large declines in the last 70 years. The site in Devon (which is of the same variety as in Wales) was last seen in 1988. Since 1930 there has been a decline of 76% (calculated range for 1930-69 is 1715 km<sup>2</sup>), indicating that the rate of range loss is currently higher than earlier.

## **1.8 Range conclusion<sup>2.8</sup>**

### **Unfavourable – Bad and deteriorating**

The current range is more than 10% below the favourable reference range, and there has been a large decline in the range since the Habitats Directive came into force (more than 1% per year). The current range is also more than 10% below the range present in 1994. Therefore, in accordance with Annex C, the range is reported as Unfavourable-Bad and deteriorating.

## **2. Population of the species<sup>2.4</sup>**

### **2.1 Population estimate<sup>2.4.1</sup>**

#### **5 localities**

A proxy of a number of localities has been used instead of absolute numbers because of fluctuations in the number of plants at some sites. In 2006 the absolute count of plants was 261 (151 plants in one locality in Wales (Countryside Council for Wales (CCW) monitoring), and 110 plants in three localities in England (R. Land, *pers. comm.*)).

### **2.2 Date of population estimate<sup>2.4.2</sup>**

#### **2005 – 2006**

The current population estimate includes data from both 2005 and 2006. Most sites are monitored annually, and it is therefore possible to provide a very recent estimate of population. One of the two remaining Welsh sites had no plants in 2006. Whilst this may reflect the loss of the species, it was decided to include the 2005 data in the population estimate, since it is not yet certain that the site has been lost.

### **2.3 Method of population estimate<sup>2.4.3</sup>**

#### **3 = from comprehensive inventory**

A comprehensive inventory of sites, and populations within the sites, is maintained.

### **2.4 Quality of population data<sup>2.4.4</sup>**

#### **Good**

At the site level the data are comprehensive and accurate.

### **2.5 Population trend<sup>2.4.5</sup> & Population trend magnitude<sup>2.4.6</sup>**

#### **-29%**

The current trend is one of large decline, although this figure is dominated by the situation in Wales. In England the number of sites is stable, and the number of plants is increasing. Since 1994 there have been at least two sites lost in Wales, possibly three (calculated trend based on the loss of two sites).

Within Wales, there has also been a decline in the number of plants present within each site. When the text of the Red Data Book was prepared (Wigginton, 1999), a statement was included “the Welsh population is known to exceed 10,000 plants”. By the time that this was published it would already have been out of date, but it is clear that there has been a dramatic decline from >10,000 in the early 1990s to 151 in 2006. Over the last four years the

population at Kenfig has fluctuated at around 200 plants, with 2006 being a poor year. The population at Whiteford has declined from a 3-year average of 148 in 1994 to just 24 in 2005.

## **2.6 Population trend period<sup>2.4.7</sup>**

**1994 – 2006**

Good data exist for *L. loeselii*. The population trend has been calculated for the period since the Directive came into force.

## **2.7 Reasons for reported trend in population<sup>2.4.8</sup>**

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

**4. Indirect anthropo(zoo)genic influence**

**5. Natural processes**

Negative trends have been attributed mainly to factors such as inappropriate grazing-management, adjacent forestry, foreshore stabilization, scrub encroachment and succession.

## **2.8 Justification of % thresholds for trends<sup>2.4.9</sup>**

**Not applicable**

## **2.9 Main pressures<sup>2.4.10</sup>**

**140 Grazing**

**160 General Forestry management**

**950 Biocenotic evolution**

**871 sea defense or coast protection works**

## **2.10 Threats<sup>2.4.11</sup>**

**140 Grazing**

**160 General Forestry management**

**950 Biocenotic evolution**

**871 sea defense or coast protection works**

## **2.11 Favourable reference population<sup>2.7.2</sup>**

**8 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').

The favourable reference population must be at least the level that it was at in 1994, this value was 7 localities. Additionally, expert opinion is that the population is insufficiently large for long-term species survival and is at high risk from stochastic events. An extra locality has been added to the 1994 value to take account of this need.

An additional requirement is for the populations within these localities to be viable.

## **2.12 Population conclusion<sup>2.8</sup>**

**Unfavourable – Bad and deteriorating**

The current population is more than 25% below the favourable reference population and there has been a large decline in population (more than 1% per year since the Habitats Directive came into force). The current population is also more than 25% below the population present in 1994. Therefore, in accordance with Annex C, the population is judged as Unfavourable – Bad and deteriorating.

### **3. Habitat for the species in the Biogeographic region or sea<sup>2.5</sup>**

*L. loeselii* is a small green-flowered orchid of fens and dune systems. Two morphologically distinct forms occur: the type form of the East Anglian fens has acute oblong-elliptical leaves, while the form occurring in the dune slacks of south Wales and formerly north Devon (var. *ovata*) is shorter, generally fewer-flowered and bears blunt, broadly elliptical leaves. In the UK the two forms are mutually exclusive with respect to their distribution between habitats.

In all fenland sites in the Norfolk Broads, this species is confined to tall-herb fens that have experienced disturbance through peat-cutting. In dune slacks *L. loeselii* occurs across quite a wide range of vegetation types, though principally in younger dune slack communities occur where some open soil remains. A high summer water table appears to be essential for the survival of this drought-sensitive species. In common with many other orchids, *L. loeselii* appears to rely on regular disturbance for its long-term survival at any one site, and dune system over-stabilisation has been a major causal element in its decline.

Water quality and water quantity issues are limiting, and habitat management is currently very artificial and possibly unsustainable (R. Land, *pers. comm.*).

#### **3.1 Surface area of habitat<sup>2.5.2</sup>**

**Unknown**

#### **3.2 Date of estimation<sup>2.5.3</sup>**

**Not applicable**

#### **3.3 Quality of data on habitat area<sup>2.5.4</sup>**

**Poor**

Although concerted efforts have been made to understand the habitat of this species, there are currently no estimates of habitat area.

#### **3.4 Habitat trend<sup>2.5.5</sup>**

**Unknown**

In eastern England, the area of fenland suitable for the species is currently either stable or increasing. This is due to protection of the remaining habitat, improvements in water quality, and a number of large-scale restoration projects. This current situation is in contrast to the large declines that characterised most of the nineteenth and twentieth centuries.

In Wales, the dune slack habitat seems to be currently decreasing, at least in terms of the area that is suitable for the species. Loss of the traditional grazing and afforestation of dune slack areas appear to be key causes in this decline. Overall, dune slack habitats have declined in area as well as quality over the last century.

Given the contrasting situations in England and Wales, and uncertainty over which process is dominating, the habitat trend is reported as unknown.

#### **3.5 Habitat trend period<sup>2.5.6</sup>**

**1994 – 2006**

The habitat trend is reported over the same time period as the range and population. If a longer perspective were given, it would almost certainly be one of overall decline.

### **3.6 Reasons for reported trend in habitat<sup>2.5.7</sup>**

**3 = Direct human influence (restoration, deterioration, destruction)**

**4 = Indirect anthropo(zoo)genic influence**

**5 = Natural processes**

3 (forestry, drainage, shoreline reinforcement) and 4 (inappropriate grazing and other management techniques – including the cessation of traditional management techniques like peat-cutting and reed cutting – with diffuse pollution and other water quality issues); leading to 5 (scrub encroachment and stabilisation *etc.*).

### **3.7 Suitable habitat for the species (in km<sup>2</sup>)<sup>2.7.3</sup>**

**Unknown**

### **3.8 Habitat conclusion<sup>2.8</sup>**

**Unfavourable – Bad**

In England, the area of habitat available may still not be sufficient to ensure the long-term survival of the species. However, this is uncertain, and the situation is currently improving. In Wales there are significant issues regarding habitat quality, leading to site extinctions, and clearly undermining long-term viability in the dune slack systems. Therefore, the overall assessment is Unfavourable-Bad without any qualification regarding improvement or deterioration.

## **4. Future Prospects<sup>2.6</sup>**

**Poor prospects**

“Species likely to struggle unless conditions change.”

*L. loeselii* is the subject of a Species Action Plan under the UK Biodiversity Action Plan (and included on the revised list). However, given the ongoing large declines in both range and population in Wales, it is impossible to believe that the future prospects are good. In England the current population is stable, but it is not large and requires boosting for long-term viability. Furthermore, the climate change predictions from the Biodiversity Requires Adaption in Northwest Europe under a Changing Climate (BRANCH) project suggest severe declines in suitable climate envelope for *L. loeselii* within the UK. There are a number of restoration projects in both England and Wales that are currently proposed and may assist in species survival; however it is too early to report any improvement in prospects as a result of these.

### **4.1 Future prospects conclusion<sup>2.8</sup>**

**Unfavourable – Bad**

Given the ongoing declines it appears most appropriate to report the future prospects as Unfavourable – Bad. This implies that there is a severe influence of the pressures and threats (as demonstrated by the current large declines), and that the long-term viability is at risk. This situation might improve once some of the restoration projects get under way, although the prospects for *L. loeselii* within these projects remain uncertain, and therefore a judgement of Unfavourable – Inadequate cannot be justified.

## 5. Overall Conclusion <sup>2.8</sup>

### Unfavourable – Bad and deteriorating

The range, population and future prospects are all Unfavourable – Bad, with both range and population classified as deteriorating. The habitat is Unfavourable – Inadequate. Therefore, in accordance with Annex C, the overall conclusion is reported as Unfavourable – Bad and deteriorating.

**Table 5.1.** Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
<b>Range</b>	Unfavourable – Bad and deteriorating	Range has suffered a large decline (equivalent to a loss of more than 1% per year within period specified by Member State) and is more than 10% below the favourable reference range	1
<b>Population</b>	Unfavourable – Bad and deteriorating	Population is more than 25% below favourable reference population	1
<b>Habitat</b>	Unfavourable – Bad	Habitat quality is poor, not favouring long term survival of the species	2
<b>Future Prospects</b>	Unfavourable – Bad	Severe influence of pressures and threats to the species; very bad prospects for its future, long-term viability at risk.	2
<b>Overall Assessment</b>	Unfavourable – Bad and deteriorating	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

WIGGINTON, M.J. 1999. *British Red Data Books 1 Vascular Plants*. 3<sup>rd</sup> Edition. Peterborough: Joint Nature Conservation Committee

### Map Data Sources

Andy Jones, CCW (*pers. comm.*).

Vascular Plants Database, Botanical Society of the British Isles, via the Biological Records Centre.