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:

S1903 - Fen orchid (*Liparis loeselii*)

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	**1903**
1.3 Species scientific name	**Liparis loeselii**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Fen orchid

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2016-2017
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

PANKHURST, T., 2018 Report of conservation action for rare and threatened fenland plants: Fen Orchid (Liparis loeselii var. loeselii), Fen Violet (Viola stagnina) and Yellow Early Marsh-orchid (Dactylorhiza incarnata ssp. ochroleuca): 2017-18 Plantlife, Salsibury - a report to Natural England.
PANKHURST, T., 2017 Report of conservation action for rare and threatened fenland plants: Fen Orchid Liparis loeselii var. loeselii, Fen Violet Viola stagnina and Yellow Early Marsh-orchid Dactylorhiza incarnata ssp. ochroleuca. 2016-2017 Plantlife, Salisbury - a report to Natural England.
MASON, R.A., 2014a A survey of Sphagnum moss at Butterfly Conservation Catfield Fen and comparison with past surveys. RSPB internal report
MASON, R.A., 2014b An assessment of Sphagnum moss and fen orchid Liparis loeselii on Mill Marsh West and Mill Marsh East at Butterfly Conservation Catfield Fen. RSPB internal report

5. Range

5.1 Surface area (km²)

5.2 Short-term trend Period

5.3 Short-term trend Direction

Stable (0)

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 (km²) b) Operator c) Unknown d) Method	
5.11 Change and reason for change in surface area of range	No change The change is mainly due to:	
5.12 Additional information		

6. Population

6.1 Year or period	2017	
6.2 Population size (in reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	
	c) Maximum	
	d) Best single value	12337
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	2007-2017	
6.8 Short-term trend Direction	Increasing (+)	
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	1994-2017	
6.12 Long-term trend Direction	Increasing (+)	
6.13 Long-term trend Magnitude	a) Minimum b) Maximum c) Confidence interval	
6.14 Long-term trend Method used	Complete survey or a statistically robust estimate	
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size b) Operator c) Unknown	

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	d) Method	
6.16 Change and reason for change in population size	Genuine change	
	The change is mainly due to:	Genuine change
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)?	No
	b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?	Unknown
7.2 Sufficiency of area and quality of occupied habitat Method used	Insufficient or no data available	
7.3 Short-term trend Period	2007-2018	
7.4 Short-term trend Direction	Unknown (x)	
7.5 Short-term trend Method used	Insufficient or no data available	
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
Abstraction from groundwater, surface water or mixed water (K01)	H

Threat	Ranking
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	H
Abstraction from groundwater, surface water or mixed water (K01)	H

8.2 Sources of information

8.3 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

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9.2 Main purpose of the measures taken	Increase the population size and/or improve population dynamics (improve reproduction success, reduce mortality, improve age/sex structure) (related to 'Population')
9.3 Location of the measures taken	Only inside Natura 2000
9.4 Response to the measures	Short-term results (within the current reporting period, 2013-2018)
9.5 List of main conservation measures	

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

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	

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

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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	12337
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		Increasing (+)
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

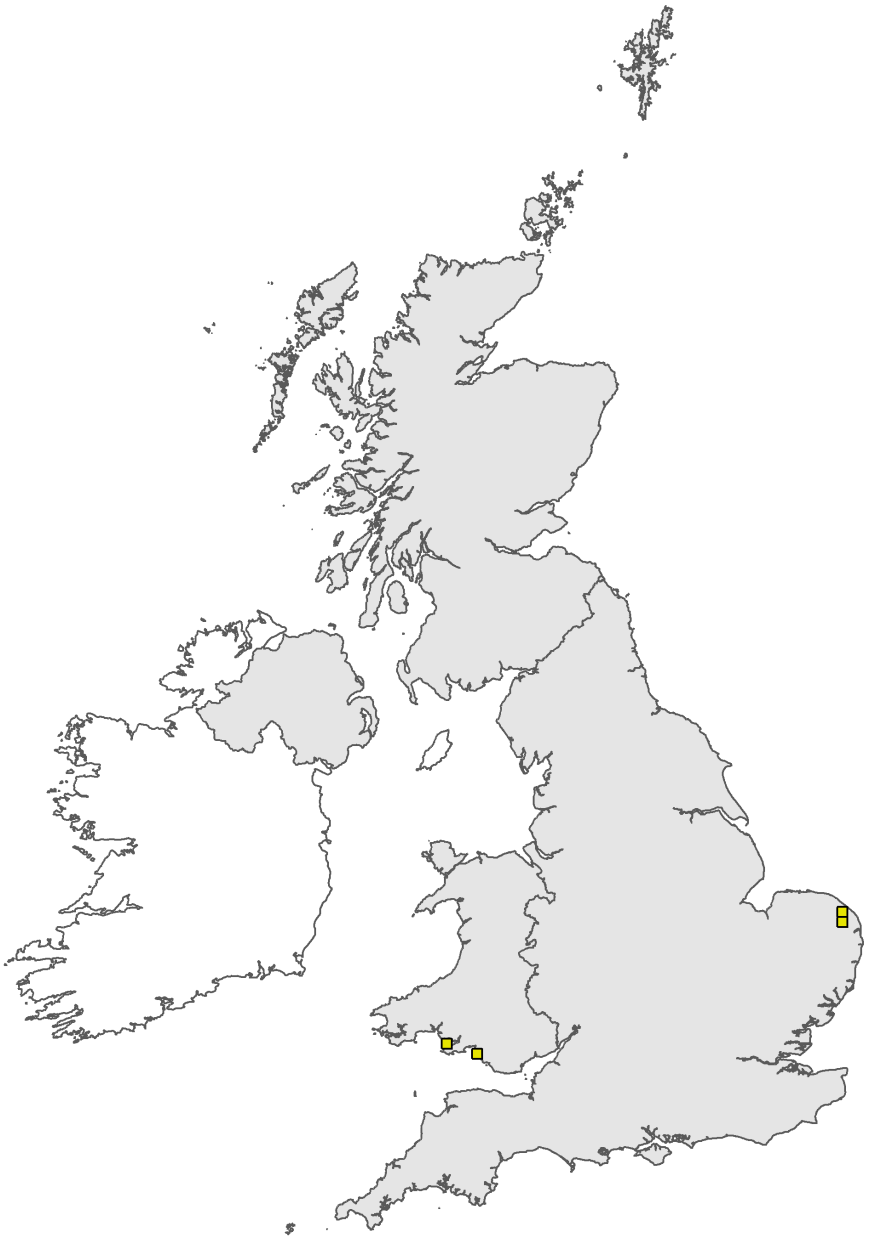

Figure 1: UK distribution map for S1903 - Fen orchid (*Liparis loeselii*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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 S1903 - Fen orchid (*Liparis loeselii*). 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: Liparis loeselii (1903)

Field label	Note
2.1 Sensitive species	Despite being a very highly restricted species there is little evidence of direct losses due to collection. The species is therefore not considered sensitive.
2.2 Year or Period	The three main sites are monitored every year, but some of the minor sub-sites were not monitored in 2017 and so 2016 data has been used for these.
2.4 Distribution map; Method used	In most years detailed monitoring is undertaken by Plantlife staff and volunteers. There are experimental re-introductions underway in an additional hectad but this work is at an early stage and the current population here is not considered part of the range for the purposes of this report.

Species name: Liparis loeselii (1903) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	The last site in England from which the species was lost was Braunton Burrows in Devon where it was last recorded in 1987. Two hectads have been occupied since that time.
5.11 Change and reason for change in surface area of range	The last site in England from which the species was lost was Braunton Burrows in Devon where it was last recorded in 1987.
6.2 Population size	This figure represents counts in 2017 at the major sites with some projected figures (from 2015 & 2016) for sites holding smaller populations
6.6 Population size; Method used	Counts are made of individuals at most sites in most years with emphasis placed on the areas holding the largest populations at Catfield Fen, Sutton Broad and Upton Broad if resources are limited. Some of the smaller sites were not counted in 2017 with projections made from either 2015 or 2016 based on experience of annual variations.
6.7 Short term trend; Period	No figures yet available from the 2018 season.
6.8 Short term trend; Direction	Total population from 2007 to 2010 was under 1,000. In both 2016 and 2017 it was over 12,000. (Pankhurst, 2018)
6.10 Short term trend; Method used	Annual combined records for Liparis in the Fens go back to 1994 (Pankhurst, 2018)
6.11 Long term trend; Period	Annual combined records for Liparis in the Fens go back to 1994 (Pankhurst, 2018) coincident with the recommended long-term trend period.
6.16 Change and reason for change in population size	Throughout the 1990's the total English population was<500. It was less than 1,000 until 2010 but from 2011 onwards the figure has been > 2,000 every year and >8,000 in 3 years (2011, 2016 & 2017). The gains represent genuine increases and are mainly due to improvements in the habitats at Catfield Fen (Mill Marsh) and Sutton Broad (South).
7.1 Sufficiency of area and quality of occupied habitat	This is difficult to assess as requirements remain relatively poorly known and therefore identifying suitable habitat (particularly that which is unoccupied) relies heavily on expert judgement. However most populations remain small and experimental introductions have fared poorly to date suggesting suitable habitat is very limited and limiting to population expansion.

8.1 Characterisation of pressures/ threats	Pressures and threats are essentially the same (for this species) and, whilst limited in scope, are critical to survival and to the restoration of both range and population. Recent work has demonstrated the importance of fen restoration in promoting population recovery on individual sites (PANKHURST 2018; MASON 2014a, 2014b) and evidence suggests that failures to establish re-introductions previously are due to poor habitat restoration, probably alongside sub-optimal hydrological conditions. Whilst these observations primarily relate to inadequate restoration of habitat, the root cause of this is the abandonment of vegetation control which had previously been realised through cutting and grazing. Changes in the distribution of plants within one of the key sites (Sutton Broad) also point to the likely importance of ground water as part of the hydrological regime. Many sites have been lost through drainage in the past and restoration of more approriate hydrological conditions is essential if current minor populations are to be secured and re-introductions are to prosper. (PANKHURST 2018).
9.1 Status of measures	Liparis ecology is complex and most of the work currently underway is investigative or experimental in nature. However, it is clear from recent work at Sutton Broad that regenerative management on the Phragmites swamp resulting in a more diverse species complement is important and work is underway to extend this management. Ultimately restoring the range is also critical and experimental management with re-introductions is also underway - although it is too early to tell if these will be successful in creating new self-sustaining populations. Early indications are not promising but this may be related to recent atypical weather rather than fundamental underlying issues at the re-introduction sites.
9.2 Main purpose of the measures taken	Initial/experimental management is designed to elucidate conditions favourable to encouraging and maintaining larger, stable populations. Ultimately the intention is to expand the range as well (with experimental re-introductions now underway).
9.4 Response to the measures	Although the underlying reasons are not yet fully understood, changes in species composition and vegetation structure resulting from regenerative fen management have had impressive positive effects on population size at two sites. (PANKHURST 2018)
9.5 List of main conservation measures	These are essentially the corollary of the two significant pressures/threats: Recent work has demonstrated the importance of fen restoration in promoting population recovery on individual sites (PANKHURST 2018; MASON 2014a, 2014b) and eviednce suggests that failures to establish re-introductions previously are due to poor habitat restoration, probably alongside sub-optimal hydrological conditions. Whilst these observations primarily relate to inadequate restoration of habitat the root cause is the abandonment of vegetation control which had previously been realised through cutting and grazing. Changes in the distribution of plants within one of the key sites (Sutton Broad) also point to the likely importance of ground water as part of the hydrological regime. Many sites have been lost through drainage in the past and restoration of more appropriate hydrological conditions is essential if current minor populations are to be secured and re-introductions are to prosper. (PANKHURST 2018).
10.1 Future prospects of parameters	If current improvements in population can be maintained then range is likely to stabilise and population might be expected to continue to increase - perhaps at a slower rate. However, the habitat is complex with critical and hard to predict hydrological variations between seasons (perhaps also linked to ground-water availability and quality) and prospects for stabilising this parameter are uncertain.
12.1 Population size inside the pSCIs, SCIs and SACs network	This is a compound figure for 2017 representing a count of 7537 (61% of the total), a scaled-up systemmatic representative sample resulting in a figure of 4,500 (36% of the total) and a number of projections from 2016 and 2015 counts resulting in a figure of 300 across 5 minor sub-stes (3%). All sites lie within The Broads SAC.
12.2 Type of estimate	This is a compound figure for 2017 representing a count of 7537 (61% of the total), a scaled-up systemmatic representative sample resulting in a figure of 4,500 (36% of the total) and a number of projections from 2016 and 2015 counts resulting in a figure of 300 across 5 minor sub-stes (3%). All sites lie within The Broads SAC.

12.3 Population size inside the network; Method used	This is a compound figure for 2017 representing: i) a count of 7537 (61% of the total), ii) a scaled-up representative sample resulting in a figure of 4,500 (36% of the total) and iii) a number of projections from 2016 and 2015 counts resulting in a figure of 300 across 5 minor sub-sites (3%). All sites lie within The Broads SAC.
12.4 Short term trend of the population size within the network; Direction	Total population from 2007 to 2010 was under 1,000. In both 2016 and 2017 it was over 12,000. (PANKHURST, 2018)
12.5 Short term trend of population size within the network; Method used	The Broads SAC population has been assessed annualy since 1994, usually by a complete cound but, occasionally, by a count of the main populations plus samples and projections (as described for 2017 above) (PANKHURST 2018).