

Report under The Conservation of Habitats and
Species Regulations 2017 (as amended),
Regulation 9A

2019-2024

Conservation status assessment for the species:

S1903 - Fen orchid

(Liparis loeselii)

England



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Important note - Please read

- The information in this document represents the England Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural England, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- 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; and/or (iii) the field was not relevant to this species (section 12 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the [JNCC website](#).

Assessment Summary: Fen orchid

Distribution Map



Range Map

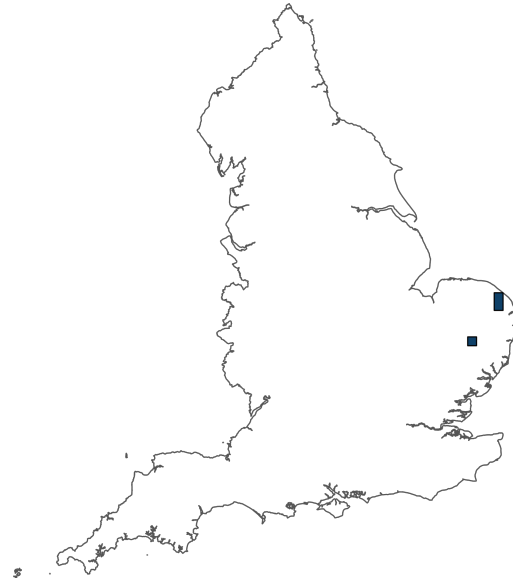


Figure 1: England distribution and range map for S1903 - Fen orchid (*Liparis loeselii*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1903 - Fen orchid (*Liparis loeselii*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Unfavourable-inadequate (U1)

Breakdown of Overall Conservation Status

Range (see section 5)	Unfavourable-inadequate (U1)
Population (see section 6)	Unfavourable-inadequate (U1)
Habitat for the species (see section 7)	Unfavourable-inadequate (U1)
Future prospects (see section 10)	Unfavourable-inadequate (U1)

List of Sections

National Level	5
1. General information	5
2. Maps	5
3. Information related to Annex V Species	5
Biogeographical Level	7
4. Biogeographical and marine regions	7
5. Range	7
6. Population	9
7. Habitat for the species	11
8. Main pressures	13
9. Conservation measures	14
10. Future prospects	15
11. Conclusions	16
12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species	17
13. Complementary information	18
14. References	19
Biogeographical and marine regions	19
Main pressures	19
15. Explanatory Notes	21

National Level

1. General information

1.1 Country	England
1.2 Species code	S1903
1.3 Species scientific name	<i>Liparis loeselii</i>
1.4 Alternative species scientific name	
1.5 Common name	Fen orchid
Annex(es)	II, IV

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2010-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Complete survey or a statistically robust estimate

2.5 Additional information

Populations arising from conservation translocations that are showing signs of being self sustaining have been included in the distribution map.

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property

b) Temporary or local prohibition on the taking of specimens in the wild and exploitation

c) Regulation of the periods and/or methods of taking specimens

d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

Other measures description

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

a) Unit

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs ATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²) 300

5.2 Short-term trend; Period 2013-2024

5.3 Short-term trend; Direction Increasing

5.4 Short-term trend;
Magnitude

a) Estimated minimum

b) Estimated maximum

c) Pre-defined range

d) Unknown

e) Type of estimate

f) Rate of decrease

5.5 Short-term trend; Method used Complete survey or a statistically robust estimate used

5.6 Long-term trend; Period 2000-2024

5.7 Long-term trend; Direction Increasing

5.8 Long-term trend;
Magnitude

a) Minimum

b) Maximum

c) Rate of decrease

5.9 Long-term trend; Method used	Complete survey or a statistically robust estimate
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5.10 Favourable Reference Range (FRR)

a) Area (km²)

b) Pre-defined increment	Current range is between 11% and 50% smaller than the FRR
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c) Unknown	No
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d) Method used	Reference-based approach
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e) Quality of information	high
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5.11 Change and reason for change in surface area of range

a) Change	Yes
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b) Genuine change	Yes
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c) Improved knowledge or more accurate data	
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d) Different method	No
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e) No information	
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f) Other reason	Yes
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g) Main reason	Other reasons
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5.12 Additional information

Despite the absence of calculated range value in 2019 for England only, it is clear by comparing the range maps produced by JNCC in 2019 and in 2024 that the range has increased by about a third in England. Whilst this is a genuine change, it is attributable to the inclusion of reintroduced populations at Thelnetham Fen (Thelnetham Middle and Thelnetham Old Fens) which are now showing positive signs of regeneration and therefore higher potential of becoming self-sustaining - unlike in 2019 when it was thought that the reintroduced populations were at best stable by virtue of the original translocated plants surviving (as at TMF), and the others declining or gone, and therefore the reintroduced populations weren't included in the range calculation at that time. The FRR for England was recommended by JNCC as 'between 11% and 50%' based on 2019 UK range of 381.63km² and FRR of 790km² at that time. The current

England range at 300km² is now at 38% of the FRR for UK (790km² as was set in 2019). The current range in Wales is 254km², also a slight increase since last reporting round due the reappearance of another population, and therefore the current range in UK is 554km². This is still below the FRR for the UK, and whilst the increase in numbers at extant populations has reduced the threat level, the species remains highly restricted geographically, with a limited number of extant native populations and reintroduced populations optimistically included here in England distribution and range, with some uncertainty remaining as to whether these have become self sustaining populations.

6. Population

6.1 Year or period	2024-
6.2 Population size (in reporting unit)	
a) Unit	number of individuals
b) Minimum	
c) Maximum	
d) Best single value	14,194
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	moderate
6.5 Additional population size (using population unit other than reporting unit)	
a) Unit	
b) Minimum	
c) Maximum	
d) Best single value	
e) Type of estimate	
6.6 Population size; Method used	Complete survey or a statistically robust estimate
6.7 Short-term trend; Period	2013-2024
6.8 Short-term trend; Direction	Increasing

**6.9 Short-term trend;
Magnitude**

a) Estimated minimum

b) Estimated maximum

c) Pre-defined range Decreasing 13 - 25%

d) Unknown No

e) Type of estimate Best estimate

f) Rate of decrease

6.10 Short-term trend; Method used Complete survey or a statistically robust estimate

6.11 Long-term trend; Period 2000-2024

**6.12 Long-term trend;
Direction** Increasing

**6.13 Long-term trend;
Magnitude**

a) Minimum

b) Maximum

c) Confidence interval

d) Rate of decrease

6.14 Long-term trend; Method used Complete survey or a statistically robust estimate

6.15 Favourable Reference Population (FRP)

ai) Population size

a ii) Unit number of individuals

b) Pre-defined increment Current population is between 26% and 50%
smaller than the FRP

c) Unknown No

d) Method used Expert opinion

e) Quality of information moderate

6.16 Change and reason for change in population size

a) Change	Yes
b) Genuine change	Yes
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	
f) Other reason	
g) Main reason	Genuine change

6.17 Additional information

There has been a marked and genuine increase in the number of individuals at the extant native sites in the short and long term time periods, based on survey counts in most years at the most significant sites (Pankhurst, 2024, 2025), with some extrapolation for years where data is missing based on previous trends at these locations and observations in habitat condition and climatic events. In the last reporting round populations at reintroduction sites were not included as the plants were yet to convincingly demonstrate survival or regeneration. In this round these populations have been included, although the counts at these sites are still very low, and do not contribute materially to the overall total in numbers, they do contribute to an increase in range by virtue of occupying an additional hectad. There has been a dip in numbers since 17,373 in 2023 to 14,194 in 2024 (counts from main sites) but this is thought to be within expected natural variation and not a cause for concern (Pankhurst, 2025). Counts for 2023 were closer to the FRP for England which utilises the operator 'between 26 and 50% smaller than the FRP' (utilising the UK value and operator which was recommended as 20,000 individuals for the UK, JNCC, 2019b).

6.18 Age structure, mortality and reproduction deviation No deviation from normal

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient? No

b) Is quality of occupied habitat sufficient?	Yes
c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?	Unknown

7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used	Based mainly on extrapolation from a limited amount of data
b) Sufficiency of quality of occupied habitat; Method used	Based mainly on expert opinion with very limited data
7.3 Short-term trend; Period	2013-2024
7.4 Short-term trend; Direction	Increasing
7.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
7.6 Long-term trend; Period	2000-2024
7.7 Long-term trend; Direction	Increasing
7.8 Long-term trend; Method used	Based mainly on extrapolation from a limited amount of data

7.9 Additional information

Populations have increased substantially at the remaining extant native sites in most cases (England totals from less than 500 in 1997 to 17,373 in 2023), which is primarily attributed to reinstating cutting and grazing management targeted at improving habitat conditions for the species. Fen orchid is clearly able to persist at very low levels for decades and rebound when conditions are more suitable. The counts of thousands at some sites are the result of focussed management (Pankhurst, 2025) and may not be representative for the species living in less intensively curated habitat. Providing the plant can reliably complete its life cycle at a decent number of sites/subsites and have sufficient genetic diversity to be able to adapt to the environment, lower numbers at sites are acceptable. The fact that population numbers have risen quite markedly, approaching the estimated favourable reference population value indicates that the habitat is currently suitable at these extant native sites, the exception being Catfield Mill

Marsh, where vegetation appears too acidic and is Sphagnum dominated. However the isolation and small size of the wetlands renders the populations vulnerable to stochastic events and relaxation of conservation management, so there is still insufficient area of habitat. Sufficiency of area in conjunction with the right quality in currently unoccupied habitat is difficult to assess as requirements are not precisely known and therefore identifying suitable habitat (particularly that which is unoccupied) relies heavily on expert judgement. The fact that most experimental introductions have fared poorly to date suggests that suitable habitat is very limited and is limiting to population expansion. Only two populations at the reintroduction site Thelnetham Fen could be described as showing encouraging signs of being self sustaining, following observations of 27 plants at Thelnetham Middle Fen (TMF) in 2023 an increase from the 21 mature pseudocorns that were originally translocated; and at Thelnetham Old Fen (TOF) 6 plants in two clumps of three were found in 2024. It remains somewhat uncertain whether these reintroductions will be self-sustaining in the long term, so inclusion in the dataset for this reporting round should be treated with some caution. Despite the addition of the new hectad for these reintroduction sites the range of the species in England remains far below pre 1980's levels and therefore the area of occupied habitat remains insufficient even though the population measured as number of individuals falls within the estimated favourable range. The number of localities was used in 2013 reporting round, as the unit of measure for population, which was changed to number of individuals in 2019. Ideally both units of measure would be utilised to establish a more representative favourable reference state for the population of this species.

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PA05: Abandonment of management/use of grasslands and other agricultural and agroforestry systems (e.g. cessation of grazing, mowing or traditional farming)	Ongoing and likely to be in the future	Medium (M)
PJ14: Other climate related changes in abiotic conditions	Ongoing and likely to be in the future	Medium (M)

PL01: Abstraction from groundwater, surface water or mixed water (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PL05: Modification of hydrological flow (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)

8.2 Sources of information

See section 14 References

8.3 Additional information

No 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

9.2 Main purpose of the measures taken

Expand the current range of the species (related to 'Range')

9.3 Location of the measures taken

Both inside and outside National Site Network

9.4 Response to measures

Medium-term results (within the next two reporting periods, 2025–2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MA04: Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures	Medium (M)

MA13: Manage agricultural drainage and water abstraction (incl. the restoration of drained or hydrologically altered habitats)	High (H)
MS02: Reintroduce species from the directives	Medium (M)
MS03: Restoration of habitat of species from the directives	High (H)

9.6 Additional information

Technically *Liparis loeselii* is no longer threatened in the UK or England (now assessed as Near Threatened, Stroh, pers. comm. 2024) based on the stabilisation of extant locations (4, including two with multiple sub-populations), with 3 of the 4 locations exceeding 1,000 mature individuals for the past eight years and the increase in numbers, and all of these improvements can be attributed to decades of habitat management, trials and monitoring carried out by Plantlife and other conservation bodies, much of it made possible by Natural England's (and its predecessor English Nature's) Species Recovery Programme. The conservation translocation work, in germination techniques, propagation and reintroduction by seed spreading and planting mature protobulbs has advanced knowledge and new self sustaining populations are close to being realised. Pankhurst (2025) has suggested the following measures of success for reintroduced populations: vegetative reproduction is confirmed to take place - this has already been confirmed at both TOF and TMF; sexual reproduction is confirmed to have taken place or may be strongly inferred, and numbers exceed 100 plants in a population for four successive years. Conservation actions are still required to maintain or improve suitable habitat conditions at existing sites, identify fungal symbionts and assess new sites for (re)establishing populations and continue to produce propagules for conservation translocations. Ideally the population at Braunton Burrows would be re-established to increase range and number of localities and thereby reduce extinction risk.

10. Future prospects

10.1a Future trends of parameters

ai) Range	Unknown
bi) Population	Overall stable
ci) Habitat for the species	Positive - slight/moderate improvement

10.1b Future prospects of parameters

aii) Range	Good
bii) Population	Good
cii) Habitat for the species	Good

10.2 Additional information

If current improvements in population can be maintained at the known native sites, or at least all populations sustained, then the current range will remain stable. Population might be expected to continue to increase at some sites where further habitat improvements can be made, and it is hoped at reintroduction sites, the latter perhaps at a slower rate. However, the habitat requirements are complex with critical and hard to predict hydrological variations between seasons (perhaps also linked to ground-water availability and quality), with impacts of climate change on hydrology uncertain and therefore difficult to mitigate. Increasing the range and the number of localities would be a means to build resilience into the long term survival of the species.

11. Conclusions

11.1 Range	Unfavourable-inadequate (U1)
11.2 Population	Unfavourable-inadequate (U1)
11.3 Habitat for the species	Unfavourable-inadequate (U1)
11.4 Future prospects	Unfavourable-inadequate (U1)
11.5 Overall assessment of Conservation Status	Unfavourable-inadequate (U1)
11.6 Overall trend in Conservation Status	Improving

11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

Future trend of range is unknown, and would only be considered positive if reintroductions can be shown to be successfully undergoing sexual reproduction and the presence of fungal symbionts can be detected. Isolating the latter would improve the likelihood of increasing the range still further, for example considering re-establishment at Braunton Burrows. Future trend of Population is likely to show a less rapid improvement than has been seen in the last two reporting rounds and could be regarded as likely to be stable providing existing populations can be sustained. Future trend of Habitat for the species is Positive with slight/moderate improvements to habitats at some sites still plausible and the possibility of finding other suitable locations for (re)establishment of populations becoming more likely as more information is acquired on habitat requirements and availability of fungal symbionts.

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit	number of individuals
b) Minimum	
c) Maximum	
d) Best single value	14,194
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 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction Uncertain

12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used Insufficient or no data available

12.8 Additional information

All native extant sites contributing to this count and the increasing trend in population lie within The Broads SAC. It is uncertain what future gains can be made in habitat for the species within the Site Network.

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

BSBI Distribution database (Accessed January 2025)

JNCC, 2019a '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'. <https://jncc.gov.uk/jncc-assets/Art17/S1903-EN-Habitats-Directive-Art17-2019.pdf>

JNCC, 2019b 'European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora(92/43/EEC), 2019 'Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018 Conservation status assessment for the species: S1903 - Fen orchid (*Liparis loeselii*), UNITED KINGDOM'. <https://jncc.gov.uk/jncc-assets/Art17/S1903-UK-Habitats-Directive-Art17-2019.pdf>

Pankhurst, T., 2024 '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*): 2023-24', Plantlife, Salsbury - a report to Natural England, March 2024

Pankhurst, T., 2025 '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*): 2024-25', Plantlife, Salsbury - a report to Natural England, March 2025.

Stroh, P.A., Humphrey, T.A., Burkmar, R.J., Pescott, O.L., Roy, D.B., & Walker, K.J., 2023 *Liparis loeselii* (L.) Rich. in BSBI Online Plant Atlas 2020, <https://plantatlas2020.org/atlas/2cd4p9h.1dm> (Accessed January 2025)

Stroh, P.A., 2024 pers. comm. from 'GB Vascular Plant Red List December 2024', in draft.

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
2.1: Sensitive species	Despite being a very highly restricted orchid species there is little evidence of direct losses due to collection nor evidence of any indirect effects through compaction and trampling so not considered sensitive.
2.2: Year or Period	The time period 2010-2024 has been used to provide a more representative current distribution for plant species in this reporting round. This is because the national dataset of botanical records (BSBI) could for many species show a dip in records post-2020, an artefact of the relaxation in recording effort post production of the Plant Atlas 2020. For this species surveys of the all populations including introduction and reintroduction sites are conducted by Plantlife staff and volunteers in most years, therefore the data is considered good and complete.
2.3: Distribution map	An additional hectad is included in the distribution map for this reporting round as conservation translocations at a reintroduction site, albeit within the native range envelope, are showing signs of being self sustaining.
2.4: Distribution map; Method used	Hectad data is from BSBI Distribution database (accessed January 2025) plus survey data arising from the Natural England funded species recovery work by Plantlife, that may not yet be in the BSBI dataset.
5.3: Short-term trend; Direction	The short term trend is increasing as a third hectad has been added to include a reintroduction site, Thelnetham Fen, near Diss, Suffolk (hectad TM07) where reintroduced populations in two areas of the site are showing signs of successful establishment since the last reporting round.
5.7: Long-term trend; Direction	Long term trend in range is increasing due the addition of a third hectad which includes the reintroduction site Thelnetham Fen, near Diss, Suffolk (hectad TM07) where reintroduced populations in two areas of the site are showing signs of successful establishment. Prior to this the last site in England from which the species was lost was Braunton Burrows in Devon where it was last recorded in

1987. Since that time the severely contracted range included just two native hectads in Norfolk which remained occupied so the short and long term trend for range was stable, though tenuous, for many decades until this recent addition of a hectad that includes two reintroduced populations at Thelnetham Fen.

5.10: Favourable Reference Range (FRR)

The FRR was set in the 2013 as 790km² for the UK and was retained in 2019 reporting for the UK. The species has a very limited distribution in Wales (JNCC, 2019a,b), and the vast majority of the UK range was in England. The value was considered to be large enough to support a viable population and no lower than the range estimate when the Habitats Directive came into force in the UK. The FRR was set in 2013 as the 1994 range value for the UK plus an additional 100km² which represented the addition of a single disjunct site somewhere within the historic eastern England range which would buffer the species against possible stochastic events causing losses at the remaining isolated populations. In 2019 the UK range was 381.63km² but no actual range, nor FRR was given in the England-only 2019 report (this could be calculated if the JNCC range model was rerun on the England 2019 data but that value is not available here). The species was last recorded in Devon at Braunton Burrows (which was of the same variety as in Wales) in 1987, and historically there have been large declines in eastern England. There were many losses from the eighteenth century onwards as the fens were drained and steep declines continued in the era of modern agricultural improvement from 70 years ago until the species was at high risk of extinction in England (assessed as Endangered in 2005). By 2019, the eastern England range (and population) had stabilised, albeit at a very low level. Now the population has improved by concentrated species recovery work at extant sites and range has improved due to the inclusion of a reintroduction site. The reintroduction site at Thelnetham Fen, Suffolk, where plants are showing signs of establishment and possibly of regeneration, adds a third hectad (TM07 - Thelnetham Middle Fen and Thelnetham Old Fen) to the

England range since 2019. For this reporting round the FRR for England is set as 'between 11% and 50% smaller' (based on the UK FRR in 2019, 790km², when the actual UK range at that time was 381.63km²).

5.11: Change and reason for change in surface area of range

Since there is no England-only 2019 calculated figure for range (it would be possible to calculate this if the JNCC model was run on the England only 2019 data) the method used here for assessing range trend for England is by comparing the range maps produced by JNCC in 2019 and for 2024. There has been a clear if modest increase in the range in England since 2019 - accrued by the additional hectad TM07 for a reintroduction site in Suffolk. The current range calculation for England is 300km², a range which is represented by the operator 'between 11-50% smaller than' (ie what would be considered favourable for England, utilising the UK FRR of 790km² and operator as the reference point). The increase in range is due to the inclusion of Thelnetham Fen's two reintroductions where the populations are showing signs of becoming self-sustaining. These were not included in the distribution map in 2019 as at that time there was insufficient evidence that the populations were successful. Pseudobulbs for the 2017 translocations to Thelnetham Middle Fen (TMF), Thelnetham Old Fen (TOF); and Great Fen (GF) in South Lopham (no plants have been observed at the latter since 2017 and it is thought to have failed) were all taken under license 2017-28506-SCI-SCI from Sutton, the largest population. There was insufficient ex-situ stock at the time to supply the proposed reintroductions and the take was under 1% which was considered tolerable at the time. Cambridge University Botanic Gardens supplied seed for the 2023 translocation to TOF. Two of the three reintroductions still have plants (both at Thelnetham Fen in hectad TM07); Thelnetham Middle Fen (TMF) where in 2023 there were 27 plants, an increase from the 21 mature pseudocorms that were originally translocated; and at Thelnetham Old Fen (TOF) 6 plants still present in two clumps of three in 2024 (from the 21 originally translocated). The current plants at both these sites are

likely to be mainly original transplants plus some clonal recruitment and regeneration from ramets broken off during raking. There is a possibility that there has been regeneration by seed. At TOF in December 2023, 500 seeds were reintroduced, and at TMF flowering of transplants could have led to regeneration from seed. It is not known yet whether any of the new plants have fungal symbionts which are considered necessary for successful germination, and the presence of which would indicate that germination from seed has taken place. No mycorrhizal fungi were isolated from earlier seed baiting trials and in 2019, the work by Kew on this aspect of the species ceased. Seed baiting trials are therefore recommended to again to test whether the fungal symbionts are present through genetic analysis. This would help more clearly understand whether new plants have formed at the two reintroductions sites by sexual or vegetative reproduction. Successful sexual reproduction would provide more confidence in the suitability of the habitat and the long term prospects for the species, and validation for including the additional hectad TM07 for these reintroductions in the current range in this reporting round.

6.1: Year or Period Population count is for the year 2024, by Plantlife and volunteers at closely monitored sites in the Species Recovery Programme, plus data from other partners Suffolk Wildlife Trust, Norfolk Wildlife Trust and the RSPB, with projections based on previous years where there are missing data.

6.3: Type of estimate Annual counts are made of individuals with emphasis placed on the areas holding the largest populations at Catfield Fen, Sutton Broad, Upton Broad and Smallburgh Fen. Data gaps sometimes arise as in 2024 for Catfield Great Fen and Smallburgh Fen when accurate counts were not obtained by Norfolk Wildlife Trust. However continuity of monitoring over many years means from that experience gained and using expert judgement of the suitability of the habitat and climatic influences, projections can be made on the likely estimated numbers of individuals to cover these

data gaps, albeit with reduced confidence in the figures (Pankhurst, 2025).

6.5: Additional population size

The total estimate for the number of individuals in England in 2024 was 14,194 down from 17,373 in 2023, the counts being from the following native sites: Catfield; Sutton Broad; Upton Broad and Smallburgh Fen (Pankhurst, 2025). This oscillation in numbers is well within what might be regarded as normal variation for this species, and nothing to be concerned about (Pankhurst, 2025). Other factors including timing of cutting meaning that plants could have been missed at Catfield and a generally wet spring in 2024 could have suppressed the populations. The reintroduction sites have not been included in this total count, and even if it were conclusive which were new plants and which were surviving translocations, in any case it would only add a very low number (possibly 6 individuals) insignificant to the final tally. The increase in number of individuals since prior to 2010 when there were fewer than 1,000, to 2017 (12,337 individuals) and further to 2023 (17,373) in England is attributed primarily to improved habitat management at the remaining native sites, especially Sutton Broad but also to the rediscovery of plants at other previously known sites following intensive survey effort by the Plantlife fen orchid project which started in 2008. The species has been reassessed from EN to Near Threatened in the current status assessment review of vascular plants in GB (pers comms Stroh, 2024). This is because whilst there have been improvements in the population and therefore reduced threat of extinction, the species is not completely clear of jeopardy. There is still at best, only a very modest increase at one of the native sites Catfield Mill Marsh (MMF) due to acidification and succession to Sphagnum-dominated vegetation (management works are in place here to address these issues), and whilst one of the reintroduced populations in particular is showing encouraging signs of becoming self sustaining, numbers are still low and the longevity of these reintroductions is still uncertain.

6.7: Short-term trend;
Period

There has been a strong increase in population size since 2010. 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). Increases continued to 12,337 in 2018 and 17,373 in 2023, albeit with a dip to 14,194 in 2024. The gains represent genuine increases and are mainly due to improvements in the habitats at the extant native sites resulting from intensive conservation efforts.

6.15: Favourable
Reference Population
(FRP)

In 2019, the unit of measure for FRP was changed from 'number of localities' (as used in 2013) to number of individuals (JNCC 2019a,b). This is because the population distribution across the localities has always been very uneven, with some localities holding many thousands of plants and others very few. Number of individuals was deemed more appropriate and made possible by intensive monitoring by Plantlife at the sites holding the largest populations. In 2019 expert opinion considered that the FRP should be about 25% more than the current population at the time, or approximately 20,000 individuals at UK level. Since this was not a scientifically-robust estimate, an operator was used to define the FRP in UK - 'much more than'. In this reporting round, JNCC have recommended the following operator be applied to establish the FRP: 'between 26 and 50% smaller' (ie the current population is up to 50% smaller than what would be considered favourable) based on actual and estimated counts for native (17,373 in 2023 in England), plus Thelnetham Fens reintroduction site, and the FRP audit in 2019 recommending 20,000 individuals as representing the total UK FRP. The number of localities was used in 2013 reporting round, as the unit of measure for population, which was changed to number of individuals in 2019. Ideally both units of measure would be utilised to establish a more representative favourable reference state for the population of this species. Fen orchid is clearly able to persist at very low levels for decades and rebound when conditions are more suitable. The counts of thousands at

	<p>some sites are effected by focussed management (Pankhurst, 2025) and may not be representative for the species living in less intensively curated habitat. Providing the plant can reliably complete its life cycle at a decent number of sites/subsites and have sufficient genetic diversity to be able to adapt to the environment, lower numbers at sites are acceptable but an increase in the number of localities would be preferable and provide more security for the long term survival of the species.</p>
<p>9.1: Status of measures</p>	<p>The ecology of <i>Liparis loeselii</i> is complex and much of the work carried out so far has been investigative or experimental in nature, with some resounding successes in increasing the population numbers at the main extant native sites. Ultimately restoring the range is also critical and the experimental management with re-introductions needs to be continued. The early signs of successfully creating new self-sustaining populations (survival and clonal regeneration in two populations), needs more time to prove sexual regeneration can take place and to identify fungal symbionts necessary for germination. The latter would lead to locating more sites for conservation translocations with precision and certainty.</p>
<p>9.2: Main purpose of the measures taken</p>	<p>Initial/experimental management was designed to elucidate conditions favourable to encouraging and maintaining larger, stable populations which is bearing fruit. Ultimately the intention must be to expand the range as well, with experimental reintroductions underway and also starting to show signs of success, in survival and clonal regeneration but uncertain yet as to sexual reproduction and germination from seed.</p>
<p>9.4: Response to the measures</p>	<p>Although the underlying reasons are not yet fully understood, attention to the hydrology regime, species composition and vegetation structure resulting from regenerative fen management have had impressive positive effects on population size at two sites. This has enabled practitioners to identify suitable new sites for conservation translocations which has been now validated (Pankhurst, 2025) by the survival of translocated plants and</p>

signs of clonal regeneration in two the reintroduction populations.

13.3: Other relevant information

Recent work has demonstrated the importance of fen restoration in promoting population recovery on individual sites (Pankhurst, 2025) and evidence suggests that failures to establish reintroductions previously are due to sub-optimal 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, activities of traditional agricultural practices. 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 reintroductions are to prosper.