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*)

Wales

Cyfoeth Naturiol Cymru
Natural Resources Wales

JNCC

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Important note - Please read

- The information in this document represents the Wales 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 Resources Wales, 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

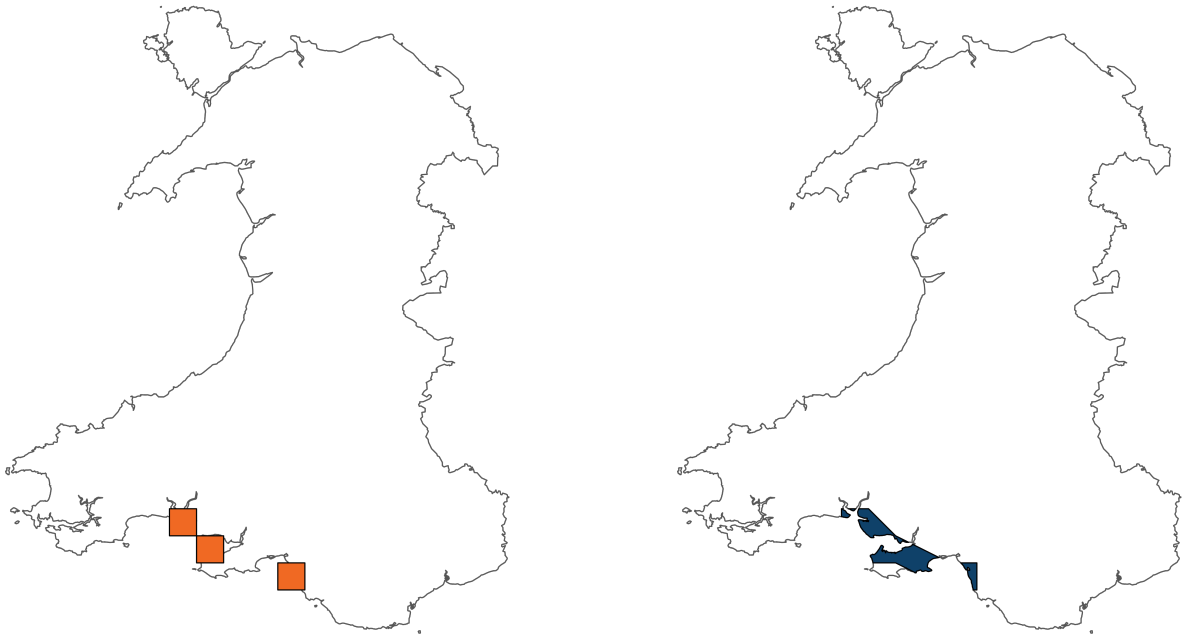

Figure 1: Wales distribution and range map for S1903 - Fen orchid (*Liparis loeselii*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km 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-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 5)	**Unfavourable-bad (U2)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Unfavourable-inadequate (U1)**
Future prospects (see section 10)	**Unfavourable-inadequate (U1)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1903
1.3 Species scientific name	*Liparis loeselii*
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	2019-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Complete survey or a statistically robust estimate

2.5 Additional information

No additional information

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)	254.01
5.2 Short-term trend; Period	2013-2024
5.3 Short-term trend; Direction	Stable
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	No
e) Type of estimate	Best estimate
f) Rate of decrease	
5.5 Short-term trend; Method used	Complete survey or a statistically robust estimate
5.6 Long-term trend; Period	2001-2024
5.7 Long-term trend; Direction	Stable
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

5.10 Favourable Reference Range (FRR)

a) Area (km²)	
b) Pre-defined increment	Current range is between 11% and 50% smaller than the FRR
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

5.11 Change and reason for change in surface area of range

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

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2013-2024

6.2 Population size (in reporting unit)

a) Unit	number of individuals
b) Minimum	734
c) Maximum	4,257

d) Best single value	
6.3 Type of estimate	Minimum
6.4 Quality of extrapolation to reporting unit	high

6.5 Additional population size (using population unit other than reporting unit)

a) Unit	number of localities
b) Minimum	
c) Maximum	
d) Best single value	3
e) Type of estimate	Best 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	Increasing > 100%
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	2003-2024
6.12 Long-term trend; Direction	Stable
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	
aii) Unit	
b) Pre-defined increment	Current population is between 26% and 50% smaller than the FRP
c) Unknown	No
d) Method used	Reference-based approach
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	No
d) Different method	No
e) No information	No
f) Other reason	No
g) Main reason	Genuine change

6.17 Additional information

No additional information

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?	No
c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?	No

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 extrapolation from a limited amount of 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	
7.7 Long-term trend; Direction	
7.8 Long-term trend; Method used	

7.9 Additional information

No additional information

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
PA08: Extensive grazing or undergrazing by livestock	Ongoing and likely to be in the future	High (H)
PA18: Agricultural activities generating air pollution	Ongoing and likely to be in the future	Medium (M)
PI02: Other invasive alien species (other than species of Union concern)	Ongoing and likely to be in the future	Medium (M)
PI03: Problematic native species	Ongoing and likely to be in the future	Medium (M)
PK03: Mixed source air pollution, air-borne pollutants	Ongoing and likely to be in the future	Medium (M)
PJ03: Changes in precipitation regimes due to climate change	Ongoing and likely to be in the future	High (H)
PJ04: Sea-level rise due to climate change	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)
PM07: Natural processes without direct or indirect influence from human activities or climate change	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	Restore the habitat of the species (related to 'Habitat for the species')
9.3 Location of the measures taken	Only inside National Site Network
9.4 Response to measures	Short-term results (within the current reporting period, 2019–2024)

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
MA12: Reduce/eliminate soil pollution from agricultural activities	Medium (M)
MM01: Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes that occur without direct or indirect influence from human activities or climate change	High (H)
MM04: Other measures related to natural processes	High (H)
MS01: Reinforce populations of species from the directives	High (H)
MK01: Reduce impact of mixed source pollution	Medium (M)
MS02: Reintroduce species from the directives	High (H)
MS03: Restoration of habitat of species from the directives	High (H)

9.6 Additional information

No additional information

10. Future prospects

10.1a Future trends of parameters

ai) Range	Overall stable

bi) Population	Positive - increasing <=1% (one percent or less) per year on average
ci) Habitat for the species	Positive - slight/moderate improvement

10.1b Future prospects of parameters

aii) Range	Unknown
bii) Population	Poor
cii) Habitat for the species	Poor

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Unfavourable-bad (U2)
11.2 Population	Unfavourable-bad (U2)
11.3 Habitat for the species	Unfavourable-inadequate (U1)
11.4 Future prospects	Unfavourable-inadequate (U1)
11.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
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

No additional information

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	632
c) Maximum	4,257
d) Best single value	
12.2 Type of estimate	Minimum
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	Increasing
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Based mainly on extrapolation from a limited amount of data

12.8 Additional information

No additional information

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

Brooks, L. 2022. Fen Orchid Liparis Loeselii, Species Survey Report. Kenfig SAC. L00001_21.

Brooks, L. 2024. Kenfig SAC Fen Orchid Counts 2024 File Note. L00330. NRW Internal file note.

Brooks, L. Wilkinson, K. 2023, Kenfig Fen Orchid Counts 2022. NRW Internal file note.

Carrington, D et al 2010, The Fen Orchid – a species on the brink, British Wildlife, Vol 22, no 1: pp 1-8

Guest. D. pers. comm e-mail, 29 August 2017 Liparis at Whiteford.

Hammond, C. 2022. Whiteford burrows Fen Orchid report. NRW internal report.

Hammond, C. 2023. Whiteford Burrows Fen Orchid report 2023 monitoring. NRW internal report.

Hammond, C. 2024. Whiteford Burrows SSSI Fen Orchid monitoring report 2024. LOO341_24. NRW internal report.

Hurford, C. 1994. A survey to monitor the Fen Orchid Liparis loesilii in dune slack ND6 at Kenfig NNR, October 1992. Species & Monitoring report 92/2/24

Hurford, C. 1997. Year 1 report on the Fen Ochid Liparis loesilii Species Recovery Programme at Kenfig NNR, Glamorgan. Species & Monitoring Rport 97/2/1

Jones P.S. 1995. An inventory of Liparis loesilii var.ovata populations at Kenfig National Nature Reserve, Glamorgan. 1985 – 95. Countryside Council for Wales, Bangor HQ

Jones P.S. 1996. The conservation of Liparis loesilii var.ovata in Wales: Interim report of progress with phase 1 of the recovery Project. Countryside Council for Wales, Bangor HQ

Jones, P. S. 1998. Aspects of the population biology of Liparis loeselii (L.) Rich. var. ovata Ridd. ex Godfery (Orchidaceae) in the dune slacks of South Wales, UK. Botanical Journal of the Linnean Society, Volume 126, p.123-139.

Kay, Q. O. N., and John R. 1995. The conservation of scarce and declining plant species in lowland Wales: population genetics, demographic ecology and recommendations for

future conservation in 32 species of lowland grassland and related habitats. Countryside Council for Wales Science Report No. 110.

Kenfig SAC Liparis loeselii Surveillance Data 2003 – 2012 single excel spreadsheet. K. Wilkinson.

Kenfig SAC Liparis loeselii Surveillance Data 2013 – 2017, 2019, 2020, 2023. separate spreasheets for each year. K. Wilkinson.

Newberry, C. & Westwood, S. 2008. Kenfig SAC Petalwort Petalophyllum ralfsii (1395) & Fen orchid Liparis loeselii (1903) Summary SAC Monitoring report (draft). Countryside Council for Wales, unpublished report.

Stroh, P.A., Walker, K.J., Humphrey, T.A., Pescott, O.L & Burkmar, R.J. eds (2023). Plant Atlas 2020. Mapping Changes in the Distribution of the British and Irish Flora. 2 Volumes. Princeton: Botanical Society of Britain and Ireland & Princeton University Press.https://doi.org/10.2307/j.ctv2x6f08m

Wigginton, M. J., , 1999. British Red Data Books. 1. Vascular plants, 3rd Edition. JNCC, Peterborough.

Wilkinson, K. 2007. Monitoring Report for Kenfig/Cynffig SAC 2002 - 2006. CCW internal report.

Wilkinson. K. (in prep) Kenfig SAC Monitoring Summary note Liparis loeselii Fen Orchid, Monitoring Round 2013 to 2018

Wilkinson. K. (in prep). Carmarthen Bay Dunes Liparis loeselii SAC Monitoring summary note 2018

Wilkinson. K. 2017. Kenfig Extent of slack habitat calculcated from Gwawr Jones maps.

Wilkinson. K. Hayes.J. Kenfig SAC Liparis loeselii Surveillance Data All data combined JH: GIS inventory. NRW HQ dataset. 2018. Wales

Wilkinson. K.2013. Kenfig SAC Liparis loeselii Surveillance Data 2003-2012

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
2.4: Distribution map; Method used	The distribution map is derived from targeted surveys of all extant Welsh populations of Liparis. Most of the historic localities, excluding those lost to development, are also fairly regularly visited and it is considered unlikely that undiscovered populations persist at any of these. However, given the rediscovery of the species at a well searched former location at Pendine, following a 20 year gap in records, it is not entirely impossible that other overlooked populations occur elsewhere.
5.3: Short-term trend; Direction	See 5.11 The reoccurrence of Liparis at its former location at Pendine suggests it was always there but simply overlooked or present as a suppressed protocorm. So the apparent increase in range is an artifact rather than the result of an actual expansion in its distribution.
5.5: Short-term trend; Method used	The distribution map is derived from targeted surveys of all extant Welsh populations of Liparis. Most of the historic localities, excluding those lost to development, are also fairly regularly visited and it is considered unlikely that undiscovered populations persist at any of these. However, given the rediscovery of the species at a well searched former location at Pendine, following a 20 year gap in records, it is not entirely impossible that other overlooked populations occur elsewhere.
5.7: Long-term trend; Direction	During this time period the known range has been stable with records from Kenfig, Pendine and Whiteford. However there has been some flux in the population at Whiteford where it was last seen in 2005, then re-introduced in 2012 and not seen at Pendine between 2002 and 2022.
5.11: Change and reason for change in surface area of range	There is continued presence (2024) at Kenfig. At Whiteford, a new slack (Tor Slack) has developed which it was thought had suitable conditions for a re-seeding trial

	of Liparis in 2012. Subsequently 2 non-flowering young plants were found in 2016 and then 4 plants in 2017 (Guest 2017) Since then numbers have increased to 623 in 2024 (Hammond 2024). In the last reporting round Liparis was known from only two extant sites, Kenfig and Whiteford. However in 2022 a small population was rediscovered at Pendine some 20 years after it was last seen at the same location. This rediscovery has resulted in a significant increase in the species known range in Wales. However, given the species has been refound at its most recent previous location at Pendine and the significant distance between this site and its other known extant populations it is most likely that the plant has persisted in some form at the site over the period and simply been refound. The change in distribution and range is therefore considered to be an artifact of better recording rather than genuine change. Therefore the current range needs to take in all three locations.
6.2: Population size	2019 Kenfig = 4255; Whiteford = 2 2024 Kenfig = 111; Whiteford = 623; Pendine = 0
6.5: Additional population size	3 localities. Liparis is currently confined to three separate dune systems in Wales, Kenfig, Whiteford & Pendine.
6.6: Population size; Method used	The population counts are based on actual counts in the years mentioned, by several individual surveyors in a structured survey. However Liparis can be an inconspicuous species, especially when juvenile, as a

	consequence, any count data should be considered a minimum value. Like many orchids, Liparis populations are prone to significant fluctuations depending on seasonal climate conditions Liparis numbers were building at Kenfig year on year from 513 in 2016, with a peak in 2019 of 4255, a dip in 2022 (1536) then a crash in 2024 (111). The crash in 2024 can be attributed to the extended flooding that stretched from Winter into July in some / many slacks.
6.9: Short-term trend; Magnitude	Trends in fen orchid populations can be difficult to identify as individuals can be difficult to detect making accurate population counts difficult. And populations are subject to large fluxes in size in response to inter-annual variation in rainfall patterns etc. Overall though there has been a significant increase in the size and distribution of the fen orchid population in Wales over the last 12 years. This broad trend masks significant differences in the recent performance of two main Welsh populations at Whiteford and Kenfig. In 2013 Liparis was only know from a single site in Wales, Kenfig, although undetected plants or propagules were probably present at both Pendine and Whiteford at this time, the later as a result of reintroduction by seed scattering in 2013. Counts at Kenfig in 2013 recorded just 44 plants with an average count for the period 2011-13 of 320 individuals, since then numbers at Kenfig rose consistently until 2019 when 4255 plants were recorded. Numbers at that site have since dropping again with just 111 individuals counted in 2024. The plant was detected again at Whiteford in very small numbers 2016 , with much higher counts (in the order of 500 to 600 plants) in 2022,2023 and 2024. At Pendine, no fen orchids were seen from 2002 until 2022 when 7 plants were found in a slack where they were last recorded. Since then searches have not been successful in finding any fen orchid here.

	The total number of fen orchids recorded on Welsh sites in 2024 was 734 individuals with an average annual count of 1257 plants for the period 2022-2024.
6.10: Short-term trend; Method used	Annual counts (sometimes partial in terms of number of slacks) are undertaken at Kenfig Burrows NNR. Numbers of non-flowering, flowering, seeding and aborted (i.e. those that had attempted to flower or fruit but had flowering parts removed or withered) plants are recorded. Annual counts with a small team of trained staff and sometimes volunteers, have been undertaken at the Whiteford since 2016.The numbers were in single figures from then, until 2022 when they jumped to 495 and have risen steadily. The latest total number in 2024 is 623. This should be seen as a minimum as not all suitable habitat in Tor Slack was checked.
6.12: Long-term trend; Direction	Over the last 24 years the total Liparis population Wales has increased in size, from a rough average of 290 plants per year in 2003 - 2005 to c 1257 plants in 2022-2024 and maintained its overall distribution with a continued presence at three, sites Kenfig, Whiteford and Pendine despite a loss of the species at Whiteford from 2005-2016 and an absence of records at Pendine from 2002-2022. Over the longer term, however there has been a much more significant decline in terms of the species distribution and abundance in Wales. Since the late 1980s, the species has been lost from two (Crymlyn Burrows and Baglan Burrows) out of 5 dune systems on which it occurred. Since the last reporting round numbers continue to rise at the Tor Slack, Whiteford with 623 plants in 2024. There has been no occurrence elsewhere in the dune system at Whiteford. (Hammond, 2022 - 24). There has been an equally significant long-term decline in the numbers of individual plants, with the population at Kenfig alone falling from an estimated 20,000+ in 1987-1992 (Jones 1995) to c.1000 in 2017(Wilkinson.K,

	Hayes.J, 2018). The rise in population during the last reporting round continued into this one with a peak of 4255 in 2019. Since then the number jumped around from 1000+ to 600+ plants, until 2024 when numbers crashed to 111 plants. This crash is thought to be attributable to the long period of slack flooding over the Winter, Spring and into mid-summer. (Brooks, 2024).
6.14: Long-term trend; Method used	Regular and organised counts of the Liparis population have been undertaken at its two main Welsh localities (Kenfig and Whiteford Burrows). Counts and searches at the other localities where fen orchids have been present in the past have been more ad hoc.
6.18: Age structure, mortality and reproduction	There is no reason to consider that the population structure of Liparis at Kenfig Burrows and Whiteford Burrows (its core Welsh localities) deviates significantly from normal.
7.1: Sufficiency of area and quality of occupied habitat	In Wales Liparis was thought to be confined to damp, winter flooded dune slacks in the south of the country, where it occupies the early to mid-successional stages in slack development. The development of the Tor slack, introduction of Liparis here, and subsequent explosion of Liparis in conditions more akin to the Eastern England, have raised queries about habitat suitability. At the Tor Slack Liparis is found embedded in a thick moss layer in taller vegetation. Here it seems to be less impacted by extensive flooding. Over-stabilisation of dune systems in south Wales has led to a decline in the extent and distribution of these open slack habitats. Liparis is now restricted to a small proportion of its former sites and neither the area nor quality of the habitat it occupies is considered sufficient to maintain it at FCS. Creation of early-successional slack conditions occurs at Kenfig and Pendine. The overall extent of damp dune slack habitat within the natural range of Liparis in Wales is almost certainly sufficient to maintain a population at FCS. However, there has been a long-term decline in the extent of early successional phases in slack development required by the

	species and the quality of this dune slack habitat is not considered sufficient to maintain Liparis at FCS.
7.4: Short-term trend; Direction	At Kenfig scraping has increased the area of early successional habitat and there has been a net trend in colonisation of these areas (despite recent falls in population size), while mowing has helped maintain extant populations in areas of more mature slack. The reestablishment of the population in Tor Slack at Whiteford represent a big increase in the area of occupied habitat in this period.
8.1: Characterisation of pressures	Pressures: the principal pressures are natural succession (PM07) resulting from under-grazing (PA08), (Wilkinson 2007 & 2017) and lack of dune system dynamism, exacerbated by air pollution (PA18 & PK03). It is clear that fluctuations in flooding and drought are becoming more extreme and having an impact on mortality and flowering success at Kenfig (PJ03), and are predicted to continue in the future. The invasive shrub (PI02) Hippophae is a significant problem at Pembrey. Groundwater abstraction (PL01) has been suggested as a cause of lowered water levels at Kenfig (Carrington et. al, 2010). Threats: all current pressures are expected to continue to act over the next two reporting cycles. Some action is being taken to try to create suitable habitat but without sustainable natural creation of habitat through dune mobility the continued threat from natural succession will continue. Agricultural pollution (PA18) seems to be an increasing threat, especially if intensive agriculture is permitted close to dune systems.
9.5: List of main conservation measures	Managing dune systems to increase mobility and the abundance of early successional habitats (MM01 & MM04) has taken place in a number of Natura 2000 sites but especially Kenfig, as has control of invasive species (MI03) (Carrington et al., 2010. Wilkinson 2007 & 2017); NRW regulate air pollution and limit its impacts on dune systems (MK01); NRW also regulate agricultural air pollution (MA12), have policies preventing afforestation of dunes

	(MB01). Plans to reinforce or reintroduce the species (MS01 & MS02) on sites could be considered and should be assessed in line with the NRW's internal guidance note 5: Considering Conservation translocations.
11.1: Range	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable and (ii) the current Range surface area is more than 10% below the Favourable Reference Range.
11.2: Population	Conclusion on Population reached because:(i) the short-term trend direction in Population size is increasing; (ii) the current Population size is more than 25% below the Favourable Reference Population and iii) reproduction, mortality and age structure not deviating from normal.
11.3: Habitat for the species	Conclusion on Habitat for the species reached because: (i) the area of occupied habitat is not sufficiently large for long-term survival of the species (ii) the quality of occupied habitat is not suitable for the long-term survival of the species; and iii) there is a not a sufficiently large area of occupied and unoccupied habitat of suitable quality for long term survival (iv) the short-term trend in area of habitat is increasing; and v) expert opinion determines that the habitat quality of occupied and unoccupied habitat is not bad; and vi) expert opinion determines that the habitat area is insufficient, but not clearly so.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are unknown; (ii) the Future prospects for Population are poor; and (iii) the Future prospects for Habitat for the species are poor.
11.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Unfavourable-bad because two of the conclusions are Unfavourable-bad.
6.15: Favourable Reference Population (FRP)	The UK-level FRV for population was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019

	Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current population trends and abundance.
5.10: Favourable Reference Range (FRR)	The UK-level FRV for range was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current distribution and trends.