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

2019-2024

Conservation status assessment for the species:

S1395 - Petalwort

(*Petalophyllum ralfsii*)

Wales

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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: Petalwort

Distribution Map

Range Map

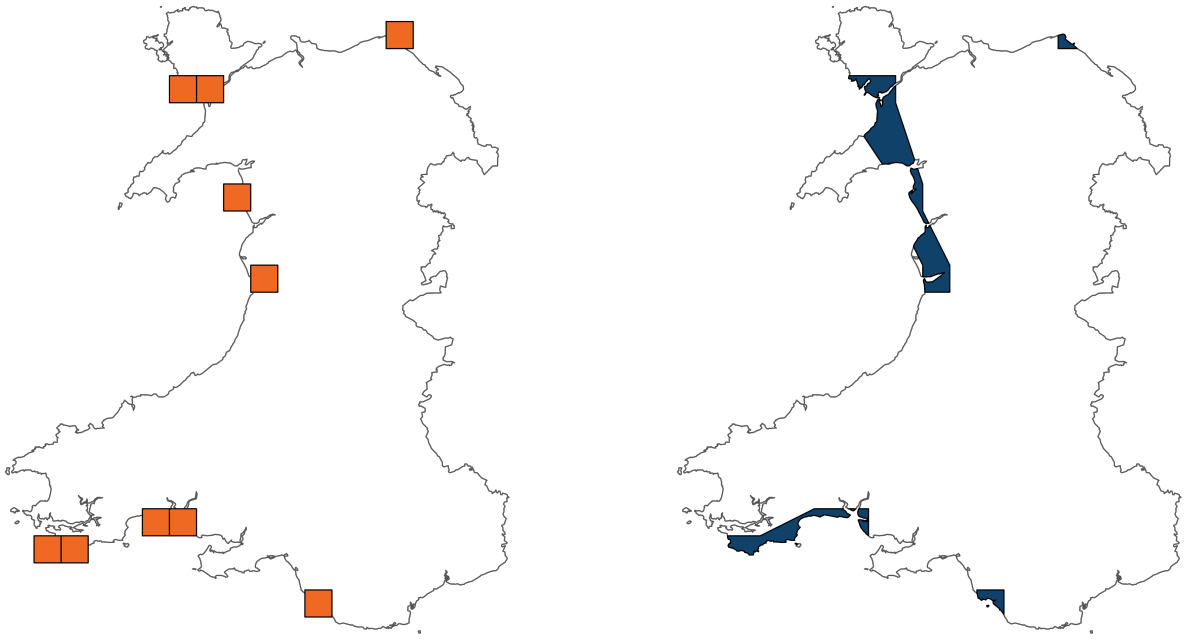

Figure 1: Wales distribution and range map for S1395 - Petalwort (*Petalophyllum ralfsii*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1395 - Petalwort (*Petalophyllum ralfsii*). 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-inadequate (U1)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Unfavourable-bad (U2)**
Future prospects (see section 10)	**Unfavourable-bad (U2)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1395
1.3 Species scientific name	*Petalophyllum ralfsii*
1.4 Alternative species scientific name	
1.5 Common name	Petalwort
Annex(es)	II

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)	903.78
5.2 Short-term trend; Period	2013-2024
5.3 Short-term trend; Direction	Decreasing
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	Decreasing <=1% (one percent or less) per year on average
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	Decreasing
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 2% and 10% smaller than the FRR
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	

5.11 Change and reason for change in surface area of range

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

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2019-2024

6.2 Population size (in reporting unit)

a) Unit	number of localities
b) Minimum	8
c) Maximum	10

d) Best single value	10
6.3 Type of estimate	Minimum
6.4 Quality of extrapolation to reporting unit	

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

a) Unit	number of map 1x1 km grid cells
b) Minimum	15
c) Maximum	24
d) Best single value	16
e) Type of estimate	Minimum
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	Decreasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	23
b) Estimated maximum	38
c) Pre-defined range	
d) Unknown	No
e) Type of estimate	Minimum
f) Rate of decrease	Decreasing >1% (more than one percent) per year on average
6.10 Short-term trend; Method used	Complete survey or a statistically robust estimate
6.11 Long-term trend; Period	2001-2024
6.12 Long-term trend; Direction	Decreasing

6.13 Long-term trend; Magnitude	
a) Minimum	33
b) Maximum	47
c) Confidence interval	
d) Rate of decrease	Decreasing >1% (more than one percent) per year on average
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	Expert opinion
e) Quality of information	

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

The decline in the number of occupied localities (from 17 in 1995 to 13 by 2013 and 10 by 2024) and 1x1 km squares tells only part of the story. Monitoring and surveillance have indicated substantial declines in thallus counts and the number of occupied 10x10 km squares at 3 of the remaining 8 Welsh site for Petalophyllum ralfsii. Only 5 sites still have stable or increasing populations.

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	Decreasing
7.5 Short-term trend; Method used	Complete survey or a statistically robust estimate
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)
PB23: Physical alteration of water bodies for forestry (including dams)	Ongoing and likely to be in the future	Medium (M)
PC01: Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell)	Ongoing and likely to be in the future	Medium (M)
PF03: Creation or development of sports, tourism and leisure infrastructure	In the past but now suspended due to measures	Medium (M)
PF15: Modification of coastline, estuary and coastal conditions for built-up areas	In the past but now suspended due to measures	Medium (M)
PF09: Residential, commercial and industrial activities and structures generating air pollution	Ongoing and likely to be in the future	High (H)
PH01: Military, paramilitary or police exercises and operations on land and freshwater	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	High (H)
PJ03: Changes in precipitation regimes due to climate change	Ongoing and likely to be in the future	High (H)

PK04: Atmospheric N-deposition	Ongoing and likely to be in the future	High (H)
PL01: Abstraction from groundwater, surface water or mixed water (mixed or unknown drivers)	Ongoing and likely to be in the future	Medium (M)
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	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
MA11: Reduce/eliminate air pollution from agricultural activities	High (H)

MB01: Prevent conversion of (semi-) natural habitats into forests and of (semi-) natural forests into intensive forest plantation	Medium (M)
MF02: Habitat restoration of areas impacted by residential, commercial, industrial and recreational infrastructure, operations and activities	Medium (M)
MI03: Management, control or eradication of other invasive alien species	High (H)
MK01: Reduce impact of mixed source pollution	High (H)
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)

9.6 Additional information

No additional information

10. Future prospects

10.1a Future trends of parameters

ai) Range	Negative - decreasing <=1% (one percent or less) per year on average
bi) Population	Very Negative - decreasing >1% (more than one percent) per year on average
ci) Habitat for the species	Negative - slight/moderate deterioration

10.1b Future prospects of parameters

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

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Unfavourable-inadequate (U1)
11.2 Population	Unfavourable-bad (U2)

11.3 Habitat for the species	Unfavourable-bad (U2)
11.4 Future prospects	Unfavourable-bad (U2)
11.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
11.6 Overall trend in Conservation Status	Deteriorating

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 localities
b) Minimum	7
c) Maximum	9
d) Best single value	8
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	Decreasing
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	Decreasing
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Complete survey or a statistically robust estimate

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

Modelling by UKCEH using the FRAME model shows that a significant proportion of the reactive N pollution that affects sand dune systems with Petalophyllum derives from outside the UK. For example, 26.5% of the N deposition at Morfa Dyffryn a Morfa Harlech SAC is derived from the Republic of Ireland, ‘European sources’ and International Shipping (pie chart and bar chart below), with comparable figures of 26% for Kenfig SAC, 25.3% for Carmarthen Bay Dunes SAC and a relatively lower 18.8% for Dee Estuary SAC.

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

BLOCKEEL, T.L., BOSANQUET, S.D.S., HILL, M.O. & PRESTON, C.D., 2014, Atlas of British and Irish bryophytes. Pisces Publications, Newbury.

BOSANQUET, S.D.S. 2012. Supporting information for Countryside Council for Wales submission on Petalophyllum ralfsii.

CALLAGHAN, D.A. 2023a. Desk-based Petalwort Condition Assessment Study for Sands of LIFE Project Sites. NRW Evidence Report No: xxx, 44 pp, Natural Resources Wales, Bangor.

CALLAGHAN, D.A. 2023b. Bryophyte feature monitoring on the Dyfi National Nature Reserve. Unpublished report, Natural Resources Wales, Bangor.

CALLAGHAN, D.A., VAN WILLEGEN, L., WILLIAMS, G., HOLLINGHAM, M. & JONES, L. (2020): Pony trails, hydrology and habitat restoration: aspects of the ecology of Petalophyllumralfsii in a Welsh oceanic dune system, Journal of Bryology.

CREER, J. 2024. 2019-2024 Evidence pack for Annex B & D feature reports. Feature name: Humid dune slacks. Feature code: H2190. NRW Report to the European Union.

DUNNE, H., JESSOP, A., STEVENSON, P. & TOWNSEND, N. 2017. Petalophyllum ralfsii (Petalwort) Monitoring at Ynyslas NNR, Ceredigion, 2017. Aberystwyth University MSc Thesis.

JONES, L., NIZAM, M.S., REYNOLDS, B., BAREHAM, S. & OXLEY, E.R.B. 2013. Upwind impacts of ammonia from an intensive poultry unit. Environmental Pollution 180: 221-228.

LYONS, J. 2020. Brief report on Petalwort - Petalophyllum ralfsii colonising scrape created in 2018, 14th December 2020 at the northern edge of slack 11 at Ynyslas, Dyfi NNR. Unpublished NRW report.

NATURAL RESOURCES WALES. 2025. Sands of LIFE (https://naturalresourceswales.gov.uk/about-us/what-we-do/our-projects/our-nature-projects/sands-of-life/?lang=en) Accessed 20th February 2025.

PYE, K. & BLOTT, S.J. 2013. Kenfig Phase 1 Dune Rejuvenation Works, July 2013 - Overview Report. Report to Natural Resources Wales.

SUTTON, M.D. 2020. Survey of Petalwort, Laugharne & Pendine Burrows SSSI, November 2020. Unpublished report to Qinetic

SUTTON, M.D. 2022. Bryophyte Survey, Brownslade and Linney Burrows, Castlemartin Cliffs and Dunes SSSI. Unpublished report to Landmarc.

WILKINSON, K. 2018. Summary of Petalophyllum monitoring 2013 to 2018. NRW internal report.

British Bryological Society database, accessed 18th February 2025.

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
5.3: Short-term trend; Direction	The reported range has decreased during the last two reporting rounds, following the loss of the species from its two sites on Gower, along with the introduced inland colony. The range map in the last report included those areas.
5.4: Short-term trend; Magnitude	The range is probably not decreasing by >1% per year but the population probably is.
5.11: Change and reason for change in surface area of range	Data come from the British Bryological Society, from NRW staff, and from surveyors contracted by NRW; between these sources most Petalophyllum sites have been visited during the reporting period.
6.2: Population size	Petalophyllum has been reported from 8 dune systems in the current reporting round – Aberffraw, Brownslade Burrows, Laugharne Burrows, Merthyr Mawr, Morfa Dyffryn, Newborough Warren, Pendine Burrows and Ynyslas - and is stable or increasing at 5 of those sites. Two other sites have not been visited recently – Talacre Warren is believed likely to be still extant, whilst the status of Petalwort at Broomhill Burrows is uncertain and it is considered potentially lost from there.
6.5: Additional population size	Occupied 1x1km grid cells was the reporting unit last reporting round, although localities was included as an alternative value. The species has been recorded from 15 1x1km grid cells in the 2019-2024 reporting period, so that is the minimum potential population, but some of the colonies recorded in the previous round are probably still extant giving a maximum of 24 1x1km grid cells. In reality, most of the grid cells reported in the previous round but not the current one are known to have lost the species, with only Broomhill Burrows and Talacre Warren being unvisited and therefore potentially still extant – the Best Single Value is therefore the 15 grid cells recorded this round plus 1 for one of those two sites.

6.8: Short-term trend; Direction	The decline is from 13 localities (or 21 occupied 1x1km grid cells) reported in 2013-2018 to 10 localities (16 occupied grid cells) this round.
6.9: Short-term trend; Magnitude	a) Estimated Min = 23 % decline (from 13 occupied localities in 2013-2018 to 10 occupied localities in 2019 to 2024) b) Estimated Max = 38% decline (from 13 to 8 occupied localities, because two potentially occupied localities might have been lost)
6.13: Long-term trend; Magnitude	a) Min 33% (from 15 occupied localities in 2001-2006 to 10 localities now, with definite losses from Kenfig Burrows, Linney Burrows and Morfa Harlech since 2013 and additional definite losses from Oxwich Burrows and Whiteford Burrows since 2001) b) Max 47% (from 15 occupied localities in 2001-2006 to 8 localities now, given the potential loss from two sites mentioned in 6.9 as well as the definite losses described above)
6.18: Age structure, mortality and reproduction	Most remaining populations hold male and female plants and some sporophytes if surveyed at a suitable time of year
7.1: Sufficiency of area and quality of occupied habitat	Bosanquet (2012) reported the area occupied by Petalwort as 22 ha in that reporting round. The area of potentially suitable habitat has increased quite significantly, following dune destabilisation work at Kenfig, Merthyr Mawr and Newborough, as well as smaller-scale scraping at Aberffraw, Broomhill Burrows, Brownslade Burrows, Talacre Warren, Tywyn Burrows and Ynyslas. However, colonisation of new scrapes has only taken place at Brownslade Burrows and Ynyslas, as well as brief

	appearances (a few thalli for one season, with subsequent loss) in two scrapes at Kenfig, which suggests that the quality remains insufficient for the species. It is possible that the successional reset provided by these destabilisation works will allow colonisation by Petalwort in the medium term as scrapes mature beyond the bare sand stage. Away from scrapes, much of the occupied habitat is becoming more closed, with increasing vascular plant growth and reducing abundance of Petalwort; according to the Reg9A report for H2190 Humid Dune Slacks, none of the habitat is in good condition (Creer, 2024). At some sites, such as Merthyr Mawr (Wilkinson, 2018) and Newborough Warren (Callaghan et al, 2020), Petalwort is largely or entirely restricted to trampled paths through rank slacks.
8.1: Characterisation of pressures	The principal pressures are under-grazing (PA08) and resulting natural succession (PM07), exacerbated by air pollution (PA18, PF09 & PK04), for example that identified as affecting Newborough Warren by Jones et al (2013). According to the Reg9A report for H2190 Humid Dune Slacks, 100% of the habitat resource in Wales is found in areas where the deposition of atmospheric nitrogen (2022 data) exceeds the Critical Load (Creer, 2024). The invasive shrub (PI02) Hippophae is a significant problem on a number of sites, and Talacre Warren holds a suite of other problem INNS. Forestry activities affecting the water table (PB23) are a pressure at Newborough Warren, where Petalwort has been lost from slacks close to the forest, and were at Tywyn Burrows and Whiteford Burrows where Petalwort has gone from the entire dune systems, although ongoing afforestation (PB01) is now unlikely to take place on coastal sand dunes. Sand Dredging (PC01) has been blamed for decreased dune mobility at a number of sites (e.g. Pye & Blott, 2013). The extent of golf courses, sea defences etc. (PF03 & PF15) currently has limited impacts on Petalwort, although loss of habitat was a major problem in the past. Military activities (PH01) are carefully controlled to avoid damage at two sites, both of which hold increasing populations of Petalwort in contrast to the remainder of

	Welsh sites. Abstraction from the groundwater (PL01) has been suggested as a cause of lowered water levels at Kenfig, whilst altered precipitation due to Climate Change (PJ03) has enhanced vascular plant growth as well as suppressing the natural movement of sand affecting dune slack dynamics.
9.5: List of main conservation measures	Managing dune systems to increase mobility and increase the abundance of early successional habitats (MM01) has taken place on all UK National Site Network sites with Petalophyllum, both as part of the Sands of LIFE Programme (Natural Resources Wales, 2025) and beforehand. Sands of LIFE have also carried out control of invasive species (MI03), as have partner organisations on other dune systems. NRW regulate air pollution and limit its impacts on dune systems as much as possible (MK01); NRW also regulate agricultural air pollution (MA11), have policies preventing afforestation of dunes (MB01), and are restoring some habitat near a golf course and a caravan park (MF02). Military activities (MH02) in two UK National Site Network sites have been adapted to benefit Petalwort, and those are the only two sites in Wales at which the Petalophyllum population is now increasing.
11.1: Range	Conclusion on Range reached because:(i) the short-term trend direction in Range surface area is decreasing by 1% per year or less; and (ii) the current Range surface area is not 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 decreasing by more than 1% per year; (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 decreasing; and v) expert opinion determines that the habitat quality of occupied and unoccupied habitat is bad; and vi) expert opinion determines that the habitat area is clearly insufficient.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are poor; (ii) the Future prospects for Population are bad; and (iii) the Future prospects for Habitat for the species are bad.
11.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Unfavourable-bad because three of the conclusions are Unfavourable-bad.
12.1: Population size inside the pSCIs, SCIs and SACs network	The entire population of Petalwort in Wales is now within the UK National Site Network.
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. Following expert review, a Wales-level FRV was derived based on population trend and abundance data specific to Wales, rather than adopting the UK-level value. The revised FRV has been set as Population trend in Wales is substantially negative, more so than the suggested UK level FRVs.
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. Following expert review, a Wales-level FRV was derived based on distribution and trend evidence

specific to Wales, rather than adopting the UK-level value.

The revised FRV has been set as range trend in Wales is substantially negative, more so than the suggested UK level FRVs.