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

2019-2024

Conservation status assessment for the species:

S1831 - Floating water-plantain

(*Luronium natans*)

Wales

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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: Floating water-plantain

Distribution Map

Range Map

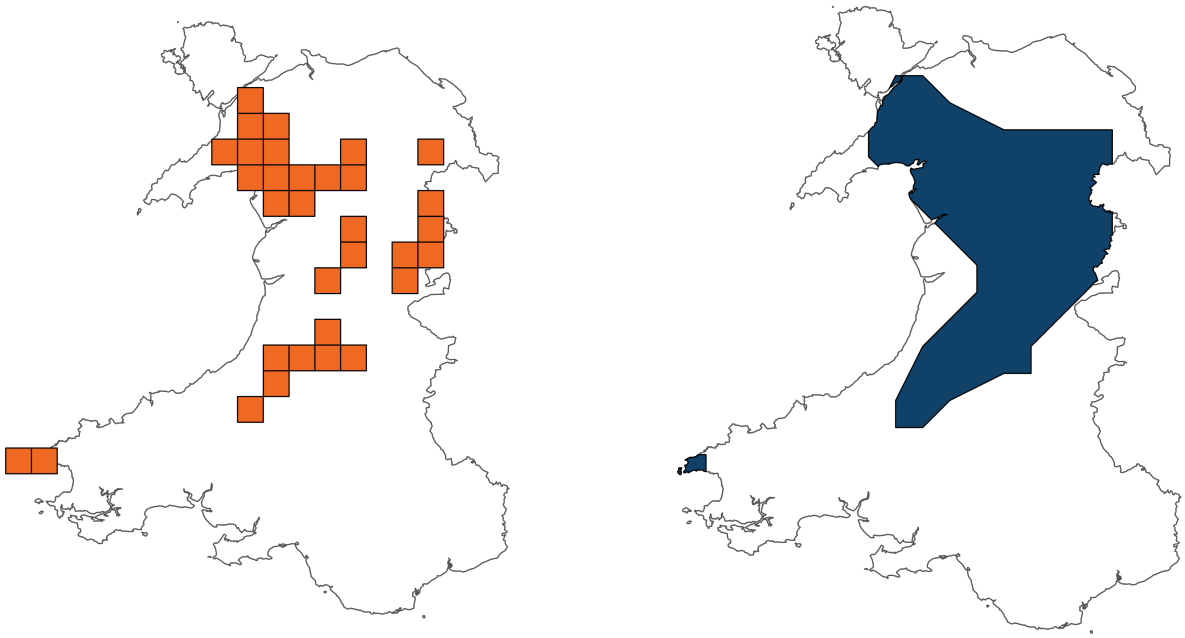

Figure 1: Wales distribution and range map for S1831 - Floating water-plantain (*Luronium natans*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. 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 S1831 - Floating water-plantain (*Luronium natans*). 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)	**Favourable (FV)**
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

1. General information

1.1 Country	Wales
1.2 Species code	S1831
1.3 Species scientific name	*Luronium natans*
1.4 Alternative species scientific name	
1.5 Common name	Floating water-plantain
Annex(es)	II, IV

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2014-2024
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)	6,120.8
5.2 Short-term trend; Period	2014-2024
5.3 Short-term trend; Direction	Stable
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	Decreasing 0 - 12%
d) Unknown	No
e) Type of 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	1980-2024
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 less than 2% smaller than the FRR
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	high

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	No
d) Different method	No
e) No information	No
f) Other reason	Yes
g) Main reason	Other reasons

5.12 Additional information

Since the last monitoring cycle, L. natans has been not been recorded from four 10 km squares. All of these are relatively peripheral locations which have not been visited in the current reporting round.

6. Population

6.1 Year or period	2014-2024

6.2 Population size (in reporting unit)

a) Unit	number of map 1x1 km grid cells

b) Minimum	
c) Maximum	
d) Best single value	123
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	Based mainly on extrapolation from a limited amount of data
6.7 Short-term trend; Period	2014-2024
6.8 Short-term trend; Direction	Unknown
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
6.10 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
6.11 Long-term trend; Period	1992-2024

6.12 Long-term trend; Direction	Decreasing
6.13 Long-term trend; Magnitude	
a) Minimum	0.14
b) Maximum	0.51
c) Confidence interval	
d) Rate of decrease	Decreasing <=1% (one percent or less) per year on average
6.14 Long-term trend; Method used	Based mainly on extrapolation from a limited amount of data

6.15 Favourable Reference Population (FRP)

ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is between 5% and 25% smaller than the FRP
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	high

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	Yes
f) Other reason	No
g) Main reason	Unknown

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?	Yes
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	Complete survey or a statistically robust estimate
b) Sufficiency of quality of occupied habitat; Method used	Complete survey or a statistically robust estimate

7.3 Short-term trend; Period	2014-2024
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	1990-2024
7.7 Long-term trend; Direction	Decreasing
7.8 Long-term trend; Method used	Based mainly on expert opinion with very limited data

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
PE05: Land, water and air transport activities generating pollution to surface or ground waters	Ongoing and likely to be in the future	Medium (M)
PI01: Invasive alien species of Union concern	Ongoing and likely to be in the future	High (H)
PI02: Other invasive alien species (other than species of Union concern)	Ongoing and likely to be in the future	High (H)
PI03: Problematic native species	Ongoing and likely to be in the future	Medium (M)
PL04: Development and operation of dams (mixed or unknown drivers)	Ongoing and likely to be in the future	Medium (M)
PL05: Modification of hydrological flow (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	Medium (M)

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	Maintain the current range, population and/or habitat for the species
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
MA10: Reduce/eliminate point or diffuse source pollution to surface or ground waters (including marine) from agricultural activities	Medium (M)
ME01: Reduce impact of transport operation and infrastructure	High (H)
MI01: Early detection and rapid eradication of invasive alien species of Union concern	High (H)
MI02: Management, control or eradication of established invasive alien species of Union concern	Medium (M)
MI03: Management, control or eradication of other invasive alien species	High (H)
MI05: Management of problematic native species	Medium (M)
MK02: Reduce impact of multi-purpose hydrological changes	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)

9.6 Additional information

No additional information

10. Future prospects

10.1a Future trends of parameters

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

10.1b Future prospects of parameters

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

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Favourable (FV)
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	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 map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	101
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	Stable
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

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

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Goldsmith B, Shilland EM, Yang H, Shilland J, Salgado J, Turner SD. 2014c. Condition Assessment of Eight Standing Waters in Sites of Special Scientific Interest (SSSIs). NRW Evidence Report No: 29, 147pp, Bangor: Natural Resources Wales.

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Hatton-Ellis TW. 2025a. Evidence Pack for the Conservation Status Assessment of H3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea – First Habitats Regulations 9A Report for Wales. Unpublished internal document, Natural Resources Wales.

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Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
2.2: Year or Period	Favourable reference (Hatton-Ellis 2025b - Figure 1): 1983-2018. Some additional records from the 1980s have been used to better capture the range of this species. In total there are 35 favourable reference squares (Hatton-Ellis 2019). Current (Hatton-Ellis 2025b - Figure 2): 2014-2024. The standard period has been used.
5.2: Short-term trend; Period	The standard period has been used.
5.3: Short-term trend; Direction	There is no evidence of a decrease in range since the previous reporting round. Of the 10km squares where Luronium was reported in the previous round but now is not, all are locations that have not subsequently been visited.
5.4: Short-term trend; Magnitude	There is no evidence of a short-term decrease in range.
5.5: Short-term trend; Method used	The available data cover most of the favourable reference range for L. natans in Wales and are therefore considered robust. More frequent surveys would allow a more rapid identification of trend, but this level of effort is not warranted for a species where there is no clear evidence of decline in range.
5.7: Long-term trend; Direction	Although populations have been rediscovered since the 1990s, the general range of the species in Wales at a 10km scale has changed little between the period 1980-1999 and the present day.
5.9: Long-term trend; Method used	There are good long-term distribution data for Luronium natans, based on distribution data held on the BSBI's Distribution Database (DDB).

5.11: Change and reason for change in surface area of range	Since the last monitoring cycle, L. natans has been not been recorded from four 10 km squares. All of these are relatively peripheral locations which have not been visited in the current reporting round.
6.1: Year or Period	The standard period has been used.
6.2: Population size	Unit = 1km squares Best Single Value = 123 1km squares L. natans was positively recorded in 71 1km squares over the relevant time period, with an additional 52 interpolated or considered likely still extant (Hatton-Ellis 2025b - Figure 3a). Compared to the last reporting round, when 110 1km squares had a positive record and 13 were interpolated or likely still extant (Hatton-Ellis 2025b - Figure 3b), this represents a significant deterioration in the quality of the dataset, with a corresponding increase in uncertainty. This represents 85% of the favourable reference number of 1km squares (145 squares: Hatton-Ellis 2025b - Figure 3c). 45 (31%) of these reference squares are in the Montgomery Canal, highlighting the suitability of this location for Luronium. However, the Montgomery Canal population of L. natans has low genetic diversity (Kay et al. 1999). There have been no confirmed losses of populations since the last reporting round, but the lack of monitoring data at many sites makes an accurate assessment of decline impossible. However, there is no evidence of a rapid decline (>1% per year on average). The LEAFPACS / CSM method (Willby et al. 2009; JNCC 2015) provides a standardised method for assessing relative macrophyte cover in lakes. Although not an official measure of population, cover scores calculated from LEAFPACS / CSM lake survey data (Baxter & Stewart 2015; Burgess et al. 2006, 2009, 2013; Goldsmith et al.

	2006, 2014a, b, 2016, 2018; Shilland et al. 2017; Hatton-Ellis 2011), river LEAFPACS surveys (NRW unpublished data) and SCUBA / snorkel surveys (Goldsmith et al. 2014d; Lomas et al. unpublished) suggest that Luronium populations are stable in most sites.
6.5: Additional population size	No alternative population unit has been used. The previous unit was number of sites.
6.8: Short-term trend; Direction	There is no evidence of widespread loss or gain of populations within this time frame, and although datasets are too small for a full trend analysis LEAFPACS cover scores on lakes with multiple surveys show no consistent evidence of decline, with cover apparently increasing in some sites and decreasing or fluctuating in others. The data are not very suitable for trend analysis, as individual sites show evidence of differing trends and therefore a nested analysis is required. However, surveys at individual sites are too infrequent to assess trends at a site level and data have consequently had to be pooled. The resulting trendline is very weakly positive, but explains less than 3% of the variance in the data (slope = 0.056, R2 = 0.0028). As the trendline is almost identical to zero, explains almost none of the variation in cover and is based on an approach that is statistically weak, trend direction has been reported as unknown.
6.9: Short-term trend; Magnitude	No clear evidence of change See commentary in 6.8. The trend analysis does not provide sufficient certainty to identify a direction or magnitude of change.
6.10: Short-term trend; Method used	There are limited data to assess trends with confidence.
6.12: Long-term trend; Direction	There have been some losses since the early 1990s. See Hatton-Ellis (2019).

6.13: Long-term trend; Magnitude	a) Min: 21 1km squares (14%) b) Max: 74 1km squares (51%) c) Not available The minimum value is the number of 1km squares where Luronium has definitely been lost. The maximum value includes squares where Luronium is thought likely to still exist, but have not been recorded in the current cycle. The maximum value mainly reflects the lower survey effort over the last decade compared to the 2000s, rather than a genuine loss of populations. The true number of lost squares is thought to be close to the minimum value. d) Decreasing ≤1% (one percent or less) per year on average Whilst we cannot exclude the possibility of a more rapid decline due to the relative lack of survey data, the fact that L. natans continues to be present in most localities where it has been previously recorded suggests that a decline >1% per year is unlikely.
6.14: Long-term trend; Method used	Our knowledge of the population of this species was limited at the start of the assessment period and this has in turn restricted opportunities for assessing long-term trends. The relative lack of recent survey data in many sites where it was previously present adds significantly to the uncertainty, meaning that although unlikely, a more significant decline is possible.
6.15: Favourable Reference Population (FRP)	The favourable reference population in Wales is 145 1km squares (Hatton-Ellis 2019).

6.16: Change and reason for change in population size	Although the change in method has altered the results, the main difference is the reinterpretation of existing records and availability of new data.
6.18: Age structure, mortality and reproduction	L. natans is a naturally clonal plant and although flowering occurs sporadically in many populations, this is considered to be a natural phenomenon (Willby & Eaton 1993; Kay et al. 1999). Most Welsh populations have fairly low genetic diversity (Kay et al. 1999), though a new study using modern genetic techniques would be welcome.
7.1: Sufficiency of area and quality of occupied habitat	Area of occupied habitat Population extinctions of Luronium natans are always linked to deteriorations in quality of the supporting habitat. Habitat area per se is not likely to be a factor in population extinctions. Quality of occupied habitat L. natans occurs in three main habitat types: lakes, canals and rivers. The most important of these are lakes, which support 26 separate, self-sustaining populations. These vary significantly in size. 12 of these populations, comprising 28% of habitat area (by lake perimeter) are considered to be in Good condition whilst 9 populations, comprising 57% of habitat area (by lake perimeter) are in Not Good condition, with the status of the remainder being unknown. The plant is also found in some small ponds in coastal Pembrokeshire. There is a single canal population, in the Montgomery Canal. The maintenance of this population depends on regular vegetation management in the canal to prevent succession. The Montgomery Canal is in Unfavourable Condition due to invasive species, overshading and nutrient issues. River populations in Wales may not be self-sustaining over the long term and probably depend on regular colonization

	from upstream lake habitat; certainly all extant river populations in Wales are downstream of lakes supporting substantial populations. Area and quality of unoccupied habitat Although L. natans is not a good coloniser in comparison with many aquatic plants, it nevertheless does colonise suitable sites over time, as is clear from its wide distribution in northern and western Wales (Figure 1) and by its colonisation of the canal network (Willby & Eaton 1993). In lakes and ponds, occupancy of L. natans is lower, with the species being found in about 40-50% of low alkalinity lakes in its Snowdonia and Cambrian Mountains heartland areas. It seems to have a distinct preference for fine substrates and in larger lakes such as Llyn Tegid or Llyn Cwellyn tends to occur on or near the alluvial fans of inflow rivers (NRW unpublished data). It is unclear whether its absence from the remaining lakes is because these lack suitable mesohabitat, or because they are suitable but unoccupied. For this reason, the extent of unoccupied habitat is considered unknown. Floating water-plantain is very rare in ponds. In Welsh rivers, floating water-plantain is rare, occurring in a handful of low alkalinity, low gradient rivers with other macrophytes, such as the Afon Gwyrfai and Afon Glaslyn in Eryri (Snowdonia). There is insufficient information on habitat requirements to determine occupancy. Since the extent and quality of unoccupied habitat is not known, no conclusion can be reached regarding overall habitat sufficiency in relation to occupancy.
7.2: Sufficiency of area and quality of occupied habitat; Methods used	General condition assessments of habitats supporting L. natans have been used (for methods see JNCC 2015).

7.4: Short-term trend; Direction	In the previous cycle, 35% of lake habitat was assessed as Good, 50% as Not Good, and 15% as Unknown. The current results are 28% Good, 57% Not Good, and 15% Unknown. These changes mainly reflect spread of invasive non native species. These figures do not include the Montgomery Canal, which has remained at Not Good status throughout.
7.5: Short-term trend; Method used	Based on recent survey data, each occupied lake has been assigned a habitat quality of 'Good', 'Not Good' or 'Unknown' depending on evidence of significant pressure / habitat damage likely to affect Luronium. The summed perimeter has been calculated of lakes in each category and compared with comparable data from the previous cycle (Hatton-Ellis 2019). Perimeter rather than area has been used because L. natans grows mainly in relatively shallow water in marginal areas, and using area therefore tends to overstate the importance of large deep lakes.
7.8: Long-term trend; Method used	Long-term assessments are complicated by a lack of detailed data, especially at the start of the assessment period, and by the presence of multiple pressures with different trajectories. Acidification as a pressure has reduced over the course of the trend period, whereas invasive species pressures have increased and nutrient pressures remained roughly stable overall (though different sites show different pressures).
8.1: Characterisation of pressures	Pressures: In general, pressures on L. natans are not considered to be particularly serious in comparison with those affecting many other aquatic habitats and species. The majority of these have therefore been ranked as Moderate or Low importance. Nutrient enrichment from agriculture (PA17, PK01) and other sources such as storm drains and sewage works (PK01) damages Luronium habitat by promoting excessive growth of competitor plants, filamentous algae and phytoplankton. Many sites for this species are however in

upland areas where these sources are rare or absent.

Due to its clonal habit, L. natans seems fairly resilient to fluctuations in water level and may even benefit from limited fluctuations by virtue of the growth of competitors such as Isoetes lacustris and Myriophyllum alterniflorum being suppressed. However, more extreme water level fluctuations (PL04, PL05, PL06) result in large reductions or loss of populations.

In canal habitats, boat movements (PE05) stir up silt from the bottom, thereby causing high turbidity and often resulting in the extinction of all submerged aquatic plants within affected areas.

Introduction of coarse fish for recreational fishing (PG09) has a similar effect on turbidity and may also promote phytoplankton growth. However, most Welsh Luronium sites are unsuitable for coarse fish and so the impact of this is low.

On the Montgomery Canal, water soldier Stratiotes aloides has been accidentally introduced, probably as a garden escape (PI03). This species is native to eastern England but not to Wales, and is increasing rapidly, shading out other aquatic plants including L. natans (Stewart 2014). Glyceria maxima also requires frequent control at this site. Water quality (PA17) and invasive non-native species such as Elodea nuttallii (PI01) are also problematic at this site. Australian swamp stonecrop Crassula helmsii (PI02) is considered a particularly serious threat to L. natans as it has a similar ecological niche, and has recently been detected in Llyn Tegid. The Montgomery canal also requires regular dredging to prevent silting up and succession to reedswamp and wet woodland (PM07).

Undergrazing / loss of grazing (PA05) is thought to have resulted in the loss of the Dowrog Pool population.

	Threats: These are similar to pressures, but the threat from invasive species (PI01, PI02, PI03) is expected to increase due to accidental or intentional spread. Proposals to increase boating use on the Montgomery Canal (PE05) will increase this pressure and may necessitate the creation of mitigation or compensation habitat.
9.1: Status of measures	However, it is unlikely that the extent of measures that have so far been taken will be sufficient.
9.2: Main purpose of the measures taken	L. natans remains comparatively widespread in Wales, so a combination of maintenance of existing conditions and localised habitat restoration is appropriate.
9.5: List of main conservation measures	Agricultural pollution (MA10) has been addressed by various local projects where it is a problem. Key sites for this work are Llyn Tegid and the Montgomery Canal, but smaller lake SSSIs with scope for restoration such as Llyn Glasfryn should also be assessed. NRW is working with the Canal and Rivers Trust to manage transport operation (ME01) on the Montgomery Canal. Invasive Species Management is also a serious issue on the Montgomery Canal and to a lesser extent on other sites. It needs to be addressed by a system of early detection and rapid response (MI01), as well as by a broader package of measures where invasive species are established or where succession threatens the species (MI02, MI03, MI05). There are no effective measures to eradicate invasive aquatic plants, though Parc Cenedlaethol Eryri are trialling the use of jute matting to control Lagarosiphon major. The Montgomery Canal also requires regular management to repair leaks and prevent silting up and succession (MI03, MM01). Two new pools for Luronium have been created (MM01) on

	Dowrog Common. Although apparently suitable habitat, they have not so far been colonised (K. Wilkinson, pers.com.). It is possible that reintroduction will be required at this site.
10.1: Future trends and prospects of parameters	10.1a Future prospects of - range. Floating water-plantain is widespread in Wales and in the northern part is unlikely to decline in range as the sites where it occurs are numerous and have few pressures. In mid and south-west Wales there is a higher risk of decline, however, as there are fewer sites and / or a larger number of pressures. Restoration of the Dowrog Pool site is of strategic importance in this context. 10.1b Future prospects of - Population The Montgomery Canal is the largest and most vulnerable site. Ensuring sufficient maintenance to prevent succession has become increasingly difficult in recent years. Conversely, a proposal to reinstate boating along much of the length of the canal could cause serious decline or even loss of this population The impacts of invasive species in Llyn Tegid and Llyn Padarn could result in population decline or even loss at these two sites. The status of the population in the Afon Teifi is also uncertain. 10.1c Future prospects of - Habitat of the species The most important habitat for this species is H3130, which was assessed as having stable prospects for range and area, and a negative trend for structure and function in Wales (Hatton-Ellis 2018). It should however be noted that the condition of lakes supporting Luronium is somewhat better than the overall H3130 resource. Heathland pools and canals are also threatened by succession, invasive species and eutrophication. See also Sections 8 and 9.

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 approximately equal to the Favourable Reference Range.
11.2: Population	The conclusion on population has been reached because the population is between 5 and 25% smaller than the Favourable Reference Population, and the short-term trend in population size is unknown and the 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 sufficiently large for the 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 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 good; (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-inadequate because two of the conclusions are Unfavourable-inadequate.
12.1: Population size inside the pSCIs, SCIs and SACs network	Best single value = 101 1km squares L. natans is well represented within the SAC network across Wales, with 82% of locations benefiting from SAC protection. Ironically, the one major gap is within the largest hotspot for the species in SH55 (Hatton-Ellis 2025b - Figure 1), where the current boundaries of the Eryri (UK0012946) and Afon Gwyrfai a Llyn Cwellyn (UK0030046) SACs do not protect several key floating water-plantain sites in this area. This

	reflects the considerably poorer quality of data when SACs were designated.
12.4: Short-term trend of the population size within the network; Direction	There is no evidence of systematic losses reflective of a declining population trend within the SAC network in the current time frame (2014-2024). However, some losses (Dowrog Common) or local declines (Montgomery Canal) are apparent.
12.5: Short-term trend of population size within the network; Method used	Despite some gaps, available monitoring data for this species are better within the SAC network than elsewhere. However, more data are needed in riverine locations.
12.6: Short-term trend of the habitat for the species within the network; Direction	Invasive species are causing deterioration in habitat quality, especially in larger lakes such as Llyn Tegid. However, on average the SAC network is less vulnerable to invasive species than the wider environment.
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. Unpublished NRW GIS analysis indicated that the Wales FRP could be estimated at 145 1 x 1 km grid squares, with the current population being approximately 15% smaller at 123 1 x 1 km2. Therefore the operator of between 5% and 25% smaller than FRP provided at the UK level was also appropriate at the Wales level.
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 comparison of the current range calculated by JNCC and all 10km2 distribution data indicates that there has been no loss of range. Unpublished NRW GIS analysis indicated that the Wales FRR could be 6121 km2 with the current range being approximately equal to this. Therefore the operator of 'less than 2% smaller than the FRR' was selected for this species.