European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Supporting documentation for the
conservation status assessment for the habitat:

H3130 - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*

WALES

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this habitat, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this habitat is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was only relevant at UK-level (sections 10 Future prospects and 11 Conclusions).
- For technical reasons, the country-level future trends for Range, Area covered by habitat and Structure and functions are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (Wales information only)**
1.2 Habitat code	**3130 - Oligotrophic to mesotrophic standing waters with vegetation of the Lit**

2. Maps

2.1 Year or period	2001-2017
2.3 Distribution map	Yes
2.3 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
2.4 Additional maps	No

BIOGEOGRAPHICAL LEVEL

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs

Atlantic (ATL)

3.2 Sources of information

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Goldsmith B, Salgado, Bennion, H. & Goodrich. 2014b. Lake Ecological Surveys (Wales) 2013 NRW Evidence Report No: 28.19 pp, Bangor: Natural Resources Wales.
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Hatton-Ellis TW. 2011. Condition Assessment: Afon Gwyrfai a Llyn Cwellyn SAC. Feature: 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoeto-Nanojuncetea. CCW Internal Report, stored on electronic document management system.
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4. Range

4.1 Surface area (in km²)		
4.2 Short-term trend Period		
4.3 Short-term trend Direction	Stable (0)	
4.4 Short-term trend Magnitude	a) Minimum	b) Maximum
4.5 Short-term trend Method used		
4.6 Long-term trend Period	1995-2012	
4.7 Long-term trend Direction	Stable (0)	
4.8 Long-term trend Magnitude	a) Minimum	b) Maximum
4.9 Long-term trend Method used	Based mainly on extrapolation from a limited amount of data	
4.10 Favourable reference range	a) Area (km²) b) Operator c) Unknown No d) Method	
4.11 Change and reason for change in surface area of range	No change The change is mainly due to:	
4.12 Additional information		

5. Area covered by habitat

5.1 Year or period	2001-2018		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 19.85
5.3 Type of estimate	Minimum		
5.4 Surface area Method used	Complete survey or a statistically robust estimate		
5.5 Short-term trend Period	2007-2018		

5.6 Short-term trend Direction	Stable (0)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Based mainly on expert opinion with very limited data		
5.9 Long-term trend Period	1988-2012		
5.10 Long-term trend Direction	Stable (0)		
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used			
5.13 Favourable reference area	a) Area (km²) b) Operator c) Unknown No d) Method		
5.14 Change and reason for change in surface area of range	No change The change is mainly due to:		
5.15 Additional information			

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum 4.18	Maximum 4.18
	b) Area in not-good condition (km²)	Minimum 10.18	Maximum 10.18
	c) Area where condition is not known (km²)	Minimum 5.49	Maximum 5.49
6.2 Condition of habitat Method used	Complete survey or a statistically robust estimate		
6.3 Short-term trend of habitat area in good condition Period	2007-2018		
6.4 Short-term trend of habitat area in good condition Direction	Stable (0)		
6.5 Short-term trend of habitat area in good condition Method used	Complete survey or a statistically robust estimate		
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period?	No	
6.7 Typical species Method used			
6.8 Additional information			

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Agricultural activities generating point source pollution to surface or ground waters (A25)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	H
Land, water and air transport activities generating pollution to surface or ground waters (E05)	M

Industrial and commercial activities and structures generating air pollution (F19)	M
Abstraction of ground and surface waters (including marine) for public water supply and recreational use (F33)	M
Management of fishing stocks and game (G08)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Abstraction from groundwater, surface water or mixed water (K01)	M
Development and operation of dams (K03)	H
Physical alteration of water bodies (K05)	H

Threat	Ranking
Agricultural activities generating point source pollution to surface or ground waters (A25)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	H
Hydropower (dams, weirs, run-off-the-river), including infrastructure (D02)	M
Abstraction of ground and surface waters (including marine) for public water supply and recreational use (F33)	M
Management of fishing stocks and game (G08)	M
Invasive alien species of Union concern (I01)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Abstraction from groundwater, surface water or mixed water (K01)	M
Development and operation of dams (K03)	H
Physical alteration of water bodies (K05)	H

7.2 Sources of information

7.3 Additional information

8. Conservation measures

8.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken
8.2 Main purpose of the measures taken	Restore the habitat of the species (related to ‘Habitat for the species’)	
8.3 Location of the measures taken	Both inside and outside Natura 2000	
8.4 Response to the measures	Medium-term results (within the next two reporting periods, 2019-2030)	
8.5 List of main conservation measures		

Reduce diffuse pollution to surface or ground waters from agricultural activities (CA11)
Manage drainage and irrigation operations and infrastructures in agriculture (CA15)
Manage/reduce/eliminate air pollution from resource exploitation and energy production (CC10)

Manage water abstraction for resource extraction and energy production (CC13)

Reducing the impact of (re-) stocking for fishing and hunting, of artificial feeding and predator control (CG03)

Management, control or eradication of established invasive alien species of Union concern (CI02)

Management, control or eradication of other invasive alien species (CI03)

Reduce impact of mixed source pollution (CJ01)

Restore habitats impacted by multi-purpose hydrological changes (CJ03)

Implement climate change adaptation measures (CN02)

8.6 Additional information

9. Future prospects

9.1 Future prospects of parameters	a) Range b) Area c) Structure and functions
9.2 Additional information	

10. Conclusions

10.1. Range	
10.2. Area	
10.3. Specific structure and functions (incl. typical species)	
10.4. Future prospects	
10.5 Overall assessment of Conservation Status	
10.6 Overall trend in Conservation Status	
10.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status No change The change is mainly due to: b) Overall trend in conservation status No change The change is mainly due to:
10.8 Additional information	

11. Natura 2000 (pSCIs, SCIs, SACs) coverage for Annex I habitat types

11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network (in km² in biogeographical/ marine region)	a) Minimum b) Maximum c) Best single value 9.47
11.2 Type of estimate	Best estimate
11.3 Surface area of the habitat type inside the network Method used	Complete survey or a statistically robust estimate

11.4 Short-term trend of habitat area in good condition within the network Direction	Stable (0)
11.5 Short-term trend of habitat area in good condition within network Method used	Based mainly on extrapolation from a limited amount of data
11.6 Additional information	

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

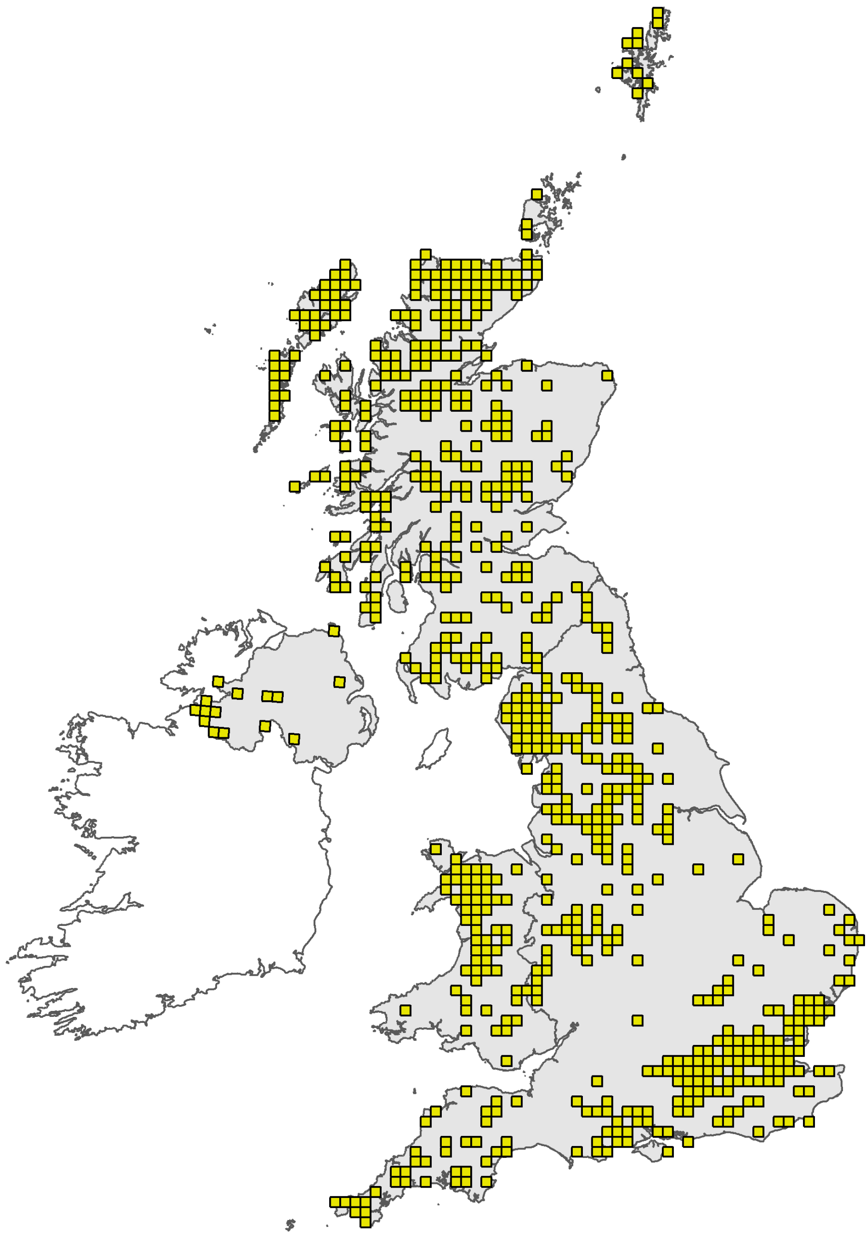

Figure 1: UK distribution map for H3130 - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available habitat records which are considered to be representative of the distribution within the current reporting period. For further details see the 2019 Article17 UK Approach document.

Range Map

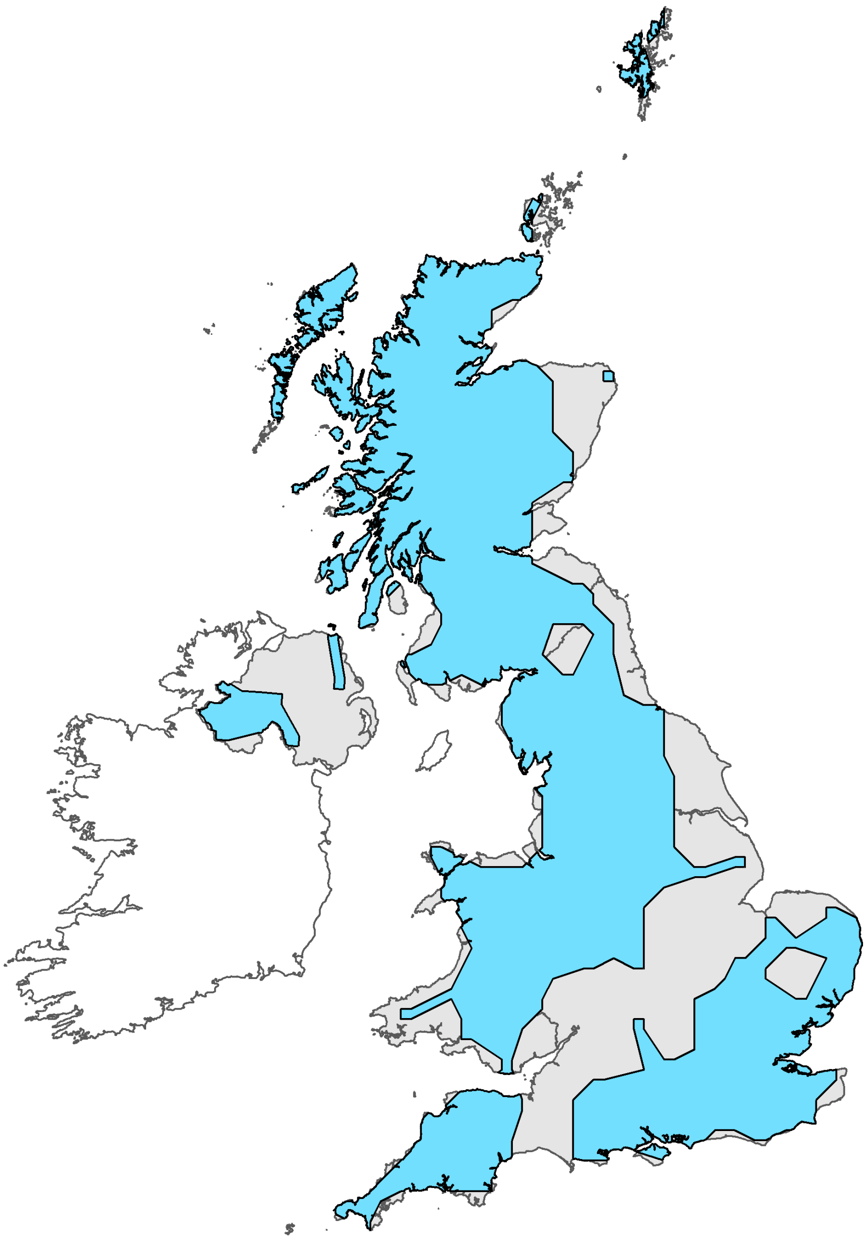

Figure 2: UK range map for H3130 - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this habitat was 25km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Habitat code: 3130

Field label	Note
2.1 Year or period	Most of the data is post 2007. The status of this and other Habitats Directive habitats in Wales were reviewed by Hatton-Ellis (2014).
2.3 Distribution map; Method used	Based on data from the Welsh updated lakes inventory (Hatton-Ellis, 2014). Uncertainties reflect the difficulty of correctly assigning water bodies to a Habitats Directive type, and the close relationship between this habitat and 3160 (see the report for 3160 and also JNCC 2007). This is a widely distributed habitat across Wales, especially in upland areas in the north and west where it is the predominant lake type. In southern and eastern areas, examples are typically smaller, more fragmented, and more likely to be artificial in origin. There is a marked difference in the distribution of the moderate (Figure 3) and low alkalinity (Figure 2) subtypes, with the moderate alkalinity subtype being more scattered in its occurrence (Figure 3).

Habitat code: 3130 Region code: ATL

Field label	Note
4.1 Surface area	This habitat is wide-ranging in and around upland areas in Wales, with occasional examples in base-poor lowland habitats such as heathland pools. See Figures 2 and 3.
4.2 Short term trend; Period	The standard period has been used.
4.3 Short term trend; Direction	There has been no significant short-term change in range of this habitat within Wales. Lowland, more moderate alkalinity examples (for example in Powys) are scarcer and most at risk (see sections 6-7). Whilst the range within the heartland of this habitat type (upland areas, especially Snowdonia and the Cambrian mountains) remains stable, more isolated moderate alkalinity examples in lowland areas will have been lost to nutrient enrichment. This is likely to affect range more than surface area. However, this effect may be masked at the 10km2 scale. Construction and subsequent abandonment of industrial and public water supply reservoirs in upland areas in South Wales (e.g. Brecon Beacons) may have extended its range somewhat in this area where there are few natural water bodies although these are usually functionally damaged, species-poor and do not compensate for loss of moderate alkalinity examples.
4.4 Short term trend; Magnitude	Not applicable - see 4.3.
4.5 Short term trend; Method used	Based on data from the Welsh updated lakes inventory (Hatton-Ellis, 2014). Range has been assessed using the UK Lakes inventory as a cross check for all 10km grid squares reported in JNCC (2007). Lakes in the UK lakes inventory were first assigned a type based on survey data and map based factors such as geology and altitude. H3260 lakes were selected and georeferenced to 10km squares.
4.6 Long term trend; Period	The standard long-term period has been used.
4.7 Long term trend; Direction	There is no evidence of a long term change in range for this habitat within Wales. See comments under short-term trend in 4.3 above.
4.8 Long term trend; Magnitude	Not applicable - see 4.7.
4.9 Long term trend; Method used	Due to limited data availability at the start of the time series, there is greater uncertainty over long-term trends.
4.11 Change and reason for change in surface area of range	There is no evidence to suggest a significant change in range.

5.1 Year or period	Most of the data is post 2007. The status of this and other Habitats Directive habitats in Wales were reviewed by Hatton-Ellis (2014). The background data for this assessment is the inventory data used by Hughes et al. (2004), updated and verified against aerial photos and any recently collected data.
5.2 Surface area	Low alkalinity: 14.47 km2 (156 lakes) Moderate alkalinity: 5.38 km2 (13 lakes) Total (Best single value): 19.85 km2 The greatest potential source of uncertainty lies in the interpretation of large public water supply reservoirs. These were excluded from the calculation unless there is evidence to suggest that they support a macrophyte community consistent with good quality lake habitat. Inclusion of these water bodies could increase the area by an additional 6km2.
5.4 Surface area; Method used	This is based on inventory data, subject to the sources of uncertainty described in 5.2 above.
5.5 Short term trend; Period	The standard period has been used, though for this habitat type significant changes in area are extremely unlikely over such a short period.
5.6 Short term trend; Direction	There is no evidence for a significant change in area over this period.
5.7 Short term trend; Magnitude	Not applicable. See 5.6.
5.8 Short term trend; Method used	No formal assessment of trend in lake area has been carried out, because the likelihood of area changing is extremely low.
5.9 Long term trend; Period	The standard period has been used.
5.10 Long term trend; Direction	There is no evidence for a significant trend in area over this period.
5.11 Long term trend; Magnitude	Not applicable. See 5.10.
5.12 Long term trend; Method used	Not applicable. See 5.10.
5.14 Change and reason for change in surface area	Comment on Favourable Reference Area in 2013 report: Value: 19km2 H3130 in Wales is likely to be somewhat above the favourable reference area for this habitat due to the construction of artificial reservoirs and pools for water supply and industry in upland areas. Some of these are now disused and may constitute good habitat. However, moderate alkalinity examples are much rarer and are a seriously threatened habitat in Wales. No accurate area figures are available but moderate alkalinity examples probably constitute less than 5% of the total area of this habitat in Wales. Method used to set FRA value: See 5.1.

6.1 Condition of habitat	Low alkalinity: Good: Max 3.91 km2 Min 3.91 km2 Not Good: Max 4.43 km2 Min 4.43 km2 Not Known: Max 5.42 km2 Min 5.42 km2 Moderate alkalinity: Good: Max 0.27 km2 Min 0.27 km2 Not Good: Max 5.75 km2 Min 5.75 km2 Not Known: Max 0.07 km2 Min 0.07 km2 Total Good: Max 4.18 km2 Min 4.18 km2 Not Good: Max 10.18 km2 Min 10.18 km2 Not Known: Max 5.49 km2 Min 5.49 km2 The overall habitat area statistics are strongly skewed by the status of several large lakes (e.g. Llyn Tegid, 4.15 km2). Upland examples of these lakes are starting to show measurable improvements in structure and function including an increase in macrophyte species richness, reappearance of acid sensitive macrophytes, diatom floras returning towards a reference condition (or at least a new, less impacted stable state), and increases in alkalinity, acid neutralising capacity and pH. These changes are interpreted as indicating recovery from acidification. Reductions in grazing animal stocking rates in upland areas are also expected to improve habitat quality, though these changes are slow and are not yet apparent in lake ecosystems. In lowland areas, H3130 usually has a higher buffering capacity and acid impacts are consequently small. Instead, pressures associated with farming and / or sewage discharges are a more serious issue, especially nutrient enrichment which leads to deoxygenation of sediments and the water column, loss of isoetid flora (including Luronium natans in Wales) and dominance by atypical or invasive plant species such as Ceratophyllum demersum and Elodea spp. Typical fish species such as charr, trout and gwyniad may also be threatened in this way. Invasive species such as Crassula helmsii and Elodea nuttallii are an increasing problem for this habitat type (Baxter & Stewart 2015; Shilland et al. 2018). NRW macrophyte survey data show that typical species of this habitat, including the more sensitive Lobelia dortmanna, remain widely distributed and often abundant.
6.2 Condition of habitat; Method used	About 75% of the estimated lake area has been surveyed, although not all relevant parameters have been measured for every lake. It should be noted that survey is biased towards the larger lakes. Structure and function for these lakes has been assessed using the Common Standards Method (JNCC, 2005; IAFG 2015). CSM results for these lakes are detailed in Burgess et al. (2006, 2009, 2013). Typical species are included in the measures of structure and function. They are identified on a lake-specific basis but usually include three or more of Isoetes spp, Lobelia dortmanna, Littorella uniflora, Sparganium angustifolium, Utricularia sp., Nitella sp. and Luronium natans. See IAFG (2015) for a description of methods and relevant NRW management plans for site-specific targets. Other relevant information: As discussed in the notes, range and area have little relevance as measures of the conservation status of the freshwater environment (see also JNCC 2007). Future Article 17 reporting on Freshwater habitats, including H3130, should place much greater emphasis on structure and function. A variety of functional, pressure sensitive metrics have been developed for protected areas (JNCC 2005) and WFD monitoring (e.g. Kelly et al. 2008, McFarland et al. 2009, Willby et al. 2009).
6.4 Short term trend of habitat area in good condition; Direction	Although some lakes have changed in status, there is no clear trend over the period indicated. Improvements generally reflect reductions in acidity pressure, whereas declines are due to colonisation by invasive non-native species.
6.6 Typical species	The typical species list was revised in 2015 during the Common Standards Monitoring Guidance review (IAFG 2015) in order to provide a more consistent approach to assessment and improve the relationship between monitoring data and pressures. The impact on conclusions for Welsh SAC and SSSI feature assessment is small. The typical species of this habitat are generally widely distributed in Wales, so habitat quality is not generally restricted by the dispersal ability of typical species. In some lakes, glacial relict fish such as Arctic charr are threatened, however.
6.7 Typical speces; Method used	IAFG (2015) Guidance has been used. This requires presence of at least three characteristic Littorelletea species (low alkalinity) or 8 species (moderate alkalinity); no loss of characteristic species; presence of characteristic species in at least 60% of vegetated sample points; and no significant decline in frequency.

7.1 Characterisation of pressures/ threats	Pressures: Pressures have been assessed by collating evidence from a variety of sources including Common Standards Monitoring (Burgess et al. 2006, 2009, Burgess & Hatton-Ellis 2013, Baxter & Stewart 2015; Goldsmith et al. 2014a, b, 2016; Shilland et al. 2017) other monitoring networks (Environment Agency, unpublished data; Kernan et al. 2010) and the scientific literature (Arts 2001; Murphy 2002; Smolders et al. 2002; Battarbee 2005; Carvalho et al. 2005; Solheim et al. 2008). Many Welsh lakes of this type have low to very low alkalinity, and have therefore suffered severely from acidification as a consequence of human induced air pollution during the mid to late 20th century (E05; F19). The Acid Waters Monitoring Network site at Llyn Llagi has shown a strong recovery signal (Kernan et al. 2010) and this is backed up by NRW monitoring elsewhere indicating a widespread increase in pH, alkalinity, ANC and acid sensitive plants such as Myriophyllum spicatum and Callitriche hamulata. Historically, many Welsh upland lakes were dammed and regulated for diverse uses such as mining, hydropower or water supply (D02, F33, K03, K05) (Roberts 1995). The severity of these impacts is very variable, from sites that maintain a largely natural flora and fauna and are considered favourable (e.g. Llyn Cwellyn - see Hatton-Ellis 2011) to sites where the functioning habitat is no longer found (e.g. Llyn Peris). However, the largest public water supply reservoirs that experience significant drawdown have either a depauperate flora or lack submerged plants altogether (NRW, unpublished data). Hydropower (D02) is usually most destructive in its impacts, but few H3130 lakes have associated hydro schemes, so its overall current impact is relatively low. Increasing demand for renewable energy sources could include demand for more hydropower on lakes of this type. In more lowland settings, some of these lakes show evidence of eutrophication caused mainly by agricultural (A25, A26) pollution (Carvalho et al. 2005, Burgess et al. 2006, 2009; Hatton-Ellis 2016). Lowland examples may also be affected by invasive species such as Crassula helmsii, Elodea spp. and Lagarosiphon major (I01, I02) (see Burgess et al. 2006, 2009, Burgess & Hatton-Ellis in prep), especially if they are also used as reservoirs or for recreation. These moderate alkalinity examples are both rarer (Fig. 3; Duigan et al. 2006; Hatton-Ellis 2014) and under much more pressure in Wales due to nutrient enrichment. Fishery management (G08) is a relatively minor pressure on these habitats, but some examples (especially in the moderate alkalinity category) are affected by past stocking of non-characteristic coarse fish species. Illegal or accidental introductions of coarse fish, such as the recent appearance of perch in Llyn Padarn, are an increasing problem. Climate change is likely to affect habitat structure and function negatively in various ways (N05), including promoting algal blooms, facilitating spread of invasive species, delaying recovery from acidification and increasing the reproduction of undesirable species such as coarse fish. In particular, climate change acts as an enabler for other pressures by worsening the impact of nutrient and invasive species. However, because both nutrient and invasive species pressures are lower than in other lake types, climate change impacts are also less. Other pressures considered to be currently minor are forestry activities generating pollution to surface or ground waters (B23) ande xtraction activities generating point source pollution to surface or ground waters (C10). Threats: There is an ongoing strategic need for water in southern Britain and Welsh upland lakes are seen as a significant resource for drinking water supply. Welsh lakes are therefore at risk of being modified for use as public water supply reservoirs (F33, K01, K03), especially where there is an existing but disused dam. The demand for hydropower schemes (D02) has been increasing recently and is likely to continue to do so as the need for renewable energy increases. There is a widespread perception that hydropower schemes have little environmental impact, even though they can be very destructive to lake ecosystems by destroying macrophyte communities and fish spawning grounds. Although this habitat continues to recover from the acidification caused by air pollution during the 20th century (E05, F19), this is predicted to remain a low level threat for the foreseeable future. Invasive non-native species (I01, I02), especially Elodea spp. and Crassula helmsii, will remain a threat to this habitat and are predicted to continue to spread through accidental introductions. Other INNS are likely

	to arrive via mainland Europe and may colonise this habitat especially where recreational activity occurs. Climate change (N05) is thought to be especially significant in upland lakes (Battarbee 2005; Jeppesen et al. 2005) with warmer temperatures, reduced ice cover, and increased nutrient availability having ecosystem level effects on both alkalinity and productivity. Other threats are expected to continue as discussed under pressures.
8.5 List of main conservation measures	An extension to the list of conservation measures is necessary in this case to effectively represent these wide-ranging habitats. CA10: Reduce/eliminate point pollution to surface or ground waters from agricultural activities H CA11: Reduce diffuse pollution to surface or ground waters from agricultural activities H CA15: Manage drainage and irrigation operations and infrastructures in agriculture H CB09: Manage the use of chemicals for fertilisation, liming and pest control in forestry M CB10: Reduce diffuse pollution to surface or ground waters from forestry activities M CC04: Reduce impact of hydropower operation and infrastructure L CC08: Manage/reduce/eliminate point pollution to surface or ground waters from resource exploitation and energy production L CC09: Manage/reduce/eliminate diffuse pollution to surface or ground waters from resource exploitation and energy production L CC10: Manage/reduce/eliminate air pollution from resource exploitation and energy production M CC13: Manage water abstraction for resource extraction and energy production H CE03: Manage/reduce/eliminate air pollution from transport M CF06: Reduce/eliminate air pollution from industrial, commercial, residential and recreational areas and activities M CG02: Management of hunting, recreational fishing and recreational or commercial harvesting or collection of plants. M CG03: Reducing the impact of (re-) stocking for fishing and hunting, of artificial feeding and predator control M CI01: Early detection and rapid eradication of invasive alien species of Union concern M CI02: Management, control or eradication of established invasive alien species of Union concern H CI03: Management, control or eradication of other invasive alien species H CJ01: Reduce impact of mixed source pollution
9.1 Future prospects of parameters	9.1a Future prospects of - range. Overall Stable There are no reasons to expect a decline in range of this habitat in Wales in the foreseeable future. 9.1b Future prospects of - area Overall Stable The area of this habitat is not expected to decline significantly in the near future. 9.1c Future prospects of - structure and function Negative Low alkalinity subtype: Positive Future prospects for the low alkalinity subtype of this habitat in Wales are seen as good. There is measurable chemical and biological recovery from acidification, and associated with this appears to be an increasing number of records for acid sensitive taxa such as Myriophyllum alterniflorum and Callitriche brutia. Overgrazing in the uplands is also much reduced. Moderate Alkalinity Subtype: Very negative The moderate alkalinity subtype, in contrast, remains highly threatened and continues to decline. It is much more vulnerable to invasive species and agricultural pressures, and less well protected by the Natura 2000 series. Overall the future prospects of structure and function are considered to be Poor due to the problems with the Moderate alkalinity subtype.
11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network	Best Estimate: Low Alkalinity: 5.26 km2 Moderate Alkalinity: 4.21 km2 Total: 9.47 km2 This total is much larger than the previous estimate. This has occurred because in the previous rounds, only habitat within SACs designated for that habitat counted towards the total, whereas under the revised reporting rules all habitat is counted irrespective of whether it is a qualifying feature. The result of this is the inclusion of Llyn Tegid (4.15km2), significantly increasing the overall reported total.
11.3 Surface area of the habitat type inside the network; Method used	Based on CSM method (JNCC, 2005), with targets adapted at a site-specific level to take into account site-specific factors that may influence the results, such as the natural flora and extent of rocky substrate. Data derived from the updated Welsh lakes inventory (Hatton-Ellis 2014).

11.4 Short term trend of habitat area in good condition within the network; Direction	Stable Low alkalinity: Good: Max 2.46 Km2 Min 2.46 Km2 (+0.27 Km2) Not Good: Max 2.17 Km2 Min 2.17 Km2 (-0.27 Km2) Not Known: Max 0.67 Km2 Min 0.67 Km2 (unchanged) Moderate alkalinity: Good: Max 0 Km2 Min 0 Km2 (-0.04 Km2) Not Good: Max 4.19 Km2 Min 4.19 Km2 (+0.04 Km2) Not Known: Max 0.02 Km2 Min 0.02 Km2 (unchanged) Overall: +0.23 Km2 (2.4% net improvement). Welsh lakes of this type within SACs continue to show ecological improvement linked to recovery from 20th century acidification. This has resulted in a small net improvement of 2.4% over the monitoring period. In the context of the wider resource this is considered within the likely margin of error and so is reported as stable.
11.5 Short term trend of habitat area in good condition within the network; Method used	Due to the widespread occurrence of this habitat type, it is not feasible to monitor every lake.