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:

H3160 - Natural dystrophic lakes and ponds

ENGLAND

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 (England information only)**
1.2 Habitat code	**3160 - Natural dystrophic lakes and ponds**

2. Maps

2.1 Year or period	1983-
2.3 Distribution map	Yes
2.3 Distribution map Method used	Complete survey or a statistically robust estimate
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	Hughes M, Hornby DD, Bennion H, Kernan, M, Hilton J et al. (2004) The development of a GIS-based inventory of standing waters in Great Britain together with a risk-based prioritisation protocol. Water, Air and Soil Pollution: Focus 4:73-84. Williams, P., Biggs, J., Crowe, A., Murphy, J., Nicolet, P., Weatherby, A., Dunbar M., (2010) Ponds Report from 2007. CS Technical Report No. 7/07 Carvalho, L. and Moss, B. (1998) Lake SSSIs subject to eutrophication: environmental audit. English Nature Freshwater Series No. 3. Peterborough: English Nature. Environment Agency (2016) Water Framework Directive Surface Water Bodies in England: Classification Status and Objectives - Cycle 2, data from 2013 -2016 Natural England CMSi condition data Mainstone C.,& Burn A. (2011) Relationships between ecological objectives and associated decision-making under the Habitats and Water Framework Directives. Discussion paper, Natural England. Burgess, A, Goldsmith, B and Goodrich, S. (2014) Interpretation of Water Framework Directive Macrophyte Data for CSM Condition Assessment. Report to Natural England Hall, R. A. (2018) Explanatory notes for the standing water analysis and reporting for Article 17 round 4. Natural England paper.

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		
4.7 Long-term trend Direction		
4.8 Long-term trend Magnitude	a) Minimum	b) Maximum
4.9 Long-term trend Method used		
4.10 Favourable reference range	a) Area (km²) b) Operator	

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	c) Unknown	No
	d) Method	
4.11 Change and reason for change in surface area of range	Improved knowledge/more accurate data	
	The change is mainly due to:	Improved knowledge/more accurate data
4.12 Additional information		

5. Area covered by habitat

5.1 Year or period	1983-983-		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 12.75
5.3 Type of estimate	Best estimate		
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			
5.10 Long-term trend Direction			
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	Improved knowledge/more accurate data		
	The change is mainly due to:	Improved knowledge/more accurate data	
5.15 Additional information			

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum 0.12	Maximum 0.12	
	b) Area in not-good condition (km²)	Minimum 12.16	Maximum 12.16	
	c) Area where condition is not known (km²)	Minimum 0.46	Maximum 0.46	
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	Based mainly on extrapolation from a limited amount of data			
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period?	No		

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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 diffuse pollution to surface or ground waters (A26)	H
Invasive alien species of Union concern (I01)	M
Other invasive alien species (other then species of Union concern) (I02)	H
Management of fishing stocks and game (G08)	M
Drainage (K02)	H
Modification of hydrological flow (K04)	H
Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (F12)	H
Agricultural activities generating point source pollution to surface or ground waters (A25)	M
Temperature changes (e.g. rise of temperature & extremes) due to climate change (N01)	M

Threat	Ranking
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	H
Invasive alien species of Union concern (I01)	M
Other invasive alien species (other then species of Union concern) (I02)	H
Management of fishing stocks and game (G08)	M
Drainage (K02)	H
Modification of hydrological flow (K04)	H
Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (F12)	H
Agricultural activities generating point source pollution to surface or ground waters (A25)	M
Temperature changes (e.g. rise of temperature & extremes) due to climate change (N01)	M

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, but none yet taken

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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	Long-term results (after 2030)
8.5 List of main conservation measures	

Reduce diffuse pollution to surface or ground waters from agricultural activities (CA11)

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

Reduce impact of multi-purpose hydrological changes (CJ02)

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

Reduce/eliminate point source pollution to surface or ground waters from industrial, commercial, residential and recreational areas and activities (CF04)

Early detection and rapid eradication of invasive alien species of Union concern (CI01)

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

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

Reduce/eliminate point pollution to surface or ground waters from agricultural activities (CA10)

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	

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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 0.59
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	Complete survey or a statistically robust estimate
11.6 Additional information	

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

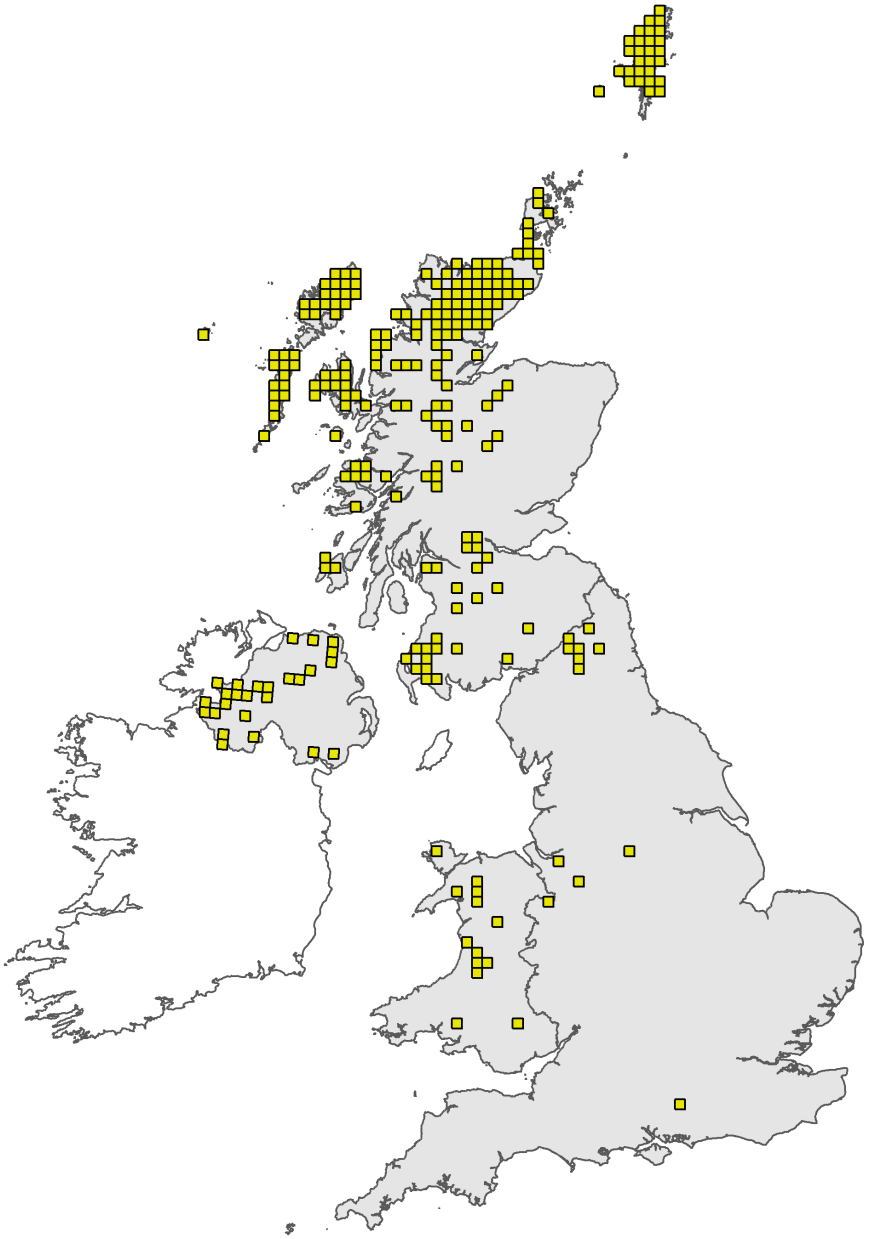

Figure 1: UK distribution map for H3160 - Natural dystrophic lakes and ponds. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

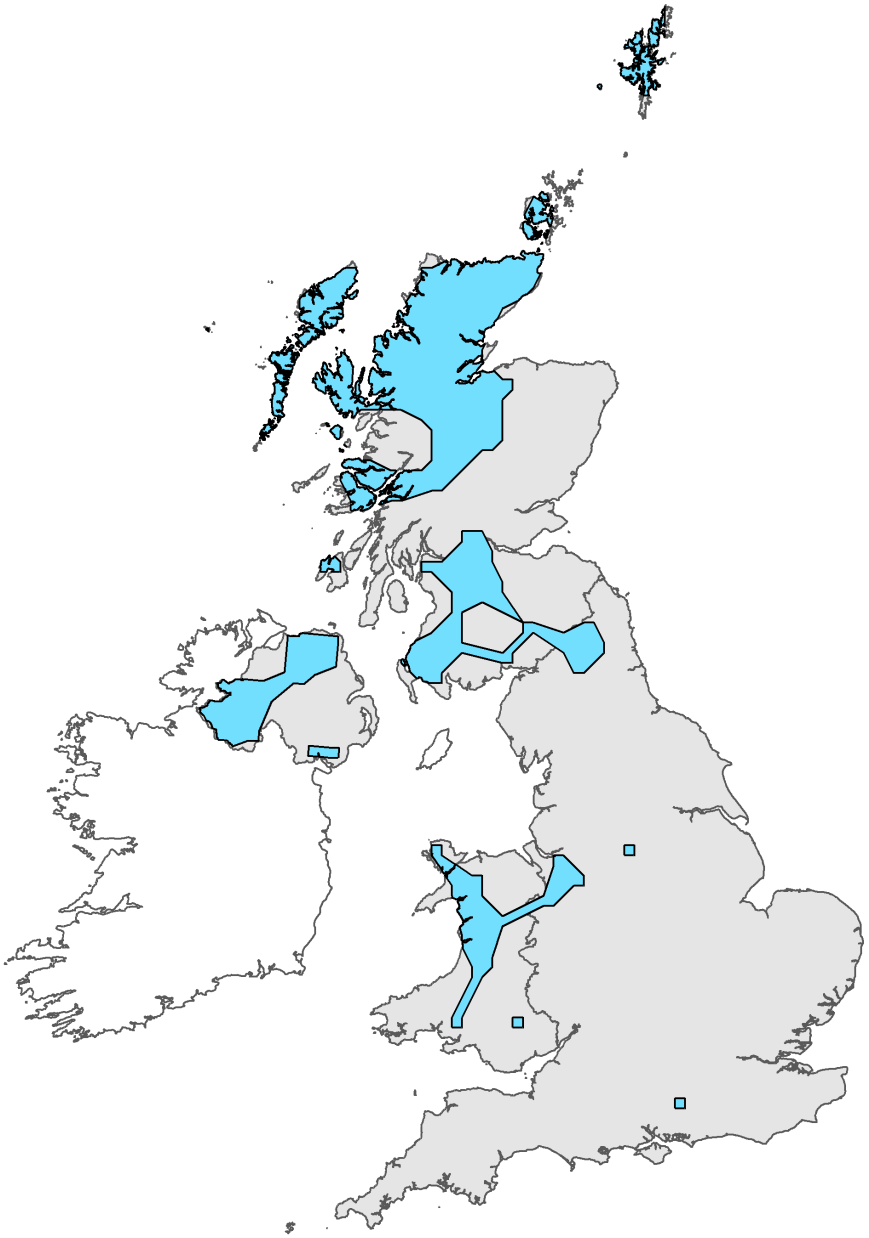

Figure 2: UK range map for H3160 - Natural dystrophic lakes and ponds. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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: 3160

Field label	Note
2.1 Year or period	The GB lakes database was used, this is based on OS Land-Form PANORAMA(R) contour data at 1:50,000. Data capture took place in 1983. Lake type is inferred from catchment geology and measured alkalinity data. The database itself was produced in 2004.
2.3 Distribution map; Method used	Small lakes and ponds are likely to be under-represented, water bodies with surface areas as small as 0.5 ha appear accurately represented in this data set, but although smaller water bodies exist in the dataset (the smallest being 0.02 ha), their representation is somewhat generalised. It is therefore acknowledged that there will be less confidence in the results for the smaller water bodies. This is important asmore than half the lakes and ponds (of all types) identified in England are less than 1 ha.

Habitat code: 3160 Region code: ATL

Field label	Note
4.3 Short term trend; Direction	Lakes are rarely 'lost' in the conventional sense, although small water bodies may be in-filled or drained. However, many lakes have been severely degraded to the extent that they no longer support characteristic plant or animal communities. Degraded sites are not considered lost because of the way in which lake types are defined. As a consequence, area and range assessments show no significant change over time in spite of nutrient enrichment and other impacts. Very small water bodies of this habitat type have been lost through land drainage and infilling activity, but others have been created (Williams et al., 2007) as have larger water bodies created for resource extraction. As the water bodies that are lost are generally small and their natural occurrence is more frequent in the landscape the area and range of H3160 is likely to have remained constant. This is not to suggest that loss of small water bodies in the landscape is of no consequence, as they often form essential stepping stones and refuges from other pressures creating a network of freshwater habitat supporting an extensive range of biodiversity.
4.11 Change and reason for change in surface area of range	It is presumed that in previous reporting rounds the only sites included were those where the natural trophic state of a water body and its vegetation were known, this will have resulted in a large under-estimate of the natural range of this habitat type. This will have centred around SSSIs with reasonable survey information available. Using the data from the GB lakes database provides a more comprehensive picture of where this habitat type naturally occurs and extends beyond the designated sites network. Consequently the range and area will look larger in this reporting round than in previous rounds. This belies a relatively stable range and extent with large water bodies remaining unchanged. Small water bodies are much more likely to be created or infilled, but these changes will not be picked up in this analysis. As ponds individually cover a small area and are relatively widespread they are unlikely to change the overall metrics greatly.
5.1 Year or period	comments made under 2.1 apply here
5.4 Surface area; Method used	Comments made under 2.3 apply here
5.6 Short term trend; Direction	Comments made under 4.3 apply here
5.14 Change and reason for change in surface area	Comments made under 4.11 apply here

6.2 Condition of habitat; Method used	Assessment of the condition of SACs and nationally designated sites provides a direct source of data on the condition of 3160 habitat. These assessments are based on evaluation of the environmental integrity of the habitat (in relation to water quality, hydrology, morphology, non-native species and some aspects of the status of the characteristic biological community). Beyond SACs and nationally designated sites, the main source of data on habitat condition is the Water Framework Directive (WFD). The WFD reports on the ecological status of lakes. Lakes of less than 50ha in surface area are generally not designated as WFD waterbodies, unless they are SACs or SSSIs or have been otherwise considered to have special importance. Consequently the condition of a large part of the H3160 habitat resource remains unknown. Ecological status is defined in terms of a number ofbiological quality elements: the macrophytes, phytoplankton, diatoms and macroinvertebrates, as well as the nutrient status of waterbodies. A number of environmental standards are also defined that support ecological status. Status categories are high, good, moderate, poor and bad. There is no simple relationship between favourable condition of H3160 habitat (as defined for use in SACs and nationally designated sites) and ecological status classes. In fact, some attributes of habitat condition used in the assessment of SACs and nationally designated sites are not directly addressed by ecological status assessment (e.g. impacts on marginal habitat, impacts on physical habitat quality including habitat extent, hydrological modifications and the presence of non-native species). Phosphorus targets used to assess favourable condition of H3160 within SACs and SSSIs can be similar to those for good ecological status. For other indicators, favourable condition targets are often similar to those for high ecological status. However, it can generally be said that if a water body is not reaching good ecological status it will not be at favourable condition, yet if it is at good ecological status it may or may not be at favourable condition. As not all biological quality elements or environmental parameters are recorded at all sites monitored for WFD purposes summarising what this data means in terms of favourable condition is inherently difficult. Consequently a decision was made to include all water bodies considered to be at good ecological status as in favourable condition, it needs to be acknowledged that this is likely to lead to some water bodies being considered to be in favourable condition when they are not, however it does allow these two data sources to be combined to produce a single simple summary metric (see Hall, 2018).
6.4 Short term trend of habitat area in good condition; Direction	Despite conservation measures implemented to improve the condition of H3160, no lakes are yet to move into favourable condition as a consequence, hence the condition of structure and function is reported as stable. This is at least in part due to the long time it takes lakes to recover from the various pressures upon them. Some improvements have been made, but these are insufficient to change condition from unfavourable to favourable.
6.5 Short term trend of habitat area in good condition; Method used	Recent condition assessments, reports and knowledge of action undertaken at these sites inform the assessment as stable.
7.1 Characterisation of pressures/ threats	K04: modifications to hydrological flow has been taken to mean a range of human induced changes in hydraulic conditions often described as inappropriate water levels through designated site reporting.
8.1 Status of measures	Whilst the status of measures is reported as identified but not yet undertaken this belies a more complicated picture. Most sites within the designated sites network have had a number of measures undertaken on them and further measures have been identified, whether these will be sufficient to restore the lake is still unclear. Outside of WFD waterbodies and designated sites little action to assess condition identify measures or undertake any such measures has occurred.

8.4 Response to the measures	Whilst the response to the measures is reported as long-term, it is likely that improvements will be seen before then, but it is unlikely that these improvements will be sufficient to move the lake into favourable condition untill after 2030, due to the long time it takes lakes to recover.
9.1 Future prospects of parameters	Comments made under 8.4 apply here.
11.3 Surface area of the habitat type inside the network; Method used	Unlike previous attempts to calculate the area of H3160 in SACs the individual lakes within SACs were identified in the GB lakes database and the area of the lake from the database used rather than the area of the SAC or unit it occurred in. Thus, there is more confidence that this figure represents actual lake habitat. Some SACs include ditches which support this habitat, these have not been included in these figures as there are no figures available for the area of ditch in an SAC, which is likely to make a relatively small contribution to the area figures overall.
11.5 Short term trend of habitat area in good condition within the network; Method used	The trend in N2K lake habitat is informed by the condition assessments taken at these sites particularly those by Burgess et al (2014), and the survey data and data reviews of Maberly et al (2015) and Phillips et al (2015) all describing a similar picture of some improvements, but none sufficient to change a lake from 'not good' condition to 'good' condition.