

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

Supporting documentation for the
Third Report by the United Kingdom under
Article 17

on the implementation of the Directive
from January 2007 to December 2012
Conservation status assessment for

Species:

S1096 - Brook lamprey (*Lampetra planeri*)

IMPORTANT NOTE – PLEASE READ

- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural Resources Wales** and refers only to the state of the habitat/species in **Wales** - it does not constitute an assessment for the whole of the UK.
- The Article 17 UK Approach document provides details on how this information has been used and, combined with information supplied by other Statutory Nature Conservation Bodies
- The format of the document is closely aligned to that set out by the European Commission for Member State reporting – as a result, some of the fields are not applicable at a country-level and have deliberately been left blank – in addition, the content of most fields is constrained by the EC reporting categories.

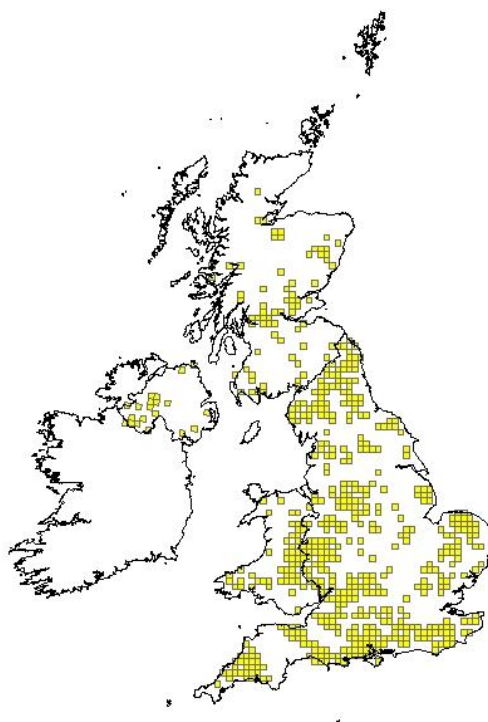
As of 1 April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru

Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

<i>Field name</i>	<i>Brief explanations</i>	
0.2 Species	0.2.1 Species code	S1096
	0.2.2 Species scientific name	<i>Lampetra planeri</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Brook lamprey, lamprai'r nant

1.1 Maps

1.1.1 Distribution map		Sensitive	False
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1.1.2 Method used - map	Estimate based on partial data with some extrapolation and/or modelling
	See note 0.2.3
1.1.3 Year or period	2001-2012
	See note 0.2.3
1.1.4 Additional distribution map	False
1.1.5 Range map	

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2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"Blank, M., K. Jurss, and R. Bastrop. 2008. A mitochondrial multigene approach contributing to the systematics of the brook and river lampreys and the phylogenetic position of <i>Eudontomyzon mariae</i>. Canadian Journal of Fisheries and Aquatic Sciences 65:2780-2790.</p> <p>Campbell D, Clarke S, Williams AE. (2005) Lamprey Survey on the Rivers Tywi, Teifi and Cleddau. CCW Review of Consents Report No. 7. Bangor, CCW / EAW.</p> <p>Espanhol, R., P. R. Almeida, and M. J. Alves. 2007. Evolutionary history of lamprey paired species <i>Lampetra fluviatilis</i> (L.) and <i>Lampetra planeri</i> (Bloch) as inferred from mitochondrial DNA variation. Molecular Ecology 16:1909-1924.</p> <p>Gardiner R.(2003) Identifying Lamprey. Conserving Natura 2000 Rivers Techniques Series No. 4. Peterborough, English Nature.</p> <p>Garrett H, Thomas Rh, Hatton-Ellis TW (in prep) River Usk Population Attribute Condition Assessment for Brook, River and Sea Lamprey 2007-12. CCW Staff Science Report No. 11/8/6. Bangor, Countryside Council for Wales.</p> <p>Harvey JP, Noble RAA, Cowx IG, Nunn AD, Taylor R. (2007) Monitoring of lamprey in the rivers Wye and Usk SACs. CCW Environmental Monitoring Report No. 41. Bangor, Countryside Council for Wales.</p> <p>Hatton-Ellis TW (2012) The Taxonomic Status of River Lamprey (<i>Lampetra fluviatilis</i> L.) and Brook Lamprey (<i>Lampetra planeri</i> Bloch) in Britain: summary of current understanding and advice for Article 17 reporting. CCW advice to JNCC. DCT-12-395837</p> <p>Joint Nature Conservation Committee (JNCC). (2005) Common Standards Monitoring Guidance for Freshwater Fauna. Peterborough, Joint Nature Conservation Committee.</p> <p>Schreiber, A., and R. Engelhorn. 1998. Population genetics of a cyclostome species pair, river lamprey (<i>Lampetra fluviatilis</i> L.) and brook lamprey (<i>Lampetra planeri</i> Bloch). Journal of Zoological Systematics and Evolutionary Research 36:85-99.</p> <p>Teague N, Webb H, Allen V, Cesar CP, Thomas Rh, Hatton-Ellis T. (2012) Lamprey monitoring on the River Dee Special Area of Conservation (SAC) CCW Contract Science Report 975. Bangor, Countryside Council for Wales.</p> <p>Thomas Rh, Garrett H. (2012) Afon Tywi Population Attribute</p>

	<p>Condition Assessment for Brook, River and Sea Lamprey 2011. CCW Staff Science Report 11/8/5. Bangor, Countryside Council for Wales.</p> <p>Thomas Rh, Hatton-Ellis TW, Garrett H (in prep) Water Quality Assessments for River Special Areas of Conservation: Third Habitats Directive Reporting Round (2007-2012). CCW Staff Science Report No. 12/8/2. CCW, Bangor.</p> <p>West, R (2005). River Dee candidate special area of conservation lamprey survey 2004. CCW Review of Consents Report No.18"</p>

2.3 Range									
2.3.1 Surface area Range									
2.3.2 Method used Surface area of Range	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>Method is based on results from surveys in Welsh SAC rivers designated for brook lamprey in this reporting cycle (Teague et al., 2012; Thomas & Garrett, 2012; Garrett et al., 2012 in prep)</p>								
2.3.3 Short-term trend Period	<p>2001-2012</p> <p>The standard period has been used.</p>								
2.3.4 Short term trend Trend direction	<p>stable</p> <p>Brook lamprey are very widespread, and there is no evidence for range trend. However, as most surveys are of ammocoetes which cannot be distinguished from river lamprey, data are too sparse to discern a trend.</p>								
2.3.5 Short-term trend Magnitude	<table border="1" style="width: 100%;"> <tr> <td style="background-color: #cccccc; width: 30%;">a) Minimum</td> <td></td> </tr> <tr> <td colspan="2">See 2.3.4.</td> </tr> <tr> <td style="background-color: #cccccc;">b) Maximum</td> <td></td> </tr> <tr> <td colspan="2">See 2.3.4.</td> </tr> </table>	a) Minimum		See 2.3.4.		b) Maximum		See 2.3.4.	
a) Minimum									
See 2.3.4.									
b) Maximum									
See 2.3.4.									
2.3.6 Long-term trend Period	<p>1989-2012</p> <p>See 2.3.3.</p>								
2.3.7 Long-term trend Trend direction	<p>unknown</p> <p>See 2.3.4.</p>								
2.3.8 Long-term trend Magnitude	<table border="1" style="width: 100%;"> <tr> <td style="background-color: #cccccc; width: 30%;">a) Minimum</td> <td></td> </tr> <tr> <td colspan="2">See 2.3.4.</td> </tr> </table>	a) Minimum		See 2.3.4.					
a) Minimum									
See 2.3.4.									
Optional									

	b) Maximum	
	See 2.3.4.	
2.3.9 Favourable reference range	a) Value in km²	
	No comment.	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	
2.3.10 Reason for change Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to...	a) Genuine change?	False
	There is no evidence for change in range.	
	b) Improved knowledge/more accurate data?	False
	See note 2.3.10a.	
	c) Use of different method (e.g. "Range tool")?	False
	See note 2.3.10a.	

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	
	b) Minimum	
	c) Maximum	
2.4.2 Population size estimation (using population unit other than individuals) Optional (<i>if 2.4.1 filled in</i>)	a) Unit	number of map 1x1 km grid cells
	Data from the NBN on the presence of <i>Lampetra planeri</i> was downloaded on the 03/10/12. The data consisted of records as grid references or 10x10km squares submitted mainly by CCW, Environment	

	<p>Agency, APEM and individuals. The grid reference data was converted into 6 figure grid references and plotted on GIS as 1x1km squares. This meant that the 10x10km sq data in NBN could not be used for this exercise. In MapInfo a query was run to count the total number of 1x1km squares with positive records. This was then inputted into the database as a minimum population.</p> <p>It is not possible to distinguish between river lamprey and brook lamprey at the ammocoetes life stage. For this reason, records of ammocoetes have not been included in this assessment.</p> <p>The number of occupied 1km grid squares was agreed as a proxy for population in the absence of a technically robust method for estimating <i>Lampetra</i> populations. Although ammocoete density measures are available for many rivers, ammocoetes cannot be identified to species. Furthermore, the absence of data on key parameters such as habitat area (reflecting the ephemeral nature of the silt beds that ammocoetes inhabit) and occupancy rate, prevents the conversion of density data to a total UK population to an acceptable level of precision.</p> <p>Since no data are available for survey effort, it will not be possible to compare the current figure statistically with other such datasets, including future Article 17 assessments. Future assessments using this approach will need to correct for survey effort.</p>	
	b) Minimum	69
	See note 2.4.2a.	
	c) Maximum	
	See note 2.4.2a.	
<p>2.4.3 Additional information on population estimates / conversion Optional</p>	a) Definition of "locality"	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	<p>It is not possible to distinguish between river lamprey and brook lamprey at the ammocoetes life stage. For this reason, records of ammocoetes have not been included in this assessment.</p> <p>The number of occupied 1km grid squares was agreed as a proxy for population in the absence of a technically robust method for estimating <i>Lampetra</i> populations. Although ammocoete density measures are available for many rivers, ammocoetes cannot be identified to species. Furthermore, the absence of data on key parameters such as habitat area (reflecting the ephemeral nature of the silt beds that ammocoetes inhabit) and</p>

		<p>occupancy rate, prevents the conversion of density data to a total UK population to an acceptable level of precision.</p> <p>Since no data are available for survey effort, it will not be possible to compare the current figure statistically with other such datasets, including future Article 17 assessments. Future assessments using this approach will need to correct for survey effort.</p> <p>See note in 2.4.2a</p>
2.4.4 Year or period	2001-2012	See note 2.3.3.
2.4.5 Method used	Estimate based on partial data with some extrapolation and/or modelling	Based on NBN records. See note 2.4.2a.
2.4.6 Short-term trend	2001-2012	No data are available over the short term population trend timescale sufficient to identify trends in brook lamprey populations.
Period		See note 2.3.3.
2.4.7 Short-term trend	unknown	Inadequate data are available to assess short term trend in Wales. It is possible that had this exercise been carried out at a UK level, it would have been possible to detect a trend.
Trend direction		
2.4.8 Short-term trend	a) Minimum	See note 2.4.7.
Magnitude		
	b) Maximum	See note 2.4.7.
	c) Confidence interval	See note 2.4.7.
2.4.9 Short-term trend	Absent data	No suitable method or data are available. See note 2.4.2a.
Method used		
2.4.10 Long-term trend –		See note 2.3.3.
Period		
2.4.11 Long-term trend		See note 2.4.2a.
Trend direction		

2.4.12 Long-term trend Magnitude Optional	a) Minimum	
	The trend is unknown.	
	b) Maximum	
	See 2.4.12a.	
	c) Confidence interval	
See 2.4.12a.		
2.4.13 Long term trend Method used	No suitable method or data are available. See 2.4.2a.	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	Brook lamprey can be expected to be present in virtually all 1km squares containing running water in Wales. However, the deficiencies of using this measure without standardising survey effort have been highlighted above.	
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	
2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	a) Genuine change?	False
	See note 2.4.12a.	
	b) Improved knowledge/more accurate data?	False
	See note 2.4.12a.	
	c) Use of different method (e.g. "Range tool")?	False
See note 2.4.12a.		

2.5 Habitat for the species	
2.5.1 Area estimation	60
	<p>Brook lampreys require clean gravel in rivers to spawn and silt/sand beds for larval growth. Some mapping of suitable habitat has occurred at 100m survey sites in the River Dee (where approx 171m² of optimal habitat and approx 379m² of suboptimal habitat in a total of 38 sites was available). However, there is no reliable dataset for brook lamprey habitat across Wales and without an agreed UK protocol it is not possible to arrive at a useful estimate. However, there is no reason to believe that brook lamprey habitat is declining.</p> <p>At a less detailed scale, CCW Phase 1 Habitat survey indicated that there was around 60km² of running water habitat in the mid 1990s (see the H3260 account for details). There is no reason to suppose this area has changed significantly. This area excludes small water courses and is therefore likely to underestimate the true area of habitat by around 20-50%, especially considering that such watercourses may be especially suitable for brook lampreys.</p> <p>There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species.</p>
2.5.2 Year or period	2001-2012 See note 2.3.3.
2.5.3 Method used Habitat for the species	Complete survey/Complete survey or a statistically robust estimate See comment in 2.5.1. We have nevertheless attempted to estimate the approximate area of this habitat. We took the total area of running water in Wales as measured by the Phase I habitat survey, and excised upland areas (where this species does not usually occur) and brackish water using GIS. This gave a total area just under 60km ² . [CCW-TWHE] No repeat datasets are available to analyse trends, nor do we advocate the use of this approach for assessing trend in habitat area, as the error involved in estimating the area of running water is likely to substantially exceed any genuine changes in habitat area..
2.5.4 Quality of the habitat	a) Habitat quality Moderate
	Habitat quality has been assessed using WFD 2010 river classification data for Wales (EA, unpublished). Due to lack of time and limited range data, no attempt was made to remove upland water bodies where lampreys may have been absent. For brook lamprey, Good Ecological Status (GES) was considered likely to represent habitat quality sufficient to support favourable conservation status. 1 water body (2 km) was High status; 286 water bodies (2050km) were Good status; 631 water bodies (4661km) were Moderate status; 80 water bodies (766km) were Poor status and 4 water bodies (32.5km) were Bad status. More recent figures are due for publication but were not available at the time of writing; however, they generally showed a small improvement (R. Hemsworth, Environment Agency, pers com.). We have therefore reported habitat quality as moderate. [CCW-TWHE]
	b) Assessment method CSM lamprey and EA WFD river monitoring data

	See Teague et al. (2012), Thomas & Garrett (2012); Thomas et al. (2012) and Garrett et al (2012 in prep) for further details.	
2.5.5 Short-term trend Period	2001-2012	
	See note 2.3.3.	
2.5.6 Short-term trend Trend direction	unknown	
	For ammocoete habitat (silt beds), no area estimation was given in first cycle assessment. Poor data availability of habitat area suitable for brook lamprey. Hence trend direction is unknown.	
2.5.7 Long-term trend Period	1989-2012	
	See note 2.3.3.	
2.5.8 Long-term trend Trend direction	unknown	
	See note 2.5.6.	
2.5.9 Area of suitable habitat for the species	a) Value in km²	60
	Habitat occupancy levels for brook lamprey in Wales are high, and surveys (e.g. Teague et al. 2012) have not revealed any significant issues regarding access. The figure from 2.5.1 has therefore been used for this exercise.[CCW-TWHE]	
	b) Absence of data indicated as '0'	
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	True
	c) Use of different method (e.g. "Range tool")?	False
	No attempt was made to assess total habitat area in 2007. Note that there are substantial caveats with the figure quoted here - see note 2.5.1.[CCW-TWHE]	

2.6 Main pressures		
a) Pressure	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
J02: human induced changes in hydraulic conditions	H	
C03: Renewable abiotic energy use	M	

E03: Discharges	M	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	
I01: invasive non-native species	M	
M01: Changes in abiotic conditions	L	

The main pressures on brook lampreys in the UK include dams and weirs, river modification (e.g. canalisation), abstractions and discharges. General water pollution may also affect larval development but lamprey ammocoetes are not thought to be particularly pollution sensitive.

2.6.1 Method used – Pressures	mainly based on expert judgement and other data
	See note 2.6

2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
J02: human induced changes in hydraulic conditions	H	
C03: Renewable abiotic energy use	M	
E03: Discharges	M	
E06: Other urbanisation, industrial and similar activities	M	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	
I01: invasive non-native species	M	
M01: Changes in abiotic conditions	M	

There is increasing demand for water resources in terms of local abstractions and water transfers. The resultant reduction in flow could have negative effects on brook lamprey. Increased abstractions could also lead to brook lampreys being entrained. Hence screening of abstractions which is protective to lampreys would be required.

The effect of climate change on brook lampreys is uncertain. Lower summer flows and potential droughts may also have negative effects on brook lamprey. The increased frequency of extreme events may lead to washout of silt beds and the juvenile brook lamprey inhabiting the habitat.

2.7.1 Method used – Threats	expert opinion
	See note 2.7

2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	<p>There are serious taxonomic issues between this species and the very closely related <i>L. fluviatilis</i>, and genetic evidence suggests that the two may be no more than ecotypes of a single polymorphic species (Schreiber & Engelhorn 1998; Espanhol et al. 2007; Blank et al. 2008). This is supported by the widespread distribution of <i>L. planeri</i> in Britain, (see 1.1.1), which could only have reached many parts of its current range via a migratory ancestor or life form. It is CCW's advice that <i>L. planeri</i> cannot safely be considered a separate species from <i>L. fluviatilis</i>. For administrative reasons we have included a report on <i>L. planeri</i> but we strongly recommend that the two reports are read in conjunction with one another and considered as separate reports on migratory and non-migratory stock components of a single species. This would have implications for the range and population aspects of FCS.</p>
2.8.3 Trans-boundary assessment	

2.9 Conclusions (*assessment of conservation status at end of reporting period*)

Please refer to the United Kingdom assessment for this species.

3 Natura 2000 coverage & conservation measures - Annex II species (*only applies to species listed under Annex II of the Directive*)

3.1 Population		
3.1.1 Population size Estimation of population size included in the SAC network	a) Unit	number of map 1x1 km grid cells
	See note 3.1.1b	
	b) Minimum	34
	Population size was determined in the same way as in 2.4.2 above but filtered for Natura 2000 sites designated for the species.	
	c) Maximum	34
No maximum value is known. A value has been entered here for validation purposes. See note 3.1.1b		
3.1.2 Method used	Estimate based on partial data with some extrapolation and/or modelling	

	See note 3.1.1b
3.1.3 Trend of population size within the network (short-term trend)	unknown

3.2 Conservation measures															
Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.															
3.2.1 Measure	3.2.2 Type					3.2.3 Ranking H = high importance M = medium importance L = low importance	3.2.4 Location where the measure is PRIMARILY applied			3.2.5 Broad evaluation of the measure					
	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off		a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown	f) Not evaluated
1.2: Measures needed, but not implemented					Y	H			Y		Y				
4.1: Restoring/improving water quality		Y				M			Y					Y	
4.2: Restoring/improving the hydrological regime		Y				H			Y					Y	
4.3: Managing water abstraction	Y					H	Y			Y	Y				

The measures selected relate to the Review of Consents process for implementation of the Habitats Regulations, and the Water Framework Directive Programme of Measures. Rivers Trusts, grant aided by EU, WG, EAW and CCW funds, have carried out numerous small restoration projects to improve habitat and migratory fish access. Whilst the principal target of these is Atlantic salmon, many of these projects will also have benefited brook lamprey. [CCW-TWHE]

