

**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:

S1099 - River lamprey (*Lampetra fluviatilis*)

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.

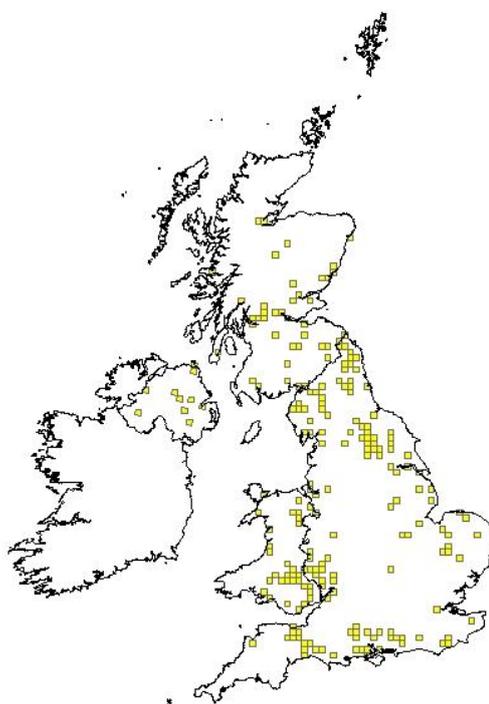
As of 1 April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru

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	S1099
	0.2.2 Species scientific name	<i>Lampetra fluviatilis</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	River lamprey, lamprai'r afon

1.1 Maps

1.1.1 Distribution map	Sensitive	False
Records unambiguously attributable to migratory individuals are widely scattered throughout Wales. However, <i>Lampetra ammocoetes</i> are common and very widespread. This distribution is consistent with river lamprey being common but under-recorded. The species is however largely absent from upland areas due to a combination of barriers to migration and lack of suitable habitat. [CCW-TWHE]		



1.1.2 Method used - map	Estimate based on partial data with some extrapolation and/or modelling
	See note 2.3.2
1.1.3 Year or period	2001-2012
	See note 1.1.1

1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<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>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 (2012) 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 (2012a) 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>Hatton-Ellis TW (2012b) Population Parameters for River Lamprey <i>Lampetra fluviatilis</i> and Sea Lamprey <i>Petromyzon marinus</i> in Wales, 1992-2012. Supplementary information for Article 17 Reporting. CCW Advice to JNCC. DCT-12-399809</p> <p>Joint Nature Conservation Committee (JNCC). (2005) Common Standards Monitoring Guidance for Freshwater Fauna. Peterborough, Joint Nature Conservation Committee.</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 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</p>

	<p>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 river 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>No evidence for range contraction. [CCW-RhT]. Apparent range expansion since 2007 is likely to be due to increased survey effort and the fragmentory nature of data available to JNCC (2007)</p>	
2.3.5 Short-term trend Magnitude	a) Minimum	
	See comment 2.3.4.	
	b) Maximum	
	See comment 2.3.4.	
2.3.6 Long-term trend Period	<p>1989-2012</p> <p>See comment 2.3.3.</p>	
2.3.7 Long-term trend Trend direction	<p>unknown</p> <p>Insufficient data are available to assess long-term range trends. However, we are not aware of any evidence of a long-term decline in range and have no reason to suspect that one has occurred (e.g. new barriers to migration). [CCW-TWHE]</p>	
2.3.8 Long-term trend Magnitude	a) Minimum	
Optional	See comment 2.3.7.	
	b) Maximum	
	See comment 2.3.7.	
2.3.9 Favourable reference	a) Value in km²	15000

range	No data are available. However, a favourable reference value should constitute all squares downstream of natural impassible falls. In practice this is likely to constitute the majority of 10km squares in Wales and hence a high proportion of the total area of Wales (e.g. around 75-80% of land area). Wales is about 20,000km ² in area, so this is likely to give a range of around 15-16,000km ² . In our view the FRR of 37,685km ² for the entire UK (JNCC, 2007) is much too low, as the data underpinning it was inadequate and no attempt was made to correct for this in the subsequent analysis (for example by increasing alpha). [CCW-TWHE]	
	b) Operator for FRR	approximately equal to
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	This is a very broad estimate, assuming that river lamprey distribution is predominantly constrained by natural barriers to migration (e.g. waterfalls) and lack of habitat (upland areas). Approximately 75-80% of 10km squares are likely to include at least some lamprey habitat, corresponding to about 15000km². A more accurate assessment would require a detailed and time-consuming analysis of the accessibility of the rivers network against a 10km square network.
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
	b) Improved knowledge/more accurate data?	True
	The primary reason for change is an increase in recent lamprey survey, and hence in records. [CCW-TWHE]	
	c) Use of different method (e.g. "Range tool")?	False

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
	<p>Data from the NBN on the presence of <i>Lampetra fluviatilis</i> was downloaded on the 03/10/12. The data consisted of records as grid references or 10x10km squares submitted mainly by CCW, Environment 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	41
	c) Maximum	
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	See note in 2.4.2a

2.4.4 Year or period	2001-2012	
	See note 2.4.2a	
2.4.5 Method used Population size	Estimate based on partial data with some extrapolation and/or modelling	
	See note 2.4.2a	
2.4.6 Short-term trend Period	2001-2012	
	The standard period has been used.	
2.4.7 Short-term trend Trend direction	stable	
	This is a low confidence assessment based on data from the Dee fish trap, where numbers are exceedingly variable. See Hatton-Ellis (2012b)	
2.4.8 Short-term trend Magnitude	a) Minimum	
	See Hatton-Ellis (2012b)	
	b) Maximum	
	See 2.4.8a.	
	c) Confidence interval	
	See 2.4.8a.	
2.4.9 Short-term trend Method used	Estimate based on partial data with some extrapolation and/or modelling	
	See 2.4.8a.	
2.4.10 Long-term trend – Period	1992-2012	
	The standard period has been used, however note that no data are available before 1992.	
2.4.11 Long-term trend Trend direction	stable	
	See 2.4.8a.	
2.4.12 Long-term trend Magnitude Optional	a) Minimum	
	See 2.4.8a.	
	b) Maximum	
	See 2.4.8a.	
	c) Confidence interval	
	See 2.4.8a.	

2.4.13 Long term trend Method used	2	
	See 2.4.8a.	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	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 Hatton-Ellis (2012b)	
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.5 Habitat for the species	
2.5.1 Area estimation	<p>26.45</p> <p>River lampreys require clear migration routes, 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 river 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 river lamprey habitat is declining. [CCW-RhT]</p> <p>We have however attempted to estimate the area of running water accessible to river lamprey. This was done using the occupied 10km</p>

	<p>squares dataset previously used for range estimation, and overlaying it onto a running waters habitat layer using a GIS package. Since river lampreys are migratory, all 10km squares downstream of any records were also included. A GIS query was then used to select all areas of running water falling within occupied 10km squares (including downstream squares). This procedure gave a figure of 22.06km². However, since river lampreys are significantly under-recorded, we also reran this procedure but this time included squares where lamprey habitat is likely to be suitable and no barriers to migration are known, but no records are available. This process gave a figure of 30.84km². The true figure is likely to lie somewhere in between, as whilst river lamprey are under-recorded, using 10km squares to select habitat areas sometimes resulted in areas of habitat outside known occupied catchments being selected. Conversely, the Phase 1 database on which running water habitat area was based is somewhat out of date, and tends to exclude small water courses that may be suitable habitat for <i>L. fluviatilis</i>. These issues could not be corrected within the time available. In the absence of better data we have therefore taken the average of the two values, 26.45km². [CCW-TWHE]</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 2.5.1	
2.5.3 Method used Habitat for the species	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>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 60km². We then applied a correction factor of 0.5 to allow for the fact that some rivers are not thought to be accessible to river lamprey, due to natural and artificial barriers to migration. This gives a very approximate figure of 30km², though much more detailed work would be required to achieve an acceptable level of precision for this figure. [CCW-TWHE]</p>	
2.5.4 Quality of the habitat	<p>a) Habitat quality</p> <p>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 river 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]</p>	<p>Moderate</p>
	<p>b) Assessment method</p>	<p>CSM lamprey and WFD river monitoring data</p>
	See Teague at al. (2012), Thomas & Garrett (2012); Thomas et al. (2012) and Garrett et al (2012 in prep) for further details.	

	See 2.5.4a.	
2.5.5 Short-term trend Period	2001-2012	
	The standard period has been applied.	
2.5.6 Short-term trend Trend direction	unknown	
	No habitat area estimation given in first cycle assessment. Poor data availability of habitat area suitable for river lamprey. Hence trend direction unknown. The trend cannot be analysed statistically due to poor intercomparability between older methods and the WFD tools that replaced them. However, general indications suggest that overall, water quality is improving, especially in the worst areas (Environment Agency, unpublished). There is also an ongoing programme of fish passes and easements which, though primarily intended for salmon, should also benefit river lamprey, especially since recent legislative changes requires new fish passes to benefit all species. [CCW-TWHE]	
2.5.7 Long-term trend Period	1989-2012	
	See note 2.5.5.	
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	30.84
	There are various barriers to migration for sea lamprey in Wales, notably in the Severn, Usk and Dee. The upper area value given in note 2.5.1 has been used for this entry, though this figure is likely to be an underestimate.	
	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?	False
	c) Use of different method (e.g. "Range tool")?	True
	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	
C03: Renewable abiotic energy use	H	
J02: human induced changes in hydraulic conditions	H	
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	

River lampreys are not fished for in Britain, so the main pressures on river lampreys in the UK include dams and barrages, 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 & 2.5.4b

2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
C03: Renewable abiotic energy use	H	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	H	
J02: human induced changes in hydraulic conditions	H	
E03: Discharges	M	
E06: Other urbanisation, industrial and similar activities	M	
I01: invasive non-native species	M	
M01: Changes in abiotic conditions	M	
D03: shipping lanes, ports, marine constructions	L	

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River lampreys are very vulnerable to activities that disrupt their migration pathways. As a result, particular threats are modifications to hydromorphology such as water transfers, dams and barrages etc. The Severn Barrage proposals have recently been abandoned by UK Government but may still be taken forward by a private consortium. The construction and operation of a barrage could have major implications for access to lamprey habitat for rivers including the Wye, Usk and Severn.

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 river lamprey. Increased abstractions could also lead to river lampreys being entrained. Hence screening of abstractions which is protective to lampreys would be required.

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

The taxonomy of *Lampetra fluviatilis* and *L. planeri* is controversial, but recent molecular evidence shows clearly that *L. planeri* as presently constituted is not a valid taxon. This has potential implications for the assessment of range and population for *L. fluviatilis* in Britain. See Hatton-Ellis (2012) for further details. [CCW-TWHE]

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	a) Unit	number of map 1x1 km grid cells
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Estimation of population size included in the SAC network	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
3.1.2 Method used	See note 3.1.1b	
	Estimate based on partial data with some extrapolation and/or modelling	
3.1.3 Trend of population size within the network (short-term trend)	See note 3.1.1b	
	unknown	
Insufficient information to determine trend.		

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
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				
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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 river lamprey. [CCW-TWHE]