

**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:

S1163 - Bullhead. (*Cottus gobio*)

IMPORTANT NOTE – PLEASE READ

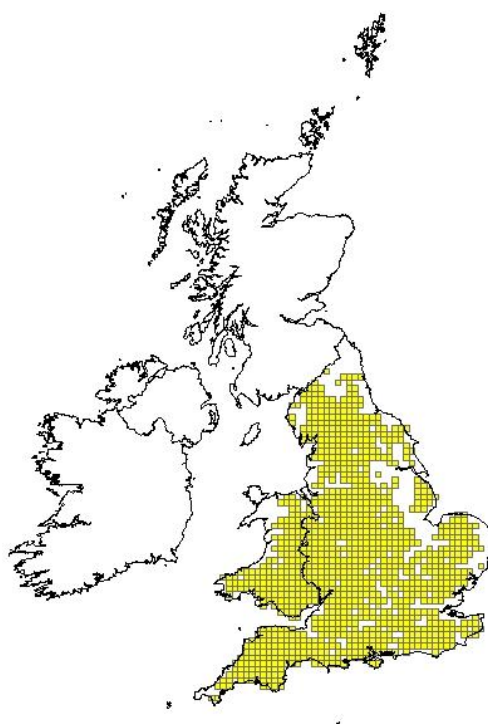
- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural Resources Wales** and refers only to the state of the habitat/species in **Wales** - it does not constitute an assessment 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	S1163
	0.2.2 Species scientific name	<i>Cottus gobio</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	bullhead, bawd y melinydd

1.1 Maps			
1.1.1 Distribution map		Sensitive	False



1.1.2 Method used - map	Estimate based on partial data with some extrapolation and/or modelling The distribution data available for this widespread species is generally good, as bullhead are routinely recorded by Environment Agency salmonid monitoring programmes. The distribution map should therefore be a good representation of this species's distribution in Wales at a 10km ² resolution.
1.1.3 Year or period	2001-2012 The time period selected provides a more complete picture of this species's distribution in Wales. Use of the default period would require

	more interpolation and might introduce spurious range gaps.
1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"Joint Nature Conservation Committee (JNCC). (2005) Common Standards Monitoring Guidance for Freshwater Fauna. Peterborough, Joint Nature Conservation Committee.</p> <p>Leah, R. T. 2003. The ecology and conservation of the fish of Llyn Tegid. Pages 115-138 in R. Gritten, C. A. Duigan, H. Millband, and P. E. S. L. A. R. Leah, editors. Llyn Tegid Symposium - The ecology, conservation and environmental history of the largest natural lake in Wales. University of Liverpool.</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>Thomas, Rh (2010). Bullhead monitoring in the River Dee catchment. CCW Staff Science Report No.09/06/01</p> <p>Tomlinson, M. L., and M. R. Perrow. 2003. Ecology of the Bullhead <i>Cottus gobio</i>. Conserving Natura 2000 Rivers Ecology Series No. 4. English Nature, Peterborough.</p> <p>West, R (2004). River Dee candidate special area of conservation bullhead survey 2004. CCW Review of Consents Report No.19</p> <p>Yeomans, WE, Murray, DS, Stevenson, C, McGillivray, C, McColl, D, Dodd, JA, Thomas, Rh (2008). Monitoring of bullhead in Welsh SAC rivers : rivers Usk and Wye. CCW Science Report No.818"</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 bullhead in this reporting cycle (Thomas, 2010).</p>

2.3.3 Short-term trend Period	2001-2011	
	Default period was used for this assessment.	
2.3.4 Short term trend Trend direction	stable	
	No evidence for range contraction.	
2.3.5 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
2.3.6 Long-term trend Period	1989-2012	
2.3.7 Long-term trend Trend direction	unknown	
2.3.8 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	
	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	a) Genuine change?	False

mainly due to...	b) Improved knowledge/more accurate data?	False
	There is no known and genuine change in range of this species. Changes in range are therefore most likely to result from improved knowledge. (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
	Data from the NBN on the presence of Bullhead was downloaded on the 23/10/12. The data consisted of records as grid references submitted mainly by CCW, Environment Agency, APEM or individuals. The grid reference data was converted into 6 figure grid references and plotted on GIS as 1x1km squares. 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.	
	The number of occupied 1km grid squares was agreed as a proxy for population in the absence of a technically robust method for estimating bullhead populations. Furthermore, the absence of data on key parameters such as habitat area and occupancy rate, prevents the conversion of density data to a total UK population to an acceptable level of precision.	
	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.	
	b) Minimum	1090
	c) Maximum	1090
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	
	Bullhead data analysis for the period 2007-12 has not yet been completed and we therefore are unable to report on the latest status. Accordingly we have had to incorporate data from earlier periods (e.g. Yeomans et al. 2008). (CCW-TWHE)	
2.4.5 Method used Population size	Estimate based on partial data with some extrapolation and/or modelling	
	See 2.4.2a	
2.4.6 Short-term trend Period	2001-2012	
	No data are available over the short term population trend timescale sufficient to identify trends in bullhead populations. Default period was used for this assessment.	
2.4.7 Short-term trend Trend direction	unknown	
2.4.8 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.9 Short-term trend Method used	Absent data	
2.4.10 Long-term trend – Period		
2.4.11 Long-term trend Trend direction		
2.4.12 Long-term trend Magnitude Optional	a) Minimum	

	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used		
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	A structured monitoring programme incorporating sampling effort is needed to calculate a scientifically defensible FRV for number of 1km squares. In Wales bullhead data with sampling effort is available and it would therefore be possible to do this, but this would require a significant technical project. The population unit was only agreed in summer 2012, which left insufficient time for this. (CCW-TWHE)	
	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
	Although data are available, insufficient time and resources are available to carry out this analysis. Due to the widespread nature of this species, the size of the dataset is large. It is however our view that bullhead populations are unlikely to have changed significantly since 2006. (CCW-TWHE)	
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

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2.5 Habitat for the species					
2.5.1 Area estimation	<p>53</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 areas outside the natural range identified in 2.3 and upland areas (where this species does not usually occur) and brackish water using GIS. This gave a total area just under 53km².</p> <p>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. Due to the inability of Phase I data to detect small habitat patches, this dataset is also likely to underestimate the total habitat area, because small streams are omitted. [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	2007-2012				
2.5.3 Method used Habitat for the species	Complete survey/Complete survey or a statistically robust estimate				
2.5.4 Quality of the habitat	<table border="1"> <tr> <td>a) Habitat quality</td> <td>Moderate</td> </tr> <tr> <td>b) Assessment method</td> <td>CSM bullhead and river monitoring results (see published sources for further information).</td> </tr> </table> <p>See Thomas et al. (2012) for further details.</p>	a) Habitat quality	Moderate	b) Assessment method	CSM bullhead and river monitoring results (see published sources for further information).
a) Habitat quality	Moderate				
b) Assessment method	CSM bullhead and river monitoring results (see published sources for further information).				
2.5.5 Short-term trend Period	2001-2012				
2.5.6 Short-term trend Trend direction	<p>stable</p> <p>No habitat area estimation given in first cycle assessment. Poor data availability of habitat area suitable for bullheads. Hence trend in area direction is unknown. However, there is no reason to suspect that there has been a significant change in the area of bullhead habitat. [CCW-RhT]</p> <p>Due to the relatively recent implementation of the Water Framework Directive and associated classification tools, it is not possible to reliably identify quality trends accurately. However, there is no evidence of a strong trend in ecological quality using either the WFD tools or the GQA system that preceded them. The most recent WFD monitoring results suggest a modest improvement within Wales but the effect on bullhead, if any, is uncertain.</p>				

	Overall we have recorded habitat trend as stable, since there is no evidence of significant short term change using available data. [CCW-TWHE]	
2.5.7 Long-term trend Period	1989-2012	
2.5.8 Long-term trend Trend direction	unknown	
2.5.9 Area of suitable habitat for the species	a) Value in km²	53
	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
	Insufficient data is available to make any comments on the nature of change between reporting rounds.	
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

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	M	
E03: Discharges	M	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	
J02: human induced changes in hydraulic conditions	M	
M01: Changes in abiotic conditions	L	

The main pressures on bullheads in the UK include dams and weirs, river modification (e.g. canalisation), abstractions and discharges. General water pollution may also have a negative effect but bullheads are not thought to be particularly pollution sensitive.

2.6.1 Method used – Pressures	mainly based on expert judgement and other data
	Data is based on evidence collected during [CSM SAC monitoring (e.g. water chemistry, flow, habitat structure)]. [CCW-TWHE]

2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
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	
J02: human induced changes in hydraulic conditions	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 bullheads. Increased abstractions could also lead to bullheads being entrained. Hence screening of abstractions which is protective to bullheads may be required.

The effect of climate change on bullheads is uncertain. Lower summer flows and potential droughts may also have negative effects on bullheads. The increased frequency of extreme events may affect bullhead habitat.

2.7.1 Method used – Threats	expert opinion
	Threats are based on generic information regarding threats to the river environment in the context of known information of bullhead's environmental requirements (Tomlinson & Perrow 2003).[CCW-TWHE]

2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	

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
Estimation of population size included in the SAC network		
	b) Minimum	347
	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	347
	See 3.1.1b	
3.1.2 Method used	Estimate based on partial data with some extrapolation and/or modelling	
	See note 2.4.2	
3.1.3 Trend of population size within the network (short-term trend)	unknown	
	See note 2.4.2	

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	3.2.4 Location	3.2.5 Broad evaluation of the measure
		H = high importance	where the measure is PRIMARILY applied	

	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off	M = medium importance L = low importance	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					M	Y			Y	Y				

Conservation measures predominantly include water quality and flow management actions that have taken place via the Review of Consents process. Diffuse pollution is being managed via agrienvironment schemes such as Glastir. Bullhead are also likely to benefit from various projects primarily targeted at restoring salmon habitat, as both species have similar habitat requirements.