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:

S1102 - Allis shad (*Alosa alosa*)

IMPORTANT NOTE – PLEASE READ

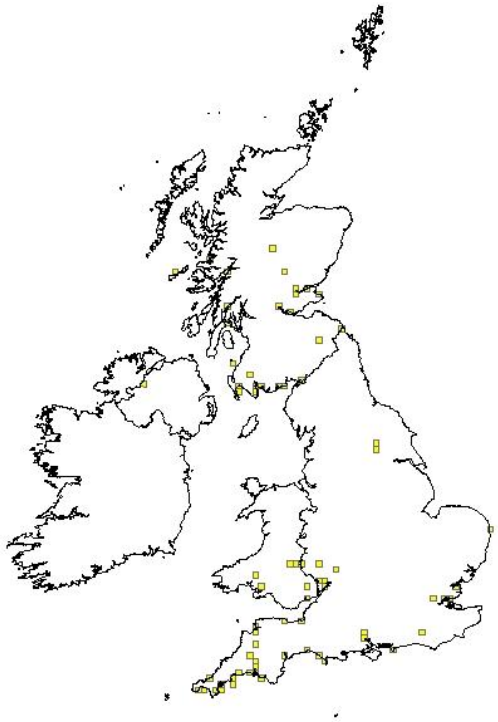
- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural Resources Wales** and refers only to the state of the habitat/species in **Wales** - it does not constitute an assessment 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

Field name	*Brief explanations*	
0.2 Species	**0.2.1 Species code**	**S1102**
	0.2.2 Species scientific name	***Alosa alosa***
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	**allis shad / herlyn**

1.1 Maps			
1.1.1 Distribution map		**Sensitive**	**False**
	Due to underreporting and difficulties identifying the species (see 0.2.3), the actual distribution of allis shad in Wales is poorly known (see also the commentary in section 1.1 of JNCC (2007)). We believe that the spawning distribution is most likely to be focused around the larger rivers entering the Bristol Channel, especially the Usk, Wye and Tywi. Other (Welsh) records are likely to be stray individuals or marine / estuarine records.		



1.1.2 Method used - map	**Estimate based on partial data with some extrapolation and/or modelling**
1.1.3 Year or period	**1990-2012**

	See note 1.1.2
1.1.4 Additional distribution map	**False**
1.1.5 Range map	

2.1 Biogeographical region & marine regions	**ATL**
2.2 Published sources	**"Alexandrino, P., R. Faria, D. Linhares, F. Castro, M. Le Corre, R. Sabatie, J.-L. Bagliniere, and S. Weiss. 2007. Interspecific differentiation and intraspecific substructure in two closely related clupeids with extensive hybridisation, Alosa alosa and Alosa fallax. Journal of Fish Biology 69 (Supplement B):242-259.** **Aprahamian, M. W., S. M. Lester, and C. D. Aprahamian. 1999. Shad Conservation in England and Wales.R & D Technical Report W110. Environment Agency, Bristol.** **Aprahamian, M. W., J.-L. Bagliniere, R. Sabatie, P. Alexandrino, and C. D. Aprahamian. 2002. Alosa alosa and Alosa fallax spp.: Literature Review and Bibliography.R&D Technical Report W1-014/TR. Environment Agency, Swindon.** **Alexandrino P, Faria R (2004) Population Genetic Structure of Shad in the UK. Report to the Environment Agency.** **Atkins Ltd. 2004. Assessment of Obstructions to Shad Migration on the River Usk.CCW RoC Report No. 16.** **Caswell, P. A., and M. W. Aprahamian. 2001. Use of River Habitat Survey to determine the spawning habitat characteristics of Twaite Shad (Alosa fallax fallax). Bulletin Francais de la Peche et de la Pisciculture 362/363:919-929.** **Davies, R. N., J. Davies, J. Griffiths, and P. Clabburn. 2011. Appraisal of the use of a DIDSON imaging sonar to quantify shad migration on the River Tywi.FAT/REP/11/FINAL DRAFT.** **Faria, R., A. N. Pinheiro, T. Gabaldon, S. Weiss, and P. Alexandrino. 2011. Molecular tools for species discrimination and detection of hybridization between two closely related Clupeid fishes Alosa alosa and A. fallax. Journal of Applied Ichthyology 27:16-20.** **Garrett H (2012) Afon Tywi SAC shad egg survey 2012. CCW Staff Science Report No. 12/8/4. CCW, Bangor.** **Hillman, R. J., I. G. Cowx, and J. P. Harvey. 2003. Monitoring Allis & Twaite Shad.Conserving Natura 2000 Rivers Monitoring Series 3. English Nature, Peterborough.**

	Joint Nature Conservation Committee. 2007. Second Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Peterborough: JNCC. Available from: www.jncc.gov.uk/article17 **Noble, R. A. A., A. D. Nunn, J. P. Harvey, and I. G. Cowx. 2007. Shad monitoring and assessment of conservation condition in the Wye, Usk and Tywi. CCW Environmental Monitoring Report No. 40. CCW, Bangor.** **Thomas, Rh., and C. Dyson. 2011. River Usk shad egg survey 2010. CCW staff Science Report no. 10/8/1. Countryside Council for Wales, Bangor.** **Thomas, Rh., and C. Dyson. 2012a. River Wye Shad Egg Survey 2011. CCW Staff Science Report No. 11/8/4. Countryside Council for Wales, Bangor.** **Thomas, Rh., and C. Dyson. 2012b. River Usk Shad Egg Survey 2011. CCW Staff Science Report 11/8/3. Countryside Council for Wales, Bangor.** **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.** **Smith, V. (2005a). River Tywi cSAC: Potential Impacts of Abstraction and River Regulation on Shad, Alosa spp. Llandarcy: Environment Agency in Wales. EATW/05/01.1, 40pp.** **Smith, V. (2005b). Llyn Brianne Reservoir: Temperature Effects in the River Tywi and their Effects on Shad, Alosa spp. Llandarcy: Environment Agency in Wales. EATW/05/01.3, 40pp.** **West, R. (2006). Temperature issues, Llyn Brianne and Afon Tywi SAC features. EA Tech Memo No: TMW06_14."**

2.3 Range	
2.3.1 Surface area Range	
	There is considerable uncertainty regarding the range of this species in Wales, due to the lack of records (see 0.2.3). Thus, the range estimate based on records and tools is inaccurate. Genetic evidence (Alexandrino & Faria 2004; Faria et al. 2011) indicates high frequency of A. alosa alleles in putative A. fallax populations in the UK.
2.3.2 Method used Surface area of Range	**Estimate based on partial data with some extrapolation and/or modelling**

2.3.3 Short-term trend Period	**1990-2012**	
2.3.4 Short term trend Trend direction	**unknown**	
	No reliable species-specific data are available to assess any trend in range over the time scale concerned, for reasons already discussed (0.2.3). However, the factors likely to cause a contraction in range (especially barriers to migration) have not changed substantially and therefore there is no reason to suspect a change in range since 1990.	
2.3.5 Short-term trend Magnitude	**a) Minimum**	
	See note 2.3.4	
	b) Maximum	
	See note 2.3.4	
2.3.6 Long-term trend Period	**1950-2012**	
	Aprahamian et al. (1998) assessed A. alosa as having declined in range at a GB level, including loss of populations in Wales in the upper Severn near Welshpool. However, the timescale of this decline was not reported.	
2.3.7 Long-term trend Trend direction	**decrease 1% or less/year**	
	There is considerable uncertainty over the range of this species in Wales, and hence also with trends (see previous comments). However, over the long term it does not seem likely that there has been a consistent trend of more than 1% per year.	
2.3.8 Long-term trend Magnitude Optional	**a) Minimum**	
	See note 2.3.7	
	b) Maximum	
	See note 2.3.7	
2.3.9 Favourable reference range	**a) Value in km²**	
	Favourable reference range for this species should include the Severn as far as Welshpool as well as the catchment of the Wye as far as Builth, Usk as far as Brecon and Tywi as far as Llandovery. Aprahamian et al. (1999) review the historic range of this species in Britain.	
	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**
	See note 2.3.4	
	b) Improved knowledge/more accurate data?	**False**
	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 *(if 2.4.1 filled in)*	**a) Unit**	**length of inhabited feature in km**
	As we advised JNCC previously, we are unable to report using thenumber of spawning populations because we have no confirmed records of allis shad spawning in Wales. However, records of large shad consistent with allis in the Wye, Usk and Tywi, plus the presence of hybrid fish (see note 0.2.3) provide strong circumstantial evidence that allis shad are present. We have therefore reported on the length of river accessible to shad (Hatton-Ellis 2012).	
	b) Minimum	**0**
	The minimum population size is 0, because due to identification issues we are not able to confirm the species of shad eggs. However, anglers from both the Wye and the Usk have caught large shad in the size range of allis shad within the past three years, suggesting the presence of spawning populations in both rivers. We have submitted a research proposal to combine use of genetic markers (see Faria et al. 2011) with future shad egg sampling in order to address this issue.	
	c) Maximum	**189**
	The maximum population size is the maximum length of accessible river within which shad spawning has been detected, between the tidal limit and the upstream known extent of adult and / or spawning records. See	

	Hatton-Ellis (2012).	
2.4.3 Additional information on population estimates / conversion Optional	**a) Definition of "locality"**	**Length here refers to accessible river within which spawning has been detected as identified in Hatton-Ellis (2012).**
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	**Other than using genetic analysis, it is not possible to distinguish between allis (S1102)and twaite (S1103) shad eggs. Consequently we cannot be sure there are self-sustaining allis shad populations.**
2.4.4 Year or period	**2007-2012**	
	Data from both CCW and the Environment Agency were used. See Thomas & Dyson 2011, 2012a, 2012b and Garrett (2012).	
2.4.5 Method used Population size	**Complete survey/Complete survey or a statistically robust estimate**	
	Surveys were carried out at suitable habitat in rivers where spawning has been previously recorded. The rivers in Wales where shad spawn (Usk, Wye, Tywi) are well known (see Aprahamian et al. 1999; JNCC 2007) and are designated as SACs. Isolated spawning events could have occurred in other rivers but these are hard to detect. However, we do not know which records refer to allis shad and which to twaite (see 0.2.3).	
2.4.6 Short-term trend Period	**1999-2012**	
	See note 2.4.5	
2.4.7 Short-term trend Trend direction	**increase**	
	Recent monitoring data (Thomas & Dyson 2011, 2012a, 2012b; Garrett 2012) indicates that shad spawning activity is now more widespread on the Usk and Tywi than was reported by Aprahamian et al. (1999). This is thought likely to be due to improved access, especially on the Usk.	
2.4.8 Short-term trend Magnitude	**a) Minimum**	
	The data are insufficient to estimate the magnitude of any short-term trend accurately (see note 2.4.9). However, principal improvements are in the Usk. Shad now routinely reach Abergavenny due to changes to two weirs in the early 2000s that increase their passability to shad, opening up an accessible wetted area of approximately 132ha over 22.5km of river.	
	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**	
	Estimates of short and long term change are based on available monitoring data. Monitoring shad populations is technically very challenging and various methods have been tried including juvenile netting and use of hydroacoustic fish counters (see Hillman et al. 2003, Noble et al. 2007). It is only recently that a cost-effective method based on egg surveys has been developed and deployed (see Thomas & Dyson 2011, 2012a, 2012b, Garrett 2012), though it should be noted that this approach focuses more on the spatial distribution of spawning within a river rather than attempting absolute estimates of population size. Consequently, population trend data are not available, though it has been possible to compare current results with maps of spawning distribution in Welsh rivers (Aprahamian et al. 1999), produced by compiling data from the 1990s. This gives an impression of changes in spawning distribution within Welsh rivers between the periods 1990-98 and 2008-2012. Comparable data for the period 1998-2007 are lacking. See Hatton-Ellis (2012).	
2.4.10 Long-term trend – Period	**1989-2012**	
	The standard period has been used.	
2.4.11 Long-term trend Trend direction	**increase**	
	See note 2.4.7 and Hatton-Ellis (2012). The baseline maps collated by Aprahamian et al. (1999) reflect data collected in the early and mid 1990s. We are therefore confident that a long term positive trend has occurred in shad, but cannot confidently say whether allis shad have increased.	
2.4.12 Long-term trend Magnitude Optional	**a) Minimum**	
	See note 2.4.8a.	
	b) Maximum	
	See note 2.4.8a.	
	c) Confidence interval	
	See note 2.4.8a.	
2.4.13 Long term trend Method used	**2**	
	See note 2.4.9. A detailed description is provided in Hatton-Ellis (2012).	
2.4.14 Favourable reference population	**a) Number of individuals/agreed exceptions/other units**	**279**
	This is the length of accessible river in km. Note that some of this length forms the border with England.	
	b) Operator	**approximately equal to**

	This value is approximate and would benefit from recalculation using a more accurate datasetat a UK level.	
	c) FRP is unknown indicated by "true"	**False**
	See 2.4.14a.	
	d) Method used to set FRP	**This is the length in km of accessible river. See Hatton-Ellis (2012).**
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?**	**True**
	No previous assessment is available (see JNCC 2007). However, this change is genuine. See Hatton-Ellis (2012).	
	b) Improved knowledge/more accurate data?	**True**
	No previous estimate was available for Wales. See JNCC (2007). It is possible, but not likely, that more detailed recording may have resulted in a change in the estimated area.	
	c) Use of different method (e.g. "Range tool")?	**False**
	The same method was applied to the current data and retrospectively to the older dataset, so this can be excluded as a reason for change.	

2.5 Habitat for the species	
2.5.1 Area estimation	**5.06**
	Habitat extent is not an appropriate measure to describe FCS for shads, because they use multiple habitats at different stages of their life history, all of which are critical to survival. The most important factor is that all habitat types are accessible and of at least adequate quality. Construction of weirs in the 19th and 20th Century largely eradicated allis shad from the Severn (Aprahamian et al. 1999, Maitland & Hatton-Ellis 2003). The figure cited here is therefore an estimate of accessible wetted area in Welsh rivers known to support shad, rather than an assessment of suitable shad habitat per se. For details see Hatton-Ellis (2012). Freshwater Habitat constitutes rivers with good water quality with unimpeded access to and from the sea. Clean, well-oxygenated gravels are required for spawning. Juveniles require slow flowing nursery areas in freshwater above the estuary. Caswell & Aprahamian (2001) describe these parameters in more detail for twaite shad; allis shad is presumed to have similar requirements. However, this habitat is widespread in Britain and yet allis shad are restricted in their distribution, so there are clearly factors that are inadequately understood. Since it is not possible

	to identify suitable freshwater habitat parameters for the species, it is likewise impossible to map its extent. Marine habitat: This aspect is poorly understood, but they seem to be mainly coastal and pelagic in habit. They have been reported from depths 10-150 m. A suitable estuarine habitat is likely to be very important for adults and juveniles (Maitland and Hatton-Ellis, 2003). There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species. This is the area classified as having good access to migratory shad in Wales. See Hatton-Ellis (2012) for a detailed discussion. There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species.	
2.5.2 Year or period	**2012-**	
	The standard period has been used so far as possible. However, available data do not allow short and long-term trends to be separated. See Hatton-Ellis (2012).	
2.5.3 Method used Habitat for the species	**Complete survey/Complete survey or a statistically robust estimate**	
	For reasons described in 2.5.1 it has not been possible to determine habitat area accurately and the figure provided is the wetted area of rivers with good accessibility to shad (Hatton-Ellis 2012). GIS analysis combined with spawning data. See Hatton-Ellis (2012)	
2.5.4 Quality of the habitat	**a) Habitat quality**	**Unknown**
	This is reported as 'unknown' due to the relative rarity of allis shad in British rivers. However, in general terms the water and habitat quality of accessible freshwater habitat in Welsh rivers is considered sufficient to support shad. See 2.6 for key pressures likely to restrict population.	
	b) Assessment method	**Data analysis of water quality against common standards monitoring targets (Thomas et al., in prep). A flow analysis was also planned but a partner organisation has been unable to deliver it to the agreed timetable.**
	Expert judgment, See 2.5.4a.	
2.5.5 Short-term trend Period	**2001-2012**	
	The standard trend period has been used.	
2.5.6 Short-term trend Trend direction	**increase**	
	See Hatton-Ellis (2012) for a detailed discussion.	
2.5.7 Long-term trend Period	**1989-2012**	
	The standard trend period has been used.	
2.5.8 Long-term trend Trend direction	**increase**	
	Shad distribution appears to have extended on the rivers Usk and Tywi. Recent monitoring data (Thomas & Dyson 2011, 2012a, 2012b; Garrett 2012) indicates that shad spawning activity is now more widespread on these rivers than was reported by Aprahamian et al. (1999). This is thought likely to be due to improved access, especially on the Usk. See Hatton-Ellis (2012) for a detailed discussion.	
2.5.9 Area of suitable habitat for the species	**a) Value in km²**	**9.5**
	This is the reference area calculated by Hatton-Ellis (2012).	

	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?**	**True**
	The primary reason for change is a genuine increase in accessible habitat area (Thomas & Dyson 2010, 2012a).	
	b) Improved knowledge/more accurate data?	**True**
	No previous estimate was available for Wales. See JNCC (2007). It is possible, but not likely, that more detailed recording may have resulted in a change in the estimated area.	
	c) Use of different method (e.g. "Range tool")?	**False**
	The same method was applied to the current data and retrospectively to the older dataset, so this can be excluded as a reason for change.	

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	
J03: Other ecosystem modifications	H	
E06: Other urbanisation, industrial and similar activities	M	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	X
F02: Fishing and harvesting aquatic resources	L	

The key pressures affecting shads in the UK are thought to be barriers to migration (Aprahamian et al. 1999) and flow modification (Smith 2005a). In Wales this consists of dams, weirs and bridge footings, especially in the Usk (Atkins Ltd 2004). In the Tywi, cold water released from the Llyn Brianne reservoir restricts shad spawning to the lower reaches (Smith 2005b, West 2006). Flood defence structures and groynes may also reduce the quality of in-river habitat. Water quality is a potential issue but is not considered to be a significant problem at any of the shad SACs (Thomas et al. in prep)	
2.6.1 Method used – Pressures	**based exclusively or to a larger extent on real data from sites/occurrences or other data sources**
	Pressures have been collated from the available literature (e.g. Aprahamian et al. 1999, 2002, Maitland & Hatton-Ellis 2003)., the CCW

	Actions Database, SAC management plans and other relevant information (e.g. Smith 2005a, 2005b).

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	
E06: Other urbanisation, industrial and similar activities	H	
J02: human induced changes in hydraulic conditions	H	
J03: Other ecosystem modifications	H	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	X
I01: invasive non-native species	M	
M01: Changes in abiotic conditions	M	
F02: Fishing and harvesting aquatic resources	L	

Threats are generally as for existing pressures. Renewable energy generation has been included due to ongoing proposals to construct a tidal power barrage in the Severn Estuary. Shad populations in the Wye and Usk, as well as the small remaining Severn population, are vulnerable to impacts from such a structure, including population extinction (Parsons Brinckerhoff Ltd & Black & Veatch Ltd, 2008). Invasive non-native species have been included due to the continuing spread of Ponto-Caspian species to British waters, most recently including Dikerogammarus villosus. However, there is uncertainty regarding what, if any, impact this and other invasives may have on shad. Finally, climate change has been included. As warm-water species, Alosa spp. could potentially benefit from climate change. However, other factors such as increased storminess may result in washout of eggs and juveniles.	
2.7.1 Method used – Threats	**expert opinion**
	Threats have been collated from the available literature (e.g. Aprahamian et al. 1999, 2002, Maitland & Hatton-Ellis 2003).

2.8 Complementary information	
2.8.1 Justification of %	

thresholds for trends	
2.8.2 Other relevant information	**The decision on whether or not to progress with a Severn Barrage is critical to the future prospects of this species in Wales. Depending on the design favoured, construction of a barrage could cause a substantial decline or even extinction of this species.** **Removal of artificial river obstructions could greatly increase the size and resilience of populations. However there is no systematic programme. Habitat destruction by in-channel and bank reinforcement works continues to be a threat.** **Due to the close taxonomic relationship between shads and their similar requirements, we recommend that a single assessment covering both species is produced in future.**
	This species and twaite shad Alosa fallax are very closely related, and can only reliably be distinguished by counting gill rakers, which requires the fish to be killed (Aprahamian et al. 1999; Aprahamian et al. 2003). Consequently, monitoring of Alosa spp. in the UK does not involve identifying these fish to species level. Both species are protected by law, so on rivers where shad are abundant, anglers avoid fishing areas and at times where shad are likely to be caught, and tend not to record catches. Consequently, few records reach NBN and those that do tend to be disproportionately from rivers where anglers are unfamiliar with the species. Genetic work (Faria et al. 2004, 2011) indicates that Welsh twaite shad populations show significant levels of hybridisation, suggesting that allis shad regularly ascend Welsh rivers and spawn with twaite shad.
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**	**length of inhabited feature in km**

Estimation of population size included in the SAC network	See note 2.4.2a.	
	b) Minimum	**0**
	This is the habitat area with access classified as 'good', from Hatton-Ellis (2012).	
	c) Maximum	**189**
	This is the habitat area with access classified as either 'good' or 'poor', from Hatton-Ellis (2012).	
3.1.2 Method used	**Complete survey/Complete survey or a statistically robust estimate**	
	See Thomas & Dyson 2011, Garrett 2012, Thomas & Dyson 2012a, 2012b for details of monitoring methods and results on Welsh SACs. See Hatton-Ellis (2012) for how these data were converted to habitat area..	
3.1.3 Trend of population size within the network (short-term trend)	**increase**	
	All of the known increase in population size has occurred on designated sites. See 2.4.7 for commentary.	

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	Y			
4.1: Restoring/improving water quality				Y		M			Y	Y					

4.2: Restoring/improving the hydrological regime	Y				Y	H			Y	Y	Y	Y			
4.3: Managing water abstraction	Y	Y		Y		H	Y			Y		Y			
7.2: Regulation/ Management of fishery in limnic systems	Y					L			Y					Y	

The most significant improvements to shad habitat have been on the Usk, where shad regularly spawn as far as Abergavenny due to improved access past several weirs. However, the bridge footings at Abergavenny and Crickhowell remain a problem and works are required to alter these. Amendments to flow and abstraction permissions as part of the Review of Consents process have also improved access and habitat quality in all rivers, especially in dry weather. Under the Wildlife and Countryside Act it is now illegal to fish for any shad species.