

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

**Second Report by the United Kingdom under
Article 17
on the implementation of the Directive
from January 2001 to December 2006**

**Conservation status assessment for :
S1102: *Alosa alosa* - Allis shad.**

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

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S1102 *Alosa alosa* Allis shad

Audit trail compiled and edited by JNCC and the Freshwater Inter-Agency Working Group

This document is an audit of the data and judgements on conservation status in the UK's report on the implementation of the Habitats Directive (January 2001 to December 2006) for this species. Superscript numbers accompanying the headings below, cross-reference to headings in the corresponding Annex B reporting form. This supporting information should be read in conjunction with the UK approach for species (see 'Assessing Conservation Status: UK Approach').

1. Range Information^{2,3}

Obtaining accurate range data for *Alosa alosa* in the UK is difficult, because it is very similar to the twaite shad *Alosa fallax*, with which it is known to hybridise (Alexandrino & Baglinière 2000). However, it is clear that whilst twaite shad is locally abundant, *Alosa alosa* is rare in the UK. The main breeding population was formerly in the Severn, with smaller populations in the Wye and Usk (Aprahamian *et al.* 1998), but these are thought to be much reduced. The Thames may also have contained a population (Aprahamian *et al.* 1998).

The only recently confirmed spawning site is in the Tamar Estuary (Plymouth Sound and Estuaries SAC). Hybrids have been found in the Wye, Usk and Tywi (Faria *et al.*, unpublished data) and angler reports suggest that small populations of allis shad probably persist in these rivers. However, large twaite shad populations in these rivers make detection of small numbers of allis shad problematic. Regular records of adults in spawning condition in the Solway Firth area suggest that one or more of the rivers here may be used (Maitland & Lyle 2001), but no spawning site has been identified. Other records from around the UK are mainly isolated individuals (Maps 1.1 and 1.2), usually caught in the sea or in estuaries. Individuals have been caught as far north as the Spey in Scotland.

1.1 Surface area of range^{2,3.1}

17,055km²

The above estimate was calculated within Alpha Hull software, with extent of occurrence used as a proxy measure for range (see Map1.1). Alpha was set at 25 km, and was clipped to include inland habitat only.

However, the range estimate includes all inland records, not just spawning stocks; the Environment Agency is aware of just one spawning population in Tamar (R. Handley, pers. comm). Hence some of these may be individual records of presence/absence and should be viewed with caution.

1.2 Date of range determination^{2,3.2}

1970 – 2002

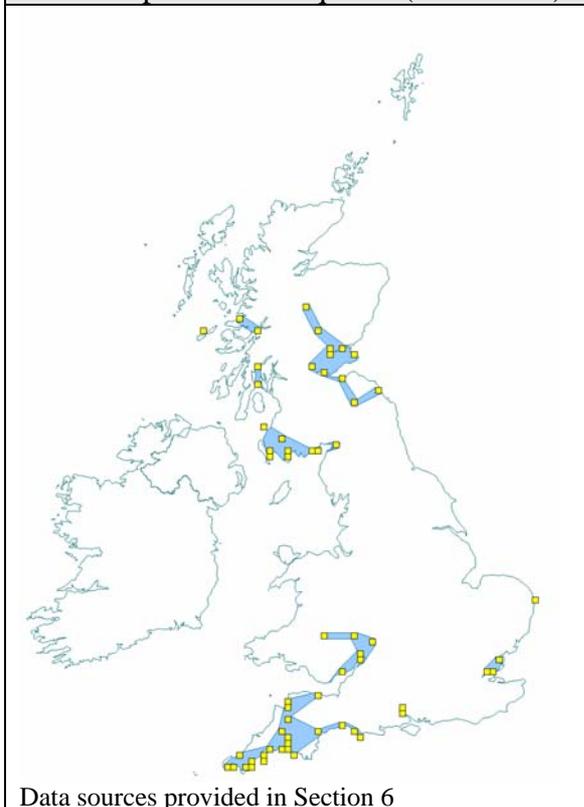
Records from 1970 to 2002 were used to calculate the current extent of occurrence; 2002 was the most recent record available via the NBN Gateway. These records provide the best representation of current (2007) range, as it is understood by species experts.

1.3 Quality of range data^{2,3.3}

Poor

At a 10-km square resolution, the Database for the Atlas of Freshwater Fishes (from which most of the data has been extracted), provides a relatively good data source for most fish across Britain. However, by necessity, records from a wide date range have been used to map current extent of occurrence. Further, it can be difficult to distinguish between this species and its close relative *A. fallax*. For these reasons, data quality is reported as poor.

Map 1.1. Current extent of occurrence and occupied 10-km squares (1970-2002)



N.B. Range maps are illustrative only. They are bound by the limitations of the Alpha hull software; therefore some *A. alosa* populations may appear landlocked when, in reality, this will not be the case. Furthermore, this map shows both presence/absence and known spawning populations. Hence should be interpreted with caution.

1.4 Range trend^{2.3.4} and range trend magnitude^{2.3.5}

Stable

The latest UK trend recorded in the Biodiversity Action Reporting System suggests that the population (and hence also range) is 'stable' (www.ukbap-reporting.org.uk 'National Action Plan - Latest UK Trend'). However this is based on "best guess" only. Therefore confidence in this judgement is low.

1.5 Range trend period^{2.3.6}

2002 – 2005

Based on UKBAP information.

1.6 Reasons for reported trend in range^{2.3.7}

Not applicable

1.7 Favourable reference range^{2.7.1}

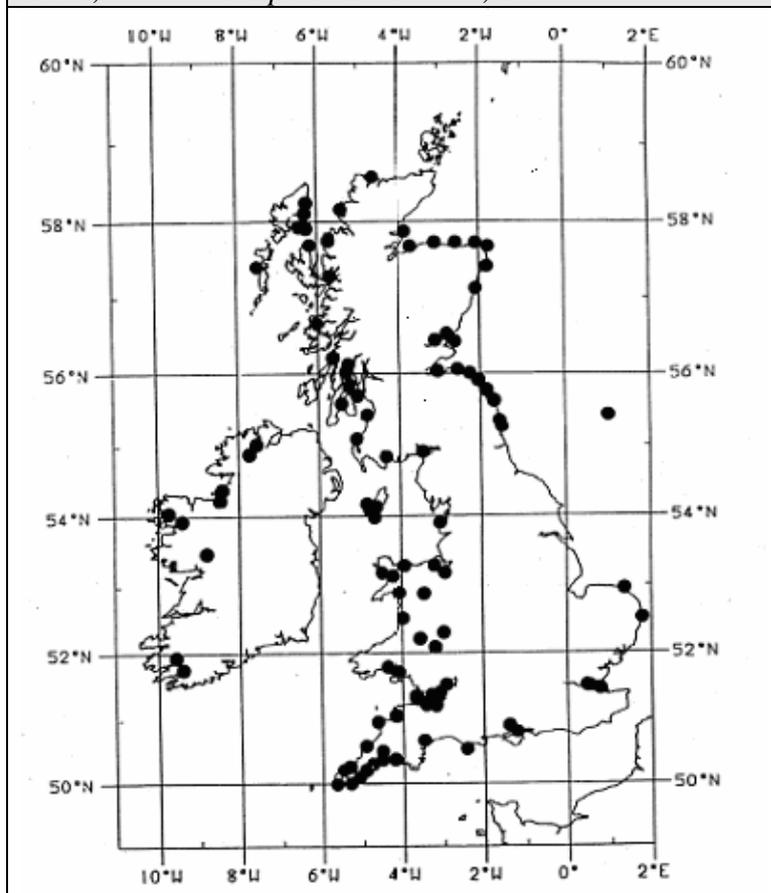
Unknown

The decision tree in Note 1 has been used as a guide in determining the favourable reference range estimate (see 'Assessing Conservation Status: UK Approach').

Recent trends are stable. However, this is based on a best guess. Prior to 1994, evidence suggests that range has declined (see Map 1.2). However, unfortunately the trend period to which Arahamian *et al.* (1998) refers is unknown, meaning that a pre-1994 rate of decline cannot be determined.

Based on expert opinion, the favourable reference range will exceed the current range. However, in the absence of reliable pre- and post-1994 trend information, it is not possible to determine to what extent these estimates would differ. The favourable reference range has therefore been reported unknown.

Map 1.2. Coastal distribution of *A. fallax* in the British Isles (date range unknown) From Potts and Swaby, 1993, as cited in Arahamian *et al.*, 1998



N.B. Map 1.1 shows both presence/absence and known spawning populations. Map 1.2 contains only presence/absence data. Hence they must be interpreted with caution.

1.8 Range conclusion^{2.8}

Unknown

There is insufficient information to assess range at present.

2. Population of the Species^{2.4}

2.1 Population estimate^{2.4.1}

Unknown

The current absolute population level is unknown, since the species is not routinely monitored. The count of 10-km squares is not an adequate proxy since it does not result from a comprehensive survey, is only available for a large date-class and it has no correlation with the breeding population.

2.2 Date of population estimate^{2.4.2}

Not applicable

2.3 Method of population estimate^{2.4.3}

Not applicable

2.4 Quality of population data^{2.4.4}

Poor

This species is not routinely monitored, and records tend to cite presence or absence only.

2.5 Population trend^{2.4.5} and population trend magnitude^{2.4.6}

Stable

The UK population is currently thought to be stable (2005 UK Biodiversity Action Reporting round). However, this is based on best guess only, and confidence in this judgment is therefore low.

2.6 Population trend period^{2.4.7}

2002 – 2005

This period represents the time over which UKBAP reporting has occurred.

2.7 Reasons for reported trend in population^{2.4.8}

Not applicable

2.8 Justification of % thresholds for trends^{2.4.9}

Not applicable

2.9 Main pressures^{2.4.10}

110 Use of pesticides

120 Fertilisation

300 Sand and gravel extraction

420 Discharges

701 Water pollution

852 Modifying structures of inland water courses

853 Management of water levels

910 Silting up

920 Drying out

952 Eutrophication

2.10 Threats^{2.4.11}

110 Use of pesticides

120 Fertilisation

300 Sand and gravel extraction

420 Discharges

701 Water pollution

852 Modifying structures of inland water courses

853 Management of water levels

910 Silting up

920 Drying out

952 Eutrophication

2.11 Favourable reference population^{2.7.2}

Unknown (Population more than 25% below favourable reference population)

The decision tree in Note 1 has been used as a guide in determining the favourable reference population estimate (see ‘Assessing Conservation Status: UK Approach’).

No reliable information exists on population sizes. Although current (2002-2005) trends were identified as stable, this is based on best guess only, and the trend is steeply downwards over the longer term (decades).

The two largest UK populations in the Severn and Thames have been virtually eradicated, with key spawning sites having been blocked (Aprahamian *et al.* 1998). Although a few small, scattered populations exist in southwest England and south Wales (see section 1) their viability is unknown. For these reasons, remaining *A. alosa* populations are considered to be at high risk from stochastic events (and where likely to have been when the Habitat Directive came into force). Therefore in accordance with the UK approach, although no quantitative estimate exists for the current population, it has been reported as more than 25% below the favourable reference population.

2.12 Population conclusion^{2.8}

Unfavourable – Bad

Although current population cannot be quantified, based on stochastic risk, it is expected to be more than 25% below favourable reference population. A conclusion of Unfavourable-Bad has therefore been triggered. (Note: due to poor data, this judgement can only be made with low confidence).

3. Habitat for the Species in the Biogeographic Region or Sea^{2.5}

Freshwater Habitat – 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.

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).

3.1 Surface area of habitat^{2.5.2}

Unknown

3.2 Date of estimation^{2.5.3}

Not applicable

3.3 Quality of data on habitat area^{2.5.4}

Poor

Relatively little is known about the marine habitats occupied by *A. alosa*, and total habitat area is unknown.

With regards to freshwater habitat quality, the only available data is from the Common Standards Monitoring, which only offers general information on very broad habitat types; it cannot be used to inform habitat conditions at a species specific level.

3.4 Habitat trend^{2.5.5}

Stable

Physical barriers to migration (constructed prior to 1994) limit the area of freshwater habitat suitable for *A. alosa* spawning, including weirs, bridge footings, etc. Recent work has also suggested that regulation releases from reservoirs can have an impact on *A. fallax* spawning due to the change in water temperature. However, overall, habitat has most likely remained stable since the Habitat Directive came into force in 1994.

3.5 Habitat trend period^{2.5.6}

1994 – 2006

3.6 Reasons for reported trend in habitat^{2.5.7}

Not applicable

Historic declines resulted from organic pollution, industrial pollution and restriction of access by weirs etc. This decline has curbed in recent years, as a result of positive conservation management and legislation.

3.7 Suitable habitat for the species (in km²)^{2.7.3}

Unknown

3.8 Habitat conclusion^{2.8}

Unfavourable – Inadequate

Although post-1994 trends were identified as stable, historically, freshwater habitat required by *A. alosa* is thought to have declined in both area and quality due to pollution and the construction of physical barriers. Although water quality conditions are now considered to be improving in the UK, two of the largest UK populations (the Severn and Thames) have been virtually eradicated as a result of key spawning sites having been blocked (Arahamian *et al.* 1998).

Therefore on the basis that restricted movement is hindering species survival, habitat has been assessed as Unfavourable – Inadequate.

(Unfavourable – Inadequate has been favoured over Unfavourable-Bad due to current trends; habitat can not be considered “clearly not allowing long term survival of the species” when populations appear to be stable. However, because this is based on a best guess rather than monitoring, confidence in this assessment is low.)

4. Future Prospects^{2.6}

Poor prospects

“Species is likely to struggle unless conditions change.”

A. alosa is the subject of a Species Action Plan under the UK Biodiversity Action Plan. (It is also included on the revised UKBAP list.)

The species has been identified as being at risk from stochastic events. Removal of artificial river obstructions could help to lower this risk. However there is no current programme for such proposals. Further, habitat destruction by in-channel works continues to be a threat.

It is possible that a warming climate will lead to improved recruitment and lead to favourable conditions for the re-establishment of populations, even over the next 12 years. Shad are sensitive to temperature changes; upstream migration from the estuary appears to be triggered by temperature and eggs are sensitive to water temperatures below 16-18°C. Additional research is required to assess this however, and as yet, the potential impacts of climate on this species are largely unconfirmed.

4.1 Future prospects conclusion^{2.8}

Unfavourable – Inadequate

Prospects over the next 12 years are considered poor by species experts. Before this situation can be considered ‘improving’, issues of restricted movement and water quality need to be addressed.

5. Overall Conclusion^{2.8}

Unfavourable – Bad

Population and Habitat have been assessed as Unfavourable-Bad; Range as Unknown; and Future Prospects as Unfavourable-Inadequate; where one parameter or more has been assessed as Unfavourable-Bad, the overall conclusion must reflect this.

Table 5.1. Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Unknown	Insufficient information available	N/A
Population	Unfavourable – Bad	Current estimate is more than 25% below the favourable reference population	3
Habitat	Unfavourable – Inadequate	Barriers to movement are hindering species survival	3
Future Prospects	Unfavourable – Inadequate	Any other combination Species is likely to struggle unless conditions change	2
Overall Assessment	Unfavourable-Bad	One or more Unfavourable-Bad	3

*1=High, 2=Moderate, 3=Low

High – Expert opinion is that the concluding judgement accurately reflects the current situation based on a professional understanding of the species. For range, population, and habitat, quality of data used to establish the current estimate has been identified as “good”; data used to inform trends is comprehensive and up to date.

Moderate – A greater understanding of the feature, or the factors affecting it, is required before a confident concluding judgement can be made by experts. For range, population, and habitat, the current estimate and/or trend are based on recent, but incomplete or limited survey data; or alternately, a comprehensive, but outdated (pre-1994) review.

Low – Judgements, and comprising estimates, are based predominately on expert opinion.

N/A – Assessment conclusion is “unknown”, on the basis of insufficient reliable information

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Map Data Sources

Database for the Atlas of Freshwater Fishes, Biological Records Centre; Marine Life Survey
Data (collected by volunteers) collated by MarLIN, (via the NBN Gateway)