

**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 :
S5085: *Barbus barbus* - Barbel**

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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S5085 *Barbus barbus* Barbel

Audit trail compiled and edited by JNCC and the Inter-Agency Freshwater 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').

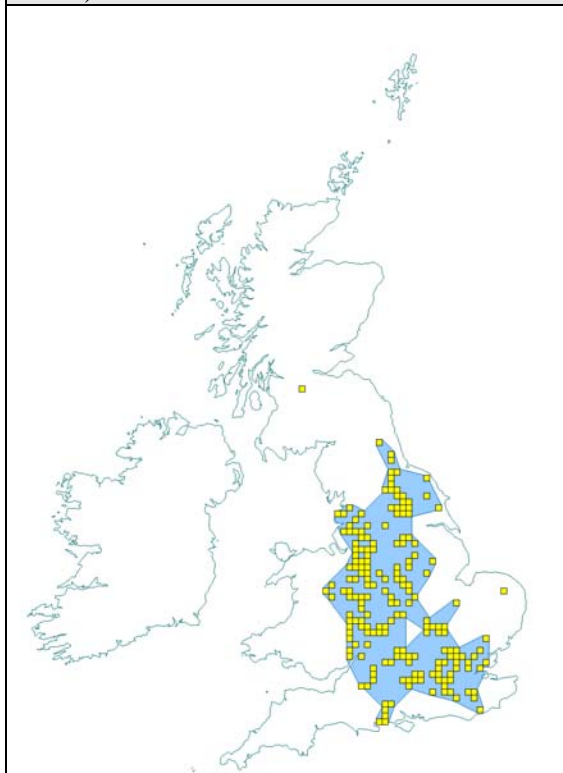
1. Range Information^{2.3}

Barbus barbus is found in many rivers across England and many parts of eastern Wales. It is absent from the south west of England, Wales and Northern Ireland. This species does not occur naturally in Scotland, but has been introduced to, and has established self-sustaining populations in, the River Clyde.

1.1 Surface area of range^{2.3.1} 62,952km²

The above estimate was calculated within Alpha Hull software, using extent of occurrence as a proxy measure for range (as shown in the map below), at a resolution of 10 km. Alpha was set at 25 km to reflect the mobility of this species. The alpha hull (range area) was clipped to exclude marine habitat.

Map 1.1. Current extent of occurrence and occupied 10-km squares (1990-2003)



Data sources provided in Section 6

1.2 Date of range determination^{2.3.2}

1990 – 2003

Records from the database for the freshwater fish atlas (Davies *et al.*, 2004) dated 1990 onwards were used to calculate the ‘current’ extent of occurrence; the most recent record in this database is 2003.

1.3 Quality of range data^{2.3.3}

Moderate

At a 10-km resolution, the freshwater fish database (Davies *et al.*, 2004) provides a relatively good data source for fish across Britain. However, because it comprises records collected from a variety of sources rather than from a blanket survey, it is reported as Moderate for this purpose.

1.4 Range trend^{2.3.4} & Range trend magnitude^{2.3.5}

Stable

It is thought that *B. barbus* was once confined to a few rivers across the east and south east of England (this being a remnant of more widespread populations in the days when Britain was connected to mainland Europe in the post-glacial period). As angling became more popular in the late 19th Century, *B. barbus* was recognised for its high sporting potential, and was subsequently introduced to rivers across the country.

No national or systematic recording system exists for monitoring *B. barbus* catches or distribution and it is not possible to determine the current or historical status of *B. barbus* populations within their natural UK range. They are not, however, considered to be under threat (Davies *et al.* op. cit., Maitland, 2004), and since 1994, there is no evidence to suggest any notable changes in range.

1.5 Range trend period^{2.3.6}

1994 – 2006

1.6 Reasons for reported trend in range^{2.3.7}

Not applicable

1.7 Favourable Reference Range^{2.7.1}

62,952km² (Equal to current)

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’).

The current range is stable and relatively widespread. Based on this and expert opinion, it is considered sufficiently large, and to have sufficient coverage, to support the species long-term. The current estimate is therefore an appropriate baseline for the favourable reference value.

1.8 Range Conclusion^{2.8}

Favourable

Current range is stable and not less than the favourable reference range.

2. Population of the species^{2.4}

2.1 Population estimate^{2.4.1}

191 occupied 10-km squares

Records from the database of the freshwater fish atlas (Davies *et al.* 2004) suggest that *B. barbus* occupies 191 10-km squares (based on records collected between 1990-2003) (see Map 1.1). Although this estimate is derived from a collation of records rather than a complete inventory, it offers a sufficient portrayal of distribution at this coarse scale. Therefore, in the absence of a more comprehensive population estimate, this figure has been used as a proxy.

2.2 Date of population estimate^{2.4.2}

1990 – 2003

The reported estimate was calculated using records from 1990 onwards from the database of the fresh water fish atlas (Davies *et al.*, 2004); the most recent record in this database is 2003.

2.3 Method of population estimate^{2.4.3}

2 = extrapolation from surveys of part of the population, sampling

The fish atlas database was derived from a variety of sources and as such, was collected by both professionals and volunteers, including the Environment Agency, the former National Rivers Authority, English Nature and anglers.

2.4 Quality of population data^{2.4.4}

Poor

Although the atlas database (Davies *et al.*, 2004) offers relatively good coverage, the scale is too coarse to be considered anything more than poor for the purpose of estimating *B. barbus* population; it provides no information on abundance at site level, or species density.

2.5 Population trend^{2.4.5} & Population trend magnitude^{2.4.6}

Stable

Davies *et al.* (2004) reported that populations fluctuate, but are not threatened. It can be inferred from this that populations are, overall, relatively stable. However, with a lack of true population data, this is done so with low confidence.

2.6 Population trend period^{2.4.7}

1994 – 2006

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}

701 water pollution

850 Modification of hydrographic functioning, general

852 modifying structures of inland water courses

853 management of water levels

There is no documentation of ‘main pressures’, as such, in relation to this species. However at a local level, *B. barbatus* (like other freshwater fish) is likely to have suffered from declines in water quality resulting from pollution and habitat modification.

2.10 Threats^{2.4.11}

701 water pollution

2.11 Favourable Reference Population^{2.7.2}

191 occupied 10-km squares (Equal to current)

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’).

Populations fluctuate, but are not threatened (Davies *et al.*, 2004). From the information available, there is no suggestion that current population need be larger to support the species. The current estimate is therefore a suitable baseline for the favourable reference value.

2.12 Population Conclusion^{2.8}

Favourable

Available information suggests that population is, overall, stable, and the favourable reference population is not less than the current estimate. The conclusion is therefore Favourable. However with low confidence, on the basis that both the current and favourable reference value estimates can only be considered at a 10-km scale.

3. Habitat for the species in the Biogeographic region or sea^{2.5}

B. barbatus is ostensibly a bottom dwelling species; it inhabits a range of habitats within large rivers, and is commonly associated with stretches of clean gravel and weed beds (Maitland & Campbell, 1992, Maitland, 2004). Adult *B. barbatus* tend to show a preference for relatively fast-flowing stretches in the middle reaches of large rivers. It also occupies deeper areas of water that form below weirs, large woody debris, rock ledges, or other obstructions on the river bed (Phillips & Rix, 1985).

3.1 Surface area of habitat^{2.5.2}

Unknown

The accessible wetted area for England and Wales is 117.4 km². However, not all of these wetted areas would be suitable for *B. barbatus*. A true estimate of the area of habitat currently used is therefore unknown.

3.2 Date of estimation^{2.5.3}

Not applicable

3.3 Quality of data on habitat area^{2.5.4}

Poor

The estimate for accessible wetland areas calculated by the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) and the Environment Agency (2006) is not thought to provide a suitable surrogate for habitat surface area (it only includes rivers classed as salmon rivers, and excludes Scotland and Northern Ireland). In the absence of an alternate, reliable estimate, data quality can only be classified as poor.

3.4 Habitat trend^{2.5.5}

Increasing

B. barbus favours clean rivers. Historically, organic pollution and industrial pollution have degraded fresh water habitat across the UK. Although pollution levels have been reduced in recent decades as a result of a decline in heavy industry and investment in the treatment of sewage effluent, actions to control diffuse sources of pollution are in their early stages. However, based on expert opinion, conditions are now considered to be improving. Therefore, the trend in habitat is assessed as increasing.

3.5 Habitat trend period^{2.5.6}

2002 – 2006

Due to limited data, habitat trends are reported over the last biodiversity action reporting round, based on expert opinion. (With the information available, it is difficult to comment on post-1994 trends with any degree of confidence, hence the shorter time period has been reported).

3.6 Reasons for reported trend in habitat^{2.5.7}

3 = Direct human influence (restoration, deterioration, destruction)

Historic declines resulted from organic pollution, industrial pollution and restriction of access by weirs etc. Improvements in more recent years are attributed to active conservation management.

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

Unknown

3.8 Habitat conclusion^{2.8}

Favourable

“Area of habitat is sufficiently large (and increasing), and habitat quality is suitable for, the long term survival of the species”.

Although it is generally accepted that many UK rivers have not yet fully recovered from historic declines, there is no clear evidence from population data that *B. barbus* is suffering notably from such pressures. The assumption is, therefore, that habitat conditions are favourable. However, again this is concluded with low confidence due to the lack of supporting data.

4. Future Prospects^{2.6}

Good prospects

“Species is expected to survive and prosper”.

B. barbus is listed under Annex V of the Habitats Directive. Despite our lack of detailed knowledge of population trends for this species, there is no evidence of a long-term or recent decline in its overall abundance or distribution. Further, the Water Framework Directive ensures that efforts continue to be made to improve water quality, and the quality of in-river habitats in accordance with wider river basin management strategies. On this basis, future prospects are considered to be good.

4.1 Future prospects conclusion^{2.8}

Favourable

5. Overall Conclusion ^{2.8}

Favourable

All parameters have been assessed as Favourable. It therefore follows that the overall conclusion is also Favourable.

Table 5.1. Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Favourable	Current range is stable and not smaller than the favourable reference range	2
Population	Favourable	Current population(s) not lower than favourable reference population	3
Habitat	Favourable	Area of habitat is sufficiently large (and increasing), and habitat quality is suitable for the long term survival of the species	3
Future Prospects	Favourable	Main pressures and threats to the species not significant; species will remain viable in the long-term	2
Overall Assessment	Favourable	All Favourable	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

6. References

DAVIES, C. E., SHELLEY, J., HARDING, P. T., MCLEAN, I. F. G., GARDINER, R. & PEIRSON, G., eds. 2004. *Freshwater fishes in Britain - the species and their distribution*. Colchester: Harley Books.

MAITLAND, P.S. 2004. Keys to the Freshwater Fish of Britain and Ireland with notes on their distribution and ecology. *Freshwater Biological Association, Scientific Publication* No. 62, pp.245.

MAITLAND, P. S. & CAMPBELL, R. N. 1992. *Freshwater Fishes of the British Isles*. London: HarperCollins.

PHILLIPS, R. & RIX, M. 1985. *A Guide to the Freshwater Fish of Britain, Ireland and Europe*. London: Treasure Press.

Map Data Sources

Biological Records Centre - Database for the Atlas of Freshwater Fishes (via the NBN Gateway).