Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A

2019-2024

Conservation status assessment for the species:

S1102 - Allis shad

(*Alosa alosa*)

Wales

Cyfoeth Naturiol Cymru
Natural Resources Wales

JNCC

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Important note - Please read

- The information in this document represents the Wales Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural Resources Wales, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the JNCC website.

Assessment Summary: Allis shad

Distribution Map

Range Map

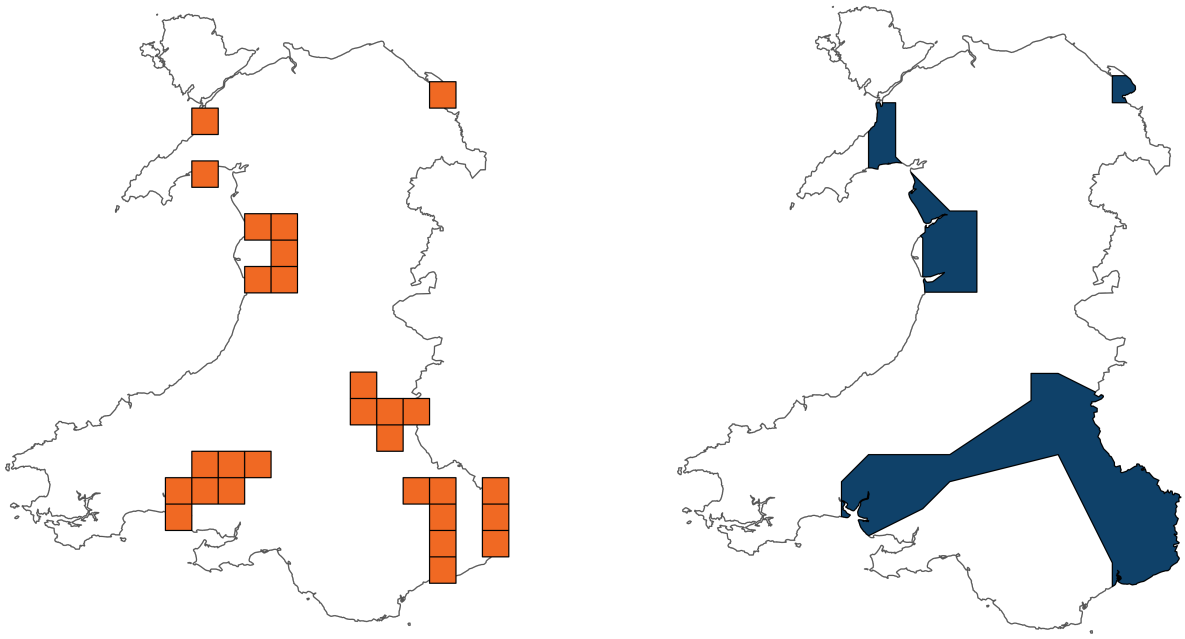

Figure 1: Wales distribution and range map for S1102 - Allis shad (*Alosa alosa*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1102 - Allis shad (*Alosa alosa*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Unfavourable-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 5)	**Unfavourable-inadequate (U1)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Unfavourable-inadequate (U1)**
Future prospects (see section 10)	**Unfavourable-bad (U2)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1102
1.3 Species scientific name	*Alosa alosa*
1.4 Alternative species scientific name	
1.5 Common name	Allis shad
Annex(es)	II, V

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1996-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Based mainly on expert opinion with very limited data

2.5 Additional information

No additional information

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?	No
3.2 What measures have been taken?	
a) Regulations regarding access to property	No
b) Temporary or local prohibition on the taking of specimens in the wild and exploitation	Yes
c) Regulation of the periods and/or methods of taking specimens	No
d) Application of hunting and fishing rules which take account of the conservation of such populations	Yes

e) Establishment of a system of licences for taking specimens or of quotas	Yes
f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens	Yes
g) Breeding in captivity of animal species as well as artificial propagation of plant species	No
Other measures	No
Other measures description	

3.3: Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit No unit - not reported

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs	ATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²)	4,246.31
5.2 Short-term trend; Period	
5.3 Short-term trend; Direction	Unknown
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	Yes
e) Type of estimate	
f) Rate of decrease	
5.5 Short-term trend; Method used	Insufficient or no data available
5.6 Long-term trend; Period	1990-2024
5.7 Long-term trend; Direction	Unknown
5.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	

5.9 Long-term trend; Method used	Insufficient or no data available

5.10 Favourable Reference Range (FRR)

a) Area (km²)	
b) Pre-defined increment	Current range is between 2% and 10% smaller than the FRR
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	

5.11 Change and reason for change in surface area of range

a) Change	No
b) Genuine change	
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	
f) Other reason	
g) Main reason	

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2019-2024

6.2 Population size (in reporting unit)

a) Unit	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	

d) Best single value	173
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	low

6.5 Additional population size (using population unit other than reporting unit)

a) Unit	No unit - not reported
b) Minimum	
c) Maximum	
d) Best single value	
e) Type of estimate	
6.6 Population size; Method used	Based mainly on expert opinion with very limited data
6.7 Short-term trend; Period	2012-2024
6.8 Short-term trend; Direction	Stable
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
6.10 Short-term trend; Method used	Insufficient or no data available
6.11 Long-term trend; Period	1994-2024
6.12 Long-term trend; Direction	Unknown
6.13 Long-term trend; Magnitude	

a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
6.14 Long-term trend; Method used	Insufficient or no data available

6.15 Favourable Reference Population (FRP)

ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is between 51% and 100% smaller than the FRP
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

6.16 Change and reason for change in population size

a) Change	Yes
b) Genuine change	No
c) Improved knowledge or more accurate data	No
d) Different method	No
e) No information	Yes
f) Other reason	No
g) Main reason	Unknown

6.17 Additional information

No additional information

6.18 Age structure, mortality and reproduction deviation	Unknown

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient?	No
b) Is quality of occupied habitat sufficient?	No
c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?	No

7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used	Complete survey or a statistically robust estimate
b) Sufficiency of quality of occupied habitat; Method used	Complete survey or a statistically robust estimate

7.3 Short-term trend; Period	2012-2024
7.4 Short-term trend; Direction	Stable
7.5 Short-term trend; Method used	Complete survey or a statistically robust estimate

7.6 Long-term trend; Period	1990-2024
7.7 Long-term trend; Direction	Increasing
7.8 Long-term trend; Method used	Complete survey or a statistically robust estimate

7.9 Additional information

No additional information

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PD01: Wind, wave and tidal power (including infrastructure)	Ongoing and likely to be in the future	High (H)
PD05: Development and operation of energy production plants (including infrastructure)	Ongoing and likely to be in the future	High (H)
PK01: Mixed source pollution to surface and ground waters (limnic and terrestrial)	Ongoing and likely to be in the future	Medium (M)
PK02: Mixed source marine water pollution (marine and coastal)	Ongoing and likely to be in the future	Medium (M)
PL01: Abstraction from groundwater, surface water or mixed water (mixed or unknown drivers)	Ongoing and likely to be in the future	Medium (M)
PL05: Modification of hydrological flow (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PL06: Physical alteration of water bodies (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)

8.2 Sources of information

See section 14 References

8.3 Additional information

No additional information

9. Conservation measures

9.1: Status of measures

a) Are measures needed?	Yes
b) Indicate the status of measures	Measures identified and taken
9.2 Main purpose of the measures taken	Restore the habitat of the species (related to ‘Habitat for the species’)

9.3 Location of the measures taken	Both inside and outside National Site Network
9.4 Response to measures	Long-term results (after 2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MA10: Reduce/eliminate point or diffuse source pollution to surface or ground waters (including marine) from agricultural activities	Medium (M)
MC12: Manage water abstraction for resource extraction and energy production	Medium (M)
MK01: Reduce impact of mixed source pollution	High (H)
MK03: Restoration of habitats impacted by multi-purpose hydrological changes	High (H)
MF09: Adapt the management of water abstraction for public supply and for industrial and commercial use to reduce negative impacts on habitats and species (incl. restoration of habitats)	High (H)
MS01: Reinforce populations of species from the directives	Medium (M)

9.6 Additional information

Only part of the measures identified have been taken.

10. Future prospects

10.1a Future trends of parameters

ai) Range	Overall stable
bi) Population	Overall stable
ci) Habitat for the species	Overall stable

10.1b Future prospects of parameters

aii) Range	Poor
bii) Population	Bad
cii) Habitat for the species	Poor

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Unfavourable-inadequate (U1)
11.2 Population	Unfavourable-bad (U2)
11.3 Habitat for the species	Unfavourable-inadequate (U1)
11.4 Future prospects	Unfavourable-bad (U2)
11.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
11.6 Overall trend in Conservation Status	Stable

11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

No additional information

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	172
12.2 Type of estimate	Best estimate
12.3 Population size inside the network; Method used	Based mainly on expert opinion with very limited data
12.4 Short-term trend of population size within the network; Direction	Unknown
12.5 Short-term trend of population size within the network; Method used	Insufficient or no data available
12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	Stable
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Complete survey or a statistically robust estimate

12.8 Additional information

No additional information

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

Natural England and the Environment Agency have been consulted in relation to relevant data for the River Wye, which is cross-boundary. The Unlocking the Severn Project have also been contacted in relation to their monitoring data for the River Severn.

13.2 Other relevant information

See Hatton-Ellis (2025) Annexe 3 for a table of water bodies in Wales considered to support shad, and Hatton-Ellis (2025) Annexe 4 for a detailed explanation of population data use in this assessment.

14. References

Biogeographical and marine regions

4.2 Sources of information

Alexandrino P, Faria R, Linhares D, Castro F, Le Corre M, Sabatié R, Baglinière J-L, Weiss S. 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.

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Natural Resources Wales 2018b. Severn Estuary / Môr Hafren Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report Series, Report No: 235, 41pp, NRW, Bangor.

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Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
2.4: Distribution map; Method used	Due to underreporting and difficulties in detecting and identifying the species, the exact distribution of allis shad in Wales remains very uncertain (see also the commentary in section 1.1 of JNCC (2007)). Spawning distribution is probably focused around the larger rivers entering the Bristol Channel, especially the Usk, Wye and Tywi. Individuals are sporadically caught in other rivers around the Welsh coast such as the Dee and Conwy, but there is no evidence of spawning in either river. Fish are occasionally reported by freshwater or marine anglers. Historically the largest UK population was in the Severn where fish reached as far as Welshpool (Aprahamian et al. 1999) but this was eradicated by construction of navigation weirs that blocked access to spawning grounds. Other (Welsh) records are likely to be stray individuals or marine / estuarine records.
3.2: Which of the measures in Art. 9a have been taken?	Under the Wildlife & Countryside Act 1981 (as amended) it is illegal to take, kill or disturb (including fishing for) allis shad without a license. Any specimens caught unintentionally must be released alive.
5.3: Short-term trend; Direction	There are insufficient data to identify a trend in range. See 5.11.
5.11: Change and reason for change in surface area of range	The range of allis shad in Welsh rivers and seas is largely unknown and data are very poor, but generally suggest that shad are widespread but rare. Detection is hampered by the presence of the much more frequent twaite shad (Alosa fallax, S1103), with which allis shad hybridises (Alexandrino et al. 2007).
6.2: Population size	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 provide circumstantial evidence that allis shad are present.

	We have therefore used the population figure for twaite shad, reflecting the approach that was also previously (Hatton-Ellis 2012; NRW 2019), on the basis that sections of river accessible to and suitable for twaite shad spawning will also be suitable for allis shad. No relevant population data are available for marine waters.
6.5: Additional population size	Previously shad were assessed using the length of river occupied (Hatton-Ellis et al. 2012). Since the EU reporting unit is an equivalent unit, river length has not been recalculated. Instead, the 2013 population unit has been converted to the current unit for the purposes of calculating trends. An interagency paper (IAFG 2018) agreed to standardise freshwater species methods in rivers, including shad, using the EU reporting unit where available.
6.6: Population size; Method used	Surveys were carried out at suitable habitat in rivers where Alosa sp(p). 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. Genetic testing of eggs (Hardouin et al. 2013; Stone 2015) did not identify any confirmed allis shad eggs.
6.8: Short-term trend; Direction	Between 2006-2018, using the same methods as above, 188 1km squares contained shad or shad eggs. In addition, three credible angler records of allis shad have come to light, all from the River Wye in 2012. Other possible allis shad records could not be confirmed.
6.9: Short-term trend; Magnitude	No trend is apparent.
6.10: Short-term trend; Method used	Estimates of short and long term change are based on available monitoring data. Monitoring shad populations is technically very challenging. 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, 2015, 2017a, 2017b), 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 or allocation to specific shad species. As a result it was possible to compare current results with maps of spawning distribution in Welsh rivers (Aprahamian et al. 1999), produced by compiling data from the 1990s. See also NRW (2012). However, most if not all of these records are likely for the closely related twaite shad. We do not know if allis shad spawn in our rivers on a regular basis, as they are so rare.
6.12: Long-term trend; Direction	Due to its great rarity and the relatively high abundance of twaite shad, the trend in allis shad numbers is unknown.
6.18: Age structure, mortality and reproduction	The available data are insufficient to assess this.
7.1: Sufficiency of area and quality of occupied habitat	(a) Is area of occupied habitat sufficient (for long-term survival)? NO Shads 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, its largest UK population (Aprahamian et al. 1999, Maitland & Hatton-Ellis 2003). Marine habitat requirements are poorly understood, but they seem to be mainly coastal and pelagic in habit, having been reported from depths between 10-150 m. A suitable estuarine habitat is likely to be very important for adults and juveniles (Maitland and Hatton-Ellis, 2003). (b) Is quality of occupied habitat sufficient (for long-term

survival)? NO

Of the water bodies considered to support shad, none were classed as Heavily Modified and where Morphology or Hydrological Regime had been assessed, all water bodies were considered to support Good Status for morphology / hydromorphology. However, weirs on the Usk remain partial barriers to migration.

Water Quality

2024 Common Standards Monitoring data (NRW, in prep) indicates that most of the water bodies that support shad are passing their water quality targets. In the Afon Tywi, both water bodies supporting shad are passing all of their water quality targets. In the three Usk water bodies, most water quality targets are passed but phosphate and diatom targets fail in one of the three with a further water body being unknown. In the Wye, there are some low confidence BOD failures and a single phosphorus failure; the majority of water bodies pass.

2021 WFD Classification data indicates that 3 of these water bodies were at Good Status and 10 were at Moderate Status. Failing WFD elements included phosphate, copper, macrophytes & phytobenthos, zinc, priority substances, and fish.

Although these failures are spatially wide-ranging, their magnitude tends to be small. In five of the water bodies reported as being at Moderate Status, this classification was Uncertain, which indicates that the failure was marginal in nature. WFD Tools are optimised to measure river ecological quality in generic terms and therefore the applicability of these data to shad is uncertain. The seasonal nature of shad presence in rivers will also mitigate against impacts occurring in autumn and winter. Finally, shad are probably more sensitive to morphological than water quality impacts. However, morphological impacts are

	inadequately reflected in the existing classification data. River habitat quality is apparently close to the Good-Moderate boundary in most instances, but there is significant uncertainty regarding the applicability of river habitat data to shad. In the marine environment, most key habitat supporting shad is worse than Good status, with a range of issues identified including biological evidence of eutrophication, failing its chemical standards, with issues identified for mercury and its compounds, brominated diphenylether and dissolved inorganic nitrogen (NRW 2018a, 2018b, 2018c, 2021). Is there a sufficiently large area of occupied and unoccupied habitat of suitable quality? NO The above conclusion applies to freshwater habitat only. Habitat in the Upper Severn in Wales is considered to be of suitable quality to support shad population were barriers to migration removed or passed. Further research is required to understand the critical tolerances of shad in the context of current environmental standards, especially in the marine environment.
7.2: Sufficiency of area and quality of occupied habitat; Methods used	There is a very good evidence base on the location of barriers that affect shad migration (e.g. Aprahamian et al. 1999; Unlocking the Severn project). Water Framework Directive monitoring data provides a detailed and spatially widespread baseline, subject to the caveats regarding its ecological relevance noted above.
7.4: Short-term trend; Direction	The area and quality of habitat for the species in Wales are considered to be stable.
7.7: Long-term trend; Direction	Access for shad in Wales has been improved at several barriers, particularly in the Usk. There have also been long-term improvements to water quality over this period

	(especially during 1990-2005) as a result of the implementation of the Urban Waste Water Directive.
8.1: Characterisation of pressures	Pressures: Shads are highly sensitive to river modifications that impair fish passage (PL06). They avoid turbulent flows and do not leap over barriers. Consequently, obstructions that other migratory fish pass with relative ease can be partial or complete barriers to shad. These particularly include weirs and dams constructed for various purposes including water abstraction, but even bridge footings can have a significant impact. Water abstractions (PL01, PL05) also remove eggs drifting downstream, although the significance of this in the context of the population is uncertain. Other physical modifications to water bodies such as river straightening and bank reinforcement may damage both the riffle habitat used for spawning and the backwaters and deep pools used by juveniles in freshwater. Although shads are less pollution sensitive than fish such as salmonids, they are nevertheless vulnerable to pollution impacts (PK01, PK02). Increasingly intensive farming regimes in South Wales are therefore of concern. However, since fish are only present in rivers in summer, they are less likely to be exposed to slurry pollution, which occurs mainly in winter. In the marine environment, cooling systems for power stations (PD05) entrain very large numbers of fish, including juvenile shad (Henderson 2003; Aprahamian et al. 2010). These impacts cannot be reflected by the existing population or range metrics as these relate only to the freshwater stage and are predominantly spatial in nature. Further monitoring data to quantify the impact of this pressure is needed.

	Threats: All of the above pressures are also threats for the future. In addition, tidal power schemes (PD01) that have been proposed in multiple locations around the Welsh coast are a particular cause for concern, as inappropriately designed or sited schemes could have significant negative impacts on migrating or subadult shad populations. Allis shad are pelagic fish and feed on small semi-transparent prey in the freshwater (PK01) and marine environment (PK02). This makes it likely that they ingest microplastics (cf Phillips & Bonner 2015). At present this is not monitored and the impact of this potential pressure is therefore unknown. This is an emerging area in research at present and it is hoped that appropriate monitoring may be identified to assess this threat.
9.1: Status of measures	The 4Rivers4LIFE project is currently working to deliver improvements to migration access in the Usk catchment. The Unlocking the Severn project delivered improvements to migration access in the lower Severn, however further measures will be required to bypass additional obstacles before shad can again access their historic spawning grounds in Wales.
9.2: Main purpose of the measures taken	It should however be noted that restoring habitat will also result in restoration of the range and population size of shad in Wales.
9.3: Location of the measures taken	Measures are needed on both the Usk and Severn catchments.
9.5: List of main conservation measures	Measures selected are specifically to address pressures identified in Section 8. The highest priority actions are to continue to improve migratory access. This will likely to benefit other migratory fish such as twaite shad, salmon and migratory lampreys. In the light of the extremely low population levels, consideration should also be given to captive rearing and

	release as a means of re-establishing a sustainable population. This will require a thorough feasibility study including application of IUCN Guidance (IUCN, 2013). This may include population reinforcement (MS01), reintroduction (MS02) or working with project in other EU States (MX01).
10.1: Future trends and prospects of parameters	Future prospects of - range. The great uncertainty around allis shad makes predicting future prospects exceedingly difficult. However, in spite of reasonably good access (excluding the Severn) and warming climate, there seems little sign of a recovery in allis shad numbers or range. Improvements in range resulting from the Unlocking the Severn project have so far not resulted in a return of allis shad to that system and in any case will not restore access to Welsh sections. Consequently its range future prospects at present have been reassessed as poor. Future prospects of - Population Any populations of allis shad in Wales are extremely small and at present show no evidence of improving. The likelihood of recolonisation from French rivers has greatly reduced as a result of the collapse of the Garonne-Dordogne stock. Future prospects of - Habitat of the species There are no good reasons to expect a marked deterioration in habitat extent or quality for allis shad in the near future.
11.1: Range	Conclusion on Range reached because:(i) the short-term trend direction in Range surface area is unknown; and (ii) the current Range surface area is not more than 10% below the Favourable Reference Range.
11.2: Population	Conclusion on Population reached because:(i) the short-term trend direction in Population size is stable; (ii) the

	current Population size is more than 25% below the Favourable Reference Population and iii) reproduction, mortality and age structure does not have data available.
11.3: Habitat for the species	Conclusion on Habitat for the species reached because: (i) the area of occupied habitat is not sufficiently large for long-term survival of the species (ii) the quality of occupied habitat is not suitable for the long-term survival of the species; and iii) there is a not a sufficiently large area of occupied and unoccupied habitat of suitable quality for long term survival (iv) the short-term trend in area of habitat is stable; and v) expert opinion determines that the habitat quality of occupied and unoccupied habitat is not bad; and vi) expert opinion determines that the habitat area is insufficient, but not clearly so.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are poor; (ii) the Future prospects for Population are bad; and (iii) the Future prospects for Habitat for the species are poor.
11.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Unfavourable-bad because two of the conclusions are Unfavourable-bad.
11.7: Change and reasons for change in conservation status and conservation status trend	NRW previously informally assessed the status of allis shad in Wales as Unfavourable – Inadequate. This has now been downgraded to Unfavourable – Bad due to continuing lack of records and the Red List assessment of Nunn et al. (2024).
12.1: Population size inside the pSCIs, SCIs and SACs network	Best single value = 172 (99%) All except one of the 1km squares are associated with a shad population within and specifically protected by the SAC network. A few additional records lie outside the SAC boundary but inside a corresponding 1km square for a SAC. See sections 4 and 6.2 for a discussion of the taxonomic uncertainty associated with this species.

6.15: Favourable Reference Population (FRP)	The UK-level FRV for population was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current population trends and abundance.
5.10: Favourable Reference Range (FRR)	The UK-level FRV for range was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current distribution and trends.