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

2019-2024

Conservation status assessment for the species:

S1109 - Grayling

(*Thymallus thymallus*)

Wales

Cyfoeth Naturiol Cymru
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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: Grayling

Distribution Map

Range Map

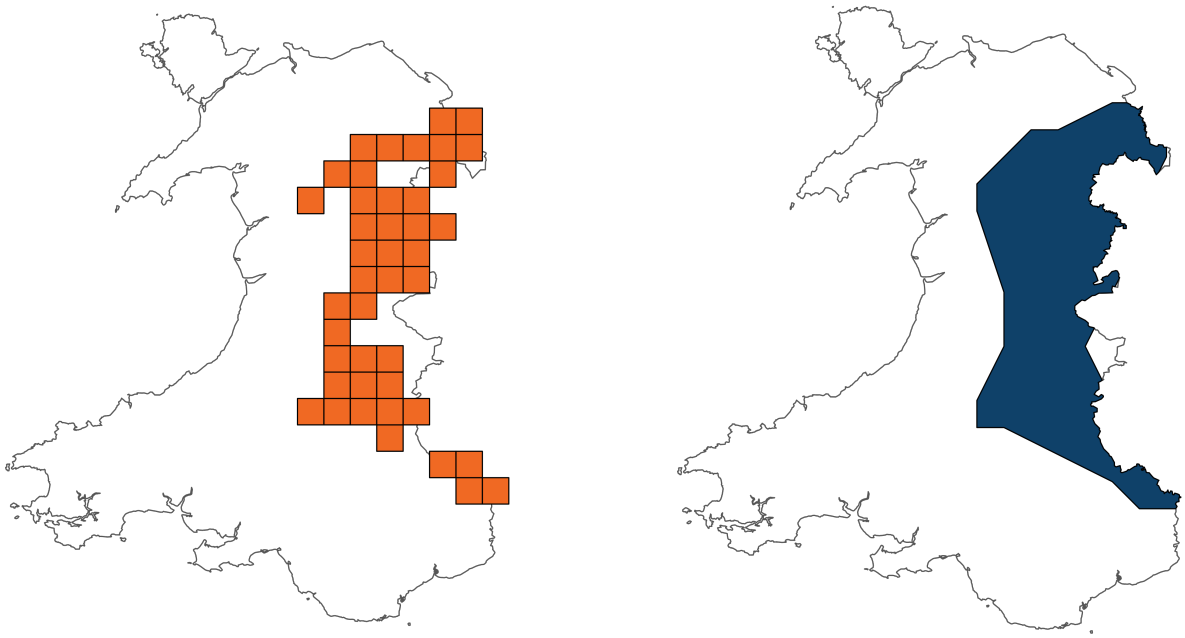

Figure 1: Wales distribution and range map for S1109 - Grayling (*Thymallus thymallus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1109 - Grayling (*Thymallus thymallus*). 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-inadequate (U1)

Breakdown of Overall Conservation Status

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

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1109
1.3 Species scientific name	*Thymallus thymallus*
1.4 Alternative species scientific name	
1.5 Common name	Grayling
Annex(es)	V

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1998-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Based mainly on extrapolation from a limited amount of 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?	Yes

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	No
c) Regulation of the periods and/or methods of taking specimens	Yes
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

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	No	No	No	No	No	No

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)	5,320.95
5.2 Short-term trend; Period	2008-2024
5.3 Short-term trend; Direction	Stable
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	Best estimate
f) Rate of decrease	
5.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
5.6 Long-term trend; Period	1990-2024
5.7 Long-term trend; Direction	Stable
5.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	

5.9 Long-term trend; Method used	Based mainly on expert opinion with very limited data

5.10 Favourable Reference Range (FRR)

a) Area (km²)	
b) Pre-defined increment	Current range is less than 2% smaller than the FRR
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	high

5.11 Change and reason for change in surface area of range

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

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2013-2024

6.2 Population size (in reporting unit)

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

d) Best single value	520
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	moderate

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 extrapolation from a limited amount of data
6.7 Short-term trend; Period	2007-2024
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	Based mainly on extrapolation from a limited amount of data
6.11 Long-term trend; Period	1988-2024
6.12 Long-term trend; Direction	Stable
6.13 Long-term trend; Magnitude	

a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
6.14 Long-term trend; Method used	Based mainly on expert opinion with very limited data

6.15 Favourable Reference Population (FRP)

ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is less than 5% smaller than the FRP
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	high

6.16 Change and reason for change in population size

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	

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?	Yes
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	2015-2024
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	
7.7 Long-term trend; Direction	
7.8 Long-term trend; Method used	

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
PI01: Invasive alien species of Union concern	Ongoing and likely to be in the future	Medium (M)
PI03: Problematic native species	Ongoing and likely to be in the future	Medium (M)
PK01: Mixed source pollution to surface and ground waters (limnic and terrestrial)	Ongoing and likely to be in the future	High (H)
PL04: Development and operation of dams (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	Medium (M)
PL06: Physical alteration of water bodies (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PJ01: Temperature changes and extremes due to climate change	Ongoing and likely to be in the future	Medium (M)

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	Medium-term results (within the next two reporting periods, 2025–2036)

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	High (H)
MA05: Adapt mowing, grazing and other equivalent agricultural activities (e.g. burning)	High (H)
MA13: Manage agricultural drainage and water abstraction (incl. the restoration of drained or hydrologically altered habitats)	High (H)
ME02: Manage/reduce/eliminate pollution to surface or ground water from transport	Medium (M)
MF04: Reduce/eliminate pollution to surface or ground waters from commercial, residential and recreational areas and activities, and from industrial activities and structures	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)
MG02: Management of hunting, recreational fishing, and the recreational or commercial harvesting or collection of plants and fungi (incl. restoration of habitats)	Medium (M)
MI02: Management, control or eradication of established invasive alien species of Union concern	High (H)
MI05: Management of problematic native species	Medium (M)
MJ01: Implement climate change mitigation measures	High (H)
MJ02: Implement climate change adaptation measures	High (H)
MK01: Reduce impact of mixed source pollution	High (H)
MK02: Reduce impact of multi-purpose hydrological changes	High (H)

MF10: Other measures related to residential, commercial, industrial and recreational infrastructures, operations and activities	High (H)

9.6 Additional information

No additional information

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	Good
bii) Population	Good
cii) Habitat for the species	Poor

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Favourable (FV)
11.2 Population	Favourable (FV)
11.3 Habitat for the species	Unfavourable-inadequate (U1)
11.4 Future prospects	Unfavourable-inadequate (U1)
11.5 Overall assessment of Conservation Status	Unfavourable-inadequate (U1)
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	
b) Minimum	
c) Maximum	
d) Best single value	
12.2 Type of estimate	
12.3 Population size inside the network; Method used	
12.4 Short-term trend of population size within the network; Direction	
12.5 Short-term trend of population size within the network; Method used	

12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction

12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used

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

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

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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	Grayling is a difficult species to electrofish, so whilst it is detected in NRW fisheries monitoring, distribution and abundance are likely to be severely underestimated. There is currently no specific survey scheme in place for grayling in Wales. The majority of data for the current cycle is based on catch returns from the Wye and Usk Foundation's website (WUF 2025), information from an annual grayling fishing competition held on the Dee (Hanak International Grayling Festival, unpublished data) as well as several data points from Natural Resources Wales' Dee Stock Assessment Programme surveys on the Dee (5 minute fry electro fishing surveys). This provided a patchy 1km2 population map for 2013-2018 (Hatton-Ellis 2025, Figure 3) due to a lack of records from several tributaries on the Severn. However, it is known from anecdotal evidence and angling clubs that the distribution of grayling has remained constant over the last 20 years and therefore the 1km2 Favourable Reference Population map used in this report for grayling in Wales is based on data from 1998-2024 (Hatton-Ellis 2025, Figure 3). This includes data in Ibbotson et al. (2001), Cove (2007) and websites of angling clubs and rivers trusts. This has substantially improved the distribution of the species with various gaps being filled particularly in the tributaries of the Severn in mid Wales. The 10km2 distribution map used in this report (Figure 1) is based directly on the FRP map (Hatton Ellis 2025, Figure 3).
3.2: Which of the measures in Art. 9a have been taken?	Grayling are covered by standard rod fisheries legislation and byelaws in Wales, explained in NRW (2023). In summary: • Grayling may only be taken with a rod and line. All anglers are required to have a rod licence;

	• Up to 2 grayling per angler per day in the size range 30-38cm may be taken. • There is a close season between March 14th to June 15th to protect fish during the spawning season; • Fish movements are regulated by the Keeping and Introduction of Fish Regulations (Wales) 2015.
5.3: Short-term trend; Direction	There is no evidence of a reduction in range since the last reporting period.
5.9: Long-term trend; Method used	Older data to assess long-term trend are limited.
5.11: Change and reason for change in surface area of range	Grayling has been reported from two additional 10km squares within catchments where it was already known to be present, reflecting improved knowledge of its distribution within the catchment. The impact on range is trivial.
6.2: Population size	This includes both 1km squares containing actual grayling records, and 1km squares in sections along the river network between actual records and where grayling are assumed to be present. The resulting count is a very good estimate of the extent of grayling populations in Wales, following the method of IAFG (2018). This is almost identical to the value reported in 2019 and equal to the favourable reference population. The overall revised population value now constitutes the favourable reference population value for this species in Wales.
6.5: Additional population size	Not Assessed. Catch return data from the annual Hanak grayling competition on the Dee could provide an index of population size. However, to derive meaningful estimates would require a detailed analysis of fishing effort and conditions, to ensure that data are comparable. Ideally, a log book scheme should be reintroduced to

	produce a Wales-wide assessment of catches (e.g. Cove 2007) and hence grayling population.
6.6: Population size; Method used	The available data are geographically comprehensive, but lack detail on population size and trends.
6.8: Short-term trend; Direction	There is no evidence of a reduction in 1km2 distribution in Wales, and there are also no reports of a systematic population decline.
6.9: Short-term trend; Magnitude	No significant trend is apparent. No quantitative data are available on population trend, and the number of occupied squares remains stable.
6.10: Short-term trend; Method used	Further work is required to establish a suitable technical method to assess grayling populations, using a standardised sampling method that can provide acceptable population estimates. Even then, it may be difficult to confidently identify trends, as grayling populations vary naturally (Ibbotson et al. 2001).
6.12: Long-term trend; Direction	No quantitative data are available on long-term trend, and grayling populations are notoriously variable (Ibbotson et al. 2001). Anecdotal evidence suggests that some grayling populations have expanded into the upper reaches of river systems as they recover from acidification, but also that fish eating birds may be affecting recruitment by predating juveniles. The relative importance of these pressures with respect to their impact on populations is unknown. In Wales the status of grayling in the Severn subcatchment is considered to be of most concern, as the grayling population there is more fragmented (Ibbotson et al. 2001). However despite this the long-term trend is still considered stable, based on a combination of expert opinion and limited data.
6.13: Long-term trend; Magnitude	No quantifiable long term population trend data are available.
6.16: Change and reason for change in population size	The change in population size (+1 square) is trivial.

6.18: Age structure, mortality and reproduction	There are no recent data on reproduction, mortality or age structure from Wales.
7.1: Sufficiency of area and quality of occupied habitat	Occupied habitat area Grayling prefer cool, well oxygenated water and spawn in shallow redds in Spring. Grayling occur naturally in 28 river and one lake water body in Wales, totalling 741km of river. Given the extent of such occupancy it is considered that there is currently sufficient area of occupied habitat to maintain the species. Occupied habitat quality Based on data from the 2024 Interim Classification (NRW 2025), of the 29 water bodies utilised by grayling in Wales, only eight (29%) meet Good Status under the Water Framework Directive (Hatton-Ellis 2025, Figure 4). A wide range of water quality, physical and biological indicators caused these failures (Hatton-Ellis 2025, Figure 5). The most common reasons for failure were macrophytes; fish; and the mitigation measures assessment. Unoccupied habitat Grayling has a very high occupancy of suitable habitat in Wales within its native range. Any areas of apparently unoccupied habitat are likely to reflect either pressures such as pollution or barriers to migration, or else lack of data.
7.2: Sufficiency of area and quality of occupied habitat; Methods used	Up to date WFD classification data are available for all water bodies used by grayling. Good Status has been used as the target, reflecting the statutory requirement under WFD.
7.4: Short-term trend; Direction	The area of suitable habitat in Wales is stable. The quality of suitable habitat in Wales seems to be

	improving slightly. In 2015, four of the 29 water bodies reached Good Status, compared with six in 2018, nine in 2021, and eight in 2024 (Hatton-Ellis 2025: Annexe 3).
7.5: Short-term trend; Method used	WFD classification data are available from 2015 to 2024 (NRW 2025). It should be noted that variability in elements monitored in different water bodies over time in the context of classification rules could have affected the classification results.
7.6: Long-term trend; Period	Not Assessed. Longer-term data are available for some sites, but this would require a more detailed trend analysis which is beyond the scope of this work.
8.1: Characterisation of pressures	Pressures: Water quality (PK01) is a significant concern for grayling habitat in Wales. Water quality parameters causing failure of water bodies that support grayling in the 2024 classification included nutrients (phosphorus, ammonia); pesticides (cypermethrin, diazinon); metals (mercury, cadmium, zinc) and chemicals (PAHs and BDPEs). Biological metrics indicative of water quality problems (macrophytes and phytobenthos; macroinvertebrates) also indicated problems with nutrients and organic pollution. Mitigation measures assessments (PL04, PL05, PL06) cause failures of 6 water bodies. These reflect hydromorphological pressures such as flow modification and impact of structures on rivers. Riverine habitat structure particularly lack of bankside shading is the other major pressure on grayling due to the resulting elevated temperatures (PJ01). Other reductions in habitat structure and diversity which have negative impacts on grayling include removal of woody material for perceived flood control purposes reduces cover from predators such as fish eating birds, and promotes competition with other fish such as trout (Ibbotson et al. 2001). Grayling also require adequate riffle habitat for spawning, and pool habitat for fry development (PL06).

The range of grayling in Wales coincides with some of the most regulated river systems. 258km of grayling habitat is classed as Heavily Modified Water Body (HMWB), mostly due to the effects of flow regulation for public water supply. Smaller weirs are also likely to affect migration and dispersal.

Predation of fish, including grayling, by piscivorous birds is a highly contentious issue (PI03). Piscivorous birds are mobile species that do not depend on a single food source outside the breeding season, hence there is the potential for them to have significant local impacts on fish populations. Two species, goosander Mergus merganser and cormorants Phalacrocorax carbo, have expanded their range into Wales in recent years and increased in numbers, though national trends suggest their numbers are now levelling off. Several studies have indicated that fish-eating birds may affect the size and stability of grayling populations (see Ibbotson et al. 2001 for a summary). However, fish eating birds are an extremely conspicuous pressure and their true impact in comparison to other pressures may be exaggerated.

Threats:

The largest threat to grayling is warmer river temperatures caused by climate change (PJ01). Grayling are longer lived in colder water conditions for instance in the Dee, grayling mature at age 2-5 (Wooland 1972), compared to 1-2 years in southern England (Ibbotson et al. 2001). Temperature is also likely to affect the length of the growing season and spawning timing (Ibbotson et al. 2001). Climate change is also likely to cause more extreme low flows and floods, increasing the amount of pollution runoff and the severity of eutrophication.

Invasive non-native species are a significant threat to Welsh freshwaters (PI03). Their impacts are complex and

	species-specific, but since they may reach large densities they are likely to affect various species including grayling either through direct impacts or by modifications to the food chain. A particularly problematic species is likely to be signal crayfish, which is capable of predating grayling eggs and competing with it for food. Grayling are widely fished in Wales and are increasingly a valued target species, as evidenced by the anglers comments published on the WUF website (Wye & Usk foundation, 2024). As grayling are quite a delicate species, some mortality or stress may be caused by handling, thereby reducing lifespan (Ibbotson et al. 2001, G12). However, exploitation rates are very low in Wales with fewer than 1% of grayling caught by anglers killed (Cove, 2007). There are also national byelaws in place to protect grayling and the Grayling Society actively encourages catch-and-release (Grayling Society, 2018).
9.5: List of main conservation measures	The EU LIFE Project, LIFE Dee River, is taking action to improve connectivity and habitat quality in the River Dee by fencing river corridors to exclude livestock (MA05, MA1, MJ02, MK01), by modifying or removing barriers to fish migration (MF10), and by modifying forestry practice (MB14). A similar project, the Upper Wye Restoration project, has recently commenced on the Welsh parts of the Wye above Hay-on-Wye. This will have a greater focus on river habitat structure and management of agricultural pollution. This is in addition to NRW's River Restoration Programme, Salmon for Tomorrow and work by external organisations such as the National Trust and Rivers Trusts across Wales via the Inland Fisheries Habitat Grant. Together, this work has improved, protected or restored 854km of river environment, created, protected or restored 100ha of river habitat, addressed 77 barriers to migratory fish and improved access for migratory fish to 954km of river (NRW 2024d). However, not all of this work is in grayling habitat.

	Grayling angling (MG02) is effectively regulated by existing fisheries legislation and by angling clubs and fishery owners.
10.1: Future trends and prospects of parameters	Future range trend: Overall stable. Whilst habitat quality may continue to be an issue over the next 12 years range is expected to remain stable. Future population trend: Overall stable Despite the pressures and threats to grayling habitat, grayling numbers appear to be resilient in the three native catchments in Wales. This reflects the ability of grayling to withstand certain pressures and it is predicted that numbers will continue to remain stable over the next twelve years (unless key water temperature or quality thresholds are reached). However, there is a growing awareness of the need to improve both river habitat and land management. It is anticipated that positive works due to interventions by organisations including Natural Resources Wales and rivers trusts alongside positive policy changes will mitigate impacts of these pressures before they cause grayling numbers to decline. Future habitat trend: Overall stable The two major pressures to grayling habitat; climate change causing increases in river temperatures and reduction in water quality due to diffuse pollution are both likely to increase in the next twelve years. The benefits of habitat restoration works across the Dee and Upper Wye catchments are expected to mature over the next few years as vegetation recovers and trees planted start to mature. However, the positive effects on grayling habitat of interventions such as fencing and tree

	planting to increase riverine shading as well as better land management will only be seen over the long term.
11.1: Range	This conclusion is because: (i) the short-term trend direction in Range is stable; and (ii) the current Range is approximately equal to the Favourable Reference Range.
11.2: Population	This conclusion is because: (i) the short-term trend direction in population is stable; and (ii) the current population is approximately equal to the Favourable Reference Population.
11.3: Habitat for the species	This conclusion is because: i) the area of occupied habitat is sufficiently large for the 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.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are good; (ii) the Future prospects for Population are good; and (iii) the Future prospects for Habitat for the species are poor.
11.5: Overall assessment of Conservation Status	The overall assessment of Conservation Status is Unfavourable-inadequate because two of the conclusions (for Habitat and Future Prospects) are Unfavourable-inadequate.
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. Unpublished NRW GIS analysis indicated that the Wales

	FRP could be estimated at 520 1 x 1 km grid squares, with the current population being approximately equal. Therefore the operator of less than 5% smaller than FRP provided at the UK level was also appropriate at the Wales level.
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. Unpublished NRW GIS analysis indicated that the Wales FRR could be 5484 km2 with the current range being approximately equal to this. Therefore the operator of 'less than 2% smaller than the FRR' provided at the UK level was also appropriate at the Wales level.