

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)

England



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This report was produced by JNCC in collaboration with Natural England.

This document should be cited as:

Natural England and JNCC. (2026). Conservation status assessment for the species: S1109 Grayling (*Thymallus thymallus*).

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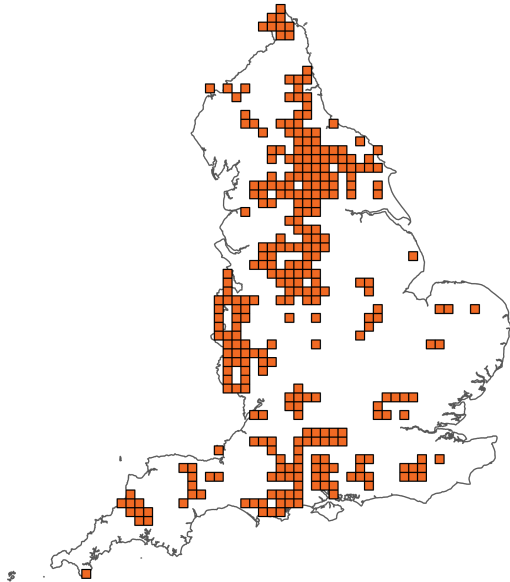
Important note - Please read

- The information in this document represents the England 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 England, 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

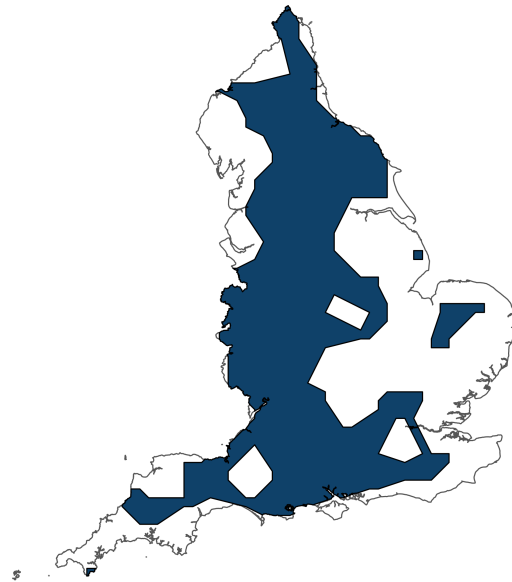


Figure 1: England distribution and range map for S1109 - Grayling (*Thymallus thymallus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 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)

Favourable (FV)

Breakdown of Overall Conservation Status

Range (see section 5)

Favourable (FV)

Population (see section 6)

Favourable (FV)

Habitat for the species (see section 7)

Favourable (FV)

Future prospects (see section 10)

Unknown (XX)

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National Level

1. General information

1.1 Country	England
1.2 Species code	S1109
1.3 Species scientific name	<i>Thymallus thymallus</i>
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	2000-2024
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

The grayling is a widespread species in England. It is thought that the species reached Britain via the North Sea River, prior to isolation from continental Europe after the last glacial period. Native grayling populations are thought to be restricted to the Rivers Ouse, Trent, Hampshire Avon and possibly the rivers Severn, Wye, Thames, Ribble and Welsh Dee and their tributaries. However, grayling range has been artificially increased due to stocking for recreational angling purposes for approximately 200 years. Enhancement stocking has also been undertaken within their native range as a perceived conservation measure to boost dwindling natural stocks. The effect of such extensive stocking has made the natural distribution of grayling unclear. Recent genetic studies of grayling indicate further differentiation of grayling populations can be made within England as there appear to be distinct genetic differences between rivers / physically isolated populations. These differences have led to calls for individual river stocks to be managed as discrete management units to avoid a loss of genetic specificity within the management unit.

Due the lack of clarity on the historic distribution, grayling and the large period of time over which introductions have been made, records related to artificial expansions of range due to stocking have been included in the distribution map.

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 Yes

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 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 Yes

Other measures Yes

Other measures description

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

a) Unit number of map 1x1 km grid cells

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
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b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	Yes	Yes	Yes	Yes	Yes	Yes

3.4: Hunting bag or quantity taken in the wild; Method used Insufficient or no data available

3.5: Additional information

Grayling are highly valued as a quarry species for many recreational anglers. Grayling are recognised as an important member of the wider fish community and an indicator of good habitat and water quality. Grayling may be subject to catch and release or taken as a food species in England. If catch and release methods are used, angler capture and handling of this relatively sensitive species may lead to mortality for a small number of individuals and a reduction in fitness or spawning success for others.

Grayling in all English rivers are subject to controls on angling activity. The primary legislation for the regulation of angling is the ‘Salmon and Freshwater Fishery Act 1975’. Under this legislation the Environment Agency has powers to licence recreational angling. Fishery byelaws regulate when, where and how angling can take place. The licencing approach records the number of licenced individuals and regulates the gear and effort used. As part of this managed exploitation, pressure on the population can be controlled and data can be collected on grayling stocks. The taking of grayling from English waters is specifically cited within the regulations and there is a limit of 2 grayling (30cm to 38cm) imposed. In addition to the Salmon and Freshwater Fishery Act, the stocking of fish to freshwaters is regulated by ‘The Keeping and Introduction of Fish (England and River Esk Catchment Area) Regulations 2015’.

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) 71,434.25

5.2 Short-term trend; Period 2013-2024

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

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 2000-2024

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 extrapolation from a limited amount of data
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5.10 Favourable Reference Range (FRR)

a) Area (km²)

b) Pre-defined increment	Current range is less than 2% smaller than the FRR
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c) Unknown	No
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d) Method used	Expert opinion
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e) Quality of information

5.11 Change and reason for change in surface area of range

a) Change	No
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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	2000-2024
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6.2 Population size (in reporting unit)

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

c) Maximum

d) Best single value	950
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	
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	2013-2024
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	2000-2024
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 extrapolation from a limited amount of 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 Expert opinion

e) Quality of information

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? Yes

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

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

a) Sufficiency of area of occupied habitat; Method used Based mainly on extrapolation from a limited amount of data

b) Sufficiency of quality of occupied habitat; Method used Insufficient or no data available

7.3 Short-term trend; Period 2013-2024

7.4 Short-term trend; Direction Stable

7.5 Short-term trend; Method used Based mainly on extrapolation from a limited amount of data

7.6 Long-term trend; Period 2000-2024

7.7 Long-term trend; Direction Stable

7.8 Long-term trend; Method used Based mainly on extrapolation from a limited amount of data

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
PK01: Mixed source pollution to surface and ground waters (limnic and terrestrial)	Ongoing and likely to be in the future	High (H)
PI01: Invasive alien species of Union concern	Ongoing and likely to be in the future	High (H)
PL01: Abstraction from groundwater, surface water or mixed water (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PA17: Agricultural activities generating pollution to surface or ground waters (including marine)	Ongoing and likely to be in the future	High (H)
PL05: Modification of hydrological flow (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PJ14: Other climate related changes in abiotic conditions	Ongoing and likely to be in the future	High (H)
PL03: Old barriers or other obsolete infrastructures (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PJ03: Changes in precipitation regimes due to climate change	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)
PD02: Hydropower (dams, weirs, run-off-the-river and respective infrastructure)	Ongoing and likely to be in the future	High (H)
PG07: Freshwater fish and shellfish harvesting (recreational)	Ongoing and likely to be in the future	Medium (M)
PG09: Management of fishing stocks and game	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? No

b) Indicate the status of measures

9.2 Main purpose of the measures taken

9.3 Location of the measures taken

9.4 Response to measures

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
No conservation measures	

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 Unknown

cii) Habitat for the species Unknown

10.2 Additional information

As improvements continue to be made regarding water quality and the re-establishment of natural riverine processes in England the area of freshwater habitat suitable for grayling may be expected to increase. The recent increased understanding of genetic differentiation between grayling stocks has led to changes in stocking policy and more enlightened angling practices have reduced direct pressure on grayling populations.

Set in opposition to this generally positive outlook are the unknowns of climate change effects which may lead to more extreme flow variations, the potential for continued diffuse agricultural pollution resulting in inputs of nutrients and fine sediment, the increase and expansion of non-native crayfish populations and the possibility of increases in energy production infrastructure associated with run of river hydropower.

11. Conclusions

11.1 Range Favourable (FV)

11.2 Population Favourable (FV)

11.3 Habitat for the species Favourable (FV)

11.4 Future prospects Unknown (XX)

11.5 Overall assessment of Conservation Status Favourable (FV)

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	Data contained within the National Biodiversity Network Database has been used to produce distribution maps for grayling. Adult and juvenile grayling are captured during routine electric fishing surveys, therefore, recording effort across England is relatively high. The grayling has a tendency to be more active during daylight hours and to rest in deeper water during darkness, therefore, capture efficiency may be increased compared with some other fish species. However, they may be under recorded due to the difficulty of surveying grayling habitats with electric fishing gear caused by strong flows and abundant submerged macrophytes. In addition, grayling are a relatively sensitive fish and high mortality rates can occur if electric fishing is carried out during spawning periods or fish are held in the electric field for too long. Therefore, there may be a tendency to avoid targeting grayling to avoid injury to the fish.
3.4: Hunting bag or quantity take in the wild; Method used	Grayling are subject to a combination of catch and release and fish taken in England. There is no national requirement for catch returns to be submitted.
5.3: Short-term trend; Direction	The grayling is a widespread species in England and records for grayling are common throughout the short term trend period, however, survey effort is not consistent across the species range. Native grayling populations are thought to be restricted to the Rivers Ouse, Trent, Hampshire Avon and possibly the rivers Severn, Wye, Thames, Ribble and Welsh Dee and their tributaries. However, grayling range has been artificially increased due to stocking for recreational angling purposes for approximately 200 years. Enhancement stocking has also been undertaken within their accepted native range as a perceived conservation measure to boost dwindling natural stocks. The effect of such extensive stocking has made the natural distribution of grayling unclear. The species is being regularly recorded across its natural range and there has been no significant

	<p>increase in pressures suggesting that the population is at least stable. The water quality of many English rivers has improved in recent years improving the probability of both adult and juvenile survival. It is likely that the range is stable and possibly increasing.</p>
5.7: Long-term trend; Direction	<p>Due to varying levels of survey effort throughout the grayling range it is not possible to accurately assess population trends for this period. However, as the species has been consistently recorded across much of its accepted natural range and pressures have not increased, the species is considered to be at least stable. Water quality has improved markedly in many English rivers, which may in turn benefit adult and juvenile survival. This may have led to an increase in the distribution and abundance of the species within the overall range.</p>
6.8: Short-term trend; Direction	<p>Records for grayling are common throughout the short-term trend period, however, survey effort is not consistent across the species accepted range. It is therefore impossible to accurately assess a trend direction. The species is being regularly recorded across its natural range and there has been no significant increase in pressures suggesting that the population is at least stable. The water quality of many English rivers has improved in recent years increasing the probability of both adult and juvenile survival, it is likely that the population is stable and possibly increasing.</p>
6.12: Long-term trend; Direction	<p>Due to varying levels of survey effort throughout the accepted grayling range it is not possible to accurately assess population trends for this period. However, as the species has been consistently recorded across much of its accepted range and pressures have not increased, the species is considered to be at least stable. Water quality has markedly improved in many English rivers, which may in turn benefit adult and juvenile survival. This may have led to an increasing trend in the population over this period, however, this may have been counteracted by the rapid expansion of the invasive, non-native signal crayfish population which has the potential to negatively impact on fish species. In addition, excessive fine sediments and</p>

	<p>eutrophication impacts resulting from poor agricultural practices have continued to occur in many typical grayling habitats, potentially reducing successful recruitment.</p>
<p>6.18: Age structure, mortality and reproduction</p>	<p>The lack of a coordinated monitoring programme which takes account of all lifestages of grayling makes it impossible to accurately assess whether the population is recruiting efficiently. The continued presence of adult grayling within a river catchment would indicate that the population has remained viable over time and is recruiting successfully. However, the expansion of non-native crayfish populations within England has the potential to increase mortality rates and reduce egg numbers in fish species such as grayling which lay their eggs in gravels and may therefore cause a deviation from the unimpacted condition.</p> <p>Grayling are particularly intolerant of poor water quality. While the average water quality has continued to improve in many rivers across England, episodic, short duration periods of polluted water continue to blight some areas. These inputs are often related to heavy rainfall events causing run off from riparian land or infrastructure. Due to their transient nature this type of pollution is under recorded by most monitoring programmes but may have serious consequences for particularly sensitive species such as grayling.</p> <p>Recent genetic studies have highlighted the importance of maintaining the genetic integrity of isolated grayling stocks. The reports recommend that stocking of fish sourced from other areas should not be undertaken as interbreeding may reduce the fecundity of native fish. As stocking has been undertaken over a long time period, it is possible that reproduction may have deviated from the natural condition.</p>
<p>10.1: Future trends and prospects of parameters</p>	<p>Assumes widespread species, with a large natural range within England. However, the species may expect to become increasingly distributed and abundant within this range, assuming no further increases in barriers to</p>

upstream movement associated with hydropower development and unsuitable fish passage solutions.

10.1: Future trends and prospects of parameters

10.1 b) The species may expect to become increasingly distributed and abundant within its natural range, assuming no further increases in altered hydrology, barriers to upstream movements associated hydropower development and unsuitable fish passage solutions. However, the potential impact of increasing range and biomass of non-native crayfish and pressures associated with climate change effects is unquantified.

10.1 c) Assumes water quality improvements and physical habitat restoration continues and no further increases in altered hydrology, barriers to upstream movements associated hydropower development and unsuitable fish passage solutions. However, the potential impact of increasing range and biomass of non-native crayfish and pressures associated with climate change effects is unquantified.