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

2019-2024

Conservation status assessment for the species:

S6963 - Spined loach

(*Cobitis taenia*)

England

NATURAL ENGLAND

JNCC

For further information please contact:

Natural England, Foss House, Kings Pool, 1-2 Peasholme Green, York, YO1 7PX.
https://www.gov.uk/government/organisations/natural-england

JNCC, Quay House, 2 East Station Road, Fletton Quays, Peterborough, PE2 8YY.
https://jncc.gov.uk

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: S6963 Spined loach (*Cobitis taenia*).

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: Spined loach

Distribution Map

Range Map

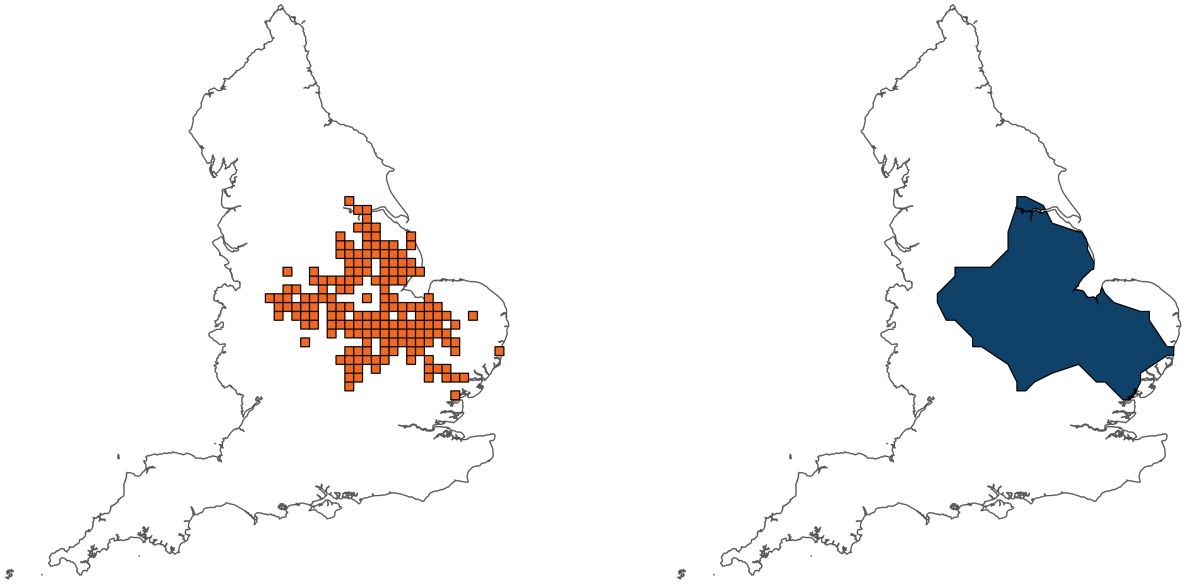

Figure 1: England distribution and range map for S6963 - Spined loach (*Cobitis taenia*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S6963 - Spined loach (*Cobitis taenia*). 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)**

List of Sections

National Level

1. General information

1.1 Country	England
1.2 Species code	S6963
1.3 Species scientific name	*Cobitis taenia*
1.4 Alternative species scientific name	
1.5 Common name	Spined loach
Annex(es)	II

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

Data contained within the National Biodiversity Network database has been used to produce distribution maps for spined loach. Adult spined loach are captured during routine electric fishing surveys (although the techniques may be refined for spined loach specific surveys) and benthic kick samples, therefore, recording effort across England is relatively high. However, they may be under recorded in some habitats due to the cryptic nature and habitat of spined loach, lifecycle, diel behaviour and operational difficulties using electric fishing gear in typical spined loach habitat.

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property

b) Temporary or local prohibition on the taking of specimens in the wild and exploitation

c) Regulation of the periods and/or methods of taking specimens

d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

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	-	-	-	-	-	-

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)	29,597.91
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	Decreasing <=1% (one percent or less) per year on average
5.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
5.6 Long-term trend; Period	
5.7 Long-term trend; Direction	
5.8 Long-term trend; Magnitude	

a) Minimum	
b) Maximum	
c) Rate of decrease	
5.9 Long-term trend; Method used	

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	Expert opinion
e) Quality of information	moderate

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	2000-2024

6.2 Population size (in reporting unit)

a) Unit	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	601
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	

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	moderate

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 expert opinion with very limited 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 expert opinion with very limited data

7.9 Additional information

Spined loach require a mosaic of microhabitats including areas of open sediment for feeding and stands of macrophytes and stoney substrates for egg deposition. These factors, combined with sporadic survey effort make a detailed assessment of habitat quality trends for spined loach impossible at the present time. However, progress has been made with reducing nutrient and organic pollution concentrations in many rivers across England within the short-term trend period, which may have a beneficial effect on habitat quality for spined loach. However habitat degradation is still a significant stressor on spined loach populations within England and improvements may be off-set by the continued expansion of INNS crayfish range.

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	Medium (M)
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	Medium (M)
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	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
MK01: Reduce impact of mixed source pollution	High (H)
MF02: Habitat restoration of areas impacted by residential, commercial, industrial and recreational infrastructure, operations and activities	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)
MJ01: Implement climate change mitigation measures	High (H)

9.6 Additional information

Work has continued to reduce point and diffuse discharges to both the national site network and wider river network. Major infrastructure projects to improve sewerage, such as removal or upgrade of combined sewer overflows and improved phosphorus removal from treated sewage effluent has been funded via the water industry's programme of strategic improvements such as AMP and PR rounds. However, further investigations are needed into the application of new best available technology for phosphorus removal and the increased availability of mains sewerage for rural populations. The England Catchment Sensitive Farming Initiative is continuing to promote a range of best agricultural practices to reduce pollution loads to priority aquatic sites. A combination of Habitats Site, SSSI and Water Framework objectives continues to drive improvements in water quality with diffuse water pollution prevention plans developed for many sites. New Countryside Stewardship payments are being developed to incentivise good agricultural practices.

A major programme of physical restoration has been implemented on the designated river network, involving the development of a long-term strategic plan for each river and its programmed implementation. These plans address key issues such as dams and weirs, floodplain reconnection, channel modifications, lack of riparian habitat, lack of riparian trees and lack of woody debris in the channel. Outside of the designated site network, river restoration schemes have focused on addressing channel modifications and the many weirs and dams on the river network in England. A further driver for river restoration has been the increased prominence of natural flood management. If properly implemented, NFM has the potential to enable widespread improvements in many previously degraded riverine habitats.

The rationale behind restoring river habitat in England is the restoration of natural riverine processes, which creates characteristic habitats and provides for individual species to an extent dependent on the natural character of the river. This rationale is also the main adaptation response for combatting climate change. Some aspects of restoring natural function are also seen as climate change mitigation measures, such as the re-establishment of natural tree cover and riparian vegetation which is being implemented as part of many river restoration and agri-environment schemes. These

interventions may result in moderated extremes of flow, reductions in water temperature and increased water quality.

Improvements have been achieved with limiting abstraction volumes and improving flow regimes by altering compensation flows from water company assets via AMP and PR rounds. However, further improvements are required to naturalise flows at many sites.

Detailed assessments are being made of potential risks to spined loach due to abstractions, discharges, potential barrier effects and inter-catchment connectivity from existing and new water supply infrastructure. Where problems are highlighted mitigation measures such as improved screening or modified operating procedures are being implemented.

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 re-establishment of natural riverine processes in England the area of freshwater habitat suitable for spined loach may be expected to increase. 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 in non-native crayfish populations and the possibility of increases in energy production and water supply infrastructure.

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	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	48
12.2 Type of estimate	Best estimate

12.3 Population size inside the network; Method used	Based mainly on extrapolation from a limited amount of data
12.4 Short-term trend of population size within the network; Direction	Stable
12.5 Short-term trend of population size within the network; Method used	Based mainly on expert opinion with very limited data
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	Based mainly on expert opinion with very limited data

12.8 Additional information

The situation within the SAC network broadly reflects the general situation within higher quality areas of the river resource outside of the network. As improvements continue to be made regarding water quality and re-establishment of natural riverine and lacustrine processes in England and plans are developed and implemented to improve fish passage for all fish species, including spined loach, in rivers throughout England, the area of freshwater habitat suitable for spined loach may be expected to increase. The rate of improvement may be expected to be greater within the SAC network than outside of it. Set in opposition to this generally positive outlook are the unknowns of climate change effects which may lead to more extreme flow variations and the potential for continued diffuse agricultural pollution resulting in inputs of nutrients and fine sediment. In addition , it is likely that new water transfer schemes will allow the mixing of previously isolated spined loach populations, with unpredictable genetic impacts on the population. However, it is less likely that future barriers to bullhead movement would be permitted within the SAC site series.

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
2.5: Additional information	Spined loach are a small fish, normally between 5 – 10 cm long. They are widely distributed across Europe and Asia, however, in England they are only thought to occur naturally in five river catchments in the east of England: the Rivers Trent, Welland, Witham, Nene and Great Ouse. In addition, genetic studies have demonstrated significant differences between the populations of spined loach present in these catchments. Due to a lack of angling interest in this species, the historic distribution has remained relatively stable. However, water transfer schemes have led to minor expansions of range into the River Stour catchment (Essex/Suffolk) and the River Ancholme (Lincolnshire). Although distributed across a number of river types, spined loach appear to have relatively specific micro habitat and habitat mosaic requirements with fine silty or sandy substrates utilised for feeding and refuge and coarse substrates or vegetation for spawning and egg deposition. Spined loach spawn between April and June and eggs are shed among stones or vegetation. Once hatched juveniles adopt a benthic existence in or on the substrate. This benthic lifestyle continues throughout their life. Adults are physiologically adapted to tolerate the low oxygen conditions associated with burrowing and possess the mechanisms required for feeding within fine silty substrates.
6.8: Short-term trend; Direction	Records for spined loach are common throughout the short term trend period, however, survey effort is not consistent across the species range. In addition, specific surveys targeting spined loach and taking into account their cryptic traits are limited within theses data. 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 and lakes has improved in recent years improving the probability of both adult and juvenile survival, it is likely that the population is stable and possibly increasing.
6.18: Age structure, mortality and reproduction	The lack of a coordinated monitoring programme which takes account of their cryptic lifestyle and encompasses all lifestages of spined loach makes it impossible to accurately assess whether the population is recruiting efficiently. The continued presence of adult spined loach 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 benthic fish species such as spined loach and may therefore cause a deviation from the unimpacted condition
7.1: Sufficiency of area and quality of occupied habitat	sufficient unoccupied = Access restrictions to historical river habitat due to poor water quality is thought to have been responsible for the reduction in spined loach numbers within English rivers. The extent to which poor water quality has effected spined loach populations is uncertain, however, nutrient enrichment and the deposition of organic matter may result in anoxic fine sediments which are unsuitable for spined loach. In addition, macrophytes may be lost from water courses due to pollution. This may reduce cover for adults and anchor points for egg deposition. Although adullt spined loach are known to favour fine sediments for refuge and feeding during daylight hours, a mosaic of microhabitats which includes areas of open sediment for feeding and stands of macrophytes and stoney substrates for egg deposition may be utilised during the more active nocturnal phase of their liefcycle. Excessive sediment loads due to agricultural sources has the potential to transform this habitat mosaic into a homogenious silted environment

	which may impact on spined loach recuitment. Excessive predation may impact on spined loach. Due to their small size spined loach are liable to be preyed upon by a number of coarse fish species, therefore, additional stocking for recreational angling purposes may increase predation rates. Invasive non-native crayfish species such as signal crayfish Pacifastacus leniusculus also have the potential to increase predation pressure on both spined loach and their eggs. Invasive non-native crayfish may be more aggressive, more tolerant of poor water quality, better adapted to silty substrates and achieve greater biomasses than the indigenous white clawed crayfish Austropotamobious pallipes which may have co-existed with spined loach in rivers such as the Rive Mease, within the Trent catchment. The invasion of habitats by INNS crayfish and the displacement of indigenous crayfish species may therefore have led to an increase in interspecific competition with between crayfish and spined loach.
8.3: Additional information	Physical modification of river channels may remove habitat heterogeneity and the mosaic of microhabitats utilised by spined loach at different stages of their lifecycle. Although spined loach are not thought to undertake large scale migratory movements, if water quality improvements open up potential new/historic upstream habitat within a river, colonisation of these areas by spined loach may be blocked by man-made in-stream barriers such as weirs. These barriers may also act synergistically with water quality problems such as increased sediment and nutrient load. Impoundments behind structures may lead to increased deposition of fine sediment on gravels and dissolved oxygen sags due to a lack of turbulent flow. In some areas fish passes have been added to barrier structures, however, these tend to be focused on increasing turbulent flows for the passage of salmonid species and are not suited to the passage of spined loach which require lower flow velocities and would therefore be excluded from colonising suitable upstream habitat.

Spined loach require a habitat mosaic of fine silt for refuge and feeding, macrophytes for cover and coarser substrates and/or macrophytes for egg deposition . Changes to the hydrological regime may increase deposition rates of fine sediment on gravels, increase the resistance of structures to passage by spined loach and lead to stranding of fish or desiccation of eggs during low flows. In addition river engineering works may increase spate flow velocities within the catchment which may result in spined loach being washed out of areas of favourable habitat within the river system. If low flows are maintained over long periods, elevated water temperatures, deoxygenation, siltation and bed armouring may become evident. Conversely very high flows may scour spawning substrates, deposited eggs or silt substrates for adult refuge.

Diffuse agricultural pollution has increased the input of fine sediment, phosphate and nitrate to rivers leading to eutrophication impacts such as increased algal production and changes in the macrophyte community. Urbanization and industrialization have resulted in discharges of both raw and treated sewage effluent, industrial effluents and diffuse urban pollution. These discharges may prove acutely toxic to spined loach or produce lethal effects due to deoxygenation. A wide variety of other chemicals, including pesticides and endocrine disrupters, have been released into the aquatic environment. Spined loach may be particularly vulnerable to deposited pollutants due to their burrowing and feeding habits. Pollutants may result in obvious lethal effects, however, a wide variety of sub-lethal effects, such as reduced fertility may affect the overall fitness of spined loach. Due to the diverse array of sources and impacts, the severity and contribution of each individual stressor on the population as a whole is unknown.

The potential for climate change to impact on future spined loach populations is poorly understood. However, future

climate change scenarios indicate a shift to a pattern of increasingly extreme events such as more prolonged low flows and higher, more energetic spate flows. Increases in temperature may produce synergistic effects with other environmental stresses such as increased toxicity of pollutants and more rapid deoxygenation. Low flows may reduce the ability of spined loach to pass barriers and reach new habitat. High spate flows may lead to fish and eggs being washed out of areas of suitable habitat.

Invasive non-native crayfish species such as signal crayfish Pacifastacus leniusculus have the potential to increase predation pressure on both spined loach and their eggs. Invasive non-native crayfish may be more aggressive, more tolerant of poor water quality, better adapted to silty substrates and achieve greater biomasses than the indigenous white clawed crayfish Austropotamobious pallipes which may have co-existed with spined loach in rivers such as the River Mease, within the Trent catchment. The invasion of habitats by INNS crayfish and the displacement of indigenous crayfish species may therefore have led to an increase in interspecific competition with between crayfish and spined loach. Signal crayfish, together with other INNS crayfish species, continue to increase their range and populations in many English river catchments, including rivers such as the River Mease SAC which hold populations of spined loach. There are no effective control measures for INNS crayfish and their range is expected to continue to expand in river networks for the foreseeable future.

Spined loach are present in a number of English rivers, such as the River Trent, associated with power station abstraction points. Due to their relatively sedentary nature they may be susceptible to direct entrainment in cooling water abstractions or dissolved oxygen fluctuations due to the discharge of artificially warm water from these sites. In addition to the risks posed by entrainment into pumps and associated infrastructure related to public water supply,

	water transfer schemes have the potential to allow the cross catchment movement of spined loach and allow genetic mixing of previously discrete, isolated populations, therefore limiting the genetic diversity. As the demand for potable water continues to rise there will be an increased reliance on inter-catchment water transfer schemes. New schemes may increase the risk of homogenising the genetic structure of spined loach.
10.1: Future trends and prospects of parameters	Assumes relatively widespread species but with a relatively resticted 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 upstream movement associated with hydropower development and unsuitable fish passage solutions
10.1: Future trends and prospects of parameters	Spined loach 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 the particular sensitivities of spined loach to this pressure is unquantified. In addition, new water transfer systems have the potential to alter the genetic diversity of discrete spined loach populations, again with unquantified population scale impacts
10.1: Future trends and prospects of parameters	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 the particular sensitivities of spined loach to this pressure is unquantified