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

2019-2024

Conservation status assessment for the species:

S1092 - White-clawed crayfish

(*Austropotamobius pallipes*)

Wales

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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: White-clawed crayfish

Distribution Map

Range Map

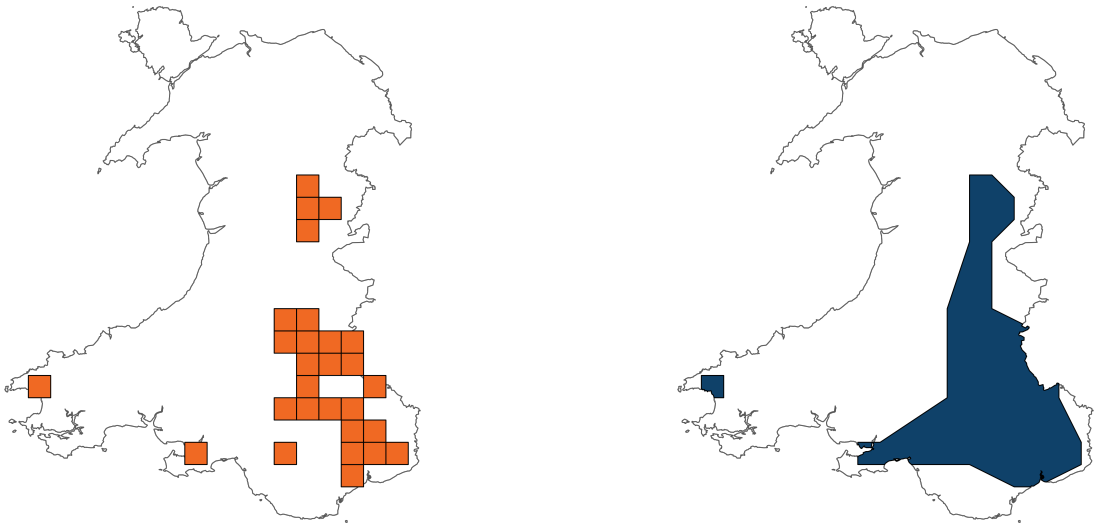

Figure 1: Wales distribution and range map for S1092 - White-clawed crayfish (*Austropotamobius pallipes*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas 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 S1092 - White-clawed crayfish (*Austropotamobius pallipes*). 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-bad (U2)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Unknown (XX)**
Future prospects (see section 10)	**Unfavourable-bad (U2)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1092
1.3 Species scientific name	*Austropotamobius pallipes*
1.4 Alternative species scientific name	
1.5 Common name	White-clawed crayfish
Annex(es)	II, V

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2010-2017
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	No
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	No

e) Establishment of a system of licences for taking specimens or of quotas	No
f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens	No
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	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)	5,122.81
5.2 Short-term trend; Period	2019-2024
5.3 Short-term trend; Direction	Decreasing
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	Decreasing 0 - 12%
d) Unknown	No
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 expert opinion with very limited data
5.6 Long-term trend; Period	1994-2024
5.7 Long-term trend; Direction	Decreasing
5.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	

	Decreasing >1% (more than one percent) per year on average
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 between 11% and 50% 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	Yes
b) Genuine change	No
c) Improved knowledge or more accurate data	Yes
d) Different method	No
e) No information	No
f) Other reason	
g) Main reason	Improved knowledge/more accurate data

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	47
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 expert opinion with very limited data
6.7 Short-term trend; Period	2019-2024
6.8 Short-term trend; Direction	Decreasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	Decreasing 13 - 25%
d) Unknown	No
e) Type of estimate	Pre-defined range
f) Rate of decrease	Decreasing >1% (more than one percent) per year on average
6.10 Short-term trend; Method used	Based mainly on expert opinion with very limited data
6.11 Long-term trend; Period	1980-2024

6.12 Long-term trend; Direction	Decreasing
6.13 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	Decreasing >1% (more than one percent) per year on average
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 between 26% and 50% 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	Yes
b) Genuine change	Yes
c) Improved knowledge or more accurate data	No
d) Different method	No
e) No information	No
f) Other reason	No
g) Main reason	Genuine change

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?	Unknown

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

a) Sufficiency of area of occupied habitat; Method used	Based mainly on expert opinion with very limited data
b) Sufficiency of quality of occupied habitat; Method used	Based mainly on expert opinion with very limited data

7.3 Short-term trend; Period	2019-2024
7.4 Short-term trend; Direction	Decreasing
7.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data

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
PA07: Intensive grazing or overgrazing by livestock	Ongoing and likely to be in the future	Medium (M)
PA11: Soil management practices in agriculture (e.g. ploughing)	Ongoing and likely to be in the future	High (H)
PA13: Application of natural or synthetic fertilisers on agricultural land	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	Medium (M)
PB19: Forestry activities generating pollution to surface or ground waters (including marine)	Ongoing and likely to be in the future	Medium (M)
PG21: Introduction and spread of new species in aquaculture (including GMOs)	Ongoing and likely to be in the future	Medium (M)
PI01: Invasive alien species of Union concern	Ongoing and likely to be in the future	High (H)
PM07: Natural processes without direct or indirect influence from human activities or climate change	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	Increase the population size and/or improve population dynamics (related to 'Population')
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
MA08: Adapt soil management practices in agriculture	Medium (M)
MA10: Reduce/eliminate point or diffuse source pollution to surface or ground waters (including marine) from agricultural activities	Medium (M)
MB12: Reduce other types of pollution from forestry activities (such as noise and soil pollution)	Medium (M)
MI01: Early detection and rapid eradication of invasive alien species of Union concern	High (H)
MI02: Management, control or eradication of established invasive alien species of Union concern	High (H)
MI03: Management, control or eradication of other invasive alien species	High (H)
MS01: Reinforce populations of species from the directives	Medium (M)
MS02: Reintroduce species from the directives	Medium (M)
MS03: Restoration of habitat of species from the directives	High (H)

9.6 Additional information

No additional information

10. Future prospects

10.1a Future trends of parameters

ai) Range	Very Negative - decreasing >1% (more than one percent) per year on average
bi) Population	Very Negative - decreasing >1% (more than one percent) per year on average
ci) Habitat for the species	Very negative - important deterioration

10.1b Future prospects of parameters

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

10.2 Additional information

No additional information

11. Conclusions

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

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	8
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	Decreasing
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	Decreasing
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

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

(92/43/EEC) Supporting documentation for the Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012 Conservation status assessment for Species: S1092 - White-clawed Crayfish (Austropotamobius pallipes).

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Holdich, D. 2003. Ecology of the white-clawed crayfish. Conserving Natura 2000 Rivers Ecology Series. No. 1. English Nature.

Howe, M.A. 2013. European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora

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Howells, M., Slater, F.M., Gaweda, A., Lee, R., Jenkins, R. & Smith, J. 2004. Measurement of siltation levels in the Afon Edw. CCW Contract Science Report No. 622. Countryside Council for Wales & Cardiff University.

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Rogers, D. & Watson, E. 2003. The status of the white-clawed crayfish Austropotamobius pallipes in the mid-Wye catchment, 2002. CCW Contract Science Report No. 543. Countryside Council for Wales.

Rogers, D. & Watson, E. 2004. Assessment of the condition of the white-clawed crayfish Austropotamobius pallipes in the River Wye candidate Special Area of Conservation. CCW Environmental Monitoring Report No. 2. Countryside Council for Wales.

Rogers, D. & Watson, E. 2005. Scoping study for a 5-year project to bring the River Wye SAC into favourable conservation status for white-clawed crayfish. CCW Regional Report No. CCW/SEW/05/05. Countryside Council for Wales.

Rogers, D. & Watson, E. 2015. Assessment of the condition of the white-clawed crayfish Austropotamobius pallipes in the River Wye Special Area of Conservation in 2014. NRW Evidence Report No. 74. Natural Resources Wales, Bangor.

Rogers, D. & Watson, E. 2016. Assessment of the condition of the white-clawed crayfish Austropotamobius pallipes in the River Wye Special Area of Conservation in 2014-15. NRW Evidence Report No. 153. Natural Resources Wales, Bangor.

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Slater, F.M., Davidson, K., James, C., Sherrard-Smith, E., Ross, F., Chen, J., Phillips, A. & Tombs, V. 2007b. The status of the white-clawed crayfish Austropotamobius pallipes in tributaries of the River Usk on Mynydd Eppynt in Breconshire in 2005 & 2006. CCW Contract Science No. 725. Countryside Council for Wales.

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Smith, R., Speak, E., Preston-Mafham, L., Pitt, H., Hale, A., & Slater, F. 2009. The South East Wales Crayfish Project: work to inform choice of donor and ark (receptor) sites for white-clawed crayfish translocations. Unpublished report for Environment Agency Wales, Cardiff.

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Wye & Usk Foundation. 2013. Final Report covering project activities from 1st Jan 2010 to 31st December 2013 ISAC Irfon Special Area of Conservation project LIFE08NAT/UK/000201.

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
3.1: Is the species taken in the wild/ exploited	There has been historic exploitation in Wales but nothing in recent decades.
5.7: Long-term trend; Direction	The past assessment reported declines in numbers on the Nant Fawr,Nant y Pia, and Berthin Brook on the River Usk (Oliver Brown, pers. comm.). There was crayfish plague outbreak on the Irfon and Ennig in 2024, with subsequent persistence uncertain. Surveys of A.pallipes in 2002 and 2003 (Rogers & Watson, 2003 & 2004) showed marked declines in mid-Wye tributaries with complete losses from some tributaries and much reduced ranges in others. A 2014-16 assessment of the condition of the population in the Wye SAC (Rogers & Watson, 2017) reported continued losses and considered the population to be in Unfavourable condition. Crayfish were restricted to Nant yr Offeiriad and Sgithwen Brook, with populations now confined to headwaters, and Clyro Brook. None were found in Dulas Brook (Builth Wells), where good numbers had been found in downstream reaches in 2003, nor in the Afon Edw, once the key tributary for crayfish on the Wye. A continued absence from the Edw, which initially may have been lost as a consequence of sheep dip pollution, may be prevented from recovery due to the presence of Signal Crayfish.
5.8: Long-term trend; Magnitude	This is based on discussions with crayfish surveyors and previous assessments. There have been some additional records in 1km squares since last assessment, but this is attributed to additional or congenial survey effort rather than range expansion. Surveyors are reporting encountering fewer crayfish at famililar sites.
5.11: Change and reason for change in surface area of range	Recent surveys and observations have revealed crayfish in their previous range where they were not recorded in the previous assessment period. This is understood to be an artefact of stochastic survey effort, with understanding that

	this obscures the signal of actual population trend, which crayfish surveyors understand to be in decline. Historically, surveys in 2002 and 2003 (Rogers & Watson, 2003 & 2004) showed marked declines in mid-Wye tributaries with complete losses from some tributaries and much reduced ranges in others. These declines have continued, with a 2014-16 assessment of the condition of the population in the Wye SAC (Rogers & Watson, 2017) reporting an absence from Dulas Brook (Builth Wells), where good numbers had been found in downstream reaches in 2003, from the Afon Edw, once the key tributary for crayfish on the Wye, and with populations on the Nant yr Offieriad and Sgithwen Brook retreating to the headwaters. A lack of recent systematic recording precludes an assessment of distributional changes on other Welsh freshwater habitats.
6.2: Population size	Unit = number of map 1x1 km grid cells Best Single Value = 47 During this period, there are records from 29 hectads and 47 1km squares. This represents the best single value but is undoubtedly a marked under-estimate in the absence of systematic recording and data collation away from the River Wye SAC.
6.6: Population size; Method used	Assessment is based indirectly on records submitted by NRW and to iRecord and not actual population measurements.
6.8: Short-term trend; Direction	The previous number of squares is higher than the previous assessment, but this is understood to be a sampling artefact, with populations at these sites in decline. This is based on experienced crayfish surveyors noting lower abundance at familiar sites, as well as crayfish plague

	outbreaks at sites previously known to have robust WCC populations.
6.9: Short-term trend; Magnitude	a-c) Magnitude - Comprehensive magnitude information is not available. f) Rate of declines - Given the marked declines noted it is likely to be greater than 1% per year. This is not just based on reports from experienced crayfish surveyors based on familiar sites, but also recent outbreaks of crayfish plague in important WCC populations.
6.10: Short-term trend; Method used	Surveys in 2002 and 2003 (Rogers & Watson, 2003 & 2004) showed marked declines in mid-Wye tributaries with complete losses from some tributaries and much reduced ranges in others. These declines have continued, with a 2014-16 assessment of the condition of the population in the Wye SAC (Rogers & Watson, 2017) reporting an absence from Dulas Brook (Builth Wells), where good numbers had been found in downstream reaches in 2003, from the Afon Edw, once the key tributary for crayfish on the Wye, and with populations on the Nant yr Offieriad and Sgithwen Brook retreating to the headwaters. The Wye SAC population was assessed to be in Unfavourable condition (Rogers & Watson, 2017). Declines have been reported on the Nant fawr and Nant y Pia (Oliver Brown, pers. comm.). Howe (2013) stated that the “short-term range trend is likely to be one of decline. There has been a historic range decline (records from 48 10km squares, with only 17 10km squares with post-2001 records - although this is obscured by a lack of survey data and past introductions). Surveys in 2002 and 2003 (Rogers & Watson, 2003 & 2004) showed marked declines in mid-Wye tributaries with complete losses from some tributaries and much reduced ranges in others. The continued presence of signal crayfish in the River Bachawy and associated ponds and in fish pools adjacent to the main Wye channel at Llyswen is a further threat to the status and range of white-clawed crayfish.”

	In 2024, mass mortalities of White-clawed Crayfish took place in the Irfon at Cilmery and the Ennig above Talgarth, both with Crayfish Plague confirmed.
6.12: Long-term trend; Direction	Howe (2013) states that the “long-term range trend is one of decline. Ignoring introductions, white-clawed crayfish have been recorded from 48 10km squares but since 2001 has been recorded from just 17 10km squares. A further 16 10km have been added in the round between 2019-2024, but this most likely attributed to improved data availability from more survey effort, with some possible recovery of populations at those sites. In addition, there have been marked declines in range on the mid-Wye tributaries with complete losses from some tributaries and much reduced ranges in others (Rogers & Watson, 2003 & 2004).” Rogers & Watson (2017) highlight continuing declines in the River Wye SAC.
7.1: Sufficiency of area and quality of occupied habitat	Occupied habitat area 1393 km2 Occupied habitat quality Only 37% of river bodies have WFD classifications as Good. Howe (2013) stated that a “Wales Surface Area Range of 6160 square km has been calculated using the 48 10km squares with contemporary or historic records within the core area. The measure includes all land within a line drawn to connect these 10km squares snapped to the Welsh border. .” Water quality requirements for White Clawed Crayfish are are assumed to reflect that of Good Ecological Status (GES) is required (WFD classification) (Haddaway et al. 2015). Of 19 river water bodies with WCC present, only 37% are in good status based on 2020-2023 data (NRW

	2024b). Failing WFD elements include phosphate, polycyclic aromatic hydrocarbons, pyrethroids, invertebrates, and fish. WFD Tools are optimised to measure river ecological quality in generic terms and therefore the applicability of these data to WCC distribution data is uncertain. The current distribution of WCC throughout moderate status waterbodies suggests that they can tolerate certain levels of pollution; although the level of tolerance would be affected by both the pressure type driving this classification and the altitude of the water body type (Haddaway et al 2015). WCC are known to be sensitive to siltation, which blocks their gills (Rosewarne et al. 2014) which is not measured in WFD assessments. The key issues of quality relate to: sediment and pollution loads in the rivers and streams; the presence of nearby, uncontrolled populations of non-native signal crayfish; and rates of introduction of Crayfish Plague, which can occur independently to non-native crayfish (as apparently occurred in the Irfon in 2024). Population data in this report is based on distribution data rather than densities. This could be masking the impact of habitat quality since it is likely that WCC will be present in sub optimal habitat but in lower numbers.
7.4: Short-term trend; Direction	Overall, habitat quality is likely to be declining across the Welsh range of WCC, as a consequence of chemical pollution (phosphates in 37% of sites, polcyclic aromatic hydrocarbons in 11% of sites, especially the Usk catchment; pyrethroids in 5% of sites, notably the Wye) and sediment loads in the rivers, and especially the presence of American signal crayfish. There have recently also been outbreaks of Crayfish Plague in the Wye-Irfon catchment, which have arisen through contamination without the expansion of non-native crayfish (no eDNA detected for signal crayfish). However, habitat improvement management has taken place on the Irfon, resulting in the recent release of captive-reared crayfish into the Chwefru. A ban on the use of sheep dip synthetic pyrethroids over

	the last decade appears to have reduced the number of crayfish 'kills'.
8.1: Characterisation of pressures	Pressures: The key pressure comes from the non-native Signal Crayfish (PI01 & PG21). Previously introduced for commercial aquaculture purposes, Signals escaped into the wild and are now widely distributed in the UK. They aggressively out-compete White-clawed Crayfish, carry Crayfish Plague (PG21) which can be lethal to White-clawed Crayfish, and cause damage to the freshwater ecosystem. Chinese Mitten Crab are also increasing their range and can act as carriers for crayfish plague. Heavy siltation as a consequence of soil run-off from agricultural (PA11) and forestry (PB19) practices or heavy poaching by cattle (PA07) can smother the river bed and result in loss of adult and juvenile refugia. Pollution from agriculture (PA13 & PA17) can reduce water and habitat quality. Synthetic pyrethroid sheep dip spills have caused localised extinctions in the past (Wilkins, 1998) but sheep dip practices are now more tightly regulated. Threats: As with Pressures, the key threat comes from the non-native Signal Crayfish (PI01 & PG21) particularly given their close proximity to key White-clawed Crayfish tributaries and their apparent dispersal within the mid-Wye catchment and elsewhere in Wales, such as the Severn catchment.
9.5: List of main conservation measures	Over the last few years, river banks on several major tributaries of the Mid-Wye have been fenced to exclude livestock access to reduce siltation episodes. Whilst this has been primarily for

	fisheries purposes, there has been a focus on important crayfish tributaries and such action will have benefitted crayfish populations. Habitat improvement management has taken place on the Irfon as part of a LIFE-funded project, resulting in the recent release of 5000 captive-reared crayfish into the Chwefru, one of its major tributaries, with wild progeny recorded in 2018, the Cneiddion and more recently the Monnow, with plans to release also into the Afon Cledan. The banning in February 2006 by the Veterinary Medicines Directorate of the use of synthetic pyrethroids (SPs) in sheep dip has reduced the number of crayfish kill incidents and will have improved water quality. An improvement in invertebrates is noted on the Irfon. Currently, there is no signal crayfish control programme in place on the Wye or Severn. Consideration should be given to notify Clyro Brook and the Afon Ennig as part of River Wye (Lower Wye) SSSI and Afon Llynfi SSSI respectively as these important sites currently have no statutory protection. Ideally, these should also be included in the River Wye SAC. After the outbreak of Crayfish Plague in the Wye-Irfon catchment in 2024, monitoring and education promoting biosecurity in the public has followed.
10.1: Future trends and prospects of parameters	Habitat for species Whilst management has improved habitat quality on several waterways, with a recent dedicated LIFE project on the Irfon (for crayfish and other SAC features), and there has been success with crayfish introductions into the Chwefru, the continued presence and spread of signal crayfish and crayfish plague outbreaks within the mid-Wye catchment and elsewhere suggest a very negative future trend. The Wye catchment is also subject to ongoing pollution from agriculture.

11.1: Range	Conclusion on Range reached because:(i) the short-term trend direction in Range surface area is decreasing by 1% per year or less; and (ii) the current Range surface area is 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 decreasing by more than 1% per year; (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 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) it is unknown whethere there is 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 decreasing.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are bad; (ii) the Future prospects for Population are bad; and (iii) the Future prospects for Habitat for the species are bad.
11.5: Overall assessment of Conservation Status	verall assessment of Conservation Status is Unfavourable-bad because two of the conclusions are Unfavourable-bad.
12.1: Population size inside the pSCIs, SCIs and SACs network	Unit = number of map 1x1 km grid cells Best single value = 8 x 1 km squares during the 2019-24 period. These SACs included: Wye Valley and Forest of Dean Bat Sites / Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena (Wales) Mynydd Epynt River Usk

	River Wye Montgomery Canal 17 1km squares were recorded in the 2013-18 assessment. It is unclear whether this represents a true decline or under-recording at those sites in this time period. A 2014-16 assessment of the condition of the population in the Wye SAC (Rogers & Watson, 2017) reported continued losses and considered the population to be in Unfavourable condition. Crayfish were restricted to Nant yr Offeiriad and Sgithwen Brook, with populations now confined to headwaters, and Clyro Brook (which has no statutory protection). None were found in Dulas Brook (Builth Wells), where good numbers had been found in downstream reaches in 2003, nor in the Afon Edw, once the key tributary for crayfish on the Wye. Populations were found to be persisting in the main section of the Irfon (within the Wye SAC) evidenced from the follow-ups of crayfish plague outbreak in 2024. The Afon Ennig, a tributary of the Afon Llynfi with no statutory protection, may support the stongest population left in Wales (Oliver Brown, pers. comm.), however this has undergone a crayfish plague mass mortality. NotRecent introductions to the Afon Chwefru (within the Wye SAC) have taken place as part of a NRW captive rearing/release programme.
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. Following expert review, a Wales-level FRV was derived based on population trend and abundance data specific to Wales, rather than adopting the UK-level value.

	The revised FRV has been set as expert opinion on white clawed crayfish has noted that the range in Wales may not be declining as quickly as in England, though the population size in this range does appear to be declining more dramatically. The latest appraisal shows an increase in records compared to the previous evidence pack, however this includes better recording that could provide a false impression that the range size is increasing.
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. Following expert review, a Wales-level FRV was derived based on distribution and trend evidence specific to Wales, rather than adopting the UK-level value. The revised FRV has been set as expert opinion on white clawed crayfish has noted that the range in Wales may not be declining as quickly as in England, though the population size in this range does appear to be declining more dramatically. The latest appraisal shows an increase in records compared to the previous evidence pack, however this includes better recording that could provide a false impression that the range size is increasing.