European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Supporting documentation for the
conservation status assessment for the species:

S1092 - White-clawed crayfish (*Austropotamobius pallipes*)

WALES

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this species is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- 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; (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species) and/or (iv) the field was only relevant at UK-level (sections 9 Future prospects and 10 Conclusions).
- For technical reasons, the country-level future trends for Range, Population and Habitat for the species are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (Wales information only)**
1.2 Species code	**1092**
1.3 Species scientific name	**Austropotamobius pallipes**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	White-clawed crayfish

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 extrapolation from a limited amount of data
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of 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
	h) other measures	Yes
	A species conservation licence is needed to disurb or take Austropotamobius pallipes	

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

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

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Nightingale, J., Stebbing, P., Sibley, P., Brown, O., Rushbrook, B. & Jones, G. 2017. A review of the use of ark sites and associated conservation measures to secure the long-term survival of White-clawed crayfish Austropotamobius pallipes in the United Kingdom and Ireland. International Zoo Yearbook 51, 1-19.
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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.
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Rogers, D. & Watson, E. 2017. Assessment of the condition of the white-clawed crayfish Austropotamobius pallipes in the River Wye Special Area of Conservation in 2014-16. NRW Evidence Report No. 187. Natural Resources Wales, Bangor.
Rogers, W.D. 2005a. Painscastle: recommendations for the prevention of transfer of crayfish plague. CCW Regional Report. Countryside Council for Wales.
Rogers, W.D. 2005b. Painscastle: results of trapping and recommendations for further management to eradicate signal crayfish. CCW Regional Report. Countryside Council for Wales.
RPS. 2005. Native white-clawed crayfish survey report South Sebastopol, Cwmbran. RPS Chepstow.
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Whitehouse, A.T., Peay, S. & Kindemba, V. 2009. Ark sites for white-clawed crayfish - guidance for the aggregates industry. Buglife - The Invertebrate Conservation Trust.
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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.

5. Range

5.1 Surface area (km²)		
5.2 Short-term trend Period		
5.3 Short-term trend Direction	Decreasing (-)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used		
5.6 Long-term trend Period		
5.7 Long-term trend Direction		
5.8 Long-term trend Magnitude	a) Minimum	b) Maximum
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km²) b) Operator c) Unknown d) Method	
5.11 Change and reason for change in surface area of range	Genuine change The change is mainly due to:	Genuine change
5.12 Additional information		

6. Population

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6.1 Year or period	2010-2016	
6.2 Population size (in reporting unit)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	47
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 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	2010-2017	
6.8 Short-term trend Direction	Decreasing (-)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
6.11 Long-term trend Period	1980-2017	
6.12 Long-term trend Direction	Decreasing (-)	
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.14 Long-term trend Method used	Based mainly on extrapolation from a limited amount of data	
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	
	b) Operator	
	c) Unknown	
	d) Method	
6.16 Change and reason for change in population size	Genuine change	
	The change is mainly due to:	Genuine change
6.17 Additional information		

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (to maintain the species at FCS)?	No
	b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?	No

7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on extrapolation from a limited amount of data
7.3 Short-term trend Period	2010-2017
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	

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Intensive grazing or overgrazing by livestock (A09)	M
Other soil management practices in agriculture (A16)	H
Application of synthetic (mineral) fertilisers on agricultural land (A20)	M
Agricultural activities generating point source pollution to surface or ground waters (A25)	M
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	M
Forestry activities generating pollution to surface or ground waters (B23)	M
Introduction and spread of species (including alien species and GMOs) in freshwater aquaculture (G24)	M
Invasive alien species of Union concern (I01)	H
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	H

Threat	Ranking
Intensive grazing or overgrazing by livestock (A09)	M
Other soil management practices in agriculture (A16)	H
Application of synthetic (mineral) fertilisers on agricultural land (A20)	M
Agricultural activities generating point source pollution to surface or ground waters (A25)	M
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	M
Forestry activities generating pollution to surface or ground waters (B23)	M
Introduction and spread of species (including alien species and GMOs) in freshwater aquaculture (G24)	M
Invasive alien species of Union concern (I01)	H

Interspecific relations (competition, predation, parasitism, pathogens) (L06)	H

8.2 Sources of information

8.3 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 Natura 2000
9.4 Response to the measures		Medium-term results (within the next two reporting periods, 2019-2030)

9.5 List of main conservation measures

- Adapt soil management practices in agriculture (CA08)
- Reduce/eliminate point pollution to surface or ground waters from agricultural activities (CA10)
- Reduce diffuse pollution to surface or ground waters from agricultural activities (CA11)
- Reduce soil pollution from forestry activities (CB13)
- Early detection and rapid eradication of invasive alien species of Union concern (CI01)
- Management, control or eradication of established invasive alien species of Union concern (CI02)
- Management, control or eradication of other invasive alien species (CI03)
- Reinforce populations of species from the directives (CS01)
- Reintroduce species from the directives (CS02)
- Improvement of habitat of species from the directives (CS03)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters	a) Range b) Population c) Habitat of the species

10.2 Additional information

11. Conclusions

11.1. Range

11.2. Population

11.3. Habitat for the species

11.4. Future prospects

11.5 Overall assessment of Conservation Status

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11.6 Overall trend in Conservation Status	
11.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status No change The change is mainly due to: b) Overall trend in conservation status No change The change is mainly due to:
11.8 Additional information	

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	17
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	Decreasing (-)	
12.5 Short-term trend of population size within the network Method used	Based mainly on extrapolation from a limited amount of data	
12.6 Additional information		

13. Complementary information

13.1 Justification of % thresholds for trends
13.2 Trans-boundary assessment
13.3 Other relevant Information

Distribution Map

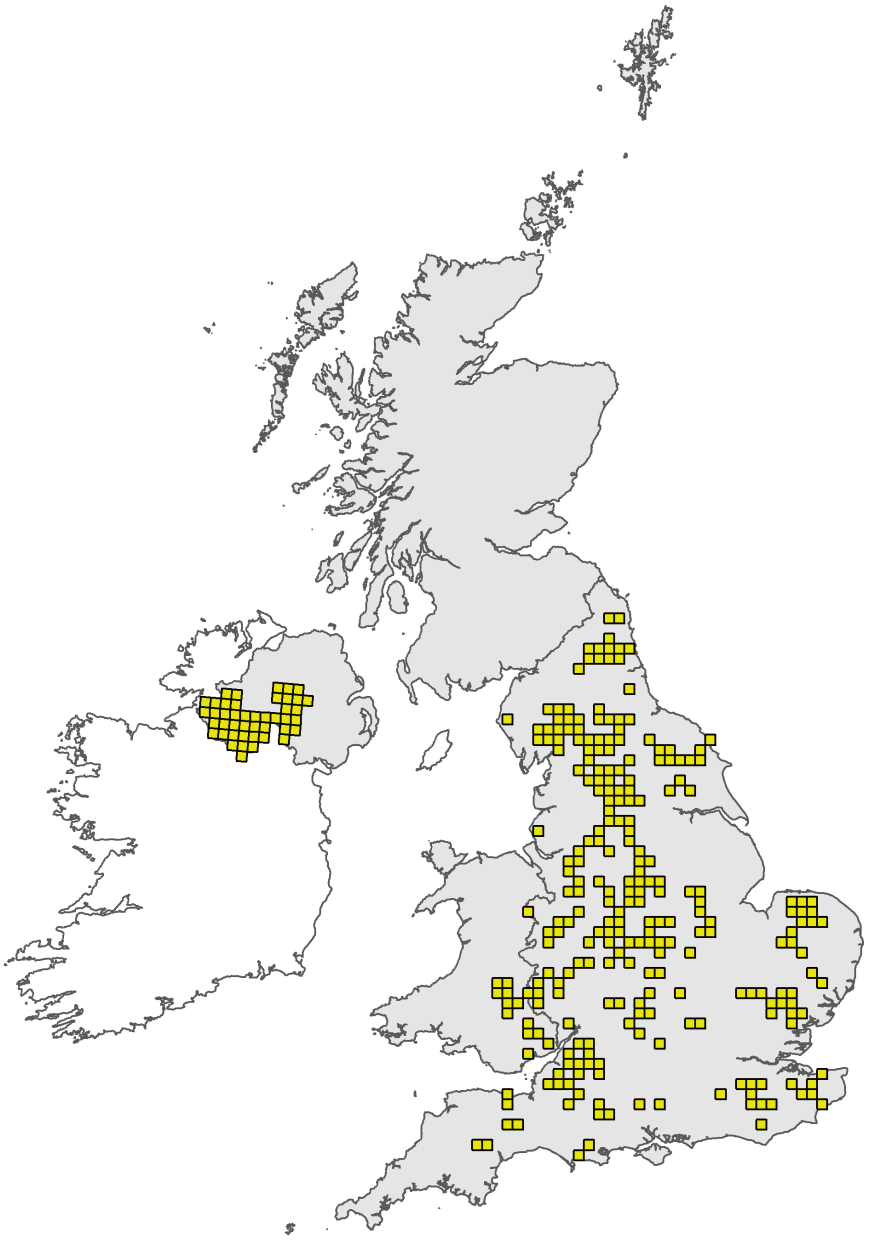

Figure 1: UK distribution map for S1092 - White-clawed crayfish (*Austropotamobius pallipes*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

Range Map

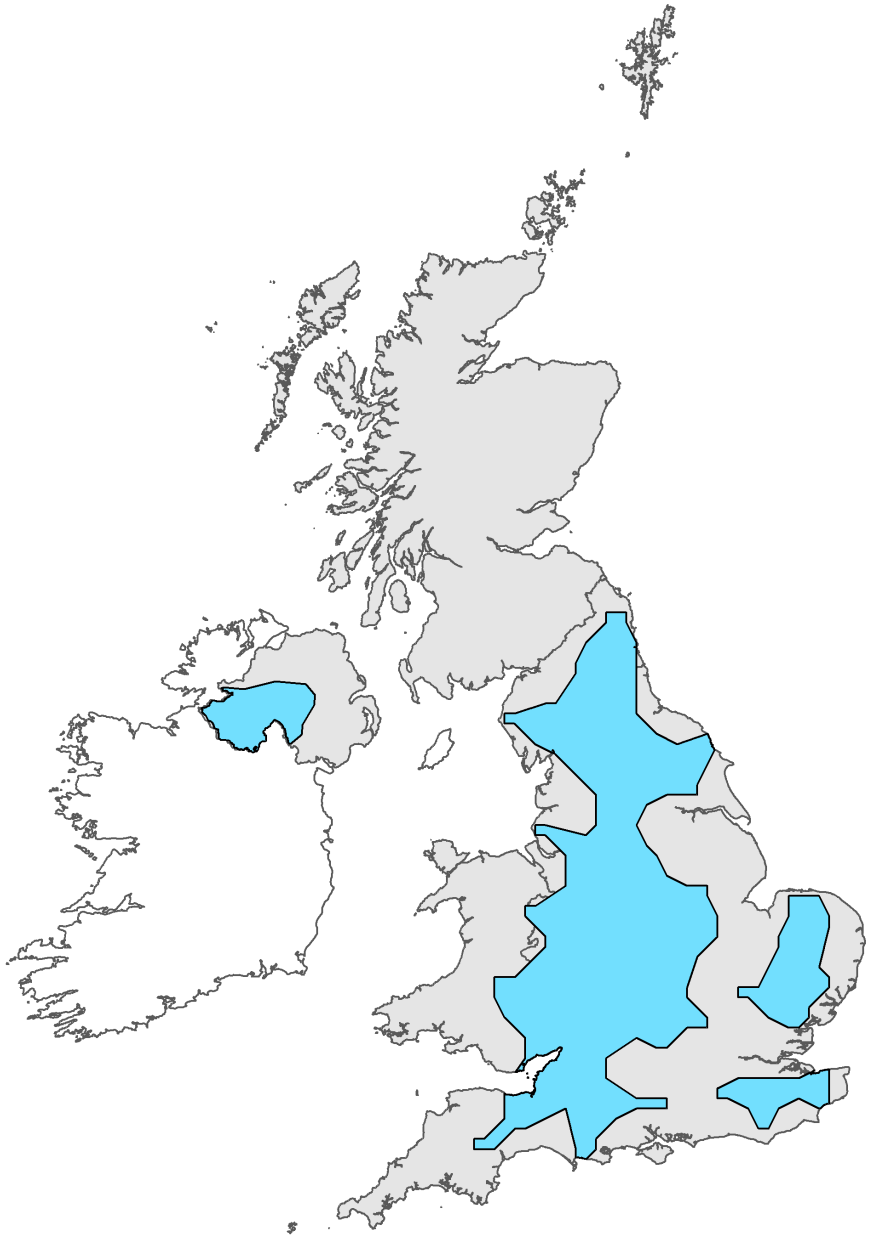

Figure 2: UK range map for S1092 - White-clawed crayfish (*Austropotamobius pallipes*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 25km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Species name: Austropotamobius pallipes (1092)

Field label	Note
3.1 Is the species take in the wild/ exploited	There has been historic exploitation in Wales but nothing in recent decades.

Species name: Austropotamobius pallipes (1092) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	See 5.11
5.11 Change and reason for change in surface area of range	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 rivers and streams.
6.2 Population size	During this period, there are records from 14 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.
6.8 Short term trend; Direction	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.'
6.9 Short term trend; Magnitude	Given the marked declines noted it is likely to be greater than 1% per year
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. 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	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 and ignoring introduced populations in Pembrokeshire and the Cardiff area. The measure includes all land within a line drawn to connect these 10km squares snapped to the Welsh border. The calculation of range is obscured by a lack of up-to-date information and past introductions of white-clawed crayfish outside its 'natural' range.' The key issues of quality relate to sediment and pollution loads in the rivers and streams and the presence of nearby, uncontrolled populations of non-native signal crayfish.
7.4 Short term trend; Direction	Overall, habitat quality is likely to be declining in the Wye SAC as a consequence of sediment and pollution loads in the rivers and streams and the presence of nearby, uncontrolled populations of signal crayfish. However, habitat improvement management has taken place on the Irfon as part of a LIFE-funded project, resulting in the recent release of captive-reared crayfish into the Chwefri. A ban on the use of sheep dip synthetic pyrethroids over the last decade appears to have reduced the number of crayfish 'kills'.
7.9 Additional information	As part of the Irfon LIFE project, a captive-rearing programme at NRW's Cynrig hatchery from 2012-2014 released 2700 crayfish into the Afon Chwefri (a tributary of the Irfon), with wild progeny recorded in 2018. Over 5000 crayfish have now been released into Ark sites to date on the Chwefri and the Cneiddion. The final report (Wye & Usk Foundation, 2013) states that management work (e.g. fencing to prevent stock access and siltation) has improved 14km of fluvial habitat for crayfish, with an extra 10km of occupied habitat as a consequence of introduced populations.
8.1 Characterisation of pressures/ threats	Pressures: The key pressure comes from the non-native signal crayfish (I01 & G24). 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 (L06) which can be lethal to White-clawed Crayfish, and cause damage to the freshwater ecosystem. Heavy siltation as a consequence of soil run-off from agricultural (A16) and forestry (B23) practices or heavy poaching by cattle (A09) can smother the river bed and result in loss of adult and juvenile refugia. Pollution from agriculture (A20, A25 & A26) 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 (I01 & G24) particularly given their close proximity to key White-clawed Crayfish tributaries and their apparent dispersal within the mid-Wye catchment.
10.1 Future prospects of parameters	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 Chwefri, the continued presence and spread of signals with the mid-Wye catchment and elsewhere suggest a very negative future trend.
12.1 Population size inside the pSCIs, SCIs and SACs network	Best value = 17 x 1 km squares in 4 hectads during the 2010-17 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 was 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. 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.). Recently introduced into the Afon Chwefri as part of a NRW captive rearing/release programme.