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Assessment of the condition of the white-clawed crayfish *Austropotamobius pallipes* in the River Wye Special Area of Conservation in 2014-2016

David Rogers & Elizabeth Watson

NRW Evidence Report No. 187

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1. Crynodeb Gweithredol

Rhwng mis Hydref 2014 a mis Medi 2016, cynhaliwyd gwaith i ddarparu'r data sydd ei angen i asesu a oedd Ardaloedd Cadwraeth Arbennig (ACA) Afon Gwy mewn cyflwr ffafriol ar gyfer y cimwch afon craffanc wen *Austropotamobius pallipes*. Arolygwyd Afon Edw, Nant yr Offeiriad, Nant Sgithwen, Nant Dulas (Builth Road), Nant Cleiro ac Afon Llynfi i asesu cyflwr poblogaethau a chynefin cimychiaid afon. Mae dwy afon bellach (Afon Duhonw ac Afon Irfon) yn cwblhau'r casgliad llawn o isafonydd ACA Afon Gwy. Fodd bynnag, ni chanfuwyd unrhyw gimychiaid afon yn y ddwy afon hyn yn 2003 ac nid oes unrhyw gofnodion dilynol, felly ni chafodd y rhain eu harolygu yn ystod yr arolwg cyfredol a thybiwyd nad oes unrhyw gimychiaid afon craffanc wen yn bresennol yn y ddwy afon hyn ar gyfer yr asesiad hwn.

Gwnaeth samplu ddilyn y fethodoleg a ddatblygwyd yn ystod rhaglen fonitro 2003 (Rogers a Watson 2004) ac roedd yn cynnwys cyfuniad o chwilio â llaw a rhwydo. Yn ystod yr arolwg, canfuwyd cimychiaid afon craffanc wen mewn ond tri o wyth isafon ACA Afon Gwy: Nant yr Offeiriad, Nant Sgithwen a Nant Cleiro (er nad yw'r olaf wedi'i chynnwys fel rhan o'r Ardaloedd Cadwraeth Arbennig (ACA), mae wedi'i chynnwys o fewn yr asesiad o gyflwr). Er bod niferoedd cimychiaid afon yn gymharol gadarn yn Nant yr Offeiriad a Nant Sgithwen, mae poblogaethau bellach wedi cael eu cyfyngu i'r rhagnentydd. Yn 2016, mae Nant Cleiro o hyd yn cefnogi poblogaeth lewyrchus, fel yr oedd yn 2003, ac mae hyn bellach yn ymddangos i fod yn un o boblogaethau mwyaf pwysig Afon Gwy gan nad oes lleihad mewn niferoedd na lledaeniad fel sydd wedi digwydd yn Nant Sgithwen a Nant yr Offeiriad. Mewn gwirionedd, mae niferoedd a lledaeniad wedi cynyddu yn Nant Cleiro. Mae'r diffyg cimychiaid afon craffanc wen yn Afon Edw, yn dilyn marwolaethau yn 2006, yn peri pryder gan fod y ddyfrffordd hon wedi bod yn bwysig iawn ar gyfer y rhywogaeth hon yn y gorffennol diweddar. Hefyd, roedd yn ymddangos fel nad oedd unrhyw gimychiaid afon yn Nant Dulas (Builth Road) yn 2015 er gwaethaf y ffaith bod y nant hon yn cefnogi poblogaeth dda yn ei rhannau isaf yn 2003.

Gan ddefnyddio'r amcanion cadwraeth dros dro fel rhan o'r asesiad o Statws Cadwraeth Ffaffriol ar gyfer nodweddion Natura 2000, mae arolwg 2014–2016 yn dangos **nad yw ACA Afon Gwy yn cyflawni Statws Cadwraeth Ffaffriol**. Er gwaethaf cynefin addas helaeth (Nodwedd 3) a diffyg clefyd ac absenoldeb rhywogaethau estron (Nodwedd 4), nid yw dwysedd y cimychiaid afon yn ddigon uchel (Nodwedd 1) ac nid yw'r dosbarthiad drwy gydol yr unedau monitro yn ddigonol (Nodwedd 2) ar gyfer ACA Afon Gwy i gyflawni Statws Ffaffriol.

Yn 2013-14, cyflwynodd Uned Magu Pysgod Cynrig Cyfoeth Naturiol Cymru tua 3,000 o gimychiaid afon i Afon Chwefru, isafon o Afon Irfon. Fel rhan o'r gwaith cyfredol, roedd arolwg ychwanegol o hyd 1km mewn dwy rhan 500 medr o hyd yn y safleoedd cyflwyno wedi'i gynnwys, ond ni chanfuwyd unrhyw gimychiaid afon.

Mae argymhellion yn cynnwys adolygiad o'r mesurau amddiffyn ar gyfer poblogaethau cimychiaid afon craffanc wen sy'n goroesi a gwaith arolwg pellach i gadarnhau presenoldeb/absenoldeb cimychiaid afon brodorol ac estron ym mhob rhan o Afon Gwy a'i hisafonydd. **Oherwydd pwysigrwydd Nant Cleiro ar gyfer cimychiaid afon, argymhellir bod yr isafon hon yn cael ei hysbysu fel rhan o SoDdGA Afon Gwy ac ACA Afon Gwy.**

[Mae'r adroddiad hwn yn darparu cyfuniad o ganlyniadau arolygon cimwch afon 2014, 2015 a 2016 ac yn disodli adroddiadau arolwg 2014 a 2015 (Rogers a Watson, 2015 a 2016)].

2. Executive Summary

Between October 2014 and September 2016 work was undertaken to provide the data required to assess whether the River Wye SAC was in favourable condition for the white-clawed crayfish *Austropotamobius pallipes*. The Afon Edw, Nant yr Offeiriad, Sgithwen Brook, Dulas Brook (Builth Road), Clyro Brook and Afon Llynfi were surveyed to assess the condition of both crayfish populations and crayfish habitat. A further two rivers (Afon Duhonw and Afon Irfon) make up the full complement of the Wye SAC tributaries but no crayfish were found in these two rivers in 2003 and there are no subsequent records, so these were not surveyed during the current survey and it is assumed that no white-clawed crayfish are present in these two rivers for this assessment.

Sampling followed the methodology developed during the 2003 monitoring programme (Rogers & Watson 2004) and included a combination of manual searching and trapping. During the survey, white-clawed crayfish were only found in three of the eight tributaries of the River Wye SAC: Nant yr Offeiriad, Sgithwen Brook and Clyro Brook (although the latter is not included as part of the SAC, it is included within the condition assessment). Whilst crayfish numbers were relatively robust in Nant yr Offeiriad and Sgithwen Brook, populations have now become confined to the headwaters. In 2016, Clyro Brook still supports a thriving population as it did in 2003, and this now appears to be one of the most important populations in the Wye because there is no diminution in numbers or extent as in the Sgithwen and Offeiriad. In fact, both numbers and extent have increased in the Clyro. The lack of white-clawed crayfish in the Afon Edw, following a mortality in 2006, is worrying given that this has been a very important waterway for this species in the recent past. Also, there appeared to be no crayfish left in Dulas Brook (Builth Road) in 2015 despite supporting a good population in downstream reaches in 2003.

Using the provisional conservation objectives as part of the assessment of Favourable Conservation Status for Natura 2000 features, the 2014 - 2016 survey shows the River Wye SAC does **not achieve Favourable Conservation Status**. Despite abundant suitable habitat (Attribute 3) and a lack of disease and the absence of aliens (Attribute 4), the density of crayfish throughout is not high enough (Attribute 1) and the distribution throughout the monitoring units is not sufficient (Attribute 2) for the River Wye SAC to achieve Favourable Status.

In 2013-14, the Natural Resources Wales' Cynrig Fish Culture Unit implanted approximately 3000 crayfish into Afon Chwefru, a tributary of the Irfon. As part of the present work, an additional survey of a 1km stretch in two 500 metre sections at the introduction sites was included but no crayfish were found.

Recommendations include a review of protection for surviving white-clawed crayfish populations and further survey work to verify the presence/absence of native and alien crayfish throughout the main River Wye and all tributaries and sub-tributaries. **Given the importance of Clyro Brook for crayfish, it is recommended that this tributary is notified as part of the Wye SSSI and Wye SAC.**

[This report provides an amalgamation of the 2014, 2015 and 2016 crayfish survey results, and supersedes the 2014 and 2015 survey reports (Rogers & Watson, 2015 and 2016)].

3. Introduction

3.1. Background information

The white-clawed crayfish *Austropotamobius pallipes* is a feature of the River Wye Special Area of Conservation (SAC). The SAC designation aims to ensure that populations within selected sites are in Favourable Condition and that Favourable Conservation Status (FCS) is maintained across its range. Favourable Condition is defined by a Conservation Objective that is assessed by monitoring appropriate attributes against agreed thresholds. To this end, a standardised monitoring protocol for the white-clawed crayfish was developed as part of the 'LIFE in UK Rivers' project (Peay, 2002).

Surveys for crayfish within the mid-Wye catchment in 1995 and 2002 helped to determine its status and distribution, and identified the most important tributaries on the River Wye (Rogers & Holdich, 1995; Rogers & Watson, 2003). These are the Afon Duhonw, Afon Edw, Afon Irfon, Afon Llynfi, Clyro Brook, Dulas Brook (Built Road), Nant yr Offeiriad and Sgithwen Brook. The surveys also enabled the setting of provisional thresholds for condition assessment within these key tributaries. Using a modified version of the standardised UK monitoring protocol, a condition assessment of the population in the Wye SAC was undertaken in 2003 (Rogers & Watson, 2004). During the course of the monitoring programme, the protocol was further modified to include trapping as well as manual searching to improve the volume of data.

Using five attributes to determine favourable condition (see Table 1), the 2003 assessment concluded that the white-clawed crayfish population was in Unfavourable Condition, although it was noted that the only failing threshold was the average number of crayfish recorded in each habitat patch. Although the authors suggested that the "lower limit of [greater than one] is set too high and should be revised" (Rogers & Watson, 2004), the Countryside Council for Wales and Natural Resources Wales have continued to use this threshold in assessing favourable condition. At that time, white-clawed crayfish were found in 6 of the 8 monitoring units, being absent from the Afon Duhonw and the Afon Irfon. Whilst porcelain disease was recorded at low incidence, no signal crayfish were detected in any of the monitoring units. Suitable habitat was recorded in 79% of the sampled habitat patches and all monitoring units had a GQA Biological Class of A or B.

Since 2003, signal crayfish appear to have spread within the Bachawy, a tributary of the mid-Wye, despite attempts to control numbers, and may now be in the main Wye river channel (Chris Dyson, pers. comm.). The dispersal of signals within the mid-Wye catchment will have a serious impact upon white-clawed crayfish, by both direct competition and the spread of crayfish plague. Over the last three years, a NRW captive-rearing programme has released 3000 juvenile white-clawed crayfish into the Afon Chwefru (a tributary of the Afon Irfon).

3.2. Objectives

The objective of the 2014-2016 survey work was to undertake monitoring of the white-clawed crayfish and its habitat within the River Wye SAC in order to report on its condition as part of the assessment of Favourable Conservation Status for Natura 2000 features (see Table 1 below).

Table 1: Conservation Objective for the white-clawed crayfish in the River Wye SAC in 2003 and 2014-16.

Attribute No.	Conservation objective (when the feature is in favourable condition)	To maintain the white-clawed crayfish <i>Austropotamobius pallipes</i> in the River Wye SAC in favourable condition where:
1	Lower limit	the average number of crayfish recorded in each habitat patch is: greater than 1
2	Lower limit	where: crayfish are present in 5 of the 8 monitoring units
3	Lower limit	and where: there is an absence of alien crayfish and plague, and a <10% incidence of porcelain disease
4	Habitat quality Lower limit	Suitable habitat should be present in 60% of the sampled habitat patches
5	Lower limit	and where: water quality is at GQA Biological Class A or B in 5 of the 8 monitoring units
Definition of suitable white-clawed crayfish habitat		River beds with cobble and boulders larger than 15cm along the longest axis, and with little or no siltation.

4. Methods

Due to financial constraints, the survey work was undertaken over a three year period prioritizing rivers that had more recent white-clawed crayfish records, especially those with the most abundant populations.

In the 2003 survey, crayfish were found in the Afon Edw, Nant yr Offeiriad, Sgithwen Brook, Dulas Brook (Builth Road) Clyro Brook and Afon Llynfi and these were considered to be the most important **monitoring units**. Note that Clyro Brook has no statutory protection in terms of SSSI and SAC but was included as one of the monitoring units because of the presence of crayfish.

No crayfish were found in the Afon Irfon or Duhonw in 2003 (and there are no subsequent records) so these were not surveyed in 2014-2016 and it is assumed that no white-clawed crayfish are present in these two rivers for this assessment. However, a section up and downstream of the reintroduction points on the Afon Chwefru was included in the present survey to ascertain whether the 3000 juveniles introduced into Afon Chwefru had established a detectable population (see additional survey section 5.7) although these results are not included in the overall Conservation Status Assessment.

Monitoring of current condition followed the Common Standards approach adopted during the 2003 assessment, including the use of traps as well as manual searches.

A total of 16 x 500m **stretches** were selected randomly within each monitoring unit (see Appendix A to F). Starting from the downstream end of the stretch, a 100m sampling site was selected within each stretch which contained five suitable **habitat patches** measuring from 1 to 20m². Within each habitat patch, 10 potential **refuges** (large cobble or boulder >15cm along longest axis) were searched and the number of crayfish recorded.

A crayfish habitat recording sheet was completed for each site and includes basic survey details, including conditions at the time of the survey:

- Habitat details in each habitat patch.
- An overall appraisal of habitat for crayfish and ease of survey in the site.
- Crayfish record, the details of the catch.

A photograph was taken at each site and incorporated into the habitat recording sheet and where crayfish were found, details were recorded on a crayfish species survey form. Following examination, crayfish were returned to the water in the position from whence they came.

Special attention was paid to Health and Safety procedures for fieldwork in the water and to the use of appropriate precautions to prevent the spread of crayfish plague.

4.1. Methods of Analysis

4.1.1. Crayfish catch

The crayfish catch was analysed as follows:

- Geographical distribution of crayfish within the monitoring unit showing sites and abundance on a scale of distance upstream from the confluence of the River Wye.
- Crayfish abundance per site as number of crayfish caught at each sampling site, relative abundance at each site and average abundance per monitoring unit. Classification was graded using the 5-point scale shown in Table 2.

Table 2: Average counts of crayfish and classification of population abundance (after Peay, 2002).

Average number of crayfish per site	Population abundance
>5	Very high
>=3, <=5	High
>=1, <3	Moderate
>0, <1	Low
0	Absent/undetected

- Size distribution of population.
- Health of population, % of population with thelohianiasis (porcelain disease).
- % of adult females showing signs of breeding.

4.1.2. Habitat

Each sampling site was evaluated for crayfish habitat according to abundance of habitat as shown below.

- Evaluation of crayfish habitat for whole site (scored separately for margins, mid-channel and banks):

0	Not evident or only minimal potential for refuges
1	Present but localised or sparse, in less than a third of site
2	Frequent, covering more than a third of site, or frequent, but small patches
3	Abundant. Potential refuge habitat continuous, or semi-continuous, along more than two-thirds sample site

An evaluation of crayfish habitat score was calculated for each tributary surveyed and also for the River Wye SAC to assess the presence of suitable crayfish habitat.

4.1.3. Water quality

Water quality data was not collected during this survey.

5. Results

The following sections of monitoring units (or tributaries) were surveyed in the years shown- National Grid Reference for down and upstream limits are shown in brackets.

2014 & 2015 - Afon Edw (SO077470 – SO137579)

2014 - Nant yr Offeiriad (SO096431 – SO012439)

2014 & 2015 - Sgithwen Brook (SO113415 – SO045391)

2015 - Dulas Brook (Builth Road) (SO020530 – SO063572)

2016 - Clyro Brook (SO232454 – SO192454)

2016 - Afon Llynfi (SO179388 – SO143230)

2016 – Afon Chwefru (SN999527 – SN988539)

(Afon Irfon and Duhonw were not surveyed)

5.1. Afon Edw

5.1.1. Abundance

The Afon Edw is approximately 18 km in length and was divided into thirty-six 500m stretches. Sixteen of these were selected randomly and were to be sampled using the standard method and trapping. No crayfish were caught during survey work in 2014 and 2015.

Table 3: Classification of population abundance – Afon Edw.

COMBINED: STANDARD AND TRAPPING				
Site	Distance from confluence (km)	No of crayfish per site	Average abundance per patch	Classification of population abundance
1	0	0	0	Absent/undetected
2	1	0	0	Absent/undetected
3	2	0	0	Absent/undetected
4	2.5	0	0	Absent/undetected
5	3	0	0	Absent/undetected
6	4	0	0	Absent/undetected
7	4.5	0	0	Absent/undetected
8	6	0	0	Absent/undetected
9	6.5	0	0	Absent/undetected
10	8	0	0	Absent/undetected
11	10	0	0	Absent/undetected
12	10.5	0	0	Absent/undetected
13	11	0	0	Absent/undetected
14	14	0	0	Absent/undetected
15	16.5	0	0	Absent/undetected
16	17	0	0	Absent/undetected
Total		0		
		Classification for monitoring unit		ABSENT/UNDETECTED

5.1.2. Habitat

Table 4: Summary of evaluation of crayfish habitats - Afon Edw. See Section 4.1.2 for explanation of values.

Site	In margin	In mid channel	In banks	
Edw				
1	3	3	3	
2	3	3	3	
3	3	3	3	
4	3	3	3	
5	3	3	3	
6	3	3	3	
7	3	3	3	
8	3	3	3	
9	3	3	3	
10	3	3	3	
11	2	2	2	
12	2	2	2	
13	2	2	2	
14	3	3	3	
15	3	3	3	
16	3	3	3	
Total	45	45	45	
	Total for Afon Edw monitoring unit			94%

5.2. Nant yr Offeiriad

5.2.1. Abundance

Nant yr Offeiriad is approximately 9.5 km in length and was divided into nineteen 500m stretches. Sixteen of these were randomly selected and sampled using the standard method and trapping. There was a marked absence downstream but a total

of 122 crayfish were caught in the six most upstream sections of Nant yr Offeiriad in 2014. Raw data can be found in Appendix 1.

Table 5: Classification of population abundance – Nant yr Offeiriad.

COMBINED STANDARD AND TRAPPING				
Site	Distance from confluence (km)	No of crayfish per site	Average abundance per patch	Classification of population abundance
1	0	0	0	Absent/undetected
2	0.5	0	0	Absent/undetected
3	1	0	0	Absent/undetected
4	1.5	0	0	Absent/undetected
5	2	0	0	Absent/undetected
6	2.5	0	0	Absent/undetected
7	3	0	0	Absent/undetected
8	3.5	0	0	Absent/undetected
9	4	0	0	Absent/undetected
10	4.5	0	0	Absent/undetected
11	5.5	8	1.6	Moderate
12	6.5	32	6.4	Very high
13	7	48	9.6	Very high
14	7.5	14	2.8	Moderate
15	8	12	2.4	Moderate
16	8.5	8	1.6	Moderate
Total		122		
		Classification for monitoring unit		MODERATE

5.2.2. Analysis of catch in Nant yr Offeiriad

A total of 122 crayfish (45 females and 77 males) were caught on Nant yr Offeiriad. Carapace lengths ranged between 17 and 47 mm. Figure 1 illustrates carapace length frequency.

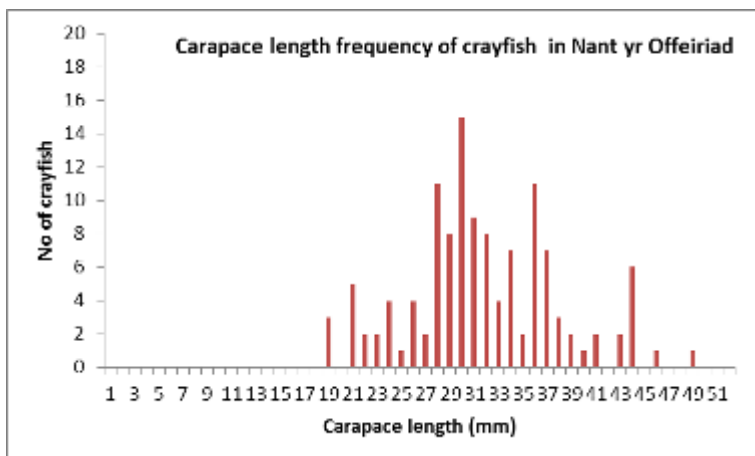


Figure 1: Summary of carapace length frequency of crayfish caught on Nant yr Offeiriad.

Table 6 shows analysis of other information gathered on examination of crayfish caught. Individual crayfish details can be found in Appendix 1.

Table 6: Other information regarding crayfish population on Nant yr Offeiriad.

Percentage of crayfish affected	
Thelohania	8 (7%)
Damage	18 (15%)
Indication of females breeding (with glair)	39 (87%)

5.2.3. Habitat

Table 7. Summary of evaluation of crayfish habitats - Nant yr Offeiriad. See Section 4.1.2 for explanation of values.

Site	In margin	In mid channel	In banks	
Nant yr Offeiriad				
1	3	3	3	
2	3	2	1	
3	2	2	1	
4	3	3	0	
5	3	3	1	
6	2	3	2	
7	3	3	1	
8	3	3	2	
9	2	3	2	
10	3	3	3	
11	3	3	3	
12	3	3	2	
13	3	3	3	
14	2	3	3	
15	2	2	2	
16	2	2	2	
Total	42	44	31	
Total for Nant yr Offeiriad Monitoring Unit				81%

5.3. Sgithwen Brook

5.3.1. Abundance

Sgithwen Brook is approximately 8 km in length and was divided into sixteen 500m stretches.

Sites 9 – 16 were surveyed in 2014 survey and Sites 1 – 8 in 2015. Crayfish were found in most of the upstream sites as in the 2003 survey, with Site 14 having the highest abundance. No crayfish were found in the most downstream sites (Sites 1 – 5) or at the most upstream site (Site 16) where the land use changes in character to conifer forest, despite the dense population immediately downstream.

A total of 120 crayfish were caught on Sgithwen Brook. Raw data can be found in Appendix 1.

Table 8: Classification of population abundance in Sgithwen Brook.

COMBINED STANDARD AND TRAPPING				
Site	Distance from confluence (km)	No of crayfish per site	Average abundance per patch	Classification of population abundance
1	0	0	0	Absent/undetected
2	0.5	0	0	Absent/undetected
3	1	0	0	Absent/undetected
4	1.5	0	0	Absent/undetected
5	2	0	0	Absent/undetected
6	2.5	2	0.4	Low
7	3	13	2.6	Moderate
8	3.5	7	1.4	Moderate
9	4	7	1.4	Moderate
10	4.5	4	0.8	Low
11	5	8	1.6	Moderate
12	5.5	2	0.4	Low
13	6	4	0.8	Low
14	6.5	54	10.8	Very high
15	7	19	3.8	High
16	7.5	0	0	Absent/undetected
Total		120		
		Classification		MODERATE

5.3.2. Analysis of catch in Sgithwen Brook

A total of 120 crayfish (55 females and 65 males) were caught on Sgithwen Brook. Carapace lengths ranged between 16 and 42 mm. Figure 2 illustrates carapace length frequency.

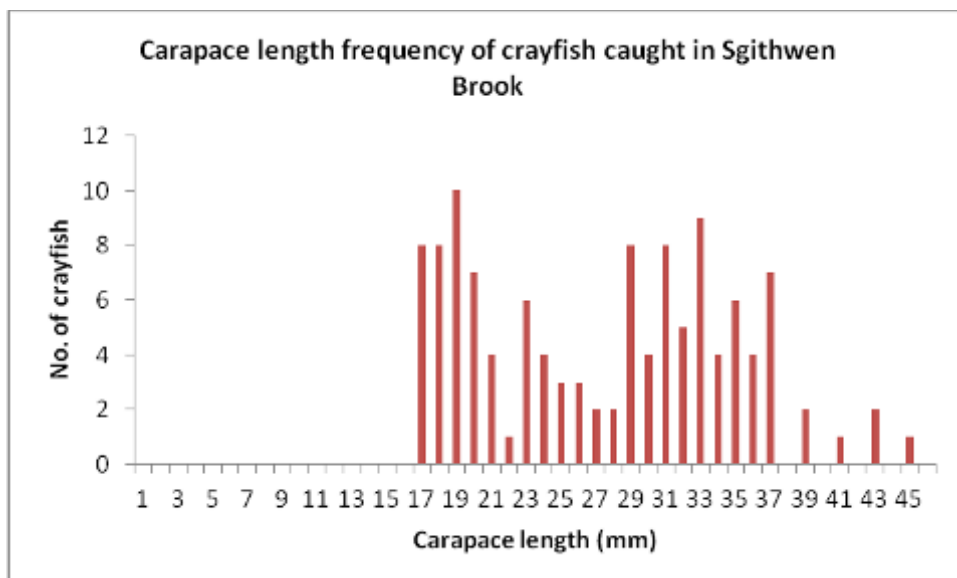


Figure 2: Summary of carapace length frequency of crayfish caught on Sgithwen Brook.

Table 9 shows analysis of other information gathered on examination of crayfish caught. Individual crayfish details can be found in Appendix 1.

Table 9: Other information regarding crayfish population on Sgithwen Brook.

Percentage of crayfish affected	
Thelohania	6 (5%)
Damage	14(12%)
Indication of females breeding (with glair)	29 (69%)

5.3.3. Habitat

Table 10: Summary of evaluation of crayfish habitats - Sgithwen Brook. See Section 4.1.2 for explanation of values.

Site	In margin	In mid channel	In banks	
Sgithwen Brook				
1	3	3	3	
2	3	3	3	
3	3	3	3	
4	3	3	3	
5	3	3	3	
6	3	3	3	
7	3	3	3	
8	3	3	3	
9	3	3	1	
10	3	3	3	
11	3	3	2	
12	3	3	1	
13	3	3	2	
14	3	3	3	
15	3	3	2	
16	3	3	1	
Total	48	48	39	
Total for Sgithwen Brook Monitoring unit				94%

5.4. Dulas Brook (Builth Road)

5.4.1. Abundance

The Dulas Brook (Builth Road) is approximately 6.5 km in length and was divided into thirteen 500m stretches. The two most upstream sites (Sites 12 and 13) were dry and therefore unsuitable for survey. No crayfish were found in any sites during the survey in 2015.

Table 11: Classification of population abundance – Dulas Brook (Builth Road).

COMBINED: STANDARD AND TRAPPING				
Site	Distance from confluence (km)	No of crayfish per site	Average abundance per patch	Classification of population abundance
1	0	0	0	Absent/undetected
2	0.5	0	0	Absent/undetected
3	1	0	0	Absent/undetected
4	1.5	0	0	Absent/undetected
5	2	0	0	Absent/undetected
6	2.5	0	0	Absent/undetected
7	3	0	0	Absent/undetected

8	3.5	0	0	Absent/undetected
9	4	0	0	Absent/undetected
10	4.5	0	0	Absent/undetected
11	5	0	0	Absent/undetected
12	5.5	0	0	Absent/undetected
13	6	0	0	Absent/undetected
Total		0		
		Classification for monitoring unit		ABSENT/UNDETECTED

5.4.2. Habitat

Table 12: Summary of evaluation of crayfish habitats – Dulas Brook (Builth Road). See Section 4.1.2 for explanation of values.

Site	In margin	In mid channel	In banks	
Dulas Brook (Builth Road)				
1	3	3	3	
2	3	3	3	
3	3	3	3	
4	3	3	3	
5	3	3	3	
6	3	3	3	
7	3	3	3	
8	3	3	3	
9	2	2	1	
10	2	2	2	
11	1	1	0	
12	0	0	0	
13	0	0	0	
Total	29	29	27	
Total for Dulas Brook (Builth Road) monitoring unit				73%

5.5. Clyro Brook

5.5.1. Abundance

Clyro Brook is approximately 6.5 km in length and was divided into thirteen 500m stretches. Each stretch was sampled using the standard method and trapping. A total of 58 crayfish were caught in the middle section of Clyro Brook in 2016. Raw data can be found in Appendix E.

Table 13: Classification of population abundance – Clyro Brook.

COMBINED STANDARD AND TRAPPING				
Site	Distance from confluence (km)	No of crayfish per site	Average abundance per patch	Classification of population abundance
1	0	0	0	Absent/undetected
2	0.5	0	0	Absent/undetected
3	1	0	0	Absent/undetected
4	1.5	0	0	Absent/undetected
5	2	0	0	Absent/undetected
6	2.5	1	0.2	LOW
7	3	38	7.6	VERY HIGH
8	3.5	16	3.2	HIGH

9	4	3	0.6	LOW
10	4.5	0	0	Absent/undetected
11	5	8	0	Absent/undetected
12	5.5	0	0	Absent/undetected
13	6	0	0	Absent/undetected
Total		58		
		Classification for monitoring unit		MODERATE

5.5.2. Analysis of catch in Clyro Brook

A total of 58 crayfish (22 females, 25 males and 11 that were too small to be sure of their sex) were caught on Clyro Brook. Carapace lengths ranged between 11 and 41 mm. The figure below illustrates carapace length frequency.

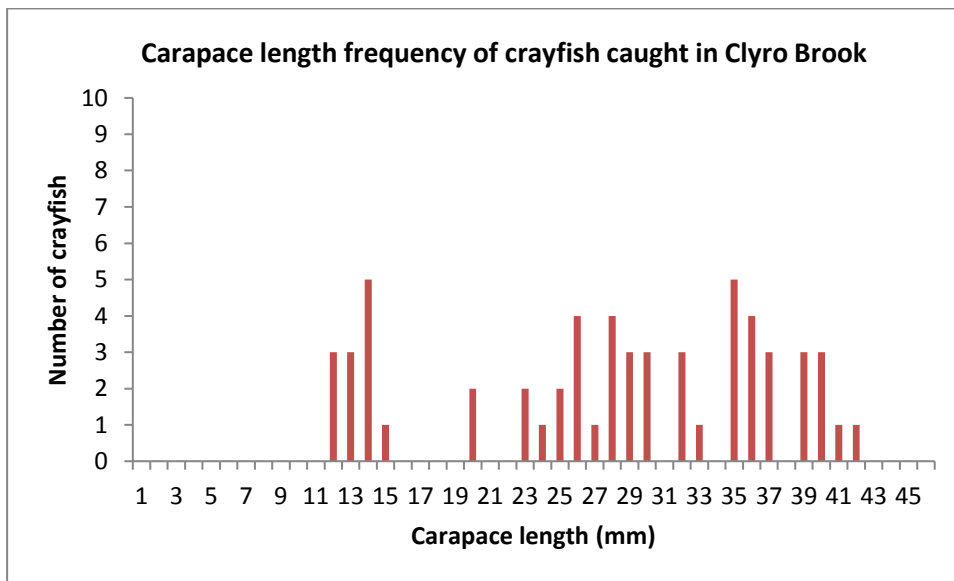


Figure 3: Summary of carapace length frequency of crayfish caught on Clyro Brook.

Table 14 shows analysis of other information gathered on examination of crayfish caught. Individual crayfish details can be found in Appendix I.

Table 14: Other information regarding crayfish population on Clyro Brook.

Crayfish affected	
Thelohania	3 (5%)
Damage	11 (19%)
Indication of females breeding (with glair)	0

5.5.3. Habitat

Table 15. Summary of evaluation of crayfish habitats – Clyro Brook. See Section 4.1.2 for explanation of values.

Site	In margin	In mid channel	In banks
Clyro Brook			
1	1	1	1
2	1	1	1
3	1	1	1
4	1	1	1
5	1	1	1
6	2	2	2
7	3	3	3

8	3	3	3	
9	3	3	3	
10	1	1	1	
11	0	0	0	
12	0	0	0	
13	0	0	0	
Total	17	17	17	
Total for Clyro Brook Monitoring Unit				44%

5.6. Afon Llynfi

5.6.1. Abundance

Afon Llynfi is approximately 8 km in length and was divided into sixteen 500m stretches. No crayfish were caught during the 2016 survey.

Table 16: Classification of population abundance – Afon Llynfi.

COMBINED: STANDARD AND TRAPPING				
Site	Distance from confluence (km)	No of crayfish per site	Average abundance per patch	Classification of population abundance
1	0	0	0	Absent/undetected
2	0.5	0	0	Absent/undetected
3	1	0	0	Absent/undetected
4	1.5	0	0	Absent/undetected
5	2	0	0	Absent/undetected
6	2.5	0	0	Absent/undetected
7	3	0	0	Absent/undetected
8	3.5	0	0	Absent/undetected
9	4	0	0	Absent/undetected
10	4.5	0	0	Absent/undetected
11	5	0	0	Absent/undetected
12	5.5	0	0	Absent/undetected
13	6	0	0	Absent/undetected
14	6.5	0	0	Absent/undetected
15	7	0	0	Absent/undetected
16	7.5	0	0	Absent/undetected
Total		0		
Classification for monitoring unit				ABSENT/UNDETECTED

5.6.2. Habitat

Table 17: Summary of evaluation of crayfish habitats - Afon Llynfi. See Section 4.1.2 for explanation of values.

Site	In margin	In mid channel	In banks
Llynfi			
1	2	2	1
2	2	2	1
3	3	3	2
4	3	3	3
5	3	3	3
6	3	3	3
7	3	3	3
8	3	3	3

9	3	3	3	
10	3	3	3	
11	3	3	3	
12	3	3	3	
13	1	1	1	
14	0	0	1	
15	1	1	1	
16	1	1	1	
Total	37	37	35	
			Total for Afon Llynfi monitoring unit	76%

5.7. Afon Chwefru

Two 500m sections were surveyed on Afon Chwefru being the two sections where crayfish were implanted by Cynrig Fish Culture Unit in 2012-2014. No crayfish were found during the 2016 survey but there was good crayfish habitat throughout.

6. Discussion – Analysis of Attributes

The project objective was to report on condition as part of the assessment of Favourable Conservation Status for Natura 2000 features using the provisional conservation objectives as supplied with the project specification (Table 1) which lists the lower limits for these. The following sections address each of the attributes and determine whether the lower limit has been attained in this survey. It should be noted, however, that survey work in 2014-16 only considered six of the eight monitoring units and it has been assumed that there are no original white-clawed crayfish populations in the other two monitoring units (Afon Irfon and Duhonw).

Attribute 1: Average number of crayfish

The average crayfish per patch was greater than one (above the lower limit, see Table 1) in the Offeiriad and Sgithwen but in none of the other monitoring units (Table 18).

Table 18: Average crayfish per patch in each monitoring unit.

Monitoring unit	Total crayfish caught	Number of patches	Average crayfish per patch
Nant yr Offeiriad	122	80	1.5
Afon Edw	0	80	0
Sgithwen Brook	120	80	1.5
Dulas Brook (Builth Road)	0	65	0
Clyro Brook	58	65	0.9
Afon Llynfi	0	80	0
Afon Irfon	Not surveyed	Not surveyed	Assumed zero
Afon Duhonw	Not surveyed	Not surveyed	Assumed zero
OVERALL	300	610	0.49

Assuming there are no crayfish in the Irfon or Duhonw, the average would be 300 crayfish in 610 sites, which is 0.49 crayfish per site. This is less than the threshold of 1 and therefore this **Attribute has not been reached**.

Attribute 2: Crayfish distribution

Crayfish were found in three of the six monitoring units surveyed (Table 14) and it is assumed that there were no white-clawed crayfish the other two (Afon Irfon and Duhonw).

Table 19: Distribution and density of crayfish in monitoring units.

Monitoring unit	Classification
Nant yr Offeiriad	Moderate
Afon Edw	Absent/undetected
Sgithwen Brook	Moderate
Dulas Brook (Builth Road)	Absent/undetected
Clyro Brook	Moderate
Afon Llynfi	Absent/undetected
Afon Irfon	Assumed absent/undetected
Afon Duhonw	Assumed absent/undetected

Crayfish are present in three of the eight monitoring units which is below the threshold of five and therefore this **Attribute has not been reached**.

Attribute 3: Alien crayfish/plague and porcelain disease

No non-native crayfish were found in the survey and there was no evidence of plague although there may have been an outbreak in the Edw in 2006 (see Conclusion). Porcelain disease was found in less than 10% of the crayfish captured (the limit, see Table 1), thus this **Attribute has been met in the areas where crayfish were present**.

However, to attain a complete picture of the risks to white-clawed crayfish in the Wye SAC it is important to verify that no alien crayfish are present in any high risk areas, e.g. tributaries of Nant yr Offeiriad, Sgithwen Brook and Clyro Brook.

Table 20: Incidence of thelohania in crayfish from each monitoring unit.

Monitoring unit	Incidence of Thelohania
Nant yr Offeiriad	6%
Afon Edw	Not applicable because no crayfish
Sgithwen Brook	4%
Dulas Brook (Builth Road)	Not applicable because no crayfish
Clyro Brook	5%
Afon Llynfi	Not applicable because no crayfish
Afon Irfon	Not applicable because not surveyed
Afon Duhonw	Not applicable because not surveyed

Attribute 4: Habitat Quality, extent of suitable habitat

Suitable habitat was present in 76% of the areas surveyed which exceeds the lower limit of 60% for this **Attribute, which has therefore been met in this evaluation.**

Table 21: Percentage of suitable habitat

Monitoring unit	In margins	In mid-channel	In banks	Overall evaluation
Nant yr Offeiriad	88%	92%	65%	81%
Afon Edw	94%	94%	94%	94%
Sgithwen Brook	100%	100%	81%	88%
Dulas Brook (Builth Road)	74%	74%	69%	73%
Clyro Brook	44%	44%	44%	44%
Afon Llynfi	77%	77%	73%	76%
Afon Irfon				Omitted from this evaluation but known to be good
Afon Duhonw				Omitted from this evaluation but known to be good
Suitable habitat in area surveyed				76%

7. Conclusion

Despite an abundance of excellent habitat throughout all the tributaries of the River Wye SAC, the feature was found to be in Unfavourable condition in 2003 and is somewhat worse now because previously important populations of white-clawed crayfish in Afon Edw and Dulas Brook (Builth Road) appear to have been lost.

As signal crayfish are spreading in the Wye catchment, there is a bleak prospect for the white-clawed crayfish and although a causal link for the decline of the natives has not been made with the expansion of signal crayfish in this survey, it is strongly suspected.

With regard to the individual monitoring units:

Nant yr Offeiriad was surveyed fully and yielded 1.5 crayfish per patch with low incidence of *Thelohania* (7%) and ample suitable habitat. It met all the Attribute needs of the SAC, although it should be noted that whilst the crayfish population is dense in places it is only found in the upper reaches of this river. For this reason investigation of the tributaries particularly in the lower reaches for the presence of signal crayfish is recommended for the completion of knowledge of crayfish distribution in the Nant yr Offeiriad.

Afon Edw yielded no crayfish although there was ample suitable habitat quality. The absence of crayfish was thought to be due to a crayfish mortality in 2006 which was highlighted to the current surveyors by local residents. This mortality was investigated by the Environment Agency at the time but no cause of death was identified. The following account was supplied by Catrin Grimstead of Natural Resources Wales:

“In 1977 native crayfish were found at two downstream sites on the River Edw (Lilley *et al.*, 1979). Subsequently, in 1988, it was shown to hold a large population of native crayfish within the midstream section both upstream and downstream of Hundred House and at a downstream site upstream of Aberedw (Foster, 1996). Subsequent surveys found many crayfish at downstream (Holdich, 1993) sites and at several sites along the stretch of river from Hundred House to Aberedw (Rogers & Holdich, 1995). Although the number of individuals found showed considerable decline, subsequent reports from the following ten years confirmed their presence along this stretch (Slater & House, 2001; Rogers & Watson, 2003b; Slater & Howells, 2003a; Howells, 2005) and further upstream from Frank’s Bridge (Rogers & Watson, 2003b). The decline in numbers were suspected to be the result of a sheep dip pollution event (Slater & House, 2001), as the Environment Agency reported a pollution incident of unknown cause in 1997 (Environment Agency, 1997), and / or the result of increased siltation following deforestation in the area (Slater, 2002; Slater & Howells, 2003a).

“A subsequent Environment Agency Wales investigation in 2006 reported many dead native crayfish along the river upstream of Frank’s Bridge but no cause of death was identified (Environment Agency, 2006). The most recent survey of eight of the sites which contained crayfish in 2003 (Rogers & Watson, 2003b) found no crayfish remaining (Slater *et al.*, 2008b). It is unknown if there has been a further pollution event in the river. Both the 2006 and the 2008 surveys found freshwater invertebrates, including gammarus and insect larvae, and fish within the river. A previous report on a pyrethroid pollution incident on the Sgithwen Brook showed that freshwater invertebrates, salmon and trout fry rapidly returned to the area in the years following the event, but that crayfish did not (Wilkins, 1998). It is therefore possible that an unreported incident occurred on the River Edw between 2004 and 2006, after which the freshwater fauna returned to the area with the exception of the native crayfish.”

The absence of crayfish in 2006 when other riverine invertebrates and fish were found is more suggestive of crayfish plague than a pollution incident, with the disease going undetected. Further investigation of the tributaries of the Edw, particularly those adjacent to the Bachawy which supports signal crayfish, would complete the crayfish distribution picture, ascertain whether there are any signal crayfish in the catchment and perhaps shed light on the reason for the disappearance.

On **Sgithwen Brook** the average catch was 1.5 crayfish per patch, with low incidence of *Thelohania* (6%) and ample suitable habitat. It met all the Attribute needs of the SAC, although it should be noted that, whilst the crayfish population is dense in places, it is only found in the upper reaches of this river. For this reason investigation of the tributaries particularly in the lower reaches for the presence of signal crayfish is recommended for the completion of knowledge of distribution.

Dulas Brook (Builth Road) yielded no crayfish in 2014-15 but had shown good populations in the lower reaches in 2003. Although the habitat is not quite as good as the Afon Edw, Sgithwen Brook and Nant yr Offeiriad it is more than adequate to support white-clawed crayfish.

In **Clyro Brook** the average catch was 0.9 crayfish per patch, with low incidence of *Thelohania* (5%) and the overall habitat evaluation was 44% which is unusually low being only about half of that found in the other monitoring units of this SAC. This is because there is a 2km section (Sites 6-9) in the middle reaches of the river that is

excellent for crayfish yielding high catches similar to those in the good reaches of the Sgithwen and Offeiriad, but upstream (Sites 10-13) of this excellent area the Brook dries out in summer. Downstream of it the Brook enters the River Wye floodplain becoming much less steep and having virtually no fall over the 2.5km (Sites 1-5) leading to the confluence. Thus the Brook habitat upstream and downstream of the excellent middle section cannot support crayfish.

Afon Llynfi yielded no crayfish in 2016 although there was a population present at Site 11 in 2003 and populations have been reported in the River Ennig, one of its tributaries entering near Bronllys (Oliver Brown NRW, pers. comm.). Although the habitat is not as good as the best tributaries in the Wye (the Afon Edw, Nant yr Offeiriad and Sgithwen Brook), the mid sections of this monitoring unit (Sites 4 -12) offer very good habitat and could support a white clawed crayfish population. The monitoring unit as a whole is let down by less steep sections at the upstream (Sites 13-16) and downstream (sites 1-3) ends.

Afon Irfon was not surveyed because crayfish were not been found in this river in the 2003 SAC assessment, have not been found since the mid-1990s and it was not necessary to survey this river to reach a conclusive assessment of the SAC. There has however been an attempt to reinstate crayfish in the Irfon catchment by the introduction in 2013/14 of approximately 3000 fairly small crayfish into the Afon Chwefru tributary. Despite searching extensively for these in the area that they had been introduced, no crayfish were found.

Afon Duhonw, although it appears to have similar habitat to the very good crayfish rivers (Edw, Offeiriad and Sgithwen), was not surveyed because crayfish were not found in the 2003 SAC Assessment, have never been found in this river and it was not necessary to survey this river to reach a conclusive assessment of the SAC.

Overall Assessment: Based on the current 2014-16 survey, the assessment of attributes 1 to 5 for the River Wye SAC are summarised in Table 22.

Table 22: Overall Assessment of Attributes for River Wye SAC 2014-16.

Attribute	Conservation objective (when the feature is in favourable condition)	Result of Surveys	Assessment
1 (Overall number of crayfish)	Average number of crayfish recorded in each habitat patch greater than 1	0.49 crayfish per patch	Favourable Condition not achieved
2 (Distribution of <i>A. pallipes</i> throughout SAC)	Present in 5 of the 8 monitoring units	Present in 3 of the 8 monitoring units	Favourable Condition not achieved
3 (Alien threat and disease status)	Absence of alien crayfish and plague, and a <10% incidence of porcelain disease	No aliens, no plague and only 7% porcelain disease	Favourable Condition achieved

4 (Habitat quality)	Suitable habitat should be present in 60% of the sampled habitat patches	Suitable habitat in 76% of sampled habitats	Favourable Condition achieved
5 (Water quality)	Water quality is at GQA Biological Class A or B in 5 of the 8 monitoring units	Not measured in this survey	Not measured
Overall			Favourable Conservation Status NOT ACHIEVED

The current survey shows that despite suitable habitat (Attribute 3), disease status and the absence of aliens (Attribute 4), **Favourable Conservation Status has not been achieved** because the density of crayfish throughout is not high enough (Attribute 1) and the distribution throughout the monitoring units is not sufficient (Attribute 2) for the River Wye SAC.

The 2003 survey had the same result, i.e. **Favourable Conservation Status was not achieved**, but the situation is now worse than in 2003 because crayfish have disappeared from the Edw, Dulas Brook (Builth Road) and Afon Llynfi and the downstream reaches of the Sgithwen Brook (Sites 2-5) and are less dense in all monitoring units surveyed except Clyro Brook, as summarised in Table 23.

Table 23: Comparison of crayfish numbers found in monitoring units in 2003 and 2014-16.

Monitoring unit	Crayfish found in 2003 survey	Crayfish found in 2014-16 survey
Nant yr Offeiriad	133	122
Afon Edw	94	0
Sgithwen Brook	190	120
Dulas Brook (Builth Road)	12	0
Clyro Brook	9	58
Afon Llynfi	11	0
Afon Irfon	0	Assumed 0
Afon Duhonw	0	Assumed 0

8. Recommendations

Given the strength of the crayfish population, **it is recommended that Clyro Brook which currently has no statutory protection is notified as part of the Wye SSSI and Wye SAC.**

Verify the presence/absence of native and alien crayfish by targeted survey of tributaries of Afon Edw, Clyro Brook, Sgithwen Brook and Nant yr Offeiriad.

Complete the survey of the main River Wye, all the tributaries (not just the monitoring units) and sub-tributaries to assess native populations and possible distribution of signal crayfish. (Note: Signals appear to be spreading from Nant Bachawy but it is not known by how much e.g. they may have spread across the catchment boundary to the Edw catchment and be responsible for the decimation of white-clawed crayfish there.)

For completeness, one could verify the current status of native crayfish in the Afon Irfon plus tributaries, Afon Duhonw and other tributaries of monitoring units where crayfish have been reported e.g. Afon Ennig.

Investigate any other reports of crayfish in the Wye catchment.

9. Acknowledgements

We thank Natural Resources Wales for funding the three year survey and for providing the necessary licences to carry out the work.

10. References

Peay, S. 2002. A standardised survey and monitoring protocol for the white-clawed crayfish *Austropotamobius pallipes* in the UK. Life in UK Rivers.

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Rogers, D. & Watson, E. 2004. Assessment of condition of 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. 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**, 85pp. 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**, 120pp. Natural Resources Wales, Bangor.

11. Data Archive Appendix

The data archive contains:

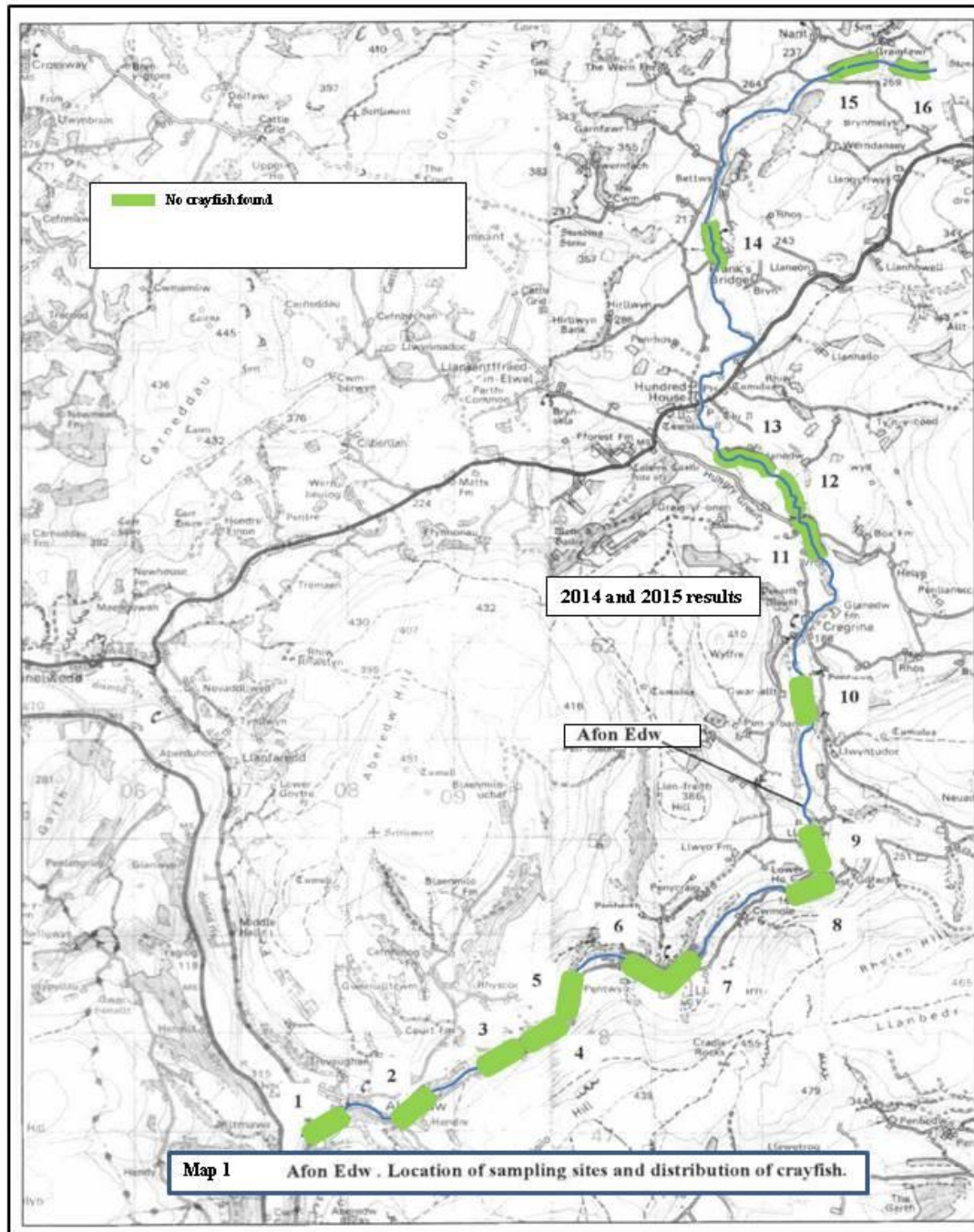
[A] The final report in Microsoft Word and Adobe PDF formats.

[B] Species records, which are held on the NRW Recorder 6 database.

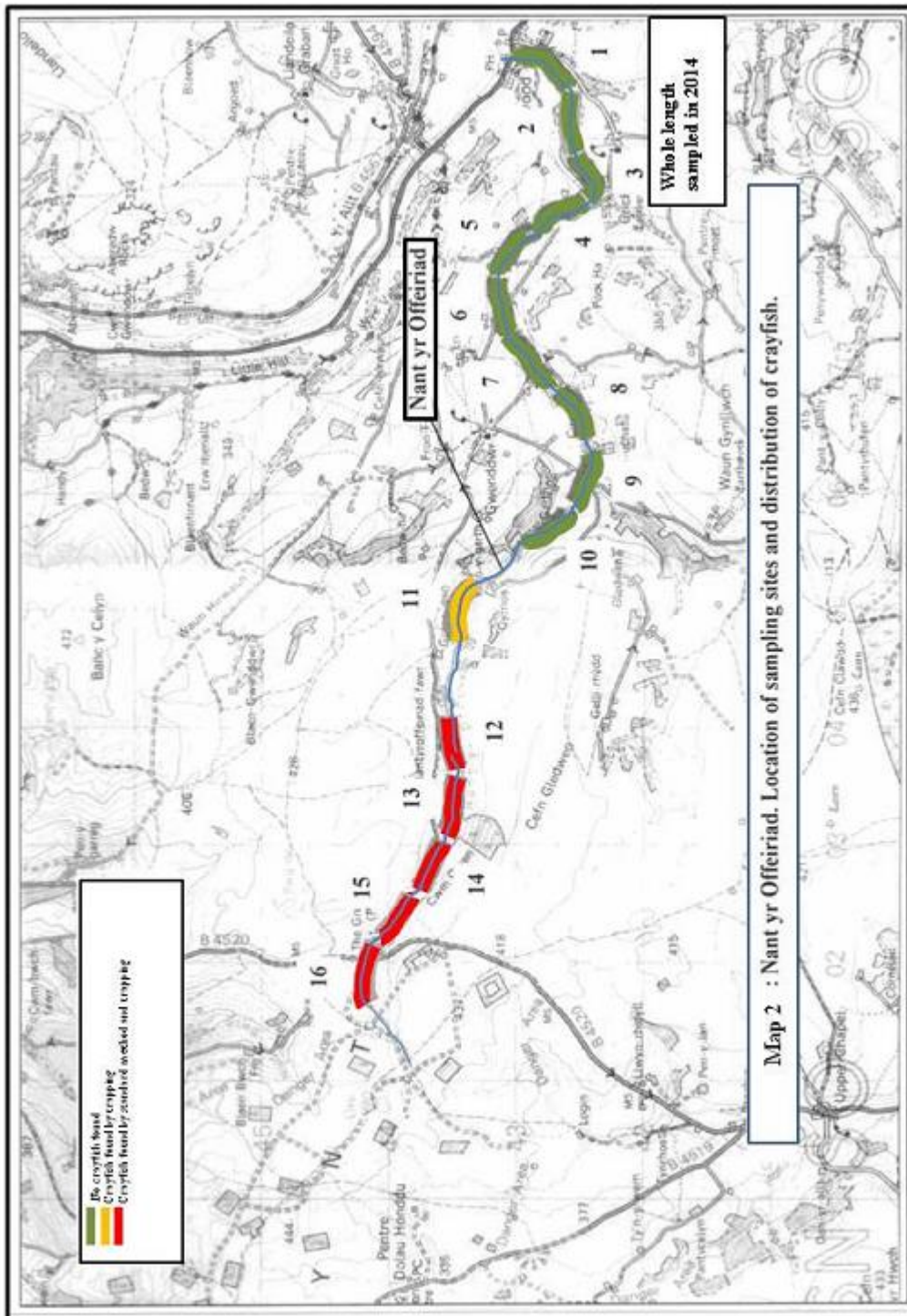
Metadata for this project is publicly accessible through Natural Resources Wales' Library Catalogue <http://libcat.naturalresources.wales> or <http://catllyfr.cyfoethnaturiol.cymru> by searching 'Dataset Titles'. The metadata is held as record no 116829.

11. Appendices

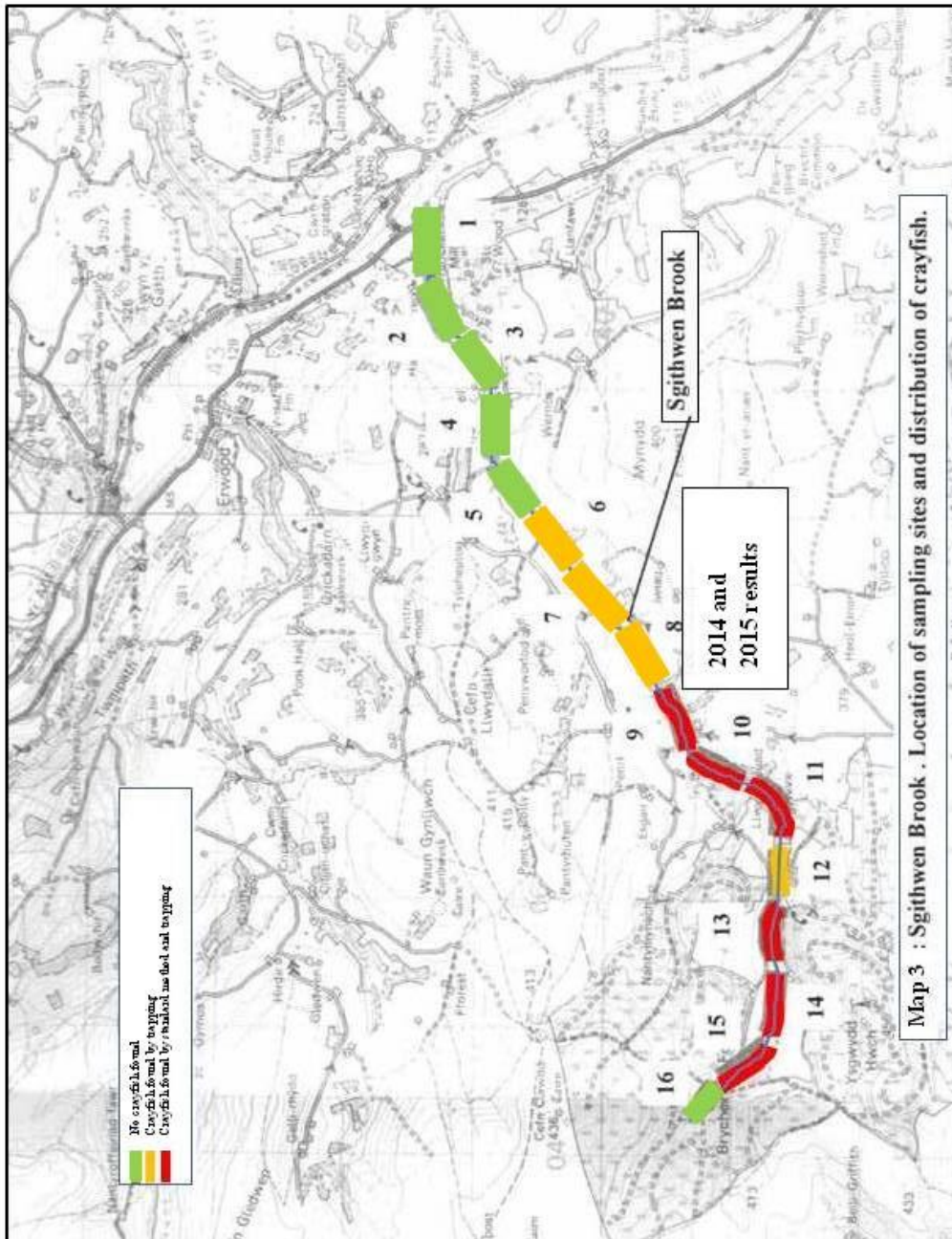
11.1. Appendix A: Location of sampling stations and distribution of white-clawed crayfish in the Afon Edw.



11.2. Appendix B: Location of sampling stations and distribution of white-clawed crayfish in Nant yr Offerriad.

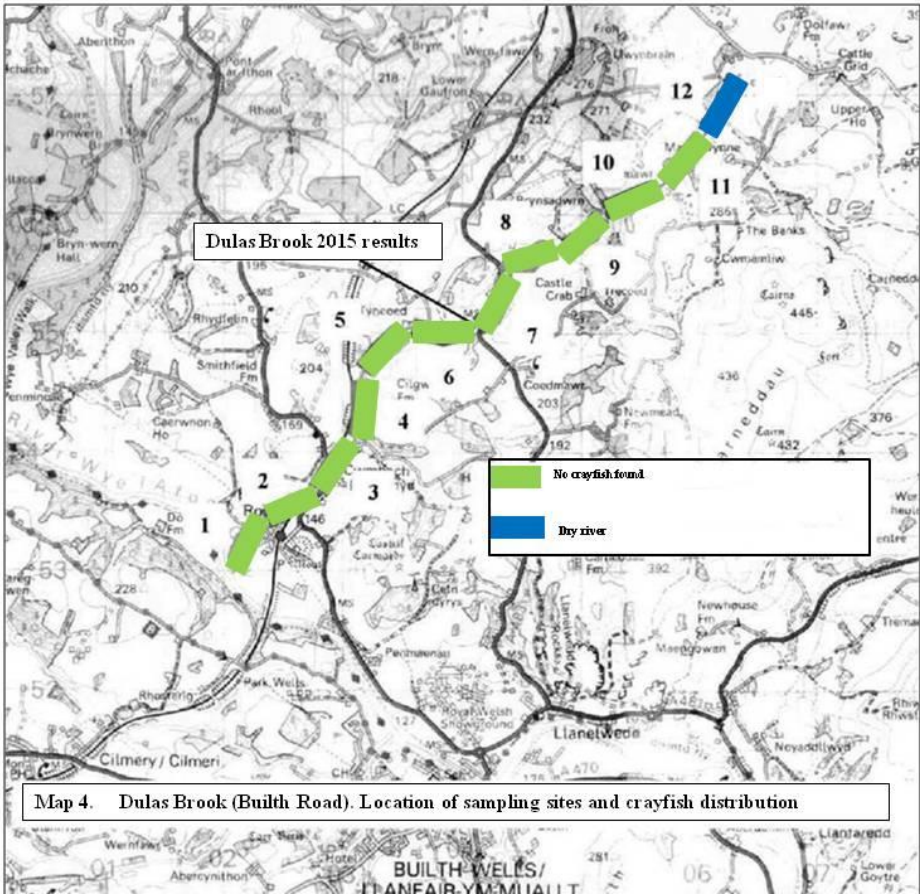


11.3. Appendix C: Location of sampling stations and distribution of white-clawed crayfish in Sgithwen Brook.

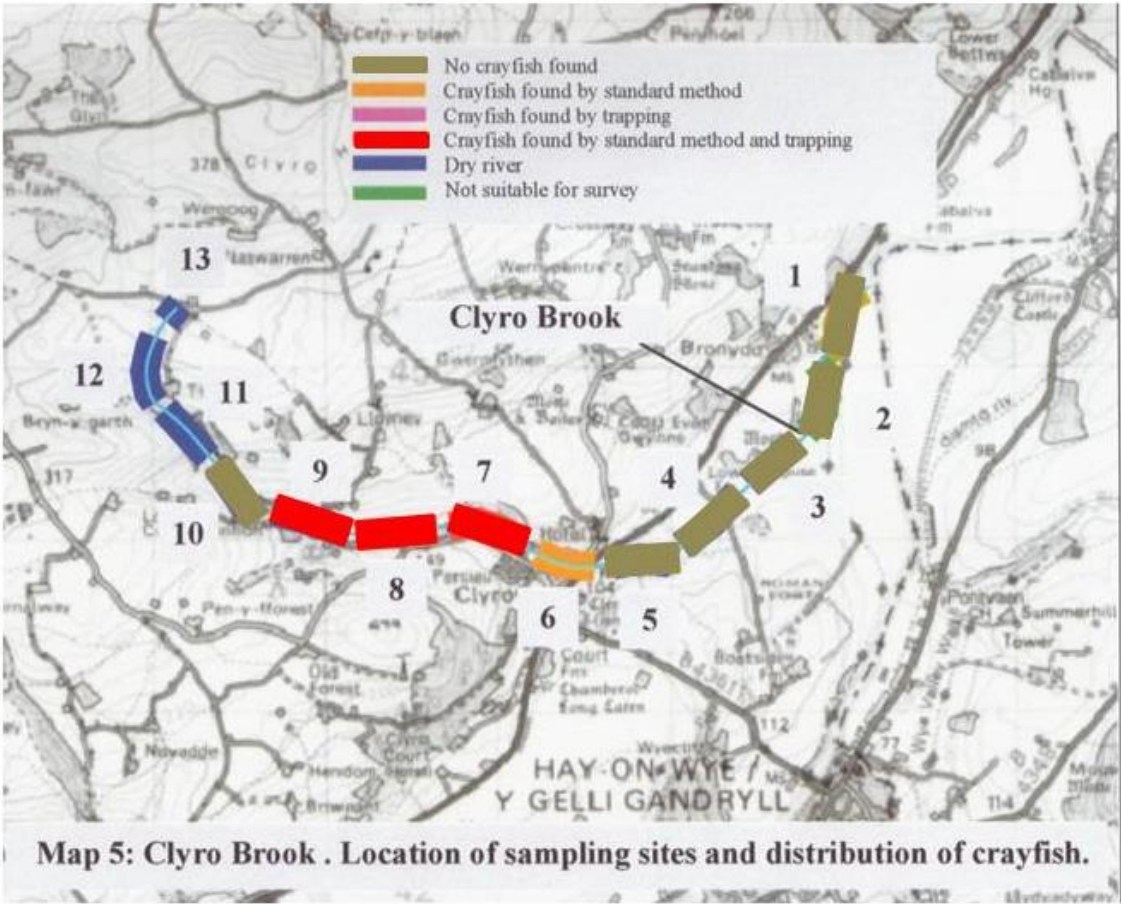


Map 3 : Sgithwen Brook . Location of sampling sites and distribution of crayfish.

11.4. Appendix D: Location of sampling stations and distribution of white-clawed crayfish in Dulas Brook (Builth Road)



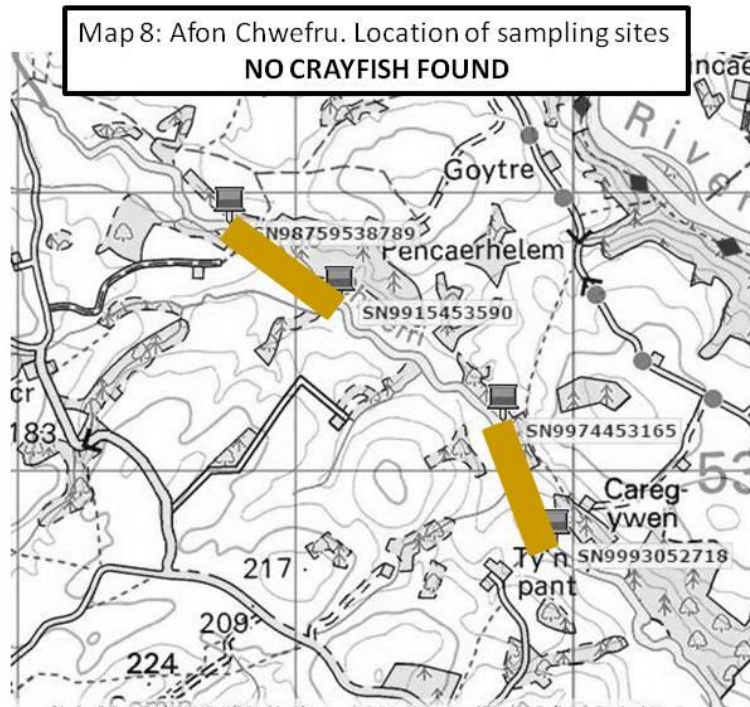
11.5. Appendix E: Location of sampling stations and distribution of white-clawed crayfish in Clyro Brook



11.6. Appendix F: Location of sampling stations and distribution of white-clawed crayfish in Afon Llynfi



11.7. Appendix G: Location of sampling stations in Afon Chwefru



11.8. Appendix H: Details of individual white-clawed crayfish records in Nant yr Offeiriad (in October 2014).

Site 11

CRAYFISH RECORDING FORM

Catchment	Wye		River	Offeiriad			Site reference	11	
Date	10/10/2014		Surveyors	DR LW			Sheet no.	1	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	M	32						4
2	<i>A.p</i>	M	36						4
3	<i>A.p</i>	M	35						4
4	<i>A.p</i>	F	34			G			4
5	<i>A.p</i>	M	39						4
6	<i>A.p</i>	F	28		PD				4
7	<i>A.p</i>	M	32						4
8	<i>A.p</i>	M	27	AL OI					4

Site 12

CRAYFISH RECORDING FORM

Catchment	Wye		River	Offeiriad			Site reference	12	
Date	10/10/2014		Surveyors	DR LW			Sheet no.	2	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	M	22	ML				P1	1
2	<i>A.p</i>	F	27			G		P2	1
3	<i>A.p</i>	F	32			G		P2	1
4	<i>A.p</i>	M	26	MR	PD			P2	1
5	<i>A.p</i>	F	20		PD			P3	1
6	<i>A.p</i>	M	19					P3	1
7	<i>A.p</i>	M	42					P3	1
8	<i>A.p</i>	M	35	MR				P3	1
9	<i>A.p</i>	F	32			G		P4	1
10	<i>A.p</i>	F	17					P4	1
11	<i>A.p</i>	M	27						4
12	<i>A.p</i>	F	28			G			4
13	<i>A.p</i>	M	36						4
14	<i>A.p</i>	F	26	ML	PD				4
15	<i>A.p</i>	M	30	MR					4
16	<i>A.p</i>	M	34						4
17	<i>A.p</i>	F	28			G			4
18	<i>A.p</i>	M	28						4
19	<i>A.p</i>	M	36						4
20	<i>A.p</i>	F	26			G			4
21	<i>A.p</i>	M	29	OI					4
22	<i>A.p</i>	M	30						4

23	<i>A.p</i>	M	28						4
24	<i>A.p</i>	F	28			G			4
25	<i>A.p</i>	M	26	RL					4
26	<i>A.p</i>	M	34						4
27	<i>A.p</i>	M	26						4
28	<i>A.p</i>	F	32			G			4
29	<i>A.p</i>	F	30			G			4
30	<i>A.p</i>	M	34						4
31	<i>A.p</i>	M	26						4
32	<i>A.p</i>	M	28						4

Site 13

CRAYFISH RECORDING FORM

Catchment	Wye		River	Offeiriad			Site reference	13	
Date	10/10/2014		Surveyors	DR LW			Sheet no.	3	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	F	34			G		P1	1
2	<i>A.p</i>	M	47					P1	1
3	<i>A.p</i>	F	28			G		P1	1
4	<i>A.p</i>	F	28			G		P2	1
5	<i>A.p</i>	M	24	ML				P2	1
6	<i>A.p</i>	M	42					P2	1
7	<i>A.p</i>	F	23			G		P2	1
8	<i>A.p</i>	M	34					P2	1
9	<i>A.p</i>	M	19		BS			P2	1
10	<i>A.p</i>	M	17					P2	1
11	<i>A.p</i>	M	28e					P2	1
12	<i>A.p</i>	M	42					P2	1
13	<i>A.p</i>	M	41					P2	1
14	<i>A.p</i>	M	42					P3	1
15	<i>A.p</i>	M	35		PD			P3	1
16	<i>A.p</i>	F	42			G		P3	1
17	<i>A.p</i>	M	34					P3	1
18	<i>A.p</i>	M	19					P3	1
19	<i>A.p</i>	M	41					P3	1
20	<i>A.p</i>	F	32			G		P3	1
21	<i>A.p</i>	M	22					P3	1
22	<i>A.p</i>	F	22			G		P3	1
23	<i>A.p</i>	F	29			G		P3	1
24	<i>A.p</i>	M	42					P3	1
25	<i>A.p</i>	M	34					P3	1
26	<i>A.p</i>	F	28	OM		G		P4	1
27	<i>A.p</i>	M	44					P5	1
28	<i>A.p</i>	M	26					P5	1
29	<i>A.p</i>	M	37					P5	1
30	<i>A.p</i>	M	30					P5	1
31	<i>A.p</i>	M	38						4
32	<i>A.p</i>	F	21	MR	PD				4

33	A.p	F	35			G			4
34	A.p	F	26			G			4
35	A.p	F	37			G			4
36	A.p	M	33						4
37	A.p	M	25						4
38	A.p	M	27						4
39	A.p	F	31			G			4
40	A.p	M	34						4
41	A.p	M	32						4
42	A.p	M	31	MR					4
43	A.p	M	33						4
44	A.p	F	19			G			4
45	A.p	M	27						4

Site 13

CRAYFISH RECORDING FORM

Catchment	Wye		River	Offeiriad			Site reference	13	
Date	10/10/2014		Surveyors	DR LW			Sheet no.	3a	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
46	A.p	M	35						4
47	A.p	F	26			G			4
48	A.p	M	28						4

Site 14

CRAYFISH RECORDING FORM

Catchment	Wye		River	Offeiriad			Site reference	14	
Date	10/10/2014		Surveyors	DR LW			Sheet no.	4	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	A.p	F	30	OI		G		P2	1
2	A.p	F	30			G		P2	1
3	A.p	M	29					P2	1
4	A.p	F	27			G		P2	1
5	A.p	F	29			G		P3	1
6	A.p	M	29					P3	1
7	A.p	F	31			G		P4	1
8	A.p	M	34		PD				4
9	A.p	F	27			G			4
10	A.p	F	28			G			4
11	A.p	M	35						4
12	A.p	M	24	ML					4
13	A.p	F	24			G			4
14	A.p	M	26						4

Site 15

CRAYFISH RECORDING FORM

Catchment	Wye		River	Offeiriad			Site reference	15	
Date	09/10/2014		Surveyors	DR LW			Sheet no.	5	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	M	21	AR				P4	1
2	<i>A.p</i>	M	39					P4	1
3	<i>A.p</i>	M	20					P5	1
4	<i>A.p</i>	F	31			G			4
5	<i>A.p</i>	M	28	ML					4
6	<i>A.p</i>	M	29						4
7	<i>A.p</i>	F	26			G			4
8	<i>A.p</i>	M	29						4
9	<i>A.p</i>	F	24			G			4
10	<i>A.p</i>	M	34						4
11	<i>A.p</i>	M	35						4
12	<i>A.p</i>	F	27	MR		G			4

Site 16

CRAYFISH RECORDING FORM

Catchment	Wye		River	Offeiriad			Site reference	16	
Date	09/10/2014		Surveyors	DR LW			Sheet no.	6	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	F	17		PD			P3	1
2	<i>A.p</i>	M	30						4
3	<i>A.p</i>	M	36						4
4	<i>A.p</i>	M	29						4
5	<i>A.p</i>	M	29						4
6	<i>A.p</i>	F	28			G			4
7	<i>A.p</i>	F	30			G			4
8	<i>A.p</i>	M	25	OI					4

11.9. Appendix I: Details of individual white-clawed crayfish records in Sgithwen Brook (in October 2014 and September 2015)

Site 6

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen			Site reference	6	
Date	02/09/2015		Surveyors	DR LW			Sheet no.	2015/1	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	M	18					P2	4
2	<i>A.p</i>	F	32					P2	4

Site 7

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen			Site reference	7	
Date	02/09/2015		Surveyors	DR LW			Sheet no.	2015/2	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	F	29					P1	4
2	<i>A.p</i>	M	30	ML				P1	4
3	<i>A.p</i>	M	19					P1	4
4	<i>A.p</i>	F	23	OL				P1	4
5	<i>A.p</i>	M	32		PD			P1	4
6	<i>A.p</i>	F	30	MR				P1	4
7	<i>A.p</i>	F	33					P1	4
8	<i>A.p</i>	M	19					P3	4
9	<i>A.p</i>	F	28					P3	4
10	<i>A.p</i>	F	31					P3	4
11	<i>A.p</i>	M	35					P4	4
12	<i>A.p</i>	F	29					P5	4
13	<i>A.p</i>	F	29				AM	P5	4

Site 8

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen			Site reference	8	
Date	03/09/2015		Surveyors	DR LW			Sheet no.	2015/3	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	<i>A.p</i>	M	42		PD			P1	4
2	<i>A.p</i>	F	33	MR				P1	4
3	<i>A.p</i>	F	36					P1	4

4	A.p	M	38				P2	4
5	A.p	F	17	MR			P2	4
6	A.p	F	44				P4	4
7	A.p	M	23	RL			P4	4

Site 9

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen			Site reference	9	
Date	16/10/2014		Surveyors	DR LW			Sheet no.	Sg1	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	Ap	M	36					P5	1
2	Ap	M	32					P5	1
3	Ap	F	22			G		P5	1
4	Ap	M	32						4
5	Ap	M	36						4
6	Ap	M	35						4
7	Ap	M	30						4

Site 10

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen			Site reference	10	
Date	16/10/2014		Surveyors	DR LW			Sheet no.	2	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	Ap	F	21	OI	PD			P3	1
2	Ap	F	17						4
3	Ap	M	33						4
4	Ap	M	30						4

Site 11

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen			Site reference	11	
Date	16/10/2014		Surveyors	DR LW			Sheet no.	Sg 3	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	Ap	M	19					P2	1
2	Ap	M	19					P4	1
3	Ap	F	36	RM		G		P5	1
4	Ap	F	32			G			4
5	Ap	F	31			G			4
6	Ap	M	42						4
7	Ap	M	34						4

Site 12

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen				Site reference	12	
Date	16/10/2014		Surveyors	DR LW				Sheet no.	Sg 4	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method	
1	Ap	M	33						4	
2	Ap	F	36			G			4	

Site 13

CRAYFISH RECORDING FORM

Catchment	Wye		River					Site reference	13	
Date	15/10/2014		Surveyors	DR LW				Sheet no.	Sg 5	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method	
1	Ap	M	23					P5	1	
2	Ap	F	18						4	
3	Ap	M	25						4	
4	Ap	M	18						4	

Site 14

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen				Site reference	14	
Date	15/10/2014		Surveyors	DR LW				Sheet no.	Sg 6	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method	
1	Ap	F	22			G		P1	1	
2	Ap	F	17					P1	1	
3	Ap	M	19					P1	1	
4	Ap	M	16					P1	1	
5	Ap	M	17					P1	1	
6	Ap	M	17					P1	1	
7	Ap	F	23			G		P2	1	
8	Ap	M	16					P2	1	
9	Ap	F	16					P2	1	
10	Ap	M	16					P2	1	
11	Ap	M	17					P2	1	
12	Ap	M	18					P2	1	
13	Ap	F	22			G		P2	1	
14	Ap	F	16					P3	1	
15	Ap	M	18					P3	1	
16	Ap	F	17					P4	1	
17	Ap	M	16					P5	1	

18	Ap	M	40	LM RM					4
19	Ap	M	38						4
20	Ap	F	34			G			4
21	Ap	F	32			G			4
22	Ap	M	31						4
23	Ap	M	31						4
24	Ap	M	35						4
25	Ap	F	28			G			4
26	Ap	F	34			G			4
27	Ap	M	36		PD				4
28	Ap	F	32			G			4
29	Ap	F	34	LM		G			4
30	Ap	F	30			G			4
31	Ap	M	20						4
32	Ap	F	30			G			4
33	Ap	F	29			G			4
34	Ap	M	32						4
35	Ap	F	27						4
36	Ap	M	22						4
37	Ap	F	30						4
38	Ap	F	31			G			4
39	Ap	M	30						4
40	Ap	M	28						4
41	Ap	M	34	RM					4

Site 14

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen				Site reference	14	
Date	15/10/2014		Surveyors	DR LW				Sheet no.	Sg 6a	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method	
42	Ap	M	36	OM					4	
43	Ap	F	35			G			4	
44	Ap	M	18						4	
45	Ap	F	28			G			4	
46	Ap	M	20						4	
47	Ap	M	24						4	
48	Ap	M	24						4	
49	Ap	M	22			PD			4	
50	Ap	M	22						4	
51	Ap	F	24	RL					4	
52	Ap	F	28			G			4	
53	Ap	F	28			G			4	
54	Ap	M	28						4	

Site 15

CRAYFISH RECORDING FORM

Catchment	Wye		River	Sgithwen				Site reference	15	
Date	15/10/2014		Surveyors	DR LW				Sheet no.	Sg 7	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method	
1	Ap	F	32			G		P1	1	
2	Ap	F	19			G		P1	1	
3	Ap	M	18					P1	1	
4	Ap	M	18					P2	1	
5	Ap	M	17					P2	1	
6	Ap	M	18					P4	1	
7	Ap	M	16					P4	1	
8	Ap	F	27			G			4	
9	Ap	F	25			G			4	
10	Ap	M	34						4	
11	Ap	M	28						4	
12	Ap	F	20		PD				4	
13	Ap	F	16	LM					4	
14	Ap	F	26			G			4	
15	Ap	M	20						4	
16	Ap	M	28						4	
17	Ap	F	26			G			4	
18	Ap	F	18						4	
19	Ap	F	19			G			4	

11.10. Appendix J: Details of individual white-clawed crayfish records in Clyro Brook (in August 2016)

Site Clyro 6

CRAYFISH RECORDING FORM

Catchment	Wye		River	Clyro				Site reference	6	
Date	26/08/2016		Surveyors	DR LW				Sheet no.	1	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method	
1	A pallipes	F	34	RR	PD			P3	1	

Site Clyro 7

CRAYFISH RECORDING FORM

Catchment	Wye		River	Clyro				Site reference	7	
Date	23/08/2016		Surveyors	DR LW				Sheet no.	1	

Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	A.pallipes	F	35	MB				P1	1
2	A.pallipes	M	29					P1	1
3	A.pallipes		14					P1	1
4	A.pallipes		11					P1	1
5	A.pallipes		12					P1	1
6	A.pallipes		11					P1	1
7	A.pallipes		12					P1	1
8	A.pallipes	F	25					P1	1
9	A.pallipes	F	24					P1	4
10	A.pallipes	M	39					P1	4
11	A.pallipes	M	25	RL				P2	1
12	A.pallipes	F	38					P2	4
13	A.pallipes	F	34					P2	4
14	A.pallipes	M	34					P2	4
15	A.pallipes	M	34					P2	4
16	A.pallipes	M	32		Porcelain			P2	4
17	A.pallipes	F	38					P2	4
18	A.pallipes	F	36					P2	4
19	A.pallipes	F	25					P4	1
20	A.pallipes	M	26	RR				P4	1
21	A.pallipes	M	36					P4	1
22	A.pallipes	M	25					P4	4
23	A.pallipes	M	36					P4	4
24	A.pallipes	F	29					P4	4
25	A.pallipes	F	24					P5	1
26	A.pallipes	M	41					P5	1
27	A.pallipes	M	40					P5	1
28	A.pallipes	F	27	RL				P5	1
29	A.pallipes	F	29					P5	4
30	A.pallipes	F	35					P5	4
31	A.pallipes	F	28					P5	4
32	A.pallipes	M	19	ML				P5	4
33	A.pallipes	M	39					P5	4
34	A.pallipes	M	34					P5	1
35	A.pallipes	M	13					P5	1
36	A.pallipes		11					P5	1
37	A.pallipes		12					P5	1
38	A.pallipes		13					P5	1

Site Clyro 8

CRAYFISH RECORDING FORM

Catchment	Wye	River	Clyro	Site reference	8
Date	23/08/2016	Surveyors	DR LW	Sheet no.	1

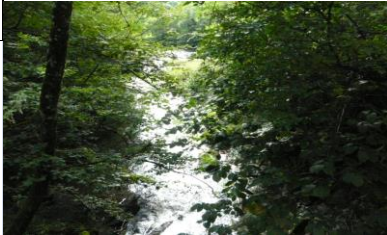
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	A.pallipes		13					P1	1
2	A.pallipes		13					P1	1
3	A.pallipes		13					P1	1
4	A.pallipes	F	31	MR	Porcelain			P1	4
5	A.pallipes	F	27	MR				P1	4
6	A.pallipes	M	27	RB				P1	4
7	A.pallipes	F	22					P1	4
8	A.pallipes	M	39					P2	4
9	A.pallipes	M	38	RL				P2	4
10	A.pallipes	M	27					P2	4
11	A.pallipes	F	19					P4	1
12	A.pallipes	F	28					P4	4
13	A.pallipes	M	31					P4	4
14	A.pallipes	F	23					P4	4
15	A.pallipes	M	35					P4	4
16	A.pallipes	M	22					P5	1

Site Clyro 9


CRAYFISH RECORDING FORM


Catchment	Wye		River	Clyro			Site reference	9	
Date	23/08/2016		Surveyors	DR LW			Sheet no.	1	
Record no.	Species	Sex	Carapace length, mm	Damage	Disease	Breeding	Moult	Sub-site location ref.	Catch method
1	A.pallipes	F	35					P1	2
2	A.pallipes	M	31					P1	1
3	A.pallipes	M	28					P2	2

11.11. Appendix K: White-clawed crayfish habitat survey forms for Afon Edw, October 2014 and August/September 2015


CRAYFISH HABITAT SURVEY FORM						
Catchment	Wye	Surveyors	River	Edw	Site (no., name)	1
Date (dd/mm/yy)	27/08/2015	DR, LW			Grid ref. (d/s end)	SO 0767 4694
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	13	Clarity, good 1, mod 2, poor 3
Photo ref. & Location	Edw01					
Site length (m)	100					
Width channel (m)	6	Descript. (channel features, landuse)	Wooded, agricultural. Access from road good and close			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Extent (l x w patch)	2x1	3x2	2x2	1x3	2x2	
Channel (1 margins, 2 mid, 3 both, other specify)	1	2	3	2	2	
Depth (metres)	0.2	0.4	0.2	0.5	0.4	
Feature (1 marg. d/water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	4	4	3	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris	YES	YES		YES		
other urban debris						
tree roots, fine	YES					
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock	YES	YES	YES	YES	YES	
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt		YES				
Siltation						
none	YES			YES	YES	
low		YES		YES		
moderate						
high						
Refuges in bank						
none	YES			YES	YES	
cobble/boulder		YES			YES	
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	MOD	MOD	MOD	MOD	MOD	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	1	
Search time (Mins)	5	5	5	5	5	
Bullhead present?	YES	YES	YES	YES	YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stone loach. Mink spraint					
Score						
in margins	3					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					

CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Edw	Site (no., name)	2
Date (dd/mm/yy)	27/08/2015	Surveyors	DR, LW	Grid ref. (d/s end)	SO 0847 4712
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4	Water temp. oC	Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Edw02, Road bridge at upstream end				
Site length (m)	100	Descript. (channel features, landuse) Good access from road. Land use is grazing; disused sheep dip near river. Large areas of angular bedrock			
Width channel (m)	8				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Extent (l x w patch)	5x1	3x1	2x2	2x2	3x1
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	2	2	1
Depth (metres)	0.3	0.2	0.2	0.2	0.2
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	3	4	5	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)	YES			YES	
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES		YES		YES
tree roots, large		YES		YES	
vertical or undercut bank					
dry stone wall					
other reinforced	YES				
crayfish burrows					
Shading above	LIGHT	LIGHT	LIGHT	LIGHT	LIGHT
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	5	10	5	10	5
Bullhead present?		YES		YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stone loach. Mink spraint				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

Catchment	Wye	River	Edw	Site (no., name)	3	
Date (dd/mm/yy)	23/08/2003	Surveyors	DR, LW	Grid ref. (d/s end)	SO 0930 4767	
Weather, good 1, mod 2, poor 3	Flow norm 1, low 2, fall 3, rise 4	Water temp. oC	13	Clarity, good 1, mod 2, poor 3	1	
Photo ref. & Location	Edw03					
Site length (m)	100	Descript. (channel features, landuse)	Grazing and woodland. Good access			
Width channel (m)	8		sample patch 1	sample patch 2		sample patch 3
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	2x2	2X2	3X1	3x3	2x5	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	1	3	3	
Depth (metres)	0.2	0.2	0.2	0.3	0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	5	4	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)	YES	YES	YES	YES	YES	
woody debris						
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock	YES	YES	YES	YES	YES	
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt						
Siltation						
none	YES	YES	YES		YES	
low				YES		
moderate						
high						
Refuges in bank	YES	YES				
none						
cobble/boulder				YES		
tree roots, large			YES		YES	
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	LIGHT	LIGHT	LIGHT	NIL	LIGHT	
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	5	10	9	8	5	
Bullhead present?	YES	YES	YES	YES	YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stone loach					
in margins	Score					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	4
Date (dd/mm/yy)	27/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 0960 4783
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	13
Photo ref. & Location	Immediately downstream of first 100m				
Site length (m)	100	Descript. (channel features, landuse)	Good access from road. Grazing.		
Width channel (m)	9				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Extent (l x w patch)	4x1	4x3	2x2	5x2	3x3
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	1	1	3
Depth (metres)	0.2	0.2	0.2	0.2	0.3
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	3	5	3	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine	YES				
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES		YES		YES
low		YES		YES	
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large	YES				
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	MOD	HEAVY	MOD	HEAVY
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	15	5	10	10	10
Bullhead present?		YES			YES
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.) Stone loach, Heron			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	5	
Date (dd/mm/yy)	28/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1012 4813	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	13	
Clarity, good 1, mod 2, poor 3	1					
Photo ref. & Location	Immediately downstream of first 100m					
Site length (m)	100	Descript. (channel features, landuse)	Good access. Picnic areas, heavy use by General Public.			
Width channel (m)	9					
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	2x2	2x2	3x2	4x1	2x2	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	1	2	
Depth (metres)	0.2	0.3	0.2	0.2	0.3	
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	4	5	4	4	5	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris						
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock	YES	YES	YES	YES	YES	
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt						
Siltation						
none	YES		YES	YES	YES	
low		YES				
moderate						
high						
Refuges in bank			YES		YES	
none						
cobble/boulder	YES	YES		YES		
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	MOD	LIGHT	LIGHT	LIGHT	NONE	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	10	5	10	15	5	
Bullhead present?		YES		YES		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Stone loach, kingfisher				
in margins	3					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	6
Date (dd/mm/yy)	28/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1056 4885
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	13
				Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Edw05				
Site length (m)	100	Descript. (channel features, landuse)			
Width channel (m)	10		Good access. Grazing and woodland		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Extent (l x w patch)	1x1	2x3	1x3	2x2	3x2
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	3	3	2
Depth (metres)	0.2	0.3	0.3	0.3	0.2
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	4	3	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine			YES		
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none		YES			YES
low	YES		YES	YES	
moderate					
high					
Refuges in bank					YES
none					
cobble/boulder	YES	YES	YES	YES	
tree roots, large			YES		
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	LIGHT	MOD	LIGHT	MOD
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	5	10	5	10	10
Bullhead present?	YES		YES		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stone loach				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	7	
Date (dd/mm/yy)	28/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1113 4861	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	14	
Clarity, good 1, mod 2, poor 3	1					
Photo ref. & Location	Edw07					
Site length (m)	100					
Width channel (m)	8	Descript. (channel features, landuse)	Good access. Grazing and woodland			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	4x4	2x2	3x2	3x3	4x1	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	2	3	1	
Depth (metres)	0.3	0.3	0.4	0.3	0.2	
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	4	3	5	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris						
other urban debris						
tree roots, fine		YES			YES	
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock	YES	YES	YES	YES	YES	
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt						
Siltation						
none	YES	YES	YES	YES		
low					YES	
moderate						
high						
Refuges in bank						
none						
cobble/boulder	YES	YES	YES	YES	YES	
tree roots, large					YES	
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	LIGHT	MOD	MOD	MOD	LIGHT	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	15	5	10	10	10	
Bullhead present?		YES			YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Stone loach				
in margins	3					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					

CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Edw	Site (no., name)	8
Date (dd/mm/yy)	28/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1229 4948
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	13
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Edw08				
Site length (m)	100				
Width channel (m)	7	Descript. (channel features, landuse)	Good access. Grazing and woodland		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Extent (l x w patch)	3x1	2x3	4x1	3x2	3x3
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	1	3	3
Depth (metres)	0.2	0.3	0.2	0.3	0.3
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	3	5	4	5
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank		YES			
none					
cobble/boulder	YES		YES	YES	YES
tree roots, large	YES				
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	LIGHT	LIGHT	MOD	LIGHT	LIGHT
Crayfish/10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	15	5	15	5	5
Bullhead present?	YES		YES	YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stone loach, kingfisher				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	9
Date (dd/mm/yy)	29/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1260 4969
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	13
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Edw09				
Site length (m)	100	Descript. (channel features, landuse)	Difficult access, steep bank and fences. Grazing and woodland		
Width channel (m)	5				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x1	3x1	2x2	2x2	4x1
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	2	2	1
Depth (metres)	0.2	0.2	0.3	0.2	0.2
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	4	3	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES	YES			
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none	YES	YES	YES	YES	YES
cobble/boulder					
tree roots, large					
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	NONE	NONE	MOD	NONE	NONE
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	5	10	10	10	5
Bullhead present?					YES
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stone loach, heron				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				



CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Edw	Site (no., name)	10
Date (dd/mm/yy)	29/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1248 5118
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4	Water temp. oC	Clarity, good 1, mod 2, poor 3	
Photo ref. & Location	Edw10				
Site length (m)	100	Descript. (channel features, landuse) Land use - cattle grazing. Cattle poaching immediately downstream of site. Access down very steep field.			
Width channel (m)	6				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	2x1	3x3	4x1	2x5	1x4
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	1	3	3
Depth (metres)	0.3	0.4	0.2	0.25	0.3
Feature (1 marg. dwater, 2 pool, 3 glide, 4 run, 5 riffle)	2	3	2	4	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES		YES		
other urban debris					
tree roots, fine					
moss		YES		YES	
filamentous algae	YES	YES	YES	YES	YES
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank				YES	
none					
cobble/boulder	YES	YES	YES		YES
tree roots, large		YES			YES
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	HEAVY	MOD	MOD	MOD
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	5	10	10	15	5
Bullhead present?	YES	YES			YES
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stone loach				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	11
Date (dd/mm/yy)	14/10/2014	Surveyors	DR LW	Grid ref.	SO 12602 52787
Weather, good 1, mod 2, poor 3	2	Flow norm 1, low 2, fall 3, rise 4	4	Start and finish time	1500-1700
Photo ref. & Location	At 300m				
Site length (m)	400	Descript. (channel features, landuse)			
Width channel (m)	5				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	5x1	3x1	5x1	2x2	4x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	1	1	1	3
Depth (metres)	0.3	0.2	0.3	0.3	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	4	3	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)	YES	YES	YES	YES	YES
woody debris					
other urban debris					YES
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					


cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt	YES	YES	YES	YES	YES
Siltation					
none					
low					
moderate	YES	YES	YES	YES	YES
high					
Refuges in bank					
none					
cobble/boulder		YES	YES	YES	
tree roots, large vertical or undercut bank	YES	YES			YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	MOD	MOD	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):			
Score					
in margins	2				
in mid channel	2				
in banks	2				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	12
Date (dd/mm/yy)	14/10/2014	Surveyors	DR LW	Grid ref.	SO 12384 53394
Weather, good 1, mod 2, poor 3	2	Flow norm 1, low 2, fall 3, rise 4	4	Start and finish time	1300-1500
Photo ref. & Location	In first 100m				
Site length (m)	400	Descript. (channel features, landuse) Series of pools with slow flowing glides			
Width channel (m)	5				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	2x1	3x1	3x2	3x1	2x1
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	3	1	1
Depth (metres)	0.2	0.2	0.3	0.2	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	2	3	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES		YES		
other urban debris					
tree roots, fine	YES	YES	YES	YES	YES
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES			
cobble (6.5-15cm)					


pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					YES
clay					
silt			YES	YES	
Siltation					
none					
low					
moderate	YES	YES	YES	YES	YES
high					
Refuges in bank					
none					
cobble/boulder		YES		YES	
tree roots, large vertical or undercut bank		YES			YES
dry stone wall	YES		YES		
other reinforced					
crayfish burrows					
Shading above	LIGHT	LIGHT	HEAVY	HEAVY	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):			
Score					
in margins	2				
in mid channel	2				
in banks	2				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	13
Date (dd/mm/yy)	14/10/2014	Surveyors	DR, LW	Grid ref.	SO 12047 53816
Weather, good 1, mod 2, poor 3	2	Flow norm 1, low 2, fall 3, rise 4	4	Start and finish time	1100 - 1300
Photo ref. & Location	In first 100m.				
Site length (m)	400	Descript. (channel features, landuse) Land use - grazing with stock access.			
Width channel (m)	4				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	5x1	7x1	2x2	2x2	5x1
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	3	2	1
Depth (metres)	0.2	0.2	0.2	0.3	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	5	4	3
Refuges in channel	tick all present in patch, ain type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)	YES	YES	YES	YES	YES
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock		YES	YES	YES	
cobble (6.5-15cm)					


pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)	YES				YES
clay					
silt					
Siltation					
none					
low			YES		YES
moderate	YES	YES		YES	
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	LIGHT	LIGHT	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):			
Score					
in margins	2				
in mid channel	2				
in banks	2				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	14
Date (dd/mm/yy)	14/10/2014	Surveyors	DR LW	Grid ref.	SO 11549 55871
Weather, good 1, mod 2, poor 3	2	Flow norm 1, low 2, fall 3, rise 4	4	Start and finish time	0900-1100
Photo ref. & Location	In first 100m				
Site length (m)	100	Descript. (channel features, landuse) Land use - Agriculture with occasional stock access to water. Good access from road bridge			
Width channel (m)	3				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x2	3x2	3x2	4x2	4x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.2	0.2	0.3	0.2	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	2	2	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)		YES			
rubble (give size)					
woody debris	YES	YES			
other urban debris					
tree roots, fine	YES	YES	YES	YES	YES
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)				YES	


pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES			
sand (<2mm)					
clay					
silt			YES		YES
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none	YES	YES	YES		YES
cobble/boulder				YES	
tree roots, large vertical or undercut bank				YES	
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	HEAVY	HEAVY	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.): Approximately 6 years ago local resident reported crayfish mortality. Only dead crayfish found; no moribund. Wye and Usk Foundation informed but no cause identified.			
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Edw		Site (no., name)	15	
Date (dd/mm/yy)	13/10/2014	Surveyors	DR LW			Grid ref.	SO 12632 57817	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	1500-1700	
Photo ref. & Location	In first 100m							
Site length (m)	100							
Width channel (m)	2.5		Descript. (channel features, landuse) Land use - grazing. Very heavy stock access in areas. Areas of deep pools and small stony riffles. Some mud banks with possible crayfish burrows.					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	5x1	3x2	4x2	6x2	3x2			
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	3	3	3			
Depth (metres)	0.3	0.3	0.3	0.2	0.4			
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	3	3	3	3			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)	YES	YES	YES	YES	YES			
rubble (give size)								
woody debris								
other urban debris								
tree roots, fine	YES	YES	YES	YES	YES			
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								

pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt	YES	YES	YES	YES	YES
Siltation					
none					
low					
moderate	YES				
high		YES	YES	YES	YES
Refuges in bank					
none			YES	YES	
cobble/boulder					
tree roots, large vertical or undercut bank		YES			YES
dry stone wall	YES	YES	YES	YES	YES
other reinforced					
crayfish burrows					
Shading above	LOW	HEAVY	MOD	HEAVY	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):			
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Edw	Site (no., name)	16
Date (dd/mm/yy)	13/10/2014	Surveyors	DR LW	Grid ref.	SO 13203 57976
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1300-1500
Photo ref. & Location	In first 100m				
Site length (m)	100	Descript. (channel features, landuse)	Land use grazing and woodland. Highly agricultural area.		
Width channel (m)	3				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x1	3x1	4x1	2x2	4x2
Channel (1 margins, 2 mid, 3 both, other specify)	1	2	1	3	1
Depth (metres)	0.2	0.3	0.2	0.2	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	3	3	5	2
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES	YES	YES	YES	YES
other urban debris					
tree roots, fine	YES		YES		YES
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					

pebble (<6.5cm)					
gravel (<1.6cm)				YES	
sand (<2mm)					
clay	YES	YES	YES		YES
silt					
Siltation					
none					
low					
moderate	YES	YES	YES	YES	YES
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	MOD	MOD	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.): Variable patches with lots of fallen trees. Deep stone layer to reach substrate.			
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


11.12. Appendix L: White-clawed crayfish habitat survey forms for Nant yr Offeiriad, October 2014.

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	1
Date (dd/mm/yy)	13/10/2014	Surveyors	DR LW	Grid ref. (d/s end)	SO 09650 43123
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1100-1300
Photo ref. & Location	view upstream from roadbridge				
Site length (m)	100	Descript. (channel features, landuse)	Access good through garden. Land use - woodland and urban. Otters known to be in area. Good habitat present.		
Width channel (m)	5				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	1x3	2x2	2x2	3x1	3x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	3	1	3
Depth (metres)	0.3	0.4	0.2	0.1	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	1	3	4	4	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)	YES	YES	YES	YES	YES
woody debris					
other urban debris					YES
tree roots, fine	YES	YES			YES
moss					YES
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					YES
cobble (6.5-15cm)					


pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES	YES	YES	
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder		YES	YES	YES	YES
tree roots, large vertical or undercut bank	YES		YES	YES	YES
dry stone wall	YES			YES	
other reinforced					YES
crayfish burrows					
Shading above	MOD	MOD	MOD	MOD	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	2
Date (dd/mm/yy)	13/10/2014	Surveyors	DR LW	Grid ref.	SO 09542 42629
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	0900-1100
Photo ref. & Location	Mid Point at footbridge				
Site length (m)	100	Descript. (channel features, landuse)	Access down very steep woodland footpath. Landuse - woodland. Series of riffles and pools, some very deep. Excellent habitat throughout.		
Width channel (m)	6				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	1x6	3x3	6x1	5x2	3x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	1	3	3
Depth (metres)	0.3	0.2	0.2	0.3	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	5	2	3	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)	YES	YES	YES	YES	YES
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					YES
none					
cobble/boulder	YES	YES	YES	YES	
tree roots, large vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	2				
in banks	1				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeirad	Site (no., name)	3
Date (dd/mm/yy)	12/10/2014	Surveyors	DR LW	Grid ref.	SO 08926 42561
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1500-1700
Photo ref. & Location	In 1st 100m				
Site length (m)	100	Descript. (channel features, landuse) Access very difficult across field and down very steep woodland bank. Excellent surveyability once there. Good habitat.			
Width channel (m)	7				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	1x8	3x3	8x1	4x3	5x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	1	3	3
Depth (metres)	0.3	0.3	0.1	0.2	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	2	2
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine moss					
filamentous algae					


other submerged veg. emergents					
Main substrate beneath					
bedrock				YES	YES
cobble (6.5- 15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES	YES		
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank	YES	YES	YES	YES	YES
none					
cobble/boulder					
tree roots, large vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score				
in margins	2				
in mid channel	2				
in banks	1				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	4
Date (dd/mm/yy)	12/10/2014	Surveyors	DR LW	Grid ref.	SO 08596 42386
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1300-1500
Photo ref. & Location	In 1st 100m				
Site length (m)	100	Descript. (channel features, landuse) Access down very steep wooded banks. Land use - woodland and grazing. Looks good habitat throughout.			
Width channel (m)	7				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	1x7	3x3	6x1	3x2	1x7
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	1	2	3
Depth (metres)	0.3	0.3	0.1	0.3	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	5	4	3	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)	YES	YES	YES	YES	YES
pebble (<6.5cm)					
gravel (<1.6cm)					


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank	YES	YES	YES	YES	YES
none					
cobble/boulder					
tree roots, large vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	0				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Offeiriad		Site (no., name)	5	
Date (dd/mm/yy)	12/10/2014	Surveyors	DR LW			Grid ref.	SO 08224 42923	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	1100 - 1300	
Photo ref. & Location	Upstream end							
Site length (m)	100							
Width channel (m)	6	Descript. (channel features, landuse)	Access good across fields. Land use grazing and woodland. Stock access to river.					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	3x2	1x5	5x1	1x6	3x3			
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	1	3	2			
Depth (metres)	0.2	0.2	0.1	0.3	0.2			
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	2	5	4	4	4			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)	YES	YES	YES	YES	YES			
rubble (give size)	YES	YES	YES					
woody debris								
other urban debris								
tree roots, fine								
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								
pebble (<6.5cm)								
gravel (<1.6cm)	YES	YES	YES	YES	YES			


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	HEAVY	MOD	MOD	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	1				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Offeiriad		Site (no., name)	6	
Date (dd/mm/yy)	12/10/2014	Surveyors	DR LW			Grid ref.	SO07681 43093	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	0900-1100	
Photo ref. & Location	In 1st 100m							
Site length (m)	100							
Width channel (m)	4	Descript. (channel features, landuse)	Access good via road bridge. Landuse grazing for sheep. Shaded on one side open to stock on other side.					
	sample patch 1		sample patch 2		sample patch 3		sample patch 4	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4		1 & 4		1 & 4		1 & 4	
Details (if not standard)								
Extent (l x w patch)	2x2		4x2		4x2		2x2	
Channel (1 margins, 2 mid, 3 both, other specify)	2		2		2		1	
Depth (metres)	0.2		0.3		0.2		0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4		4		4		4	
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES		YES		YES		YES	
cobble (15-25.6cm)	YES		YES		YES		YES	
boulder (25.6-40cm)	YES		YES		YES		YES	
boulder (>40cm)	YES		YES		YES		YES	
rubble (give size)								
woody debris								
other urban debris								
tree roots, fine	YES							
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)	YES		YES		YES		YES	
pebble (<6.5cm)								
gravel (<1.6cm)								


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder				YES	YES
tree roots, large vertical or undercut bank	YES	YES	YES		
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	HEAVY	HEAVY	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score				
in margins	2				
in mid channel	3				
in banks	2				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Offeiriad		Site (no., name)	7	
Date (dd/mm/yy)	11/10/2014	Surveyors	DR LW			Grid ref.	SO 07277 42979	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	1500-1700	
Photo ref. & Location	Upstream end							
Site length (m)	100	Descript. (channel features, landuse)	Access from roadbridge. Land use - woodland. Series of riffles, waterfalls and pools - some very deep.					
Width channel (m)	5							
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	2x5	2x5	5x3	4x3	4x3			
Channel (1 margins, 2 mid, 3 both, other specify)	2	2	3	1	1			
Depth (metres)	0.3	0.3	0.2	0.2	0.2			
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	3	4	4			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)	YES	YES	YES	YES	YES			
rubble (give size)								
woody debris	YES			YES				
other urban debris								
tree roots, fine								
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
pebble (<6.5cm)								
gravel (<1.6cm)								


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					YES
none					
cobble/boulder	YES				
tree roots, large vertical or undercut bank		YES	YES	YES	
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	MOD	MOD	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score				
in margins	3				
in mid channel	3				
in banks	1				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	8	
Date (dd/mm/yy)	11/10/2014	Surveyors	DR LW	Grid ref.	SO 06933 42733	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1300-1500	
Photo ref. & Location	Downstream end					
Site length (m)	100	Descript. (channel features, landuse)	Access from road bridge. Land use - grazing and woodland. Good habitat throughout.			
Width channel (m)	5					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	3x3	2x4	3x4	2x3	3x2	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	2	2	
Depth (metres)	0.2	0.2	0.2	0.3	0.3	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	5	5	4	4	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris				YES		
other urban debris						
tree roots, fine	YES		YES	YES		
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
pebble (<6.5cm)						
gravel (<1.6cm)						


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large vertical or undercut bank	YES			YES	
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score				
in margins	3				
in mid channel	3				
in banks	2				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	9	
Date (dd/mm/yy)	11/10/2014	Surveyors	DR LW	Grid ref.	SO06264 42414	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1100 - 1300	
Photo ref. & Location	Mid point					
Site length (m)	100	Descript. (channel features, landuse)	Access good via road bridge. Fully shaded on left bank with some erosion. Right side field with occasional shading. Land use - grazing . Good habitat throughout.			
Width channel (m)	4					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	2x3	2x4	2x4	3x1	3x3	
Channel (1 margins, 2 mid, 3 both, other specify)	2	2	3	3	1	
Depth (metres)	0.3	0.2	0.3	0.3	0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	5	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris					YES	
other urban debris						
tree roots, fine	YES					
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
pebble (<6.5cm)						
gravel (<1.6cm)						


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	HEAVY	HEAVY	MOD	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score				
in margins	2				
in mid channel	3				
in banks	2				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	2				
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	10
Date (dd/mm/yy)	11/10/2014	Surveyors	DR LW	Grid ref.	SO 05861 42621
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	0900-1100
Photo ref. & Location	In 1st 100m				
Site length (m)	100	Descript. (channel features, landuse)	Access down steep wooded banks. Heavily wooded with many large tree roots. Land use - grazing, stock access to river.		
Width channel (m)	3				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x3	3x3	4x2	3x3	3x3
Channel (1 margins, 2 mid, 3 both, other specify)	2	2	1	3	3
Depth (metres)	0.4	0.4	0.2	0.25	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	4	4	3	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES				
rubble (give size)					
woody debris	YES		YES		
other urban debris					
tree roots, fine		YES			
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES				
cobble (6.5-15cm)		YES	YES	YES	YES
pebble (<6.5cm)					
gravel (<1.6cm)					


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES		YES	YES	YES
tree roots, large vertical or undercut bank		YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Patch 1, downstream end of site was on bedrock with fewer refuges. Patch 2 like Site 9.			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Offeiriad		Site (no., name)	11	
Date (dd/mm/yy)	10/10/2014	Surveyors	DR LW			Grid ref.	SO 05269 43142	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	1500 - 1700	
Photo ref. & Location	Downstream end							
Site length (m)	100							
Width channel (m)	3	Descript. (channel features, landuse)	Access through farmyard. Land use grazing adjacent to farmyard. Site just upstream of farmyard.					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	4x3	3x3	4x3	4x3	4x3			
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	3	2	3			
Depth (metres)	0.3	0.3	0.3	0.3	0.3			
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	5	4	4			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)								
rubble (give size)								
woody debris								
other urban debris								
tree roots, fine								
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
pebble (<6.5cm)								
gravel (<1.6cm)								


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	LIGHT	MOD	MOD	MOD
Crayfish manually					
Crayfish by trap	8				
Total crayfish caught	8				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	8				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	12
Date (dd/mm/yy)	10/10/2014	Surveyors	DR LW	Grid ref.	SO 04635 43457
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1300-1500
Photo ref. & Location	In 1st 100m				
Site length (m)	100	Descript. (channel features, landuse) Good access across steep field. Land use - grazing and woodland			
Width channel (m)	3				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x2	2x2	3x1	5x2	3x3
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	1	1	2
Depth (metres)	0.4	0.3	0.3	0.2	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	4	5	5
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)			YES		
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine	YES	YES	YES	YES	YES
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES	YES	YES	YES


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder			YES	YES	YES
tree roots, large vertical or undercut bank	YES	YES			
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	MOD	MOD	MOD	MOD
Crayfish manually	1	3	4	2	
Crayfish by trap	22				
Total crayfish caught	32				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Patch 1 - earth banks on right side			
in margins	3				
in mid channel	3				
in banks	2				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	32				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Offeiriad	Site (no., name)	13
Date (dd/mm/yy)	10/10/2014	Surveyors	DR LW	Grid ref.	SO 03771 43539
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1100-1300
Photo ref. & Location	In 1st 100m				
Site length (m)	100	Descript. (channel features, landuse) Access down moderately steep wooded bank. Land use woodland and grazing with limited stock access to water. Appears to be excellent habitat.			
Width channel (m)	3				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x3	2x3	3x3	3x3	3x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.3	0.3	0.2	0.2	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	4	4	4	5
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)					
rubble (give size)					
woody debris	YES			YES	YES
other urban debris					
tree roots, fine	YES	YES	YES	YES	
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES	YES	YES	YES


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank		YES			
none					
cobble/boulder					
tree roots, large vertical or undercut bank	YES		YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	MOD	HEAVY
Crayfish manually	3	10	12	1	4
Crayfish by trap	18				
Total crayfish caught	48				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Patch 1 & 2 had earth banks with no crayfish burrows. An otter holt has recently been installed and it is believed that otters have started to use it. Photo of crayfish found at this site			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	48				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Offeiriad		Site (no., name)	14	
Date (dd/mm/yy)	10/10/2014	Surveyors	DR LW			Grid ref.	SO 03000 43674	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	0900-1100	
Photo ref. & Location	In 1st 100m							
Site length (m)	100	Descript. (channel features, landuse)	Access over moorland. Land use moorland grazing and woodland. Stock access throughout					
Width channel (m)	1							
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	6x1	4x1	5x1	6x1	6x1			
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3			
Depth (metres)	0.1	0.2	0.2	0.2	0.2			
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	4	4	4			
Refuges in channel	tick all present in patch, main types searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)	YES	YES						
rubble (give size)								
woody debris					YES			
other urban debris								
tree roots, fine moss								
filamentous algae								
other submerged veg. emergents	YES	YES	YES	YES	YES			
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								
pebble (<6.5cm)								
gravel (<1.6cm)	YES	YES	YES	YES	YES			


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	NONE	NONE	NONE	NONE	NONE
Crayfish manually		4	2	1	
Crayfish by trap	7				
Total crayfish caught	14				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	2				
in mid channel	3				
in banks	3				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	14				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Offeiriad		Site (no., name)	15	
Date (dd/mm/yy)	09/10/2014	Surveyors	DR LW			Grid ref.	SO 02620 43857	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	1100-1300	
Photo ref. & Location	In 1st 100m							
Site length (m)	400m							
Width channel (m)	1	Descript. (channel features, landuse)	Access good walking from road. Low water. Very few large boulders/stones.					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4		1 & 4		1 & 4		1 & 4	
Details (if not standard)								
Extent (l x w patch)	3x1		4x1		5x1		7x1	
Channel (1 margins, 2 mid, 3 both, other specify)	3		3		3		3	
Depth (metres)	0.2		0.2		0.2		0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4		4		4		4	
Refuges in channel	tick all present in patch, ring main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES						
boulder (>40cm)								
rubble (give size)								
woody debris								
other urban debris								
tree roots, fine								
moss								
filamentous algae								
other submerged veg.	YES	YES	YES	YES	YES	YES		
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								
pebble (<6.5cm)								
gravel (<1.6cm)	YES	YES	YES	YES	YES	YES		


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	NONE	NONE	NONE	NONE	NONE
Crayfish manually				2	1
Crayfish by trap	9				
Total crayfish caught	12				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	2				
in mid channel	2				
in banks	2				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	12				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Offeiriad		Site (no., name)	16	
Date (dd/mm/yy)	09/10/2014	Surveyors	DR LW			Grid ref.	SO 02021 44210	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	0900-1100	
Photo ref. & Location	In 1st 100m							
Site length (m)	400							
Width channel (m)	0.5		Descript. (channel features, landuse)				Access good walking from road. Very few large boulders/stones.	
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4		1 & 4		1 & 4		1 & 4	
Details (if not standard)								
Extent (l x w patch)	4x0.5		4x0.5		5x0.5		5x0.5	
Channel (1 margins, 2 mid, 3 both, other specify)	3		3		3		3	
Depth (metres)	0.2		0.2		0.2		0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4		4		4		4	
Refuges in channel	tick all present in patch, ring main type(s) searched							
cobble (6.5-15cm)	YES	YES	YES	YES	YES	YES		
cobble (15-25.6cm)	YES	YES	YES	YES	YES	YES		
boulder (25.6-40cm)								
boulder (>40cm)								
rubble (give size)								
woody debris								
other urban debris								
tree roots, fine								
moss								
filamentous algae								
other submerged veg.	YES	YES	YES	YES	YES	YES		
emergents	YES	YES	YES	YES	YES	YES		
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								
pebble (<6.5cm)								
gravel (<1.6cm)	YES	YES	YES	YES	YES	YES		


sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	NONE	NONE	NONE	NONE	NONE
Crayfish manually			1		
Crayfish by trap	7				
Total crayfish caught	8				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	2				
in mid channel	2				
in banks	2				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	8				

11.13. Appendix M: White-clawed crayfish habitat survey forms for Sgithwen Brook, October 2014 and September 2015


CRAYFISH HABITAT SURVEY FORM							
Catchment	Wye	Surveyor	River	Sgithwen	Site (no., name)	1	
Date (dd/mm/yy)	01/09/2015		DR LW		Grid ref. (d/s end)	SO 1136 4147	
Weather, good 1, mod 2, poor 3	1 & 4		Water temp. °C	1	Clarity, good 1, mod 2, poor 3	12	
Photo ref. & Location	Sg01						
Site length (m)	100						
Width channel (m)	6	Descript. (channel features, landuse)	Urban gardens, grazing, woodland, road bridges and walls. Access good via public footpath				
			sample patch 1	sample patch 2	sample patch 3		sample patch 4
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4		1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)							
Extent (l x w patch)	1x6		2x6	5x1	3x3	3x2	
Channel (1 margins, 2 mid, 3 both, other specify)	3		3	1	2	2	
Depth (metres)	0.3		0.2	0.1	0.3	0.3	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5		5	4	4	4	
Refuges in channel	tick all present in patch, main type(s) searched in red						
cobble (6.5-15cm)	YES		YES		YES		
cobble (15-25.6cm)	YES		YES		YES		
boulder (25.6-40cm)	YES		YES		YES		
boulder (>40cm)	YES		YES		YES		
rubble (give size)							
woody debris							
other urban debris							
tree roots, fine							
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock	YES		YES		YES		
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)							
sand (<2mm)							
clay							
silt							
Siltation							
none	YES		YES		YES		
low							
moderate							
high							
Refuges in bank							
none	YES		YES		YES		
cobble/boulder							
tree roots, large							
vertical or undercut bank							
dry stone wall							
other reinforced							
crayfish burrows							
Shading above	HEAVY		HEAVY		HEAVY		
Crayfish /10 refuges, or per unit (depending on method)	0		0		0		
Search time (Mins)	10		10		5		
Bullhead present?	YES		YES				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Salmonids present throughout					
in margins	3						
in mid channel	3						
in banks	3						
surveyability	3						
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.							
Total crayfish (all methods)	0						

CRAYFISH HABITAT SURVEY FORM						
Catchment	Wye	River	Sgithwen	Site (no., name)	2	
Date (dd/mm/yy)	01/09/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1102 4140	
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3
Photo ref. & Location	Sg02					
Site length (m)	100					
Width channel (m)	4					
	Descript. (channel features, landuse) Wooded and urban grounds of Trericket Mill. Pools bedrock and waterfalls. Access good					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	3x2	4x1	3x3	6x1	2x2	
Channel (1 margins, 2 mid, 3 both, other specify)	3	1	3	1	3	
Depth (metres)	0.1	0.3	0.2	0.3	0.1	
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	5	2	5	2	5	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris		YES		YES		
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock	YES	YES	YES	YES	YES	
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt						
Siltation						
none	YES	YES	YES	YES	YES	
low						
moderate						
high						
Refuges in bank		YES		YES		
none	YES		YES		YES	
cobble/boulder						
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	HEAVY	MOD	HEAVY	MOD	HEAVY	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	5	15	5	15	5	
Bullhead present?	YES		YES		YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Derelict fish pass				
in margins	3					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (all methods)	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen		Site (no., name)	3		
Date (dd/mm/yy)	01/09/2015	Surveyors	DR LW		Grid ref. (d/s end)	SO 1054 4135		
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4		Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1	
Photo ref. & Location	Sg03							
Site length (m)	100	Descript. (channel features, landuse) Wooded/urban. Riffle, pools bedrock and waterfalls. Access steep.						
Width channel (m)	5							
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	5x2	4x1	3x1	4x2	6x2			
Channel (1 margins, 2 mid, 3 both, other specify)	3	1	1	3	2			
Depth (metres)	0.4	0.2	0.2	0.2	0.3			
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	3	4	5	4	5			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)	YES	YES	YES	YES	YES			
rubble (give size)								
woody debris						YES		
other urban debris								
tree roots, fine		YES				YES		
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock	YES	YES	YES	YES	YES			
cobble (6.5-15cm)								
pebble (<6.5cm)								
gravel (<1.6cm)								
sand (<2mm)								
clay								
silt								
Siltation								
none	YES	YES	YES	YES	YES			
low								
moderate								
high								
Refuges in bank								
none	YES					YES		
cobble/boulder								
tree roots, large			YES					
vertical or undercut bank								
dry stone wall								
other reinforced								
crayfish burrows								
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY			
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0			
Search time (Mins)	5	10	5	10	5			
Bullhead present?			YES	YES				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): All Patches exhibit excellent habitat							
Score								
in margins	3							
in mid channel	3							
in banks	3							
surveyability	3							
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.								
Total crayfish (all methods)	0							


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	4
Date (dd/mm/yy)	02/09/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 1016 4091
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4	Water temp. oC	Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Sg04				
Site length (m)	100	Descript. (channel features, landuse)	Urban and wooded. Riffle upstream of waterfalls. Access good via road to house		
Width channel (m)	5				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Extent (l x w patch)	3x1	2x3	4x1	4x1	6x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	1	1	3
Depth (metres)	0.2	0.3	0.2	0.2	0.4
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	3	5	2	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES		YES		YES
other urban debris					
tree roots, fine		YES	YES		YES
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large	YES		YES		YES
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	5	5	5	10	15
Bullhead present?		YES	YES		YES
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (all methods)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	5
Date (dd/mm/yy)	02/09/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 0948 4084
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12
				Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Sg05				
Site length (m)	100	Descript. (channel features, landuse)	Woodland adjacent to river then grazing. Access from roadbridge.		
Width channel (m)	6				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Extent (l x w patch)	2x2	3x2	3x1	2x2	5x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	1	2	3
Depth (metres)	0.4	0.2	0.3	0.2	0.3
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	2	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none	YES			YES	YES
cobble/boulder		YES	YES		
tree roots, large		YES			YES
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	10	5	5	10	10
Bullhead present?		YES	YES	YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (all methods)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	6
Date (dd/mm/yy)	02/09/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 0902 4048
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	Water temp. oC	12	Clarity, good 1, mod 2, poor 3
Photo ref. & Location	Sg06				
Site length (m)	100		1 & 4	1 & 4	
Width channel (m)	5	Descript. (channel features, landuse)	1 & 4	1 & 4	
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	4x1	4x1	2x2	2x2	4x2
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	2	2	3
Depth (metres)	0.2	0.2	0.4	0.3	0.2
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	4	2	5
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)					
rubble (give size)					
woody debris	YES	YES	YES	YES	YES
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large					
vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish 10 refuges, or per unit (depending on method)	0	2	0	0	0
Search time (Mins)	10	10	5	10	5
Bullhead present?		YES			
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (all methods)	2				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	7
Date (dd/mm/yy)	02/09/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 0861 4025
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12
				Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Sg07				
Site length (m)	100	Descript. (channel features, landuse) Wooded banks with surrounding grazing. Access good via road bridge.			
Width channel (m)	3				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x2	3x4	5x1	4x3	5x1
Channel (1 margins, 2 mid, 3 both, other specify)	2	3	1	3	1
Depth (metres)	0.2	0.3	0.2	0.3	0.2
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	3	4	3	5	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES		YES		YES
rubble (give size)					
woody debris	YES		YES		
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large		YES	YES		
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish 10 refuges, or per unit (depending on method)	7	0	3	1	2
Search time (Mins)	10	5	10	10	10
Bullhead present?		YES	YES		YES
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Disintegrating spraint of mink or otter under road bridges				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (all methods)	13				

CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Sgithwen			Site (no., name)	8	
Date (dd/mm/yy)	03/09/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0823 3995	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1	
Photo ref. & Location	Sg08							
Site length (m)	100	Descript. (channel features, landuse) Grazing with heavily wooded banks. Access good via road bridge.						
Width channel (m)	4							
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	2x2	2x4	3x2	5x1	2x2			
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	1	2			
Depth (metres)	0.2	0.2	0.2	0.2	0.3			
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	4	5	4	3	3			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)	YES	YES	YES	YES	YES			
rubble (give size)								
woody debris	YES				YES	YES		
other urban debris								
tree roots, fine	YES				YES			
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock	YES	YES	YES	YES	YES	YES		
cobble (6.5-15cm)								
pebble (<6.5cm)								
gravel (<1.6cm)								
sand (<2mm)								
clay								
silt								
Siltation								
none	YES	YES	YES	YES	YES	YES		
low								
moderate								
high								
Refuges in bank								
none								
cobble/boulder	YES	YES	YES	YES	YES	YES		
tree roots, large	YES				YES	YES		
vertical or undercut bank								
dry stone wall								
other reinforced								
crayfish burrows								
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY		
Crayfish 10 refuges, or per unit (depending on method)	3	2	0	2	0			
Search time (Mins)	5	10	5	5	5			
Bullhead present?	YES	YES				YES		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Mink spriant containing crayfish remains present throughout.							
Score								
in margins	3							
in mid channel	3							
in banks	3							
surveyability	3							
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.								
Total crayfish (all methods)	7							

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	9
Date (dd/mm/yy)	16/10/2014	Surveyors	DR LW	Grid ref.	SO 08312 40030
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1500-1700
Photo ref. & Location	Immediately downstream of 1st 100m				
Site length (m)	100	Descript. (channel features, landuse) Land use - woodland, grazing. Access - roadbridge at downstream end. Series of bedrock waterfalls, pools and stoney areas.			
Width channel (m)	4				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x2	6x1	6x1	6x1	6x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.2	0.2	0.3	0.2	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES	YES	YES	YES	YES
other urban debris					
tree roots, fine	YES				YES
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					


cobble (6.5-15cm)	YES	YES	YES	YES	YES					
pebble (<6.5cm)										
gravel (<1.6cm)										
sand (<2mm)										
clay										
silt										
Siltation										
none										
low	YES	YES	YES	YES	YES					
moderate										
high										
Refuges in bank										
none		YES		YES						
cobble/boulder										
tree roots, large vertical or undercut bank	YES		YES		YES					
dry stone wall										
other reinforced										
crayfish burrows										
Shading above	LIGHT	LIGHT	LIGHT	LIGHT	LIGHT					
Crayfish manually	0	0	0	0	3					
Crayfish by trap	4									
Total crayfish caught	7									
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Stock access throughout.									
Score										
in margins						3				
in mid channel						3				
in banks						1				
surveyability						3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.										
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	7									

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	10	
Date (dd/mm/yy)	16/10/2014	Surveyors	DR LW	Grid ref.	SO 07659 39571	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1300-1500	
Photo ref. & Location	400m mark					
Site length (m)	100	Descript. (channel features, landuse)	Land use - agricultural. Easy access via road bridge			
Width channel (m)	3					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	5x1	7x2	7x2	5x2	7x1	
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	2	3	3	
Depth (metres)	0.4	0.2	0.3	0.3	0.3	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	5	5	4	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris	YES	YES	YES	YES	YES	
other urban debris						
tree roots, fine	YES	YES	YES			
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)	YES	YES	YES	YES	YES	


pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall		YES		YES	
other reinforced					
crayfish burrows					
Shading above	MOD	HEAVY	MOD	HEAVY	HEAVY
Crayfish manually	0	0	1	0	0
Crayfish by trap	3				
Total crayfish caught	4				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):Excellent habitat throughout			
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	4				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	11	
Date (dd/mm/yy)	16/10/2014	Surveyors	DR LW	Grid ref.	SO 06970 39107	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1100-1300	
Photo ref. & Location	In 1st 100m					
Site length (m)	100	Descript. (channel features, landuse)	Land use - woodland. Access from roadbridge in Site 10			
Width channel (m)	2.5					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	2x2	4x2	3x2	8x1	10x1	
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	2	2	3	
Depth (metres)	0.2	0.2	0.2	0.3	0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	4	5	5	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris	YES	YES	YES	YES	YES	
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)	YES	YES	YES	YES	YES	


pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none	YES	YES			
cobble/boulder			YES	YES	YES
tree roots, large vertical or undercut bank				YES	YES
dry stone wall			YES	YES	
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish manually		1		1	1
Crayfish by trap			5		
Total crayfish caught			8		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):Excellent habitat			
Score					
in margins	3				
in mid channel	3				
in banks	2				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	8				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	12	
Date (dd/mm/yy)	16/10/2014	Surveyors	DR LW	Grid ref.	SO 06541 38597	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	0900-1100	
Photo ref. & Location	Mid point of site					
Site length (m)	100	Descript. (channel features, landuse)	Land use - woodland and village. Access via roadbridge.			
Width channel (m)	3					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	3x2	4x2	6x2	5x1	3x1	
Channel (1 margins, 2 mid, 3 both, other specify)	2	1	3	1	3	
Depth (metres)	0.2	0.2	0.2	0.2	0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris	YES	YES	YES	YES	YES	
other urban debris						
tree roots, fine	YES	YES	YES	YES	YES	
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock	YES	YES	YES	YES	YES	
cobble (6.5-15cm)						


pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt						
Siltation						
none	YES	YES	YES	YES	YES	
low						
moderate						
high						
Refuges in bank						
none						
cobble/boulder	YES	YES				
tree roots, large vertical or undercut bank	YES	YES	YES	YES	YES	
dry stone wall	YES					
other reinforced						
crayfish burrows						
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY	
Crayfish manually	0	0	0	0	0	
Crayfish by trap	2					
Total crayfish caught	2					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):					
Score						
in margins						3
in mid channel						3
in banks						1
surveyability						3
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	2					

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	13
Date (dd/mm/yy)	15/10/2014	Surveyors	DR LW	Grid ref.	SO 06010 38645
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	1500-1700
Photo ref. & Location	Towards upstream end of site				
Site length (m)	100	Descript. (channel features, landuse) Land use - grazing, total stock access. Easy access across field.			
Width channel (m)	1.5				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	6x1	6x1	6x1	6x1	6x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.2	0.2	0.2	0.2	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					


pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES	YES	YES	YES
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large vertical or undercut bank					
dry stone wall	YES	YES	YES	YES	YES
other reinforced					
crayfish burrows					
Shading above	NONE	NONE	NONE	NONE	NONE
Crayfish manually					1
Crayfish by trap			3		
Total crayfish caught			4		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.): Site is mostly a straight channel except for the most upstream end where there is more diversity of habitat			
Score					
in margins	3				
in mid channel	3				
in banks	2				
surveyability	1				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	4				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Sgithwen		Site (no., name)	14	
Date (dd/mm/yy)	15/10/2014	Surveyors	DR LW			Grid ref.	SO 05720 38718	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	1300-1500	
Photo ref. & Location	At 100 m between patches 1 and 2							
Site length (m)	100							
Width channel (m)	1.5 - 2.5	Descript. (channel features, landuse)	Land use - farmyard and grazing. Irish bridge between Patches 1 & 2. Good habitat throughout. Easy access through farmyard					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Details (if not standard)								
Extent (l x w patch)	6x4	8x2	5x1	5x1	5x1			
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	3	3	3			
Depth (metres)	0.3	0.3	0.3	0.3	0.2			
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	4	4	4			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)	YES	YES	YES	YES	YES	YES		
rubble (give size)								
woody debris				YES				
other urban debris								
tree roots, fine								
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								


pebble (<6.5cm)						
gravel (<1.6cm)			YES	YES	YES	
sand (<2mm)						
clay						
silt	YES	YES				
Siltation			YES	YES	YES	
none						
low						
moderate	YES	YES				
high						
Refuges in bank						
none	YES	YES				
cobble/boulder		YES				
tree roots, large vertical or undercut bank		YES				
dry stone wall		YES		YES	YES	
other reinforced						
crayfish burrows					YES	
Shading above	NONE	NONE	NONE	MOD	MOD	
Crayfish manually	6	7	2	1	1	
Crayfish by trap	37					
Total crayfish caught	54					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Good habitat throughout. Six crayfish seen walking across riverbed from Irish bridge (in photo). Also reports of largest crayfish ever seen in this area by local farmers.					
Score						
in margins						3
in mid channel						3
in banks						3
surveyability						3
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	54					

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye		River	Sgithwen		Site (no., name)	15				
Date (dd/mm/yy)	15/10/2014	Surveyors	DR LW			Grid ref.	SO 05116 38682				
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1			Start and finish time	1100-1300				
Photo ref. & Location	In 1st 100m										
Site length (m)	100										
Width channel (m)	1.5 - 3		Descript. (channel features, landuse) Land use - woodland and grazing. Easy access across field. Good habitat throughout.								
	sample patch 1		sample patch 2		sample patch 3		sample patch 4		sample patch 5		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4		1 & 4		1 & 4		1 & 4		1 & 4		
Details (if not standard)											
Extent (l x w patch)	3x2		3x2		4x3		5x1		5x1		
Channel (1 margins, 2 mid, 3 both, other specify)	3		3		1		3		3		
Depth (metres)	0.2		0.2		0.3		0.2		0.2		
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5		5		2		3		5		
Refuges in channel	tick all present in patch, main type(s) searched in red										
cobble (6.5-15cm)	YES		YES		YES		YES		YES		
cobble (15-25.6cm)	YES		YES		YES		YES		YES		
boulder (25.6-40cm)	YES		YES		YES		YES		YES		
boulder (>40cm)	YES		YES		YES		YES		YES		
rubble (give size)											
woody debris	YES		YES								
other urban debris											
tree roots, fine	YES		YES								
moss											
filamentous algae											
other submerged veg.											
emergents											
Main substrate beneath											
bedrock											
cobble (6.5-15cm)											

pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES	YES	YES	YES
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large vertical or undercut bank	YES	YES			
dry stone wall	YES	YES		YES	YES
other reinforced					
crayfish burrows					
Shading above	LOW	MOD	HEAVY	HEAVY	LOW
Crayfish manually	3	2		2	
Crayfish by trap	12				
Total crayfish caught	19				
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):				
Score					
in margins	3				
in mid channel	3				
in banks	2				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	19				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Sgithwen	Site (no., name)	16	
Date (dd/mm/yy)	15/10/2014	Surveyors	DR LW	Grid ref.	SO 04620 39077	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Start and finish time	0900-1100	
Photo ref. & Location	Pond					
Site length (m)	100	Descript. (channel features, landuse)	Land use - forestry plus forestry store. Small stream channel with adjacent pond.			
Width channel (m)	1.5					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	8x1	8x1	8x1	8x1	8x1	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3	
Depth (metres)	0.2	0.2	0.2	0.3	0.2	
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	4	3	3	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris	YES			YES		
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath	CONCRETE					
bedrock						
cobble (6.5-15cm)						


pebble (<6.5cm)	YES	YES	YES		YES
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none	YES			YES	YES
cobble/boulder					
tree roots, large vertical or undercut bank		YES	YES		
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	MOD	MOD	MOD
Crayfish manually					
Crayfish by trap					
Total crayfish caught					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):Patch 4 - river piped under track, contains boulders and cobbles. Photos of river upstream and downstream of piped section.			
Score					
in margins	3				
in mid channel	3				
in banks	1				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				




11.14. Appendix N: White-clawed crayfish habitat survey forms for Dulas Brook (Builth Road) September 2015

CRAYFISH HABITAT SURVEY FORM						
Catchment	Wye	Surveyor	River	Dulas Brook (Builth Road)	Site (no., name)	1
Date (dd/mm/yy)	29/09/2015		DR LW		Grid ref. (d/s end)	SO 0210 5300
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Dulas01					
Site length (m)	500	Descript. (channel features, landuse)	Grazing and urban. Adjacent sewage works			
Width channel (m)	5		Access good.			
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	5x1	5x1	4x2	5x1	5x2	
Channel (1 marg, 2 mid, 3 both, other specify)	2	2	3	1	3	
Depth (metres)	0.2	0.2	0.3	0.2	0.3	
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	4	5	4	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris						
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)						YES
gravel (<1.6cm)	YES	YES	YES	YES	YES	
sand (<2mm)						
clay						
silt						
Siltation						
none	YES		YES	YES		
low		YES				YES
moderate						
high						
Refuges in bank						
none						
cobble/boulder	YES	YES	YES	YES	YES	
tree roots, large			YES		YES	
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	MOD	HEAVY	MOD	HEAVY	MOD	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	5	5	10	10	15	
Bullhead present?	YES		YES		YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):				
in margins	3					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)		Site (no., name)	2
Date (dd/mm/yy)	29/08/2015	Surveyors	DR LW		Grid ref. (d/s end)	SO 0234 5335
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12	Clarity, good 1, mod 2, poor 3
Photo ref. & Location	Dulas02					
Site length (m)	100	Descript. (channel features, landuse) Urban, footpath, footbridge, public access, dog walking, footbridge, wooded banks, grazing. Good access.				
Width channel (m)	5					
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	5x1	5x1	4x3	4x1	3x2	
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	3	1	3	
Depth (metres)	0.2	0.3	0.4	0.3	0.2	
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	3	2	3	4	4	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris	YES		YES		YES	
other urban debris	YES	YES			YES	
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)			YES			
gravel (<1.6cm)	YES	YES		YES	YES	
sand (<2mm)						
clay						
silt						
Siltation						
none	YES	YES		YES	YES	
low			YES			
moderate						
high						
Refuges in bank						
none						
cobble/boulder						
tree roots, large	YES	YES		YES	YES	
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	HEAVY	HEAVY	HEAVY	MOD	HEAVY	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	15	10	5	5	5	
Bullhead present?			YES	YES		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Large boulders obscure water flow at some points.				
in margins	3					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)			Site (no., name)	3
Date (dd/mm/yy)	30/08/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0270 5356
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Dulas03						
Site length (m)	100	Descript. (channel features, landuse)	Wooded, back of old garage, roadbridgerailway embankment. Good access.				
Width channel (m)	4						
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4		
Details (if not standard)							
Extent (l x w patch)	1x3	4x1	3x2	2x2	4x2		
Channel (1 margins, 2 mid, 3 both, other specify)	3	1	1	2	2		
Depth (metres)	0.2	0.2	0.2	0.2	0.2		
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	4	4	4		
Refuges in channel	tick all present in patch, main type(s) searched in red						
cobble (6.5-15cm)	YES	YES	YES	YES	YES		
cobble (15-25.6cm)	YES	YES	YES	YES	YES		
boulder (25.6-40cm)	YES	YES	YES	YES	YES		
boulder (>40cm)	YES	YES	YES	YES	YES		
rubble (give size)							
woody debris							
other urban debris							
tree roots, fine							
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock							
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)	YES	YES	YES	YES	YES		
sand (<2mm)							
clay							
silt							
Siltation							
none	YES	YES	YES	YES	YES		
low							
moderate							
high							
Refuges in bank							
none							
cobble/boulder	YES	YES	YES	YES	YES		
tree roots, large	YES	YES	YES	YES	YES		
vertical or undercut bank	YES						
dry stone wall							
other reinforced							
crayfish burrows							
Shading above	MOD	LIGHT	LIGHT	NONE	NONE		
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0		
Search time (Mins)	5	5	15	5	5		
Bullhead present?	YES	YES		YES	YES		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):					
in margins	3						
in mid channel	3						
in banks	3						
surveyability	3						
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.							
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0						


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)			Site (no., name)	4	
Date (dd/mm/yy)	30/08/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0293 5391	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1	
Photo ref. & Location	Dulas04							
Site length (m)	100	Descript. (channel features, landuse) Urban, woodland, grazing, stock access. Access by walking from downstream.						
Width channel (m)	4							
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Extent (l x w patch)	2x2	3x1	3x2	4x1	6x1			
Channel (1 margins, 2 mid, 3 both, other specify)	3	1	2	1	1			
Depth (metres)	0.4	0.2	0.3	0.2	0.2			
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	4	3	4			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES	YES		
cobble (15-25.6cm)	YES	YES	YES	YES	YES	YES		
boulder (25.6-40cm)	YES	YES	YES	YES	YES	YES		
boulder (>40cm)	YES	YES	YES	YES	YES	YES		
rubble (give size)								
woody debris								
other urban debris								
tree roots, fine					YES	YES		
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								
pebble (<6.5cm)								
gravel (<1.6cm)	YES	YES	YES	YES	YES	YES		
sand (<2mm)								
clay								
silt								
Siltation								
none					YES	YES		
low	YES	YES	YES					
moderate								
high								
Refuges in bank								
none								
cobble/boulder	YES	YES	YES	YES	YES	YES		
tree roots, large					YES	YES		
vertical or undercut bank								
dry stone wall								
other reinforced								
crayfish burrows								
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY		
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	0		
Search time (Mins)	10	10	10	10	10	10		
Bullhead present?							YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):							
Score								
in margins	3							
in mid channel	3							
in banks	3							
surveyability	3							
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.								
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0							


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)		Site (no., name)	5	
Date (dd/mm/yy)	30/08/2015	Surveyor	DR LW		Grid ref. (d/s end)	SO 0314 5439	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	
Photo ref. & Location	Dulas05						
Site length (m)	100						
Width channel (m)	4						
	Descript. (channel features, landuse) Woodland, grazing. Buffer zone except at some stock access point. Good access						
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4		
Details (if not standard)							
Extent (l x w patch)	2x2	2x3	6x1	3x2	3x2		
Channel (1 margins, 2 mid, 3 both, other specify)	2	2	1	3	2		
Depth (metres)	0.2	0.2	0.2	0.2	0.2		
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	4	4	5		
Refuges in channel	tick all present in patch, main type(s) searched in red						
cobble (6.5-15cm)	YES	YES	YES	YES	YES		
cobble (15-25.6cm)	YES	YES	YES	YES	YES		
boulder (25.6-40cm)	YES	YES	YES	YES	YES		
boulder (>40cm)	YES	YES	YES	YES	YES		
rubble (give size)							
woody debris	YES						
other urban debris							
tree roots, fine			YES				
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock							
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)	YES	YES	YES	YES	YES		
sand (<2mm)							
clay							
silt							
Siltation							
none	YES	YES	YES	YES	YES		
low							
moderate							
high							
Refuges in bank							
none							
cobble/boulder	YES	YES	YES	YES	YES		
tree roots, large	YES	YES	YES		YES		
vertical or undercut bank							
dry stone wall							
other reinforced							
crayfish burrows							
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY		
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0		
Search time (Mins)	5	5	10	5	5		
Bullhead present?	YES	YES		YES	YES		
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):						
Score							
in margins	3						
in mid channel	3						
in banks	3						
surveyability	3						
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.							
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0						


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)			Site (no., name)	6		
Date (dd/mm/yy)	30/08/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0353 5500		
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1		
Photo ref. & Location	Dulas06								
Site length (m)	100	Descript. (channel features, landuse) Woodland strip adjacent to river creates buffer zone except at some stock access point. Good access							
Width channel (m)	3								
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Details (if not standard)									
Extent (l x w patch)	5x1		4x1	4x1	3x2	3x2			
Channel (1 margins, 2 mid, 3 both, other specify)	1		1	1	2	3			
Depth (metres)	0.3		0.2	0.3	0.3	0.3			
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3		2	4	3	3			
Refuges in channel	tick all present in patch, main type(s) searched in red								
cobble (6.5-15cm)	YES		YES		YES		YES		
cobble (15-25.6cm)	YES		YES		YES		YES		
boulder (25.6-40cm)	YES		YES		YES		YES		
boulder (>40cm)	YES		YES		YES		YES		
rubble (give size)									
woody debris	YES			YES					
other urban debris									
tree roots, fine	YES			YES					
moss									
filamentous algae									
other submerged veg.									
emergents									
Main substrate beneath									
bedrock									
cobble (6.5-15cm)									
pebble (<6.5cm)									
gravel (<1.6cm)	YES								
sand (<2mm)			YES		YES		YES		
clay									
silt									
Siltation									
none									
low	YES		YES		YES		YES		
moderate									
high									
Refuges in bank									
none									
cobble/boulder	YES		YES		YES		YES		
tree roots, large	YES				YES				
vertical or undercut bank			YES						
dry stone wall									
other reinforced									
crayfish burrows									
Shading above	HEAVY		HEAVY		HEAVY		HEAVY		
Crayfish /10 refuges, or per unit (depending on method)	0		0		0		0		
Search time (Mins)	10		5		10		10		
Bullhead present?	YES								
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)		Notes (survey conditions, patches etc.):							
Score									
in margins	3								
in mid channel	3								
in banks	3								
surveyability	3								
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.									
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0								


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)			Site (no., name)	7	
Date (dd/mm/yy)	31/08/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0412 5508	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1	
Photo ref. & Location	Dulas07							
Site length (m)	100	Descript. (channel features, landuse) Gardens roadbridge, back of outbuildings. Access good.						
Width channel (m)	2							
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5			
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4			
Extent (l x w patch)	5x2	5x2	3x1	2x2	2x3			
Channel (1 margins, 2 mid, 3 both, other specify)	2	2	1	2	3			
Depth (metres)	0.1	0.1	0.2	0.2	0.2			
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	4	5	5			
Refuges in channel	tick all present in patch, main type(s) searched in red							
cobble (6.5-15cm)	YES	YES	YES	YES	YES			
cobble (15-25.6cm)	YES	YES	YES	YES	YES			
boulder (25.6-40cm)	YES	YES	YES	YES	YES			
boulder (>40cm)								
rubble (give size)								
woody debris								
other urban debris	YES	YES						
tree roots, fine								
moss								
filamentous algae								
other submerged veg.								
emergents								
Main substrate beneath								
bedrock								
cobble (6.5-15cm)								
pebble (<6.5cm)	YES	YES	YES	YES	YES			
gravel (<1.6cm)								
sand (<2mm)								
clay								
silt								
Siltation								
none	YES	YES	YES	YES	YES			
low								
moderate								
high								
Refuges in bank								
none	YES	YES						
cobble/boulder				YES	YES			
tree roots, large								
vertical or undercut bank				YES	YES			
dry stone wall								
other reinforced								
crayfish burrows								
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY			
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0			
Search time (Mins)	15	15	5	5	5			
Bullhead present?								
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Disintegrating otter or mink spraint							
Score								
in margins	3							
in mid channel	3							
in banks	3							
surveyability	3							
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.								
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0							


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)			Site (no., name)	8		
Date (dd/mm/yy)	31/08/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0441 5562		
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1		
Photo ref. & Location	Dulas08								
Site length (m)	100	Descript. (channel features, landuse)	Grazing, exposed banks. Good access						
Width channel (m)	2								
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5				
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4				
Extent (l x w patch)	5x1	5x1	3x1	3x1	3x1				
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3				
Depth (metres)	0.2	0.2	0.2	0.2	0.3				
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	5	4	3	5				
Refuges in channel	tick all present in patch, main type(s) searched in red								
cobble (6.5-15cm)	YES	YES	YES	YES	YES				
cobble (15-25.6cm)	YES	YES	YES	YES	YES				
boulder (25.6-40cm)	YES	YES	YES	YES	YES				
boulder (>40cm)									
rubble (give size)									
woody debris	YES								
other urban debris									
tree roots, fine									
moss									
filamentous algae									
other submerged veg.									
emergents									
Main substrate beneath									
bedrock									
cobble (6.5-15cm)									
pebble (<6.5cm)									
gravel (<1.6cm)	YES	YES	YES	YES	YES				
sand (<2mm)									
clay									
silt									
Siltation									
none	YES	YES	YES	YES	YES				
low									
moderate									
high									
Refuges in bank									
none									
cobble/boulder		YES			YES	YES			
tree roots, large	YES	YES			YES				
vertical or undercut bank									
dry stone wall									
other reinforced									
crayfish burrows									
Shading above	MOD	MOD	MOD	MOD	MOD				
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	0			
Search time (Mins)	10	10	5	5	10				
Bullhead present?									
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Stock access is major influence							
in margins	3								
in mid channel	3								
in banks	3								
surveyability	3								
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.									
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0								


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)			Site (no., name)	9
Date (dd/mm/yy)	31/08/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0487 5576
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4		Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Dulas09						
Site length (m)	100	Descript. (channel features, landuse)	Grazing, heavy stock access, bank erosion. Good access				
Width channel (m)	2						
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4		
Details (if not standard)							
Extent (l x w patch)	3x1	4x1	2x3	2x2	3x2		
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	2	3		
Depth (metres)	0.2	0.2	0.2	0.2	0.2		
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	4	4	5		
Refuges in channel	tick all present in patch, main type(s) searched in red						
cobble (6.5-15cm)	YES	YES	YES	YES	YES		
cobble (15-25.6cm)	YES	YES	YES	YES	YES		
boulder (25.6-40cm)	YES	YES	YES	YES	YES		
boulder (>40cm)							
rubble (give size)							
woody debris		YES	YES				
other urban debris							
tree roots, fine		YES			YES		
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock							
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)							
sand (<2mm)							
clay	YES	YES	YES	YES	YES		
silt							
Siltation							
none							
low	YES	YES	YES	YES	YES		
moderate							
high							
Refuges in bank	YES	YES	YES	YES	YES		
none							
cobble/boulder							
tree roots, large							
vertical or undercut bank							
dry stone wall							
other reinforced							
crayfish burrows							
Shading above	MOD	MOD	MOD	MOD	MOD		
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0		
Search time (Mins)	10	10	5	5	5		
Bullhead present?							
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):						
Score							
in margins	2						
in mid channel	2						
in banks	1						
surveyability	2						
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	2						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0						

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Buith Road)	Site (no., name)	10	
Date (dd/mm/yy)	31/08/2015	Surveyors	DR LW	Grid ref. (d/s end)	SO 0530 5610	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12	
Clarity, good 1, mod 2, poor 3	1					
Photo ref. & Location	Dulas10					
Site length (m)	100					
Width channel (m)	2	Descript. (channel features, landuse)	Land use: Grazing. Good access			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	3x2	3x2	5x2	5x2	5x3	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3	
Depth (metres)	0.2	0.2	0.2	0.2	0.2	
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4	
Refuges in channel	tick all present in patch, main type(s) searched IN RED					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)						
rubble (give size)						
woody debris						
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt	YES	YES	YES	YES	YES	
Siltation						
none						
low						
moderate	YES	YES	YES	YES	YES	
high						
Refuges in bank						
none						
cobble/boulder						
tree roots, large	YES	YES	YES	YES	YES	
vertical or undercut bank	YES	YES	YES	YES	YES	
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	MOD	MOD	MOD	HEAVY	MOD	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	10	5	5	10	10	
Bullhead present?						
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Entrance to motocross site					
Score						
in margins	2					
in mid channel	2					
in banks	2					
surveyability	2					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					

CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Dulas Brook (Buith Road)			Site (no., name)	11
Date (dd/mm/yy)	09/09/2015	Surveyors	DR LW			Grid ref. (d/s end)	SO 0573 5630
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Dulas11						
Site length (m)	100						
Width channel (m)	2	Descript. (channel features, landuse) Motocross, major erosion. Good access					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4		
Details (if not standard)							
Extent (l x w patch)	3x2	5x2	2x2	4x2	3x2		
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	3	2	3		
Depth (metres)	0.2	0.2	0.2	0.2	0.2		
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	4	4	4		
Refuges in channel	tick all present in patch, main type(s) searched in red						
cobble (6.5-15cm)	YES	YES	YES	YES	YES		
cobble (15-25.6cm)	YES	YES	YES	YES	YES		
boulder (25.6-40cm)	YES	YES	YES	YES	YES		
boulder (>40cm)							
rubble (give size)							
woody debris		YES					
other urban debris							
tree roots, fine							
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock			YES	YES	YES		
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)							
sand (<2mm)							
clay							
silt	YES	YES					
Siltation							
none							
low							
moderate	YES	YES	YES	YES	YES		
high							
Refuges in bank	YES		YES	YES			
none							
cobble/boulder							
tree roots, large		YES				YES	
vertical or undercut bank							
dry stone wall							
other reinforced							
crayfish burrows							
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY		
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0		
Search time (Mins)	10	5	10	5	5		
Bullhead present?							
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Erosion on banks and motocross site. Tributary has good habitat						
Score							
in margins	1						
in mid channel	1						
in banks	0						
surveyability	3						
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	2						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0						

CRAYFISH HABITAT SURVEY FORM						
Catchment	Wye	River	Dulas Brook (Buith Road)	Site (no., name)	12	
Date (dd/mm/yy)	01/09/2015	Surveyor	DR LW	Grid ref. (d/s end)	SO 0604 5673	
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4		Water temp. oC		Clarity, good 1, mod 2, poor 3
Photo ref. & Location						
Site length (m)						
Width channel (m)	Descript. Whole 500m unsuitable due to small flow. Main flow appears to come from tributaries arising from Maesgwynne.					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5						
Details (if not standard)						
Extent (l x w patch)						
Channel (1 margins, 2 mid, 3 both, other specify)						
Depth (metres)						
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)						
Refuges in channel	tick all present in patch, ring main type(s) searched					
cobble (6.5-15cm)						
cobble (15-25.6cm)						
boulder (25.6-40cm)						
boulder (>40cm)						
rubble (give size)						
woody debris						
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt						
Siltation						
none						
low						
moderate						
high						
Refuges in bank						
none						
cobble/boulder						
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above						
Crayfish /10 refuges, or per unit (depending on method)						
Search time (Mins)						
Bullhead present?						
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):				
in margins	0					
in mid channel	0					
in banks	0					
surveyability	0					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)						


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Dulas Brook (Builth Road)			Site (no., name)	13
Date (dd/mm/yy)	01/09/2015	Surveyors	DR LW			Grid ref. (d/s end)	
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4		Water temp. °C		Clarity, good 1, mod 2, poor 3	
Photo ref. & Location							
Site length (m)		Descript. (channel features, landuse)	Whole 500m unsuitable for survey due to dry riverbed				
Width channel (m)	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5							
Details (if not standard)							
Extent (l x w patch)							
Channel (1 margins, 2 mid, 3 both, other specify)							
Depth (metres)							
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)							
Refuges in channel	tick all present in patch, ring main type(s) searched						
cobble (6.5-15cm)							
cobble (15-25.6cm)							
boulder (25.6-40cm)							
boulder (>40cm)							
rubble (give size)							
woody debris							
other debris							
tree roots, fine							
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock							
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)							
sand (<2mm)							
clay							
silt							
Siltation							
none							
low							
moderate							
high							
Refuges in bank							
none							
cobble/boulder							
tree roots, large							
vertical or undercut bank							
dry stone wall							
other reinforced							
crayfish burrows							
Shading above							
Crayfish/10 refuges, or per unit (depending on method)							
Search time (Mins)							
Bullhead present?							
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):					
in margins	0						
in mid channel	0						
in banks	0						
surveyability	0						
Problems							
pollution 1, erosion 2, (E if >33% affected), aliens 3.							
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)							


11.15. Appendix O: White-clawed crayfish habitat survey forms for Clyro Brook August 2016

CRAYFISH HABITAT SURVEY FORM						
Catchment	Wye	River	Clyro	Site (no., name)	1	
Date (dd/mm/yy)	24/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 232 454	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12	Clarity, good 1, mod 2, poor 3
Photo ref. & Location	Near confluence					
Site length (m)	300					
Width channel (m)	2					
	Descript. (channel features, landuse) Massive amounts of balsam. Ditch like at confluence unsuitable for standard survey. Mud over ankle level but variety of stones often not visible underneath it. Stock poaching throughout.					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	4x1	5x4	4x1	2x2	2x1	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3	
Depth (metres)	0.2	0.3	0.3	0.2	0.2	
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	3	2	3	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)						
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)				YES		
rubble (give size)						
woody debris		YES			YES	
other urban debris						
tree roots, fine	YES	YES	YES		YES	
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay	YES	YES	YES	YES	YES	
silt						
Siltation						
none						
low						
moderate						
high	YES	YES	YES	YES	YES	
Refuges in bank	YES	YES	YES	YES	YES	
none						
cobble/boulder						
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	5	10	8	12	6	
Bullhead present?	YES	YES	YES	YES	YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Difficult to find suitable patches to survey					
Score						
in margins	1					
in mid channel	1					
in banks	1					
surveyability	1					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	Silt deposit					
Total crayfish	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	2
Date (dd/mm/yy)	24/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 229 451
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	2				
Photo ref. & Location	Immediately downstream of 1st 100m				
Site length (m)	500				
Width channel (m)	3				
	Descript. (channel features, landuse) Landuse, agricultural. River channelled within thick bushes with occasional stock access.				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x1	2x1	4x1	3x1	4x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.3	0.3	0.3	0.3	0.3
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)		YES		YES	
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay	YES	YES	YES	YES	YES
silt					
Siltation					
none					
low					
moderate					
high	YES	YES	YES	YES	YES
Refuges in bank	YES	YES	YES	YES	YES
none					
cobble/boulder					
tree roots, large					
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	6	8	6	6	6
Bullhead present?	YES		YES	YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Difficult to access river through conopy				
Score					
in margins	1				
in mid channel	1				
in banks	1				
surveyability	1				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	1 & 2				
Total crayfish	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	3
Date (dd/mm/yy)	24/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 228 446
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Typical stretch in middle of site				
Site length (m)	500				
Width channel (m)	2	Descript. (channel features, landuse) River enclosed by dense canopy of elder, hawthorn, alder, willow, hazel, ash with occasional stock access. Heavy agricultural land use - cattle and sheep grazing/poaching.			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1	1	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x1	4x1	3x1	3x1	5x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.2	0.1	0.1	0.2	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	5	4	4
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)					
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine	YES	YES	YES	YES	YES
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)	YES	YES	YES	YES	YES
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large	YES	YES	YES	YES	YES
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish/10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	12	6	10	8	10
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Difficult to access river through canopy				
Score					
in margins	1				
in mid channel	1				
in banks	1				
surveyability	1				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish	0				

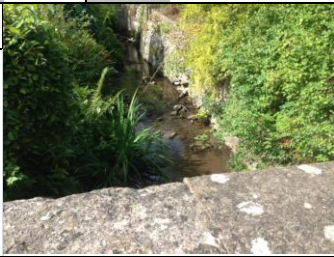
CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	4
Date (dd/mm/yy)	24/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 224 443
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	Water temp. oC	12	Clarity, good 1, mod 2, poor 3
Photo ref. & Location	At roadbridge				
Site length (m)	500	Descript. (channel features, landuse)	Low slow flowing, deep pool after roadbridge. Increased siltation maybe by sewage works upstream		
Width channel (m)	2				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Extent (l x w patch)	4x2	4x2	5x1	5x1	4x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.2	0.2	0.2	0.2	0.2
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	4	4	4
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES			
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.	YES	YES			
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)			YES		
pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES		YES	YES
sand (<2mm)					
clay					
silt					
Siltation					
none					
low					
moderate	YES	YES	YES	YES	YES
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large					
vertical or undercut bank	YES	YES			
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	HEAVY	HEAVY	HEAVY
Crayfish 10 refuges, or per unit (depending on method)					
Search time (Mins)					
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Difficult to access river through canopy except at road and field gates			
in margins	1				
in mid channel	1				
in banks	1				
surveyability	1				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	1 sewage?				
Total crayfish	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	5
Date (dd/mm/yy)	23/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 220 439
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12
				Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	At sewage works discharge				
Site length (m)	500	Descript. (channel features, landuse)	Privately developed mill house with very large pond and sewage works discharging to the river upstream of it. Sites 1 to 5 are in the flood plain of the River Wye.		
Width channel (m)	1.5				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	4x1	4x1	2x1	2x1	5x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.2	0.2	0.2	0.2	0.2
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	3	3	3
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)			YES		
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine	YES		YES	YES	
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)	YES	YES	YES	YES	YES
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low					
moderate	YES	YES	YES	YES	YES
high					
Refuges in bank					
none					
cobble/boulder	YES	YES			
tree roots, large	YES	YES		YES	YES
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	6	8	10	6	14
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Difficult to access river through canopy			
in margins	1				
in mid channel	1				
in banks	1				
surveyability	1				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	1 sewage?				
Total crayfish	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	6
Date (dd/mm/yy)	23/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 216 439
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	13
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Roadbridge in village				
Site length (m)	100				
Width channel (m)	3	Descript. (channel features, landuse)	Land use - main road bridges and urban. Appears good habitat.		
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x2	3x3	5x1	2x2	3x4
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	1	3	3
Depth (metres)	0.2	0.3	0.2	0.2	0.3
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	3	3	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)	YES	YES	YES	YES	YES
woody debris	YES	YES	YES	YES	YES
other urban debris				YES	
tree roots, fine moss	YES	YES			YES
filamentous algae					
other submerged veg.					
emergents	YES	YES	YES	YES	YES
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)	YES	YES			
gravel (<1.6cm)				YES	YES
sand (<2mm)			YES		
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank				YES	
none					
cobble/boulder					YES
tree roots, large			YES		
vertical or undercut bank	YES		YES		
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MODERATE	HEAVY	HEAVY	LIGHT	NONE
Crayfish 10 refuges, or per unit (depending on method)	0	0	1	0	0
Search time (Mins)	12	6	11	12	5
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): P1 - many red roots			
in margins	2				
in mid channel	2				
in banks	2				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish	1				

CRAYFISH HABITAT SURVEY FORM

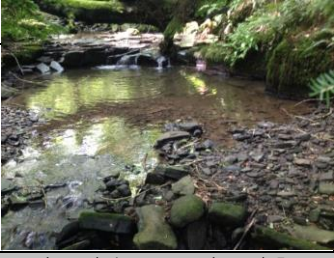

Catchment	Wye	River	Clyro	Site (no., name)	7
Date (dd/mm/yy)	23/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 211 440
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	13
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Footpath bridge				
Site length (m)	100				
Width channel (m)	3	Descript. (channel features, landuse)	Land use - woodland. Good habitat although some channels dry with large deeper pools remaining (used for traps).		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1&4	1&4	1&4	1&4	1&4
Extent (l x w patch)	5x2	5x2	8x2	5x1	4x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.2	0.2	0.2	0.4	0.2
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	4	2	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris				YES	
other urban debris					
tree roots, fine					
moss				YES	
filamentous algae	YES				
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank			YES		
none					
cobble/boulder					
tree roots, large					
vertical or undercut bank	YES	YES		YES	YES
dry stone wall	YES				
other reinforced				YES	YES
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	10	8	0	6	14
Search time (Mins)	10	6	6	10	10
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Easy to search large areas. habitat in cracks and crevices in the bedrock. Banks very undercut in places providing excellent habitat				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish	38				

CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Clyro	Site (no., name)	8
Date (dd/mm/yy)	23/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 206 441
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Typical section in 1st 100m				
Site length (m)	100				
Width channel (m)	3	Descript. (channel features, landuse)	Land use - woodland. Good habitat		
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	5x2	4x2	4x2	5x2	3x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	2	3	2
Depth (metres)	0.2	0.2	0.3	0.2	0.2
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	2	3	3	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES	YES	YES	YES	YES
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none	YES	YES	YES	YES	YES
cobble/boulder					
tree roots, large					
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish/10 refuges, or per unit (depending on method)	7	3	0	5	1
Search time (mins)	5	10	5	10	5
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Many crayfish ranging from juveniles to mature adults, river did not extend the width of the riverbed so there were no refuges in bank.				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2. (E if >33% affected), aliens 3.					
Total crayfish	16				




CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	9		
Date (dd/mm/yy)	22/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 202 440		
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Typical habitat at downstream end of site						
Site length (m)	100	Descript. (channel features, landuse)	Land use woodland and farmland. Good habitat, small flow between pools				
Width channel (m)	3						
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1&4	1&4	1&4	1&4	1&4	1&4	
Details (if not standard)							
Extent (l x w patch)	3x2	3x4	2x4	2x2	5x2		
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3		
Depth (metres)	0.3	0.3	0.3	0.3	0.3		
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	2	2	2	5	5		
Refuges in channel	tick all present in patch, ring main type(s) searched						
cobble (6.5-15cm)	YES	YES	YES	YES	YES		
cobble (15-25.6cm)	YES	YES	YES	YES	YES		
boulder (25.6-40cm)	YES	YES	YES	YES	YES		
boulder (>40cm)		YES	YES				
rubble (give size)							
woody debris				YES	YES		
other urban debris							
tree roots, fine							
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock	YES	YES	YES	YES	YES		
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)							
sand (<2mm)							
clay							
silt							
Siltation							
none							
low	YES	YES	YES	YES	YES		
moderate							
high							
Refuges in bank							
none							
cobble/boulder	YES	YES	YES	YES	YES		
tree roots, large	YES	YES	YES	YES	YES		
vertical or undercut bank	YES	YES	YES		YES		
dry stone wall							
other reinforced							
crayfish burrows							
Shading above	MOD	MOD	HEAVY	HEAVY	MOD		
Crayfish /10 refuges, or per unit (depending on method)	2	1	0	0	0		
Search time (Mins)	8	12	8	12	9		
Bullhead present?							
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):					
in margins	3						
in mid channel	3						
in banks	3						
surveyability	3						
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.							
Total crayfish	3						


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	10	
Date (dd/mm/yy)	22/08/2016	Surveyors	DR, LW	Grid ref. (d/s end)	SO198442	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	NONE	Water temp. oC	Clarity, good 1, mod 2, poor 3	
Photo ref. & Location	one of many dry sections					
Site length (m)	500	Descript. (channel features, landuse) Channel dry in places and in other places has pools and a little flow.				
Width channel (m)	2					
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Details (if not standard)	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Extent (l x w patch)	2x1	3x1	2x1	2x1	2x1	
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3	
Depth (metres)	0.1	0.1	0.1	0.1	0.1	
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	2	3	2	3	3	
Refuges in channel	tick all present in patch, ring main type(s) searched					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES		YES	
boulder (>40cm)						
rubble (give size)						
woody debris	Yes		Yes	Yes		
other urban debris						
tree roots, fine						
moss	Yes	Yes				
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock	Yes	Yes	Yes	Yes	Yes	
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt						
Siltation						
none						
low						
moderate						
high						
Refuges in bank						
none						
cobble/boulder						
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	MOD	MOD	MOD	MOD	MOD	
Crayfish /10 refuges, or per unit (depending on method)						
Search time (Mins)	5	5	5	5	5	
Bullhead present?						
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Searched and trapped pools					
Score						
in margins	1					
in mid channel	1					
in banks	1					
surveyability	3					
Problems pollution 1, erosion 2. (E if >33% affected), aliens 3.	drys out					
Total crayfish	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	11
Date (dd/mm/yy)	22/03/2016	Surveyors	DR, LW	Grid ref. (d/s end)	SO192445
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	2	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	typical reach with very low flow				
Site length (m)	100	Descript. (channel features, landuse)			
Width channel (m)	1				
	Almost dry stream bed, too shallow for traps				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)	1	1	1	1	1
Extent (l x w patch)	3X1	3X1	3X1	3X1	3X1
Channel (1 margins, 2 mid, 3 both, other specify)					
Depth (metres)	0.1	0.1	0.1	0.1	0.1
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)					
cobble (15-25.6cm)					
boulder (25.6-40cm)					
boulder (>40cm)					
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large					
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above					
Crayfish /10 refuges, or per unit (depending on method)					
Search time (Mins)					
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	This site has been scored at zero because it probably dries out regularly (as was found in the 2003 survey)				
Score					
in margins	0				
in mid channel	0				
in banks	0				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish	0				



CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	12
Date (dd/mm/yy)	22/03/2016	Surveyor	DR, LW	Grid ref. (d/s end)	SO189449
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	None	Water temp. oC	N/A
Photo ref. & Location	typical dry section				
Site length (m)		Descript. (channel features, landuse)	Dry stream bed		
Width channel (m)					
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5					
Details (if not standard)					
Extent (l x w patch)					
Channel (1 margins, 2 mid, 3 both, other specify)					
Depth (metres)					
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)					
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)					
cobble (15-25.6cm)					
boulder (25.6-40cm)					
boulder (>40cm)					
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large					
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above					
Crayfish /10 refuges, or per unit (depending on method)					
Search time (Mins)					
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins					
in mid channel					
in banks					
surveyability					
Problems pollution 1, erosion 2. (E if >33% affected), aliens 3.					
Total crayfish					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Clyro	Site (no., name)	13
Date (dd/mm/yy)	22/03/2016	Surveyors	DR, LW	Grid ref. (d/s end)	SO192454
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4	None	Water temp. oC	
Photo ref. & Location	Dry pond at headwater				
Site length (m)					
Width channel (m)		Descript. (channel features, landuse)	Dry pond		
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5					
Details (if not standard)					
Extent (l x w patch)					
Channel (1 margins, 2 mid, 3 both, other specify)					
Depth (metres)					
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)					
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)					
cobble (15-25.6cm)					
boulder (25.6-40cm)					
boulder (>40cm)					
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation	none				
	low				
	moderate				
	high				
Refuges in bank	none				
	cobble/boulder				
	tree roots, large				
	vertical or undercut bank				
	dry stone wall				
	other reinforced				
	crayfish burrows				
Shading above					
Crayfish /10 refuges, or per unit (depending on method)					
Search time (Mins)					
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins					
in mid channel					
in banks					
surveyability					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish					


11.16. Appendix P: White-clawed crayfish habitat survey forms for Afon Llynfi, September 2016

CRAYFISH HABITAT SURVEY FORM									
Catchment	Wye	Surveyor	River	Llynfi	Site (no., name)	1			
Date (dd/mm/yy)	16/09/2016		DR LW		Grid ref. (d/s end)	SO 17858 38841			
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4		Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1		
Photo ref. & Location	Typical stretch								
Site length (m)	300	Land use - grazing. Occasional heavy stock access. Earth banks and mud shallows with eroded banks in places. Slow not noticeable flow with occasional riffles (see photo) and pools.							
Width channel (m)	10	Descript. (channel features, landuse)							
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4				
Details (if not standard)									
Extent (l x w patch)	4x1	2x3	3x3	4x3	4x1				
Channel (1 margins, 2 mid, 3 both, other specify)	1	2	3	3	1				
Depth (metres)	0.5	0.7	0.4	0.5	1				
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	5	4	2				
Refuges in channel	tick all present in patch, main type(s) searched in red								
cobble (6.5-15cm)	YES	YES	YES	YES	YES				
cobble (15-25.6cm)	YES	YES	YES	YES	YES				
boulder (25.6-40cm)	YES	YES	YES	YES	YES				
boulder (>40cm)									
rubble (give size)									
woody debris		YES			YES				
other urban debris									
tree roots, fine									
moss									
filamentous algae									
other submerged veg.									
emergents									
Main substrate beneath									
bedrock									
cobble (6.5-15cm)									
pebble (<6.5cm)									
gravel (<1.6cm)									
sand (<2mm)									
clay	YES	YES	YES	YES	YES				
silt									
Siltation									
none									
low	YES	YES	YES	YES	YES				
moderate									
high									
Refuges in bank									
none	YES	YES	YES	YES	YES				
cobble/boulder									
tree roots, large									
vertical or undercut bank									
dry stone wall									
other reinforced									
crayfish burrows									
Shading above	light	light	NONE	light	heavy				
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0				
Search time (Mins)	8	8	10	5	13				
Bullhead present?									
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Heron seen, photo is example of eroded bank in Patch 5								
Score									
in margins	2								
in mid channel	2								
in banks	1								
surveyability	2								
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.									
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0								
									
	Eroded section of bank								


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Lynfi	Site (no., name)	2
Date (dd/mm/yy)	16/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 17553 38814
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Immediately downstream of 1st 100m				
Site length (m)	300				
Width channel (m)	10	Descript. (channel features, landuse)	Land use - grazing. Large stands of balsam throughout. Earth banks up to 2m high, some erosion. Some areas virtually no flow (see photo)		
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	4x2	4x2	5x4	3x3	3x2
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	3	3	1
Depth (metres)	0.4	0.3	0.3	0.4	0.4
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)					
rubble (give size)					
woody debris	YES			YES	YES
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay	YES	YES	YES	YES	YES
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none	YES	YES	YES	YES	YES
cobble/boulder					
tree roots, large	YES	YES	YES	YES	YES
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	LIGHT	HEAVY	MOD	LIGHT	MOD
Crayfish/10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	10	6	10	10	10
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):				
Score					
in margins	2				
in mid channel	2				
in banks	1				
surveyability	2				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	2				
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llynfi	Site (no., name)	3	
Date (dd/mm/yy)	16/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 16646 37100	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3
Photo ref. & Location	Immediately downstream of 1st 100m					
Site length (m)	100	Descript. (channel features, landuse)	Land use - urban and grazing. Series of pools and riffles			
Width channel (m)	4					
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	4x1	4x1	3x2	7x2	4x1	
Channel (1 margins, 2 mid, 3 both, other specify)	1	1	3	3	1	
Depth (metres)	0.2	0.4	0.5	0.2	0.3	
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	3	2	3	2	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES		YES	YES	
boulder (>40cm)						
rubble (give size)						
woody debris	YES		YES			
other urban debris						
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay	YES	YES	YES	YES	YES	
silt						
Siltation						
none	YES	YES	YES	YES	YES	
low						
moderate						
high						
Refuges in bank						
none	YES	YES		YES	YES	
cobble/boulder						
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	NONE	MOD	LIGHT	MOD	LIGHT	
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	10	10	6	6	8	
Bullhead present?						
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):				
in margins	3					
in mid channel	3					
in banks	2					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llynfi	Site (no., name)	4	
Date (dd/mm/yy)	16/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 17553 38814	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	
Clarity, good 1, mod 2, poor 3	1					
Photo ref. & Location	From roadbridge					
Site length (m)	100					
Width channel (m)	5	Descript. (channel features, landuse)	Land use - urban, agricultural and woodland. Easy access via road bridge			
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Details (if not standard)						
Extent (l x w patch)	5x2	5x2	6x1	3x1	4x1	
Channel (1 margins, 2 mid, 3 both, other specify)	2	2	2	3	3	
Depth (metres)	0.2	0.2	0.2	0.2	0.2	
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	5	4	5	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES	
boulder (25.6-40cm)	YES	YES	YES	YES	YES	
boulder (>40cm)	YES	YES	YES	YES	YES	
rubble (give size)						
woody debris	YES					
other urban debris	YES	YES	YES	YES	YES	
tree roots, fine						
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)	YES	YES	YES	YES	YES	
sand (<2mm)						
clay						
silt						
Siltation						
none	YES	YES	YES	YES	YES	
low						
moderate						
high						
Refuges in bank						
none					YES	
cobble/boulder	YES	YES	YES	YES		
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced		YES				
crayfish burrows						
Shading above	LIGHT	MOD	LIGHT	HEAVY	LIGHT	
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0	
Search time (Mins)	8	7	8	5	6	
Bullhead present?						
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Patch 3 under road bridge. Fresh otter spraint containing fish bones but no crayfish remains and heron droppings					
Score						
in margins	3					
in mid channel	3					
in banks	3					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					


CRAYFISH HABITAT SURVEY FORM									
Catchment	Wye	River	Llynfi	Site (no., name)	5				
Date (dd/mm/yy)	15/09/2016	Surveyor	DR LW	Grid ref. (d/s end)	SO 15033 34706				
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4		Water temp. oC	12	Clarity, good 1, mod 2, poor 3	1		
Photo ref. & Location	Middle of site near roadbridge								
Site length (m)	100								
Width channel (m)	10								
	Descript. (channel features, landuse) Land use - recreation, campsite and walkers, urban. Looks like an excellent habitat for crayfish. Otter pass, see below.								
	sample patch 1		sample patch 2		sample patch 3		sample patch 4		sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4		1 & 4		1 & 4		1 & 4		1 & 4
Details (if not standard)									
Extent (l x w patch)	5x1		4x2		4x1		4x3		3x3
Channel (1 margins, 2 mid, 3 both, other specify)	1		1		1		3		3
Depth (metres)	0.3		0.4		0.4		0.3		0.3
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	2		2		3		3		3
Refuges in channel	tick all present in patch, main type(s) searched in red								
cobble (6.5-15cm)	YES		YES		YES		YES		YES
cobble (15-25.6cm)	YES		YES		YES		YES		YES
boulder (25.6-40cm)	YES		YES		YES		YES		YES
boulder (>40cm)	YES		YES		YES		YES		YES
rubble (give size)									
woody debris									
other urban debris									
tree roots, fine									
moss									
filamentous algae									
other submerged veg.									
emergents									
Main substrate beneath									
bedrock									
cobble (6.5-15cm)			YES		YES		YES		YES
pebble (<6.5cm)									
gravel (<1.6cm)	YES						YES		YES
sand (<2mm)									
clay	YES		YES		YES		YES		YES
silt									
Siltation									
none	YES		YES		YES		YES		YES
low									
moderate									
high									
Refuges in bank									
none									
cobble/boulder			YES				YES		YES
tree roots, large	YES		YES		YES		YES		YES
vertical or undercut bank			YES		YES				
dry stone wall									
other reinforced									
crayfish burrows									
Shading above	LIGHT		LIGHT		HEAVY		MOD		LIGHT
Crayfish /10 refuges, or per unit (depending on method)	0		0		0		0		0
Search time (Mins)	10		9		6		8		11
Bullhead present?									
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.): Photo of otter pass under the road bridge								
Score									
in margins	3								
in mid channel	3								
in banks	3								
surveyability	3								
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.									
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0								




CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River			Site (no., name)	6	
Date (dd/mm/yy)	15/09/2016	Surveyors	DR LW		Grid ref. (d/s end)	SO 14824 32914	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	Clarity, good 1, mod 2, poor 3	
Photo ref. & Location	Downstream of roadbridge						
Site length (m)	100	Descript. (channel features, landuse)	Land use - grazing. Newly fenced alongside river, good crayfish habitat improved by fencing off.				
Width channel (m)	3						
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5	
Details (if not standard)		1 & 4	1 & 4	1 & 4	1 & 4	1 & 4	
Extent (l x w patch)	2X1		5X1	3X3	4X2	4X2	
Channel (1 margins, 2 mid, 3 both, other specify)	1		1	3	3	3	
Depth (metres)	0.3		0.3	0.3	0.3	0.3	
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3		2	5	3	3	
Refuges in channel	tick all present in patch, main type(s) searched in red						
cobble (6.5-15cm)	YES		YES	YES	YES	YES	
cobble (15-25.6cm)	YES		YES	YES	YES	YES	
boulder (25.6-40cm)	YES		YES	YES	YES	YES	
boulder (>40cm)	YES		YES	YES	YES	YES	
rubble (give size)							
woody debris	YES			YES	YES	YES	
other urban debris							
tree roots, fine							
moss							
filamentous algae							
other submerged veg.							
emergents							
Main substrate beneath							
bedrock							
cobble (6.5-15cm)							
pebble (<6.5cm)							
gravel (<1.6cm)							
sand (<2mm)							
clay	YES		YES	YES	YES	YES	
silt							
Siltation							
none							
low	YES		YES	YES	YES	YES	
moderate							
high							
Refuges in bank							
none							
cobble/boulder	YES		YES	YES	YES	YES	
tree roots, large							
vertical or undercut bank							
dry stone wall							
other reinforced							
crayfish burrows							
Shading above	HEAVY		HEAVY	MOD	HEAVY	HEAVY	
Crayfish /10 refuges, or per unit (depending on method)	0		0	0	0	0	
Search time (Mins)	5		8	10	6	10	
Bullhead present?							
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):					
in margins	3						
in mid channel	3						
in banks	3						
surveyability	3						
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.							
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0						


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llynfi	Site (no., name)	7
Date (dd/mm/yy)	15/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 14398 33041
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Immediately downstream of 1st 100m				
Site length (m)	100				
Width channel (m)	4	Descript. (channel features, landuse)	Land use - agricultural and private garden, habitat looks good for crayfish		
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	1x4	3x2	4x1	5x2	4x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	1	3	2
Depth (metres)	0.3	0.3	0.3	0.3	0.2
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	3	2	3	2	2
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris		YES	YES	YES	YES
other urban debris					
tree roots, fine				YES	YES
moss					
filamentous algae					
other submerged veg.					
emergents	YES				
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay	YES	YES	YES	YES	YES
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large			YES	YES	YES
vertical or undercut bank			YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MODERATE	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	10	8	10	10	10
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River		Site (no., name)	8
Date (dd/mm/yy)	15/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 14022 32206
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
				Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Near Bridge near Trefeca				
Site length (m)	100	Descript. (channel features, landuse)			
Width channel (m)	4	Land use - woodland. River runs through steep valley. Slow flow. Earth banks.			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	2x3	3x2	4x1	6x1	2x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	1	1	3
Depth (metres)	0.3	0.3	0.3	0.3	0.3
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)	YES	YES	YES	YES	YES
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large	YES	YES	YES	YES	YES
vertical or undercut bank	YES	YES		YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	HEAVY	MOD	MOD	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	6	12	8	8	12
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llynfi	Site (no., name)	9
Date (dd/mm/yy)	14/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 13386 30702
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Mid site				
Site length (m)	100				
Width channel (m)	4				
	Descript. Land use - grazing, wooded banks with surround land flat. Area around bridge would be excellent habitat for crayfish.				
	Land use				
	Channel features				
	Landuse				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x2	4X2	3x2	5x1	2x2
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	3	1	3
Depth (metres)	0.3	0.3	0.3	0.3	0.3
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	2	4	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES	YES			YES
other urban debris					
tree roots, fine	YES	YES	YES	YES	YES
moss					
filamentous algae	YES	YES	YES	YES	YES
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large	YES	YES	YES	YES	YES
vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall			YES		
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	7	13	9	10	10
Bullhead present?			YES	YES	
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llyfni	Site (no., name)	10
Date (dd/mm/yy)	14/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 13001 30323
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Immediately downstream of 1st 100m				
Site length (m)	100	Descript. (channel features, landuse)	Land use - Woodland and grazing. Appears good habitat		
Width channel (m)	4				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	3x2	2x2	2x2	3x2	3x2
Channel (1 margins, 2 mid, 3 both, other specify)	2	3	3	2	3
Depth (metres)	0.3	0.2	0.3	0.3	0.3
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	2	2	3
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris	YES		YES		YES
other urban debris					
tree roots, fine					
moss	YES	YES		YES	YES
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay	YES	YES	YES	YES	YES
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank				YES	
none					
cobble/boulder	YES	YES			
tree roots, large			YES		
vertical or undercut bank		YES			YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	MOD	HEAVY	HEAVY
Crayfish 10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	7	10	12	6	10
Bullhead present?					YES
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llynfi	Site (no., name)	11
Date (dd/mm/yy)	14/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 12683 29971
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
				Clarity, good 1, mod 2, poor 3	1
Photo ref. & Location	Footbridge near disused railway				
Site length (m)	100	Descript. (channel features, landuse)	Land use - woodland. River changes to bedrock riffles with s Steep banks on either side. Riffles, glides and pools in woodland ; No intensive agriculture. Excellent habitat		
Width channel (m)	4.5				
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	4x3	2x2	5x1	3x2	4x3
Channel (1 margins, 2 mid, 3 both, other specify)	3	2	1	3	3
Depth (metres)	0.3	0.2	0.3	0.3	0.3
Feature (1 marg, d/water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	2	2	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)	YES	YES	YES	YES	YES
rubble (give size)					
woody debris			YES	YES	
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder	YES	YES	YES	YES	YES
tree roots, large	YES	YES	YES	YES	YES
vertical or undercut bank			YES	YES	
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish ¹⁰ refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	10	10	8	8	10
Bullhead present?	YES	YES	YES		YES
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Good access from west bank via footpath			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llyfni	Site (no., name)	12
Date (dd/mm/yy)	14/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 12868 29130
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Immediately downstream of 1st 100m				
Site length (m)	100				
Width channel (m)	4	Descript. (channel features, landuse)	Land use - grazing, wooded banks act as a good buffer strip. Good access from road bridge		
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	6X2	5X2	4X2	4X2	2X2
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	2	3
Depth (metres)	0.1	0.2	0.2	0.2	0.2
Feature (1 marg. d/water, 2 pool, 3 glide, 4 run, 5 riffle)	5	4	4	4	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)					YES
rubble (give size)					
woody debris	YES	YES	YES	YES	YES
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay	YES	YES	YES	YES	YES
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none			YES	YES	
cobble/boulder					
tree roots, large			YES		
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	MOD	HEAVY	MOD	MOD
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	10	8	12	12	10
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llynfi	Site (no., name)	13	
Date (dd/mm/yy)	13/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 13082 27665	
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12	
Clarity, good 1, mod 2, poor 3	1					
Photo ref. & Location	Just upstream of roadbridge					
Site length (m)	200					
Width channel (m)	2	Descript. (channel features, landuse)	Land use - woodland, grazing.			
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Details (if not standard)						
Extent (l x w patch)	3x2		2x2		3x2	
Channel (1 margins, 2 mid, 3 both, other specify)	3		3		3	
Depth (metres)	0.2		0.2		0.2	
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	3		3		3	
Refuges in channel	tick all present in patch, main type(s) searched in red					
cobble (6.5-15cm)	YES					
cobble (15-25.6cm)	YES				YES	YES
boulder (25.6-40cm)	YES	YES		YES	YES	YES
boulder (>40cm)						
rubble (give size)		YES		YES		
woody debris	YES	YES		YES	YES	YES
other urban debris						
tree roots, fine	YES	YES		YES	YES	YES
moss						
filamentous algae						
other submerged veg.						
emergents						
Main substrate beneath						
bedrock						
cobble (6.5-15cm)						
pebble (<6.5cm)						
gravel (<1.6cm)						
sand (<2mm)						
clay						
silt	YES	YES		YES	YES	YES
Siltation						
none						
low						
moderate						
high	YES	YES		YES	YES	YES
Refuges in bank						
none						
cobble/boulder						
tree roots, large						
vertical or undercut bank						
dry stone wall						
other reinforced						
crayfish burrows						
Shading above	NONE		HEAVY		MOD	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0		0		0	0
Search time (Mins)	8		8		10	8
Bullhead present?						
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.): Good access from roadbridge				
in margins	1					
in mid channel	1					
in banks	1					
surveyability	3					
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.						
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0					


CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Llynfi	Site (no., name)	14
Date (dd/mm/yy)	13/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 13656 25068
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Near roadbridge				
Site length (m)	300				
Width channel (m)	2	Descript. (channel features, landuse)	Land use - grazing. Evidence of heavy stock access. Eroded banks and river channel is silted up offering no crayfish refuges		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	5x1	6x1	8x1	12x1	14x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.1	0.1	0.1	0.1	0.2
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	3	3	3	2	4
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)		YES		YES	
cobble (15-25.6cm)	YES		YES		YES
boulder (25.6-40cm)					YES
boulder (>40cm)					
rubble (give size)					
woody debris	YES	YES	YES	YES	YES
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt	YES	YES	YES	YES	YES
Siltation					
none					
low					
moderate					
high	YES	YES	YES	YES	YES
Refuges in bank	YES	YES	YES	YES	YES
none					
cobble/boulder					
tree roots, large					
vertical or undercut bank					
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	LIGHT	LIGHT	HEAVY	MOD
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	5	5	8	5	5
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	0				
in mid channel	0				
in banks	1				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.	2e				
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Llynfi	Site (no., name)	15
Date (dd/mm/yy)	13/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 13899 24149
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	At field boundary in first 100m				
Site length (m)	100	Land use - grazing with stock access in places, occasional riffles and glides. Buffer zone of trees and bushes on river banks. Some areas of clay banks and land drains entering river throughout.			
Width channel (m)	1				
Descript. (channel features, landuse)					
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	4x1	7x1	3x1	9	7x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.1	0.2	0.4	0.2	0.1
Feature (1 marg, dwater, 2 pool, 3 glide, 4 run, 5 riffle)	4	5	2	4	5
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)				YES	
cobble (15-25.6cm)				YES	
boulder (25.6-40cm)					
boulder (>40cm)	YES				
rubble (give size)					
woody debris	YES	YES	YES	YES	YES
other urban debris					
tree roots, fine	YES	YES	YES	YES	YES
moss					
filamentous algae					
other submerged veg.					
emergents	YES	YES		YES	
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt	YES	YES	YES	YES	YES
Siltation					
none					
low					
moderate					
high	YES	YES	YES	YES	YES
Refuges in bank					
none					
cobble/boulder					
tree roots, large	YES		YES		
vertical or undercut bank		YES	YES		YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	MOD	MOD	MOD	MOD
Crayfish/10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	6	10	10	8	8
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	1				
in mid channel	1				
in banks	1				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM


Catchment	Wye	River	Llynfi	Site (no., name)	16
Date (dd/mm/yy)	13/09/2016	Surveyors	DR LW	Grid ref. (d/s end)	SO 14270 23082
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Adjacent road				
Site length (m)	100				
Width channel (m)	1	Descript. (channel features, landuse)	Land use - grazing and urban. Narrows to 0.5m beyond 1st 100m then is culverted under road at approx 350m		
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	4x1	5x1	7x1	2x1	4x1
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	3	3	3
Depth (metres)	0.1	0.1	0.2	0.1	0.1
Feature (1 marg. d/water, 2 pool, 3 glide, 4 run, 5 riffle)	5	5	2	4	5
Refuges in channel	tick all present in patch, ring main type(s) searched				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)			YES		
boulder (25.6-40cm)					
boulder (>40cm)	YES				
rubble (give size)					
woody debris					
other urban debris					
tree roots, fine	YES		YES		YES
moss					
filamentous algae					
other submerged veg.					
emergents	YES		YES		
Main substrate beneath					
bedrock					
cobble (6.5-15cm)					
pebble (<6.5cm)	YES	YES	YES	YES	YES
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none					
low	YES	YES	YES	YES	YES
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large	YES	YES	YES	YES	YES
vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	HEAVY	HEAVY	HEAVY	HEAVY	HEAVY
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	10	8	10	6	8
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Score	Notes (survey conditions, patches etc.):			
in margins	1				
in mid channel	1				
in banks	1				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

11.17. Appendix Q: Crayfish Habitat Survey Forms for Afon Chwefru (Two forms)

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Chwefru	Site (no., name)	1
Date (dd/mm/yy)	22/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SN9915453590 to SN9875953879
Weather, good 1, mod 2, poor 3	1	Flow norm 1, low 2, fall 3, rise 4	1	Water temp. oC	12
Clarity, good 1, mod 2, poor 3	1				
Photo ref. & Location	Typical stretch				
Site length (m)	500	Descript. (channel features, landuse) Land use - grazing. Occasional stock access. Many excellent areas.			
Width channel (m)	7				
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	5x1	4x2	1x5	4x1	5x2
Channel (1 margins, 2 mid, 3 both, other specify)	1	3	3	1	3
Depth (metres)	0.3	0.3	0.4	0.3	1
Feature (1 marg. d'water, 2 pool, 3 glide, 4 run, 5 riffle)	1	4	4	3	5
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	YES
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES	YES	YES	YES	YES
boulder (>40cm)					
rubble (give size)					
woody debris	YES			YES	
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank					
none					
cobble/boulder					
tree roots, large	YES	YES	YES	YES	YES
vertical or undercut bank		YES			
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	MOD	HEAVY	MOD
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	12	8	10	12	13
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)					
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				

CRAYFISH HABITAT SURVEY FORM

Catchment	Wye	River	Chwefru	Site (no., name)	2
Date (dd/mm/yy)	22/08/2016	Surveyors	DR LW	Grid ref. (d/s end)	SN9993052718 to SN9974453165
Weather, good 1, mod 2, poor 3		Flow norm 1, low 2, fall 3, rise 4		Water temp. oC	12
Clarity, good 1, mod 2, poor 3					1
Photo ref. & Location	Ford between fields either side of the river				
Site length (m)	500				
Width channel (m)	7				
		Descript. (channel features, landuse)	Land use - grazing..Excellent areas where there is no stock access		
	sample patch 1	sample patch 2	sample patch 3	sample patch 4	sample patch 5
Survey method, std 1, quad 2, net/kick 3, trap 4, view 5	1 & 4	1 & 4	1 & 4	1 & 4	1 & 4
Details (if not standard)					
Extent (l x w patch)	5x2	4x3	4x1	3x3	1x6
Channel (1 margins, 2 mid, 3 both, other specify)	3	3	1	3	3
Depth (metres)	0.3	0.3	0.3	0.4	0.4
Feature (1 marg, d'water, 2 pool, 3 glide, 4 run, 5 riffle)	4	4	4	3	4
Refuges in channel	tick all present in patch, main type(s) searched in red				
cobble (6.5-15cm)	YES	YES	YES	YES	
cobble (15-25.6cm)	YES	YES	YES	YES	YES
boulder (25.6-40cm)	YES		YES	YES	YES
boulder (>40cm)					
rubble (give size)					
woody debris	YES	YES			
other urban debris					
tree roots, fine					
moss					
filamentous algae					
other submerged veg.					
emergents					
Main substrate beneath					
bedrock	YES	YES	YES	YES	YES
cobble (6.5-15cm)					
pebble (<6.5cm)					
gravel (<1.6cm)					
sand (<2mm)					
clay					
silt					
Siltation					
none	YES	YES	YES	YES	YES
low					
moderate					
high					
Refuges in bank none					
cobble/boulder					
tree roots, large		YES		YES	
vertical or undercut bank	YES	YES	YES	YES	YES
dry stone wall					
other reinforced					
crayfish burrows					
Shading above	MOD	MOD	MOD	MOD	MOD
Crayfish /10 refuges, or per unit (depending on method)	0	0	0	0	0
Search time (Mins)	10	6	10	10	10
Bullhead present?					
Evaluation crayfish habitat for whole site (0 none, 1 pres., 2 freq., 3 abund.)	Notes (survey conditions, patches etc.):				
Score					
in margins	3				
in mid channel	3				
in banks	3				
surveyability	3				
Problems pollution 1, erosion 2, (E if >33% affected), aliens 3.					
Total crayfish (by 1 method, note total(s) by other methods in notes if applicable)	0				



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