

The citizen River Habitat Survey



the River Restoration Centre
Working to restore and enhance our rivers

 Cyfoeth
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**Natural
Resources
Wales**

The citizen River Habitat Survey

Introduction

The **citizen River Habitat Survey (cRHS)** is a method designed to allow volunteers and conservation groups to characterise and assess the physical structure and characteristics of streams and rivers. As local volunteers, you are ideally placed to help further our understanding of river networks and help conserve them.

What is Involved?

The survey involves walking along a **500m stretch of river** and **recording its characteristics**.

characteristics. The survey can be broken down into two distinct stages.

The first stage of the survey involves recording detailed observations on channel and bank features, human modifications, and surrounding landuse at 10 locations called '**spot-checks**', spaced at 50m intervals along the survey site.

The second stage of the survey is an appraisal of the whole site, or '**sweep-up**', that captures the overall characteristics of the survey site and any features not observed at the spot-checks. The sweep-up section is usually carried out while walking back along the survey site.

In addition to completing the survey form you will also be asked to take photos and videos which will be used by experts to identify additional features. Depending on local conditions, walking the 500m site and completing the survey form can take **60 - 90 minutes**.

The completed survey form can be inputted into the RHS Toolbox to run quality checks and conduct further analysis.

How to Use this Mini-Manual

This mini-manual is designed as a handy reference guide to take with you in the field. It provides a step-by-step description of how to conduct the cRHS as well as information about how to fill in the survey form, including: the **Spot-Check Key**(page 7) which details abbreviations for various features, and a Diagram that describes **Artificial Features** (page

8). It should be noted that this is not a definitive guide of how to conduct a cRHS but a condensed version. You should make sure you **read and learn the definitions in the main manual.**

Health and Safety

Working near rivers, streams or other water bodies can be hazardous. When conducting a cRHS survey, health and safety must always be taken into account.

Every effort should be taken to minimise risk whilst surveying, and the following guidelines should be followed:

General

- Ensure you have completed a risk assessment before each new survey
- Work in pairs; where this is not possible ensure someone knows your location, work schedule and contact details in case of an emergency

Personal

- Avoid contact with water and soil; broken skin should be covered with a waterproof dressing
- If you are lone working make sure someone knows where you are and your expected time of return

Equipment

- Appropriate clothing and footwear (wellington boots or waders)
- Ranging-pole
- Life jacket if entering river

Site

- Do not enter the river if it is in flood and/or the river bed is not visible
- Do not enter private land without prior consent from the landowner
- Be aware of the weather at all times; if conditions change, reassess the risk level
- Avoid steep or overhanging banks
- Do not enter culverts
- Be aware of your surroundings and other activities occurring around you, e.g. grazing cattle
- Be aware of unseen hazards, e.g. broken glass, sharp metal, waste or pollution

Weil's Disease (Leptospirosis) is a bacterial infection that is spread through contact with soil or water contaminated with the urine of infected animals - most commonly rats, mice, cows, pigs and dogs. While it is rare in the UK, the likelihood of catching it is higher when working in or near freshwater. You should contact your GP if you experience flu-like symptoms such as a high temperature, headaches, nausea or diarrhoea and aching joints and muscles. In the majority of cases symptoms are mild. However, if you experience more severe symptoms, such as internal bleeding, a rash or chest pains contact your GP immediately.

Lyme Disease is a bacterial infection spread to humans by infected ticks. It is usually easy to treat if diagnosed early. Lyme Disease can be recognised by a circular, ring-shaped or oval rash around a tick bite. However, you may also experience: a high temperature, or feel hot and shivery; headaches; aching muscles and joints; tiredness and loss of energy.

It is important to be aware that these symptoms may not take effect immediately, and while in some cases symptoms will appear after a few days or weeks, it can take up to 3 months for symptoms to occur. Not all ticks in the UK carry the bacteria. However, you are at higher risk when working in or near long grass, reeds, heather or bracken. To avoid being bitten by ticks you should wear trousers and long-sleeved clothes. After working in areas prone to ticks you should inspect your clothing and skin. If you find a tick on your body, use tweezers or a tick-removal tool to remove it. This is done by grasping the tick as closely to the skin as possible and pulling upwards slowly but firmly.

Biosecurity

Reducing the spread of invasive and non-native species is essential to preserve the health of our rivers and every effort should be made to ensure biosecurity. Follow the Check, Clean, Dry campaign after working in or near a river:

Check your equipment and clothing, particularly in areas where moisture collects;

Clean and wash all your equipment, footwear and clothing in 45°C water for 15 minutes;

Dry all equipment and clothing in direct sunlight - some species may survive several days in moist conditions.

Equipment Checklist

- cRHS survey form
- Mini-manual
- Writing material (pencil or pen)
- Site risk assessment
- Waterproof footwear (wellington boots or waders)
- Appropriate clothing (waterproof jacket)
- Ranging-pole
- Camera or mobile phone able to take photos and video
- Handheld GPS or smart device (phone, tablet etc.) with a GPS app

How are Data Used?

The cRHS data that you collect will allow the calculation of indices to assess the quality of river habitats and identify pressures and impacts. This will enable you to set objectives for river restoration or habitat improvement, design schemes to work towards these objectives and monitor progress. Using the cRHS, you will be able to compare your sites to other sites of similar type across the UK and to produce assessments and plans at site, reach and catchment scales.



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The citizen River Habitat Survey was created by the River Restoration Centre (RRC).

The RRC is an independent and impartial, not-for-profit organisation that actively promotes the re-establishment of natural processes, features, habitats and biodiversity within our river systems.

The RRC actively supports others to achieve this by collating information, driving knowledge and disseminating evidence to share best practice across the river and catchment management community.

For further information visit
www.therrc.co.uk

Getting Started

Pages 4 - 8 describe how to conduct a cRHS. It is broken down step-by-step into what you need to do when starting a new survey (this page), collecting information at the spot-checks (page 5 - 7), and conducting the sweep-up assessment (Page 8).

1

Before you go out to conduct a survey you should complete a risk assessment. Also, you should collect some information about your intended site. Things to look for:

- Access points and parking
- Rights of way
- Local facilities

2

Arriving on site, you should conduct a **dynamic risk assessment** to ensure it is safe to work. You should stay aware of your surroundings during the survey to ensure your continued safety.

3

Next, begin filling in the **Survey Details** (Section A) on the cRHS form. This includes the river name, the time and date of the survey, and the name of the surveyor (your name). If the river you are working on is an unnamed tributary or headwater note the name of the main river into which it flows and that it is a tributary/headwater, e.g. 'tributary of the River Avon'. For Section B - **Survey Information** - indicate if the river is artificial (e.g. canal, dyke, ditch, or drain dug entirely by human activity), and note if adverse conditions are affecting the survey results (e.g. the channel is very deep and the bed substrate is not visible).



During the cRHS survey you will be asked to identify various features, from types of channel substrate and bank profiles to vegetation types and surrounding landuse. A detailed description of how to identify these can be found in the main cRHS manual available online. Alternatively, you can scan the QR code here to view pictures and diagrams to help with identification when in the field.



First spot-check at start of survey site (0m)

1
2
3
4
Record coordinates

To conduct the Sweep-Up walk back along the survey site

5
6
7
8
9
10
Record coordinates

End-of-site (500m)

Record coordinates

(4)

Pacing out your Spot-Checks

Before you begin surveying you should calibrate your stride so you can accurately pace out 50m between spot checks.

To do this:

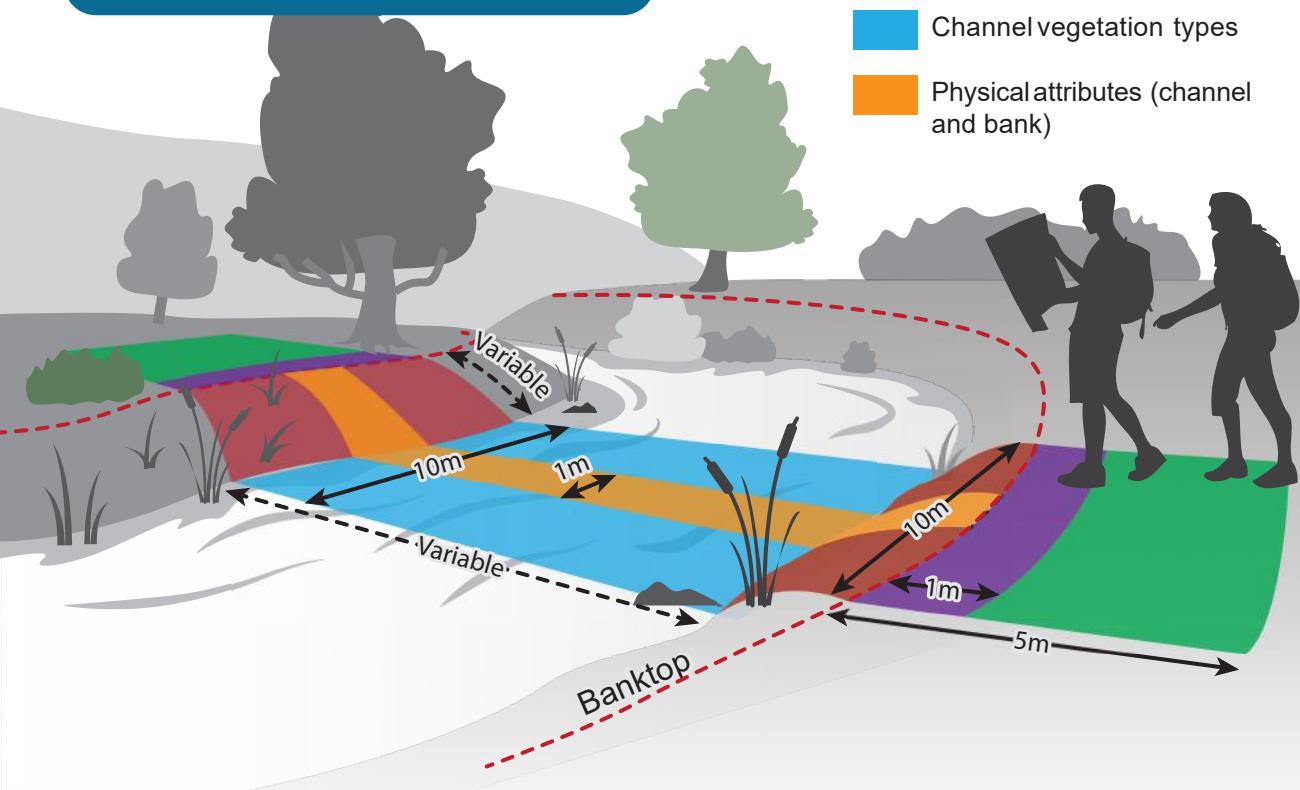
- Measure out 50m along a flat surface.
- Walk along the 50m using your normal stride.
- Repeat this three times, recording the number of paces it takes you on each attempt.
- Average the results and use this value when pacing out your spot-checks.

When walking in the channel or across difficult terrain, it may not always be possible to accurately pace 50m and adjustments may be needed. When this occurs make a note on the form.

Recording at Spot-Checks

At each spot-check you will be asked to record information about the physical attributes of the bank and channel (**Section G**), the banktop landuse and vegetation structure (**Section H**) and the Types of in-channel vegetation (**Section I**).

- Banktop landuse
- Banktop vegetation structure
- Bankface vegetation structure
- Channel vegetation types
- Physical attributes (channel and bank)



- When you arrive at your first spot-check stand on the banktop to **determine the direction of flow** and record where you are starting from (upstream or downstream).
- Next, orient yourself facing downstream; the left bank is on your left, and right bank is on your right. You will be asked to record some characteristics for each bank separately.
- Next, locate the **limits of the banktop** for both river banks. This is done by identifying the first noticeable 'break in slope', i.e. where the angle of the bank changes. If in doubt, remember the banktop is the point from which the ground is level enough to allow building or farming.
- The next step is to **zorate the spot-check**. Look at the image above; different information is recorded by assessing different areas of the spot-check. The **Physical Attributes** (Section G) of the channel and bank are assessed across a 1m wide transect extending across the channel, from banktop to banktop. Information recorded in Section H includes the **Banktop Landuse** (extending 5m landwards from banktop) and Vegetation Structure of the **Bankface** (channel edge to banktop - do not include bar features) and **Banktop** (extending 1m landwards from banktop) all of which are assessed across a 10m wide transect. Finally, the **Channel Vegetation Types** (Section I) is recorded in a 10m wide transect across the channel.

Recording at Spot-Checks

8 Begin filling in the survey form, working from Section G to I. For Sections G to H use the abbreviations shown in the **Spot-Check Key** on the opposite page. Note that where a box is outlined in bold (█) only a single entry is allowed. For all other boxes (□) multiple entries can be made. For **Section I**, denote the presence of a vegetation type using a '✓', provided it covers at least 1% of the channel area within the 10m wide transect, or as an 'E' if more than one third of the area.

9 Once the data entry has been completed at a spot-check you should **record a short video** for further analysis of the site and quality control (see box on the right).

10 Proceed to your next spot-check and repeat Steps 4 to 10. Do this until you have completed recording at all spot-checks.

For **Section J** you will be asked to record grid references at selected spot-checks and measure the dimensions of the channel at a location of your choice.

Recording Spot-Check Videos

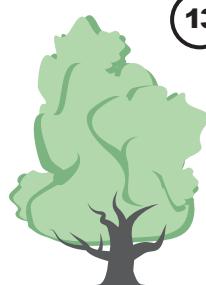
A short (1 - 1½ minutes) video should be recorded to document each spot-check. To do this:

- Stand on top of the bank.
- Start recording the video; face across the channel to capture the opposite bank.
- State the spot-check number and river name.
- Direct the camera so the water surface and flow is visible (fixed shot: 10 seconds).
- Slowly pan the camera to record the river and its banks downstream and then upstream.
- Take a few steps back to capture the banktop and bankface of the bank you are standing on, as well as the floodplain.

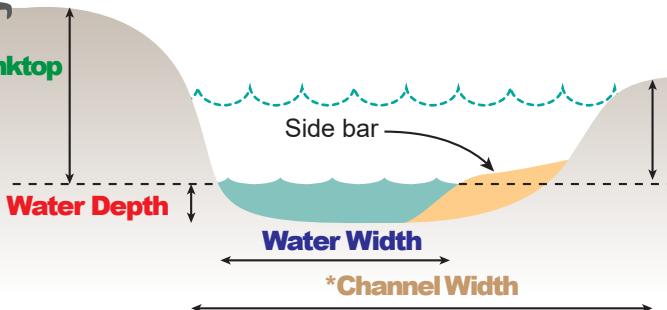
11 Record the coordinates at spot-checks 1 and 6 and at the End-of-Survey. In the UK, this should be an Ordnance Survey grid reference consisting of two letters followed by 10 numbers. This can be found using either a handheld GPS or a smart device with a GPS app, or a map.

12 While walking between spot-checks, look for a suitable location to take measurements of the channel dimension. This should be a straight section of river, preferably with well-defined banks that is safe to access.

13 When walking back along the survey site **during the sweep-up**, stop at your chosen location and record the channel dimension. The **Bank Height** is the vertical distance from the water level to the banktop; note this may differ between the banks. Where an **Embankment** is present (on one or both banks) record its vertical height from the banktop. The **Water Width** is the distance across the wetted area at the time of recording. The **Channel Width** is the horizontal distance between the banktops (use the lowest banktop if they have different heights). The **Water Depth** is the average depth of water, estimated using a ranging pole. This may be difficult for deeper rivers. If in doubt record 'Not Known'.



Left Banktop Height



Right Banktop Height

Right Embankment Height

*In this example, the Channel Width is determined based on the height of the right banktop which is the lower of the two banks

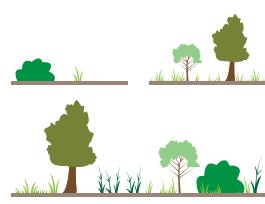
Spot-Check Key

Physical Attributes (Section G)

BANKS		CHANNEL	
Predominant bank material NV = Not visible BE = Bedrock BO = Boulder CO = Cobble GS = Gravel/sand EA = Earth PE = Peat CL = Clay CC = Concrete SP = Sheet piling WP = Wood piling GA = Gabion BR = Brick/laid stone RR = Rip-rap TD = Tipped debris FA = Fabric BI = Bio-engineering materials	Bank modifications NK = Not known NO = None RI = Reinforced PC = Poached BM = Artificial berm EM = Embankment Marginal and bank features NV = Not visible (e.g. far bank) NO = None EC = Unvegetated eroding cliff SC = Vegetated stable cliff SB = Unvegetated side bar VS = Vegetated side bar	Predominant substrate NV = Not visible BE = Bedrock BO = Boulder CO = Cobble GP = Gravel/pebbles SA = Sand SI = Silt CL = Clay PE = Peat EA = Earth AR = Artificial	Channel modifications NK = Not known NO = None CV = Culverted RI = Reinforced DA = Dam/weir/sludge FO = Ford (man-made) Channel features NV = Not visible NO = None EB = Exposed bedrock RO = Exposed boulders VR = Vegetated rock MB = Unvegetated mid-channel bar VB = Vegetated mid-channel bar MI = Mature island TR = Trash (urban debris)

Banktop Land Use & Vegetation Structure (Section H)

LAND USE TYPES (within 5m of Banktop)			
BL = Broadleaf/mixed woodland (semi-natural) BP = Broadleaf/mixed plantation CW = Coniferous woodland (semi-natural) CP = Coniferous plantation SH = Scrub & shrubs OR = Orchard WL = Wetland (e.g. bog, marsh, fen) MH = Moorland/heath	AW = Artificial open water OW = Natural open water RP = Rough improved grassland /pasture IG = Improved/semi-improved grassland TH = Tall herb/rank vegetation RD = Rock, scree or sand dunes SU = Suburban/urban development	TL = Tilled land IL = Irrigated land PG = Parkland or gardens NV = Not Visible	

VEGETATION STRUCTURE (Bank-face and within 1m of Banktop)			
B = Bare: Bare earth, or rock U = Uniform: Predominantly one veg. type (no shrub or trees) S = Simple: Two or three vegetation types C = Complex: Four or more vegetation types	   	Vegetation Type →	    

Sweep-Up Information

During the Sweep-Up you will be asked to assess the extent of features over the entire 500m survey site. This includes artificial features, landuse within 50m of the banktop, the bank profiles, and channel vegetation (**Sections C - F**). You will also be asked to assess the extent of trees and associated features, channel and bank features, and any features of interest or nuisance plant species (**Sections K - N**).

14

Once you have completed the spot-checks, walk back along the survey site to conduct the sweep-up.



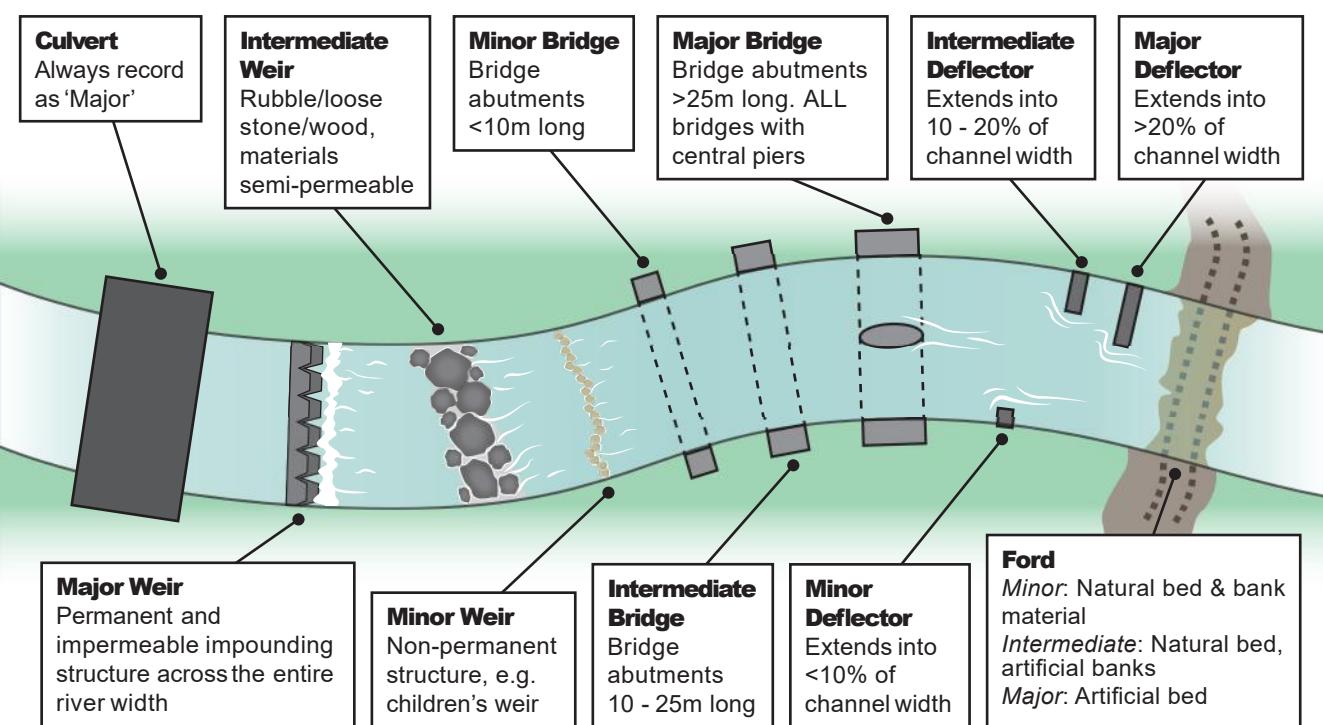
Remember! It is important to walk to the 'End-of-Survey' site (50m beyond the final spot-check) and include this in the sweep-up assessment.



Remember! Take photos of all Artificial Features and Features of Special Interest.

15

For **Artificial Features** (Section C) tally the number of features in each category (i.e. minor, intermediate and major) with reference to the image below. Record the total number of features in the survey form. Note that culverts are always recorded as Major.



16

For Sections D - F and K - N, record the presence and extent of features by entering a for those present along at least 1% (5m) of the entire survey site, or an where features cover >33% (165m) of the site. For features marked with an asterisk (*), e.g. debris dams and waterfalls etc., mark their presence even if their extent is <1%.



Remember! For **Notable Nuisance Plant Species** (Section N) indicate which species are present within the channel, on the banktop and/or the bankface even if the area they cover is <1%. Sometimes, it may be tricky to identify plant species. If you find it difficult, consider using the mobile app **Seek by iNaturalist**, which will not only help you identify plants but also animals you may observe while conducting cRHS surveys.

17

Lastly, record additional information about features and structures in Section O - Overall Characteristics. You should also record any information about features beyond the limits of the 500m survey site that may impact the site (e.g. the presence of dams/weirs).