

TACP

**River Waycock, File Mile Lane,
Barry**

Crayfish survey



September 2014

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Document reference: C181/D1/V1

Cover photographs: Views along surveyed section of River Waycock.

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1. Introduction

TACP is undertaking a series of ecology surveys to inform the A4226 Five Mile Lane Highway Improvement Scheme, Barry. The A4226 crosses the River Waycock and has been identified as potentially supporting White-clawed Crayfish (*Austropotamobius pallipes*). Sturgess Ecology was appointed to undertake a presence/absence survey of White-clawed Crayfish and/or any alien crayfish species along a 200m section of the river, centred on the lay-by and old bridge at ST088694.

White-clawed Crayfish is a native species that has been subject to significant decline at national level. It is protected under the Wildlife and Countryside Act 1981, classed as Globally Threatened by IUCN/WCMC, listed in Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive (92/43/EEC). It is also the subject of several Biodiversity Action Plans, including the UK BAP and Vale of Glamorgan LBAP, and is listed in the Welsh Government's Natural Environment & Rural Communities Act 2006: 'Section 42 List of Species of Principal Importance for Conservation of Biological Diversity in Wales'. TACP's review of existing data found no previous specific crayfish records for this river, but there are a few historical records of White Clawed Crayfish from the Vale of Glamorgan. The entry for the species in the Vale of Glamorgan LBAP reads "Rare; clean waters with gravel substrates".

2. Survey method

The survey was undertaken on 3 August 2014, which is during the optimal period for crayfish surveys (i.e. mid-July to mid-September). The survey date was chosen because it followed a period of several days with little or no rainfall, so that flows in the stream were low. The survey was carried out by Dr Peter Sturgess CEnv MCIEEM, under Natural Resources Wales (NRW) White-clawed Crayfish survey licence number 56601:OTH:SA:2014. Peter Sturgess was assisted by TACP ecologist Jean Hamilton.

A map showing the location of the surveyed section of stream is given in Figure 1.

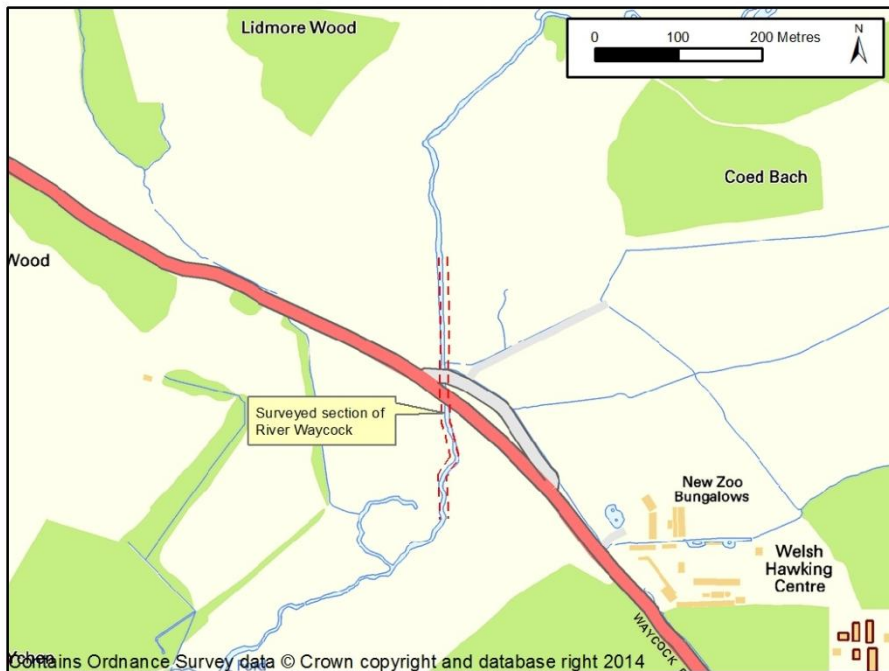


Figure 1. Location and extent of survey section

The principal survey technique was manual searching: turning over stones by hand to search for crayfish underneath them. A Perspex viewing box was used to aid searching

below the water. No torch surveys were undertaken and no trapping was used. The survey method was supplemented in some parts of the stream by using a standard pond net to sweep through fine roots at the side of the channel and mats of accumulated leaf debris. 'Kick-samples' using the net were also carried out in riffles with gravelly sediments.

The surveyors started at the downstream end of the section and worked systematically upstream, to minimise disruption of the survey from disturbed sediment. Intensive searching was undertaken in three short (i.e. 10m) sections upstream and downstream of the bridge, which were judged to have highest potential suitability for crayfish. Within these sections the surveyors aimed to examine every possible stone and potentially suitable cavity in the bank. The intervening parts of the channel between these sections were also searched, but survey effort in these was more focused on the places judged to be most likely to support Crayfish (e.g. under larger rocks, or beneath overhanging tree roots).

Most of the channel was readily searchable, but the surveyors were hampered by low branches and deep water in a few short sections. Much of the channel bed is formed from bed-rock, and it was not possible to find many individual stones to check beneath in some of these parts. Another very significant limitation was a sudden influx of very turbid water from somewhere upstream of the survey section. This prevented any effective survey while it lasted, causing the search to be suspended for approximately 30 minutes until the water had cleared.

All survey equipment and footwear was thoroughly dried and/ or disinfected before and after the survey to prevent possible transfer of Crayfish plague or other waterborne diseases.

3. Survey findings

No native White-clawed Crayfish nor any alien crayfish were found during the survey.

Several species of native fish were observed incidentally during the survey. The most abundant was Bullhead. There were also several young Eels, and small numbers of Minnow and Three-spined Stickleback.

The habitat generally appears suitable for crayfish, with a fair range of potential crevices under rocks and in bank-side roots, and the water quality which appears reasonably good.

The river downstream from the bridge had the most natural variation in channel form, with several pools and slower-flowing sections, and several gravelly riffles. The section with the bridges was difficult to survey, due to deep water and dark conditions under the road bridge. The old bridge at the lay-by supported only shallow water over concrete, with few potential cavities for crayfish. Immediately upstream from the lay-by there is an outfall pipe from the adjacent waste water treatment plant. Rag deposits on the screen at the outlet indicate that sewage is discharged into the river from time to time (presumably during high rainfall events). The upstream section is relatively straight and has a more uniform character than the rest of the channel. A higher proportion of the bed is formed from bedrock (which made the survey harder), but there are several patches of dense roots and some unshaded parts with dense bank vegetation overhanging the channel. Photographs in Appendix 1 show the range of channel habitats seen along the surveyed section.

4. Discussion

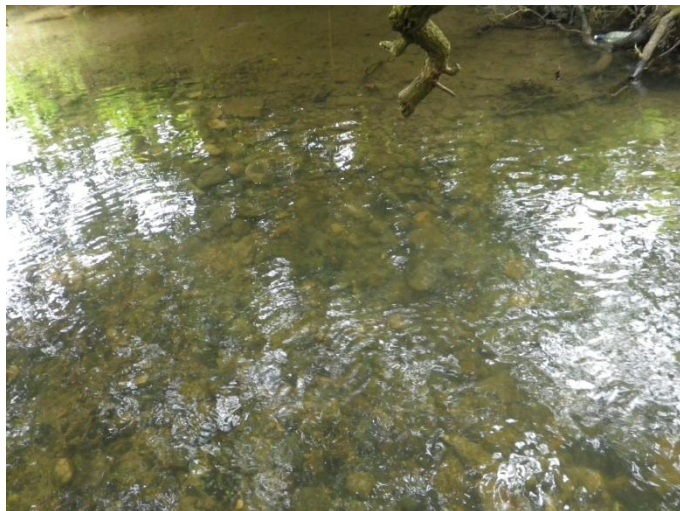
The lack of crayfish observations during this survey indicates that they are probably absent from this section of the River Waycock. It does not necessarily mean that they are not present in other parts of the catchment, or that they have always been absent, or that they

will never colonise this river. It is feasible that a small crayfish population might be present at a very low density, which was not possible to detect using this survey method. However, for the purposes of the current project, it is reasonable to assume that crayfish are not a constraint to the highway improvement scheme.

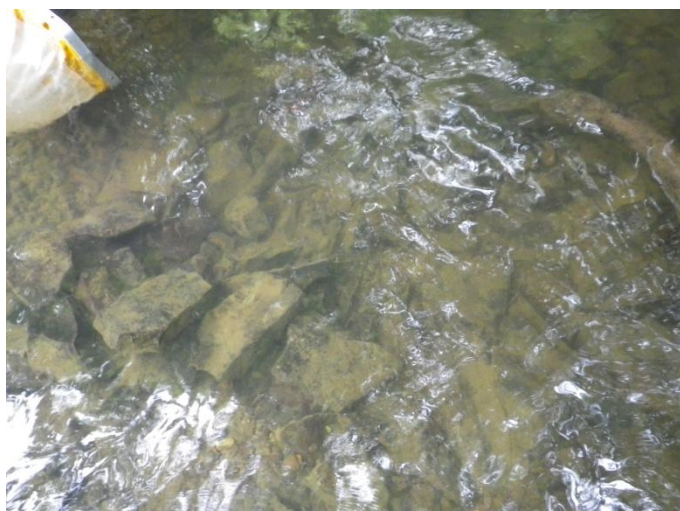
Possible explanations for the likely absence of crayfish might be because of some historic pollution event, or an extreme drought (given that it is a very shallow flow over limestone). Or it might be simply that they have never colonised this relatively small catchment.

Appendix 1. Photographs

(Arranged in approximate order from downstream to upstream.)



Photograph 1. Slow flowing water with a stony bed, and bank-side tree-roots, at the downstream end of the study section.



Photograph 2. Channel over bedrock, with very few stones sufficiently loose to lift.



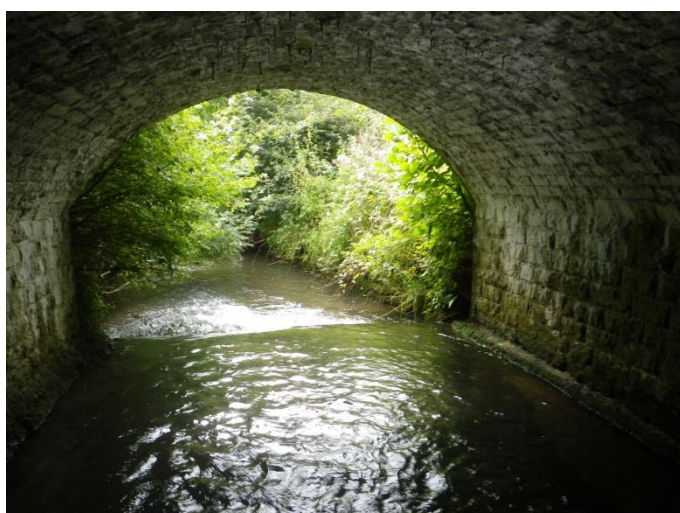
Photograph 3. Undercut banks that were surveyed by pond-net.



Photograph 4. Large collection of branches above a deep-water pool. This proved too difficult to dismantle or survey effectively



Photograph 5. Deep dark water beneath the road bridge.



Photograph 6. Channel bed formed from bedrock, with few stones sufficiently loose to lift.



Photograph 7. Outflow from Waste Water Treatment Works upstream from bridge.



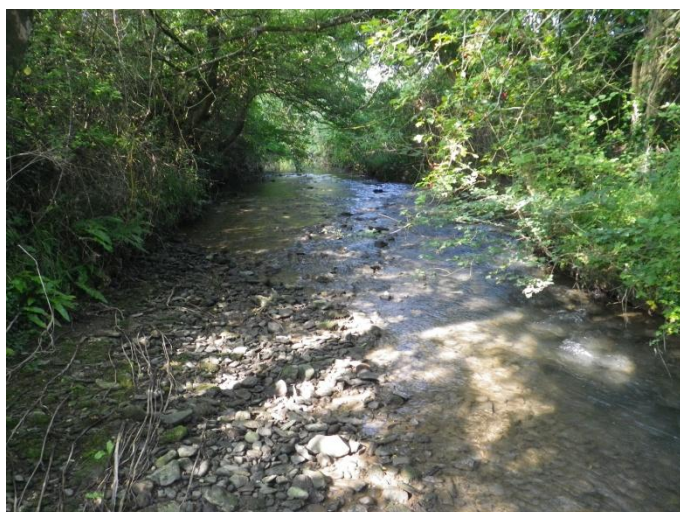
Photograph 8. Turbid water that stopped the survey for several minutes..



Photograph 9. Upstream from bridge, showing a relatively shallow, shaded section.



Photograph 10. Upstream from bridge, showing unshaded section with overhanging nettles and reeds.



Photograph 11. Shallow riffle at upstream end of surveyed section.



Photograph 12. Bullhead.



Photograph 13. Elver.



Photograph 14. Three-spined Stickleback.



Photograph 15. Minnow.