



Walkover Habitat Survey
Ruskington Beck, Lincolnshire
November 2016

Contents

Summary	3
Introduction	4
Catchment Overview	4
Habitat Assessment	5
Opportunities for habitat improvement.....	13
Acknowledgement	13
Disclaimer.....	13
Glossary.....	14

Summary

- Approximately 1.2 km of the Ruskington Beck was inspected within Ruskington village and 0.75 km downstream of the village (Priory Road downstream). The Beck is a small stream fed by springs from the Lincolnshire limestone aquifer. It has clear water and aquatic plant growth characteristic of calcareous conditions.
- Throughout the course of the beck, the channel has been significantly modified from its natural state, having been straightened, widened and its course altered. The section within Ruskington is artificially wide, shallow and bordered by vertical walls of concrete, brick or stone; habitat value throughout is extremely poor.
- A short section (200 m) of the Beck running through Horseshoe Hollow public open space has natural banks which are low and with good connection to the adjacent floodplain. There is a population of water voles here.
- The flood risk status of the beck within the is likely to limit habitat improvement opportunities within that section.
- The section of Beck between Chestnut Street and Priory Road was not inspected during this visit, but appears to be less artificial in nature, and is more removed from developed areas. Further investigation of habitat improvement opportunities should be carried out here with landowner permission.
- Downstream of Priory Road to the River Slea, the beck is regularly maintained for land drainage purposes. Landowners and authorities currently maintaining the watercourse should be consulted regarding habitat improvement opportunities.
- A search of Lincolnshire Environmental Records Centre data, centred on the Beck, was requested by Lincolnshire Rivers Trust in October 2016 and includes records of the following species associated with aquatic habitats: water vole. The full search report is available from marie.taylor@lincsivers.org.uk.

Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust to the Ruskington Beck, approximately 23 km south southeast of Lincoln, on 16th November, 2016. Comments in this report are based on observations on the day of the site visit.

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left hand bank (LHB) or right hand bank (RHB) whilst looking downstream. Specific locations are identified using the Ordnance Survey National Grid Reference (NGR) system.

Catchment Overview

The walkover survey was conducted to identify opportunities for habitat improvement along the Beck which could form part of the potential Lincolnshire Limestone Becks project, a partnership project currently under development by Lincolnshire Rivers Trust, Wild Trout Trust and the Environment Agency.

The Ruskington Beck is a small stream which rises to the west of Ruskington village and flows south-eastwards to join the River Slea near Haverholme Priory (TF 10667 49686). The Beck is groundwater fed, flowing off the Lincolnshire limestone.

Information from the Water Framework Directive classification for the Ruskington Beck is shown below. It is classified as a heavily modified waterbody. The Directive sets all water bodies the target of achieving good status or good potential by 2027 based on ecological health and water quality.

River	Ruskington Beck
Waterbody Name	Ruskington Beck
Waterbody ID	GB105030056700
Management Catchment	Witham (Operational catchment: Lower Witham)
River Basin District	Anglian

Current Ecological Quality	Overall Moderate ecological potential in assessment cycle 2015, Good in 2009.
U/S Grid Ref inspected	TF 07624 51310
D/S Grid Ref inspected	TF1013249879
Length of river inspected	~3 km

Habitat Assessment

A short section (200 m) of the Beck runs through Horseshoe Hollow public open space between Lincoln Road and Manor Road (TF0772751256). This reach has few bends suggesting it has been straightened in the past, but it has natural banks which are low and with good connection to the adjacent floodplain. There is a population of water voles (*Arvicola amphibious*) in this area (Photo 1). The inspiration for "Ratty" in *Wind in the Willows*, the Water Vole is Britain's fastest declining wild mammal and has disappeared from many parts of the country where it was once common. It is threatened by habitat loss, but has suffered particularly from predation by the introduced American Mink. There may be opportunities on Ruskington Beck to improve and link habitats, increasing the range and resilience of the vole population and contributing to its national conservation.

There is a pond dipping area created in 2015 as part of a project undertaken by Network Rail and the GNGE Alliance in partnership with Ruskington Parish Council (mitigation for disruption caused by upgrading the East Coast Main line).

Downstream of Horseshoe Hollow, the Beck enters a very heavily modified channel alongside Manor Street (Photo 4), then through the grounds of private residences (Photo 5), and alongside Chapel Street (Photo 6) into the village centre where it is flanked by High Street North and South (Photos 7 - 8). Throughout this section the channel is artificially wide, shallow and bordered by vertical walls of concrete, brick or stone; habitat value throughout is extremely poor.

The beck is main river from its source and Environment Agency flood risk maps indicate a corridor through the village with a greater than 1% annual flood risk. In 2014, Anglian Water carried out a 10-week scheme to increase

sewer capacity and reduce risk of sewer flooding. The proximity of the beck to properties and flood risk within the village is likely to greatly limit the opportunities for instream habitat improvement.

The section of Beck between Chestnut Street (TF 08601 50965) and Priory Road (TF 09049 50442) was not inspected during this visit, but appears to be less artificial in nature, and is more removed from developed areas. There may be scope for habitat improvement within this reach, for example in the Orchards Park area (Photo 9). The proximity of a local school and the crossing of the Beck by the Spires and Steeples Trail may also provide partnership and public engagement opportunities. It is recommended that access is sought and this area revisited to assess opportunities.

Downstream of the sewage works on Priory Road the Beck follows the Spires and Steeples Trail to its confluence with the River Slea. Apart from short sections at the upstream end (Photos 10 -11), the Beck is effectively a land drain with uniformly poor habitat. Regular maintenance occurs here and the banks had recently been cut and aquatic vegetation removed (Photo 12). There may be opportunities for habitat improvement along this reach with the aim of improving connectivity with the River Slea and interpretation for users of the trail. Liaison and working in synergy with the landowners and authorities currently maintaining the watercourse (possibly Environment Agency Operations Delivery team) would be vital.



Photo 1 Information sign regarding water voles in Horseshoe Hollow.



Photo 2 Low, natural banks within Horseshoe Hollow.



Photo 3 Pond dipping area created by Network Rail / Parish Council project.



Photo 4 Highly modified, artificial channel alongside Manor Road.



Photo 5 View upstream from Chapel Street of section flanked by private residences.



Photo 6 Highly modified, artificial channel alongside Chapel Street.



Photo 7 Highly modified, artificial channel alongside between High Streets North and South.



Photo 8 Small weir on the High Street section



Photo 9 View upstream from the road alongside the sewage works.



Photo 10 View upstream from TF0915950389.



Photo 11 Shaded section alongside the track next to Lakeview.



Photo 12 Beck alongside track at TF 09458 50191. The channel is straightened, deepened and maintained for drainage. The bankside and instream vegetation had recently been cut.

Opportunities for habitat improvement

- Limited opportunity through the village, because of flood risk.
- Possible opportunities downstream of Chestnut Street to Priory Road. Further investigation and consultation required. Instream works to create a narrower low flow channel, and/or re-meandering may be possible. Potential links with local community, schools, and users of Spires and Steeples Trail.
- Downstream of Priory Road, opportunity to influence current management regime and undertake instream habitat improvements. Improve connectivity with the River Slea, providing a corridor for movements of fish (including eels), water voles, etc.

Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programme in England.

Disclaimer

This report is produced for guidance and not for specific advice; no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon guidance made in this report. Accordingly, no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon comments made in this report.

Glossary

Bank-full	The point when , during high flows, the river channel is at full capacity and any further increase in flow results in water spilling onto the floodplain . At bank-full flows, the river has its greatest power (for example, for erosion).
Bank re-profiling	Changing the slope of a river bank to a different angle. Usually used on channels previously engineered for drainage/flood reduction, to create a shallower bank angle on the inside of a bend. This helps restore more natural flow patterns and habitats.
Berm	A shelf in the margins of a river. Berms form in channels that have been engineered to be wider than their natural width. They can also be created as part of habitat improvement measures (see two-stage channel).
Conduit flow	The flow of groundwater through cracks and fissures in the geology (for example, limestone); this flow is quicker than the more gradual seepage in porous rocks (for example, chalk).
Conveyance	The capacity of a channel to transport water. Straight, smooth channel have a greater conveyance than meandering, rough channels.
Dig and dump	A habitat improvement technique used on previously engineered, lowland rivers involving the re-shaping of the river bed with an excavator. Deeper pools are dug and the resulting material used to pinch the width of the channel upstream, fluming the flow into the pool to maintain its depth.
Easement	A term describing a range of low-tech, low cost techniques to improve the ability of fish to cross barriers (e.g. weirs, culverts) in a watercourse.

Floodplain	The flat land adjacent to a watercourse that is inundated during higher flows. Watercourses engineered for drainage overtop into the floodplain less frequently than unaltered watercourses (the former are often described as disconnected from their floodplain). Floodplains can store floodwater and hence protect downstream areas.
Habitat	The natural environment in which a species or group of species lives and complete their life cycle.
LiDAR	An acronym for Light Detection and Ranging, a surveying method which measures distance with a laser light. Often carried out from an aircraft, it allows terrain maps to be compiled showing differences in height to a high resolution (30 cm or better).
Pool-riffle sequence	In low to moderate gradient rivers, the natural sequence of deeper pools separated by shallow riffles of broken water. Scour pools form on the outside of meanders and riffles form on the straighter sections of channel in between. The pool-riffle sequence is the basis of good in-stream habitat in lowland rivers, but is often disrupted or destroyed by engineering for drainage (e.g. river straightening).
Scour pool	A pool formed by flow directed either laterally or obliquely against a partial channel obstruction or bank. Often found on the outside of a meander bend in a river.
Two-stage channel	A channel engineered to have a smaller capacity channel within a larger one. The smaller channel mimics the dimensions (and better habitat) of the natural watercourse, containing low to medium flows. Higher flows overtop the small channel but are retained within the larger channel. The channel therefore works at two different stages of flow.