Advisory Visit

River Onny, Shropshire

November 2017

1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust to the River Onny, Horderley, Shropshire on 6th November, 2017. Comments in this report are based on observations on the day of the site visit and discussions with Ben and Sian Muggridge (landowners) and Chris Bainger (Fisheries Technical Specialist, Environment Agency).

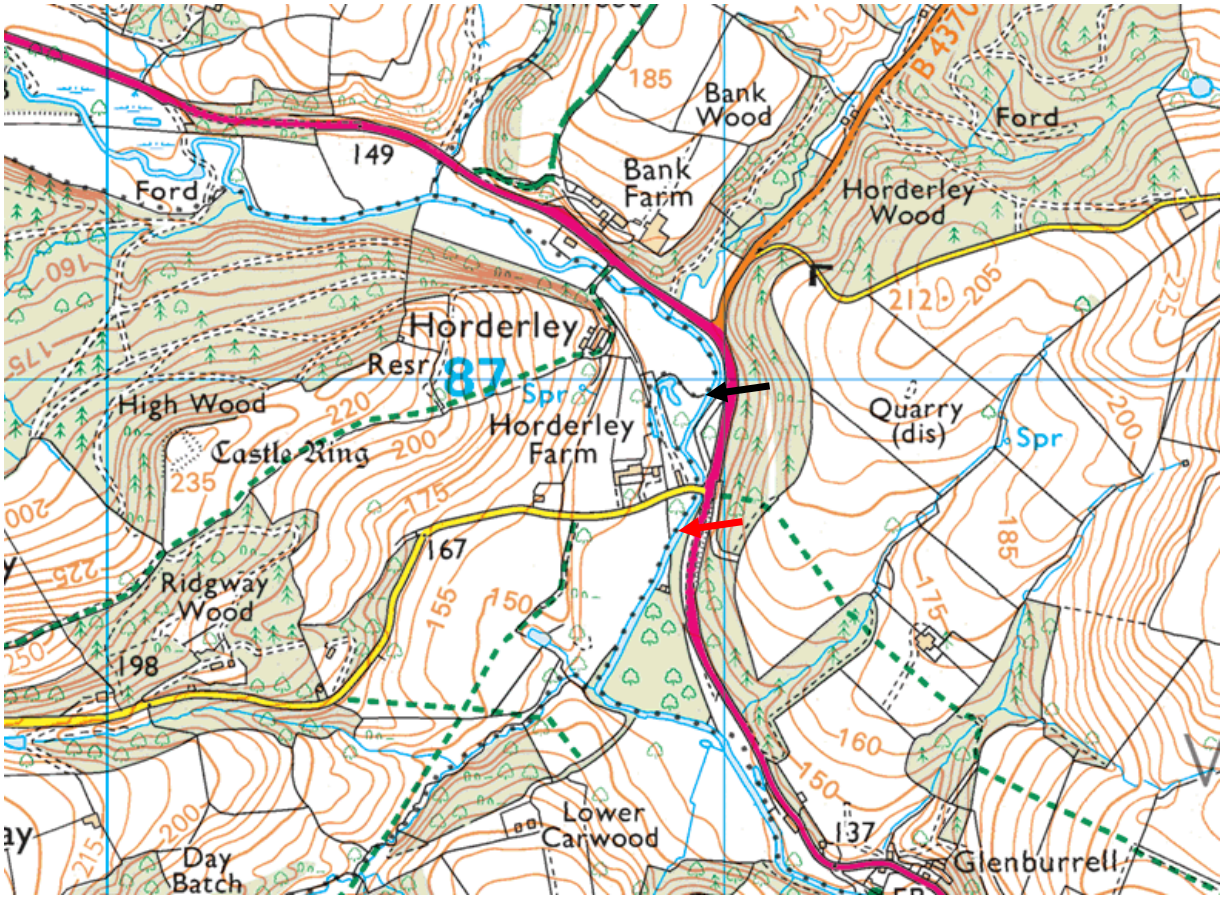
Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left hand bank (LHB) or right hand bank (RHB) whilst looking downstream.

2.0 Catchment / Fishery Overview

The River Onny rises in the Shropshire Hills, comprising two arms (the East and West Onny) which have a confluence at Eaton. The river then flows in a south-easterly direction, through Craven Arms, to join the River Teme at Bromfield, just upstream of Ludlow. The Onny is known for trout and grayling fishing and is an important spawning tributary for Atlantic salmon, which run the Severn and Teme.

The Environment Agency assess the health of rivers under the Water Framework Directive, European legislation which sets targets for improving the physical and ecological condition of rivers. Rivers are sub-divided into waterbodies (reaches) and various parameters are measured and combined to give an overall status (high, good, moderate, poor or bad) for each waterbody. Any parameter classified as less than “good” status will trigger an overall status failure. Table 1 summarises the information for the waterbody covering this section of the River Onny and shows it has met “good” status for the last two assessment cycles. More detailed information can be found at http://environment.data.gov.uk/catchment-planning/WaterBody/GB109054044330 .

The section of river inspected during this visit is at Horderley Farm (Map 1), upstream of Craven Arms. The Environment Agency carried out an electric fishing survey at Horderley on 17th June, 2014 and recorded 37 trout, 4 juvenile salmon, 14 bullhead, 9 minnow and 4 stone loach (Chris Bainger, pers. comm.).



Map 1 Location of visit, showing approximate downstream (red arrow) and upstream (black arrow) limits.

River	River Onny
Waterbody Name	Onny – confluence River East Onny to confluence River Teme
Waterbody ID	GB109054044330
Management Catchment	Teme – Teme Upper
River Basin District	Severn
Current Ecological Quality	Overall status of **Good** ecological status sustained through two assessment cycles in 2009 and 2016

U/S Grid Ref inspected	SO4097986972
D/S Grid Ref inspected	SO4091286725
Length of river inspected	260 metres

Table 1 Summary of information for the waterbody from investigations for the Water Framework Directive (http://environment.data.gov.uk/catchment-planning/WaterBody/GB109054044330)

3.0 Habitat Assessment

The plan-form of the river at Horderley indicates the river channel has been straightened or re-routed in the past. The lack of a naturally meandering course is evident if this reach is compared with the two or three kilometres upstream towards Plowden. The straightening is probably associated with the routing of the former railway along the valley (the old station building stands adjacent to the road bridge) and/or to create field space for agriculture on the flat valley bottom.

The loss of meanders also leads to the loss of deeper pools, which provide habitat for adult trout and salmon. Pools tend to form on the outside of bends where the scouring action of the flow maintains depth (Figure 1). Riffles form in-between pools at the point of inflection between meanders; these provide habitats for trout and salmon juveniles (which occupy different niches, the salmon favouring faster water to trout). The tail (downstream) areas of pools or glides, where the flow velocity is increasing and breaking into a riffle, are often used for spawning by trout and salmon. The eggs are buried in hollows (redds) excavated in the gravel by the female fish in autumn, remaining there over the winter and emerging as fry the following spring (Figure 2). The continuous flow of oxygenated water over and through the gravel in these locations is vital for the survival of the eggs. Freshly made redds are easily observed and keeping an eye out for them in autumn will help identify where fish are choosing to spawn and the areas that should be protected from disturbance, particularly over the spawning and incubation period.

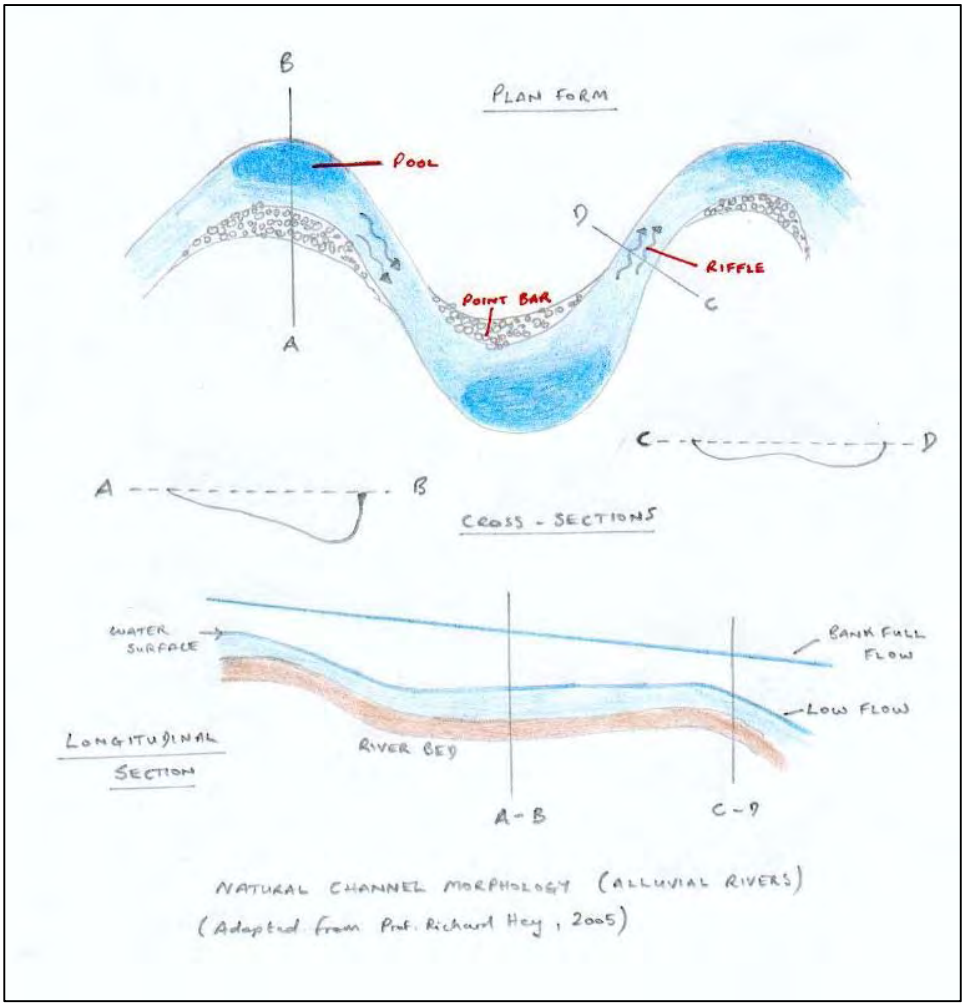


Figure 1 Natural channel morphology in alluvial rivers.

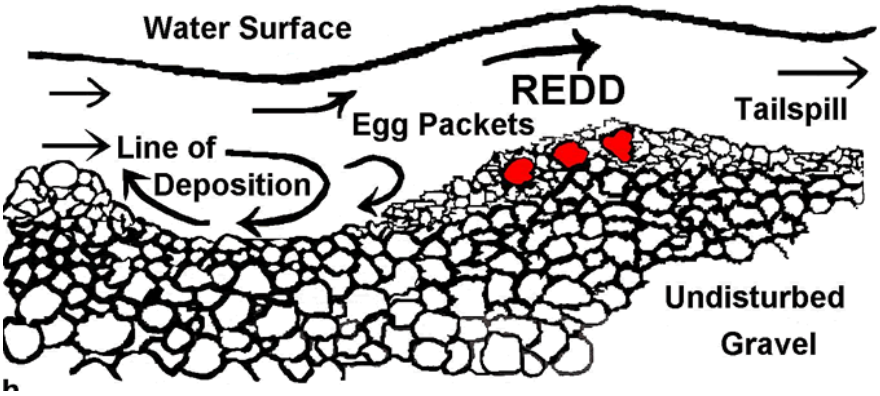


Figure 2 Long-section of a trout / salmon spawning redd

Although the historic straightening of the river here has reduced the availability of pool habitat, the river has sufficient gradient and sediment supply (sand, gravel, cobbles) from upstream to have reinstated a pool/glide and riffle sequence. Compared with an unaltered channel, the pools/glides tend to be shallower and more widely spaced, but overall instream habitat is good. The river here should support good numbers of wild trout in a range of sizes, along with juvenile salmon (and adults at spawning time). Smaller fish species such as bullhead, stone loach, minnow and brook lamprey should also be present.

The A489 road runs close to the left bank of the river on either side of the minor road bridge in the middle of the reach inspected. There is a steep drop down from the road to the river in places and the toe of the bank has been reinforced with gabion baskets (downstream of the bridge) and concrete sandbags (upstream of the bridge). The growth of trees in and around these reinforcements suggest they were constructed around 20 years ago (Photos 7 – 9). There are few intact gabions left below the bridge, but trees root systems are now providing bank stability. The concrete sandbags are largely intact, except for a section where discharge from a surface water road drain set at a high level has scalloped behind the sandbags and created a weak spot for high river flows to erode (Photo 8).

The deeds of the property include a clause allowing the local highways department to maintain the bank reinforcements; inevitably, when this occurs there will be disturbance and damage to the existing riparian habitat and loss of trees. Early intervention to manage existing trees and repair the gap in the sandbags could delay or prevent the need for major works, thus protecting habitats. Installation of a solid apron beneath the drainage pipe to withstand and dissipate the force of the falling water could also be incorporated.

Land use on both sides of the river is mature deciduous woodland, some of which has been managed as a coppice in the past (particularly on the left bank). As noted above, the tree root systems provide bank stability and the canopy provides shade which regulates river temperatures. Trout and salmon are cold-water species with maximum tolerances in the low twenties Celsius and need cold winter temperatures to trigger spawning activity. In 2016, fishery surveys revealed very poor recruitment of juvenile salmon in this part of the UK, with mild winter temperatures and high flows being

possible factors (https://naturalresources.wales/about-us/news-and-events/news/salmon-stocks-threatened-by-decline-in-fry-numbers/?lang=en). Chris Bainger reports that the Onny has bucked this trend, with good numbers of juvenile salmon recorded; the extensive shading of the river by riparian woodland could be an important contributor to this.

Management of trees and woodland alongside the river should therefore be carried out with a light touch in order to maintain shade over the river. There are sections of channel where some light coppicing would be beneficial; this should be done in an annual rotation of between 1 in 5 and 1 in 10 trees, allowing for varied stages of re-growth. Trees which, if they fell, are in danger of damaging the banks alongside the road should be assessed for stability and prioritised for coppicing accordingly.

There are numerous smaller tree stems that lend themselves to being "hinged" over into the channel margins to provide cover habitat. This is an easy and established technique for boosting numbers of juvenile trout and salmon. The trees are partially cut through and bent over into the river channel in the same manner as hedge-laying.

There were one or two examples of large woody material (fallen trees) in the river channel. This provides excellent habitat by promoting localised scour and sorting of bed materials, trapping leaf litter (boosting invertebrate numbers) and providing cover for fish. Large woody material should be retained in the channel wherever possible, unless genuinely increasing flood risk or threatening infrastructure.

There were numerous signs of otter activity along the river and dipper nests under the road bridge. These are signs of a healthy river, with good fish and invertebrate populations. Turning some riverbed stones during the visit revealed stone-clinging mayfly nymphs, freshwater shrimp and caseless caddis pupation chambers – signs of good water quality. The Riverfly Partnership (www.riverflies.org) provide support and training for volunteers to monitor aquatic invertebrates (and hence water quality) in their local river. This is done through local 'hubs' and Severn Rivers Trust (http://severnriverstrust.com/) will be able to advise further on this.

Upstream of the bridge there is a small stand of the non-native, invasive plant species Japanese knotweed on the right bank. The landowners are aware of this and have had it treated with herbicide; this should be

continued until it is eradicated. The landowners are also aware of the undesirability of Himalayan balsam, another non-native invasive, and have been pulling this by hand.

There are a number of veteran trees on the right bank which provide valuable habitats for many different species in the hollows, crevices and extensive ivy cover. These should be retained as part of any woodland management plans, along with standing dead wood which is also a valuable habitat. The right bank woodland appears to have been lightly managed and have a high value for biodiversity. The left bank appears to have been more recently managed as a coppice. Professional advice on woodland management should be sought from experts such as the local wildlife trust and Woodland Trust.

At the upstream extent of the reach, there is a dry channel on the left bank that could be the remains of a former meander in the river. At the end of it nearest the river, it appears that an earth bund has been removed in order to drain the former channel (and presumably the adjacent low-lying field). There are drainage pipes on the bank here that could have been set at a high level within the bund to retain water levels in the former meander and create wet woodland. The adjacent field is evidently still wet (from the *Juncus* rushes present), so it may be worth liaising with the owner/user of the field to see if the bund and pipes could be reinstated to restore the wet woodland habitat.

Photo 1 Downstream view of the section downstream of the road bridge, with the former railway bridge buttress visible mid-channel in the background. There are numerous opportunities for hinging smaller trees on the left bank.

Photo 2 Upstream view of the section downstream of the road bridge. Large woody material present here should be retained.

Photo 3 Area where it is likely trout and salmon may spawn, on gravel substrate at the tail of a pool/glide where the flow is speeding up and breaking into a riffle.

Photo 4 Numerous signs of otter activity were found during the visit including fresh spraint…

Photo 5…footprints, rolling and sliding activity in riverside sand….

Photo 6…and mounding of sand to form a sprainting point.

Photo 7 Steep section of left bank immediately downstream of the bridge. Assessing the stability of the tress here and selectively coppicing could preserve the root structure and bank stability, preventing the need for less sensitive bank protection in the event of trees toppling.

Photo 8 Repair of the bank protection failure caused by the outfall from the drain (arrow) upstream of the bridge could also prevent the need for more extensive works. Likewise, assessment and staggered coppicing of the trees (as per Photo 7). Hinging smaller trees to lay parallel to the bank would also improve low cover and fish holding capacity alongside the hard revetment.

Photo 9 Tree root systems provide good bank stability and much better habitat (cover) compared with the hard bank revetment. Preserve the root systems by coppicing the tree if it looks in danger of falling.

Photo 10 A bend in the channel illustrates the point in the text about pool formation and a more natural river cross-sectional profile, with deep water on the outside and a point bar ("beach") on the inside. With good bankside cover (including some tree hinging - arrow), the outside of the bend is a classic fish holding spot.

Photo 11 A stand of Japanese knotweed – highly undesirable and invasive. The landowners are aware and have treated this stand. This should be continued until eradicated.

Photo 12 Veteran trees such as this, with crevices and extensive ivy cover, are very valuable wildlife habitats (particularly for bats) and should be preserved. Equally, standing dead wood should be retained as habitat for invertebrates, woodpeckers, etc.

Photo 13 The sections of river with more dense stands of trees of a similar size and age could benefit from light rotational coppicing top promote re-growth of varying size and maturity.

Photo 14 Possibly the former course of the river cut off by channel straightening at the upstream end of the reach, right bank.

Photo 15 The woodland on the right bank has some good examples of veteran trees (including some fine yews) and lots of fallen dead wood. Biodiversity interest is high here.

Photo 16 On the left bank, the woodland appears to have been more recently managed as a coppice. Advice from experts such as the local wildlife trust and Woodland Trust should be sought for the best way to manage the woods on both banks.

4.0 Recommendations

- Assess the trees on the left bank for risk of toppling and damaging the bank alongside the road. Make a plan for staggered coppicing over a few years to reduce this risk and the need for invasive bank repairs. Likewise, repair presently small areas of damage to bank revetments to prevent more extensive problems and interventions.
- Hinge smaller trees into the river margins to create cover for fish (Photos 17 and 18).

Photo 17 Hinged trees providing excellent fish cover.

Photo 18 Partial cut to allow tree to be laid into the river.

- Contact Severn Rivers Trust and join the Riverfly Partnership invertebrate monitoring scheme.
- Keep an eye out for spawning trout and salmon and report to Chris Bainger at the Environment Agency.
- Have a regard for maintaining shading of the channel during any woodland maintenance works. Undertake any coppicing on a rotational basis, allowing trees to re-grow at different rates / sizes. See the code of practice for coppicing in the appendix.
- Investigate the possibility of re-instating the wet woodland in the former channel.

5.0 Making it Happen

Further assistance from the Wild Trout Trust is available in the form of:

- Helping obtain the necessary consents for carrying out in-stream works, from either the local authority or Environment Agency (depending upon whether the river is a designated Main River or not).

- A practical visit, which involves a visit from a WTT Conservation Officer to demonstrate the techniques described. This enables recipients to obtain on-the-ground training regarding the appropriate use of conservation techniques and materials, including Health & Safety, equipment. This will then give projects the strongest possible start leading to successful completion of aims and objectives. Recipients will be expected to cover travel expenses of the WTT attendees.
- The WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement:

http://www.wildtrout.org/content/library

The Wild Trout Trust has also produced a 70-minute DVD called 'Rivers: Working for Wild Trout' which graphically illustrates the challenges of managing river habitat for wild trout, with examples of good and poor habitat and practical demonstrations of habitat improvement. Additional sections of film cover key topics in greater depth, such as woody debris, enhancing fish stocks and managing invasive species.

The DVD is available to buy for £10.00 from our website shop http://www.wildtrout.org/product/rivers-working-wild-trout-dvd-0 or by calling the WTT office on 02392 570985.

6.0 Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programme in England, through a partnership funded using rod licence income.

7.0 Disclaimer

Appendix 1 – Good Practice Code for Coppicing

1. Before carrying out any coppicing a plan should be drawn up. The presence of protected species (including bats and otters) should be determined (see below), and their habitat requirements taken into account.

2. In heavily shaded sections, coppicing should be concentrated in fast flowing shallow 'riffle' areas with lighter work around the glides and pools.

3. Try to leave most of the remaining shading on the south bank along glides.

4. Coppice trees only from October to March and, in any case, well before they come into leaf in the spring.

5. Avoid cutting right back to old growth. Aim to cut to knee height, retaining at least 200mm of new growth. This helps promote good re-growth of the coppice stool.

6. Preferentially leave ivy covered trunks.

7. Leave old and dead trees unless dangerous. Very old or "veteran" trees provide valuable habitat for a variety of wildlife and can contain a rich lichen flora. Some bat species are known to roost under loose bark, in tree holes and under ivy.

8. Do not take mature timber. It does not coppice well. Any trees with good holes, cavities, splits, or loose bark should be retained.

9. Do not use machinery in the river. There are risks of pollution from fuel, oils and silt associated with use of machinery, which could result in prosecution.

10. Do not damage riverbanks or tree roots with machinery as this may lead to additional erosion. Avoid the use of machinery within 3m of the bank edge or tree stems.

11. Do not work **in** the river between 1 October and 31 March to prevent disturbance to spawning trout, trout eggs and newly hatched fry.

12. Coppiced timber and brash can form valuable habitat for a wide variety of wildlife. Where possible, it should be used to create LWD in the channel, or stacked and secured in such a way as to avoid it washing

away and either endangering fences downstream or accumulating on obstructions (bridges etc) and causing a flood risk. If material cannot be securely stacked then it should be removed from the flood plain completely. Should any material be burnt then this should be done no nearer than 50m to any other tree. In no circumstance should burning take place in the river channel. Ash must not be allowed to enter the watercourse.

13. Leave the stumps in the bank as they help to protect the bank from erosion and provide valuable habitat for fish. Tree roots also provide lying up sites for otters and nest sites for riverine birds such as grey wagtail and dippers.

14. Coppicing should be fenced to prevent damage to new growth from browsing stock.

15. Before working in areas with wildlife designations - Natura 2000 sites, Sites of Special Scientific Interest, National and Local Nature Reserves – you must first consult the relevant authorities, to avoid breaching wildlife legislation.

PROTECTED SPECIES

Many of the animals associated with river corridors (including bats, otters and dormice) are protected under Schedule 5 of the Wildlife and Countryside Act (1981), as amended by the Countryside and Rights of Way Act (2000) (CROW 2000) and The Conservation (Natural Habitats, &c.) Regulations 1994. This now extends the offence in section 9(4) of the 1981 Act to 'subject to the provisions of this Part, if any person intentionally or recklessly kills, injures or takes any wild animal included in Schedule 5, he shall be guilty of an offence.

BATS

All work that may affect bats should be discussed in advance with Natural England as a bat licence is required to survey (licensed consultant/bat worker) or carry out work on roost sites (DEFRA license). Under the Bonn Convention (Agreement on the Conservation of Bats in Europe) the UK is also required to protect their habitats, requiring the identification and protection from damage or disturbance of important feeding areas.

Bank side trees form important habitats for bats, as certain species are dependent on trees. Check trees for signs of bat roosts:

- obvious holes, cavities and splits in trunks and limbs
- dark staining on the tree below a hole
- staining around a hole caused by the natural oils in bats' fur
- tiny scratch marks around the hole from bats' claws
- droppings below a hole - they look similar to those of rodents but crumble to a powder of insect fragments
- noise (squeaking or chittering) coming from a hole
- check holes by inserting a mirror and watching the hole at dawn or dusk
- bats will also roost behind loose bark, which should be checked similarly.

If a roost is identified or suspected a more detailed inspection must be undertaken by someone with the relevant experience and correct license to assess, obtain and implement a DEFRA license where tree roosts will be damaged or lost. Whether bats are found or not, any trees with good holes, cavities, splits, or loose bark should be retained. An assessment should be made of the impact the work will have on bat roosts, feeding habitats and commuting routes before determining the final coppice plan, which may require alteration to accommodate the requirements of the bats.

OTTERS

Otter holts are found in cavities in large tree root systems, so any work on trees should be preceded by a root inspection. If a holt or lying-up place is *identified or suspected* a more detailed inspection must be undertaken by someone with relevant experience to ascertain whether otters are present. Coppicing should be carried out so that the coppice cut is taken some height above the stool, to allow for the protection of the cavity. Otter holts are protected by law and a licence may be required if disturbance is likely. All such works should be discussed and agreed with Natural England before proceeding.