WILD TROUT TRUST

wildtrout.org

Back Stream, Bishops Lydeard, Somerset

Advisory Visit October 2025

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Contents

1. Introduction

This report is the output of a visit undertaken by Theo Pike of the Wild Trout Trust on approximately 500 metres (0.3 miles) of the Back Stream at Bishops Lydeard, Somerset, on 22 October 2025.

This Advisory Visit was requested by Bishops Lydeard & Cothelstone Parish Council, on behalf of the local Streamside Residents' Group, who are seeking an assessment of the ecological health of this stretch of the Back Stream. As such, the visit focused on assessing the sustainability of habitat for wildlife in general, including wild brown trout *(Salmo trutta),* other fish species, water birds and overall biodiversity.

Comments in this report are based on observations on the day of the visit, as well as brief email discussions with representatives of the Parish Council and local community.

Throughout the report, normal convention is followed with respect to bank identification, i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream. The Ordnance Survey National Grid Reference system is used to identify specific locations.

At the time of the walkover, river flows were judged to be at low to average autumn levels: water clarity was good.

Figure 1: A map showing the Back Stream at Bishops Lydeard

2. Catchment overview

The Back Stream is a small watercourse which rises in the Brendon Hills north of West Bagborough in Somerset, and flows broadly south-east to meet the River Tone on the western edge of Taunton. From here, the Tone flows north-east to join the River Parrett at Burrowbridge; the Parrett reaches the Bristol Channel at Bridgwater Bay near Burnham-on-Sea.

The geology of the Brendon Hills and the lower Back Stream catchment is complex – a mixture of Triassic mudstones, sandstones and sedimentary conglomerates, with intermittent large deposits of gravel and sand in the floodplain.

On its 17km (10.5 mile) course, the Back Stream collects numerous smaller tributaries. Like many other Somerset streams and rivers, most of these appear to have been modified by centuries of human activity for ornamental, milling and other purposes.

Figure 2: The 1887 Ordnance Survey map of Bishops Lydeard and the Back Stream: compare the 'wiggliness' of the Back Stream with its straightened modern channel(s) shown in Figure 1, whilst also noting that the stream's course is likely to have been subject to modification before the Victorian era. (Source: National Library of Scotland)

At Bishops Lydeard, the flows of the Back Stream and its tributaries have been historically managed in several channels through the village, and harnessed for two mills (one of which, Lower Mill, is still in existence as a working mill and museum). The stream channels also seem to have been re-routed and straightened to accommodate several successive phases of urbanisation, as 20th

and 21st century residential areas have been developed on former agricultural land at the south-eastern end of the village.

River	Back Stream
Waterbody Name	Back Stream Water Body
Waterbody ID	GB108052021390
Management Catchment	Somerset South and West / Tone
River Basin District	South West
Current Ecological Quality	Poor (as at 2022)
U/S Grid Ref inspected	ST 17034 29212 (approx.)
D/S Grid Ref inspected	ST 17390 28855 (approx.)
Length of river inspected	0.5 km approx.

Table 1: Water Framework Directive (WFD) summary information for the Back Stream. The most recent assessment (from 2022) can be found via this link:

https://environment.data.gov.uk/catchment-planning/WaterBody/GB108052021390

The overall physical, biological and chemical health of all rivers in the UK is periodically assessed by the Environment Agency (EA) for the purposes of the Water Framework Directive (WFD).

Although the Back Stream was most recently assessed (in 2022) as High for invertebrates, and generally High for physico-chemical characteristics (with the exception of Moderate for phosphate from agricultural and water industry sources) it is concerning to note that the classification for fish is Poor. This assessment is jointly ascribed to ecological discontinuity as a result of barriers such as weirs associated with industry, and also a lack of relevant data (confirmed by consulting the EA's Ecology & Fish Data Explorer portal at https://environment.data.gov.uk/ecology/explorer).

On a more positive note, local people are aware of the presence of native wild brown trout in the Back Stream at Bishops Lydeard, and indeed several trout were seen in the course of this Advisory Visit. This should not detract from the urgency of addressing issues such as in-stream barriers in order to improve the health of wild trout populations in the Back Stream, and indeed to boost the ecological resilience of the water body as a whole.

Paved footpaths and informal 'desire paths' along both banks of the Back Stream suggest that this area is well used and valued by residents. However, this does mean that wildlife in these areas receives little respite from disturbance, and it may be worth nudging access towards just one bank, as part of a suggested review of vegetation management along the Back Stream – as discussed below.

High quality blue-green spaces are extremely important for physical and mental health, especially in urban and semi-urban areas where local people may also benefit from feeling empowered to take 'ownership' of mutually shared areas.

In addition to developing some or all of the habitat improvement ideas suggested below, community engagement ideas could include regular litter picking and citizen science schemes to monitor the health of the stream, such as riverfly monitoring (via the Riverfly Partnership: https://www.riverflies.org/). For example, monthly samples of pollution-sensitive aquatic invertebrates could be taken a short distance upstream and downstream of the Back Stream's bifurcations through Bishops Lydeard, in order to detect and locate any potential sources of pollution.

3. Habitat assessment

Thanks to their need for clean, well-oxygenated water, structurally-varied habitat, and free movement between different types of habitat at different life stages – as shown in Appendix A – the UK's native wild brown trout makes an ideal indicator species for healthy streams and rivers.

As such, a simple and effective assessment for overall stream and river health can be based around the life cycle requirements of wild brown trout: these are described in detail in Appendix B, and applied throughout this habitat assessment.

For the purposes of this report, the stretches of the Back Stream assessed are ordered from the upstream to the downstream extent visited.

Figure 3: The junction pool just upstream of the Hither Mead road bridge: a lightly-managed pocket of habitat with a good balance of light and shade, and beneficially 'shaggy' edges

Alongside the southern edge of the recreation ground in the middle of Bishops Lydeard, several bifurcated courses of the Back Stream converge to form a single channel which flows downstream from the Hither Mead road bridge to the edge of the village.

This area was not included within the requested extent of this Advisory Visit: however, some of its characteristics may merit brief discussion, particularly by contrast to features within the survey area just downstream.

In this area, the channel was buffered from urban influences by a well-grown – and lightly-managed – fringe of small willow trees. Although the channel may have been dredged or otherwise reprofiled in the past, there was a healthy riparian fringe of grasses and other native plants such as hemp agrimony, as well as emergent plants including bur reed and canary reed grass. Particularly when trailing over the water and into the margins, all of these provide very beneficial 'shaggy', complex habitat for a wide range of species including insects, birds and fish.

The bed of the stream was dominated by silt and sand (both potentially derived from fine particulate urban runoff) with occasional cobbles.

At NGR ST 17034 29212, where a subsidiary channel joins the main stem of the Back Stream from the recreation ground on the LB, a scour pool up to 1m (3ft) deep had formed, and up to dozen adult trout up to c 25-30cm (10-12 inches) in length were seen in this small area of deeper water habitat.

By nature, wild trout inhabiting small streams tend to prefer visual isolation from potential competition, so this gathering of individuals may reflect either the paucity of suitable adult trout habitat elsewhere in this area, or possibly the result of seasonal migration ahead of spawning later in the year.

Figure 4: By contrast with the photos in Figure 3, the two-stage channel of the Back Stream below the Hither Mead bridge is heavily managed, with very limited opportunities for terrestrial wildlife to live undisturbed (left); the banks in this area are reinforced with quarry cobbles (right)

Proceeding downstream from the Hither Mead road bridge, the Back Stream presents a very different set of characteristics.

In the course of urbanisation, the bed level of the stream appears to have been lowered in this area so that it now flows through an engineered two-stage channel (Figure 4, above left). The resulting artificial stream channel is straight (or at best very gently curving), and its banks appear to have been armoured with quarry cobbles of Carboniferous limestone. These may once have been enclosed in steel mesh gabions, which have now deteriorated or been removed, so that in many places the cobbles have become distributed across the bed of the stream.

As a result, most of this stretch of the stream is now a shallow, continuous riffle, dominated by cobbles and fine silt, rapidly flowing and rarely more than 20cm (8 inches) deep. This may provide suitable habitat for trout fry and small parr (as well as bullhead and other small fish species) but offers few opportunities for larger juvenile and adult trout. The closely-mown upper berms of the two-stage channel also provide very little habitat for terrestrial species to live free from disturbance.

Figure 5: Two areas of the LB where incipient 'rewiggling' could be encouraged by redistributing cobbles across the stream (and possibly also adding larger boulders and woody material to provide cover in an exposed and barren reach with little riparian 'shagginess')

At ST 17112 29176, on the outside edge of the stream's long curve though this area, a short stretch of cobble armouring on the LB seems to have become dislodged, allowing the bank to slope more gently into the water, and perhaps kick-start the process of creating a couple of small meanders.

Localised erosion of this kind is a beneficial natural process which could help to reduce the uniformity of the channel – introducing diversity of flows, and thus creating a variety of habitat niches for many different species. A brief 'rock pick' in this area produced a healthy range of aquatic invertebrates: cased and caseless caddis, freshwater shrimp and small mayflies: a result which bears out the EA's WFD assessment, and reinforces the view that this stretch of the Back Stream could hold a good population of trout if habitat were improved.

This early-stage instance of self-willed 'rewiggling' may suggest a low-cost opportunity to improve the hydromorphology of this area. Simply by redistributing loose cobbles across the stream into low berms, it may be possible to encourage natural processes of erosion and deposition, and nudge the stream back towards a more natural sequence of meanders, pools and shorter riffles within the existing two-stage channel profile.

In some areas, root structures from a line of alders on the RB of the two-stage channel had also grown through the limestone cobble armouring into the Back Stream. Such root structures contribute valuable heterogeneity to stream and river channels: when well developed, they can promote very beneficial mid-channel scour (thus producing deeper pools) and provide cover for fish in a range of flows.

In the course of this survey, two attenuation ponds (SuDS – Sustainable Drainage Schemes) were noted at ST 17070 29173 and ST 17207 29139. These are a welcome feature of urban planning, being designed to 'slow the flow' of increased runoff from impermeable urban surfaces into local waterways. Experience shows that it is important to undertake occasional 'wet weather walks' to check that such structures are still fulfilling their design objective, and ensure that flows are not passing straight through the SuDS without being temporarily captured and attenuated.

Figure 6: Contractors clearing the banks of the Back Stream with strimmers (left) and heavy mower (right) at the time of this survey: a much more relaxed management regime would pay dividends for wildlife and local aesthetics (and could help Somerset Council to save money too!)

At the time of this Advisory Visit, contractors were seen to be progressively clearing the Back Stream's banks and two-stage channel – working downstream from Hither Mead road bridge with strimmers and a heavy-duty mower – leaving a very short sward, and banks closely mown right down to the water's edge. It is understood that Somerset Council are responsible for maintenance of the Back Stream's banks and paths in Bishops Lydeard, and this mowing may take place around 4 times per year – probably to keep the two-stage channel clear for flood conveyance, including the prevention of natural tree succession.

In general, consistently 'shaggy' and well-vegetated stream margins and riparian zone are essential for healthy aquatic ecology. As such, a very much lighter touch management regime is recommended for the whole riparian corridor of the Back Stream through Bishops Lydeard – with the aim of leaving a well-vegetated buffer of 2-5 metres minimum width on each bank of the river, and mown paths for public access located well back from the water.

This could be achieved by revising the contractors' method statement to leave a permanent riparian fringe along the banks of the stream – whilst reducing the frequency of other mowing, or to rotate the areas mowed on each visit.

Such an approach would preserve the wider two-stage channel's flood conveyance function, whilst allowing a variety of aesthetically pleasing waterside plants to become established along the stream margins, with deep root systems to bind the banks and prevent excessive erosion, and providing low-level overhead and trailing cover which is so valuable for fish, insects and water birds.

In the course of this visit, plants such as hemp agrimony, canary reed grass, fool's water cress and starwort were noted, and supplementary planting for additional biodiversity value could include purple loosestrife, sedge, yellow flag iris, marsh marigold, water parsnip, water forget-me-not and water mint; water crowfoot could also be planted if not already established upstream. This approach would provide local residents with real aesthetic benefits, and the opportunity to enjoy the changing streamside environment as different flowering plants succeed each other through the seasons.

In order to assist these plants to become established, it may also be beneficial to consider light and shade levels along the Back Stream's corridor. Downstream of Hither Mead road bridge, the stream is shaded from the (south-western) RB by a line of alder trees, all of a similar age.

Small, shallow water bodies like the Back Stream can heat up very rapidly under summer sun, creating conditions that are uncomfortable and even dangerous for trout at temperatures of c 20 degrees C or more. Thus, 'keeping rivers cool' will become increasingly vital as climate change continues (including extended periods of extreme weather).

At the same time, carefully light-touch and selective rotational coppicing may be desirable to allow a little more sunlight to reach this stretch of the Back Stream, with an approximate target shade:light ratio of 70:30. Such low-percentage management of streamside trees can prolong their life span, especially in the case of alders if *Phytopthora* disease is present: it can also provide a helpful source of locally-won 'large woody material' (LWM) to introduce to stream channels for added structural complexity and habitat benefits.

Figure 7: A diverse plant community flourishes along this short stretch of the Back Stream where overshading is reduced. This adds valuable habitat and visual interest to the channel: it would be even more beneficial if not so closely mown to the bank top

Proceeding downstream, the Back Stream's artificial two-stage channel becomes appreciably narrower. However, from ST 17212 29111 to the downstream extent of this survey at ST 17389 28855, the course of the stream has been almost completely straightened, as well as progressively more impounded by a boulder weir further downstream at ST 17328 28952.

At ST 17247 29065 (as shown above), where tree overshading from the RB is reduced, healthy growths of marginal plants, including hemp agrimony, yellow flag iris and water cress, have started to pinch the permanently wetted channel, adding miniature meanders with abundant trailing cover.

This will provide important habitat pockets for many species, including wild trout which can find shelter under the trailing vegetation. It is hoped that such areas of beneficially 'shaggy' fringes will be retained and expanded as part of future management plans for the Back Stream.

Figure 7 and the image on the front cover of this report, also demonstrate the contrast between the just-mown LB, and the not-yet-mown RB: the well-vegetated RB as shown is very much preferable for biodiversity.

Figure 8: An example of a small alder tree which could be hinged over into the margins of the Back Stream to augment valuable cover for many species

Many rivers and streams in the UK are functionally deprived of valuable woody material – a naturally-occurring component of river ecosystems which adds valuable structural complexity, encourages localised scour and deposition of silt, and creates a multitude of habitat niches for different species. As such, every opportunity should be welcomed to mimic the effect of natural tree fall, or other contributors such as beavers, to sensitively augment the amount of beneficial woody material in water bodies such as the Back Stream.

Most of the trees in this area were confined to the RB; however, a small alder was noted on the LB (Figure 8). In due course, when this tree becomes larger, consideration could be given to 'hinging' it into the margins of the stream, pointing in a downstream direction and securing it with stakes, in a process like aquatic hedge-laying. In this way, the tree can continue to grow in place while offering a natural matrix of valuable, low-level in-stream cover for many species, and letting higher flood flows pass over the top. (See Appendix C for further details.)

It may also be useful to plan ahead for future works by planting whips of goat willow and other small willow species at suitable points along the banks, with a view to similarly hinging them into the margins of the stream in future.

Figure 9: The boulder weir at ST 17328 28952, and the straight, featureless impoundment which it has promoted upstream

As the Back Stream approaches the boulder weir at ST 17328 28952, the upstream 'ponding' effect of this structure becomes increasingly pronounced. The weir itself may have been built with rocks from the stream bed just upstream, which now lacks habitat complexity apart from occasional cobbles, and root masses from alder trees on the RB.

In general terms, weirs cause problems for streams and rivers because they impound long stretches of very slowly-moving water, where sediment carried in suspension drops out of the water column uniformly across the stream bed; habitat quality and diversity are severely degraded.

Such conditions can sometimes provide sufficient deep-water habitat for small numbers of adult trout and other species (until the deep water inevitably fills with sediment) but are generally unsuitable for gravel spawning fish, fry and juveniles. Long stretches of unshaded water, with dark sediments on the river bed, can also act as heat sinks, causing water temperatures to rise dangerously high, and dissolved oxygen to fall, affecting both the immediate area and the river downstream.

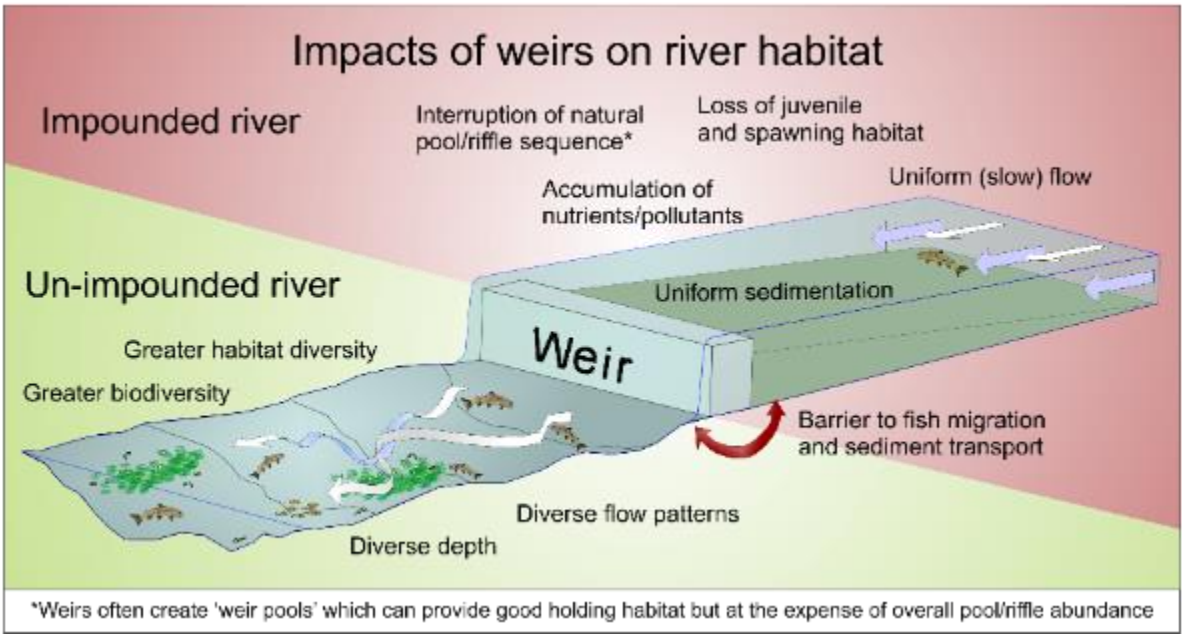

Figure 10: An illustration showing the impacts of weirs on habitat quality

Weirs are also problematic because they form significant obstacles to fish passage, preventing many species from moving up and down rivers freely to fulfil the different stages of their life cycles – in other words, creating the kind of discontinuity that the EA has identified as a 'reason for not achieving good status' under WFD.

In addition to these issues, weirs interrupt the natural transport of river sediment. This can cause the river downstream to become depleted of coarse sediment, and increase rates of bed and bank erosion in an attempt to compensate for the interrupted supply of suitable gravel and cobbles.

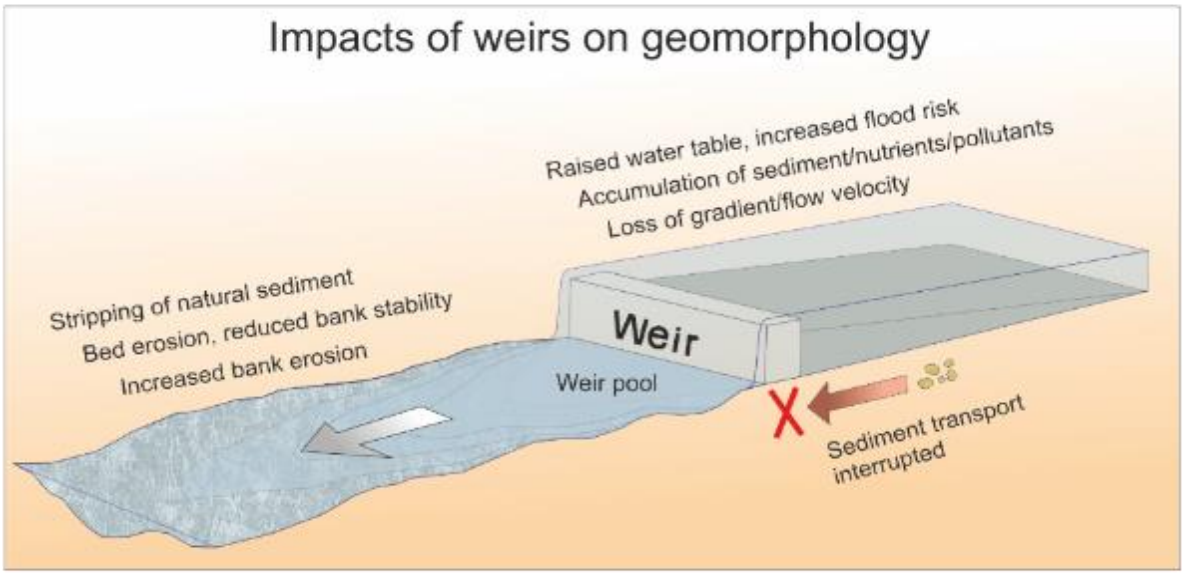

Figure 11: An illustration showing the impacts of weirs on river geomorphology

In the case of this boulder weir, the height of the structure is likely to constitute a complete barrier to most fish passage in most flows. For all of the reasons above,

urgent consideration should be given to removing it and redistributing its constituent boulders up and downstream.

These could form the basis of a 'chicane' of alternating cobble berms, top-dressed with gravel and designed to restore flow diversity within the channel's existing planform. Such plans could also include introducing large woody material (perhaps locally-won as part of efforts to reduce overshading from alders on the RB) as habitat structures, and in due course, small 'hinged' trees as described above. There is also the possibility of adding a footbridge to link up the footpaths on both banks – so that people and dogs no longer need to ford the stream just downstream of the weir, as at present.

Figure 12: An excellent example of how even the smallest amount of woody material can kick-start essential natural processes such as sediment scour and deposition

Downstream of the boulder weir, the banks of the Back Stream became significantly overshaded by the line of alders; vegetation also tended to be trampled by desire paths. Meanwhile, the bed of the stream becomes abruptly shallow and dominated by 'unsorted' gravel and fine silt, with very few cobbles at all, for c 30 - 50 metres.

Inspection of the banks just downstream of the weir revealed some lateral erosion cutting into a seam of similar gravel (with this erosion possibly accentuated by people and dogs descending the banks to cross the shallow gravels below the

weir), but perhaps not enough to account for the volume in this stretch of stream bed. Instead, it is possible that this gravel represents several years of sediment having accumulated by normal downstream transport behind the boulder dam; the dam may then have 'blown out' in a flood (and has subsequently been rebuilt), causing the gravel and silt to be redistributed downstream.

About halfway down this long, shallow gravel glide, a small branch had fallen and become lodged in the channel – creating a small pinch point, and vividly demonstrating the high value of woody material for creating variations in habitat, sorting sediments, and generating clean, de-silted gravel which would be suitable for trout spawning.

As shown in Figure 12, fine silt has fallen out of the water column and become deposited in the slightly slacker water immediately downstream of the branch. Meanwhile, a mound of clean, 'de-silted' gravel has formed alongside, in the faster current downstream of the pinch point scour. Both of these will offer slightly different habitats for aquatic invertebrates.

Figure 13: Invasive non-native Himalayan balsam plants alongside the Back Stream

At various points along this stretch of the Back Stream, the presence of Himalayan balsam (HB) was noted – mainly as individual plants, but with higher concentrations on fenced-off private land on the LB just downstream of the boulder weir, and amongst bur reed along the stream through the recreation ground beside Hither Green road.

HB is a damaging invasive non-native species (INNS): a tall, shallow-rooted plant which spreads with floating, spring-loaded seeds which can be ejected up to 7m from the parent plant. It grows in dense monoculture stands that shade out native species before dying back in winter, leaving bare soil without perennial root structure to help resist erosion. Excessive river bank erosion can contribute significantly to river bed sedimentation (one recent study suggests a rate of 10 tonnes per km per year) smothering gravels, invertebrates and fish eggs. More generally, HB also reduces biodiversity by suppressing native plants with allelopathic compounds in the soil and attracting insects to pollinate its flowers preferentially with its strong scent and prolific nectar.

Extensive areas of HB monoculture can be brought under control by repeated strimming or mowing, with hand-pulling as a follow-up measure. For smaller areas, or greater selectivity when HB is growing among other more desirable plants, hand-pulling is a tried and tested means of control and eventual eradication, as well as an excellent form of community engagement.

For sustainable long-term results, a catchment-scale approach is required: the furthest upstream extent of the infestation should be located, with a systematic programme of eradication designed to progressively push HB further and further downstream, and eventually out of the catchment completely.

In general, HB seeds appear to survive in the soil for around 3 years, so it may be necessary to revisit previously infested areas for at least this length of time. For best results, areas of infestation should also be revisited repeatedly through the growing season, up to the time of the first frosts in autumn, to prevent late-germinating plants from flowering and setting a seed bank for the next year.

Once pulled or strimmed, HB plants should be piled up to compost well away from any watercourses, with the stems snapped between the root and the first node of the stem to prevent resprouting: the fleshy plants will desiccate quickly, and experience shows that few seeds will survive this process to germinate in future years.

In recent years, efforts have been made to introduce suitably co-evolved varieties of rust fungus as a biocontrol for HB:

https://www.cabi.org/projects/biological-control-of-himalayan-balsam/

However, these have not yet achieved widespread levels of success, and strategic hand clearance is still considered to be the most effective approach.

Apart from HB, no other INNS were noted along the Back Stream in the course of this Advisory Visit, but any future management plan for the stream should include remaining alert for HB, Japanese knotweed, giant hogweed, floating pennywort, American signal crayfish, American mink and other damaging INNS.

Figure 14: A wild trout seen in the Back Stream (left), adjacent to a mattress of fool's water cress which provides valuable refuge habitat for fish (right)

At ST 17360 28902, at the downstream end of the gravel glide described above, the channel became more deeply incised (possibly by past dredging to compensate for non-continuation of the two-stage channel), and also impounded by another boulder weir at ST 17390 28855.

Two wild trout, both c 8 inches (20 cm) long, were seen in this area, adjacent to a thick floating mattress of fool's water cress. When alarmed, both fish fled under the cress to seek cover – aptly demonstrating the value of emergent plants as riparian habitat, in a channel where such features are largely lacking elsewhere.

Figure 15: In this straightened channel where habitat diversity has been reduced, future growth of these bankside alder trees could be hinged and staked into the margins of the river to provide complex woody cover for fish, birds and invertebrates

On the LB, a few metres downstream from this point, two alder trees were noted, which had apparently been roughly coppiced at approximately the height of the stock fence and nearby length of hedge.

In both cases, small lower branches continued to provide valuable low-level cover along the edge of the Back Stream: however, an opportunity may have been missed for further habitat improvement.

In future, it would be beneficial to engage with the landowner of the LB, and agree that the trees should be allowed to grow to a height of a few metres, before being hinged down into the margins of the stream – to form trailing complex cover much

like the water cress mattress shown in Figure 14 above. (In due course, it is likely that such a trailing woody structure would also be colonised by water cress, further enhancing its biodiversity value.)

Figure 16: A further weir which should be investigated for removal (left) and the impoundment of very slowly moving water which it creates for c 50m upstream (right)

At ST 17390 28855, the downstream extent of this Advisory Visit, a second boulder weir was noted.

Due to access restrictions, this structure could not be closely inspected, but it appears to be more passable for trout than the weir upstream. However, it is still impounding the system and causing degradation from a sediment transport perspective: as such, removing it is recommended, as a further contribution to future higher ecological status for the Back Stream.

4. Recommendations

The following table provides a summary of recommended actions to improve the health of the Bishops Lydeard stretch of the Back Stream for wild brown trout, other fish species, and biodiversity in general.

Opportunities	**Locations**	**Recommended actions**
Fish passage barriers (boulder weirs)	ST 17328 28952 and ST 17390 28855	Engage with the EA to investigate possibilities for removing boulder weirs – for improved WFD status – and renaturalising stream channel
Renaturalising ('rewiggling') straightened channel	Survey area generally	Engage with the EA to investigate possibilities for renaturalising stream channel (including remeandering by redistribution of cobbles within the stream's existing planform and two-stage channel)
'Shaggy', well vegetated river margins and bankside buffer strip (2-5m depth)	Survey area generally	Adopt lighter touch vegetation management regime; maintain a 'shaggy' overhanging fringe of native vegetation along the bank tops of all water courses, whilst rotating mowing of other two-stage areas; consider supplementary planting of marginal plants and deep-rooted herbs
Reducing overshading	Survey area generally	Allow more light to reach the river corridor by selective coppicing / thinning of overshading alders (mainly on RB)
LWM augmentation and tree hinging	Survey area generally	Retain naturally fallen large woody material (LWM) in river channel when opportunities arise; identify suitable locations for tree hinging and adding further LWM; planting trees for future hinging
INNS clearance including Himalayan balsam	Survey area generally and throughout Bishops Lydeard	Clear Himalayan balsam throughout Bishops Lydeard; seek opportunities to collaborate with similar projects throughout the Back Stream catchment (especially upstream); remain alert for appearance of other INNS

Citizen science water quality monitoring	Survey area generally and throughout Bishops Lydeard	Monitor the Back Stream's water quality via riverfly monitoring and other citizen science initiatives
Other community engagement activities	Survey area generally and throughout Bishops Lydeard	Ecologically and socially beneficial activities such as litter picking

5. Making it happen

The creation of any structures within 'Main Rivers' or within 8m of the channel boundary (which may be the top of the floodplain in some cases) may require a formal Environmental Permit from the Environment Agency (EA). This enables the EA to assess possible flood risk, and also any possible ecological impacts. The headwaters of many rivers are not designated as 'Main River', in which case the body responsible for issuing consent will be the Local Authority (often the County Council as the Lead Local Flood Authority). In any case, contacting the EA early and informally discussing any proposed works is recommended as a means of efficiently processing an application.

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/index

A focused Trout in the Town Urban River Toolkit (which also contains many valuable insights for general community engagement) is available at:

https://www.wildtrout.org/content/trout-town

There is also the possibility that the WTT could help via a Practical Visit (PV). PV's typically comprise a 1-3 day visit where WTT Conservation Officers will complete a demonstration plot on the site to be restored.

This enables recipients to obtain on the ground training regarding the appropriate use of conservation techniques and materials, including Health & Safety, equipment and requirements. This will then give projects the strongest possible start leading to successful completion of aims and objectives.

Recipients will be expected to cover travel and accommodation (if required) expenses of the WTT attendees.

There is currently high demand for practical assistance and the WTT has to prioritise exactly where it can deploy its limited resources. The Trust is always available to provide free advice and help to organisations and landowners through guidance and linking them up with others that have had experience in improving river habitat.

An important source of income which helps to fund the WTT's work is our Annual Spring Auction. The auction is our biggest fundraising event and includes fishing days, tackle, books, art and more. Many of our AV and PV recipients subsequently help us with auction lots each year, and we're very grateful for this extra support. To donate a lot, please contact WWT via Christina Bryant @ office@wildtrout.org

6. Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for their continued support of the Advisory and Practical Visit programme in England, through a partnership funded using rod licence income.

7. Disclaimer

This report is produced for guidance; 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.

Legal permissions may be required before commencing work on site. These are not limited to landowner permissions but may also involve regulatory authorities such as the EA, lead local flood authority and any other relevant bodies (e.g. Natural England and Forestry Commission) or stakeholders. Alongside permissions, risk assessment and adhering to health and safety legislation and guidance is also an essential component of any interventions or activities in and around your river.

8. Appendix A : Trout life cycle

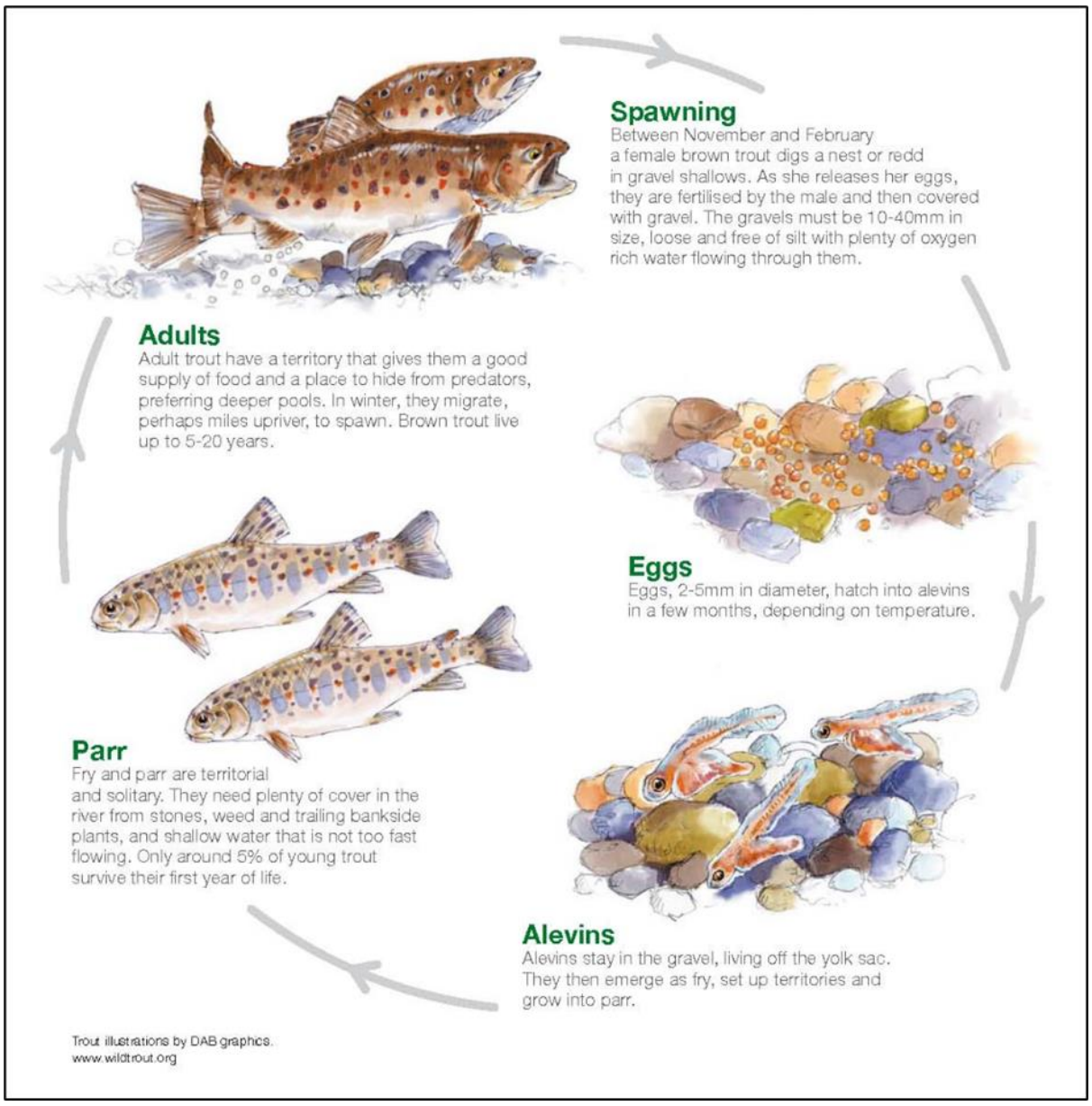

Figure 17: A diagram showing the life cycle of the UK's native wild brown trout, Salmo trutta

9. Appendix B : Trout habitat

Due to their need for clean, well-oxygenated water, structurally-varied habitat, and free movement between different types of habitat at different life stages, the UK's native wild brown trout makes an ideal indicator species for healthy rivers. These characteristics mean that a simple and effective assessment for overall river health can be based around the life cycle requirements of brown trout.

As a result, identifying and noting the presence or absence of habitat features that allow trout to complete their full life cycle is a very practical way to assess overall habitat quality. By identifying the gaps (i.e. where crucial habitat is lacking), it is often possible to design actions to solve those habitat bottlenecks.

To put all this into context, there are three main habitat types required for wild trout to complete each of their three key life cycle stages. This creates a demand for varied habitat, which is vital for supporting a wide diversity of other species too.

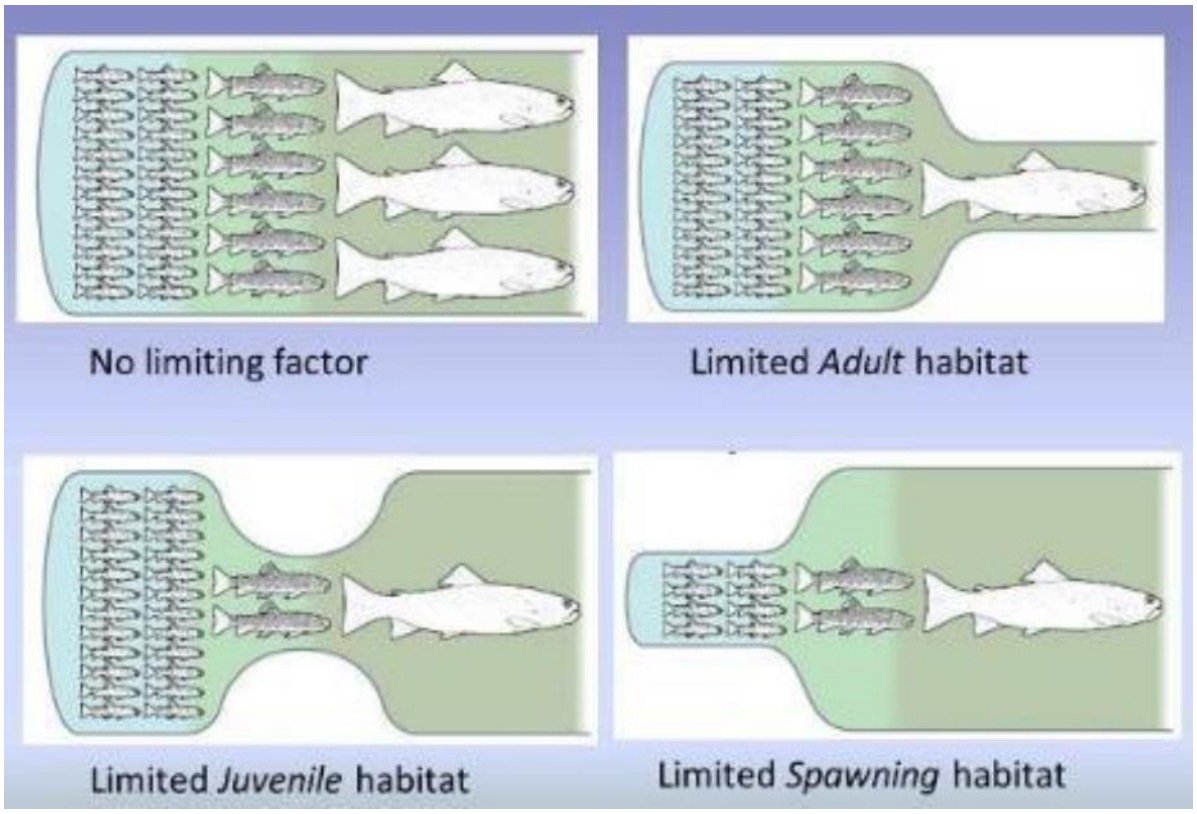

Figure 18: The impacts on trout populations lacking adequate habitat for key life cycle stages. Spawning trout require loose gravel with a good flow-through of oxygenated water. Juvenile trout need shallow water with plenty of diverse structure for protection against predators and wash-out during spates. Adult trout need deeper pools (usually > 30cm depth) with nearby structural cover such as undercut boulders, sunken trees/tree limbs and/or low overhanging cover (ideally trailing on, or at least within 30cm of, the water's surface). Excellent quality in one or two out of the three crucial habitats may not mitigate a 'weak link' in the remaining critical habitat.

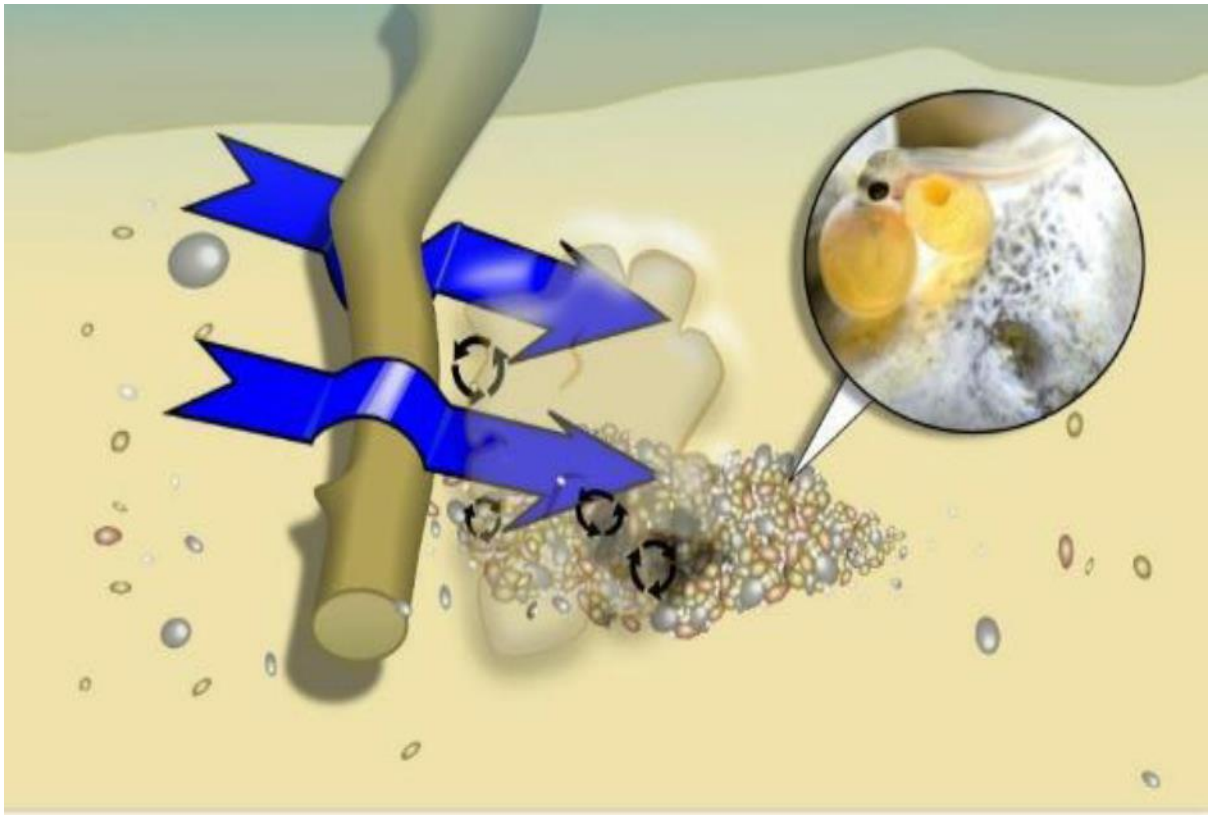

Figure 19: Successful trout spawning habitat requires relatively silt-free gravels. Here, the action of a fallen tree limb is focusing the flows (both under and over the limb as indicated by the blue arrows) on a small area of riverbed that results in silt being washed out from between gravel grains. A small mound of gravel is deposited just below the hollow scoured out by focused flows: this mound will be selected by trout to dig a 'redd' for spawning. In the silt-free gaps between the grains of gravel it is possible for sufficient oxygen-rich water to flow over the developing eggs and newly-hatched 'alevins' to keep them alive as they hide within the gravel mound (inset) until emerging in spring.

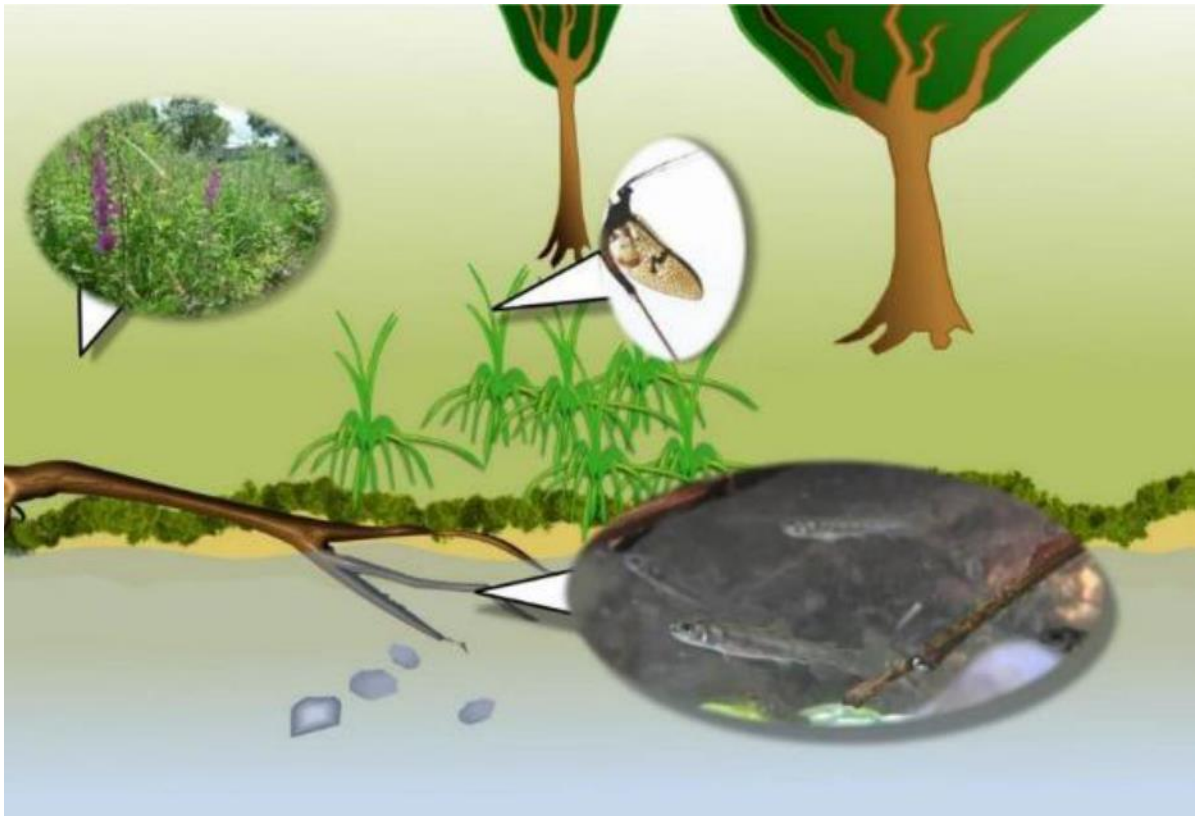

Figure 20: Larger cobbles and submerged 'brashy' cover and/or exposed fronds of tree roots provide vital cover from predation and spate flows for tiny juvenile fish in shallower water (<30cm deep). Trailing, overhanging vegetation also provides a similar function, and has many benefits for invertebrate populations (some of which will provide a ready food supply for the juvenile fish).

Figure 21: The availability of deeper water bolt holes (>30cm), low overhanging cover and/or larger submerged structures such as boulders, fallen trees, large root-wads etc. close to a good food supply (e.g. below a riffle in this case) are all strong components of adult trout habitat requirements.

10. Appendix C: Tree hinging and similar works

The Wild Trout Trust website contains detailed guidance on improving river habitat, including 'habitat sheets' providing details on using woody material in beneficial ways.

The summary web page is here:

https://www.wildtrout.org/content/habitat-improvement

Structure-specific 'habitat sheets' include:

Tree hinging:

https://www.wildtrout.org/assets/img/general/Habitat-Sheet-Hinging.pdf

Tree kickers:

https://www.wildtrout.org/assets/img/general/Habitat-Sheet-Kicker.pdf

Lodged LWM:

https://www.wildtrout.org/assets/img/general/Habitat-Sheet-Lodged-WM.pdf

Pinned woody material:

https://www.wildtrout.org/assets/img/general/Habitat-Sheet-Pinned-Woody-Material.pdf