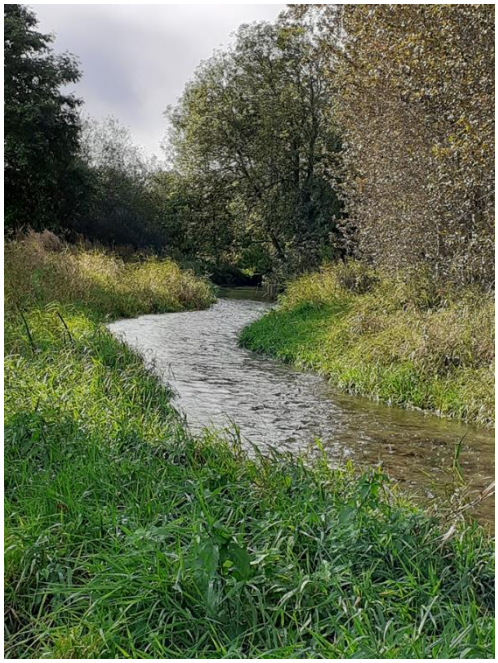
Conserving the Pillhill Brook – a rare and fragile chalk stream



The Pillhill Brook is one of the headwaters of the River Test. I am very fortunate to have 600 yards or so of this river running through watermeadows and woodland.

The River Test is arguably the best chalk stream in the world. The water rises from the aquifers via springs, and is filtered by the dense but permeable chalk, so that it is crystal clear and pure, and also has a temperature which remains constant all year. The fast flow keeps the riverbed clean gravel.

This means that the river can support a very specialised variety of wildlife.

It also means that any slight interference with the purity or temperature of the water can have a disastrous effect on the entire ecosystem. Abstraction, for instance, by water companies in times of drought, can affect temperature and change oxygen levels.

Chalks streams are not only very fragile, they are very rare. There are only about two hundred in the world, and most of them are in southern England.

The Pillhill Brook has been used historically as part of the water meadow system, which was introduced probably in mediaeval times and possibly much earlier, in order to control a flow of water over the nearby land. By careful use of aqueducts, hatch gates and channels within the fields, the river water could be diverted to flood the fields in a controlled way - a task undertaken by 'drowners'. This, in the winter, would keep the fields warm, owing to the natural warmth of the chalk stream water, and thus prevent the ground freezing. This allowed grass crops to grow much earlier than normal, giving the farmers early grazing for sheep, and a clear advantage over those whose fields could not grow until later.

To indicate how uncontrolled flooding can affect the surroundings of the river, this was our poplar plantation in 2014, after a period of heavy rain weakened the root-hold of the trees. A severe gale brought most of them down in one night.

This area is now replanted with native broad-leaved trees which will hopefully last much longer than the forty-year term of the poplars. As a further boost to the environment, I have also planted willow on a few acres of virgin watermeadow, between the road and the river, as I considered that trees would be better for the climate than methane-producing cattle.

The river is home to wild brown trout, grayling, all sorts of invertebrate life, aquatic vegetation, butterflies, dragonflies, kingfishers, ducks, swans, geese, water voles, and recently otters. The land is left untouched, apart from occasional maintenance to keep it in good order. Nature is left in peace, and thrives.

As part of their Watercress and Winterbournes project on the Test and Itchen headwaters, the Hampshire and Isle of Wight Wildlife Trust managed to win Heritage Lottery grant funding to carry out improvement works on the Pillhill Brook, with a view to improving the environment for all. They will also be offering occasional guided walks for limited numbers of the public. We cannot allow general, unfettered public access for insurance reasons – it can be very dangerous - and also because too much trampling around would destroy the very environment we are trying to protect. This is a photo of some of the team looking for evidence of water voles, which are one of our rarest species, threatened with extinction through loss of habitat. It is always a balance between protecting the wildlife, and encouraging the interest and understanding of people.

The works undertaken by the Trust last year included building a cattle drink on each side of the river, so that grazing cows would not have to paddle in the stream. Hooves disturb the sediment and make the otherwise gin-clear water murky, reducing the oxygen. This is detrimental to the invertebrates, and if you damage the bottom of the food chain, eventually the entire river dies.

The Wildlife Trust team cleared away a few trees on the bank to open up areas of light to the river. The wood was used to provide habitat, and also to divert the stream to produce differing depths of water and flow speeds, which you can pick out in the photo. Variety of habitat encourages a healthy variety of wildlife. What might look 'tidy' and neat to you and me is often just as uninviting as a concrete airfield to little creatures: they need shelter, water, protected nesting space, and food, not manicured lawn.

Scours were excavated in the river bed, to provide deep pools for fish to shelter in, and shallower slopes on which to make their redes, or spawning scrapes.

Vegetation in the river margins is encouraged, as is the bankside vegetation. Trout can shelter under the overgrowth, from predators such as otters. It is important to keep an uncut margin of at least a metre alongside the river, to shelter mammals like water voles.

The Trust will be continuing work on the river in the near future, in particular on the concrete banks adjoining some of the houses on the riverside. Being devoid of earth and vegetation, they do not attract wildlife. One way of encouraging suitable habitat is by inserting faggots to catch passing sludge and silt which will eventually become colonised.

It would be lovely if everyone who lived on or near the river could get out and look in detail at what is going on in their environment. I became involved with riverfly monitoring, which means I have to get in the river and take random samples and count all the tiny bugs. Each insect has a sensitivity to different conditions, and from the numbers of various species one can tell what is happening to the water quality.

The ecosystem is very fragile, and even a small cupful of pollutant, such as sewage from overflowing manholes, farm fertilisers, run-off from a heap of lawn cuttings left on the bank by an unwitting gardener – can be disastrous to the invertebrates and hence the rest of the wildlife. The regular discharging of surplus sewage from the water companies' inadequate sewerage system into the river is particularly worrying, and has recently been the subject of a petition to Parliament.

As a furry-friend fan, I never thought that I would ever bring myself to look closely at little wriggly, squishy things, let alone be fascinated by their lives and how they survive. One of the aspects that makes me wonder about 'natural selection' in its purely scientific presentation, is how does a caddis fly larva know it has to gather tiny bits of grit around itself for protection whilst it is changing into an adult fly? What is instinct? How is such information

handed down from generation to generation? Why did the first caddis fly larva try it? How did it pass on what it learned?

It is amazing that all this intricacy, variety and subtle order in the world should have developed by chance from what even Professor Brian Cox called the 'highly unlikely and rare event' of two protons (or whatever) colliding once, billions of years ago, in some underwater volcanic soup, and merging…

There is a lot more one could say about the river, the woodland, the watermeadows, and all that lives there, but I hope this is just a taste of the wonders of nature on our doorstep, and how it all interacts so mysteriously.

Rosemary Powell Griffiths