SPECIES PROFILE: BROOK LAMPREY

A PRIMITIVE WONDER OF THE NEW FOREST'S STREAMS

The Brook Lamprey Lampetra planeri, is one of three species of primitive jawless lamprey found in the UK, and the only one to be found in the headwater streams of the New Forest. It is a non-migratory species, spending its whole life in freshwater streams without the need to return to the marine environment.

As with many of the New Forest's freshwater species, it has rather exacting habitat requirements - gravel beds for spawning and soft marginal silts but with high levels of dissolved oxygen for the larvae. These habitats are commonplace in clean headwater streams like we find in the New Forest, but are becoming a diminishing resource in much of the wider countryside. Sadly excess sediments from urban and agricultural pollution can smother gravel riffles, whilst artificial straightening of river channels can disrupt the formation of gravel riffle and silt pool sequences. For this reason Brook Lamprey, whilst still relatively widespread, are declining across most of their European range.

Traditional surveys for Brook Lamprey are time consuming and require specialist equipment and training. The blind toothless larvae (ammocoetes), that spend around 6 years hidden in their burrows, can be surveyed with electrofishing equipment. The idea is to use a pulse of electricity to 'irritate' them from their burrows. Then stun them so that they can be collected and counted without causing permanent harm or death.

The young lampreys metamorphose into adults en-masse in July and September, but remain nocturnal and hidden within the sediments or under stones to avoid becoming a tasty snack. At this stage they develop a primitive eye and a disk ring of 'teeth'. In fact the adults never feed, so this adaptation is a reminder of their parasitic evolutionary history. It is only in the following spring (March – June) that spawning adults suddenly reveal themselves in daylight, generally when river temperatures reach around 11oC. This is a fleeting glimpse, as following spawning, the short lived adults die. So you can see that a positive identification of the adults requires the surveyor to be in the right place at the right time, although it is a delight to witness (see our volunteer blog post below).

You may remember in the last issue of Water News, that we reported on our use of new eDNA technology to identify fish species using laboratory analysis of river water samples. We were excited to see that 9 out of the 13 eDNA New Forest river samples returned a positive result for Brook Lamprey. It opens up the possibility that we could detect the location of more sites without the need for invasive survey techniques.

We are keen to hear about your encounters with Brook Lamprey from the New Forest and, to give you inspiration, we are delighted to share with you an excerpt from one of our volunteer blog posts.

By Fiona and Julian Wormald

… As we returned to the stream after lunch on Good Friday, our eldest granddaughter called out from ahead of us, that there were 3 eels in the stream. Doubtful, I reached the bank side and indeed she was right. Barely 4 feet from where we stood were three intertwining eel like fish, about 6 inches long and the thickness of a finger, sinuously twisting and focusing their activity on a very small area of the gravelly stream bed. As we all

spawning, and Fiona spotted that the fish were using flexing body movements and physically picking up stones in their mouths to fashion some sort of shallow depression.

However, my limited knowledge of eel ecology included the fact, that all eels migrate to spawn in the Sargasso Sea - that unique area of the Atlantic that has no immediate land borders, defined by four different rotating ocean currents. Someway east off the coast of North America. So maybe these weren't eels at all?

Then they must be lampreys! How exciting since none of us had ever seen one before, and here in front of us they were performing their mating and spawning ritual, completely unfazed by our presence, noise, and even stick waving by the youngest of our clan. After several minutes watching we moved downstream and I kept looking for any more. I spotted one dark form swimming purposefully upstream. An hour or so later at the spawning site, there were indeed four fish present.

Though it's difficult to count a writhing mass of lampreys…

Good Friday was the night of a full moon and being clear, warm and dry, I was intrigued to see the state of affairs the following morning, so around sunrise at 6.10 a.m. I walked back down to the stream. They'd all gone! It was only later, that I realised that the accumulated plant debris in the spawning site, just downstream of the larger stones, wasn't "just plant debris", but a collection of caddis larvae which had moved into the site for breakfast eggs!

By Dr Naomi Ewald, Freshwater Habitats Trust with Fiona and Julian Wormald