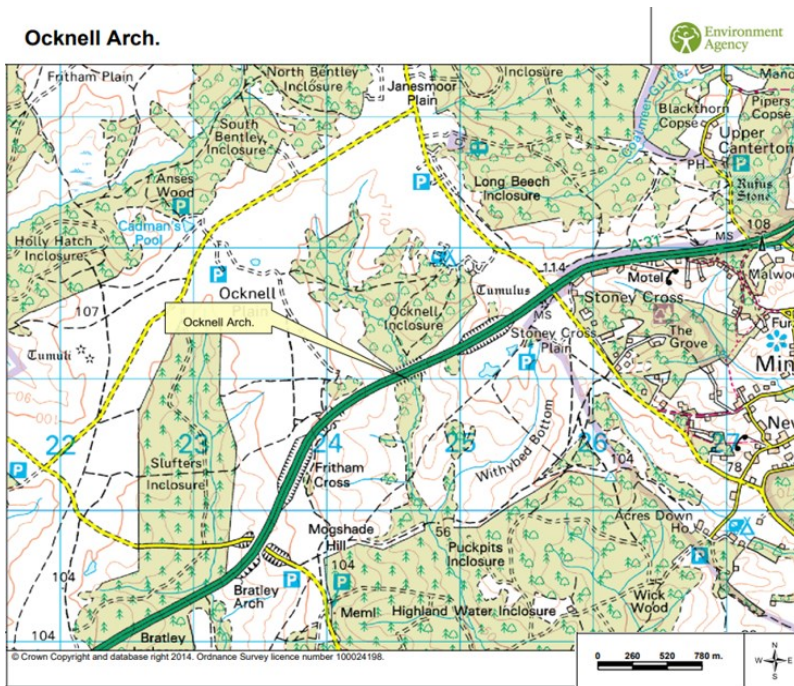


HELPING SEA TROUT OVERCOME AN ARCH NEMESIS AND PREPARE FOR CLIMATE CHANGE

A FISHY TALE OF HIGH AND LOW WATERS

The Highland Water emerges from the New Forest's mires and flows for almost 15km, meandering through a series of Forestry England Inclosures before joining the Lymington River just to the north of Brockenhurst. The area is part of the New Forest Special Area of Conservation (SAC) and Special Protection Area (SPA). Water quality here is fantastic and the habitat through the catchment is just perfect for spawning sea trout (a protected species). They have even been seen spawning right up to the edge of the mires.



Like many New Forest streams, the flows carried through the Highland Water are naturally low but also respond quickly to heavy rainfall, resulting in water rushing through the catchment. Both extremes of low and high flows can make obstacles such as weirs impassable to fish. This is a big problem for sea trout migrating up the catchment to spawn and one exacerbated by climate change where long periods of dry weather and more extreme storms are expected.

Ocknell Arch marked on a map as the step weir and culvert were identified as a barrier to sea trout, after an absence of sea trout redds were noted in the upper Highland Water.

The Environment Agency's Fisheries, Biodiversity and Geomorphology team regularly visit known spawning sites to understand changes between years. Fisheries officer Paul Newman noted an absence of sea trout redds (nests for spawning fish) in the upper Highland Water in seasons where flows had been particularly high or low. Further investigation revealed the step weir and culvert at Ocknell Arch (spanning the entire width of the dual carriageway beneath the A31) was a barrier to sea trout in these conditions.

While sea trout can put on a burst of speed to get through fast flowing sections of rivers, the velocity of water coming through the culvert and weir in high flows was too much for them to battle through. In particularly dry seasons the water levels would be too low for trout to navigate. These conditions create a spawning bottleneck (unnaturally high spawning activity over a smaller area) downstream of Ocknell Arch.



The upstream habitat perfect for spawning sea trout

Spawning bottlenecks cause multiple issues for sea trout survival rates. Failed attempts to pass the structure can exhaust the adult fish resulting in post spawning fatalities. Competition for limited spawning locations downstream of the structure can result in “overcutting”. This is where hen fish detect the improved upwelling of water through the gravels in existing redds, so spawn over the top of these rather than creating their own. In doing so, the original clutch of eggs is washed downstream to awaiting predators! For those who successfully spawn, bottlenecks can create an artificially high number of juvenile fish competing for limited space and food.

To overcome this issue, the Environment Agency have been working with partners including Forestry England, Highways England, Natural England and 5 Rivers Consultancy, to come up with a design that will allow the sea trout to pass through Ocknell Arch over a greater range of flows, while not impacting on the protected sites (SAC/SPA), commercial forestry interests or the A31.



The current structure at Ocknell Arch

In works planned for late spring, the Environment Agency will install a single timber pre-barrage downstream of the culvert. The barrage will increase water levels in the culvert, maintaining depths in low flows, while also slowing flows down when levels are high. As a result, sea trout will be able to access the upper catchment of the Highland Water over a greater range of flows, opening up high quality habitat for spawning and nursery grounds and ultimately helping sea trout survive as our climate changes.



Paul Newman the EA Fisheries Officer at Ocknell Arch

Paul Newman: *“The problems at Ocknell Arch were identified some 20 years ago, since that time the EA have been monitoring spawning activity within the Inclosure under different flow regimes.*

This project will ensure passage over a greater range of flows by slowing water velocities within the culvert and allowing access for these incredible fish to some of the best spawning and juvenile habitat within the New Forest. As part of this ongoing project we are also working with Highways England to address access to this area for eels”.