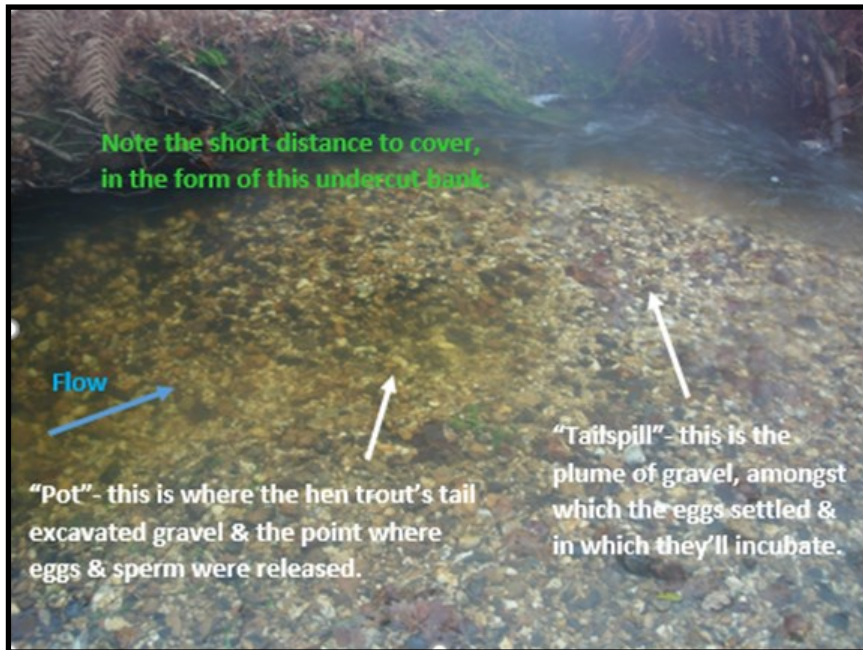


New Forest Sea Trout *Salmo trutta*

Species Profile

The returning river monsters

Sea trout are known to spawn throughout the New Forest. The fish in the clip would have entered the river system, from the Solent, in late spring making the journey upstream to spawn in December. The journey up river is broken down into segments and is often triggered by elevated flows associated with rainfall events. As river flows reduce adult sea trout require specific habitat types that they use for cover until the next rainfall arrives. These areas are called lies and include deep pools, overhanging terrestrial vegetation, tree roots and undercut river banks.



A stream bed in the New Forest, labelled with the features of a sea trout breeding ground.

The hen fish in the film clip can be seen turning on her side, she does this to release eggs and excavate clean gravel in which to lay them. The excavation is called a redd and consists of a mound of gravel behind a hollow in the riverbed. The eggs have a sticky coating which adheres to the gravel mound of the redd. The cock fish then fertilises the eggs by releasing milt. He can be seen doing this in the video by gently vibrating his body. The fertilised eggs are then covered with a layer of clean gravel by the hen fish for protection.

This spawning behaviour is repeated and can last for hours with huge volumes of gravel often being moved by larger fish. Hens will lay c. 900 eggs per pound of body weight. These small eggs, which measure between 2 – 5mm, will remain within the redd for approximately 15 weeks; although hatching time is dependent on a number of parameters such as temperature and oxygen levels. Survival within the redd can be low with up to 85% of eggs lost before they hatch. The developing eggs depend on deep, silt free gravels, ranging in size between 16 and 64mm, with a good supply of cold, clean, oxygen rich water for survival.

Once the tiny fish, which are called alevins, hatch they remain within the gravel voids living off of their yolk sack until they finally emerge as fry. The fry grow into parr which have distinct bar colouration running vertically down their flanks. Both trout fry and parr are territorial and soon set about claiming their patch of riverbed. Trout parr require cool clean shallow water that is not too fast flowing with an abundance of weed, larger cobbles and marginal cover. The shade provided by wooded sections of river in the New Forest are essential during the long hot months of summer as temperatures outside of these areas can soon rise reaching the upper lethal limit for a trout which is approximately 27°C!

Between the age of 1 and 3 years those juvenile trout that exhibit sea trout traits undergo yet another physiological process prior to making the journey to sea as sea trout. This change is called smoltification and gives brown trout the ability to cope with the extremes of a saltwater environment. The brown trout lose their camouflage colouration, turn silver and alter their swimming behaviour to face downstream and swim with the flow of water in readiness for the journey to sea. These small silver trout are called smolts, they shoal up between mid-March and May and often migrate at night. This shoaling behaviour, change in colour and night time migration is thought to be part of a predator avoidance strategy evolved to ensure as many fish as possible survive this annual downstream migration.

In the New Forest naturally functioning river systems are vital to ensuring the ongoing success of this enigmatic species. The adults require cool temperatures, the sanctuary provided by deep pools and other natural features such as undercut riverbanks during their journey upstream. Natural features such as woody debris dams are no obstacle for these athletic fish. They can leap and have fast burst speed capabilities that assist them when overcoming many natural obstructions and are quite capable of squeezing through seemingly impossible gaps.



A medium sized sea trout on a redd on the Highland Water – the photo is a little dark, as it was taken through the lens of Polaroid sunglasses; essential for fish or redd spotting

Some rivers in the New Forest exhibit evidence of past anthropogenic influences having been straightened for drainage. Although brown trout and many other species still utilise these watercourses many of the features associated with more sinuous natural systems are absent. Ultimately this equates to an overall net loss of linear river length and habitat potential. The energy within a straightened channel is directed towards the bed which results in a river that erodes downwards. Although straightened river channels are very efficient for land drainage purposes they can result in un-natural water velocities and downstream flooding events that destroy redds and “wash-out” juvenile life stages of fish. The work currently being undertaken by the Forestry Commission and other stakeholders to reverse these changes will eventually return the New Forest catchment to a more naturally functioning and resilient state. This work not only benefits the aquatic environment, the frequent wetting of terrestrial habitats help reconnect the river with the floodplain and restore SSSI habitats to a more favourable condition. Increased natural flood storage reduces the risks of downstream flooding and sinuous river channels also slow water velocities resulting in the retention of areas of deep alluvial material so important for the New Forest sea trout .

These fish have been using these habitats since before the last ice age through times of great change. With sympathetic restoration of the New Forest streams we can secure their future as well as protect people from flooding.

By Paul Newman, Environment Agency, Fisheries, Biodiversity and Geomorphology Technical Officer