

FISH AND EEL POPULATIONS IN THE RIVER STOUR

The River Stour is well known for its Areas of Outstanding Natural Beauty, Constable Country and river banks, which support a range of wildlife well known to those traveling in boats or canoes. There may also be glimpses of fish beneath the surface, but most are unaware of the range and diversity of fish in different reaches of this special river.

The upper reaches and tributaries such as the Box, Glem and Henny Brook have wild brown trout populations. It is unlikely now that sea trout can find their way up the river to spawn, but some of these brown trout in the Upper Stour grow very well on a diet of signal crayfish. There are also chub, dace and roach in abundance. These are also found in the middle Stour, along with pike, perch and the occasional barbel. Long ago barbel were thought to be native to the river, hence there has been some stocking of juvenile barbel of suitable sites. There is evidence of barbel spawning and the population is hoped to be self sustaining. The lower reaches below Flatford are more like still waters and the most common fish are roach and bream. Pike, perch and rudd are present, but the beautiful tench is probably the most outstanding fish in this reach. Common and mirror carp are also found, but these originated from lake fisheries and not considered to be a natural part of the river fish community. There are also gudgeon, minnow, stone loach and bullhead found in the slightly faster flowing sections of the river where habitat is suitable. Eels used to be abundant in the river and tributaries such as the River Brett, but they have declined dramatically since the late eighties. This is reflected throughout the UK and the rest of Europe where recruitment is thought to be only 5% of the level present in the early 1980's.

All life stages of eel are of tremendous ecological and economic importance and it is vital that action is taken now to prevent extinction of the eel. Even those who find eels themselves unappealing are impressed by their incredible life history.

All European eels share the only known spawning ground in an area of

the Sargasso Sea, south of Bermuda. Eel larvae (known as leptocephalus larvae) follow the Gulf Stream and North Atlantic Drift to return to Europe metamorphosing into glass eels when they reach the continental shelf. Glass eels are attracted to freshwater and enter UK rivers in spring, historically in great numbers, especially on the West Coast where the Severn glass eel run is famous. Fewer numbers return to the East Coast and these are not exploited commercially. Glass eels become pigmented and metamorphose into elvers, spending a number of years in rivers and lakes, feeding and growing. Density determines the sex of eels and the lower density East Coast eel populations are dominated by females, which are extremely valuable in terms of conservation of the species.

After an average of 6 years for males and 9 years for females, eels begin to mature, stop feeding and become silver in colouration. Silver eels swim downstream towards the sea to begin the long migration of 5500 km back to the Sargasso Sea, where they will spawn and die.

There are various factors thought to be causing the decline of eel populations, it is feared that changes in oceanic currents caused by climate change may be a primary reason why glass eel recruitment has plummeted. Other factors include infection of the swim bladder by a nematode parasite, *Anguillicoloides crassus*, which may impede silver eels migrating at depth across the Atlantic; accumulation of pollutants such as PCBs which affect reproduction; barriers to migration for elvers and silver eels; and also loss of accessible habitat.

In an attempt to prevent further decline, there is legislation from Europe - the EU Eel Regulation (No 1100/2007) is in place for establishing measures for the recovery of European eel stocks. The Regulation includes the preparation of Eel Management Plans for each river basin district (RBD). The objective is to increase the numbers of adult silver eels able to migrate to the Sargasso Sea to 40% of the

estimated population in undisturbed conditions with no human impact.

The Environment Agency has prepared an Eel Management Plan (EMP) for Anglian RBD to assess the status of eel stocks and actions needed to improve survival and distribution of all life stages. Implementation of this EMP is now underway in Anglian Region. Glass eels are being monitored in special traps to determine how many are migrating upstream, and barriers to migration are being assessed for both elvers migrating upstream and silver eels migrating downstream, for example, on the River Stour.

The river has many structures which are barriers to fish and eel migration. A research project is being undertaken on the River Stour by the Environment Agency and the University of Southampton. This research, carried out by Adam Piper, aims to understand more about behaviour of elvers and silver eels at barriers in order to identify which are problems and how to design the most effective passes. In autumn 2009, 28 silver eels were acoustically tagged and then tracked as they made their way down the river Stour, into the estuary. This has provided a great insight into which barriers are delaying, or in some cases preventing, the eel's downstream migration. Solutions to alleviate these bottlenecks in the migratory cycle are now being considered.

Elvers find it difficult to enter freshwater as the weir at Judas Gap is mostly dry due to water abstraction for Abberton Reservoir. A special pass with pumped water has been installed to assist the glass eels and elvers entering the River Stour whilst a more permanent solution is being designed. The glass eels have been monitored since 2002 at this site providing useful information on factors influencing upstream migration.

Growing eels are quite adept at climbing and are helped by bristle boards specially designed to assist their passage over sluices and other barriers. These 'quick fixes' have been applied to many structures on the Stour and

other rivers in Essex and Suffolk. One example of a sluice where this is not possible is at Bures Mill, which forms almost a complete barrier to eel and other fish migration. As a result the eel population upstream of the sluice is markedly low, however an alternative solution has been found. The channel from the original mill into the river had become isolated, though in partnership with Essex Wildlife Trust, this has been reconnected to the main river which will allow eels and other fish to move upstream and downstream of the mill. The new habitat will also benefit water voles, otters and other wildlife. As part of these works, improvements were made for canoeists by raising the bridge and creating a new platform. It is hoped this will make portage around the sluice much easier.

Eels have not disappeared yet, but with the low numbers of glass eels arriving each year, we must do all that is possible to protect these in their upstream migration and increase accessible habitat. Their importance for biodiversity is widely recognized, and it is important to acknowledge that any measures designed to improve our eel populations invariably hold benefits for other fish and wildlife.

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