

THE STRIPLING

Newsletter of the Upper Thames Protection Society



Issue 31, November 2011

Open Meeting and AGM

Thursday, 24th November 2011 at 7.30pm

Cricklade Town Hall Annexe

Speaker: Maddy Rees, Communication Officer for South West Crayfish Project

EXTINCTION OR SURVIVAL? HELP PROTECT UK CRAYFISH AND RIVER BIODIVERSITY

Membership only £2 a year. Non-members welcome

Illustrated Talk by Maddy Rees, Communication Office for South West Crayfish Project

Due to a devastating reduction in numbers, British crayfish are now an endangered species. The south west has lost up to 70% over recent years. Maddy Rees (Communication Officer) for South West Crayfish Project (SWCP) will be talking about conservation of this species in the south west and asks for you to take simple steps to help conserve this valuable keystone species.



Achieving a healthy balance between People, Business and the Environment

In the Upper Thames part of the Cotswolds the Environment Agency - Groundwater, Hydrology and Contaminated Land team are particularly involved in managing the water resources of the area.

One of the activities we carry out to help achieve this balance is the Cotswolds Springs and Sources Survey. Due to the nature of the River Thames and its tributaries, the locations of their sources vary over time, so we carry out these surveys approximately four times a year and walk along parts of the River Thames looking for where it starts to flow.

The local geology plays a fundamental role in influencing where the rivers source. For example, in the upper reaches of the River Thames, when groundwater levels in the limestone fall, the source moves further downstream. During wetter conditions, more water soaks into the limestone where it is stored as groundwater, and the source moves upstream.

The source of the River Thames is most often referred to as the springs at Thames Head (grid ref ST980955) to the north of Kemble. This is in fact only a seasonal source, and may only flow here for a couple of months a year when groundwater is at its highest. A common source location is at Lydd Well (grid ref ST989984), about 1.4km downstream of Thames Head. At present, the River Thames is sourcing near to Neigh Bridge near Somerford Keynes. The lowest observed source location was just upstream of Ashton Keynes in September 2003, which is over 10 km down from Thames Head.



Thames Head Photo May 2010



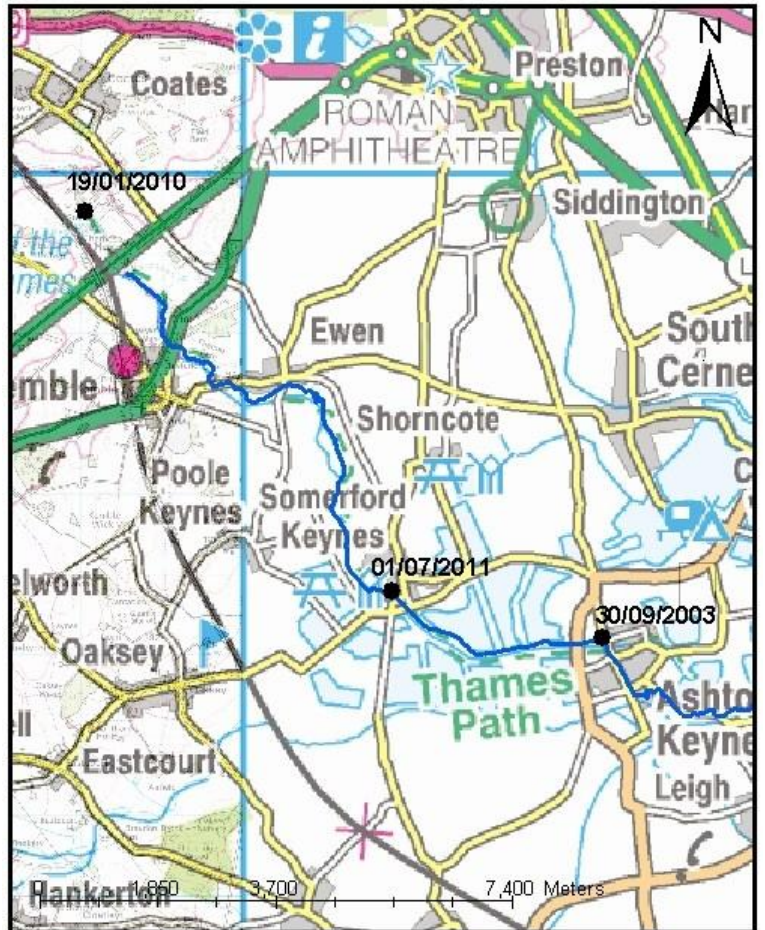
Lydd Well Photo May 2007

This information is important as it allows us to assess which areas of the river are at risk from low flows. We can then identify ways to prevent any ecological damage. In rivers that naturally dry up, the ecology tends to be well adapted to the changes. However, in cases where there are manmade impacts that exacerbate the drying period, fish and other species may get trapped and ecological damage may occur. The longer the channel remains dry beyond what it would naturally be, the greater chance of ecological damage.

We also use this information to help us assess the likelihood of groundwater flooding.

Would you like to help?

We are keen for members of the public or community groups to keep a log of observed source locations for us. We are able to visit the source four times a year, providing us with only part of the picture, and a monthly record of



observations would be very useful. If you have the time, regularly walk the Thames path in this area and would be interested in helping us, please get in touch.

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Water is the Thames and Water is in Increasing Demand

The average per capita consumption moves from 124 litres per person a day to 201 litres as I write.

We have less water available per each person than Spain and Portugal yet demand increases.

800,000 more people are expected to live in London in the near future.

Thames Water is investing in desalination sea water plans to meet the demand, taking sea water and processing it for human consumption. Their plans to build the Abingdon Reservoir have been shelved in preference to their tackling the huge amount of water lost to leaks.

Yet we continue to ignore water saving issues as their importance deserves.

There has been pressure from The Cotswold Canals Trust on Thames Water to pump from Severn to Thames over the Cotswolds heights. This only leads to increase supply to meet demand.

Needless to say the demand comes in high summer when all areas that are dependent on Severn are themselves wanting water. Locally the Cotswold Canal Trust is still looking for water supply, a consideration that should have been their first priority way back in the 1970s.

In desperation they have been pushing for the pump transfer route. The Environment Agency has stated there is no water available at the summit.

The Cotswold Canals need, it is independently estimated, to require 13416 million litres / annum (or sufficient to supply a town of 184,000 people). New use of water at this level of consumption for leisure pursuits may well be disallowed in the near future.

The only answer for the Canal Trust is to build two above ground reservoirs of 1826 and 1456 acres, one on each catchment, east and west. And buy water in the winter for storage. Then electrically pump it to the summit. This would be at a huge environmental and monetary cost for a leisure activity.

The increasing demands from agriculture, housing and our rivers are with us and will not go away.

Martin Neville

Water Framework Directive

The Environment Agency has taken the development of a reservoir near Abingdon out of the Thames River Basin Management's plans for the next 6 years. It can, of course, be reinstated, but this exclusion highlights the question of residential and commercial water supply in the region.

It was never intended to provide water for canal development, but any such project would require the provision of water storage, and compound the objections raised in this rich and densely populated area.

Seymour Aitken

Black Poplars in the Cotswold Water Park Introduction

Our true native black poplar (*Populus nigra* var. *betulifolia*) is Europe's rarest timber tree and in the UK has an increasingly aged population estimated at around 10,000 trees nationally. Few trees have been planted since the 1800s and opportunities for more natural seed production in the wider environment are very low; consequently, many of the trees are veteran trees with little or no replacement or recent re-planting.

Current status in the CWP

Black poplars were known in the Cotswold Water Park at a small number of locations following surveys by Sonia Holland in 1992, but the Cotswold Water Park Trust have been working towards a more complete survey in order to map their full distribution. Between 2008 and 2011, expert botanist Sharon Pilkington (Vegetation Survey & Assessment) was contracted to undertake a desk survey of all known black poplar records in the CWP. Following this, fieldwork was undertaken to re-visit all known trees as well as potential candidates, to confirm their identity as true native black poplars and to confirm details such as location, health, sex etc. So far, an astonishing 200+ trees have been identified in the CWP through this work.

DNA studies

The CWP Black Poplar Project has also taken another unexpected twist, opening up a whole new area of work. On the recommendation of the National Black Poplar Conservation Group, we sent samples from 35 of our trees to the Forestry Commission's Forest Research (Roslyn Institute, Scotland) for DNA testing.

As with all living organisms, black poplars have a DNA fingerprint unique to each individual. Many trees, including black poplars, can be propagated vegetatively, i.e. through cuttings or layering; the resulting tree or 'clone' sharing the exact same genetic fingerprint. It is thought that the majority of the UK black poplar population has been produced in this way, indicating very little genetic variation. In the UK, opportunities for black poplars to produce viable and germinating seed are very small, partly due to the rarity of the female, but also partly because the conditions needed for germination are so specific.

Preliminary DNA analysis has shown that there is indeed little genetic variation between our surviving UK veteran trees. This means that many of that surviving population will have equal levels of vulnerability to diseases. Therefore should a virulent pathogenic virus or fungus appear on our trees from abroad, as has happened with the vegetatively propagated English elm, unless we can maintain the small amount of genetic variation we have left in the population, the consequences could be catastrophic. Such a disease, the lethal fungal infection Poplar Scab, has already wiped out a large number of black poplars in the Manchester area. Fortunately the scab strain involved does not seem to be able to survive the drier warmer climate of southern England, but another strain already prevalent in northern Italy could potentially do so.

With this in mind, it is therefore important to understand the genetic variation of black poplars across the UK. DNA studies thus far suggest that the entire UK population is perhaps based on an original 25-30 parent trees from which cuttings were taken centuries ago, hence the small genetic diversity noted.

Exciting results

The results of the Cotswold Water Park DNA analyses from 2010 were fascinating. It highlighted that up to 12 separate clones of black poplar were present in the 35 samples that were analysed. Of these, at least 5 were brand new and previously unrecorded clones for the UK, whilst others have been recorded from only a few trees thus far. This potentially makes the CWP a very important location for the native black poplar and its genetic diversity.

One specific site within the CWP is home to two individual black poplars. The first is a veteran female pollard, a beautiful tree. She is an example of Clone 49, a clone which is widespread in the CWP but less so nationally. But remember that female trees are nationally rare anyway, so she is still an important tree. The second tree however is even more interesting; this is a small male tree, which DNA analyses indicated is a new clone for the UK and has now been registered as such. We looked at the DNA results in more detail and Forest Research have confirmed that it is highly likely that its mother tree was a Clone 49 and its father tree a Clone 23, both of which are known nearby.

In essence, this means that this particular site supports not only a rare female black poplar, but also a unique UK clone of a male black poplar.

This may be one of very few recorded instances in the UK in which this tree has successfully produced viable seed and reproduced sexually rather than vegetatively (asexually). The next steps now, are to propagate new cuttings from the young male, and plant them within the CWP to ensure we safeguard this new clone.

Cotswold Water Park Clone Bank

The National Black Poplar Conservation Group is currently trying to establish a small network of



An excellent Black poplar specimen on the River Churn
(Photo: S Pilkington 2008)

DNA clone-banks. It will involve specially selected nursery sites being planted up with cuttings from as many of the nationally known DNA clones as possible, with a view to future cuttings being able to be taken from these subsequent trees. The Cotswold Water Park Trust is pleased to reveal that the CWP will be a host site for one of these clone-banks. In fact we will hopefully be planting several mini clone-banks in order to minimise any risk of failure due to climatic or topographical reasons, or indeed any loss caused by predation or disease. With this in mind, plans are currently underway to begin planting on a number of our reserves, as well as some key private sites, in 2011.

In the future, the Cotswold Water Park will hopefully be a key site within the UK for the ongoing conservation of our native black poplar, ensuring its survival and growth across our landscapes.

Ben Welbourn [Biodiversity Field Officer]
Gareth Harris [Biodiversity Manager]

Note: The opinions expressed by correspondents are not necessarily those of the Upper Thames Protection Society. Please send contributions, letters, comments to Editor: Mrs Helen Goody Tel: 01793 750380

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