

## **The Wonderful Water of the Lincolnshire Wolds**

**The Chalk Springs and Streams of Lincolnshire are an often overlooked resource but, as Helen Gamble reports, work is being undertaken to reverse this trend.**



The Lincolnshire Wolds is a nationally important and cherished landscape. Part of it was designated an Area of Outstanding Natural Beauty (AONB) in 1973. Covering an area of 558 square kilometres or 216 square miles, the AONB contains the highest ground in eastern England between Yorkshire and Kent, rising to over 150m along its western edge. One of the most glaciated landscapes within the country, the Wolds has a combination of rolling chalk hills, a former sea cliff and areas of sandstone and clay underlying this attractive landscape. With regular water supply via the chalk springs, it is little wonder the Lincolnshire Wolds has been inhabited since prehistoric times, and the appearance of the countryside today has been greatly influenced by past and present agricultural practices.

Water is a renewable resource and the amount that is available each year depends upon rainfall. The Lincolnshire Wolds is within the driest area in Britain but water still plays an important role, contributing to valuable wildlife habitats, the location of archaeological and historical settlements and, ultimately, the water we all use in our everyday lives.

### **Chalk Springs**

As the name suggests, these springs originate from the chalk aquifer that forms the higher parts of the Lincolnshire Wolds. Permanent chalk springs are nationally important as they produce clear, mineral and oxygen-rich waters which are relatively warm and ice-free in winter and cool throughout the summer. At the head of the streams, in wooded areas, the pure, cool spring water provides ideal conditions for rare plants, mosses and invertebrate communities.

Springs occur either on the edge of the chalk, where it meets the clay, or where water rises through the chalk along structural weaknesses in the overlying boulder clay. Blow-wells or artesian springs occur where water is constantly supplied through natural pressure and requires no mechanical pumping.

### **Chalk Streams**

Chalk streams are internationally rare habitats which support some of our most threatened plants and animals such as otter, water vole and lamprey. Similar to the springs, they are characterised by clear water with a stable flow and temperature. There are eighteen large and numerous small chalk streams in the Lincolnshire Wolds that contribute to the beauty and diversity of the landscape.

## **Lincolnshire Chalk Streams Project**

The Lincolnshire Chalk Streams Project is a partnership of organisations that are actively working together to conserve and enhance this nationally important resource. The Environment Agency, Lincolnshire Wolds Countryside Service, English Nature, Lincolnshire Wildlife Trust, Anglian Water and the Wild Trout Trust are taking action to ensure that the nature conservation, landscape, community and economic interests are taken into account when working on chalk streams.

Core objectives for the Lincolnshire Chalk Streams Project

### **1) Improved Resource Definition**

Over fifty chalk springs have been surveyed and rare assemblages of flat worms and water-crowfoot species have already been discovered.

### **2) Securing Environmental Improvements**

The Environment Agency has carried out a “best practice improvement project” to reinstate a more diverse stream. This is proving successful and is being used as a demonstration project for land managers and riparian owners, with guidance and information produced in the form of fact sheets.

### **3) Awareness Raising**

The Lincolnshire Chalk Streams Project have produced information, including a “Water of the Wolds” leaflet outlining the value of chalk streams, and posters have been produced to promote the Wolds chalk streams to a wider audience at shows and other public events.

## **Demonstration Project**

The chalk stream at Sir Richard Sutton’s Settled Estates had been re-aligned in the past to make it uniform and straight. There was little diversity in the shape of the bed, banks or flow currents, and the ecological and visual aspect was poor.

The Environment Agency’s Fisheries, Recreation & Biodiversity Team undertook a project to deliver environmental enhancements, including improvements for brown trout and the whole fish community, together with improving the visual aspect of the site and increasing biodiversity. It is also

hoped that the work undertaken can form part of future Entry or Higher Level Environmental Schemes.

The stream, which is near the head of the Waithe Beck, is on a LEAF (Linking Environment and Farming) farm and, with the support of the landowner, the site is being used as a demonstration site to encourage others to learn from the work undertaken. The project was designed to showcase a diverse range of simple and economical works that all landowners can do to improve chalk streams.

The results show that by planting water crowfoot and building flow deflectors, species have been able to colonise from downstream, leading to the appearance of new species not previously recorded at the site, including a regionally rare Stonefly, *Nemurella picteti*. Consequently the number of invertebrate species in the demonstration stretch has risen from 14 to 44. This is an excellent example of how freshwater biological surveys can be used to monitor habitat improvement works. A full pre and post monitoring programme is in place for this project which will be used as evidence and will enhance the demonstration aspect of the work.

### ***It Gets Better...***

The Lincolnshire Chalk Streams Project have secured resources to employ a Project Officer who will be able to visit land managers and riparian owners to advise and assist with fishery, wildlife and landscape improvements. It is hoped the Officer, funded by Anglian Water and the Environment Agency, will be in post by spring 2006 and will be based with the Lincolnshire Wolds Countryside Service at their offices in Louth.

Visit our website to download the fact sheets produced for land managers & riparian owners or request a copy of the 'Water of the Wolds' leaflet

[www.lincswolds.org.uk/chalkstreams](http://www.lincswolds.org.uk/chalkstreams)

For further information, please contact:-  
The Lincolnshire Chalk Streams Project  
c/o The Lincolnshire Wolds Countryside Service  
Navigation Warehouse  
Riverhead Road  
Louth  
Lincolnshire  
LN11 0DA

Helen Gamble is the Countryside Project Officer with the Lincolnshire Wolds Countryside Service and a member of the Lincolnshire Chalk Streams Project.  
[Helen.Gamble@lincolnshire.gov.uk](mailto:Helen.Gamble@lincolnshire.gov.uk)

The water crowfoot is a key building block to help improve chalk stream habitats which grows in a cushion like bed, deflecting and concentrating water flows and keeping the gravel streambed free from silt deposits. This allows fish such as the native brown trout to spawn and provides shelter for invertebrates. Water crowfoot is also a food source for other invertebrates, increasing the diversity of species that a chalk stream can support.

Wild brown trout need clean, silt-free gravel with a constant flow of cool, well oxygenated and unpolluted water for reproduction, which is why chalk streams provide an ideal habitat. Many things can have a negative impact on their habitat needs: in-stream structures, such as dams, weirs, sluices and culverts; damage by excessive erosion and poaching by livestock. Drainage, dredging works and excessive abstraction can lead to reduced flows, causing a negative change to the ecology of the river.

The water vole, makes its home in river banks, is a competent swimmer, a vegetarian and can be found throughout different water courses, from small ditches to the largest stretches of major rivers. It can also be found in and near urban settings, as it is more adaptable than its predators, such as mink. However, it is at most risk from the fragmentation of habitats and inappropriate bank management, such as straightening of watercourses.

*Crenobia alpina* is a flatworm, and looks rather like a small blob of jelly to the untrained eye! Reliant on very cold, but stable water temperatures, these tiny invertebrates thrive in the cold springs and flushes in the Lincolnshire Wolds. Like many species of flatworm they have a complex life cycle, but this can take place within the confines of a single spring. The species is found in cold calcium-rich water bodies in southern and eastern England as well as alpine streams and cold water lakes at altitude throughout continental Europe.