

## NW England

### **Restore and Enhance A Crayfish Habitat (REACH) project** - Lead Organisation: Eden Rivers Trust

The aim of the REACH project was to help maintain, protect and promote a key population of white-clawed crayfish by:

- Raising awareness about the dangers of introducing alien crayfish species and crayfish plague;
- Investigating the population ecology of the River Eden's white-clawed crayfish population;
- Reconnecting fragmented crayfish populations by improving degraded habitat;
- Monitoring the impact of habitat improvement works to evaluate the benefits and disseminate to others.

<b>Project title:</b> Restore and Enhance A Crayfish Habitat (REACH) project
<b>Date the form was completed:</b> 14 October 2010
<b>Organisation managing project:</b> Eden Rivers Trust
<b>Project Partners:</b>
<b>Funders:</b> SITA Trust
<b>Project type:</b> Field project, public awareness campaign and education programme
<b>Key Topics:</b> Base line surveys, monitoring populations, habitat enhancement, habitat management and improving biosecurity
<b>Species:</b> White-clawed crayfish
<b>Project Location:</b> River Eden in Cumbria, England
<b>Coverage Type:</b> single waterbody, multiple waterbodies, <u>catchment</u> , region/river basin district, administrative district
<b>Project timescale:</b> 1 January 2008 – 30 December 2009
<b>Project contact:</b> Dr Lucy Dugdale and Dr Joanne Backshall
<b>Website link:</b> <a href="http://www.edenriverstrust.org.uk">www.edenriverstrust.org.uk</a>
<b>Contact details:</b>  Eden Rivers Trust, Units O & Q, Skirsgill Business Park Penrith , Cumbria, CA11 0FA Tel: 01768 866788  Email <a href="mailto:lucy@edenriverstrust.org.uk">lucy@edenriverstrust.org.uk</a> or <a href="mailto:joanne@edenriverstrust.org.uk">joanne@edenriverstrust.org.uk</a>
<b>Project Summary:</b>  The aim of the REACH project was to help maintain, protect and promote a key population of white-clawed crayfish by: <ul style="list-style-type: none"><li>– Raising awareness about the dangers of introducing alien crayfish species and crayfish plague;</li><li>– Investigating the population ecology of the River Eden's white-clawed crayfish population;</li><li>– Reconnecting fragmented crayfish populations by improving degraded habitat;</li><li>– Monitoring the impact of habitat improvement works to evaluate the benefits and disseminate to others.</li></ul>
<b>More detailed project description:</b> This project forms part of the Trust's wider white-clawed crayfish conservation project and focused on restoring crayfish habitat within one particular area of the River Eden catchment - the River Leith and Lyvennet sub-catchment.  It is a national target of the UKBAP to maintain key crayfish habitats, such as the SAC designated Rivers Leith and Lyvennet, in favourable condition. However, our extensive research identified a

number of serious threats to crayfish habitat within these rivers, including:

- intensive grazing in the riparian zone;
- loss of tree cover;
- degraded water quality; and
- low flows.

The Rivers Leith and Lyvennet should provide some of the best crayfish habitat within the Eden catchment due to their extensive limestone geology. However, we believed that the above pressures were seriously impacting on this habitat potential and threatening our key crayfish population. These factors have led to severe fragmentation of crayfish habitat through a loss of refuges, poor water quality, siltation, compaction of substrate and a reduction in leaf litter and food availability.

This project aimed to restore fragmented habitats by re-establishing a functioning ecological network of corridors to promote a self-sustaining population of white-clawed crayfish. It also aimed to raise awareness of their plight so as to minimise the risk of American signal crayfish (*Pacifastacus leniusculus*) and crayfish plague introduction.

The detailed aims of the project were:

- Restore 4km of the riparian (bankside) zone using stock exclusion fencing and where necessary willow spiling to reduce siltation, stock trampling and localised inputs of nitrogen;
- Plant 1000 trees to provide essential crayfish cover and to increase inputs of leaf litter;
- Carry out 8 volunteer days of in-stream habitat enhancement such as *Ranunculus* transplanting. These strategies will increase the number of crayfish refuges and encourage the accumulation of organic matter which is critical to their success;
- Undertake two surveys of WC crayfish populations to collect information on their status and distribution;
- Raise awareness through education within the local community, in particular angling groups, who are at high risk of transferring American signal crayfish and crayfish plague.

The success of the project will be demonstrated and evaluated by continuing to monitor ecological improvements to crayfish populations and their habitat. The results of this monitoring will enable the Trust to demonstrate the success and benefits of crayfish habitat restoration and to use the project as an exemplary template for best practice to promote, encourage and ensure the continued protection of this especially vulnerable species.

Although this project is primarily aimed at crayfish conservation, many of the works carried out will be of direct benefit to habitat and many species of conservation importance within this sub-catchment. These include active shingle river habitat with *Ranunculus* sp., river lamprey (*Lampetra fluviatilis*), eels (*Anguilla anguilla*), Atlantic salmon (*Salmo salar*) and brown trout (*Salmo trutta*), (all new additions to the BAP priority list during the recent Species and Habitat Review)

### **Hoff Helm Crayfish Project - Lead Organisation: Eden Rivers Trust**

The aim of the Hoff Helm crayfish project is to help maintain, protect and promote a key population of white-clawed crayfish by:

- Investigating the population ecology of the River Eden's white-clawed crayfish;
- Improving the habitat for existing crayfish populations to ensure their long-term survival;
- Reconnecting fragmented crayfish populations by improving degraded habitat;
- Establishing at least 3 Ark sites in the Eden catchment;
- Raising awareness about the dangers of introducing alien crayfish species and crayfish plague;

- Monitoring the impact of habitat improvement works to evaluate the benefits and disseminating information to others.

<b>Project title:</b> Hoff Helm Crayfish Project
<b>Date the form was completed:</b> 14 October 2010
<b>Organisation managing project:</b> Eden Rivers Trust
<b>Project Partners:</b>
<b>Funders:</b> SITA Trust
<b>Project type:</b> Feasibility study, field project, public awareness campaign and education programme
<b>Key Topics:</b> Base line surveys, monitoring populations, ark site area/site assessment, ark site protection, ark site establishment, habitat enhancement and habitat management, improving biosecurity
<b>Species:</b> White-clawed crayfish
<b>Project Location:</b> River Eden in Cumbria, England
<b>Coverage Type:</b> Catchment
<b>Project timescale:</b> August 2009 to July 2012
<b>Project contact:</b> Dr Joanne Backshall and Dr Lucy Dugdale
<b>Website link:</b> <a href="http://www.edenriverstrust.org.uk">www.edenriverstrust.org.uk</a>
<b>Contact details:</b> Eden Rivers Trust Units O & Q Skirsgill Business Park Penrith Cumbria CA11 0FA Tel: 01768 866788  Email <a href="mailto:joanne@edenriverstrust.org.uk">joanne@edenriverstrust.org.uk</a> or <a href="mailto:lucy@edenriverstrust.org.uk">lucy@edenriverstrust.org.uk</a>
<b>Project Summary:</b>  The aim of the Hoff Helm crayfish project is to help maintain, protect and promote a key population of white-clawed crayfish by: <ul style="list-style-type: none"> <li>- Investigating the population ecology of the River Eden's white-clawed crayfish;</li> <li>- Improving the habitat for existing crayfish populations to ensure their long term survival;</li> <li>- Reconnecting fragmented crayfish populations by improving degraded habitat;</li> <li>- Establishing at least 3 Ark sites in the Eden catchment;</li> <li>- Raising awareness about the dangers of introducing alien crayfish species and crayfish plague;</li> <li>- Monitoring the impact of habitat improvement works to evaluate the benefits and disseminating information to others.</li> </ul>
<b>More detailed project description:</b>  The River Eden and tributaries is arguably the most important river in the country for white-clawed crayfish. It supports good populations of native crayfish and is one of the few catchments in the country that has not had an outbreak of crayfish plague or an invasion of signal crayfish.  Eden Rivers Trust has been studying white-clawed crayfish in the Eden catchment since 2007, particularly in four tributaries which support significant crayfish populations – the River Leith and Lyvennet near Penrith and the Hoff and Helm Becks near Appleby.  This project focuses on restoring crayfish habitat in the Hoff-Helm sub-catchment of the River Eden, as well as investigating potential Ark sites throughout the Eden catchment. It is assisting the national target of the UKBAP to maintain key crayfish habitats, such as the SAC designated River Eden, in favourable condition.  Our crayfish survey work has increased our knowledge of the distribution of the native crayfish in the Eden catchment. It has provided details of the populations, including size, health,

reproduction and so on.

The river habitat improvement work we are undertaking includes riverside fencing, tree planting, water crowfoot transplanting and farm improvement work to reduce diffuse pollution. This will enable existing populations to thrive and expand. We are also linking fragmented habitats and populations, by re-establishing a functioning ecological network of corridors to promote a self-sustaining population of white-clawed crayfish.

The detailed aims of the project are as follows:

- Restore 6 km of the riparian (bankside) zone using stock exclusion fencing, watering facilities, tree planting and willow spiling where appropriate, to reduce siltation, stock trampling and localised inputs of nitrogen.
- Undertake an annual survey of white-clawed crayfish populations to collect information on their status and distribution, and to monitor the effect of habitat restoration work.
- Identify safe havens or Ark sites for white-clawed crayfish, conduct a risk assessment and survey of the potential sites to ensure their appropriateness, and translocate white-clawed crayfish into safe havens if necessary.
- Continue to monitor populations and implement habitat improvement work after the end of this project.

This project is also raising awareness of the plight of native crayfish with the aim of reducing the risk of American signal crayfish (*Pacifastacus leniusculus*) and crayfish plague being introduced.

Although this project is primarily aimed at crayfish conservation, many of the works carried out will be of direct benefit to species of conservation importance within this sub-catchment. These include river lamprey (*Lampetra fluviatilis*), eels (*Anguilla anguilla*), Atlantic salmon (*Salmo salar*) and brown trout (*Salmo trutta*), which are all included in the BAP priority list.

In addition to protecting species, this project has delivered biodiversity improvements for the UKBAP priority habitat of Rivers and streams which it supports. The Hoff and Helm Becks are active shingle rivers with *Ranunculus* sp. present. Rivers and streams is also a Cumbrian LBAP priority habitat.

### **MSc by research: White clawed crayfish species-habitat relationship: the influence of scale and landscape structure - Lead Organisation: Durham University**

An MSc by research project. This is a field based study of White clawed crayfish habitat use/preferences on the River Wansbeck. The aim of this thesis is to determine: the spatial scale at which white clawed crayfish are responding to habitat variables; the influence of habitat connectivity on population size and; the influence of distance downstream on habitat use. The output of the work will be a research thesis and a kilometre scale distribution map from the river's source to Morpeth.

**Project title:** MSc by research: White clawed crayfish species-habitat relationship: the influence of scale and landscape structure.

<b>Date the form was completed:</b> 17/08/2010
<b>Organisation managing project:</b> Durham University
<b>Project Partners:</b> Northumberland Wildlife Trust
<b>Funders:</b> ONE North East
<b>Project type:</b> Desktop study/review and field project
<b>Key Topics:</b> Monitoring populations, habitat enhancement and habitat management
<b>Species:</b> White-clawed crayfish
<b>Project Location:</b>  <b>Coverage Type:</b> Catchment
<b>Project timescale:</b> October 2009 - November 2010
<b>Project contact:</b>  Caitlin Pearson  Supervisor: Martyn Lucas
<b>Website link:</b>
<b>Contact details:</b>  <a href="mailto:caitlin.pearson@dur.ac.uk">caitlin.pearson@dur.ac.uk</a> Tel: 07852972726  14, Cookgate, Nunthorpe, Middlesbrough, TS7 0LP  <a href="mailto:m.c.lucas@dur.ac.uk">m.c.lucas@dur.ac.uk</a>  Martyn Lucas, School of Biological and Biomedical Sciences, Durham University, South Road, Durham, DH1 3LE
<b>Project Summary:</b>  An MSc by research project. This is a field based study of White clawed crayfish habitat use/preferences on the River Wansbeck. The aim of this thesis is to determine: the spatial scale at which white clawed crayfish are responding to habitat variables; the influence of habitat connectivity on population size and; the influence of distance downstream on habitat use. The output of the work will be a research thesis and a kilometre scale distribution map from the river's source to Morpeth.

**White-clawed crayfish awareness raising and surveys in Cheshire** - Lead organisation:  
Environment Agency

Highlighting the White-clawed crayfish in Cheshire and to survey existing populations, in order for the records can be sent to partners including the Cheshire Wildlife Trust and used to designate inhabited habitats as Sites of Biological Importance (SBI's).

Project title: <b>White-clawed crayfish awareness raising and surveys in Cheshire</b>
Date the form was completed: <b>6 Aug 2010</b>
Organisation managing project: <b>Environment Agency</b>
Project Partners: <b>Cheshire Region Biodiversity Partnership</b>  <a href="http://www.cheshire-biodiversity.org.uk/">http://www.cheshire-biodiversity.org.uk/</a>  <b>Cheshire Wildlife Trust</b>  <b>Paul Bradley</b>
Funders: <b>Environment Agency (in kind)</b>  <b>Cheshire Region Biodiversity Partnership (in kind)</b>
Project type (please underline all relevant project type/s):  <u>desktop study/review</u> , feasibility study, <u>field project</u> , outdoor experimental, laboratory study, <u>public awareness campaign</u> , <u>education programme</u> , other (please state what)
Key Topics (please underline the relevant description/s):  <u>catchment risk assessment for crayfish</u> , <u>base line surveys</u> , <u>monitoring populations</u> , <u>predicting invasion non-native crayfish</u> , <u>ark site area/site assessment</u> , ark site protection, ark site establishment, habitat enhancement, <u>habitat management</u> , mitigation during works, captive breeding, barriers against crayfish, improving biosecurity, impacts on ecology-macrophytes/macroinvertebrates/amphibians/fish, impacts on habitat, burrowing, impacts on angling, biology, behaviour, crayfish plague, other diseases of crayfish, control measure, trapping programme, wild harvest, opinion survey, other (please state)
Species (please underline all relevant species):  <u>white-clawed crayfish</u> , <u>signal crayfish</u> , spiny-cheek crayfish, virile crayfish, Turkish crayfish, red swamp crayfish, other crayfish species (please state which)
Project Location:  Coverage Type (please underline all relevant coverage types): single waterbody, <u>multiple waterbodies</u> , <u>catchment</u> , region/river basin district, administrative district
Project timescale (start and end dates): <b>Aug – Oct 2010</b>
Project contact:  (including supervisor for research work)  <b>Duncan Revell</b>

**Biodiversity Officer, Environment Agency (North West)**

Website link:

Contact details (address, email, tel):

[duncan.revell@environment-agency.gov.uk](mailto:duncan.revell@environment-agency.gov.uk)

Environment Agency, Richard Fairclough House, Knutsford Road, Latchford, Warrington, Cheshire, WA4 1HT 01925 542388

Project Summary (Aims and Outputs) (100 words):

This is a relatively small-scale project, designed to raise awareness of white-clawed crayfish in Cheshire and to survey existing populations to get up-to-date records. These records can then be sent to the Cheshire Wildlife Trust, Cheshire East Council and Cheshire West & Chester Council to designate these sites as Sites of Biological Importance (SBIs).

More detailed project description (500 words):

*If your project has an end date can you indicate any ways the projects work will be sustained*

In Cheshire, there are four small isolated river catchments with good white-clawed crayfish populations. These sites will hopefully be surveyed this season (2010) by EA staff to get up-to-date records.

Surveys will hopefully be carried out every year to monitor these important *A. pallipes* populations.

As part of this project, Paul Bradley will be providing a short training course for EA Monitoring staff to carry out surveys along with fully trained Biodiversity staff. This relates to Paul Bradley's EA-funded Ribblesdale Crayfish Conservation Project. The feasibility of ark sites and protection from signal crayfish will also be assessed as part of the project.

**Cheshire White-clawed crayfish rescue, quarantine and Ark Site set-up - Lead**  
organisation: Environment Agency

One of Cheshire's four Whiter-clawed crayfish populations is currently under threat from non-native Signal crayfish. This project was created to create an Ark Site to protect this endangered population.

<b>Project title:</b> White-clawed Crayfish Rescue, Quarantine and Ark Site set up
<b>Date the form was completed:</b> 11/01/13
<b>Organisation managing project:</b> Environment Agency
<b>Project Partners:</b> N/A
<b>Funders:</b> Environment Agency
<b>Project type:</b> Contract – PBA Applied Ecology
<b>Key Topics:</b> Search for white-clawed crayfish ark site
<b>Species:</b> White-clawed crayfish
<b>Project Location:</b> Cheshire
<b>Project timescale:</b> Financial year 11/12
<b>Project contact:</b> Fiona Steele, Biodiversity Officer, Environment Agency (North West)
<b>Website link:</b>
<b>Contact details:</b>  fiona.steele@environment-agency.gov.uk  Environment Agency, Richard Fairclough House, Knutsford Road, Latchford, Warrington, Cheshire, WA4 1HT 01925 54 2313
<b>Project Summary (500 words):</b>  In Cheshire there are four populations of white-clawed crayfish. One of these has come under threat from the invasive non-native signal crayfish. A project was undertaken to search for an Ark site within the Cheshire area and to then to rescue, quarantine and release. Unfortunately a suitable Ark site could not be found.
<b>More detailed project description (1000 words):</b>  Signal crayfish were found to be present in an adjacent fishery which has outfalls into the watercourse containing white-clawed crayfish. Eradication of signal crayfish within the fishery was investigated but concluded to be unfeasible. Therefore an Ark site was deemed the only way of conserving this population.  A thorough search for an Ark sites was undertaken by the consultant but they were unable to find any suitable sites. It was impossible to find a site which was offline (or limited online connection), was not fished, had a suitable water type, had good water quality and an amenable land owner.

