



Fencing work carried out along Danby beck



**“Before the fencing was installed, I had problems with cows calving in the gutter. This new fencing work will help me manage my stock and will also help look after the river too.”**

Local farmer

Work has already been carried out with a number of farmers and landowners in the Esk catchment.

# The Esk Pearl Mussel and Salmon Recovery Project

## The Freshwater Pearl Mussel

(*Margaritifera margaritifera*)

The freshwater pearl mussel is one of the longest-lived invertebrates known, and can live for more than 100 years. Formerly widespread and abundant in England and Wales, its numbers have severely declined with most former populations now virtually extinct.

The decline in pearl mussel populations is due to a number of factors:

- Habitat degradation caused by sedimentation of river gravels.
- Decline in populations of host fish (salmon and trout).
- Historic pearl fishing.
- Pollution and water quality deterioration (pearl mussels like rivers with pristine water).

The pearl mussels in the River Esk are the last surviving populations in Yorkshire, and only a few mussels are left. The mussels in the Esk have not produced young for over 30 years.

It is likely that the Esk population will become **extinct** in the next 25 years unless action is taken to halt this decline.



A Freshwater Pearl Mussel (*Margaritifera margaritifera*) found in the River Esk



Simon Hirst, River Esk Project Officer with Esk pearl mussel

## Funding

Funds are available for farmers and landowners to:

- install fences along watercourses
- provide alternative stock watering facilities
- plant trees
- create wetland / ponds
- stabilise river banks
- improve culverts and gates

Please contact the Project Officer for details.

If you would like to discuss funding opportunities or would like any further information about the project, please contact:

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## The Esk Pearl Mussel and Salmon recovery project aims to:

- 1) Improve the river habitat
- 2) Restore the pearl mussel population,
- 3) Increase populations of salmon and trout, and;
- 4) Promote good land management within the catchment.





## Demonstration farm

A Demonstration farm has been set up on the banks of the River Esk to demonstrate good environmental practice. This farm will benefit the pearl mussel populations and general ecology of the river.

A number of measures have been introduced on the farm to protect the river from sediments and other pollutants:

- 1) Installation of fencing along river banks, to prevent bankside erosion by livestock.
- 2) Establishment of vegetated buffer zones, to minimise run-off of sediments and pollutants into the river.
- 3) Provision of alternative stock watering facilities such as a solar powered water pump and pasture pumps.
- 4) Soil testing and improved use of nutrients on the land.



Eroding river banks result in gravels becoming clogged with sediment



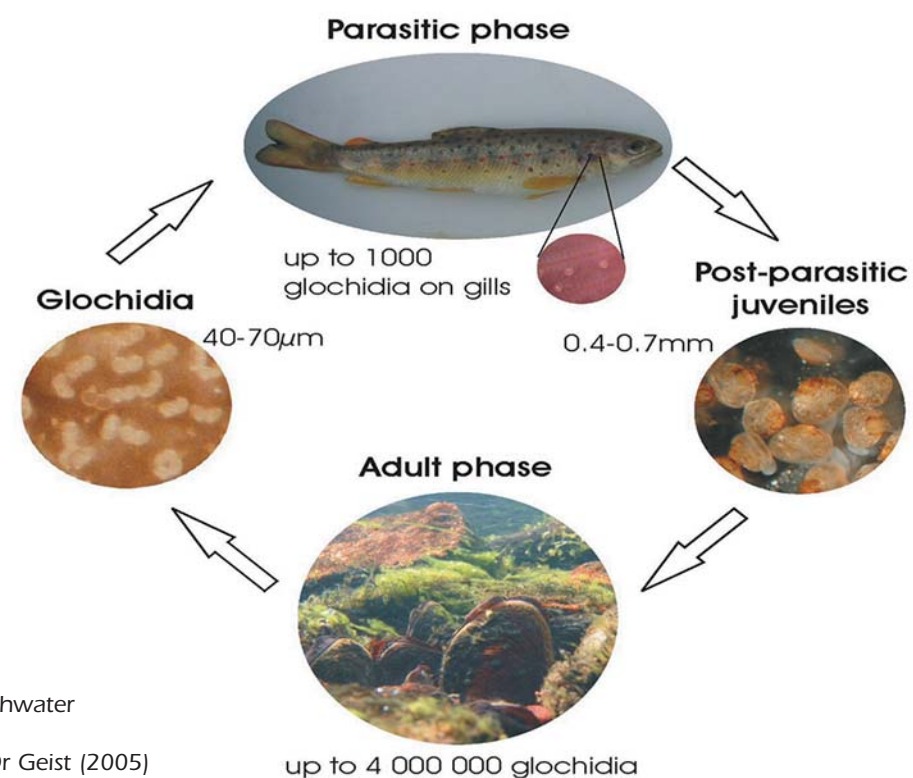
Pearl mussel breeding tanks



Esk mussels ready to be introduced to their new home

## The Lifecycle of the Pearl Mussel

The lifecycle of the Freshwater Pearl Mussel is very complex and also very unusual. The male pearl mussels release sperm into the water, which is then filtered by the females. The eggs are fertilised, and develop in the female's breeding pouch before being released as larvae (also known as glochidia). These larvae are then washed downstream by the river, and if they are lucky they attach themselves to the gills of young salmon or trout. The young mussels develop on the gills of the fish for approximately nine months, before dropping off into the gravels. They then grow in the river bed and develop into juvenile pearl mussels. The juvenile mussels take about 15 years to mature, and during this time they are very sensitive to pollution and sedimentation.



Lifecycle of the Freshwater Pearl Mussel  
Photo courtesy of Dr Geist (2005)

## Captive Breeding Programme

In September 2007, the Environment Agency moved a number of the River Esk's pearl mussels to a captive breeding programme in the Lake District. It is hoped that these mussels and the juveniles produced, will be re-introduced to the River Esk in around five years time when the habitat in the River Esk has improved.

## Habitat Restoration

Funding has been obtained from a number of sources including the Heritage Lottery Fund, Environment Agency, Yorventure and the North York Moors National Park Authority.

This funding will help to carry out habitat restoration work along the River Esk.

In order to improve the habitat for pearl mussels and fish populations, a number of measures are proposed including:

- Riverbank fencing (this includes fencing along small gutters and tributaries)
- Stabilisation of river banks
- Tree planting
- Wetland / pond creations
- Improvements around gates (culverts, hardcore and sleepers)
- Provision of watering facilities for livestock (troughs, drinking points and pumps)



Native tree planting at the demonstration farm