

## **IFM Specialist Conference 2015**

Forestry and Fisheries – Where Next?

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### **Wild River, Wilder Valley. Experiences, benefits and lessons learnt from letting the River Liza find its own way through the Ennerdale forest.**

Gareth Browning, Forestry Commission, Wild Ennerdale

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As part of our vision to allow Ennerdale to become a more self-willed landscape we have made a few changes along the river corridor and witnessed some extreme weather events which have taught us new lessons about the relationship between river and forest. This presentation aims to share some of these experiences, explore the benefits we have seen and draw out the lessons that could be applied elsewhere. Although not backed by science or research, we would welcome academic partners, we are keen to tell this story of a wild river's contribution to a wilder valley.

Wild land is a relatively new concept in the UK and involves giving natural process greater freedom to develop our future landscapes. Wild Ennerdale is one of the UK's largest wild land projects; allowing ecosystems throughout the valley to evolve with greater freedom. It is a partnership between people and organisations led by The Forestry Commission, National Trust, and United Utilities being the primary land owners and Natural England, the Government's advisor on conservation. The partnership has an exciting Vision "to allow the evolution of Ennerdale as a wild valley for the benefit of people, relying more on natural processes to shape its landscape and ecology".

Ennerdale is a remote Cumbrian valley on the western fringe of the Lake District National Park. It is 9 miles (14.5km) long and extends to an area of 11,640 acres (4711 ha). The valley narrows from west to east and is surrounded by dramatic ridges which include some of Lakeland's highest summits over 3000ft (900m) high. The valley is highly significant for its rich legacy of archaeological remains and is also home to diverse habitats for flora and fauna, which range from regional to international importance. Over 40% of the area is designated as 'Site of Special Scientific Interest' and "Special Area of Conservation". The continuous transition of vegetation types, from lakeshore through woodlands and open heath land, to the mountain summits, is spectacular.

Meaning "shinning river" in Old Norse the River Liza is one of the most natural rivers in England, falling wild and unchecked down the valley for 11km into Ennerdale Lake. This SSSI lake, important for its rare Arctic charr and natural lakeshore habitats, supplies over 60,000 customers with drinking water. The lake flows out into the River Ehen which supports England's largest reproducing Freshwater Pearl Mussel population.

Early on in our wild quest we decided to reduce intensive sheep grazing and introduce extensive cattle as a dynamic natural disturbance factor. For this to be most effective we removed the valley bottom fence enclosed fields to give the cattle freedom to roam. Whilst not intentional we soon realised after that this removed the tension between farm tenant, river and landowner. Previously the tenant was regularly seeing his enclosed land, and his income source, eaten away by the rivers erosion as it meandered. His response was to ask for the rivers course to be controlled by shoring the banks up with stone gabions. A history of these structures can be seen along sections of the river, where they are now often left isolated and looking strange in the middle of the river. Following the move to extensive grazing the farmer's grazing boundary was moved to the forest edge which reduced the tension with the river as the tenant's payment boundary was no longer linked to the self will of the river's meandering.

Our greatest learning has come with, and since, the 2009 West Cumbria floods. This major event saw unprecedented rainfall on top of already saturated ground. In the Ennerdale Valley the River Liza responded with massive increase in flow, width and energy. Jumping from channel to channel, sometimes only spending a short time demolishing one established piece of forest or scrub before moving across to another. The valley was inaccessible for a couple of days as the lake flooded across the forest road and the River Ehen became an extension of the lake. The following days saw Thirlmere and other North Cumbria reservoirs unable to supply drinking water due to high turbidity and discolouration. However Ennerdale continued to supply West Cumbrian's with its usual clean, clear water as the Liza soaked up the energy and debris in its natural filter of forest, scrub and woody debris. Looking at the river corridor afterwards we discovered huge debris piles, the river moving 50m or more in places occupying and scouring multiple channels. New channels had been created including one along the route of a public right of way! What seemed to happen though was that debris from one section of erosion was only carried a short distance before having to be dropped as the rivers energy was sapped by the high friction scrubby forest floodplain and the next meander. This meant that there was no catastrophic build up of debris or energy and only limited movement of sediment or debris into the lake. The evidence for this can be seen in photos taken during the flood and by the limited debris caught at the Irish Bridge and deposited around the lake shore bays.

Six years after the 2009 flood other lesser, yet still significant, weather events have seen the river continue to shape the valley floor. However the forest continues its relationship with the river, not as food this time, but as seed source to renew the natural filter. Virgin gravel beds scrub up with birch, pine rowan and spruce seedlings alongside bilberry, harebell and other plants this forester cannot identify. As the trees grow they capture initially only small debris but will in the future capture larger debris and eventually become the large woody debris themselves as the river returns.

Disconnecting the administrative boundary from the naturally dynamic river boundary has removed the pressure to control the river. Such change has further encouraged the river now to flow through the scrubby landscape rather than see its energy levels and thus destructive potential maintained by constructed straightening.

Recognising the value of the forest to the river as a natural water filter and energy reducer has changed our management philosophy to the rivers constant hunger to take away the forest. Accepting the visual debris strewn river as natural rather than something that needs tidying up is as challenging as leaving wind blow alone, but it is essential for the river/forest relationship.

Having a forest capable of regenerating itself alongside a river that creates regular sections of exposed gravels means that such new gravel beds rarely remain naked for long. They are quickly clothed in tree seedlings and other vegetation which are helped in part by large woody debris piles that slow and break up extreme flows. This regeneration process ensures that each bare gravel bed is, within just a few years, transformed into part of the natural filter system that provides the lake with clean water.

Allowing the River Liza more space has given the river back more self-will to move freely around its floodplain and, when it chooses, to "chomp" on some forest. The close spatial relationship between the river and the forest and latter's increasing ability to regenerate naturally are key to the response the river makes to extreme rainfall events. The swollen river must flow through a high friction self healing landscape and give up its energy to push over standing trees and burst through fallen timber. Combined, these help reduce the impact of high energy extreme events on vulnerable downstream infrastructure, charr spawning beds and public water supply. Large woody debris is kept close to where it is produced which further reduces downstream erosion risk. Superficially this process appears to benefit few people as the Liza's floodplain is not inhabited. However the 2009 flood story demonstrates that as far as securing quality drinking water is concerned the river/forest relationship is highly valuable. In a different catchment these benefits could be important in protecting residential and industrial properties; perhaps the River Liza provides an example worthy of a visit.