

# The most important hill in Britain...

...is this farm in Wales, where they're pioneering an upland economy built around wildlife, ecology and long-term sustainability. Estelle Bailey reports



Traditional breed cattle, rather than sheep, are just one tool in a low-input hill farming model being trialled in Pumlumon

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**W**ales and sheep farming, most people reckon, go together like bacon and eggs. It's a connection that goes back decades, and is celebrated by stand-up comics, rugby songs and celebrity chefs.

But the truth is that Wales' upland sheep farms are having a hard time. Incomes are falling, fuel prices are rising, and EU subsidies are about to decline. Moreover, with erosion, over-grazing and drastic loss of species, the land itself is crying enough. As a long-term prospect, the current way of doing things has little environmental or economic future – and that's before you factor in the looming threat of climate change.

Clearly, something needs to happen. So the question we asked in Wildlife Trusts Wales was: What do we need our upland farmers to produce? Clearly we need

them to produce food – but who is better placed to defend us from flood water? To manage our wildlife over large areas? To create interesting, accessible countryside? Or even to help reduce the impact and cause of climate change? And if we can recognise that farmers can provide these additional services, why shouldn't they be paid for it?

This line of enquiry is what led, in 2007, to the launch of the Pumlumon Project. It's a long-term vision for the countryside, a pioneering experiment in an area of Mid Wales which contains 250 farms, 15,000 inhabitants and catchments for five rivers (including the Severn and Wye) which supply water to four million people.

Our aim is to find new solutions to current and future land use problems. Our philosophy centres on restoring or building ecosystems and economies relevant to today's conditions. In other words, to change the way



**ESTELLE BAILEY**

Has 'the splendid job of managing one of the UK's most visionary Living Landscapes projects for Montgomeryshire WT and Wildlife Trusts Wales'.

## Pumlumon 2008

This is Rhosygarreg, one of the Pumlumon Project's six pilot areas. Taken in 2008, the picture shows how land management has eroded the area's diversity. Wet areas are drained, heather moorland is converted to grassland and tree seedlings are grazed off before they have a chance to grow. The uniform landscape provides a poor income for the farmer and a limited range of wild species.

The project here, supported by the farmer, involved blocking ditches to rewet the bogs. In ten days, 85 peat dams were installed in the drainage ditches, over an area of 73ha (which is roughly 73 football pitches). The other five pilots nearby involved more rewetting, tree planting and a switch to cattle grazing.

Two years on at Rhosygarreg, the peat-forming mosses are back (see p16).

TURN OVER TO SEE  
A BETTER FUTURE



### 1 RAPID DRAINAGE

After World War Two, government subsidies encouraged farmers to dig miles of ditches to dry out uplands for sheep grazing. Today the landscape lives with the unforeseen side effects: soil erosion, a loss in wildlife, and the increased likelihood that rain in the uplands will rush off the hills into the built-up lowlands.

### 2 FAILING HEATHER

Agricultural improvement and heavy sheep grazing has caused a widespread loss of heather moorland and bog. Some visitors imagine the resulting uniform grass cover is natural – but without large, healthy blocks of heather this landscape will continue to lose species such as red grouse and hen harrier.

### 3 VANISHED WOODLAND

For centuries Pumlumon's woodland dwindled to provide fuel and make space for grazing. As the trees went the wildlife they supported disappeared too. Today's treeless landscape has poorer soil than before. Its denuded condition makes it more prone to erosion and flash flooding too.

### 4 CATTLE-FREE ZONE

It's a rare thing these days to find a traditional breed cow grazing rough grassland in the uplands. The economics of upland beef production have forced most farmers to rear faster-growing continental breeds on intensively managed grasslands lower down the slopes, relying on cheap fertiliser and fossil fuels.

### 5 CARBON EMISSIONS

Extensive drainage systems on upland habitats dry out the peat soils, which then oxidise and release their carbon into the atmosphere. Effectively the landscape is exhaling CO<sub>2</sub>. The left-over debris reduces water quality, and dried-out peat bogs lose their millennia-old capacity to soak up and safeguard carbon.

### 6 THE SHEEP EFFECT

In past years, EU subsidies paid farmers per head of stock (today it's per hectare of ground), drastically increasing stocking rates on the mountain. The result: an intensively-managed, over-stocked, over-grazed landscape producing low quality food... and not much else.

40,000 hectares of Mid Wales is managed for products and services. That can only happen with a landscape-scale strategy that forges new partnerships between conservation, farming, forestry and tourism. So while Pumlumon is hosted by Montgomeryshire Wildlife Trust on behalf of Wildlife Trusts Wales, it has the full support of the Welsh Assembly Government, the Countryside Council for Wales, Environment Agency, Forestry Commission and many other stakeholders.

### A model for all upland farms?

In 2013 the EU will reform its Common Agricultural Policy (CAP). For upland farmers, production subsidies are likely to be increasingly re-focused on broader rural development themes. So it makes sense to have a range of tested alternatives to today's business models, whose acceptability to the farming community and other key stakeholders has been established. This is essentially what the Pumlumon Project is designed to demonstrate.

These new models are largely based on the sale of 'ecosystem services' or 'natural capital'. It is now accepted that we can only achieve a sustainable use of our environment if we consider the relationships and processes within ecosystems, and our impacts on them, at a landscape scale. We now know that doing this in the uplands can deliver not just food but biodiversity gain, flood water and sustainable soils management, and climate change mitigation. If local communities are connected with their environment, and conservation objectives integrated more closely with other land uses, there can be social and economic benefits too.

In traditional economics, the goods and services an ecosystem provides often have no market value. But the UK economy is changing, and the CAP reforms are about to affect all farmers and land managers. The opportunity in the uplands is to deliver new products to emerging markets, particularly flood water management and natural carbon storage.

Over the last three years the Project has trialled six

pilot schemes focused on three restoration approaches: blocking drainage ditches (which leads to the re-establishment of the peat-forming mosses which lock up carbon); switching from sheep to low density cattle grazing (which tends to improve habitat quality and therefore biodiversity); and planting willow, birch and rowan trees to create connecting woodland scrub between upland habitats and lowland woodland.

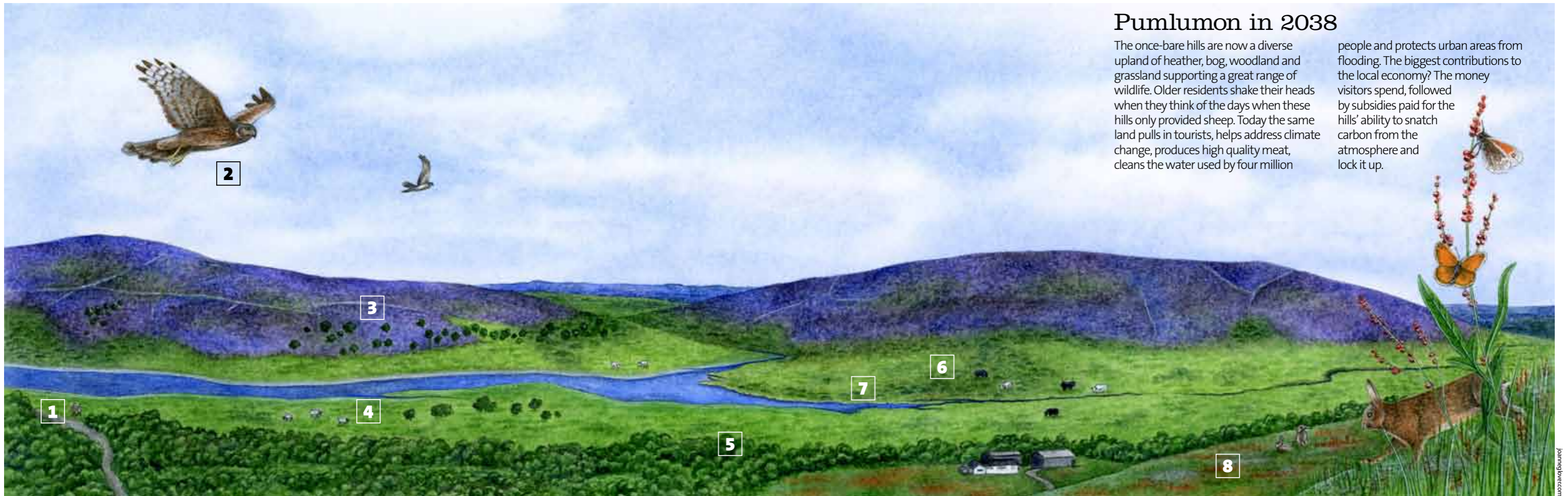
With local farmers and contractors paid to undertake these projects, the results have been positive. Habitat has been restored, created and connected; floodwater management and carbon safeguard has improved; and there are new visitor access opportunities.

The underlying premise of our land use jigsaw is if you take action on the ground for one thing you can't help having a positive effect on everything else too. One action provides multiple outcomes. In this respect, what we are doing at Pumlumon is truly sustainable. And doing it now gives us the chance to find out what might be workable in the future.

### IT'S BIG!

In his book *Rivers Griff Rhys Jones* calls Pumlumon, "the water tank in Britain's attic" – a fair description. The area (in red) is as big as Birmingham, and spans five river catchments including the Usk, Severn and Wye. It's one of the UK's largest, most diverse habitat restoration projects.





## Pumlumon in 2038

The once-bare hills are now a diverse upland of heather, bog, woodland and grassland supporting a great range of wildlife. Older residents shake their heads when they think of the days when these hills only provided sheep. Today the same land pulls in tourists, helps address climate change, produces high quality meat, cleans the water used by four million

people and protects urban areas from flooding. The biggest contributions to the local economy? The money visitors spend, followed by subsidies paid for the hills' ability to snatch carbon from the atmosphere and lock it up.

### 1 VISITING ADMIRERS

People have been coming to watch Pumlumon develop for a generation. Windsurfing, canoeing and hill walking are popular. Everyone loves the scenery and fresh air. Children can't believe it was ever any different.

### 2 RETURNED RAPTORS

The first hen harrier visiting the area to breed was front page news. The next few were pretty exciting. Today visitors and locals see them all the time. Hobbies come in summer too, hunting dragonflies over the bog pools.

### 3 HEATHER HILLSIDES

Sympathetic grazing with cattle and sheep, as well as targeted habitat restoration, has brought back heather moorland. In some areas it has painted the mountain purple; in others it's mixed with grassland and scrub.

### 4 THE CATTLE EFFECT

The way the traditional breed Welsh Whites have browsed, grazed and trampled over the years has led to the emergence of scrub grassland. The animals do well up here, providing high value beef and ecological diversity.

### 5 YOUNG WOODLAND

The scrub of the early years has given way to young trees, and short-eared owl and black grouse have moved in. The trees have also improved the soil, reducing flooding, filtering water and providing welcome shelter in the hills.

### 6 CARBON FARMING

The peat bogs are stable now, though by their own standards they've barely started. With luck they'll continue to lock up steadily increasing amounts of atmospheric carbon in peat for thousands of years to come.

### 7 NO MORE DRAINS

Blocking ditches has allowed the bog habitat to recover, re-establishing sundews and sphagnum mosses. They're already holding rainfall back like a landscape-scale sponge, protecting the lowlands from flooding.

### 8 ACID GRASSLAND

The better-drained slopes are now acid grassland, with fine-bladed grasses, wild flowers, colourful sheep's sorrel (pictured) and common bent. Small heath butterflies and hares are plentiful.



Two years on, peat-forming Sphagnum mosses have colonised a blocked ditch at Rhosygarreg

Reducing agricultural intensity, and blending it with products and services many people don't yet regard as farm outputs might seem like a luxury in these straightened economic times. But to people who ask whether we afford projects like Pumlumon, the simple answer is: can we afford not to?

### What about the wildlife benefits?

The Project's objectives are to halt biodiversity decline, inspire people about the natural world and create a sustainable landscape. By 2007 the most dramatic birds (harrier, merlin, short-eared owl, and red and black grouse) were at the limit of their viability or absent. As large blocks of habitat recover they should return.

The peat bog plant community just beginning to establish at Rhosygarreg and elsewhere is developing well, and will be monitored every five years. In one of the cattle re-introduction areas anecdotal evidence suggests that heather is re-establishing.

About 5,000ha of the Project area is a Site of Special Scientific Interest (SSSI). Part of the SSSI is Glaslyn, Montgomeryshire Wildlife Trust's biggest reserve. This is the wildlife-rich hub which can expand to reconnect fragmented outlying habitats. For now, ten separate bird, mammal and invertebrate species recovery plans are underway.

The Dyfi Osprey Project, which opened in 2009 and attracted 30,000 visitors between April and August, is in the north of the Pumlumon area. It will be the main way people find out about the Project.

### Can Pumlumon really work?

- In five years we estimate the Project will deliver:
- 1,500ha of land managed for carbon storage, holding 1.87 million tonnes of carbon.
  - 3,730ha of land managed for flood water, storing 30.67 billion litres of water.
  - 5,050ha of habitat managed for connectivity.

We think landscape-scale land management projects like this are a no-brainer. They are relatively cheap, and deliver outputs which we all value even if we don't agree on exactly how to measure them.

What's more, this value is increasing all the time as the carbon price goes up, and as flood risk increases with climate change. But the big question – who pays – is still being worked out. Government? Businesses in sectors most affected by flood risk and carbon pricing? All of us?

Our vision for the Pumlumon Project is a connected, functioning, sustainable landscape for people and wildlife. We and the local farmers believe it is the future of upland farming. Nevertheless these are early days, and the government is still conducting research to test the case for the ecosystems approach (and in fact Pumlumon is linked into many of the studies).

Essentially we are preparing and supporting local farmers to get ready for the future without compromising their business as it is. And at the same time we achieve a landscape rich in wildlife.

**“I’ve joined in”**

“We’re a farming family going back six or seven generations, probably more. We’re working with the Pumlumon Project to run Welsh White cattle on the uplands, to show they will actually survive up there. They seem to cope quite well.

“Farming isn’t just about beef and sheep. It’s making a living off your land, looking for opportunities – and the Pumlumon Project is offering them. Locking up carbon and holding the water back is just another way to farm the land. At the end of the day if someone pays you for it, that’s farming. Same as turning a field over to a campsite.

“We operate a beef box scheme, selling direct to individual people. People may pay a little more for a traditional breed, and there is the argument that it’s a better quality of meat. The animals mature at a slower rate, and eat a wide range of grasses and other material up there. Also the conservation project tag allows you to charge a little bit more. The herd isn’t the be-all and end-all – but it’s certainly a very good stream of income.”



Traditional breed cattle in the uplands? Pretty good business, says Mike Lewis. Bryn the sheepdog agrees

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**What’s a healthy ecosystem worth?**

We recently assessed the value of the increase in ecosystem services over 10 years for the project area, using Defra’s new Toolkit method.

These very preliminary figures suggest that the Project could generate almost £23m over 10 years. This implies a net present value, after costs and discounting, of £14.3m, and suggests that the

Project is likely to be worth more to the area than business as usual. And with a cost:benefit ratio approaching 1:5 it should justify further public and private sector investment.

The ecosystem services we accounted for were: food, fibre, renewable energy, downstream water quality, costs associated

with downstream flood risks, outdoor recreation, field sports, values to historic and cultural landscapes, greenhouse gases and biodiversity. The notable values are in the chart below.

Even if farmers and land managers only receive 10% of the value of these services, it amounts to over £1.4m over 10 years. If the

cost of creating one job is, say, £35,000 then the Project might create 40 new jobs.

We shouldn’t get too hung up on the difficulty of making these estimates. The main thing is that because economics is changing in the face of global challenges, it is becoming much easier to justify projects like Pumlumon.

**ECOSYSTEM SERVICES OVER TEN YEARS**

Here’s what the Project could deliver, according to Defra’s ecosystem services methodology. The figures don’t include any job creation effects, or likely benefits to the Severn and Wye catchments, which affect four million people.

