



## History and Ecology on Penybont Common

Our landscapes are not natural. The shape of the hills and valleys, yes, but for several thousand years humans have cleared and grazed, drained and levelled the landscape. Through all that time, life adapts and responds to the changes we impose on it, finding ways to thrive when we give them a chance. This is particularly true of insects and other invertebrates, which is what we'll focus on in this activity.

This guided activity will help you to see the common in a new way, and understand how life is influenced by our activities...

Although the common land is open access, the same rules apply to walking on farmland in general: keep dogs on a lead, be careful not to drop litter, and don't damage anything. This is particularly the case with the delicate pockets of wetlands and other isolated habitats... in short, take care where you're walking.

### 1. Taking the view

When you're driving through Penybont and across the common, it can seem like a desolate place: severely grazed, with rough gorse and stunted hawthorns dotting the landscape. Most people don't stop to look at the details, so that's where we'll start.

You're probably starting from the village in Penybont, so start by taking a little **walk northwards (I recommend starting off along the Dolau road) until you find somewhere that gives you a good vantage point**. The common covers a surprisingly large area, running from Penybont, nearly up to The Pales (see other activities), which you can see on the hill to the northeast. Within this area, there are lots of subtle differences in the habitats. This might be areas that are wetter than others, sheltered patches with different plants, or a single tree.

From your viewpoint, sketch the view you can see below, and label five areas of the Common that you think might be home to different creatures. We can explore some of them later!



- 1.
- 2.
- 3.
- 4.
- 5.

## 2. The human impact

The common has been shaped by centuries of human management, but unlike private farmland, that management tends to be less intensive. Few farmers would want to invest heavily in communal pasture, so it tends to be only slightly 'improved' (i.e. fertilised, drained and so on). The main activity is rough grazing, especially by sheep (but in earlier times, by other animals as well – ponies, cattle and foraging by pigs). Intensive grazing has several long-term effects...

### *Diversity*

Look closely at the range of plants on a typical area of the common. You can get a similar answer by casually looking for flowers that you recognise, but it's better to work more scientifically, seeing how many different species you can find in a small area (say, 1 square metre). You don't need to know what they are – just count them! Remember to look for different types of grass, as well as more obvious plants! (Don't include mosses and lichens.)

Diversity found in approximately 1 m<sup>2</sup> of typical grazed grassland (dry):

What you find will depend on exactly where you look, and the time of year... By comparison, chalk grassland can have over 40 species of plant per square metre... but normal *improved* agricultural land generally has only a handful. Eight to fifteen species per square metre is 'normal' for *semi-improved* pasture. **Which category do you think the common fits into?**

Now... in part 1 you identified some different areas. Hopefully, one of those was a damp patch beside a stream, or in a hollow: a wet area with obviously different plants. Be careful where you're walking, but go and have a look at one of these boggy patches... how many species do you see here?

Diversity of plants found in approximately 1 m<sup>2</sup> of wetland:

Why the difference? You might also notice that the vegetation is also much taller than on the dry, bare areas... why is that? The same reason that many of the plants you're seen on the dry areas are strangely stunted, with tiny, twisted stems and flowers that barely get above the ground.

### **The answer? Sheep.**

Unlike cattle, sheep will persistently nibble the tops off whatever they can find, and especially go for flowers rather than grasses. This results in many plants being stunted, clinging on where they can, and eventually out-competed by the faster-growing grasses. A few species, like Tormentil (see picture on p. 5, for this and some other common plants), manage to cling on very widely... but others species have vanished completely.

**Q.: Why doesn't this seem to have happened in the boggy areas? And what other habitats (as you marked in part 1) on the common might be better for biodiversity?**

### 3. Obvious insects

Time for a wander! Especially if the sun's out, take a little walk for fifteen minutes, and look for butterflies and bees as you go. Count them as you go along, and try not to count the same one twice! (And keep an eye open for other sorts of insects as well, of course...)

Butterflies:

Bees:

Q.: In a large flowery garden in the summer, you might expect to count at least ten or twenty butterflies in that time, and dozens of bees. How do your results compare?

Q.: Were the bees concentrated in a few places, or did you see them everywhere you went? If they were concentrated, what sort of habitat did you find them in?

Things to think about...

- Bees need a good supply of nectar through most of the year, in order to be able to thrive in an area. The density of flowers has to be high enough to support their energy needs.
- Butterflies need particular host plants for their caterpillars. If those plants aren't there, then they'll just be passing through.
- Bees and butterflies can fly long distances to find food, but many insect species tend to stay in a small area for most of their lives... and also depend on particular plants or in very specific environments.

### 4. The Hieroglyphic Ladybird Challenge!

It may surprise you to know that there are not just a couple of species of ladybird in the UK... but nearly 50! Of these, quite a lot are small and dull-coloured, but still, there are 26 species that you'd immediately recognise as ladybirds, and some of them come in several different colour patterns. Some species (like the 2-spot and 7-spot) are very common, but others are really rather rare. One of the scarce ones (widespread in the UK, but very localised and sadly declining) lives on Penybont Common... **the Hieroglyphic Ladybird** *Coccinella hieroglyphica* (see picture on last page).

It won't be easy to find. It's not abundant, and it may live only in the boggy patches (or elsewhere that sheep don't reach – normally it can be found on heaths, closely associated with heather). You'll only find it as an adult beetle in the summer (normally June to September), and most people who try to find it won't succeed. If you do find it, take a photo, let us know, and count yourself lucky!

### Take-home message

The common is an odd combination of relatively undisturbed, wild land (patches of wetland, the fenced-off copse near the village, and steep slopes beside streams where the sheep don't graze), with overgrazed rough pasture. Although the biodiversity of most of it is very low, there are unexpected survivors and scarce species found in those undisturbed areas (see last page).

You can easily apply the same ways of looking and thinking about our landscapes elsewhere. Where can you think of that has undisturbed environments that might be home to rare species?

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For more information about the habitats and insect life of the common, please listen to the audio recording as well! If you want to find out more about insects and how to identify them, there are lots of field guides available to buy, plus lots of help from online forums and groups on Facebook, Flickr, iSpot and so so. You'll need a digital camera (your phone probably has a basic one that will work on larger insects), but it's never been easier to get into learning about wildlife!



White-tailed bumblebee, on Lousewort



Gorse



Yellow Meadow Ant nests



Tormentil



Soft Rush

Some of the common plants and insects of Penybont Common





A scarce leafhopper, *Hardya melanopsis*



The scarce and declining Hieroglyphic Ladybird, found in boggy areas



The ground bug *Peritrechus lundii*: not previously recorded from Mid-Wales



Another newcomer: the groundhopper *Tetrix subulata*



A scarce wood-boring beetle, *Gynobius planus* – in the neglected copse!



Battle of the spider-hunting wasps (family Pompiliidae), on a steep stream bank

Some of the more unusual insects of Penybont Common