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Pathway to a More Sustainable Future:

Increasing Biodiversity by Creating or Encouraging Wildflower-Rich Habitats for Insect Pollinators

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Introduction

In a previous essay I described the background to my increasing biodiversity (B-Line) project and the work I did to prepare a 36m x 8-10m area for sowing wildflower seeds in a field adjacent to my garden. By April 11th ground preparation was complete and three different mixes of seed had been sown. This essay describes what has happened in my garden, adjacent field and cultivated wildflower patch over the next three months. Figure 1 shows three different areas marked A,B & C. Area A is garden lawn that was not mown between November and the following July – the wildflowers here are natiural – nothing has been introduced. Are B is the wildflower cultivation I began in March to increase biodiversity and Area C is a field rich in grasses with some natural wild flowers.

Figure 1 Three different wildflower habitats

Oxeye Daisy Meadow (Area A in Figure 1)

For the last 5 years I have not mown the grass in a substantial area of my garden until late July. My familyv have been rewarded by the growth of a beautiful natural Oxeye Daisy & Wild Orchid wildflower meadow. Because we have encouraged these flowers to grow and reseed they have increased in abundance over the last few years. This year, as a contribution to the B-Line project, I expanded the area to around 1500 sq m.

Slowly but surely since the end of April a multitude of stalks grew above the small daisies, grass, herbs and mosses that constitute what we call our lawn. With the late May sunshine and warmth the beautiful white Oxeye Daisies emerged in their tens of thousands in some places 40-50 per square metre. They are a magnificent site especially when the wind catches them and they bend and ripple as if in a synchronised dance. It is easy to see why they inspire people to write poems or in my case create a movie. https://www.youtube.com/watch?v=eSjB7IN96S0&t=6s

Oxeye daisies are a small perennial plant and they are quite common where I live but nowhere do they occur in the density and profusion as in my garden. Typically they are 40 – 50cm tall with a 3 to 5 cm wide flower comprising pure white petals surrounding a bright yellow centre. The yellow centre of the oxeye daisy is made up of many small flowers which hold nectar and are exploited by various pollinating insects, including butterflies, bees and hoverflies

The plant is self-seeding: a mature plant can produce up to 26,000 seeds. They also spread by shallow, creeping rhizomes. These ways of reproducing mean that the plants can quickly establish and spread over quite large areas if the conditions are right. Prior to 1970 when my house was built this was agricultural land so I don't know whether the daisies are naturally seeded or were sown by a previous owner when he dug out the pond to create this garden. While it would be interesting to know how and why these daisies came to be here – the point is they are here now and thanks to the happy accident of leaving the grass unmown five years ago we are now able to share and enjoy their annual cycle of renewal.

Figure 2 The natural (uncultivated) Oxeye Daisy meadow

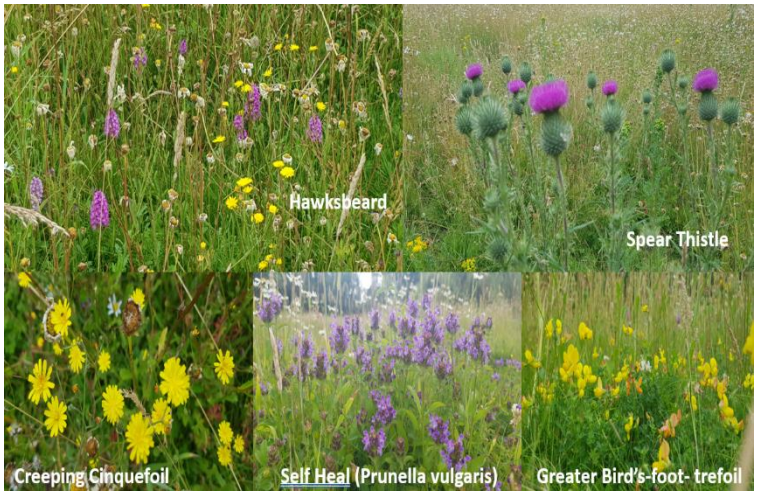
The interesting thing about the meadow is that the grasses do not grow as vigorously as they do in the adjacent field. Rather they grow as thin isolated stalks. This probably reflects the impoverished nature of the soil and the more limited number of grass species.

For the month of June the daisies provide an abundant supply of nectar for numerous insect pollinators – bees, wasps, flies, hover flies and beetles and butterflies particularly the Common Blue (Figure 3). Higher up the food chain the feeding insects attract birds and dragon flies.

Figure 3 Some of the insect pollinators spotted on the Oxeye Daisies.

The grasses and daisies are underlain by a thick carpet of herbs and wildflowers like Greater Bird's-foot- trefoil, Lesser Spearwort, Creeping Cinquefoil, and taller Hawkesbeard and Oxford Ragwort, purple Self Heal (Prunella vulgaris), Veronica, Spear Thistle and Clover and common daisy (Figure 4). These wildflowers persist long after the oxeye daisies have withered.

Figure 4 Some of the other wildflowers in the Oxeye Daisy meadow



The Oxeye Daisy meadow lasts about a month (late May to the end of June). By July 1st most of the daisies have withered (Figure 5).

Figure 5 By late June the Oxeye Daisies have produced their seed and withered

Rise of the Orchids

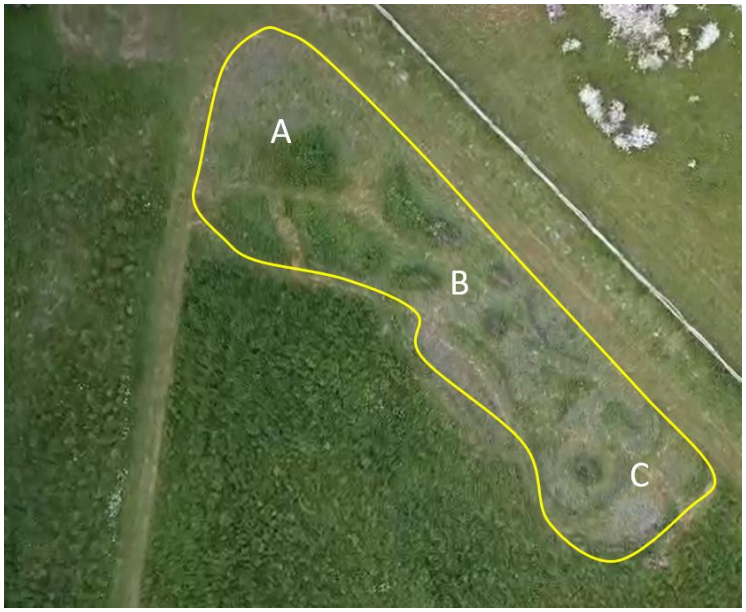
The first orchids appear in June and by the end of June, after the daisies have withered, they are the dominant larger flower in the meadow (Figure 6). Pyramid Orchid are the most abundant species, sometimes reaching up to 20 plants in a square metre. Bee Orchids are much rarer, I found 6 this

year along the side of path I had cut through the meadow, but there may have been many more within the meadow. There are also a small number of paler Spotted Orchids near the pond under some brambles. They prefer shady conditions and they are abundant in the woods.

Figure 6 Wild Orchids

I have spent quite a lot of time wandering on the hill above my home. The top of the hill is made of Chalk and there has been a lot of down wash off the hill towards its base where my garden sits. A part from Vipers bugloss which is common on the hill, all other plants I find in my garden can be found on the hill. In spite of being on Gault Clay I think the flora of my garden has been influenced by the Chalk hill.

Wildflower Cultivation (Area B in Figure 1)



In late February I began digging up turf in the field adjacent to my garden in readiness for sowing wildflower seeds. Over 4 weeks I spent many hours turning over and stacking turf into mounds and raking into the heavy clay subsoil a small amount of sand and compost. The area prepared is shown in Figure 7.

Figure 7 Aerial view of wildflower cultivation showing areas where different seed mixes were sown

I used three different seed mixes from Boston Seeds – a specialist provider of seeds. The first is the Loamy soil mix which was the main mix used for our B-Line this was sown in area A Figure 7. The second was a Butterfly Bee Mix of 26 species augmented by Cornflower Annuals and Yellow Rattle – this was sown in area B Figure 7. The third a seed mix designed for heavy clay soils containing 22 species this was sown in area C of Figure 7. Altogether over 30 diferent species of perennial native wildflower are being introduced to our biodiversity line. By April 11th all the groundwork had been completed and the seeds sown.

Figure 8 Left - my mini wildflower meadow (36m x 8-10m) after sowing on April 11th. Right the same view in June.

The spring (March & April) was cool and very wet then it was very dry in May and June (Figure 9). These were far from ideal conditions for wildflowers and as time went on I reduced my expectations of success for this first growing season. I could see lots of germination, and lots of weeds – particularly thistle which came up everywhere. I was however pleased that the amount of grass that grew in the patches of bare subsoil was minimal. But so was the growth of wildflowers until the warm weather of June and by the time we had our Wildflower Wander on July 1st there was a good display of wildflowers, although patchy in distribution.

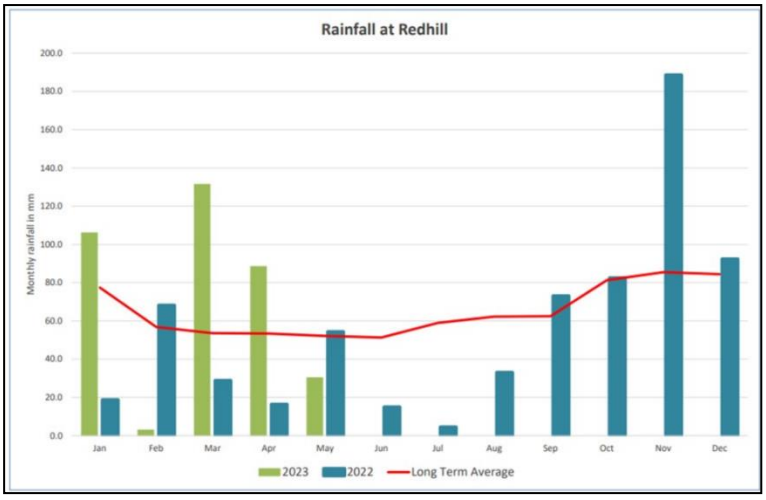


Figure 9 Local rainfall chart showing wet spring followed by dry summer

Figure 10 provides a collage of some of the wildflowers in my new mini wildflower meadow. It's the first week of July and many of the plants have yet to flower. But the mini meadow is already attracting 4 species of butterfly and several species of bee.

Figure 10 some of the wildflowers in my new mini wildflower meadow (July 2023)

Field (Area C in Figure 1)

The uncultivated field is the largest area for wildflowers but it is also the area with the least number of flowers because of the competition from grasses. Managing the grasses is probably the most important task when trying to cultivate wildflower meadows and once established they out compete most wildflowers.

Figure 11 Uncultivated field

Two pathways were cut through the grassess to provide access for study and more light. The following wildflowers were identified in June and July - yellow Hairy St Johns Wort, Meadow Vetchling, Buttercup, Agrimony and Ragwort, white and white/mauve stripped Morning Glory, small white star-shaped flowers of the Lesser Stitchwort, Red and White Campion, purple Common Storks-bill and Thistle. There is also Hogweed and bramble. In fact the western half of the field is dominated by bramble. The field is a haven for wildlife – particularly insects, small rodents, rabits, birds and deer.

Next Steps

Over the next few months I will describe in my blog posts additional activities aimed at nurturing the wild flowers and observing and recording the effects of my actions on the biodiversity of this little patch of Earth. In the autumn I plan to cut the grasses short and sow Yellow Rattle which is a parasite on grass, to try to restrain the grasses next year and allow more wildflowers to grow. I will also sow the seed I collect from this year's wild flowers.

There are a number of themes I want to explore:

- Motivations – in particular what role does feedback play in motivation and evaluation?
- Creativity – what does it mean and how is it manifest in this nature- environment project?
- Learning – what does it mean and how is it manifest in this nature-environment context?
- Health and wellbeing – what have been the effects of this project on me?

References

Jackson, N. J. (2023) Increasing Biodiversity by Creating Wildflower-Rich Habitats for Insect Pollinators Essay April 2023