Friends of the Roman Road and Fleam Dyke

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How to make a Butterfly Haven

Restoring Chalk Grassland in the Grounds of a School in Brighton

Everyone knows that wildlife has been severely affected by developments in the last half century. Habitat loss through the building of houses, business premises, new and wider roads, intensive farming methods, the increasing use of herbicides and pesticides, all contribute to the decline. Individuals can their best with nest boxes, wildlife friendly plants, ponds with hedgehog ladders and gaps at the bottom of fences, what can be done to restore habitat on a wider scale?

Our Guest Speaker, **Dr Danahar** showed how it can be done. Dan Danahar is an outstanding teacher from the Dorothy Stringer High School, a comprehensive school in Brighton, where he is the Biodiversity Co-ordinator. He is the 2011 winner of the **Stamford Raffles Award** for contributions towards the advancement of biodiversity education. He has converted an ordinary-looking school campus in Brighton into an extraordinary network of chalk grassland, aquatic and woodland habitats and, working with Butterfly Conservation, has advised on improvements in other similar chalk grassland places in Sussex. He is the Habitat Restoration Officer for the Sussex Branch of Butterfly Conservation.

Butterflies and moths need nectar sources such as Bowles' Mauve, Verbena Bonariensis, Marjoram, Lavender, Buddleia Davidii both purple and white, and Buddleia Globosa. These flowers will attract the larger, colourful Vanessid species: Red Admiral, Painted Lady, Peacock and Small Tortoiseshell, some of the brown butterflies and the various whites.

The Vanessid caterpillars feed on thistles and nettles, whilst the Large White, Small White and Green-veined White commonly feed on nasturtiums and cabbages, in our gardens. But what if you want to create a habitat for 'specialist' butterflies? Chalkhill Blue, Small Blue, Adonis Blue or Green Hairstreak? These species require food plants such such as Horseshoe Vetch, Kidney Vetch and Common Rock-rose which grow on warm and sunny chalk grassland sites, such as existed in the grounds of the Dorothy Stringer School.

These days major roadworks must include environmental benefits for wildlife, and there have been some ambitious and successful schemes designed to benefit chalk grassland species. In particular Dan Danahar cited a scheme involving major alteration to the surface of the site based on temperature surveys of the surface of the ground. Even slight rises and hollows make a difference. The top of a south facing common yellow ant hill might be 29C, and the base of a slight dip in the ground behind it might be 19C. There will be similar differences between the top and base of an east or west facing mound.

The scheme planned for the Dorothy Stringer campus involved a substantial amount of engineering, and was not going to be cheap. Fortunately, in 2006 the BBC had launched a fund called Breathing Places specifically for application in schools. Asking your Headmasters for permission to excavate a large area of lawn could be difficult, but as Dan said cheerfully, it helps to have £10,000 to put in the school bank account. (He passed smoothly over the time and effort it takes to get such a grant!)

Obviously, a survey of existing flora was essential, and the students did the necessary quadrat studies. Rather predictably, they identified10 species: Yarrow, Daisy, Dove's foot Cranesbill, Common Mallow, Spotted Trefoil, Ribwort Plantain, Creeping Buttercup, Dandelion, White Clover and Germander Speedwell.

Top soil was removed, the subsoil was mixed with the chalk bedrock, and a descending series of banks and slopes were created in a wide curve and left to compact. The curve creates the variety of aspects favoured by different species of flowers and insects. Eight bench and table units, where students could sit and record findings, were installed, along with an information board explaining what was happening. (I wish we could afford one of these for our work parties and for the work done by Bernard Hunt.)

John Gapper, who has worked cultivating wildflowers for Brighton & Hove parks for the last 40 years, was central to the success of this scheme. Between 2007 and 2008, he grew 5,515 wildflower plants in small pots for the initial planting of the site, in addition to his usual work.

A particularly interesting detail is that the little plants were not placed in a carefully prepared hole. The students were given a dibber, they eased open a space, shook the roots free of soil, and inserted the plant into the space. The roots had to spread into the chalky mix at once, or die! The school also sowed the site with a wildflower seed mix for chalk and limestone soils. The seeds came from Emorsgate Wild Seeds of King's Lynn, a firm which specialises in native wildflower seed. One major disadvantage of this mix was that 80% of it was grass seed which was of little value to this habitat restoration project.

John Gapper, who also works at the Brighton and Hove Council's Stanmer Nursery subsequently worked with staff at the Royal Botanic Gardens Kew, who provided advice on how to collect single species of seeds. The City Ecologist, Matthew Thomas, inspired the Council Brighton and Hove to apply with the South Downs National Park to become part of a for Nature Improvement Area. The application was successful and the Council secured £91,000 funding for its part of the South Downs Way Ahead Project.

In the autumn/winter of 2007/8, the students planted 450 plants of Common Knapweed, Centaury, Wild Strawberry: 800 plants of Lady's Bedstraw, Hedge Bedstraw and Horseshoe Vetch; 1,000 plants of Grass Vetchling, Oxeye Daisy, and Bird's-foot Trefoil; 1,200 Cowslips; 600 plants of Common Sorrel, Small Scabious and Red Campion; plus 540 plants in varying quantities of Kidney Vetch, Greater Knapweed, Wild Carrot, Field Scabious, Toadflax and Marjoram. (Note the novel use of plastic bags as shoe protectors for the children who forgot to bring suitable shoes.)

The wild flower seed mix was sown in April 2008 by the traditional method of broadcasting. To do this you purchase 10 bright orange buckets and find 10 reliable students as broadcasters, and, to quote Dan, who makes it all sound so easy, " off you go".

The very next day, it snowed. Disaster? No. The seeds and seedlings were covered in a thick layer of snow; but native plants are accustomed to this and there are even benefits. The conditions gave the seed a useful cold treatment, fixing the seed in position on the slopes. As the snow melted it provided a gentle watering system.

The additional Emorsgate wildflower mix included: Wild Basil, Dropwort, Rough Hawkbit, Burnet Saxifrage, Hoary Plantain, Selfheal, Meadow Buttercup. Wild Mignonette, Salad Burnet, and a mix of the less common, chalk grassland grasses: Quaking Grass, Crested Dog's-tail, Sheep's Fescue, Red Fescue, Crested Hair-grass, Smaller Cat's-Tail, and Yellow Oat grass.

Meanwhile, the work on the site became part of the GCSE Environmental Science syllabus. Graphs were made of the mean temperature of the soil surface along a transect which crosses the north and south facing banks. Students studied the effect of variation in microclimate on Cowslip growth, and learned how to list finds and make graphs to illustrate their results. In the spring of 2008, Year 7 science pupils used pitfall traps to survey the ground dwelling invertebrates of the north and south facing slopes. They found 8 times more spiders on the south facing slopes and 5 times more Carabid beetles on the north facing slopes.

A year after sowing, the site looked rather messy, but there were lots of new plants and a surge in the number of plants of Kidney and Horseshoe Vetch, which thrive on the minimal turf of a chalky site. The south facing top of the chalk banks had some useful bare patches and close up photos of the grassland sward showed a wide variety of plant species.

What is the objective view?

Professional Botanist, (the late Liz Williams) and Entomologist (Peter Hodge) surveyed the site in September 2008. Liz Williams found 107 species of flowers and grasses. Peter Hodge found 65 species of insect, including several nationally scarce species: weevils *Catapion pubescens, Nb; Kalcapion semivittatum,* Na; ladybirds *Hippodamia variegata*, Adonis Ladybird and *Aphanus rolandri*, Na; *Concephalus discolor*, the Long-winged Cone head, Na; *Colophasia lunula,* a RDB3 and a BAP species.

(Na means nationally scarce, Nb locally scarce,
RDB = Red Data Book which lists endangered species. BAP = Biodiversity Action Plan).

Once the plants are established on the banks, how to manage them?
Rare breed sheep – 'cute mini-mowing machines', but they need looking after, so he took a crash course in Lookering, which involves carrying out regular welfare checks on the sheep grazing on the school grounds and preventing hazards to school students and staff with proper risk assessment. The areas which were not managed by sheep needed to be brush cut and raked off, as you would expect. As the turf thickens, the areas of open chalk disappear, so sections of the curving banks and slopes were re-cleared to maintain the successional range of niches.

From deciding to create such a newly cleared area, it is a short step to Geoglyphs. The White Horse will be interested to hear he has been joined by a snail, a butterfly and two dolphins, which required the students to produce precise designs scaled up for the actual work: all part of the school syllabus. The sheep provided opportunities for sketching and other art work.

Apart from their value in providing interesting additions to the syllabus, the sheep were an attraction for visitors to the school. Parents frequently came with younger brothers and sisters to see developments. Spring brought many more visitors to see the lambs, and the summer meadows drew people to walk along the paths or sit on the benches wondering at the beauty of this brilliantly managed chalk grassland site.

In 2009, the citizens of Brighton & Hove were encouraged to take part in a Big Biodiversity Butterfly Count (which later inspired Butterfly Conservation to launch the Big Butterfly Count to a national audience). A total of 21 species were recorded in a Butterfly Haven which did not exist in 2006. The 21st was a Large Skipper with its chequered, golden wings, but it was the small butterflies which arrived first.
So far, 29 species of butterfly have been recorded from the site, constituting 76% of the butterflies recorded for the whole of Brighton & Hove. Not bad for just a third of a hectare.