

# Trumpington Meadows

## A report on the CNHS Field Studies area of 2012

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*The Cambridge Natural History Society visited the area being developed as Trumpington Meadows for its field studies in 2012. In addition to the housing development, the area includes a country park and farmland. This report discusses features of the site, whilst a diary giving highlights of the monthly visits is available on the Society web pages. We logged over 1200 records of 438 plant species, and also recorded other phyla. Record sheets for the area are available on the Society web pages.*

Each year since 2004 the Cambridge Natural History Society (CNHS) has selected a different area of the city for extensive study over the course of a year. Areas close to the city have been chosen to allow participation by students and others without easy

access to transport. The long term intention is to have a rolling programme with return visits to sites after a decade. Primarily these studies have concentrated on the vascular plants, however other phyla have been recorded, usually on an ad hoc basis. Whilst many of the study areas may be considered as lacking in interest, the detailed studies have revealed axiophytes (desirable, though not necessarily uncommon plants) and red-listed species growing in them, some of whose presence was previously unknown.



Map of the area © OpenStreetMap contributors, CC-BY-SA. See Ordnance Survey maps for the National Grid squares.

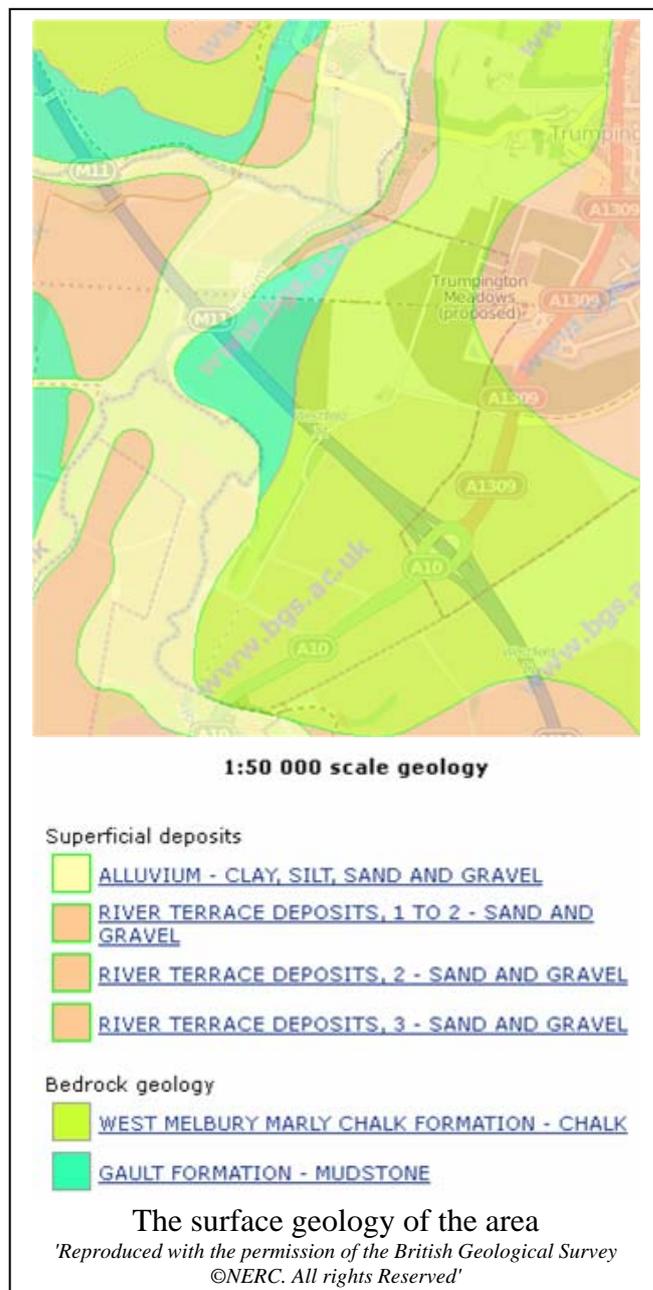
Although this year we had hoped to cover the Cambridge University North West Cambridge site prior to its development, permission was not forthcoming. Initial inquiries for an alternative venue were welcomed by the BCN Wildlife

Trust and so a last minute switch was made. The 2012 study therefore covered Trumpington Meadows, which includes new housing, a new country park and farmland, together with relict features such as a short section of the old Oxford to Cambridge railway line and some coprolite pits. It is essentially bounded to the north by Grantchester Road, to the west by the River Cam, and to the east by the A10. For some of our visits we visited the existing Byron's Pool LNR, and also included the

Trumpington Road P&R car park. The area includes parts of eight monads, often small, with the majority of the site in TL4354 and TL4353.

The year began with a continuation of the drought, but weather patterns changed in April and continued with generally cool and wet weather. After March, four of the next eight months had rainfall substantially above average. Records from the NIAB site near Cambridge show a total of over 700mm of precipitation for the year, twice that of 2011, and the highest for over half a century. Not surprisingly, we were not so lucky with the weather on our outings this year, though it only rained on three of them.

### Geology of the area



The full geology of the Cambridge area is described in *The Geology of the country around Cambridge* (Geological Survey of Great Britain, 1969) and can also be seen interactively in the British Geological Survey “Geology viewer”. The land generally slopes down westwards from 17m OD near the A1309 to the river Cam at 8m OD. The river runs through an alluvial plain several hundred metres wide, with terrace gravels on either side. The geological map shows the Gault at the surface near the M11, though the stickiness of the clay seemed to be ameliorated by surface gravels. A recently cleared area on the north side of the M11, shown as Gault on the map, appeared to be chalk marl. This formation, dating back to the Cretaceous nearly 100 million years ago, was only obvious where the coprolite pits had been excavated and at Byron’s Pool pond.

The geology gives a subtly different flora across the area. Dwarf Spurge *Euphorbia exigua* was present across much of the chalk marl, but absent nearer the river. Bur Chervil *Anthriscus*

*caucalis* was present in the field south of the M11 after agriculture ceased and before it was resown. Alder *Alnus glutinosa* and Willow *Salix sp* thrive in the damp

meadows by the river. A relict chalk flora remains on the east side of the coprolite pits, where it had been protected from agricultural sprays by the access road.

### History of the area



Archaeological work, carried out by the Cambridge Archaeological Unit, formed part of the preliminaries to development and some spectacular finds were made. The highlight was an Anglo-Saxon Christian grave of a teenage girl who was buried on a bed with gold and garnet cross

on her chest. The burial includes grave goods, and so is thought to date from around AD 650, when Christianity was just beginning to be introduced into the area. Other finds included mid to late Neolithic (4000-5000 years ago) burial monuments and Iron Age (2100-2500 years ago) pits, as well as the Anglo-Saxon material.

The Oxford to Cambridge railway (the Cambridge & Bletchley Branch of the London & North Western Railway) ran north of the M11. It was built in 1862, opening on August 1, and trains ran until the withdrawal of passenger and freight services in 1968. The track was removed in 1969. East of the A1309 it now forms the Guided Busway. A short section of embankment in TL4354 is all that remains in our area, running up to the River Cam. A few typical plant species survived on the length, including St John's Wort *Hypericum x desetangsi*, Field Scabious *Knautia arvensis* and Common Toadflax *Linaria vulgaris*.

A series of coprolite pits dug during the first world war lie south of the M11 in TL4353. These are now heavily shaded and we failed to find Cut-leaved Self-heal *Prunella laciniata* and Sharp-flowered Rush *Juncus acutiflorus* reported from here in the past. The remaining chalk flora on the east side does include species such as Dwarf Thistle *Cirsium acaule* and Hoary Plantain *Plantago media* and might have Sickle Medic *Medicago sativa ssp falcata*, though this was unfortunately cut by the farmer before it could be determined. An old ditch leading down to the pits has a good flora associated with it, including three species of orchids.

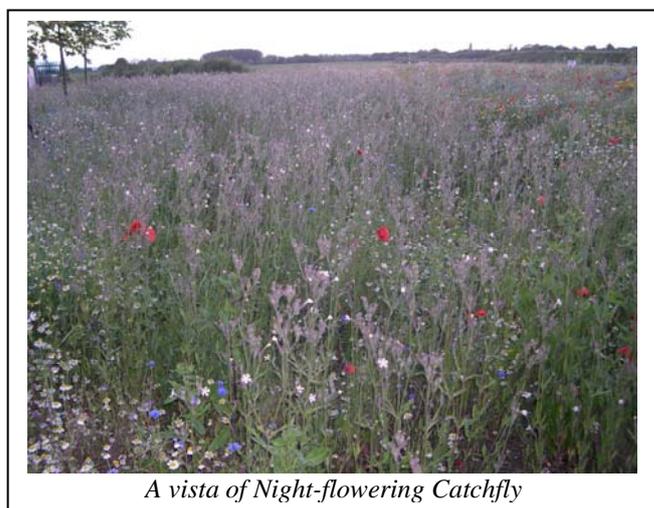
The Cambridge Plant Breeding Institute was created as part of the Cambridge University Department of Agriculture in 1912. It separated from the University in 1948 and acquired the Trumpington site in 1950 where it moved in 1952, with offices near the site of the present Park & Ride car-park. The PBI was privatised in 1987, passing through a series of hands until the land was sold to developers and the buildings demolished in 2009. Changing Forget-me-not *Myosotis discolor* had been reported from the PBI site, but we did not see it during our visits.

The western corridor along the river will become Trumpington Meadows country park. This will have a network of foot and cycle paths running through herb-rich grassland, which is being created by sowing from known provenance. Some landscaping to create drainage ditches and a balancing pond has been carried out, though these are still at a very early stage of succession. The park area will be managed by the BCN Wildlife Trust, who will have maintenance facilities on site.

### The built environment

We didn't have access to the part of the site where building was in progress, nor did we attempt to investigate the verge of the M11. The Hauxton Road had most of the expected verge plants. One of the meeting points was by the pond in the Trumpington Park & Ride car park. This had an interesting, though mostly introduced flora, including plants such as Betony *Stachys officinalis* and Bogbean *Menyanthes trifoliata*. The alien invader Floating Pennywort *Hydrocotyle ranunculoides*, which in places was seen in abundance in the river, had also found its way into the pond.

### Notable plant species



Sowing of wildflower mix has obscured the origin of some of the notable species that might have been in the area naturally. In particular Corncockle *Agrostemma githago*, Corn buttercup *Ranunculus arvensis*, Cornflower *Centaurea cyanus* and Corn Marigold *Chrysanthemum segetum* were all introduced in Emorsgate EC1 and EC2 cornfield seed mix and Sanfoin *Onobrychis viciifolia* was also introduced. An area of predominantly Night-flowering

Catchfly *Silene noctiflora* appeared near the introduced plants, although it was not supposed to be part of the mix, but seed is sold by Emorsgate Seeds. Several rare or "nice" arable weeds appeared on the lighter soils following landscaping work, notably Small Toadflax *Chaenorhinum minus*, Dwarf Spurge *Euphorbia exigua*, Common Cudweed *Filago vulgaris*, Fine-leaved Fumitory *Fumaria parviflora*, Venus's Looking-glass *Legousia hybrida*, Prickly Poppy *Papaver argemone*, Rough Poppy *Papaver hybridum* and Wild Pansy *Viola tricolor*. Unfortunately much of the land on which these species were found is destined to become grassland, and it is a pity that thought is rarely given to conservation of arable weeds when new reserves are created. Early Meadow-grass *Poa infirma* was found on the old railway embankment. Adder's-tongue *Ophioglossum vulgatum* grows in damp grassland near the river, as does Grass Vetchling *Lathyrus nissolia* in another meadow. A few trees could be regarded as notable in the wild, but the ones we saw were all planted.

### Bryophytes

Most records were made during a joint meeting with the Cambridgeshire group of the British Bryological Society, which took place in November, though Jonathan Shanklin had noted liverworts throughout the year. Diligent searching found eight

liverwort species in the area, with the least common being *Aneura pinguis* on the side of the P&R pond.

The November visit began with a quick look at Trumpington churchyard, a traditional site for budding Cambridge bryologists, though *Didymodon nicholsonii* and *Tortula protobryoides* on paths were new for the churchyard. The pond in the meadow at Byron's Pool LNR, which has a chalky bank, was disappointing, with *Barbula unguiculata* being dominant, but there were a few stems of *Aloina aloides*. Mark Hill found the introduced species *Henediella macrophylla* on the clay bank of the river near the entrance gate. It was previously known from the Cam only by the Backs and at Little Abingdon, but is slowly spreading. The new ditches and an exposed bank of chalky marl supported a good range of pioneer and ruderal species, including plentiful *Tortula protobryoides*. The bridge over the M11 had acquired several species,



*Sweeping for insects in a field of poppies*

including "Car-park moss" *Brachythecium mildeanum*. The old coprolite pits had rather too much scrub for much interest, but Richard Fisk found some delightfully small-sized *Fissidens viridulus* by a rabbit hole.

A curious feature of the flora was the low diversity of *Bryum* species. Tuberous *Bryum dichotomum* was abundant, but, apart from *Dicranella*

*staphylina*, the common arable tuber-bearers were either absent or in quantity too small to be detected. This is no doubt partly the result of extensive and deep soil disturbance, but it is possible that very strict husbandry at the former Plant Breeding Institute had eliminated both the tuber-bearers and *Riccia*.

### Fungi

A few fungi were recorded as casual records during the course of the year, but a fungal foray held in October provided the majority of records. The Byron's Pool woodland produced two notable finds: the uncommon Arched Earthstar *Geastrum fornicatum* and Striate Earthstar *Geastrum striatum* in their preferred habitat of rich woodland soil by rotting stumps. We also found Yellow Stainer *Agaricus xanthodermus*, which the new Collins Guide says is now occasional and apparently decreasing. The new grassland seemed too young to produce much of note, and the coprolite pits were also disappointing. A slightly older strip of grassland near the long demolished Shepherd's Cottage produced Garland Roundhead *Stropharia coronilla* and the uncommon Smokey Roundhead *Stropharia inuncta*.

### Lichens

Mark Powell provided expert tuition on two of the autumn visits, the first in the worst weather of any of our visits. He has contributed the following text:

It would be difficult to imagine a colder and wetter September afternoon. Not only does wet weather hinder the taking of notes but it also reduces the distinctiveness of lichen species. Subtle surface textures and characteristic colours are obscured when lichen thalli are wet. Nevertheless it was decided that an attempt at recording would be made and the chemically treated perimeter fence of the Park and Ride yielded some of the characteristic lichens of such toxic wood. *Lecanora stenotropa* is virtually indistinguishable from *L. polytropa* in the field and it is the latter which is commonly found on sandstone headstones in churchyards. If it were not for “tanalised” fences the former would have very few records but it seems to be the consistently occurring member of this pair on such woodwork. A specimen was collected and confirmed as *L. stenotropa* on the basis of its narrow spores. *L. stenotropa* not only tolerates the copper compounds used as wood preservative but actively accumulates it in its tissues and the fruits of this lichen had a visibly blue tint even in the abominable conditions. Jonathan pointed out a fascinating feature of these lignicolous thalli – their elongated oval shape. We are familiar with similar shaped thalli on young tree trunks where the regular radial growth of the lichen is distorted by the expanding girth of the trunk. In the case of elongated thalli on fence rails the mechanism is not so easily explained – obviously the fence rails are not expanding in any dimension. The long axis of the thalli were seen to be consistently parallel with the wood grain and so some feature of the lichen’s development must make it grow more rapidly with the grain than across it. An even more consistent lichen of chemically treated wood throughout Britain forms extensive granular crusts with minute pinkish pycnidia. This was well developed on the fence at Trumpington Park and Ride. Despite the fact that it is common and widespread its exact identity is not yet known. The filiform conidia make us confident that it belongs to the genus *Bacidia* but the lack of fruits has prevented a specific diagnosis. It will be interesting to see how this problem is resolved. Perhaps some apothecia will be discovered or else genetic sequencing might reveal its relationships. I tentatively suggested that it might be a well-known species such as *B. saxenii* whose fruiting is suppressed by the toxicity of its chosen environment. Jonathan made the interesting suggestion of transplanting some to a non-toxic substratum to see if this would stimulate fruiting. Although lichens can be remarkably hardy (*Xanthoria parietina* survived ten days in the hostile conditions of space hanging outside the International Space Station) they are notoriously fickle and temperamental if any attempt at transplantation is made. I doubt whether the sort of transplantation studies which have proved so useful in elucidating the taxonomy of vascular plants will work with lichens.

Although rather recent, the concrete curb stones of the car park have beautiful mosaics of species such as *Caloplaca oasis*, *C. saxicola*, *Candelariella aurella*, *Lecanora albescens*, *L. dispersa* and *Verrucaria nigrescens* with “macros” such as *Xanthoria elegans* and *X. parietina* forming more conspicuous and three dimensional ornamentations. It was on a similar curb with a very similar community of lichens at an industrial estate in Northampton that I found the first authentic British specimen of *Caloplaca soralifera* earlier this year. This illustrates the intrigue of concrete. Most times what is found is a familiar suite of ubiquitous lichens but once in a while something remarkable turns up. Today the conditions were not conducive to finding rarities and it was decided that a brisk walk to the motorway bridge might generate some internal warmth.

The aluminium railings of the bridge over the M11 have a dark scurfy crust which could easily be mistaken for an algal crust or for “grot”. Careful examination with a lens reveals dark, convex fruits and my suspicion of *Scoliciosporum umbrinum* was confirmed when microscopic examination of these fruits showed that twisted S-shaped spores, spirally arranged in the ascus were present. This lichen is rather common on sandstone headstones but also has a more specialist ecology and has been found on “bare” aluminium of bridges at Waterbeach Airfield and at Great Staughton. The most abundant lichens on the tarmac and concrete of the bridge are *Aspicilia contorta* subsp. *contorta* and *Caloplaca crenulatella*. The only cyanolichen of the day was found on the northern footway of this bridge but, other than the presence of apothecia, little could be distinguished about its features in the field under a thick film of water. It was tempting to write it off as something like *Collema tenax* but a specimen was collected and subsequent microscopic examination showed that a cellular cortex is present. The tentative determination of this specimen is *Leptogium turgidum* but further work is required.

Examination of concrete retaining walls at Shepherd’s Cottage yielded only a limited community of lichen species but it was interesting to observe the “ghosts” of various phases of inundation of these concrete panels (by piles of spoil etc.) still delimited by abrupt variations in the lichen communities.



*Black slug consuming a fungus*

The October weather proved kinder to both bryologists and lichenologists. One of the mature oak trunks in the Byron’s Pool wood yielded a surprise in the form of *Enterographa crassa* which is a lichen species which is listed in the Revised Index of Ecological Continuity; it is considered to be a poor coloniser that is usually restricted to ancient sites. Together with *Opegrapha vermicellifera* and *Schismatomma decolorans* these species probably represent a relic

community which survived on sheltered tree bases during the many decades of severe atmospheric sulphur dioxide pollution. *Porina byssophila* has, until recently, been considered to be a nationally scarce lichen of siliceous rocks but recently it has been realised that it is not uncommon on tree bases, at least in Eastern England. *Chaenotheca brachypoda* is an attractive “pin-head” lichen with bright yellow-green pruina covering the spore mass. An enormous colony was found on the underside of a gently sloping willow trunk. There are microscopic features which differ from the description of this lichen species in the literature and one must always keep an open mind for the not infrequent discovery of new taxa for the British Isles. *Lecanora barkmaniana* is one of the “new” lichen species of which no evidence can be found before the 1980s. *L. barkmaniana* was described as new to science in 1999 and seems to be spreading and thriving in the modern eutrophicated landscape.

The available substrates for lichens are rather sparse in Trumpington Meadows within TL4354 but records were made from concrete, an iron manhole grille as well as various trees. *Opegrapha viridipruinosa* was described as new to science in 2011 and good colonies were found on adjacent tree trunks beside the River Granta, one ash, the other willow. The ash trees on the embankment of a disused railway track supported only a modest lichen mycota but the presence of *Lecanora confusa* and *Fuscidea lightfootii* show how quickly the lichen communities are changing – both have only appeared in Eastern England in recent years. Short posts supporting rabbit netting beside the M11 barrier have extensive algal crusts but with colonies of fertile lichen thalli intermixed. In the field the possibility of a species of *Veizdaea* was mooted but microscopic examination show this to be a species of *Bacidia*, probably *B. chloroticula*.

Some bare clayey ground and a track in Trumpington Meadows within TL4353 yielded our only glimpses of cyano-lichens with two taxa of *Collema*. Vertical wooden boards of a revetment beside a punt-house support an extensive sorediate crust of a species of *Caloplaca* – the under-recorded and misunderstood *C. phlogina* is the most likely candidate. On wooden rails made of former telegraph poles support a spectacular lignicolous community whose composition is similar to that found on sandstone gravestones. A lecideine species was not recognised in the field but turned out to be exuberant *Catillaria chalybeia*. The specimens of various mysteries and uncertainties from today will be retained in my personal herbarium; eventually taxonomic problems are sorted out but there is a long way to go.

## Invertebrates



*Latticed Heath moth*

Bare ground near the site entrance proved to be a hot spot for ladybirds on the March visit, with 7-spot *Coccinella 7-punctata*, Adonis *Hippodamia variegata* and 11-spot *Coccinella 11-punctata* crawling over the bare earth. Following visits added Harlequin *Harmonia axyridia*, Orange *Halysia 16-guttata*, 2-spot *Adalia 2-punctata* and 24-spot *Subcoccinella 24-punctata*. Occasional damselflies (6 species) and darter dragonflies (2 species) were seen between

May and October, but conditions were rarely good for sighting. This was true for butterflies too, with ten species seen between April and October. Galls were easier to find in the circumstances, and we recorded over a dozen. A few galls of the mite *Vasates quadripedes* were seen on leaves of a planted Sugar Maple *Acer Saccharinum*; this species was first reported in London as recently as 2002. The Cambridge Wednesday voluntary conservation group paid a visit during National Insect Week to record invertebrates. The county moth recorder had set traps overnight, giving an amazing haul of 82 moth species, which were inspected when the group arrived. The total included a few local or migrant species, and also the Nationally Scarce Cream-bordered Green Pea *Earias clorana*. Others species were

noted during the day whilst sweeping through meadow and scrub. Some of the daytime finds were perhaps notable, though probably subject to mis-identification as few present were experts. In particular the parasitic wasp *Methocha articulata* is classified as Nationally Notable, and not recorded from Cambridgeshire. The spider *Philodromus histrio* is also not known from Cambridgeshire, is normally found in heathland and is noted as requiring expert determination; it is highly likely to have been mistaken.

### **Vertebrates**

We rarely had birders with us, but did note 22 species. No sightings were particularly memorable, although it was nice to see Lapwing *Vanellus vanellus* in September.

The site is perhaps most notable for its population of Hare *Lepus capensis* and we occasionally saw as many as dozen on the meadows, with some indulging in boxing displays on our March visit. The next most commonly noted mammal was Muntjac *Muntiacus reevesi*. Although we didn't see any, Otter *Lutra lutra* currently use the River Cam, whilst American Mink *Mustela vison*, which had been present, are subject to a control program. Amphibians (Common Frog *Rana temporaria* and Common Toad *Bufo bufo*) and reptiles (Grass Snake *Natrix natrix*) are present.

### **Conclusion**

Sowing of wild-flower mixes has obscured the original distribution pattern of many species. Despite intensive agriculture, arable weeds, including several which are red-listed, have survived in the seed bank. Hopefully this seed bank will remain, despite the planned conversion to grassland. Altogether we made over 1200 records of 438 vascular plant species or subspecies and records of over 400 other species. A diary style record of the visits and the full species lists are on the Society web page.

The 2013 survey is covering the area part of which is being developed to become Great Kneighton. Although the present CNHS group tends to concentrate on plants, we make records of other organisms too and would welcome beginners and experts with other interests. Do come and join in. Dates for the monthly surveys, and flora lists for many of the wildlife sites near Cambridge are on the Society web page.

*Thanks are due to Monica Frisch and Steve Hartley for comments on my original text and to cc and dd for comments on the submitted version. Mark Hill contributed to the section on bryophytes and Mark Powell wrote the section on lichens.*

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