Herts & Middlesex Wildlife Trust Position Statement on the Climate Crisis

Background

Biodiversity and climate change are completely interlinked

We are living in both a climate crisis and a biodiversity crisis. The work of the Intergovernmental Science-Policy Platform on Climate Change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services makes it clear that these two issues are serious and interlinked. One cannot be solved without solving the other and the two crises must be addressed holistically together.

Climate change affects wildlife across all habitats and is one of the biggest drivers of change to biodiversity globally [1] and nationally [2]. Not only is biodiversity affected by climate change but climate change is accelerated by biodiversity loss [1]. This is because high quality natural and semi-natural habitats store carbon in soils and vegetation.

Effects of climate change on biodiversity

Climate change affects UK wildlife in several ways. These include changes in distribution and range, particularly movement northwards [3]; changes in timing, such as nesting season [4]; and changes in population size [2]. The Hertfordshire State of Nature report identifies a number of changes specific to Hertfordshire's wildlife as a result of climate change [5]. These include loss of helleborines in beech woodlands and the ever-increasing water stress on Hertfordshire's rivers and wetlands. Although in the UK the last decade has been 8% wetter than the 1990-1991 average, rainfall has been more variable [2]. Also all the top 10 warmest years since records began have been in the last 30 years. Following two successive very dry winters and hot summers in Hertfordshire, the summer of 2019 saw catastrophic drying out of approximately 50 km of chalk rivers and many wetland features on important nature reserves. All nine species of our water-dependent sphagnum mosses have declined. In Hertfordshire, climate change appears to be exacerbating already existing issues of over abstraction of ground water.

Effects of biodiversity on climate change

Biodiversity plays an enormous role in carbon sequestration, especially the world's largest terrestrial carbon store – the soil. Carbon exchange between the atmosphere and soil is a dynamic process, affected by a number of factors [6]. Intensive land uses, such as modern agriculture, rapidly accelerate carbon loss from soils into the atmosphere and directly contribute to climate change. Loss of soil carbon is probably the second biggest cause of human-induced climate change, after burning fossil fuels. Conversely, conservation of habitats actively causes carbon to be absorbed from the atmosphere and stored temporarily in vegetation and more permanently in soil. Plants absorb

carbon from the atmosphere as they grow, and over time, decay of organic matter is absorbed into the soil and locked away. All natural and semi-natural habitats do this and carbon continues to accumulate over many decades.

Natural solutions

We need natural solutions to both mitigate and adapt to climate change [1]. IUCN defines these as "*actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits*". Put simply, we need to create more semi-natural habitat in Hertfordshire and existing habitat needs to be managed better for wildlife. Both of these biodiversity-focused activities lock up more carbon in vegetation and, most importantly, in the soil [7] [8]. They can also help to protect groundwater and regulate flooding [9].

Where more caution is needed is in the detail of choices between habitats. There is a crucial importance of creating the right habitat in the right place. One habitat type must not be promoted to the detriment of another, such as planting trees on semi-natural grassland, because that will result in biodiversity loss [10] [1]. A third of all of Hertfordshire Species of Conservation Concern are associated with grassland, over 500 species. These are some of our most threatened species in Hertfordshire, which would further be put at risk by planting trees in inappropriate places. Woodland is widely thought to be one of the most important terrestrial habitats for maximum accumulation of carbon. However, not all woodlands are the same in this regard and the importance of carbon sequestration by soils in semi-natural grasslands [7] is significant and often overlooked. Established semi-natural grasslands have a large underground store of humus which some studies suggest extends considerably deeper and in greater amounts than other ecosystems. Wetlands can also be some of the highest soil carbon stores of any habitat [6]. The science is still young in this topic and further comparative studies, particularly in a UK context, are required before it is possible to reliably determine the relative carbon sequestration potential of different habitat types under different management regimes. One thing is clear, all high quality semi-natural habitats can contribute simultaneously to nature's recovery and climate change mitigation, as long as habitat choice is appropriate to the location and no existing habitats are damaged in the process.

Rather than looking at single issues in isolation, we need to balance the needs of biodiversity and climate change to solve both issues together. Natural solutions to climate change need to take into account the state of Hertfordshire's nature and be tailored according to the local circumstances.

When climate change adaptation benefits are also considered, these clearly point to a strategic approach of connecting up habitats appropriately to form a functioning network, allowing wildlife to move in response to climate change [11] [1]. In Hertfordshire, priority areas and habitat choices can be informed by the Hertfordshire Ecological Network Map [12], which is maintained by the Hertfordshire Environmental Records Centre.

Our threatened grasslands and heathland

Grasslands and heathlands are some of the most threatened habitats in Hertfordshire [5]. There have been more extinctions and a greater number of species declines associated with grasslands than any other broad habitat. Woodland has increased significantly in Hertfordshire at the same time as grasslands have declined sharply. Woodland is by far the most common habitat type in Hertfordshire (60% of all habitats). Some of the grassland losses have been due to a lack of management, leading to the development of scrub and then trees. There are a number of woodlands in our area that may look to the casual observer to be long-established mature

woodlands but are less than fifty years old, previously being important grassland or heathland. This shows us that if we are to address both biodiversity and climate change crises together, we must not focus solely on woodland creation but give high priority in our part of the country to those habitats that are at much greater threat, namely grassland and wetland. Many of the grassland and heathland habitats are restricted to specific soil types and where these occur, they should always be a high consideration for habitat creation because they cannot be created anywhere else. It is also critical to take a strategic ecological network approach by expanding and connecting existing habitats with similar or complementary habitat creation schemes.

Tree planting schemes

There is a popular objective to plant trees to mitigate climate change impacts. However, tree planting isn't always the best method of creating woodland, nor the most climate-friendly. Tree planting is normally best where there is either a compliance-related reason for establishing tree cover immediately or where there is little likelihood of achieving natural regeneration by appropriate tree species. If nearby tree species are non-native, invasive or otherwise unsuitable, it may be necessary to plant desirable tree species to avoid natural regeneration of non-desirable species. Otherwise, natural regeneration is generally the most efficient and most environmentally friendly way of creating woodland cover. Left unmanaged, nearly all of lowland England would naturally develop a tree cover and if grass cutting is ceased and grazing animals are excluded from an area, trees will result. These trees will generally be much healthier, grow more effectively and be less reliant on aftercare than planted trees. Inadvertently, many tree planting schemes can be damaging to the environment and have an often overlooked carbon footprint. These trees are often grown in tree nurseries in southern Europe. This is high risk for bringing in tree diseases and invasive species, such as ash dieback and oak processionary moth. Both these arrived in the UK from imported trees. The growing process in the nurseries is a type of intensive agriculture, likely to cause a carbon deficit in the soil. There is also the carbon footprint of transportation of the trees long distances. Tree planting schemes should normally include an establishment phase of maintenance which lasts from 4-5 years. During this period, competing vegetation will be controlled and typically will involve plastic-based mulch matting, application of herbicide or cutting with a petrol powered strimmer, all of which have environmental impacts. 'Biodegradable' plastic tree guards can be even worse because they are not truly biodegradable and disintegrate over time, leaving microplastics in the countryside. Planted trees are much more susceptible to drought than naturally regenerated trees and either need replacing in drier summers or require watering. Our part of the country is a very water-stressed area, and any additional water used has a significant environmental cost to our rivers and wetlands. However, if tree planting is necessary, some of these impacts can be mitigated by changing the methods used. Fencing the perimeter of a scheme rather than using tree guards may be an option, as is using genuinely biodegradable alternatives to plastic matting. For some schemes it may be appropriate to allow a more naturalistic mixed habitat by not using tree guards or fencing at all, accepting that some losses will occur, creating a more patchy coverage of trees.

The importance of habitat management

To maximise biodiversity, habitats need managing sympathetically, rather than leaving unmanaged. This is because we have lost key species and altered our ecosystems to such an extent that many natural processes can no longer occur on their own. High levels of biodiversity come from a variety of different features, each suitable to different species. As a general rule, the more uniform that vegetation becomes, the less biodiversity it can support. Conservation management is aimed at maintaining a variety of different features and ages of vegetation to maximise the amount of wildlife that can be supported. Unmanaged habitats will normally always be better for wildlife than intensive

amenity or agricultural management but will fall a long way short of their full potential. Approaches with more of a rewilding ethos, where nature is allowed to look after itself, are effective where they are of sufficient scale and where a full range of natural processes are able to occur, including browsing and grazing. This is not the same as smaller areas of land left unmanaged. Please see the Trust's position statement on rewilding for more information.

Herts & Middlesex Wildlife Trust position

Natural solutions

Climate change is a crisis that impacts both humans and wildlife. The interlinked climate change and biodiversity emergencies must be addressed together in a holistic way. Natural solutions, such as creating new habitats and better managing existing habitats, are some of the most effective actions we can take to tackle climate change, after reducing fossil fuel use. All habitats are important for storing carbon, particularly in soils.

High quality, well managed semi-natural habitats, such as the Trust's nature reserves, are the most important places for wildlife and also where the greatest carbon accumulations can occur long-term. We recognise that the majority of terrestrial carbon is stored in soil across all habitats, and the Trust's management of its sites is beneficial towards maintaining and increasing soil carbon stores by maximising biodiversity. Given the critical biodiversity objectives of these sites, management often involves carefully planned selective tree removal or scrub clearance, which allows these sites to continue to be in the best possible condition long-term.

When considering a new habitat creation scheme it is important to carefully consider the most appropriate habitats for that location. The Herts Ecological Networks map can inform decisions in a strategic way by identifying where the highest priorities are for creating habitats and advising on the most appropriate habitats to create in a given location. The Trust is always interested in hearing about your ideas for habitat creation schemes and is happy to offer advice and support as appropriate. The Trust also offers a service to carry out baseline surveys and help design habitat creation schemes.

Hertfordshire's State of Nature report identifies that there have been more species extinctions and a greater decline of species associated with grassland than any other habitat in the county over the last 50 years. Grassland, heathland and wetland are also our rarest and most threatened habitats. These habitats are therefore always a high priority in our area where suitable conditions occur.

Planting trees and creating woodlands

Wherever feasible and appropriate, natural regeneration is the best method for woodland creation.

Where natural regeneration is not appropriate or realistic, such as street trees, screening or where there are no existing appropriate tree species nearby, tree planting schemes should aim to use the most environmentally friendly methods and materials. Genuinely biodegradable alternatives to plastics should be used for guards and matting. Short-term fencing the boundary to prevent rabbits and deer may be a better alternative to tree guards.

A variety of native trees of local providence should be selected in any tree planting scheme, and target woodland types should be appropriate to the location and soils.

Planting patterns should be naturalistic and incorporate open glades and rides. Plenty of space should be left between trees; the closest being at least three metres apart.

Tree planting schemes must never be planned where there are existing habitats of value. The Trust offers a service to survey land proposed for habitat creation schemes to identify existing habitats and to recommend the most appropriate solutions based on soil types and position in the ecological network.

What the Trust is doing to mitigate its own carbon footprint

It is important to the Trust that we take steps to decrease our own impact on climate change. We are making a significant contribution to carbon capture and storage through the management of our nature reserves and encouraging others to manage their land for wildlife, but carbo emissions are inevitably caused by operating the Trust. We are actively working to reduce our emissions, including ways to reduce our use of materials such as paper, to reduce waste and to reduce business travel. The Trust has created an assessment of its carbon emissions which will be updated on an annual basis to track the impact of changes made.

References

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