

## **An analysis of factors affecting lowland heathland and the research, monitoring and legislation used to maintain it**

There are approximately 350,000ha of lowland heathland in Europe (Pywell et al, 2011) with around 95,000ha in the UK (The Wildlife Trusts, 2016). Lowland heathland is found at heights of 300m or less below sea level (Forestry Commission England, 2003) and is mainly, dry heathland, comprised of ericaceous dwarf shrubs (Pywell et al, 2011). The majority of lowland heathland found in the UK is located in the Southern counties of England (Joint Nature Conservation Committee, 2016). It is widely believed that the area of lowland heath in Europe was increased by human activity, most likely starting in the Bronze Age; climate change and the clearing of trees, through chopping, burning and grazing, would have facilitated the growth of heathland shrubs (Forestry Commission England, 2003). There has been an 80% decline in the area of lowland heathland over the past 200 years much of which has been in the past 50 years (Pywell et al, 2011). This is of great concern to conservationists, as with the loss of any habitat comes biodiversity loss, 189 species have been lost since the 1930s (Diaz et al, 2013). Lowland heathland has a high level of species richness, as well as being home to numerous rare species; over 5000 species of invertebrates including half of the UK's species of Dragonfly, all six of the species of reptile found in the UK and many birds, including the Nightjar, Stonechat and Dartford Warbler can be found in our heathlands (The Wildlife Trusts, 2016). For these reasons lowland heathland is a priority habitat for nature conservation in Europe (Diaz et al, 2013). The causes of the decline in this habitat are mostly due to human activities, including urbanisation, intensified arable farming and quarrying which have led to habitat fragmentation (Diaz et al, 2013) and air pollution (Farrell, 1993). Atmospheric changes, including increased temperatures, reduced rainfall and an increase in atmospheric nitrogen are all believed to have contributed to the decline of lowland heathland habitats; many of these factors are likely to have arisen from the effects of human activity (Diaz et al, 2013). The shrubs found in lowland heathland require acidic soils, so increases in soil pH can also cause a reduction in the area of heathland and can increase the risk of succession from heathland to woodland or grassland (Pywell et al, 2011). Lack of management of lowland heathlands and farming are two of the main factors threatening the heathlands at the moment (Forestry Commission England, 2003), thus management schemes have been implemented to reduce these threats; these include agri-environmental schemes with farmers and the UK Biodiversity Action Plan (Pywell et al, 2011). This essay examines historical factors that have contributed to the decline of lowland heathland, along with contemporary threats; the legislation, conservation and management programmes implemented to prevent further loss and to increase the area of lowland heathlands in the UK; and it considers questions that need to be answered in order to create more effective management techniques and that will aid us in moving forward.

The decline of lowland heathland in the UK is mainly due to anthropogenic, human, factors. Fragmentation of lowland heathland habitats is a large problem which has contributed to the decline of this habitat, the three main causes of this fragmentation are arable farming, urbanisation and afforestation (Farrell, 1993). Many of these changes to the landscape occurred after World War II and have continued ever since, for example farming and the methods used for it have become more and more intensive, one reason for this is the growing population (Farrell, 1993). Between 1943 and 1966, the Forestry Commission planted numerous conifers on heathland, including what is now Stover Country Park in Devon, these plantations were primarily for timber production (Farrell, 1993). Urbanisation on areas that were previously heathlands, has also led to a sharp decline in this type of habitat; one example of this is the area of Suffolk surrounding Ipswich which used to contain large areas of heathland but now, after intense urbanisation, only has two patches of heathland – Martlesham Heath and Purdis Farm (Farrell, 1993). Habitat fragmentation is a serious problem, not