

Trampling

Threats to the bluebell

In the long-term, bluebells may struggle under changed climatic conditions, both in their own right and as part of their ancient woodland habitats. Bluebells enjoy our mild, wet, Atlantic climate and are much rarer under Mediterranean or dryer European conditions. Their life cycle is adapted to soaking up as much of the sun's energy as possible before the tree canopy closes in. In many more open habitats, they are outcompeted by species with longer growing seasons. As our woodlands come under pressure from tree diseases, among other factors, ground conditions may become less suitable.

Two more immediate and obvious concerns are trampling and hybridisation. Trampling by people and dogs leaving designated pathways, perhaps for that 'perfect' photo opportunity or Instagram

moment, directly damages bluebells above and below ground. No photo that damages its subject can be perfect. Compaction of the soil reduces the likelihood of germination and slows shoot development. Above ground, bluebell leaves and flowers are easily crushed and the impact of even a single trampling can be stark. In one study, the number of flower stems was shown to still be 18% down some two years after a single trampling event, and another claims a recovery time of five years. In many bluebell woods, the species composition next to pathways where people have strayed is noticeably different compared to less accessible parts of the bluebell carpet. When this happens, lesser celandine and even plantains take over.

Hybridisation between our bluebells *H. non-scripta* and Spanish bluebells *H. hispanica*, a common garden flower, results in the form known as *H. x massartiana*. This hybrid can be obvious or only subtly different from our native species, depending on its level of Spanish DNA. There is some debate about its impact and prevalence. The hybrid species is perhaps over-recorded because it tends to occur more within urban areas than in strong bluebell woods, where its genes are diluted. As well as the visual difference, the main concern is that the hybrids seem to be much less attractive to native insects that have grown up with our bluebell populations.



Hybrid bluebells tend to look more robust