



## Mow Less, Grow More - From urban lawns to urban meadows: Enhancing Biodiversity in German Public Parks

### Key Recommendations

1. Reducing the mowing frequencies to once or twice a year for 20% of the lawns in public parks
2. Implementing partial mowing for insect conservation
3. Development of individual mowing concepts at municipal level by 2030

### Summary

Intensive mowing practices of urban green spaces has detrimental effects on biodiversity by simplifying vegetation structure and reducing habitat availability for various plant and animal species. However, cities hold significant potential for enhancing biodiversity if managed with alternative, less intensive mowing practices. Reducing mowing frequency and creating varied mowing patterns can promote richer habitats, benefiting both flora and fauna. Cities can thus play a crucial role in biodiversity conservation by fostering complex urban ecosystems that align with the EU's Biodiversity Strategy for 2030. Recent societal shifts and an increasing number of civil society movements indicate growing public support for more natural and biodiverse urban environments, underscoring the feasibility of implementing these new practices. By embracing these strategies, Germany can make significant strides in achieving its biodiversity goals and enhancing the ecological resilience of urban landscapes.

## Context

In response to the continuing global decline in biodiversity, the European Commission presented its Biodiversity Strategy for 2030 in May 2020.<sup>1</sup> This ambitious long-term plan aims to protect and restore nature within the EU, with a focus on reintegrating natural elements into our daily lives, including urban areas.<sup>1</sup>

As part of this strategy, the European Commission introduced the Nature Restoration Law on June 22, 2022.<sup>2</sup> This law highlights the urgency of action, as approximately 80% of natural habitats in the EU are currently in poor condition.<sup>2</sup> It sets overarching and binding targets for the recovery of specific ecosystems, habitats, and species across the EU, emphasizing the need to restore nature and reverse biodiversity loss.<sup>2</sup>

One of the key objectives of the Nature Restoration Law is to enhance and protect urban ecosystems, which are critical for biodiversity conservation, covering about 22% of the EU's land area.<sup>2</sup> Urban green spaces are essential for human psychological and physical well-being; however, not all green spaces provide equal benefits.<sup>3</sup> The richer these spaces are in terms of biodiversity, the greater their positive impact to both people and nature.<sup>3</sup>

Despite their importance, urban green spaces are under threat from the increasing expansion and densification of cities, which leads to the loss of nature and decline in biodiversity in these areas.<sup>4</sup> The Nature Restoration Law aims to counteract these effects by increasing the total area of urban green spaces by 2050 and

protecting existing green spaces from further deterioration through targeted measures.<sup>2</sup>

However, achieving this objective is challenged by the common practice of intensive management of public green spaces in cities.<sup>4,5</sup> Short, frequently mowed lawns dominate both public and private sectors in temperate regions, often designed for recreational use rather than biodiversity conservation. This practice undermines efforts to support richer, more biodiverse green spaces that are essential for both ecological and human health.<sup>4,6,7,8</sup>

## Findings

### Effects of intensive lawn management on biodiversity and the environment

Growing evidence from numerous experimental studies across Europe highlights the negative ecological and environmental impacts of intensive management of urban lawns.<sup>3,4,5,6,9</sup> Intensive mowing practices have been shown to significantly harm local plant and animal communities, particularly insect diversity within urban environments.<sup>4,5</sup>

Urban public lawns generally provide habitat for a limited number of plant species because they are mowed frequently and short, which favors low-growing annual plants and grasses while removing taller forbs, flowering structures, and seed heads that are important resources for pollinators.<sup>3,4,5</sup> This limited diversity results in fewer feeding and nesting opportunities for various animal species, contributing to a loss of biodiversity in urban areas.

Studies have shown that rapid, highly mechanized, and extensive mowing on a warm day can eliminate up to 50% of the insect population in a flowering meadow.<sup>9</sup> This is

largely due to the destruction of feeding resources and the invasive nature of the mowing process itself.<sup>9</sup> The widespread use of rotary mowers, which shred the grass, inadvertently kills insects caught in the process, exacerbating the decline in insect populations. Additionally, urban green spaces are often mowed entirely and repeatedly within short intervals, leaving no time and space for recovery and leading to a continual decline in insect numbers and diversity.<sup>6</sup>

Intensive mowing not only directly affects insect populations but also indirectly impacts them by altering the local microclimate, such as humidity levels. Changes in the microclimate contribute to the reduction in biomass and thus to reduced feeding and nesting opportunities for various animal species.<sup>4,9</sup> The decrease in vegetation structure and composition of urban green spaces, negatively impacts the resilience of urban ecosystems.<sup>4,5</sup> The loss of diverse vegetation makes these spaces more vulnerable to colonization by invasive pest species, which further disrupt local ecosystems and increase the maintenance

burden on urban landscapes.<sup>5,4,7</sup>

The subsequent maintenance costs and the use of environmentally harmful fertilizers and pesticides to manage invasive species contribute to additional environmental impacts, such as higher greenhouse gas emissions.<sup>4,5,10</sup> These practices, associated with intensive lawn management, thus create a cycle of ecological degradation and increased environmental harm.

The rationale behind the practice of intensive mowing stems from a historical and, to a certain extent, ongoing perception of cities and nature as opposites. Uniform, short-mown, « manicured » urban lawns apparently reflect society's contemporary conceptions of aesthetics, functionality, wealth and prestige.<sup>4,5,8</sup> This limited social acceptance of alternative management methods have resulted in urban lawns being consistently intensively managed, hindering the integration of natural landscapes into urban environments.<sup>5</sup>

As a result, people, most of whom live in cities, have lost touch with non-urban natural landscapes.<sup>3</sup> However, this does not mean that cities have lost their potential to conserve



biodiversity on a local to regional scale.<sup>4</sup> On the contrary, urban ecosystems offer various small habitats that support a wide range of plant and animal species.<sup>3,4,8</sup> In some cases, these urban habitats provide even more biodiversity than surrounding rural areas and positively affect insect populations.<sup>3,4,8</sup>

### Potential of urban green spaces for biodiversity conservation

Many cities in Germany possess significant public green spaces that, if managed appropriately, could serve as suitable habitats for a species-rich flora and fauna.<sup>4</sup> For example, in Berlin, public green spaces alone account for more than 30% of the geographical area.<sup>4</sup> Although these spaces are intended to provide space for human recreation, large portions often remain unused despite intensive mowing.<sup>6</sup> This underutilized space presents an opportunity for the conservation of plant and animal species.

In recent decades, there has been a growing awareness and shift towards less intensive mowing practices. Municipalities across Germany, and worldwide, are increasingly committed to species conservation and are enhancing their efforts to preserve local biodiversity.<sup>4,11</sup> Many cities, such as Bayreuth, Hof, Büdelsdorf, and Tübingen have either adopted or are in the process of adopting more sustainable mowing concepts.<sup>11</sup>

These concepts consider various factors, including the frequency of mowing, the timing of the first mow, cutting heights, and the use of machinery. The diverse mosaic of mowing strategies at the municipal level in Germany demonstrates a recognition of the need for

adapted management of public green spaces and a willingness to implement such measures.

However, to meet the objectives of the Nature Restoration Law and effectively enhance and protect urban ecosystems in Germany, it is crucial **to strengthen these efforts through national-level guidelines**. Current regulations in single cities are insufficient to enhance and protect urban biodiversity according to the EU's objectives. Therefore, nationwide regulations and standards are necessary to ensure that the extensive mowing practices are uniformly adopted and that urban ecosystems across Germany are effectively managed and conserved.

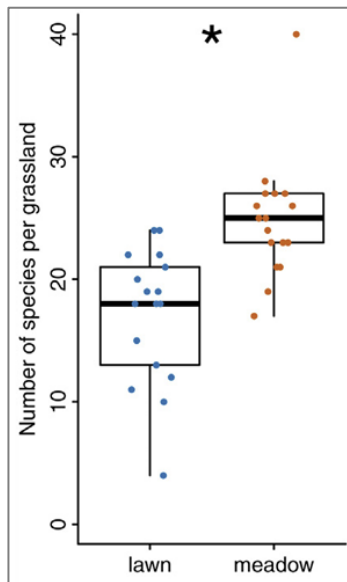
### Recommendations

The following recommendations for national regulations are grounded in recent scientific research and draw from the mowing concepts already implemented by some German cities e.g., Büdelsdorf. By adopting these evidence-based guidelines, Germany can take a significant step towards creating resilient and diverse urban ecosystems that contribute to the overall conservation of biodiversity in public parks.

#### 1. Reduced Mowing Frequency

One key factor to support biodiversity is to increase the heterogeneity in vegetation structure of urban green spaces, which is largely impeded by high-frequency mowing.<sup>3</sup> Reducing mowing frequency has been shown to significantly enhance plant diversity over time, thereby providing richer habitats and greater feeding resources for various animals species, including endangered ones such as certain wild bees, grasshoppers, beetles, butterflies and bugs.<sup>3,4,6</sup> Scientific consensus suggests that mowing urban green spaces only once or twice a year is beneficial.<sup>3,4,6</sup> For

instance, one study observed a 30% increase in plant species within just six weeks of reducing mowing frequency (see Graphic 1), while long-term reductions have resulted in a 15-62% increase in plant diversity in over 25 years.<sup>3,6</sup>



Graphic 1: 30% more plant species in urban lawns after changing the frequency of mowing from every few weeks to once or twice a season<sup>3</sup>

Based on these findings, we advise for less frequent mowing practices. This approach will promote greater plant and animal diversity, fostering more resilient urban ecosystems.

*We recommend that at least 20% of lawn areas in public parks should be mowed no more than twice annually.*

## 2. Implementing Partial Mowing

Partial mowing, or « mosaic » mowing, where sections of lawns are left unmowed, has been shown to significantly enhance the biomass, abundance, and diversity of insects.<sup>6</sup> This method allows insect communities to temporarily retreat to unmowed areas, providing them with continuous habitats and resources.<sup>4</sup> Numerous studies have confirmed that even small, unmowed patches, such as those on roadsides or urban grassland areas, support high levels of biodiversity.<sup>4</sup>

This strategy will create a network of biodiverse refuges throughout urban landscapes, contributing to the overall conservation of insect populations and other fauna.

*We propose that municipalities adopt partial mowing practices in public parks.*

## 3. Development of Mowing Concepts

Determining the optimal mowing time is complex due to the influence of various factors such as local species, habitat types, and ecological conditions.<sup>12</sup> Research suggests that postponing the first date of mowing on European grassland can have both neutral and positive effects on plant and insect biodiversity.<sup>8,14</sup> However, the response to delayed mowing varies significantly based on the specific flora and fauna, as well as the characteristics of the grassland.<sup>12</sup> Hence, no uniform mowing schedule suits all urban environments in Germany. For this reason, cities should develop individual mowing concepts in which appropriate mowing times are defined.

*We recommend municipalities to independently develop tailored mowing concepts by 2030.*

These concepts should consider local ecological factors to determine the most suitable mowing times for their public parks. Additionally, future transitions to more sustainable mowing techniques, replacing commonly used rotary mowers, should be an integral part of these customized mowing plans.

The development of individualized, long-term mowing concepts offers cities flexibility in managing their public parks. Moreover, it encourages them to develop clear and

comprehensive concepts with enhanced transparency for civil society participation. By adapting mowing practices to local conditions, cities and municipalities can strengthen their efforts to promote urban biodiversity while ensuring sustainable and resilient landscape management for the future.

### Outlook

New regulations at the federal level will always require societal support. The common application of current mowing practices, which do not align with the EU's biodiversity objectives, is largely based on the assumption that the civil society prefers well-maintained, frequently mowed lawns and rejects alternative mowing practices.

However, recent representative population surveys conducted by the Federal Ministry for the Environment and the Federal Agency for Nature Conservation in 2019 show that social awareness of nature, nature conservation and biodiversity in urban environments (e.g., preference for wild nature) has increased significantly within the last decade.<sup>13</sup> While in 2015, 54% of respondents agreed with the statement that they liked wilder nature better, this approval rose up to 75% in 2019.<sup>13</sup> In addition, over 90% of Germans are upset by the destruction of nature and believe that it is people's duty to protect nature. The population's willingness to get involved in preserving biodiversity has also grown consistently.<sup>13</sup>

Further evidence of this social willingness can be seen in the numerous civil society movements that have emerged in recent years to advocate for species conservation. In 2019,

for example, the « No Mow May » initiative was founded in England, which has also been well received in Germany, promoting environmentally conscious urban gardening.<sup>14</sup> The central demand of this initiative to avoid mowing in May is in line with scientific findings on biodiversity conservation. The calls for reduced mowing frequencies and delayed mowing times are in line with the recommendations presented in this document.<sup>14</sup>



The engagement of both society and municipalities underscores the necessity and feasibility of adapted regulations for mowing in public urban parks in Germany. The feasibility largely depends on civil society, which has already voiced support for adjusted regulations from the government. As such, there is a clear path forward for implementing these measures, with strong societal backing and demonstrated willingness to embrace change for the benefit of biodiversity and sustainable urban environments.

## FOOTNOTES

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Author: Jana Karoline Steffens

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