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Conference Abstract

Long-term control or perpetual struggle? A multi-species evaluation of invasive plant management in Central Europe

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Abstract

Long-term management of invasive alien plant species is essential for biodiversity conservation; however, its effectiveness varies among species, habitats, and management regimes, and is still insufficiently evaluated. In this contribution, we present a synthesis of long-term management outcomes for selected invasive plant species in the Czech Republic, integrating observational and experimental approaches across protected areas and managed landscapes.

The study focuses on *Lupinus polyphyllus* and *Impatiens glandulifera* (Šumava National Park), *Reynoutria* spp. (Morávka Nature Reserve), *Heracleum mantegazzianum* (Karlovy Vary region), *Pinus strobus* (Bohemian Switzerland National Park), and *Prunus serotina* (managed forests) (Kušková et al. 2026). The evaluation is based on management

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trajectories spanning 10–25 years, enabling assessment of both short-term responses and long-term dynamics.

Our results demonstrate that management effectiveness is strongly species-specific and closely linked to life-history traits. For example, a 17-year management programme on *Reynoutria* spp. shows that systematic herbicide application substantially reduces population extent and leads to fragmentation of large stands, yet does not result in eradication due to persistent regeneration from rhizomes and reinvasion processes. The high regenerative capacity of *Reynoutria* taxa, driven by vegetative reproduction and clonal growth, underpins their persistence in the landscape. Even intensive treatment over several years is insufficient for complete elimination, highlighting the necessity of sustained, multi-phase management strategies (Švec et al. 2024).

Comparable patterns are observed across other species, where long-term suppression rather than eradication is the dominant outcome. The effectiveness of management of *Lupinus polyphyllus* is evaluated over a decade of intensive cutting and mulching, while the case of *Pinus strobus* is assessed over a 25-year management campaign combined with re-evaluation of previously invaded sites. Across all case studies, we identify key drivers of successful management, including treatment continuity, early intervention, and adaptation of methods to species-specific regeneration strategies.

The study also has important policy implications, as several focal taxa (*Heracleum mantegazzianum*, *Impatiens glandulifera*, *Reynoutria* spp.) are included on the EU list of Invasive Alien Species of Union concern. Our synthesis highlights the need for robust, long-term datasets to evaluate the effectiveness of management measures underpinning such regulatory frameworks.

By integrating multiple case studies across species and management contexts, this work provides evidence-based recommendations for improving long-term invasive species management in European protected areas.

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Conflicts of interest

The authors have declared that no competing interests exist.

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