

ABSTRACT

Small balsam (*Impatiens parviflora* DC.) is one of the most widespread invasive plant species in central Europe. Nevertheless, the mechanisms of its invasion are still poorly understood. In this thesis I attempt to understand the impact of this species on native vegetation and the factors affecting its spread.

The impact of small balsam on native vegetation was studied using a removal experiment on permanent plots in oak-hornbeam forests. Following small balsam removal in 2011, a slight increase in both number and abundances of native species was observed on the removal plots during 2012-2014 compared to the invaded plots. The species composition also significantly differed among invaded and removal plots. Species with high affinity to removal plots, i.e. species that are most restricted by small balsam invasion, were mostly species with small releasing height and early start of flowering.

The factors affecting the spread of small balsam were studied between 2011 and 2014 on permanent transects in areas where it just started spreading. In each of 321 permanent plots, data on environmental conditions and on small balsam spread and performance were collected. The results show that small balsam seedlings spread mostly into areas with high soil moisture and low native species abundance, indicating that dense cover of native species may serve as an effective barrier to small balsam spread and that sufficient soil moisture is crucial for seedling establishment. Small balsam seedlings are most likely to die in areas with open canopy and low nutrients levels. Soil moisture is not crucial for seedling survival, unless the weather is extremely dry. Once the plants survive, they are most fit (i.e. greatest, highest and most fertile) in areas with high native species abundance and high canopy cover. Oak-hornbeam forests seem to be the most suitable habitat for small balsam, followed by oak and mixed coniferous forests. Small balsam is able to penetrate even into species-rich habitats such as steppe grasslands on rocks which makes it a potential threat to biodiversity.

Key Words

small balsam, *Impatiens parviflora*, invasion, removal experiment, impact on vegetation, factors affecting spread