



Universität  
Basel

## Research Project

### Impatiens glandulifera and its influence on the ecohydromorphic functioning of inland watercourses

#### Project funded by own resources

**Project title** Impatiens glandulifera and its influence on the ecohydromorphic functioning of inland watercourses

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**Organisation / Research unit**

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The invasive plant, *Impatiens glandulifera* (common English name: Himalayan Balsam), is now found in most temperate European countries, as well as across large parts of North America and on some Australasian islands. As a *ruderal* species, it favours damp, nutrient-rich soils that experience frequent disturbance, such as riparian zones. Its ability to out-compete native vegetation, but tendency to suffer rapid dieback during cold weather, has led to repeated speculation that it may promote soil erosion, particularly along riverbanks of inland watercourses. Despite the implication, this has only recently been empirically proven during an investigation covering one dieback and regrowth cycle along a watercourse in northwest Switzerland. The work now benefits from additional results covering more recent dieback and regrowth cycles, firstly from the same watercourse as above, and also from a river system in southwest UK. All results reconfirm that *I. glandulifera* promotes soil erosion along riverbanks and the riparian zone. Equivalent net surface retreat at contaminated locations is comparable with erosion rates in regions where high magnitude events are often recorded, and also exceed annual erosion rates on temperate cultivated hillslopes by one order of magnitude. Aside from the deleterious effect of nutrient-rich sediment entering into watercourses, the lack of effective intervention measures to halt or even slow the spread of *I. glandulifera* means that it may continue to act as a catalyst for repeat cycles of colonization, dieback and extreme erosion, leading to reach-scale sections of riverbank undergoing profound morphological changes. These may reduce the structural stability and ability of riverbanks to offer natural flood protection, as well as hamper the capacity of riparian zones to buffer and retain sediment and associated contaminants during their passage from terrestrial to aquatic environments. The failure of these morphological components to provide basic ecosystem services could eventually lead to a breakdown in the hydrogeomorphic functioning of whole river systems, making their management extremely difficult and complex.

**Keywords** Impatiens glandulifera, Himalayan Balsam, soil erosion, riparian zone, riverbank.

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