

# Impact of aquatic invasive species on native plant and benthic macro-invertebrate assemblages in Belgian ponds



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## Introduction & Objectives

Invasive plants are one of the most serious threats to native species assemblages and have been responsible for the degradation of natural habitats worldwide. Aquatic plants have been widely introduced around the world through horticulture and the aquarium trade. Because different aquatic plants can have contrasting effects on water chemistry, habitat structure and food resources, they can have dramatic effects on many parts of aquatic ecosystems. Aquatic invasive species such as *Ludwigia grandiflora*, *Myriophyllum aquaticum* and *Hydrocotyle ranunculoides* may alter the available structure in an aquatic habitat by creating monotypic floating mats. However little is known about the impact of these alien species on native vegetation and their associated food webs at pond level.

**Objectives:** we want to determine whether 1) invasion causes suppression of native plant/macro-invertebrate diversity existing in the resident communities (prior to invasion) and 2) there are changes in species/trophic groups composition of these communities following the invasion.

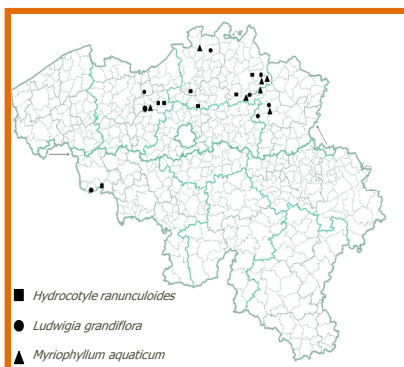
## Material & Methods



← Heavily invaded (C), semi-invaded (B) and non-invaded (A) plots

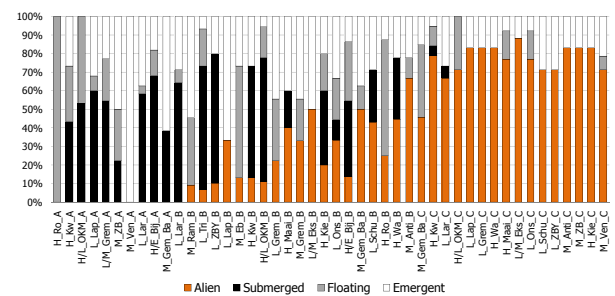
Percentage cover of each growth form estimated

10 sediment samples per uninvaded/invaded pond for macro-invertebrate analysis ↓

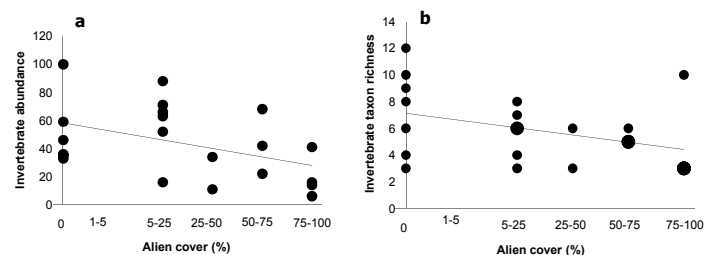


↑ 22 – 32 ponds selected in Belgium with a cover gradient of the alien species (range 0-100%)

## Results & Conclusion



**Figure 1.** Relative plant composition by plots (A, B and C) for the three alien species (submerged  $r = -0.65$ ,  $P < 0.001$ ; floating  $r = -0.33$ ,  $P < 0.01$ ; emergent  $r = -0.26$ ,  $P < 0.05$ ).



**Figure 2.** Macro-invertebrate **a)** abundance ( $r = -0.41$ ,  $P < 0.05$ ) and **b)** taxon richness ( $r = -0.43$ ,  $P < 0.05$ ) in function of alien cover. Bubble size represents number of observations



**Figure 3.** Percentage composition of broad trophic groups in **a)** invaded and **b)** non-invaded sites

**Conclusion:** the results suggest that a shift from a rather diverse vegetated habitat to a highly homogenous habitat of the alien species can present a threat to native plant species and macro-invertebrate abundance, but macro-invertebrate assemblage seems not to be affected.

## Acknowledgements

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