

Session 2. Impacts of invasions on biodiversity, health and economy

Alien impact 1. A project to quantify and explain the biodiversity impacts of highly invasive plant species (HIPS) at different spatial scales and trophic levels

*Nijs Ivan*¹, *Jacquemart Anne-Laure*², *Mahy Grégory*³, *Meerts Pierre*⁴, *Triest Ludwig*⁵

¹ *Research Group of Plant and Vegetation Ecology, Department of Biology, University of Antwerp, Belgium*

² *POPS Research Group « Genetics, Reproduction, Populations », GENA unit, Université Catholique de Louvain, B-1348 Louvain-la-Neuve, Belgium.*

³ *Laboratory of Ecology, Gembloux Agricultural University, B-5030 Gembloux, Belgium*

⁴ *Laboratoire de génétique et écologie végétales. Université Libre de Bruxelles, B-1050 Brussels, Belgium*

⁵ *Plant Biology and Nature Management, Vrije Universiteit Brussel, B-1050 Brussels, Belgium*

Alien Impact (2007-2010) is a large-scale, integrated study on patterns and mechanisms of impact of alien invasive plant species in Belgium, funded by the Belgian Science Policy (Belspo) under the programme Science for a Sustainable Development. It considers both terrestrial and fresh water ecosystems. Five groups collaborate on a shared set of highly invasive alien plant species (HIPS). The goals are: (1) To quantify impact on the diversity of native plant communities. Which native species experience the greatest impact? Can low densities already induce high impact? Do critical invader densities exist above which impacts enhance disproportionately? (2) To assess whether changes in native communities trigger diversity loss or changes in community structure at higher trophic levels, notably in soil fauna. Are such changes mediated by modification of ecosystem properties? (3) To identify mechanisms of HIPS impact on native plants. Is impact mediated primarily by competition for soil resources, by competition for pollinator resources, or by other mechanisms such as secretion of allelochemicals? Does modification of ecosystem properties (soil) triggered by HIPS reinforce impact on native plant species? (4) To analyse factors that may modulate HIPS impacts in the future: eutrophication and climate-warming. We present results and preliminary conclusions from the first two experimental years.