

Session 3. Early detection, risk assessment and management

ISEIA, a Belgian non-native species assessment protocol

*Branquart Etienne*¹, *Verreycken Hugo*², *Vanderhoeven Sonia*³, *Van Rossum Fabienne*⁴ & *Cigar Julien*¹

¹ *Belgian Biodiversity Platform*, ² *Instituut voor Natuur- en Bosonderzoek*, ³ *Faculté universitaire des Sciences agronomiques de Gembloux*, ⁴ *National Botanic Garden of Belgium*

Harmonia, the information system on invasive species in Belgium, has been recently developed at the initiative of scientists gathered within the Belgian Forum on Invasive Species (<http://ias.biodiversity.be>). Harmonia is based on a standardised assessment protocol (ISEIA) which allows to assess, categorise and list non-native species according to their invasion stage in Belgium and to their impact on native species and ecosystem functions, as described in the scientific literature. The ISEIA protocol is designed to minimise the use of subjective opinions and to make the process of assessing and listing invasive species transparent and repeatable. It offers a scientific background to identify non-native species of most concern for preventive or mitigation actions and to develop national and regional regulation frameworks.

So far, 57 neophytes and 32 vertebrates from terrestrial and freshwater environments were selected and assessed by Belgian experts* using the ISEIA protocol. Eighty-one percent of these are already naturalised in Belgium whereas the remaining 19 % are likely to be established in the coming years if no preventive action is undertaken. Fifty-four percent of the examined species were assessed as organisms with a strong detrimental impact on native biodiversity (black list species), for which preventive and mitigation actions are strongly recommended. Most of the remaining species were recorded on the watch list, which means either that their impact on native biodiversity is moderate or is still unclear due to a shortage of scientific studies.

Compared to neophytes, a higher proportion of the naturalised exotic vertebrate species has been shown to be detrimental to native species and ecosystem functions. Invasive neophytes typically affect biodiversity in making very dense populations in semi-natural habitats, which outcompete native species and often modify vegetation structure and alter nutrient cycling, whereas vertebrates adversely impact biodiversity through a wide range of interspecific interactions (competition, predation, disease transmission and hybridisation) that may act separately or synergistically.

The ISEIA protocol (see http://ias.biodiversity.be/ias/documents/ISEIA_protocol.pdf) will be used in the future to assess and categorise additional non-native species, including organisms from other taxonomic groups and from the marine environment.

* Members of the ISEIA expert group (listed by taxonomic group and in alphabetical order): Iris Stiers, Ludwig Triest, Sonia Vanderhoeven, Wouter Van Landuyt, Fabienne Van Rossum, Filip Verloove (vascular plants); Tim Adriaens, Patrick De Clercq, Wouter Dekoninck, Jean-Claude Grégoire, Wim van Bortel (insects); Dieter Anseeuw, François Lieffrig, Jean-Claude Micha, Denis Parkinson, Hugo Verreycken (fishes); Arnaud Laudelout, Gérald Louette, Youri Martin, Joachim Mergeay, Chistiane Percsy (amphibians), Anny Anselin, Diederik Strubbe, Anne Weiserbs (birds); Margo D'aes, Alain Licoppe, Grégory Motte, Vinciane Schockert, Jan Stuyck (mammals); Etienne Branquart (coordination).