# Belgian Biodiversity Platform

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# [THE HARMONIA INFORMATION SYSTEM AND THE ISEIA PROTOCOL]

Explanatory document for the *Life +* Project AlterIAS

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## General context

Belgian land managers and policy makers have to face up to an increasing number of non-native species showing detrimental effects on the environment. To help them in the identification of species of most concern for preventive or mitigation actions, *Harmonia*, an information system on invasive species in Belgium, has recently been 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 assessing, categorising and listing of non-native species from any taxonomic group according to their **invasion stage** in Belgium and to their **impact on native species and ecosystem functions**. Direct impacts on human interests as public health, plant protection or economic costs are not taken into account. The ISEIA protocol is one of the first national standardised risk assessment tools developed for non-native species in Europe and it has been used as a model for the development of other comparable initiatives in Europe. Regulatory instruments and management guidelines are being worked out in a close future both at national and European levels. The development of such kind of tool is an essential step in the implementation of these actions.

## The ISEIA protocol and the Belgian list system

The ISEIA protocol aims at categorising non-native species on the basis of a standardised methodology designed to minimise the use of subjective opinions and to make the process of assessing and listing invasive species transparent and repeatable.

The ISEIA approach favours the use of invasion histories documented in **peer-reviewed publications and in scientific reports from Belgium and neighbouring areas**. It is considered that non-native species are likely to cause significant impacts on native species and ecosystems in Belgium if they have already done so in neighbouring countries with similar environmental conditions. The reference area taken into consideration for the assessment includes the European regions with eco-climatic conditions comparable to Belgium (hardiness zones 7 and 8 characterised by an average annual minimum temperature between –7 and –17°C). It covers Belgium, Denmark, the Netherlands and large parts of Germany, France, Ireland, Switzerland and the United Kingdom (figure 1). Species concerned by the assessment are either already detrimental in neighbouring countries or reported by Belgian land managers to show considerable expansion in natural habitats.

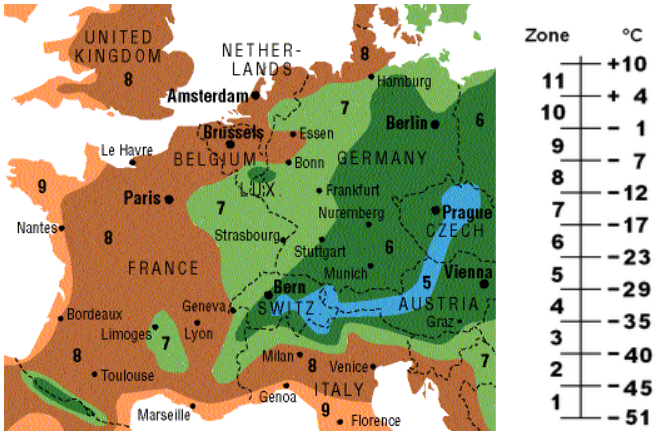


***Figure 1** – USDA hardiness zones in western Europe based on the ability of a species to withstand the minimum temperatures of the zone. The reference area used in the ISEIA protocol covers hardiness zones 7 and 8.*

The Belgian list system is based on three different list categories as recommended in the European strategy on Invasive Alien Species in 2003. Those categories are defined according to the severity of impacts on the environment: no negative impact (white list), negative impact suspected (watch or grey list) and negative impact confirmed (black list). The assignment of a non-native species to one of those categories is assessed by four main criteria matching the last steps of the invasion process: 1) the **potential for spread**, 2) the **colonisation of natural habitats** and 3) **adverse ecological impacts on native species and ecosystems**. Consistent with other risk assessment standards, equal weight is assigned to each of the four criteria and a three-point scale is used for criteria scoring: low (or unlikely), medium (or likely) and high. The global ISEIA score is calculated as the sum of risk rating scores of the four criteria. Moreover, an alert list is defined as including species that are not yet naturalised in Belgium but are invasive in neighbour areas. Note that only species with high or moderate environmental impact among non established species are taken in consideration.
More information on technical issues and definitions of criteria can be found on the website of the Belgian forum on Invasive species.
(http://ias.biodiversity.be/documents/ISEIA_protocol.pdf)

Non-native species are allocated to the different categories of the Belgian list system combining information from the ISEIA scoring and data on their invasion stage in the country (figure 2).

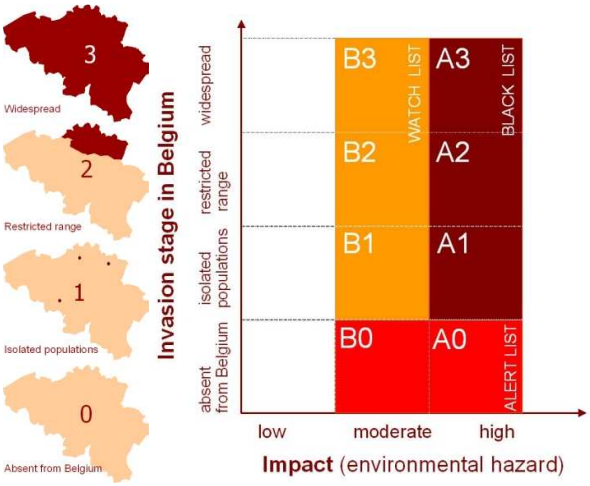


***Figure 2*** *- List system proposed to identify non-native species of most concern for preventive and mitigation actions in Belgium.*

## The assessment procedure

Five different expert working groups were established to deal with vascular plants, fishes, amphibians, birds and mammals, each of them including three to six scientists from different research institutes and universities in Belgium. As the assessment precisely deals with **environmental impacts of invasive species**, the 24 experts were chosen because of their scientific knowledge of the invasive species issue, species biological characteristics and distributions, and/or invasive environmental impacts. They are responsible for gathering and analysing the scientific information necessary to make the assessment.

Prior to any assessment, experts are made sure to share a common understanding of criteria and definitions. The environmental impact of each species is assessed independently by the different experts, sometimes leading to diverging results. These results are at last discussed during a working group meeting. Information is exchanged and discussed in order to search for a robust consensus for each species. The ISEIA protocol has been improved several times based on those discussions. It has proven to be flexible enough to be used to assess the environmental impact of non-native species from very different taxonomic groups.

The lists will evolve according to either the progress of the scientific knowledge or the expansion of species in the investigated area. Some species are therefore expected to move from one list to the other. This is particularly true for some species, currently belonging to watch list, and expected to reach the black list as soon as negative impacts will be recorded.

Impact assessment is easier for largely widespread species. More uncertainties exist for species that are at the beginning of the invasion process. Uncertainty must be considered and accepted as an integral part of any assessment procedure. If decisions are not taken for more uncertain species, managers undoubtedly face the risk of missing their goal by acting too late.

## From science to management

The Belgian list system is not a legally binding instrument. It is just the result of a scientific assessment that may be used in a second step by decision makers to prioritize actions and propose new regulations.

About a quarter of non-native species out of the group of organisms responsible for high environmental impacts are either not yet established in Belgium (A0) or only known from a limited number of localities (A1). Prevention actions and early detection of these species in the field deserve to be conducted in priority. Indeed, the ecological damages they may cause can still be restricted to a minimum at a low cost if actions are undertaken without delay.

One third of detrimental species are already widely distributed in Belgium (A2 & A3) and cannot be removed anymore. However, it is still worth avoiding the species to reach high-value habitats and slowing down the release process in the environment.

For species from the black list, actions are imperative with different alternatives of actions according to stage of invasion, preferred habitats or available management tool. For species from the watch list for which impacts are lower or suspected, actions are advised when socio-economic issues are not met.