

Actions taken in Belgium in response to the threats of Invasive alien species

A. PLANIFICATION

The 2nd federal plan on sustainable development foresees in action 19 the elaboration of action plans in order to integrate biodiversity in key federal sectors. One proposed actions for the integration of biodiversity concern in the sector transport is the creation of a national early warning system for the introduction of IAS.

The National Biodiversity Strategy (adopted in October 2006 by the Interministerial Conference Environment) identifies the following strategic and operational objectives directly related to IAS:

Strategic objective n°3: Maintain or rehabilitate biodiversity in Belgium to a favourable conservation status (operational objective n°3.7.: “Avoid the introduction and mitigate the impact of invasive alien species on biodiversity”)

Strategic objective n°5: Improve the integration of biodiversity concerns into all social and economic sectoral policies (operational objective n°5.7.: “Consider the potential impact on biodiversity, and in particular the invasiveness of species, in making import and export decisions”)

B. PREVENTION

1. Legislation

Federal:

Measures related to importation, exportation and transit of non indigenous wild bird species are taken (excepted if the birds were bred in captivity) (26/10/2001. - Arrêté royal portant des mesures relatives à l'importation, à l'exportation et au transit de certaines espèces d'oiseaux sauvages non indigènes. : Art. 3. § 1). (Transposition of BD)

Law of 28/07/1981 related to CITES (interdiction of detention, sale, etc..of species listed in annex 1 of CITES).

Measures related to commercialisation of species listed in annex A (excepted for specimens bred in captivity, with CITES certificate), (Arrêté royal du 9 avril 2003 relatif à la protection des espèces de faune et de flore sauvages par le contrôle de leur commerce (abrogeant l'Arrêté du 20/12/1983)).

Royal Decree of 19 November 1987 concerning measures against organisms harmful to plants and plant products (measures for brown rat, muskrat and grey squirrel).

In 2006, DG Environment of the Federal Public Service Health, Food Chain Security and Environment has commissioned a study to analyse the federal legislation in order to identify gaps to regulate the introduction of IAS in Belgium. The DG is currently working on the development of a legislative instrument to forbid importation/exportation/transit of IAS.

North Sea:

The deliberate introduction of alien species in the marine environment is forbidden (Royal Decree on the protection of species in the marine waters under Belgian jurisdiction, 2001).

The Belgian law of 20 January 1999 on the protection of the marine environment in marine areas under Belgian jurisdiction (MMM law) forbids the intentional introduction of non indigenous species in the marine environment without special license (Art. 11, §1). This provision mirrors those included in international instruments like the CBD.

The unintentional introduction of non indigenous species via ballast water of ships can be prohibited by royal decree (Art. 11, §2). Belgium takes part to related IMO discussions/instruments (like the convention on ballast water) dealing with the issue of non indigenous species in ballast water of ships. For the protection of the marine biota, measures can be taken (by royal decree and after scientific consultation) for the extermination of non indigenous nuisance species (Art. 11, §3).

The new law also prohibits the intentional introduction of genetically modified organisms into marine areas (Art. 11, §4).

The Council Regulation (EC) No 708/2007 of 11 June 2007 concerning use of alien and locally absent species in aquaculture will instigate a review of the aforementioned applicable legislation, in order to fully execute this Council

Regulation in the maritime area. The impact of this Council Regulation will mainly concentrate on the permit system for the exercise of aquaculture with alien and locally absent species.

Flanders:

In both public forests and forest reserves, it is prohibited to introduce animals and plants without a permit. (13/06/1990. - Bosdecreet.(modified by 1999-05-18/65) : Art. 20. [...] in de openbare bossen verboden [...] 4. dieren en planten te introduceren zonder machtiging; Art. 30. [...] is het in de bosreservaten verboden [...] 4. dieren en planten te introduceren zonder machtiging.)

A decision prohibits the introduction of non-native animal species in nature in Flanders, and is also the legal base for measures to control and eradicate these animal species. (24/04/93. – Besluit van de Vlaamse Regering betreffende de introductie in de natuur van niet-inheemse soorten).

The Flemish government can take measures to control or prohibit the introduction of animal and plant species or other organisms, as far as these are a threat to nature, the natural environment. Measures can also be taken to control or prohibit the transport of animal species and their carcasses. (21/10/1997. - Decreet betreffende het natuurbehoud en het natuurlijk milieu.: Art.51.3.).

A decision describes what species of fish can be used as bait fish ; only native fish species are allowed to be used. (17/10/2003. - Besluit van de Vlaamse Regering tot wijziging van het besluit van de Vlaamse regering van 20 mei 1992 tot uitvoering van de wet van 1 juli 1954 op de riviervisserij.)

Brussels:

It is forbidden to introduce non indigenous species of birds into the wild. (25/10/1990. - Arrêté de l'Exécutif de la Région de Bruxelles-Capitale relatif à la protection des oiseaux. : Art. 6.).

The intentional introduction of non indigenous species is regulated in order to insure that no damage is caused to natural habitats and indigenous flora and fauna, otherwise the introduction is forbidden. (26/10/2000. - Arrêté du Gouvernement de la Région de Bruxelles-Capitale relatif à la conservation des habitats naturels ainsi que de la faune et de la flore sauvages, Art. 14.)

Wallonia:

The introduction of non indigenous species or indigenous species of non indigenous origin in nature is forbidden excepted for species used for agriculture and forestry (Décret relatif à la conservation des sites Natura 2000 ainsi que de la faune et de la flore sauvage (published on 22 January 2002).

C. MITIGATION

1. Restoration

North Sea:

In transposition of the European Directive 2004/35/EG a new Royal Decree, not into force yet, has been developed to restore environmental damage in the maritime area, based on the MMM law. This Royal Decree also applies to damage caused by invasive alien species. The restoration system is based on a collaboration between the polluter (in casu the operator that has provoked the introduction of the invasive alien species) and the competent authority, in order to detect the environmental damage and to determine the appropriate restoration measures. Costs have to be borne by the polluter.

2. Population control measures

- Population control of musk rats (*Ondatra zibethicus* L.) :

There is active eradication for the muskrat (*Ondatra zibethicus*) in the three regions of Belgium because this species is known to provoke serious harm to waterways.

There is an interreg III project « Lutanuis » for Transboundary cooperation between France, Flanders and Wallonia (01/01/03 - 30/06/07– renewing is ongoing) against harmful species on :

- how to control the muskrat,
- to define infestation norms
- to put the results on the internet to enhance exchange of information with other countries who encounter problems with the Ondatra.

<http://mrw.wallonie.be/dgrne/de/dcenn/lutanuis/index.htm>

- There is active eradication of the Black cherry (*Prunus serotina*) in some parts of Flanders, leading to good results *inter alia* in the Kempen.
- In Flanders, there is a program to control the presence of Floating Pennywort (*Hydrocotyle ranunculoides*), largeflower primrose willow (*Ludwigia grandiflora*) and parrot feather (*Myriophyllum aquaticum*) in waterways.
- Population control of the Asiatic ground squirrel is ongoing in Flanders.

- There are punctual eradication of *Fallopia japonica* and *Heracleum mantegazzianum* in Nature reserves and some public green spaces in Brussels.
- There is a program testing management methods for *Fallopia* sp., *Heracleum mantegazzianum* and *Impatiens glandulifera* along rivers in the Walloon Region. This program aims to evaluate success and costs of methods by field experiments to publish a technical note and provide a monitoring methodology for managers.
- The Flemish Region plans to work out a project to actively control the Ruddy Duck (*Oxyura jamaicensis*).

D. SUPPORTING MEASURES

1. Communication, Education and Public awareness

- Belgian Forum on Invasive Alien Species BFIS (<http://www.biodiversity.be/bbpf/>) : This scientific forum acts as the Belgian node of the IUCN Invasive Species Specialist Group (ISSG). This informal structure aims to provide and gather scientific knowledge about invasive alien species in order to encourage interdisciplinary cooperation among scientists and favours information exchange and dissemination as a support to develop measures dedicated to the prevention and the mitigation of the impacts of invasive species.

The BFIS is responsible for preparing and updating the reference list of alien species invading terrestrial, freshwater and marine ecosystems in Belgium, with a focus on organisms causing a strong detrimental impact on native biodiversity.

BFIS has developed the Harmonia information system, an interoperable database dedicated to alien species introduced by man on the Belgian territory or in neighbour areas after 1500. It includes: exotic species naturalised in Belgium, with a focus on those that actively colonize semi-natural ecosystems and can be detrimental to the environment (black and watch list species), exotic species that aren't yet observed in Belgium but are invasive in neighbour countries where they are considered as highly detrimental to biodiversity (alert list species). New species are regularly appended to this database by Belgian scientists after being assessed through the ISEIA protocol (see hereafter). Before being published on the Web, data are reviewed for accreditation by a scientific committee.

The environmental impact of non-native species is assessed in a standard, objective and transparent way through a simplified protocol developed by the Forum (the Invasive Species Environmental Impact Assessment protocol). It consists of four sections matching the last steps of the invasion process, i.e. the potential for spreading and colonising natural habitats as well as the adverse impacts on non-native species and ecosystems. Scores for each section are assessed based on organism's history of impact in neighbour areas together with their ecological profiles.

This forum works in close relation with the expert contact groups on alien species depending from the CCIEP nature and biodiversity steering committees, in order to ensure a scientific background to political decisions and to provide an adequate feedback from the international decision-making scene to the scientific community. The steering committees focus on administrative and political aspects in order to prepare Belgian positions for international meetings, to write thematic reports and elaborate programs related to Belgian international obligations.

The forum is open to any people interested by scientific aspects linked to invasive alien species. It gathers 59 people, mainly from Belgian universities and research centers.

In addition to the debates animated on the discussion list, workshops are organized by the forum at regular time intervals. These aims at improving the Belgian expertise in specific fields through scientific communications and roundtable discussions gathering the different stakeholders concerned by biological invasions.

Publications

- Kerckhof, F.; Haelters, J.; Gollasch, S. (2007). Alien species in the marine and brackish ecosystem: the situation in Belgian waters. *Aquatic Invasions* 2(3): 243-257.
- The Nature department of the Walloon Region published a brochure « Les Plantes Exotiques Invasives »: This publication focuses on 4 invasive alien plants *Fallopia japonica*, *Heracleum mantegazzianum*, *Impatiens glandulifera* and *Senecio inaequidens*; For these species, the brochure gives a description, the origin and distribution in Europe (and a distribution map for Wallonia), ways to identify the plant, the biology and life history traits, the detrimental impacts, and population control measures. This publication also includes many pictures illustrating the plants.
- The Nature department of the Walloon Region published in 2002 an information folder on the fight against the muskrat. The publication is intended for the general public. Such publication was also produced within the framework of the INTERREG project 'Lutanuis'.
- The Walloon Region foresees the publication of a manual on harmful animal in waterways.
- The Walloon Agriculture research center published the following brochures:

- « Les rongeurs de Belgique: 17 planches en couleur et notices explicative », J. Bernard et Jean NICOLAS
- « Les rongeurs commensaux, les rongeurs des champs, le rat musqué et la taupe: biologie et lutte » ; Guy LATTEUR
- « Les animaux nuisibles inféodés aux cours d'eau en RW – guide pratique pour les gestionnaires des cours d'eau » ; Pol COLLET et Antoine MICHOTTE RENIER
- A brochure on Japanese knotweed (*Fallopia japonica*) was published by the Brussels Capital Region.
- The Flemish Region published a brochure directed to the general public on *Prunus serotina*, *Eutamias sibiricus*, *Rana catasbeiana*, *Trachemys scripta elegans*, *Hydrocotyle ranunculoides*, and rhododendrons at the end of 2000.
- The Flemish Region has published a brochure about the control of 3 species of rodents, namely the Black Rat, the Brown Rat and the Muskrat. The brochure is called “Ratten in de val”, and was published by the Water Division of the Ministry of the Flemish Community, in November 2002.
- For the Flemish Region, a report was published on the status and management of non-native species of waterfowl. This report, called “Beheer van verwilderde watervogels in Vlaanderen” was published in 2002, by the Institute of Nature Conservation, a scientific institute of the Flemish Community.
- For the Flemish Region, a chapter on exotic species, among which IAS, was included in the Nature Report 2003 and 2005, published by the Institute for Nature Conservation (a scientific institute of the Flemish Community). Natuurrapport 2003 and Natuurrapport 2005: “Toestand van de natuur in Vlaanderen : cijfers voor het beleid. Mededeling van het Instituut voor Natuurbehoud nr. 21, Brussel”.
- Articles inter alia on alien amphibian species were published in periodicals of nature organisations.
- The Brussels Region published a brochure on animals in the city, focused on presence of exotic species and their problems “Vivre avec eux en ville”. This brochure is intended for the large public
- The Brussels Region published a folder on *Harmonia Axyridis*. The tool was developed by Brussels Environment, in cooperation with the CG *Coccinula* and the ULB.
- « Belgian Fauna and Alien Species » : Proceedings of the symposium held in Brussels in 2001. Bulletin of the Royal Belgian Institute of Natural Sciences, Biology, vol. 72, suppl. Royal Belgian Institute of Natural Sciences, Brussels, 297 pp.
- “Apparition et développement d’espèces animales en Europe occidentale: causes et conséquences sur les équilibres écologiques existants”, Proceedings of the symposium held in Saint Hubert in 2002.
- Publication of an educational folder (fan) integrating games and informative cards on invasive alien species in Belgium. It was developed by the Belgian Biodiversity Platform and the CBD National Focal Point, with financial support of the Federal Environment Directorate General¹.
- The Namur city published an analyze of the invasives plants distribution along roads network in 2005
- For the Brussels Region, two reports were made concerning two species of invasive alien birds: the Egyptian goose (Vangeluwe & Roggeman, 2000 – KBIN) and Rose-ringed Parakeet (Weiserbs et al. 2002 – AVES).

Workshops

- “Status and trends of the Belgian fauna with a particular emphasis on alien species”, Brussels, 2002 (Proceedings of the symposium available).
- “Apparition et développement d’espèces animales en Europe occidentale: causes et conséquences sur les équilibres écologiques existants”, Saint Hubert, 2002 (Proceedings of the symposium available).
- Workshop on Ladybirds and biological control in Belgium, with a special focus on *Harmonia axyridis* (Brussels, Instituut voor Natuurbehoud, 2003); This workshop was dedicated to the use of native and exotic ladybird beetles in biological control of aphid populations. Potential problems raised by biological control introductions were discussed as well as the need to develop a regulation framework and a risk assessment procedure before intentional release of exotic predators and parasitoids. *Harmonia axyridis* was used as a case study.
- Workshop SOS invasions in 2006: general overview of current scientific knowledge on invasive alien species in Belgium, field experiences, analysis of possible tools to prevent and control biological invasions, exchange of views and recommendations to decision makers, concept of grey and black list of invasive alien species.

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2. Research

2.1. Inplanbel Project “Invasive plants in Belgium: patterns, processes and monitoring”

(Project website: <http://www.fsaqx.ac.be/ec/inplanbel/>):

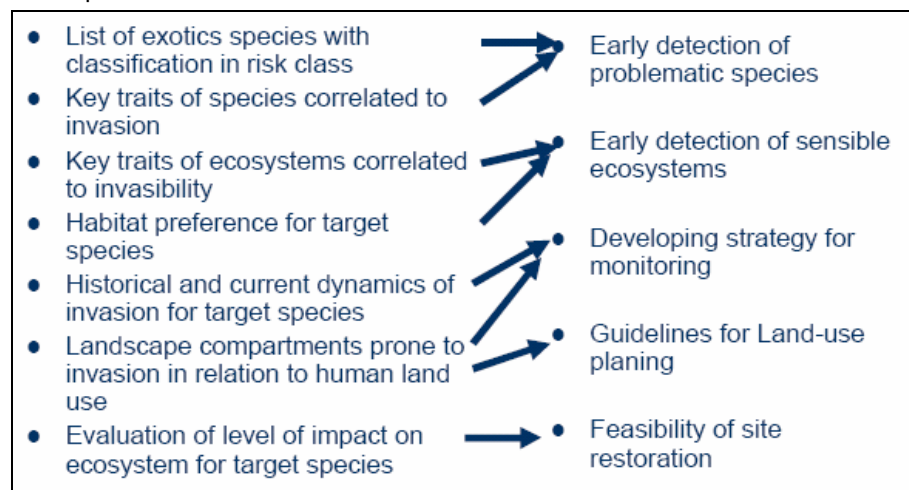
The project provides a multifunctional and multi-scale analysis of alien plant invasion in Belgium. The general aim is to give a framework for the evaluation of the threat, for the development of policies and management strategy and for the elaboration of further research programs.

This project is the first multidisciplinary approach dealing with invasive plants topic in Belgium (*Fallopia japonica*, *Heracleum mantegazzianum*, *Impatiens glandulifera*, *Impatiens parviflora*, *Prunus serotina*, *Rosa rugosa*, *Senecio inaequidens*, *Solidago gigantea*).

The specific aims are:

- (1) to provide a synthesis on plant invasion in Belgium in the form of a structured list of exotic species ;
- (2) identify universally valid principles of biological invasion through a combined analysis of ecophysiological species and community traits ;
- (3) provide a detailed analysis of the spreading of a set of invasive species at the landscape level linked to their dispersal capacities ;
- (4) analyze the consequences of a set of invasive species on ecosystems.

Expected results and valorization:



2.2. Other ongoing research programs:

- Alien crustacean and mollusks species in Belgium, ongoing, Royal Belgian Institute Natural Science 1996- (RBINS)
- Freshwater macrozoobenthos biodiversity and assessment of the biological quality of watercourses in Wallonia, 1990-, Nature, Forest and Woods Research Center (CRNFB)
- The Nature, Forest and Woods Research Center is currently monitoring invasive species in the Walloon watercourses.
- Alien species are identified through inventories of species for some groups (e.g. mosses and liverworts, vascular plants, crustaceans, birds, mammals) in Wallonia.
- The Asiatic ground squirrel (*Eutamias sibiricus*) and the coypu (*Myocastor coypus*) are studied in Flanders to investigate the necessity of monitoring.
- There is a program in which rare, colonial and introduced breeding bird species are being monitored in Flanders. Among them, alien breeding bird species as the lesser white-fronted goose (*Anser erythropus*), the Canada goose (*Branta canadensis*), the barnacle goose (*Branta leucopsis*), the Nile (Egyptian) goose (*Alopochen aegyptiacus*), the mandarin duck (*Aix galericulata*), the ring-necked parakeet (*Psittacula krameri*) and the monk parakeet (*Myiopsitta monachus*) are being monitored. This program is called the 'Bijzondere Broedvogels Vlaanderen Project' (Flemish Special Breeding Bird Project).
- In Flanders, counts of wintering waterfowl are conducted 6 times every winter; during these counts, non-native waterfowl species, including IAS, are also counted. These counts are organized by the Institute for Nature Conservation. The international coordination of these counts is in the hands of Wetlands International.
- In Flanders, the Institute of Nature Conservation conducts a research project on the distribution and numbers of Canada geese. This includes holding counts of wintering birds and catching a number of birds to mark them in order to be able to track their movements.

- Through the monitoring and inventory of fish occurring in the Flemish inland waters, alien fish species are also being monitored.
- Invasive bryophytes, their spread in Belgium and impact on the indigenous bryophytes, 1990-2010, National Botanical Garden of Belgium.
- Gathering of data on the current introduction and spread of alien species (e.g. C4-grasses (e.g. *Setaria macrocarpa*, *S. verticilliformis*, *Panicum dichotomiflorum*)), especially in and along maize fields in the area between Ghent and Bruges is being done by the National Botanical Garden of Belgium.
- Marine invertebrate fauna of W-Europe, especially Cirripedia and Mollusks; alien species, 1973, RBINS-MUMM
- The alien species issue (invasion mechanism understanding, impact assessment methods, etc.) is part of the research priorities of the Second Plan for a Sustainable Research Programme (2000-2004) of the Federal Office for Scientific, Technical and Cultural Affairs, both on terrestrial ecosystems (one project: 'invasion and biodiversity in grasslands and field borders'; 2000-2005, University of Antwerp) and on marine and freshwater ecosystems. URL: www.belspo.be
- Phylogeography, population and eco-genetics of European marine and terrestrial mollusks, ongoing, University of Antwerp
- Taxonomy and ecology of weeds, especially *Polygonum aviculare* (Polygonaceae), 1987, University of Brussels
- Dispersion of several IAS populations encountered in Brussels is monitored in the framework of a study on the Brussels biodiversity.
- In Brussels Capital Region, special attention is given to exotic species in the monitoring program on flora and fauna. Particular interest is given and several detailed studies have been made on some exotic birds (*Alopochen aegyptiacus*, *Branta canadensis*, *Psittacula krameri*, *Myiopsitta monachus*), exotic herpetofauna species (*Rana ridibunda*), some mammals (*Eutamias sibericus*). Also the extension of exotic plant species is particularly followed.
- Federal Public Service Health, Food Chain Safety and Environment - DG animals, plants and foodstuffs: launch of a 2 year contractual research project 'Pest Risk Analysis (PRA) for harmful organisms (harmful alien plants included) in the plant sector'. The project includes 3 invasive alien species (*Ambrosia artemisiifolia*, *Fallopia japonica* and *Heracleum mantegazzianum*).
- A study is currently ongoing in the Walloon Region on how to manage invasive alien plant species along waterways: how to prevent their expansion, how to control them, and on the different possibilities for the administration to implement these tasks and to communicate the information to local and regional administrations.
- The analytical report on the state of Walloon environment 2006-2007 (Rapport analytique sur l'état de l'environnement wallon 2006-2007) has chapter on the follow up of invasive alien species (http://environnement.wallonie.be/eew/rapportproblematique.aspx?id=FFH_19).
- *Senecio inaequidens* dispersion capacities, FUSAGx, 2004-2005.
- Impacts of global warming on *Senecio inaequidens* life history traits, FUSAGx, 2006-2010.
- Study of the dynamics of the populations of the invasive alien species *Fallopia* Adans. Polygonaceae. FUSAGx, 2002-2007.
- Evolutionary implications of hybridization in the invasive polyploid complex *Fallopia*, FUSAGx, 2006-2009.
- *Perinbel*: Public PERception of INvasive species in BELgium (Belspo cluster 2005-2007) FUSAGX - Research Analysis. This cluster aims: 1) at providing a framework for the evaluation of public perception of the invasive species problem in Belgium, 2) at identifying sociological constraints on the establishment of management strategies for invasive plant species including, 3) increasing communication skills of scientists and managers towards broad public on the matter of invasive species. Two target groups are considered: nature reserve managers and plant nurseries.
- Alien impact: Biodiversity impacts of highly invasive alien plants: mechanisms, enhancing factors and risk assessment. Belspo "Science for a sustainable development" research program 2007-2009.
- Walloon region : DGRNE/DCNN : "Rongeurs et autres nuisibles inféodés aux cours d'eau: évaluation des nuisances et perspectives de lutte (01/05/04 - 30/11/06) » (renewing is ongoing)
- "Study on the ecology and environmental impact of the Asian multicoloured lady beetle *Harmonia axyridis* in Flanders, Ghent University, 2006-2009"

3. **Web sites:**

<http://ias.biodiversity.be/>

<http://www.mumm.ac.be/FR/Management/Nature/ExoticSpecies/index.php>

<http://mrw.wallonie.be/dgrne/sibw/especes/exotiques/oiseaux.html>

http://environnement.wallonie.be/eew/rapportproblematique.aspx?id=FFH_19

<http://www.biodiversity.be/bbpf/forum/invasion/invforum.html>

<http://www.ibgebim.be/francais/contenu/content.asp?ref=882>

<http://www.fsagx.ac.be/ec/inplanbel/>

<http://www.lutanuis.euro.st/>

<http://www.cra.wallonie.be>