Tracking Invasive Alien Species

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Building a data driven framework to inform invasive species policy





































Where we are in Belgium ...

Valuable <u>decision support tools</u> to inform invasive alien species (IAS) policy

→ Information Systems

→ Early warning initiatives

→ Risk assessment protocols

Information Systems: HARMONIA



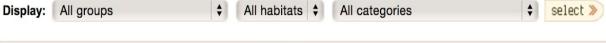
Species List

Welcome to *Harmonia*, an information system dedicated to alien species threatening native biodiversity in Belgium and in neighbour areas.

The species list presented hereafter can be sorted or filtered through different criteria including taxonomy, habitat, introduction date or hazard categories (black and watch lists). It gives access to detailed ecological information and references which have been used for assessing the environmental impact of the different species (see also the ISEIA protocol). Find more information about definitions, list categories, copyright and citation from here.

Note that the species list is far to be complete and is updated on a regular basis. Today, only vascular plants and vertebrates have been subjected to risk assessment.

Harmonia includes 101 species (43 on the black list, 38 on the watch list and 14 on the alert list).



Scientific Name	Common Name EN 💠	Taxonomic Group	Habitat	Since	Range	Category
Acer negundo	Box-elder, Ash-leaved maple	Vascular plants	terrestrial	1955	restricted	B2
Acer rufinerve	Red veined maple	Vascular plants	terrestrial	1990	isolated	B1
Ailanthus altissima	Tree of heaven	Vascular plants	terrestrial	1952	restricted	A2
Aix galericulata	Mandarin duck	Birds	freshwater	1953	widespread	
Akebia guinata	Five-leaf	Vascular plants	terrestrial			В0

2. Early warning systems: observations.be / waarnemingen.be



Waarnemingen.be

Inloggen Registreer Forum Help 📵 Kies taal en/of site 💵

Invoeren

Waarnemingen

Soorten • Overzichten

Projecten

- Homepage Invasieve exoten
- Waarnemingen
- Melding instellen

Waarschuwingssysteem Invasieve Exoten

Door toedoen van de mens komen steeds meer exotische soorten in onze omgeving terecht. De meeste van deze soorten vormen geen problemen, of kunnen hier niet overleven. Maar naar schatting 1 op 1000 exotische soorten worden na vestiging 'invasief'.

Deze invasieve exoten verdrukken inheemse dieren en planten, veroorzaken gezondheidsproblemen en verstoppen onze waterlopen. Hoe langer ze ongestoord uitbreiden, hoe moeilijker en duurder om ze te bestrijden. Een snelle opsporing is dus nodig om te kunnen ingrijpen.

Vrijwilligers kunnen tegelijk op veel plaatsen uitkijken naar deze probleemsoorten. Daarom lieten het Vlaamse, Waalse en Brusselse gewest door Natuurpunt en Natagora een systeem uitwerken om meldingen van invasieve exoten snel tot bij terreinbeheerders en bevoegde overheden te krijgen. Doel is om op basis van de lessen uit dit project het hele proces van observatie en melding tot ingrijpen en opvolgen te stroomlijnen. Je kan hier meldingen van exoten invoeren, raadplegen of je inschrijven op het meldsysteem. We onderscheiden drie types invasieve exoten:

- Alarmlijst: soorten die nog niet of slechts op een paar plaatsen gevestigd zijn.
- Opkomende soorten: soorten die bij ons of in het buitenland in volle uitbreiding zijn
- Gevestigde soorten: soorten die al een ruime verspreiding kennen in ons land, maar nog steeds uitbreiden.

Deze lijsten bevatten niet alle probleemsoorten. Momenteel wordt slechts voor sommige soorten een beheer gevoerd. Voor meer informatie over het huidige beleid en beheer van invasieve exoten kan u terecht bij: Vlaanderen, Brussel, Wallonië

Selecteer Lijst Alle Soortgroep Alle Bevestig

Alarm lijst:

Huiskraai Corvus splendens



© Ellen de Lange

Herkenning

Nog niet waargenomen

Zie ook: 🚥

Kuifmaina Acridotheres cristatellus



© Job Strumpel

Merkenning

Toon verspreidingskaart

Zie ook:

Rosse Stekelstaart Oxyura jamaicensis



© chantal deschepper

Herkenning

Toon verspreidingskaart

Zie ook: 🝩

Heilige Ibis Threskiornis aethiopicus



© Dieder Plu

★ Herkenning
▼ Toon verspreidingskaart

Zie ook: 🝩

Amerikaanse Voseekhoorn Sciurus niger



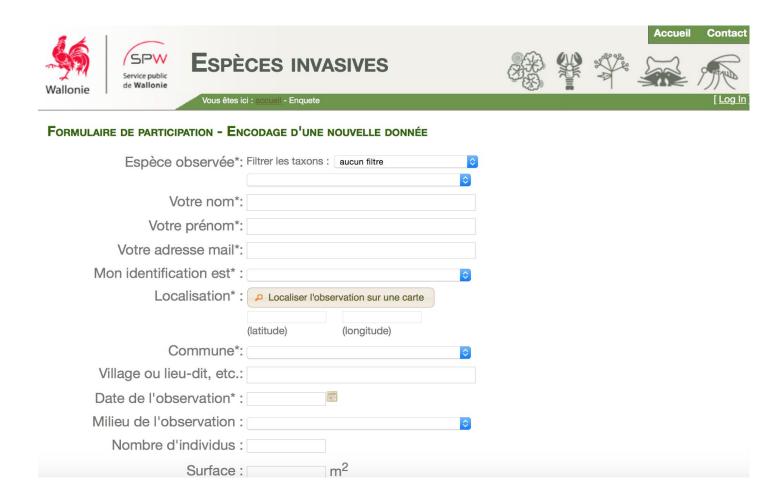
© Rick Swartzentrov...

| Herkenning

Toon verspreidingskaart

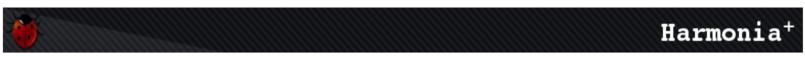
Zie ook: @

2. Early warning systems: Encodage DEMNA



3. Risk assessment protocols: Harmonia & Pandora





Navigation: home >> Harmonia+

Register Login

Harmonia+

Harmonia+ is a first-line risk assessment scheme for potentially invasive species. It present a series of questions concerning an organism, the answers of which need to be provided by one or more assessors. Harmonia+ is described in full here http://ias.biodiversity.be/harmoniaplus. Additional information is described by D'hondt et al. (manuscript).



context introduction establishment spread environmental im. plant im. animal im. human im. other im. services climate agg weight

Section A0 - Context

Questions from this module identify the assessor and the biological, geographical & social context of the assessment.

a01. Provide the name(s) of the assessors:

Comments:

Provide a (the) name(s) for the person(s) performing the assessment.

a02. Provide the name of the organism under assessment:

$\pmb{Current\ workflow\ :}\ {\sf Biodiversity\ observations} \to {\sf science\ and\ policy}$

- Slow
- Not easily repeatable
- Inflexible

Scope limitations:

- Taxonomically
- Spatially
- Temporally

What we need now ...

- → Which species are emerging / increasing?
 - → **Species of concern:** emerging species, evolving status...
- → Which areas-habitats are most affected?
 - → Areas of concern
- → What are the risks associated with these species?
 - Where ? On the short term ? Considering climate change ?
 - → Risk maps
 - What is their potential impact?

The project

Automated data mobilization framework

from diverse data sources

Data driven procedures for risk evaluation

- Risk maps
- Risk assessments

Timely inform IAS policy

- Regional
- Belgian
- EU
- International

Started

Databases

atabases

INBO

Natuurpunt/Natagora

GBIF
Occurrences

- WRIMS
- RINSE
- FISH
- HARMONIA
- Freshwater invertebrates



Databases

Databases

INBO

- **DEMNA-OFFH**
- Natuurpunt/Natagora
- Belspo Projects and experts

- **WRIMS**
- **RINSE**
- **FISH**
- **HARMONIA**
- Freshwater invertebrates
- Manual of Alien Plants
- Belspo Projects and expert

WP2 **Data Mobilization**





OCCURRENCES





BE CHECKLIST

GBIF

Databases

Databases

IN DE Na

- INBO
- DEMNA-OFFH
- Natuurpunt/Natagora
- + Belspo Projects and experts

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WP3 **Trends and Indicators GBIF OCCURRENCES INDICATORS TRENDS** Χ **BE CHECKLIST**

GBIF

WP4 Risk evaluation

RISK MODELLING

OCCURRENCES



ANALYSIS → identification +

- Emergent species
- Range expansion (invasion status)
- Affected areas

RISK MAPPING



RISK ASSESSMENT



OCCURRENCES INDICATORS TRENDS BE CHECKLIST

RISK MODELLING

ANALYSIS → identification +

- Emergent species
- Range expansion (invasion status)
- Affected areas

RISK MAPPING



RISK ASSESSMENT



WP5
Informing
Policy and
Stakeholders

To be used

- > Facilities: GBIF; Lifewatch; Museums; Herbaria
- Data from a large set of local, regional, national and international initiatives (INBO, OFFH, observations.be, waarnemingen.be, GBIF), also museums and herbaria
- > Critical climatic variables by Cordex consortium
- Available decision support tools in Belgium

Outputs

- A national Alien Species checklist (to be included in Harmonia)
- National distribution maps for alien species, including temporal trends (to be included in Harmonia)
- National risk maps under current climatic conditions and future climate change scenario's
- Identification of emerging species, associated current and future risk

Open and transparent

Open data will ensure that stakeholders in Belgium and abroad can make use of the information we generate.

Open science ensures everyone is free to adopt and adapt the workflow.

Repeatable approach allows rapid and up-to-date IAS information

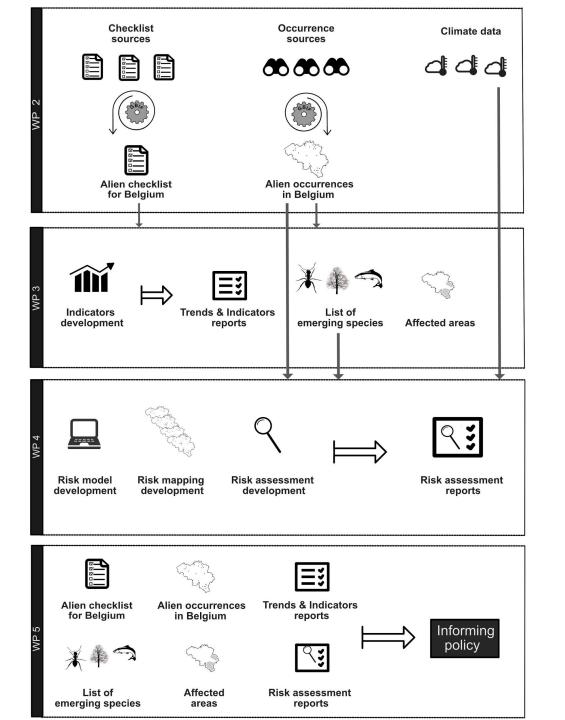
Checklist will serve as Belgian reference for international databases (IUCN - GRIIS, EASIN) and assessments (IPBES, SEBI).

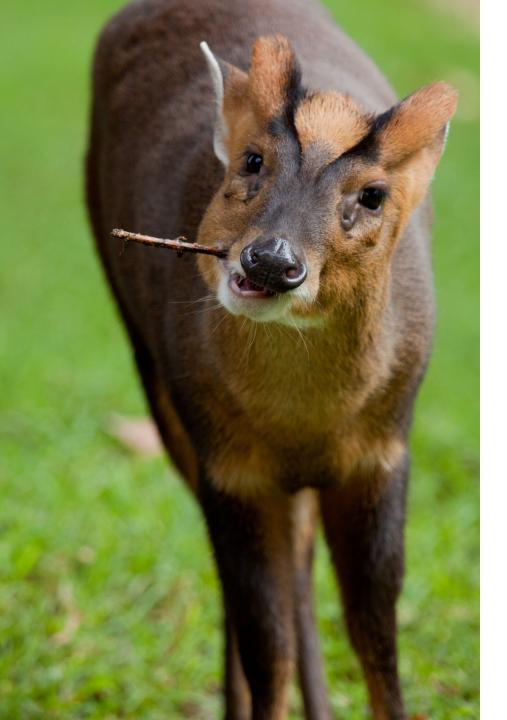
Workflow showcased through GEO BON, Invasivesnet, GBIF Observations and outcomes of risk evaluation will be used to provide science-based support for IAS policy

This approach and its technology can be used for other assessments (red-listing ...)

Other benefits

- Support for data collection and recognition for those providers
- Rapid feedback and transparency for data collectors on how their data is used.
- Improving communication between all organizations and individuals in the workflow
- A pan-taxonomic approach
- Repeatability of the workflow as often and whenever it is needed
- Potential reuse of the workflow in other countries





Thanks

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Peter Desmet

Quentin Groom

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