

# TrIAS

---

Publishing and analysing biodiversity data rapidly,  
repeatably and FAIR-ly for agile policy relevant results

Quentin Groom, Sonia Vanderhoeven, Lien Reyserhove, Damiano Oldoni, Tim Adriaens & Peter Desmet

# FAIR Data Principles

- Findable
- Accessible
- Interoperable
- Reusable

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J., Appleton, G., Axton, M., Baak, A., ... & Bouwman, J. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific data*, 3.



# The problem statement

## Policymakers

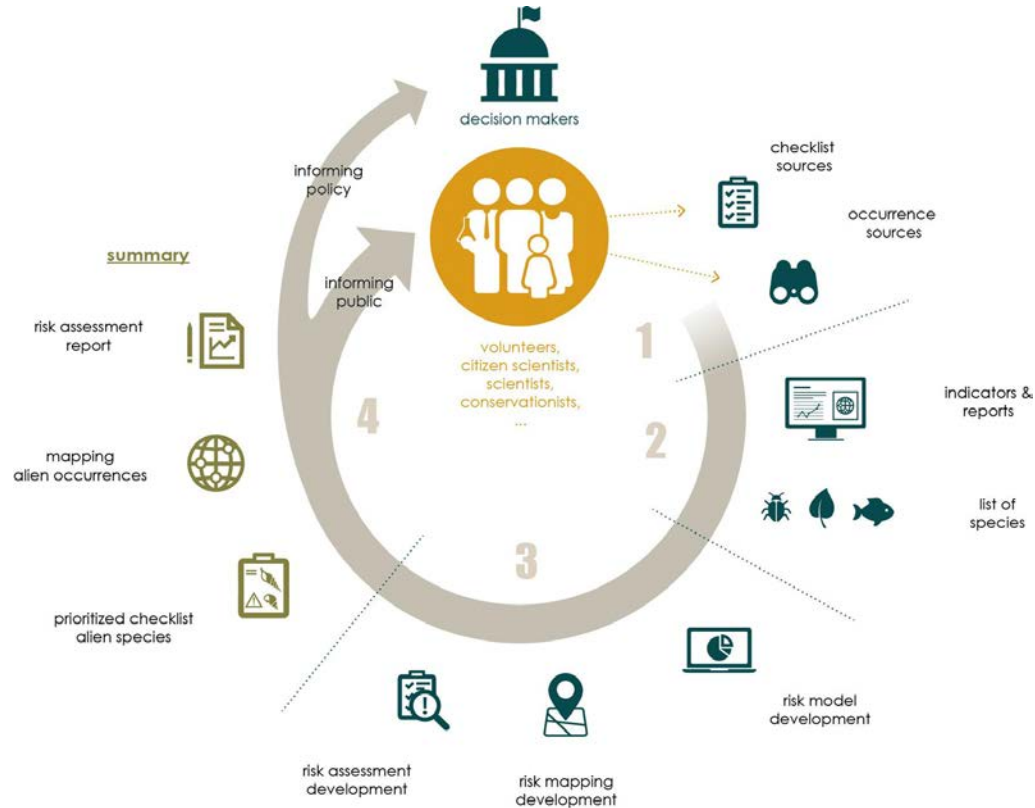
- Managing invasive species is expensive
- We lack information for prioritization
- Information is communicated too slowly
- Much of the available data are irrelevant or unsuitable for policy needs
- *“How do I know that these data are reliable?”*
- If people want to support conservation why don't they share their data?

## Citizens and their organizations

- Mobilizing data takes time and money
- Not interested in doing “real” work in my free time
- I want to manage my own data
- *“You can have all my data, but I'm not going to digitize it myself”*
- *“If my data are valuable why won't you pay for it?”*

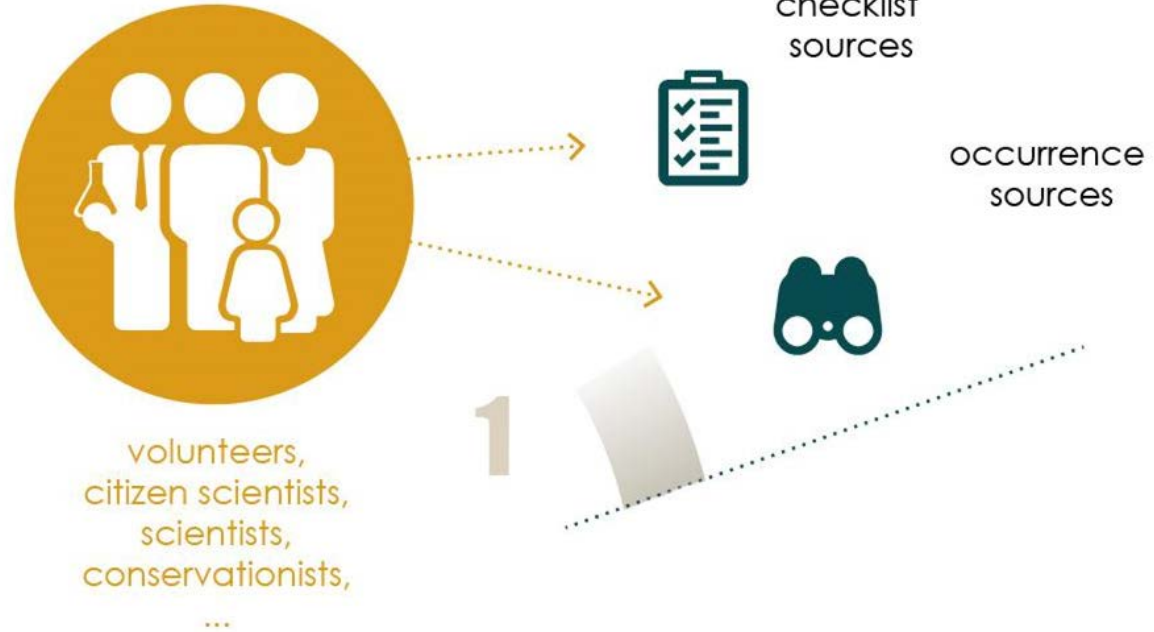
*“Suspicion is the cancer of friendship”* Francesco Petrarck

# The TrIAS-cycle



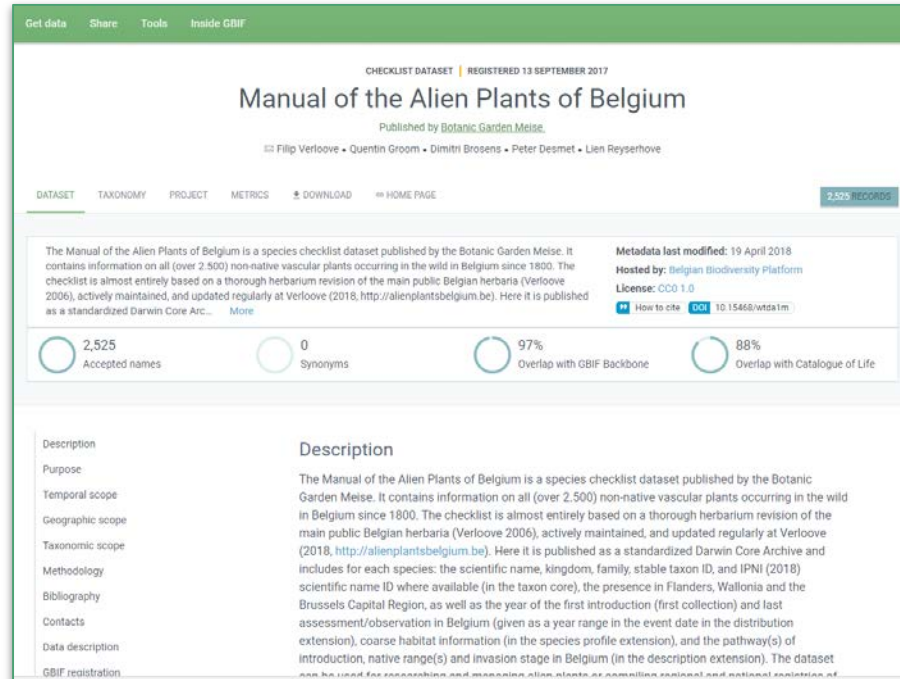
# 1. Data publication

- Checklists
- Citizen science
- Specimens
- Others



# Reuse

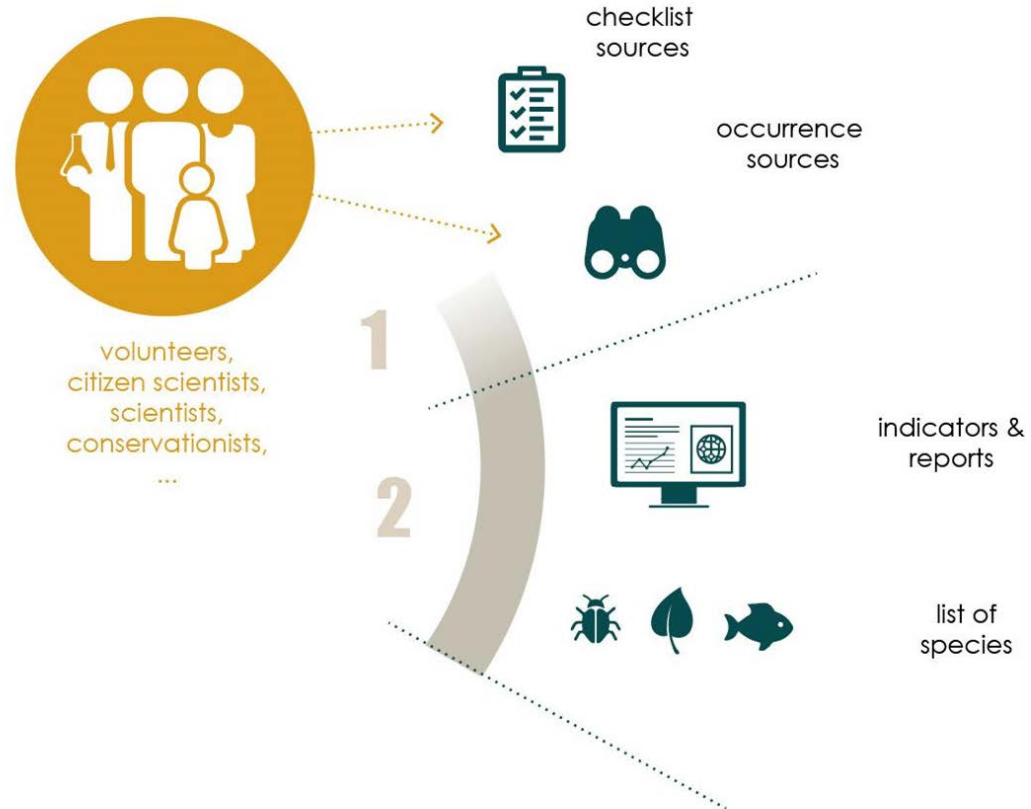
- Publishing data openly to GBIF
  - Standards
  - Taxonomic backbone
  - Publishing toolkit
  - Validation
  - Analysis tools
  - Exposure
  - Aggregation
- GitHub
- Open Science Framework
- The R Project for Statistical Computing

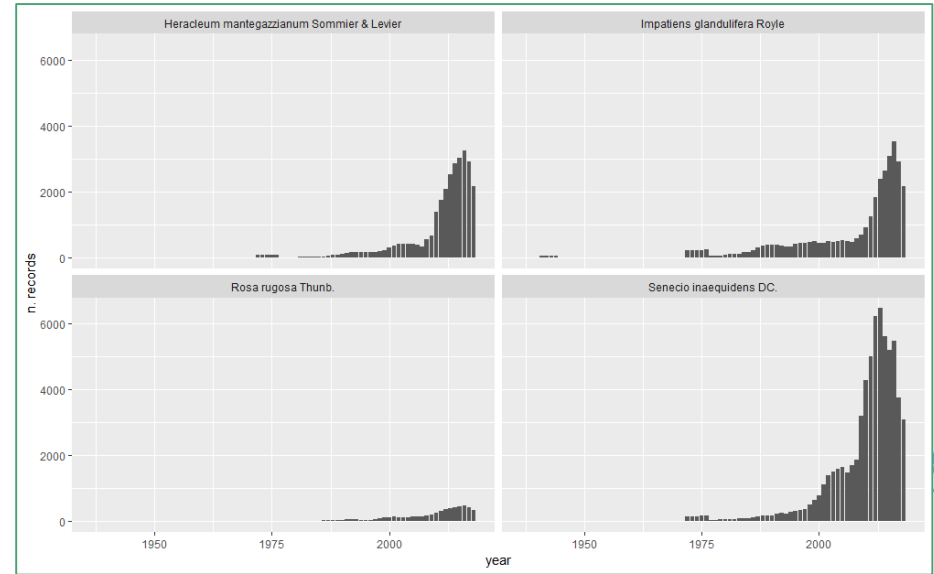
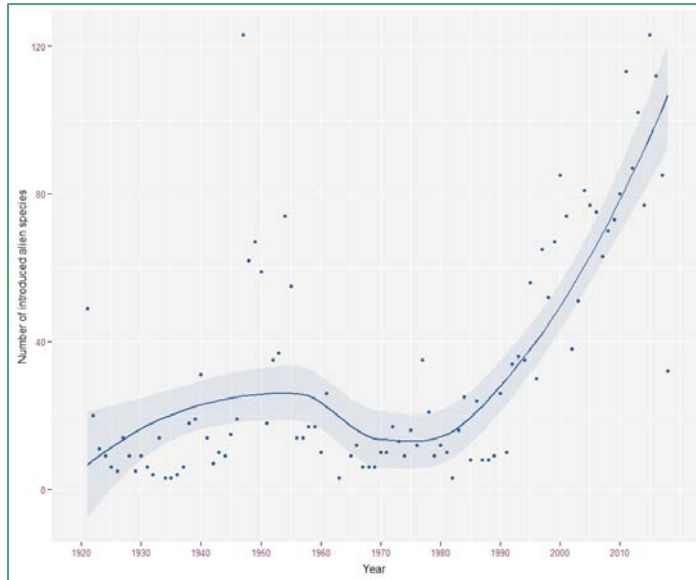
The screenshot shows the GBIF dataset page for 'Manual of the Alien Plants of Belgium'. The page includes a green header with navigation links (Get data, Share, Tools, Inside GBIF) and a title bar indicating it is a 'CHECKLIST DATASET' registered on 13 September 2017. The main title is 'Manual of the Alien Plants of Belgium', published by the Botanic Garden Meise, with authors Filip Verloove, Quentin Groom, Dimitri Brosens, Peter Desmet, and Lien Reyserhove. The page features a navigation menu (DATASET, TAXONOMY, PROJECT, METRICS, DOWNLOAD, HOME PAGE) and a '2,525 RECORDS' badge. A descriptive paragraph explains that the dataset contains information on over 2,500 non-native vascular plants in Belgium since 1800. Metadata indicates it was last modified on 19 April 2018, hosted by the Belgian Biodiversity Platform, and licensed under CC0 1.0. Four circular progress indicators show: 2,525 Accepted names, 0 Synonyms, 97% Overlap with GBIF Backbone, and 88% Overlap with Catalogue of Life. A 'Description' section on the right provides further details about the dataset's origin and content.

## 2. Data products

- A checklist of alien species
- Checklist indicators
- Occurrence indicators



# Checklist & Occurrence Indicators



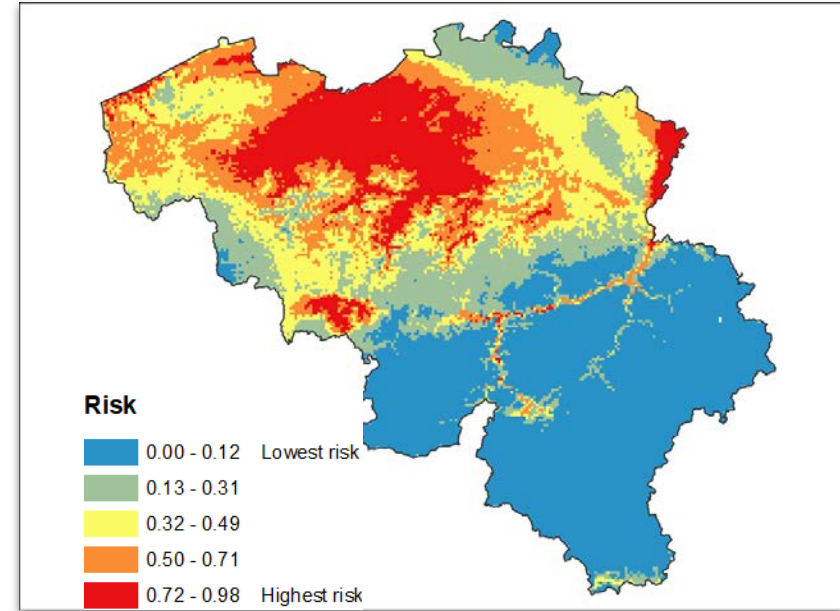
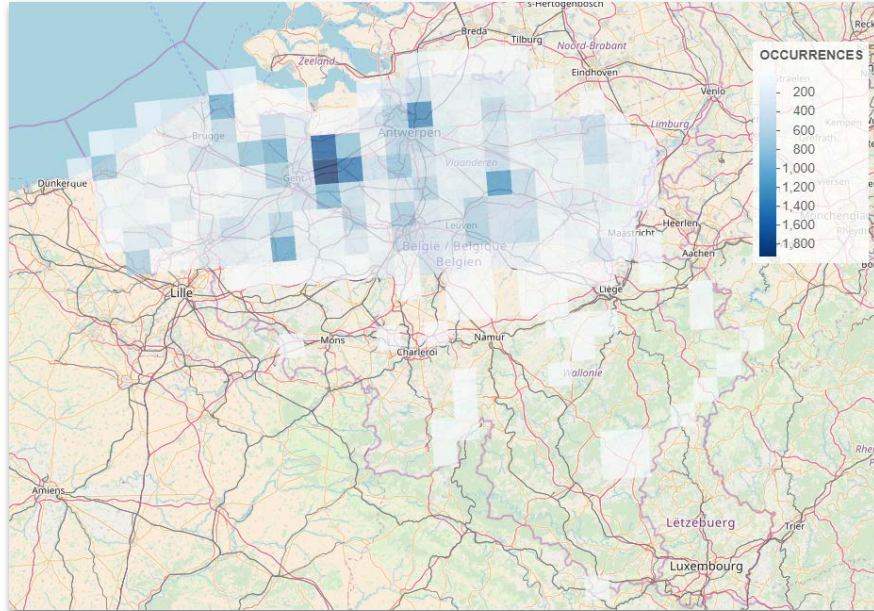


### 3. Prediction

- Mapping
- Risk assessment
- Modelling scenarios
- Reports



# Distribution maps and models



# Risk assessment



**.be Invasive species in Belgium**

Home About BFIS Species List Risk Analysis **Harmonia** Resources Outputs Mailing List Registry

Contact us | Login

**Harmonia**

- The Harmonia protocol
- The Alien Alert project
- Registry

Harmonia is a recently developed scheme for the first-line risk assessment of potentially invasive alien species. It stems from a review of the former [ISEIA protocol](#) that now incorporates all stages of invasion and different types of impacts.

Pandora is a complementary version of Harmonia that serves as a first-line risk assessment scheme for pathogenic or parasitic (micro)organisms, the results of which may feed into Harmonia.

Download the full schemes as a pdf form here : [full protocol](#)  
Or access the *online* versions here : [Harmonia](#)- [Pandora](#)- [Pandora](#).

**The Harmonia protocol**

Harmonia aims to provide a scheme that is complete yet simple enough to be practicable. It also allows for considerable flexibility in a variety of manners.

- The scheme is applicable to different taxa.
- It is not restricted to a given area or environment.
- The invasion process is covered from the introduction stage up to impacts.
- Different types of impacts are included; notably on environmental, plant, animal & human health.
- Considerable attention is paid to the role of pathogens in invasion, for which we have constructed Pandora.
- The protocol has a rigid conceptual backbone.
- Many examples are included as to support an assessment.
- Much information can be compiled as to facilitate a more complete, second-line risk analysis.




**RISK ANALYSIS REPORT OF NON-NATIVE ORGANISMS IN BELGIUM**

Photo: T. GBAWINSKI

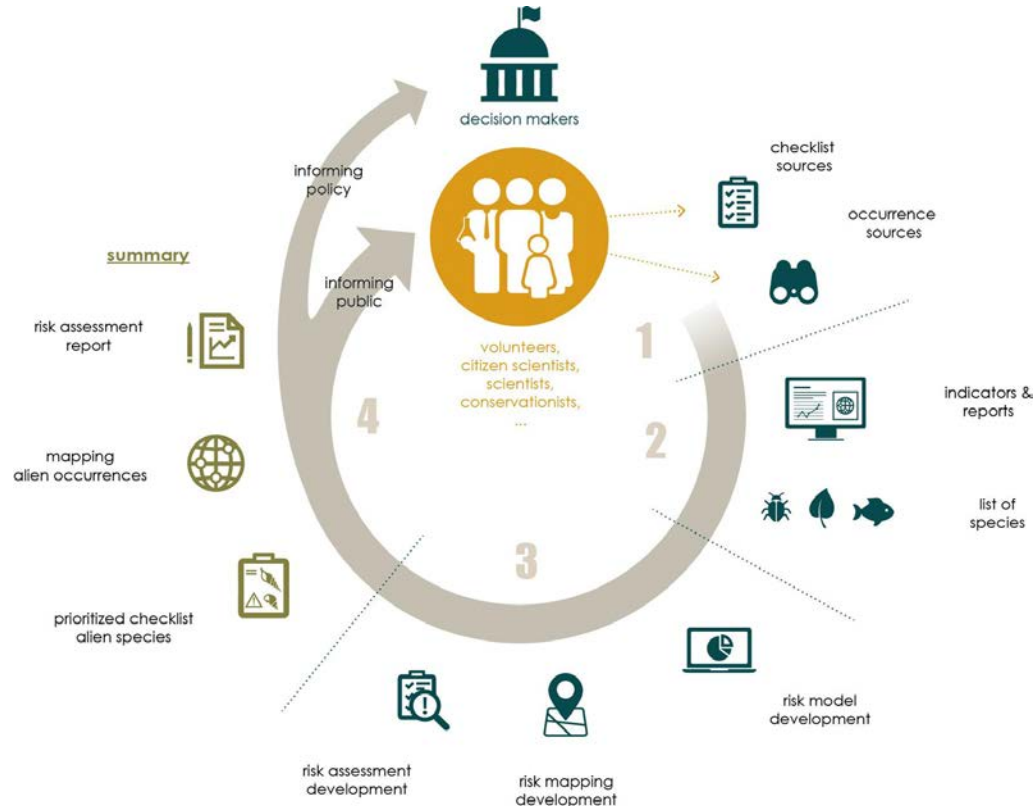
SPW / Région wallonne  
RAPSORS - STUSS

Resources naturelles

**Risk analysis of the Reeves' muntjac *Muntiacus reevesi***

Wallonie  
Université de Liège 

# 4. Communication



# Communication



**.be Invasive species in Belgium**

Home About BFIS Species List Risk Analysis Harmonia Resources Outputs Mailing List Registry

Contact us | Login |

**Sciurus carolinensis** - Grey squirrel

This species has not yet been observed in Belgium. Today it is already naturalized in Ireland, Italy, United Kingdom. It is recorded on the Belgian alert list (a0) of invasive species.

[more information](#)

More and more species are introduced outside their natural geographic range due to the increasing rate of trade in the world. Some of them are able to establish in their new environment and to develop dense populations where they can outcompete native species or disrupt ecosystem functioning. They are called invasive alien species.

The Belgian Forum on Invasive Species gathers scientific information on presence, distribution, auto-ecology, adverse impacts and management of invasive alien species. It regularly updates a reference list of exotic species in Belgium and is responsible for the elaboration of a black list gathering species with a strong detrimental impact on biodiversity.

Information exchange on exotic species is promoted through this website and by occasional forum meetings. The Belgian Forum on Invasive Species supports activities of the Belgian Contact Group on Invasive Species. It is the national node of the [IUCN](#) Invasive Species Specialist Group and of the [NORANIS](#) network.

**.be Biodiversity.be**

**News**

Previous 1/11 Next

Analyzing remotely sensed structural and chemical canopy traits of a forest invaded by *Prunus serotina* over multiple spatial scales  
ARTICLE : Ewald et al. 2018 Biological Invasions  
Posted on 10 Jul 2018

Cost-benefit analysis for invasive species control: the case of greater Canada goose *Branta canadensis* in Flanders  
ARTICLE : Reyns et al. (2018) PeerJ  
Posted on 01 Feb 2018

Beyond protocols: improving the reliability of expert-based risk analysis underpinning invasive species policies  
ARTICLE : Vanderhoeven et al. (2017) Biological Invasions  
Posted on 28 Apr 2017

Assessing the assessments: evaluation of four impact assessment protocols for invasive alien species  
ARTICLE : Turbé et al. Diversity and Distribution (2017)  
Posted on 18 Jan 2017

© 2010-2018 by the Belgian Biodiversity Platform



@cabbageleek

# TrIAS

Tracking Invasive Alien Species

