A new template for invasive species risk analysis: a support for decision makers

Etienne Branquart, Tim Adriaens, Sonia Vanderhoeven , Hans van Gossum, Bram D'hondt…

… and many other colleagues!

Cellule interdépartementale **Espèces invasives**

1. Risk analysis standards
Prevention in SPS Agreement

What? WTO Agreement on the application of (phyto-) sanitary measures ("*prevention is better than cure"* principle);

Aim? Adoption of measures to protect human, animal and plant life without creating arbitrary discrimination or disguised restriction on trade;

How? Use of international standards and available scientific evidence to justify trade restrictions (focus on risk analysis tools).

1. Risk analysis standards
National measures

Brief statement of grounds:

- Necessary
- Non-discriminatory
- Proportionality

Directive 98/34/EC, provision of information in the field of technical standards and regulation.

1. Risk analysis standards
Logical framework

Level of risk linked to organism introduction

3

Choice of appropriate risk management options taking into account:
- necessity
- cost effectiveness & feasibility
- non discimination
- minimal impact on trade
- …

Acceptable level of risk

2. The Belgian risk analysis scheme

Support for the development of regulatory tools

Adoption of the "prevention is better than cure" principle

Preparation of detailed risk analysis reports to justify risk management measures:

> import limitations (federal)

> trade restrictions (regions)

> holding conditions (regions)

Result of a joint effort provided by numerous scientists and policy makers in Belgium.

2. The Belgian risk analysis scheme

Large partnership between scientific institutes

2. The Belgian risk analysis scheme

More than 20 non-native species covered

Scientific Name	Common Name EN	Taxonomic Group	Category	Report
Callosciurus erythraeus	Pallas's squirrel, Red-bellied tree squirrel	Mammals	A1	
Carpobrotus spp.	Hottentot fig	Vascular plants	A0	
Cervus nippon	Sika deer	Mammals	A0	
Crassula helmsii	New zealand pigmyweed	Vascular plants	A1	
Egeria densa	Brazilian waterweed	Vascular plants	A1	
Hydrocotyle ranunculoides	Water pennywort	Vascular plants	A2	
Lagarosiphon major	Curly waterweed	Vascular plants	A1	
Ludwigia grandiflora	Water primrose	Vascular plants	A2	
Ludwigia peploides	Water primrose	Vascular plants	A1	

http://ias.biodiversity.be

2. The Belgian risk analysis scheme

A new scheme derived from ISPM 11 (IPPC)

STAGE 1: INITIATION

- Organism identity
- Organism distribution

STAGE 2: RISK ASSESSMENT

- Introduction in Belgium
- Establishment capacity
- Spread capacity
- Consequences of establishment

Harmonia+

STAGE3: RISK MANAGEMENT

- Relative importance of introduction pathways
- Effect of preventive actions (incl. trade restriction)
- Effects of control and eradication actions

3. The risk assessment exercise

Examples derived from 5 test species

- Pre-identification of 23 non-native plant and animal species
- Trade restriction identified as an adequate risk management option for at least 19 organisms (80%)

N. Borel

Water primrose (*Ludwigia grandiflora*)

R. Mutch

American bullfrog (*Lithobates catesbeianus*)

J.C. Schou

Raccoon dog (*Nyctereutes procyonoides*)

wikipedia

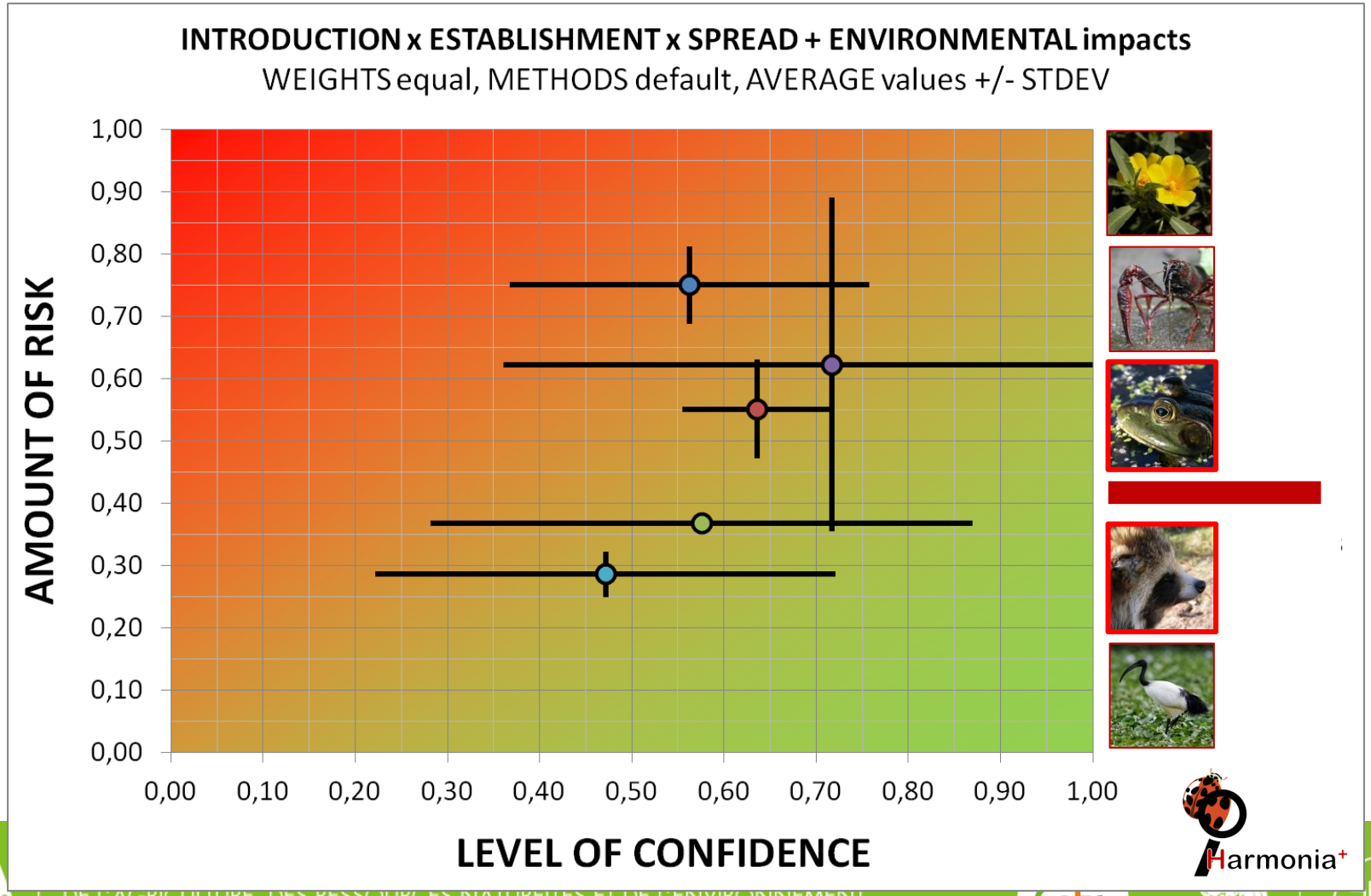
Louisiana crayfish (*Procambarus clarkii*)

V. Onishchenko

Sacred ibis (*Threskiornis aethiopica*)

3. The risk assessment exercise

Scoring environmental risks with Harmonia+

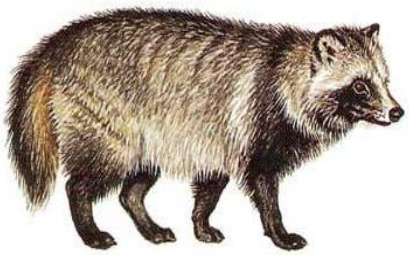


3. The risk assessment exercise

Impact of predation by the raccon dog (textual)

The raccoon dog is an opportunist and generalist omnivorous carnivore, characterized as collector or gatherer. **Concerns about its harmfulness on bird and amphibian populations were raised after its arrival in Central Europe** (…).

Hunters have suspected for a long time that raccoon dogs may destroy the nests of many game bird species. This assertion was however not based on hard facts. In addition, most studies dealing with the effects of predation are based on the analysis of scats or stomach content, where it is difficult to make the distinction between remains from actual predation or from scavenging. **Today robust scientific studies clearly demonstrating damage caused to native birds are scarce or contradictory, even in insular environments** (…).



Its impact on prey species is lower than this due to the activity of native predators as the red fox*; there is also a general agreement that the raccoon dog behaves rather as a scavenger or a gatherer than as an active predator.

3. The risk assessment exercise

Impact of predation by the raccon dog (scoring)

A13. *The Organism* has a(n) [○ inapplicable ○ low • medium ○ high] effect on the local decline of native species diversity, through predation, parasitism or herbivory.

Acert8. Answer provided with a [○ low • medium ○ high] level of confidence.

Abox13. Comments :

More info:

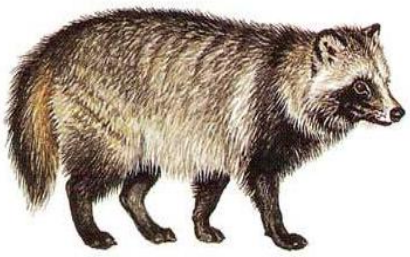
Indicate whether *The Organism* can affect particular native species through its feeding habits (predation, parasitism, or herbivory).

Assume that *The Area* is fully exposed to *The Organism*. Then, estimate the consequence of it feeding.

Low : at worst, *The Organism* causes limited population declines in species that are not of conservation concern

Medium : at worst, *The Organism* causes severe population declines in species that are not of conservation concern, or limited population declines in species that are of conservation concern

High : at worst, *The Organism* causes severe population declines in species that are of conservation concern



The effect on local decline of native species diversity through predation is scored as **medium** (i.e. may only cause limited decline in species of conservation concern).

3. The risk assessment exercise

Impact of predation by the bullfrog (textual)

Adult bullfrogs are **voracious carnivores, eating any animal smaller than themselves**, mainly crustaceans and insects, but also rodents, bats, frogs, birds, fish and reptiles (…).

Predation by bullfrog can result in reduction, elimination or displacement of native species, as has been shown by numerous authors. Introduced bullfrogs have been blamed for amphibian declines in much of western North America. Its predatory habits have been implicated in the decline of several native ranid frog species and one snake species (…).

Several removal experiments have also shown **spectacular recovery of native species after bullfrogs were removed or eradicated** from a site, which could be attributed to both behavioural changes and increased population sizes of native species.

3. The risk assessment exercise

Impact of predation by the bullfrog (scoring)

A13. *The Organism* has a(n) [○ inapplicable ○ low ○ medium ◉ high] effect on native species, through **predation, parasitism or herbivory**.

Acert9. Answer provided with a [○ low ○ medium ◉ high] level of confidence.

Abox13. Comments :

More info:

Indicate whether *The Organism* can locally affect native species through its feeding habits (predation, parasitism or herbivory).

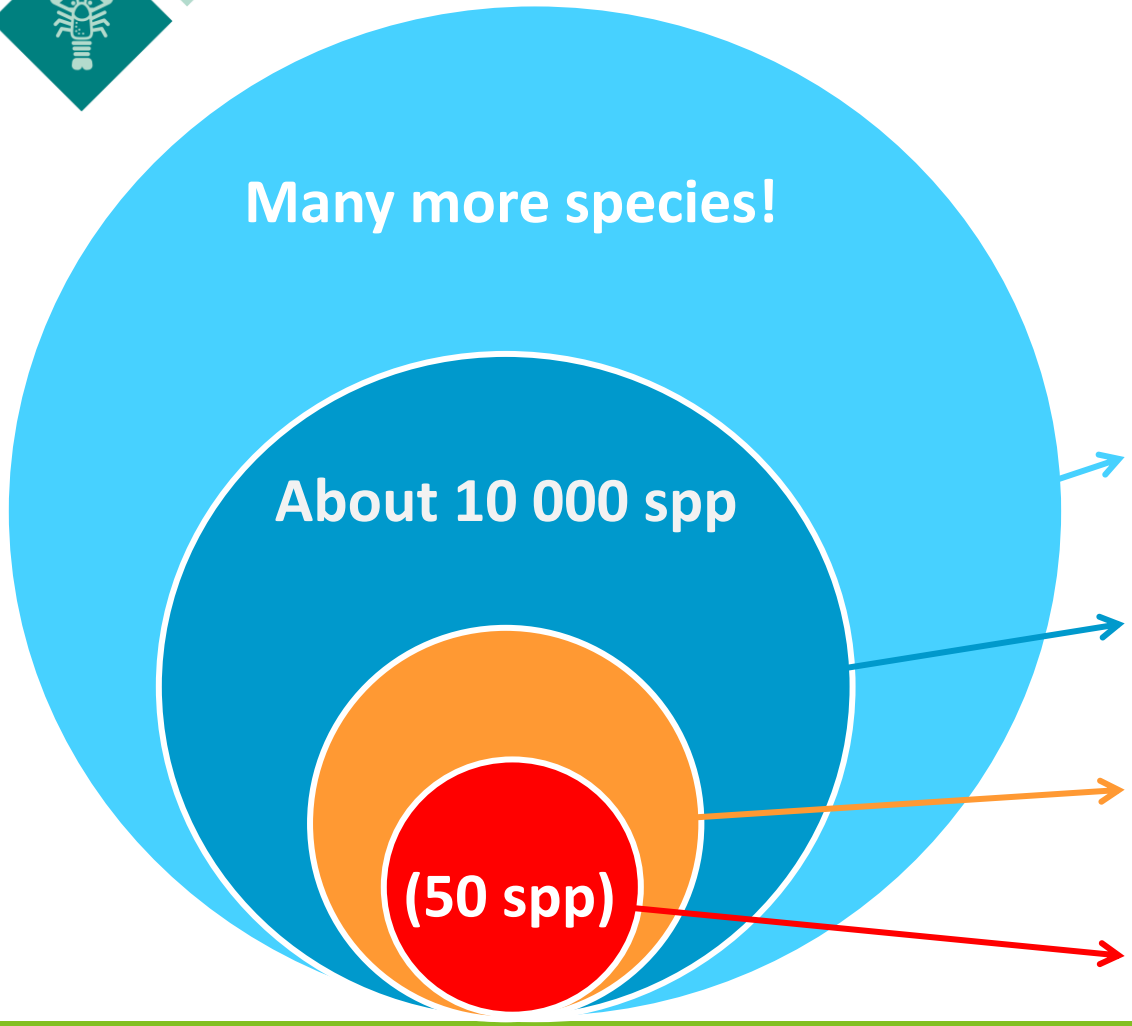
Assume that *The Organism* becomes widespread within *The Area*. Then, estimate the consequence of it feeding on targets.

Low : at worst, *The Organism* causes limited population declines in species that are not of conservation concern. **Medium** : at worst, *The Organism* causes severe population declines in species that are not of conservation concern, or limited population declines in species that are of conservation concern. **High** : at worst, *The Organism* causes severe population declines in species that are of conservation concern.

The effect on local decline of native species diversity through predation is scored as **high** (i.e. may cause severe population decline in species of conservation concern).

4. Horizon scanning

Harmonia+ as a screening tool



Alien species not yet established in Europe

Alien species established in Europe

IAS of regional and MS concern

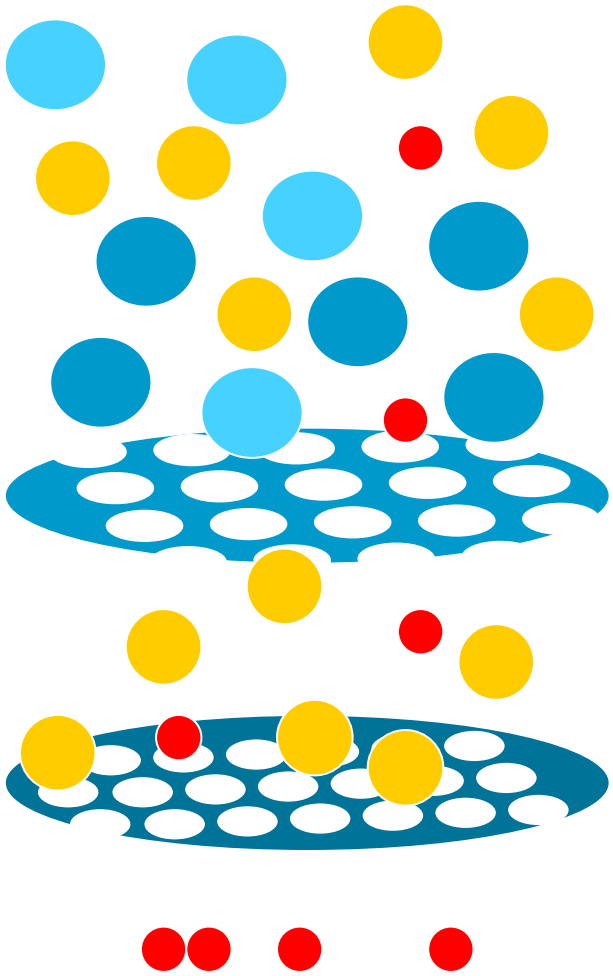
IAS of Union concern

4. Horizon scanning

Harmonia+ as a screening tool

Horizon scanning and prioritization tools (e.g. Harmonia+)

Detailled risk assessment



Alien species

(established or not yet established in Europe)

List of priority species for risk assessment

List of species of EU concern

5. General conclusions

- The identification of non-native species to be submitted to trade restrictions have to be justified by sound scientific information;
- Both quick screening tools and detailed risk analyses are needed at that level (two step approach);
- New tools were developed in Belgium to meet these goals and facilitate the development of national and European regulation aiming at curbing the introduction of detrimental species;
- Regional cooperation for prioritization and risk analysis deserves to be emphasized to reduce work redundancy and share expertise, as advised by the new EU Regulation.

Thank you very much for your attention!