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

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... and many other colleagues!

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

1. Level of risk linked to organism introduction

2. Acceptable level of risk

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

STAGE 1: INITIATION
- Organism identity
- Organism distribution

STAGE 2: RISK ASSESSMENT
- Introduction in Belgium
- Establishment capacity
- Spread capacity
- Consequences of establishment

STAGE 3: 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%)

**3. The risk assessment exercise**

Scoring environmental risks with Harmonia+

**INTRODUCTION x ESTABLISHMENT x SPREAD + ENVIRONMENTAL impacts**

WEIGHTS=equal, METHODS default, AVERAGE values +/- STDEV

**AMOUNT OF RISK**

**LEVEL OF CONFIDENCE**
3. The risk assessment exercise
Impact of predation by the raccoon 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 raccoon dog (scoring)

<table>
<thead>
<tr>
<th>The Organism has a(n)</th>
<th>effect on the local decline of native species diversity, through predation, parasitism or herbivory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Answer provided with a [low, medium, high] level of confidence.</td>
</tr>
<tr>
<td>A.</td>
<td><strong>More info:</strong></td>
</tr>
<tr>
<td>A.</td>
<td>Indicate whether The Organism can affect particular native species through its feeding habits (predation, parasitism, or herbivory).</td>
</tr>
<tr>
<td>A.</td>
<td>Assume that The Area is fully exposed to The Organism. Then, estimate the consequence of its feeding.</td>
</tr>
<tr>
<td>A.</td>
<td>Low: at worst, The Organism causes limited population declines in species that are not of conservation concern.</td>
</tr>
<tr>
<td>A.</td>
<td>Medium: at worst, The Organism causes severe population declines in species that are of conservation concern.</td>
</tr>
<tr>
<td>A.</td>
<td>High: at worst, The Organism causes severe population declines in species that are of conservation concern.</td>
</tr>
</tbody>
</table>

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)

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

Many more species!

About 10 000 spp

(50 spp)

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+)

Detailed 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!