



## WORKSHOP

Assessment of current and future  
Invasive Alien plant Species (IAS)  
in European coastal dune  
ecosystems

19-20(-21) May 2022

De Westhoek, De Panne, Belgium



Vlaanderen  
is natuur

AGENTSCHAP  
NATUUR & BOS



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RESEARCH INSTITUTE  
NATURE AND FOREST

# Break-out composition

## ▶ Salties

1110 – Sandbanks, 1130 – Estuaries, 1140 - Mudflats and sandflats, 1210 - Annual vegetation of drift lines \*, 1230 - Vegetated sea cliffs of coasts \*, 1310 - Annuals colonising mud and sand, 1320 - Spartina swards, 1330 - Atlantic salt meadows

## ▶ Sandies

2110 - Embryonic shifting dunes, 2120 - Shifting dunes along shoreline (white dunes), 2130 - Fixed coastal dunes with herbs (grey dunes), 2140 - Decalcified dunes with Empetrum \*, 21A0 - Machairs \*, 2150 - Atlantic decalcified fixed dunes, 2190 - Humid dune slacks (**consider ponds and macrophytes in this habitat**), 2320 - Dry sand heaths with Calluna & Empetrum \*

## ▶ Shrubbies

2160 - Dunes with Hippophae rhamnoides, 2170 - Dunes with Salix repens ssp. Argentea, 2180 - Wooded dunes of the Atlantic region



Joining Breakout Rooms...

Breakout Room 1

It may take a few moments.

Salties	Sandies	Shrubbies
<i>Tim Adriaens</i>	<i>Bram D'hondt</i>	<i>Sam Provoost</i>
Martijn van de Loo	John Houston	Benoît DELANGUE
Berea Rodríguez Adesso	Isabelle Spall	Janneke van der loop
Marc Leten	Marta Pérez Diz	Noa Núñez González
Patrik Oosterlynck	Wouter Van Landuyt	Indra Jacobs
Jasmijn Hillaert	Kathryn Hewitt	Frédérique Steen
Paul Rooney	Johannes Jansen	Luc Geelen
Robbe Paredis	Reinhardt Strubbe	Jake Burton
Edward Vercruysse	Johan Lamaire	Kris Lesage
Jane Reniers	Sander Carael	Guy Vileyn
	Jean-Louis Herrier	
<b>49 species</b>	<b>210 species</b>	<b>167 species</b>



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Day 2

(i)
' <i>Ameiurus melas</i> (Rafinesque, 1820)
<del>'<i>Ameiurus nebulosus</i> (Lacépède, 1819)</del>
' <i>Axis axis</i> (Erxleben, 1777)
<del>'<i>Bucconia probovialis</i> Hartman, 1940</del>
' <i>Callosciurus finlaysonii</i> (Horsfield, 1823)
<del>'<i>Casio canadensis</i> Rafin., 1820</del>
' <i>Celastrus orbiculatus</i> Thunb.
' <i>Channa argus</i> (Cantor, 1842)
' <i>Faxonius rusticus</i> (Girard, 1852)
' <i>Gambusia affinis</i> (Baird & Girard, 1853)
' <i>Gambusia holbrooki</i> Girard, 1859
' <i>Hakea sericea</i> Schrad. & J.C.Wendl.
' <i>Koenigia polystachya</i> (Wall. ex Meisn.) T.M.Schust. & Reveal
<del>'<i>Lagoccephalus scleratus</i> (Gmelin, 1789)</del>
' <i>Lampropeltis getula</i> (Linnaeus, 1766)
' <i>Limnoperna fortunei</i> (Dunker, 1857)
' <i>Morone americana</i> (Gmelin, 1789)
<del>'<i>Pennisetum</i> (Linnaeus, 1759)</del>
<del>'<i>Phytolacca americana</i> L.</del>
' <i>Pistia stratiotes</i> L.
<del>'<i>Perotis miles</i> (Bennett, 1826)</del>
' <i>Pycnonotus cafer</i> (Linnaeus, 1766)
' <i>Rugulopteryx okamurae</i> (E.Y.Dawson) I.K.Hwang, W.J.Lee & H.S.Kim, 2009
<del>'<i>Schizoperella japonica</i> Ootsumi, 1890</del>
' <i>Solenopsis geminata</i> (Fabricius, 1804)

(i)
' <i>Solenopsis invicta</i> Buren, 1972
' <i>Solenopsis richteri</i> Forel, 1909
' <i>Wasmannia auropunctata</i> (Roger, 1863)

(2) in the table, the following species are

Species
(i)
' <i>Fundulus heteroclitus</i> (Linnaeus, 1766)
' <i>Xenopus laevis</i> (Daudin, 1802)

# Break-out instructions

## 1. Quality check

- ▶ Any species missing, any species redundant
- ▶ Check habitat susceptibility
  - Any (potential) habitats missing?
  - Any habitats that should not have been flagged?
- ▶ Impact mechanism
  - **Description:** IUCN (2020a) IUCN EICAT Categories and Criteria. The Environmental Impact Classification for Alien Taxa (EICAT): 1<sup>st</sup> edition. Gland, Switzerland and Cambridge, UK:  
IUCN. <https://doi.org/10.2305/IUCN.CH.2020.05.en>
  - Bring in line with impact scoring (consistency) i.e. you can adjust that after the scoring of impact

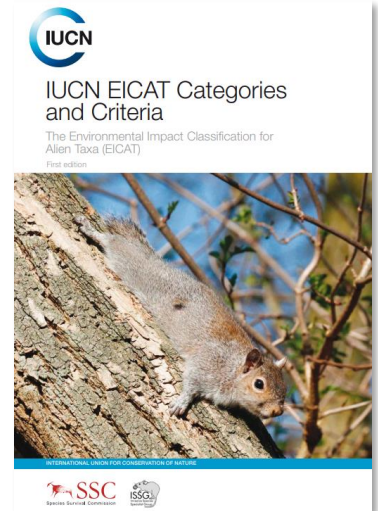
		Risk Score				
Impact	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		likelihood				



# Break-out instructions

The impact mechanisms are:

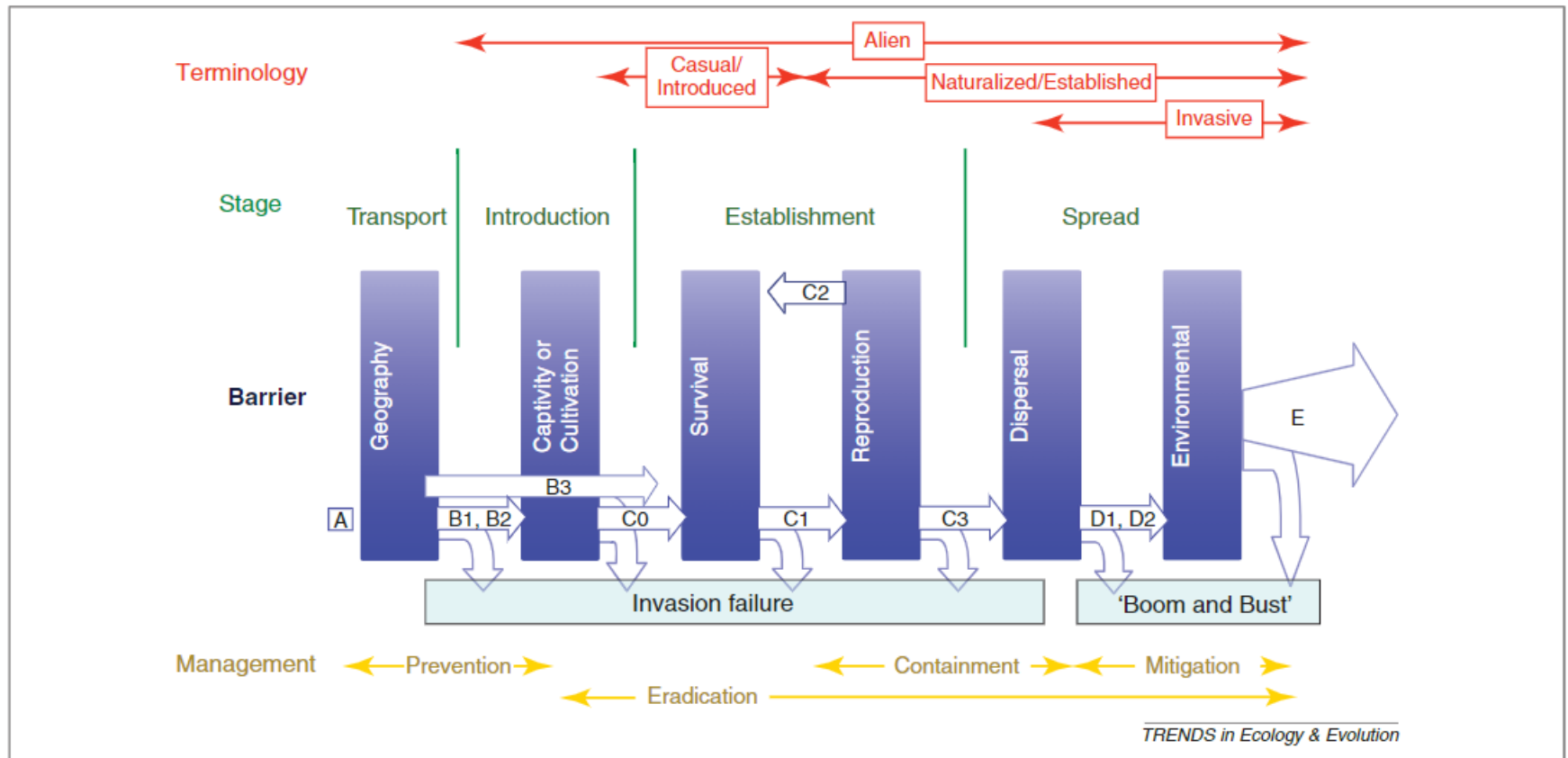
1. **Competition** – the alien taxon competes with native taxa for resources (e.g., food, water, space), leading to deleterious impact on native taxa.
2. **Predation** – the alien taxon predares on native taxa, leading to deleterious impact on native taxa.
3. **Hybridisation** – the alien taxon hybridises with native taxa, leading to deleterious impact on native taxa.
4. **Transmission of disease** – the alien taxon transmits diseases to native taxa, leading to deleterious impact on native taxa.
5. **Parasitism** – the alien taxon parasitises native taxa, leading to deleterious impact on native taxa.
6. **Poisoning/toxicity** – the alien taxon is toxic, or allergenic by ingestion, inhalation or contact, or allelopathic to plants, leading to deleterious impact on native taxa.
7. **Bio-fouling or other direct physical disturbance** – the accumulation of individuals of the alien taxon on the surface of a native taxon (i.e., bio-fouling), or other direct physical disturbances not involved in a trophic interaction (e.g., trampling, rubbing, etc.) leads to deleterious impact on native taxa.
8. **Grazing/herbivory/browsing** – grazing, herbivory or browsing by the alien taxon leads to deleterious impact on native taxa.
9. **Chemical impact on ecosystem** – the alien taxon causes changes to the chemical characteristics of the native environment (e.g., pH; nutrient and/or water cycling), leading to deleterious impact on native taxa.
10. **Physical impact on ecosystem** – the alien taxon causes changes to the physical characteristics of the native environment (e.g., disturbance or light regimes), leading to deleterious impact on native taxa.
11. **Structural impact on ecosystem** – the alien taxon causes changes to the habitat structure (e.g., changes in architecture or complexity), leading to deleterious impact on native taxa.
12. **Indirect impacts through interactions with other species** – the alien taxon interacts with other native or alien taxa (e.g., through any mechanism, including pollination, seed dispersal, apparent competition, mesopredator release), facilitating indirect deleterious impact on native taxa.



Species level  
Ecosystem level

# Break-out instructions

## 2. Impact scoring





category	definition	Proposed label and controlled value string
A	Not transported beyond limits of native range	native
B1	Individuals in captivity or quarantine (i.e. individuals provided with conditions suitable for them, but explicit measures of containment are in place)	captive
B2	Individuals in cultivation (i.e. individuals provided with conditions suitable for them, but explicit measures to prevent dispersal are limited at best)	cultivated
B3	Individuals directly released into novel environment	released
C0	Individuals released outside of captivity or cultivation in a location, but incapable of surviving for a significant period	failing
C1	Individuals surviving outside of captivity or cultivation in a location, no reproduction	casual
C2	Individuals surviving outside of captivity or cultivation in a location, reproduction is occurring, but population not self-sustaining	reproducing
C3	Individuals surviving outside of captivity or cultivation in a location, reproduction occurring, and population self-sustaining	established
D1	Self-sustaining population outside of captivity or cultivation, with individuals surviving a significant distance from the original point of introduction	colonising
D2	Self-sustaining population outside of captivity or cultivation, with individuals surviving and reproducing a significant distance from the original point of introduction	invasive
E	Fully invasive species, with individuals dispersing, surviving and reproducing at multiple sites across a greater or lesser spectrum of habitats and extent of occurrence	widespreadInvasive

# Likelihood of introduction

# Likelihood of establishment

# Likelihood of spread

**Timeframe to consider: 2030 (the “Dunias”-lifetime)**

**Scope for scoring: the protected habitats (salt, sand, shrub)**

**Consider habitats in their spatial & landscape context  
(propagule pressure)**

**Horizon scan (likelihood, risk)**

**Scoring range:**

**1 very unlikely (to arrive/establish/spread)**

**2 unlikely**

**3 moderately likely**

**4 likely**

**5 very likely**

# To consider

## Introduction

Pathways (ornamental trade, natural dispersal, transport commodities)

Location & size of potential source populations (e.g. gardens, urban areas, ruderals)

Propagule pressure (number & frequency)

Presence in ornamental garden trade

## Establishment

Physiology (e.g. halophyte)

Reproductive biology (e.g. specific pollinators)

Constraints (e.g. cold induced germination)

Biotic resistance of the habitat

## Spread

Intrinsic natural dispersal capacity (e.g. wind dispersed, vegetative spread)

Human-mediated (visitors, cars etc.)

# Environmental impact

Impact on common **species and habitats**

Impact on **species and habitats of conservation concern**

**Impact on legally protected species (NATURA2000, national regimes)**

**Impact on keystone, threatened or emblematic (indicator, umbrella, flagship) species**

Impact on **ecosystem integrity** (“transformer species”)

*abiotic*: physical, chemical or structural properties (erosion, sedimentation, litter mineralization, water (O<sub>2</sub>, turbidity, pH, salinity), nutrient pools (eutrophication), vegetation structure, light

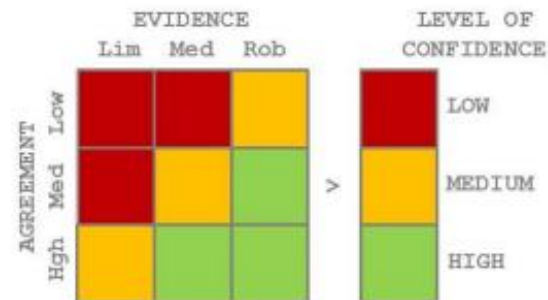
*biotic*: effects in the food web, pollination

# Environmental impact

Score	Biodiversity and ecosystem impact
Minimal	Short-term, small population losses, no significant ecosystem effect
Minor	Some ecosystem impact, reversible changes
Moderate	Measurable long-term damage to populations and ecosystem, but reversible; no extinction
Major	Long-term irreversible ecosystem change
Massive	Long-term population loss or extinction, affecting several species with serious ecosystem effects

Adapted from PRA template Union List PRA's (Roy, Rabitsch et al.)

# Confidence



Confidence Score	Examples
High	<p>There is direct relevant evidence to support the assessment.</p> <p>The situation can easily be predicted.</p> <p>There are reliable/good quality data sources on impacts of the species.</p> <p>The interpretation of data/information is straightforward.</p> <p>Data/information are not controversial, contradictory.</p>
Medium	<p>There is some evidence to support the assessment.</p> <p>Some information is indirect, e.g. data from phylogenetically or functionally similar species have been used as supporting evidence.</p> <p>The interpretation of the data is to some extent ambiguous or contradictory.</p>
Low	<p>There is no direct evidence to support the assessment, e.g. only data from other species have been used as supporting evidence.</p> <p>Evidence is poor and difficult to interpret, e.g. because it is strongly ambiguous.</p> <p>The information sources are considered to be of low quality or contain information that is unreliable.</p>



# Resources to consider

**SCORING GUIDANCE  
COMMENTS**  
(spreadsheet - *ANNEX\_AllInput*)

Habitat manual EC

Web of knowledge, scopus

Google scholar (grey literature)

CABI IS compendium

GBIF (& *GRIIS checklists*)

GRIIS

MAP

*... any others we should consider?*

