Invasive Alien Species and their Management

TRAINING FOR PRACTITIONERS

Developed by Jana Kus Veenvliet

Interreg
Danube Transnational Programme
Sava TIES

[Insert the date of the webinar]

www.interreg-danube.eu/sava-ties
Project co-funded by European Union funds (ERDF, IPA)

01

INTRODUCTION

The purpose of the webinar, introducing presenters,
the agenda and housekeeping rules.

goals
of the webinar

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knowledge

Inform on the recent advances in the understanding of invasion processes, outcomes and management of IAS.

co-operation

Practitioners from different sectors understand the immediate need for better cross-sectoral management of invasive alien species (IAS).

solutions

Participants discuss, on concrete cases, the obstacles and solutions for more effective management of invasive alien species.

today‘s presenter

Jana KUS VEENVLIET

Biologist at Institute Symbiosis, so. e.

Jana has more than 15 years of experience in nature conservation, particularly on invasive alien species and protected-area management. She is also a nature guide and runs ecotours through her non-profit company.

today‘s presenters

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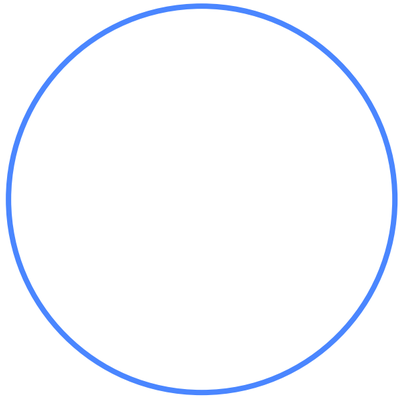
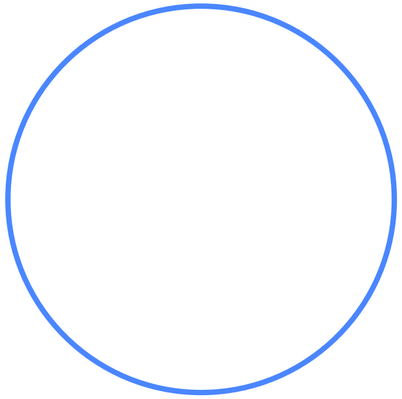


Name LAST NAME

Position at company xy

A short description of expertise.



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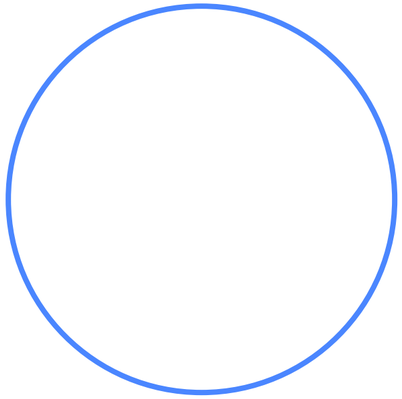
Position at company xy

A short description of expertise.



Name LAST NAME

Position at company xy

A short description of expertise.

housekeeping
rules

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Please, turn on the camera ...

… but turn off your microphone during presentations.

Write questions in the chat. We will answer them in the discussion.

We plan two breaks. Please, be back on time.

audience interaction

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Join at
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Click on a link in the chat
https://app.sli.do/event/1cfrvr1n/live/polls

today‘s agenda

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10:15 – 10:30	The Sava TIES Project
10:30 – 11:00	Session 1: Invasive Alien Species Terms and Concepts
11:00 – 11:15	Questions & answers of Session 1
11:15 – 11:25	Coffee break
11:25 – 12:15	Session 2: The Management of Invasive Alien Species

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12:15 – 12:30	Questions & answers of Session 2
12:30 – 13:00	Lunch break
13:00 – 13:40	Workshop: What do we need to improve the management of IAS?
13:40 – 14:00	Plenary session: presenting the results of the group work
14:00	End of the webinar

trainees

profile 1

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In which sector are you working?

ⓘ Start presenting to display the poll results on this slide.

trainees
profile 2

slido

How often do you work on topics, related to alien species?

ⓘ Start presenting to display the poll results on this slide.

trainees
profile 3

slido

Do you expect to work more often on alien species in the future?

ⓘ Start presenting to display the poll results on this slide.

02

Sava TIES Project

Goals and results of the project, putting the training in the context of the project.


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project goals

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- To find an effective solution for **permanent eradication of IAS**.
- To reduce **habitat fragmentation**.
- To **improve the connectivity** of the transnational ecological corridor.

project partners

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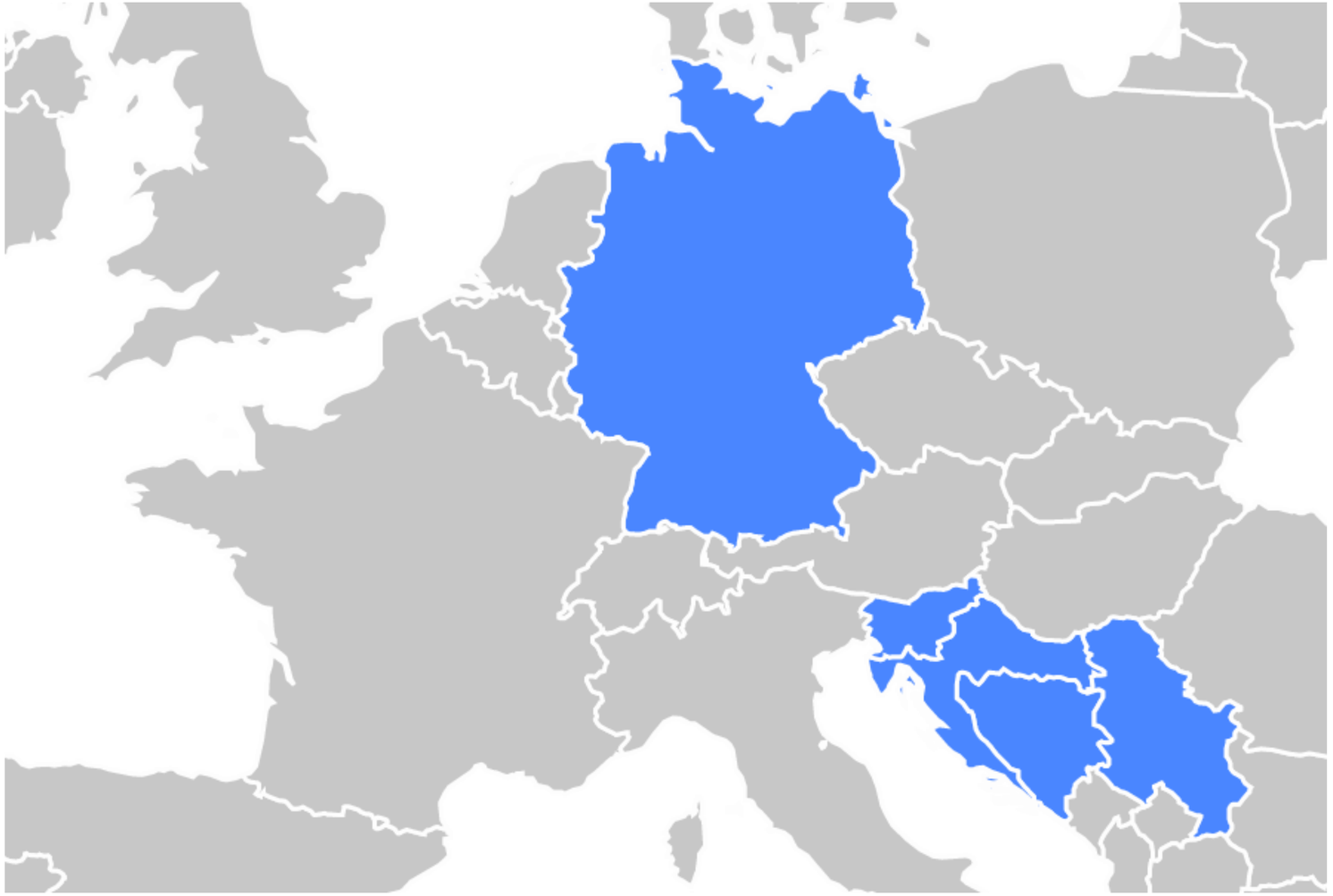

euroNATUR

LONJSKO POLJE
Park prirode • Nature Park

ZELENI PRSTEN
Zagrebačke županije

Ljubljansko barje
KRAJINSKI PARK

Nacionalni park Una

Centar za životnu sredinu

INSTITUTE FOR NATURE CONSERVATION OF VOJVODINA PROVINCE

VOJVODINAŠUME

project funding

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Overall project budget: 1,604.137 EUR

ERDF Contribution: 845.062,35 EUR

IPA Contribution: 518.454,10 EUR

project results

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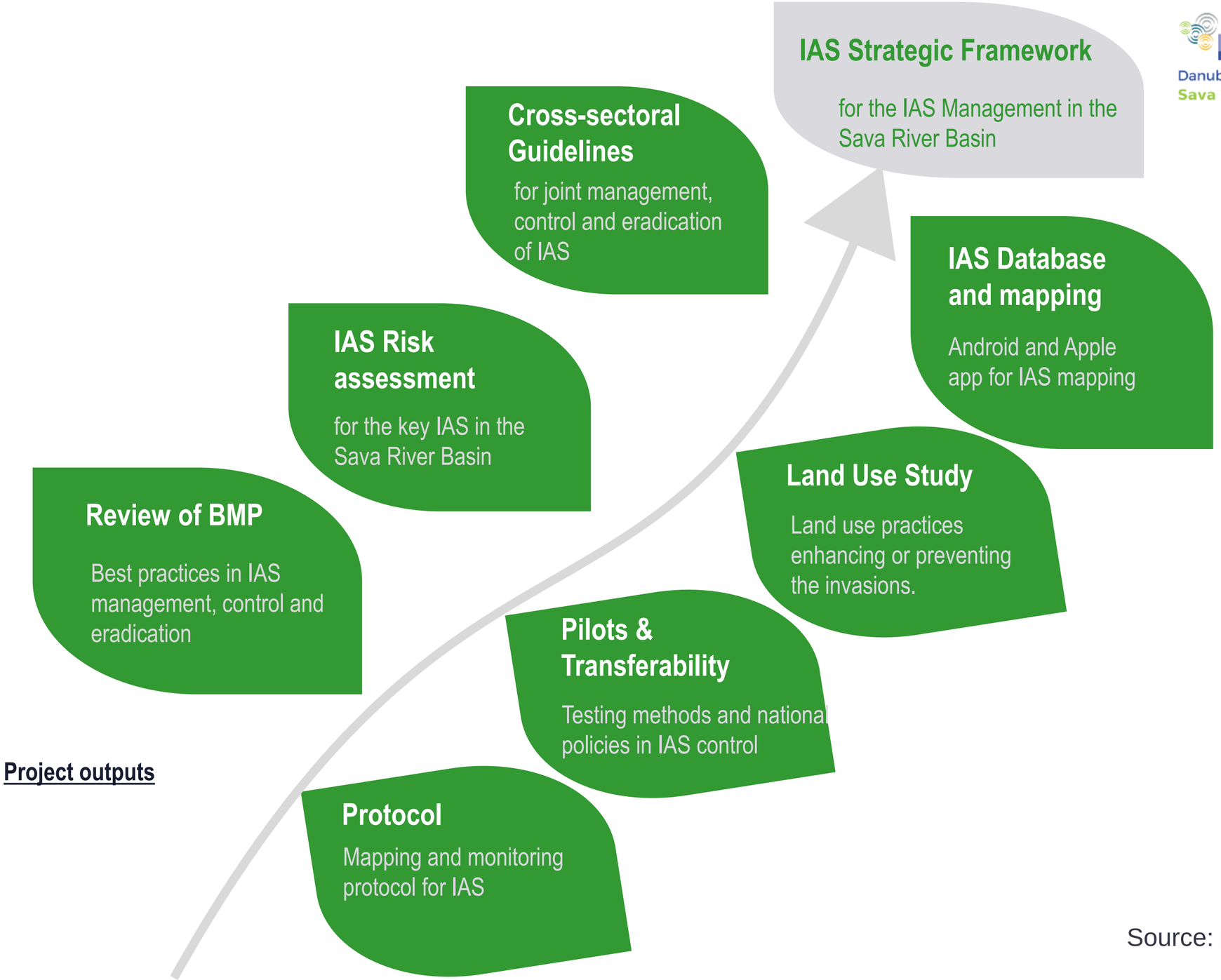

Project outputs

Source: Kiš et al. 2020

03

SESSON 1: INVASIVE ALIEN SPECIES TERMS AND CONCEPTS ON

Definition of terms, pathways of introductions, the invasion process

3.1

DEFINITION OF TERMS

native species

Native species is a species, subspecies or a lower taxa, which lives on the territory of its **usual (past or present) natural distribution**, even if it is present only sporadically. This also applies to the areas which the species **could have reached by the natural range expansion**, either by walking, flying, transport by water or wind of any other ways of dispersal.

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Touch-me-not Balsam
Impatiens noli-tangere

alien species

Alien species means any **live specimen** of a species, subspecies or lower taxon of animals, plants, fungi or micro organisms **introduced outside its natural range**; it includes any part, gametes, seeds, eggs or propagules of such species, as well as any hybrids, varieties or breeds that might survive and subsequently reproduce.

Rose Balsam
Impatiens balsamina

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invasive alien species

Invasive alien species means an alien species whose introduction or spread has been found to **threaten or adversely impact upon biodiversity** and related **ecosystem services**.

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illustrative example 1
translocation of fish between catchments

illustrative example 1
translocation of fish between catchments

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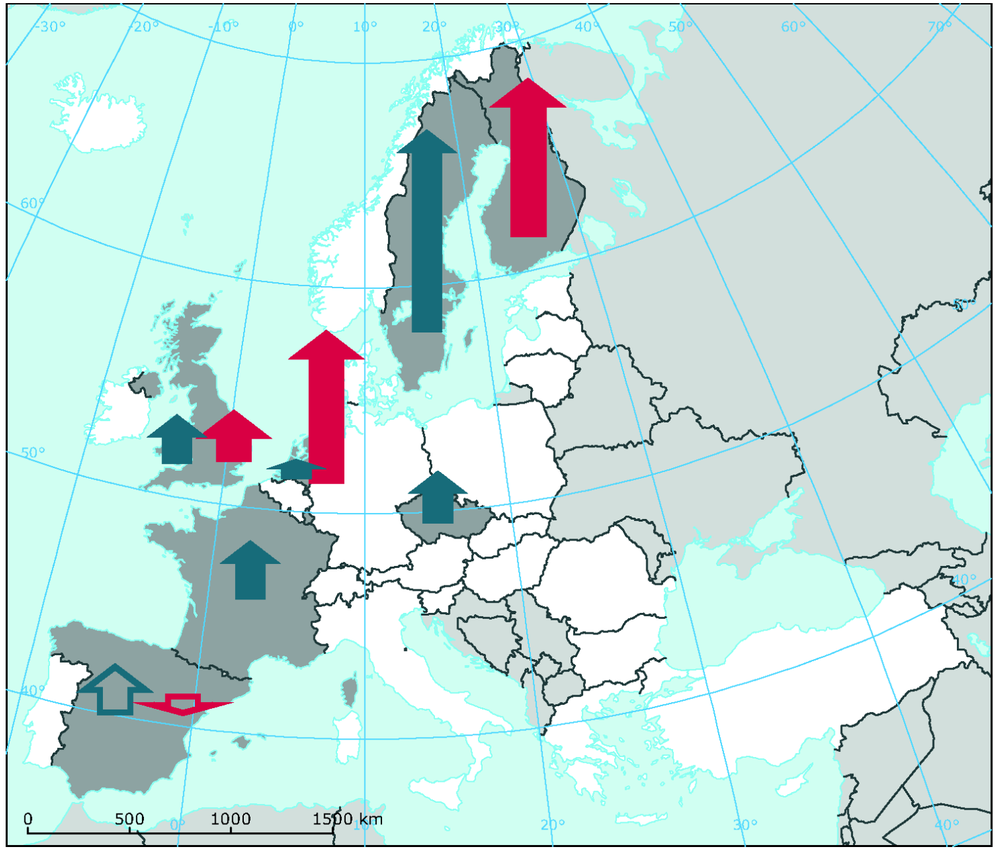
range shifts
of native species

Many native species are **moving northwards** or **uphill due to climate change**.

This **blurs the widely accepted dichotomy** of dividing species to native an alien.

New conceptual framework proposed in 2019 to add a category of „**neonatives**“.

Neonatives **may cause ecological disruptions similar** to those caused by alien species, but at the same time **might require protection,** similar to native species.



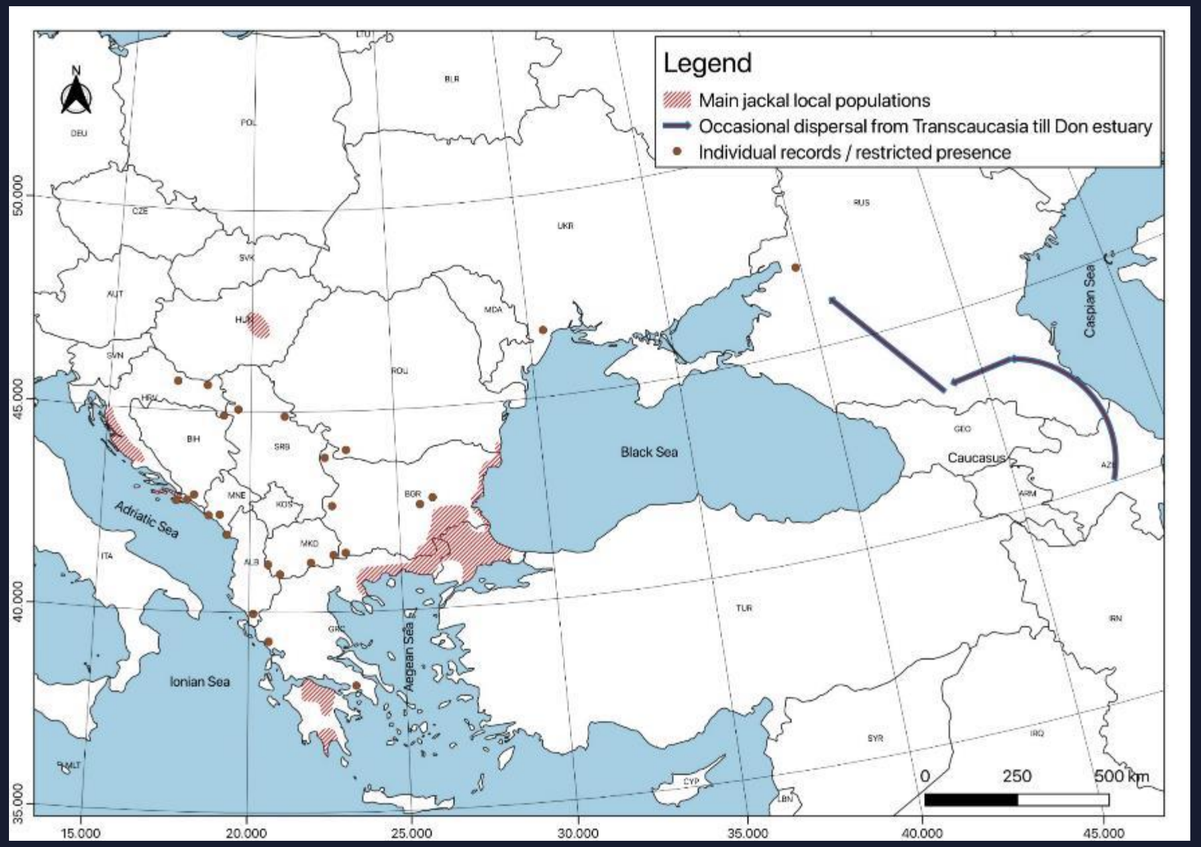
Source: provided to EEA by Centre national de la recherche scientifique (CNRS)

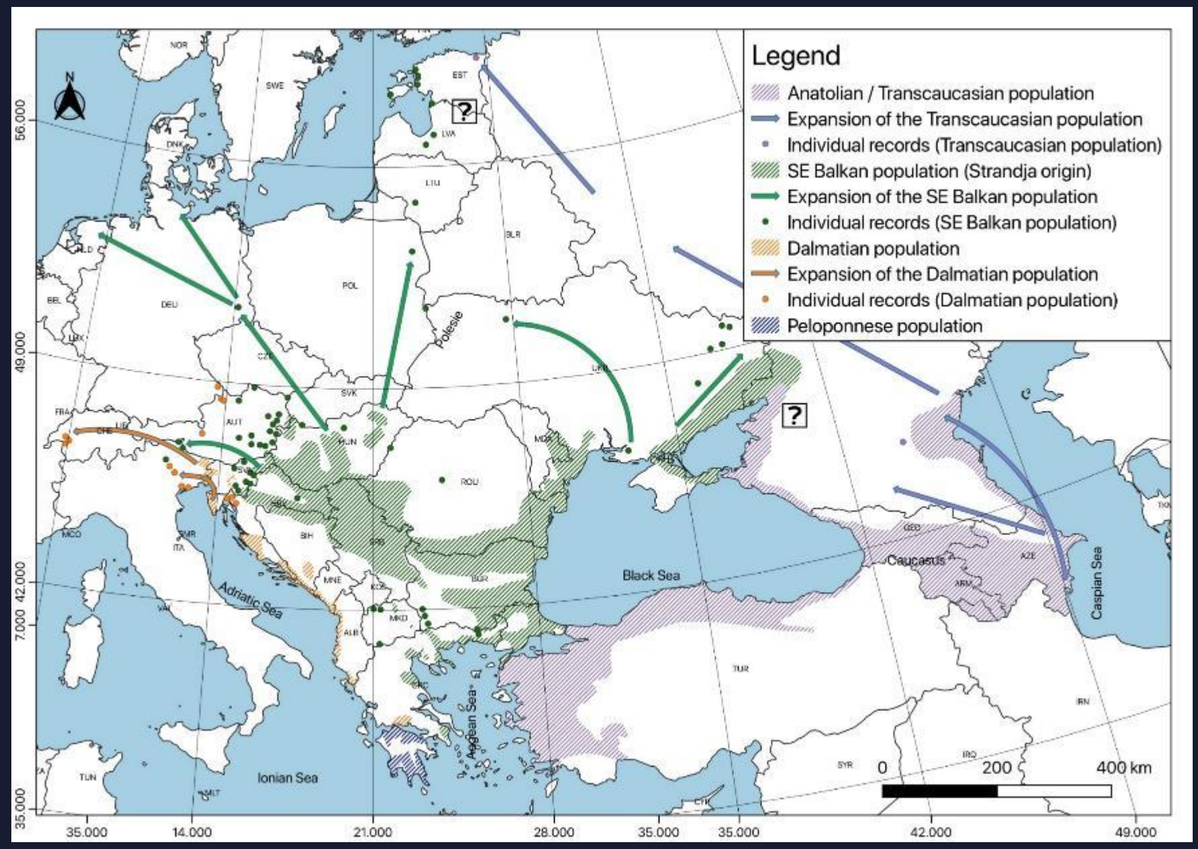
neonative species

Neonative species are those species have **expanded geographically** beyond their native range and that now have established populations whose **presence is due to human-induced changes** of the biophysical environment but **not as a result of direct movement by human agency**. The range shift should be in order of at least 100 km of latitudinal expansion, and 100 m for altitudinal expansion, after 1950.

Source: Essl et al., 2019

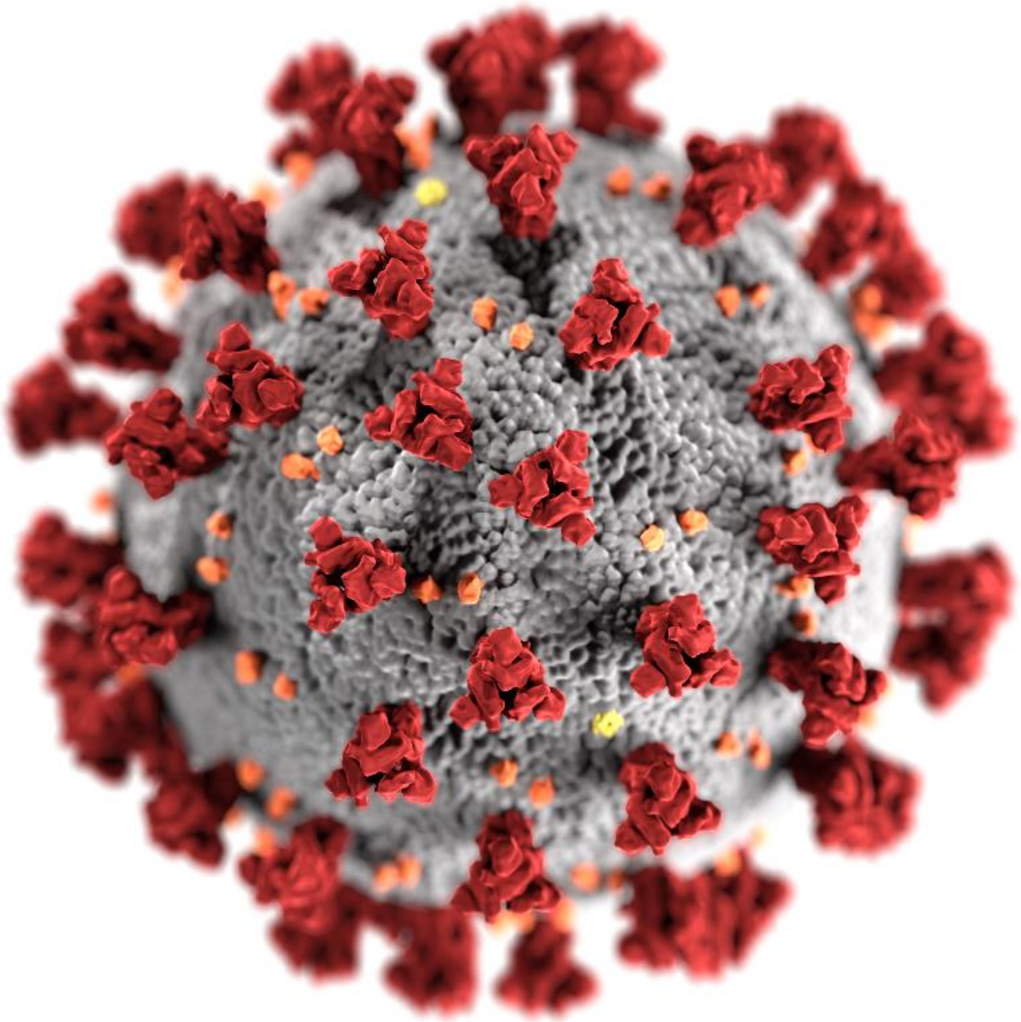
illustrative example 2
range expansion of golden jackal





cryptogenic species

Cryptogenic species is a species which **cannot be reliably** demonstrated as being **either alien or native**.



Coronavirus SARS-CoV-2

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3.2

PATHWAYS OF INTRODUCTION

classification framework of pathways of invasion

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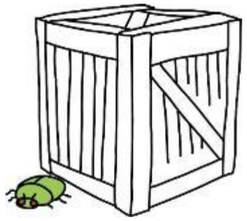
- MOVEMENT OF COMMODITY
  - Release in nature
  - Escape
  - Contaminant
- VECTOR
  - Stowaways
- SPREAD
  - Corridor
  - Unaided



category 1
release in nature

1.1 Biological control

1.2 Erosion control/dune stabilisation (windbreaks, hedges, …)

1.3 Fishery in the wild (including game fishing)

1.4 Hunting

1.5 Landscape/flora/fauna ‘improvement’ in the wild

1.6 Introduction for conservation purposes or wildlife management

1.7 Release in nature for use (other than above, e.g. fur, transport, medical use)

1.8 Other intentional release

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category 2
escape

2.1 Agriculture (including biofuel feedstocks)

2.2 Aquaculture/mariculture

2.3 Botanical garden/zoo/aquaria (excluding domestic aquaria)

2.4 Pet/aquarium/terrarium species (including live food for such species)

2.5 Farmed animals (including animals left under limited control)

2.6 Forestry (including afforestation or reforestation)

2.7 Fur farms

2.8 Horticulture

2.9 Ornamental purpose other than horticulture

2.10 Research and ex situ breeding (in facilities)

2.11 Live food and live bait

2.12 Other escape from confinement

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category 3
contaminant

3.1 Contaminant nursery material

3.2 Contaminated bait

3.3 Food contaminant (including of live food)

3.4 Contaminant on animals (except parasites, species transported by host/vector)

3.5 Parasites on animals (including species transported by host and vector)

3.6 Contaminant on plants (except parasites, species transported by host/vector)

3.7 Parasites on plants (including species transported by host and vector)

3.8 Seed contaminant

3.9 Timber trade

3.10 Transportation of habitat material (soil, vegetation, …)

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category 4
stowaway

4.1 Angling/fishing equipment

4.2 Container/bulk

4.3 Hitchhikers in or on airplane

4.4 Hitchhikers on ship/boat (excluding ballast water and hull fouling)

4.5 Machinery/equipment

4.6 People and their luggage/equipment (in particular tourism)

4.7 Organic packing material, in particular wood packaging

4.8 Ship/boat ballast water

4.9 Ship/boat hull fouling

4.10 Vehicles (car, train, …)

4.11 Other means of transport

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Zebra Mussel
Dreissena polymorpha

category 5
corridor

5.1 Interconnected waterways/basins/seas

5.2 Tunnels and land bridges

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Silver Puffer
Lagocephalus sceleratus

category 6
unaided

6.1 Natural dispersal across borders of invasive alien species that have been introduced through pathways 1 to 5

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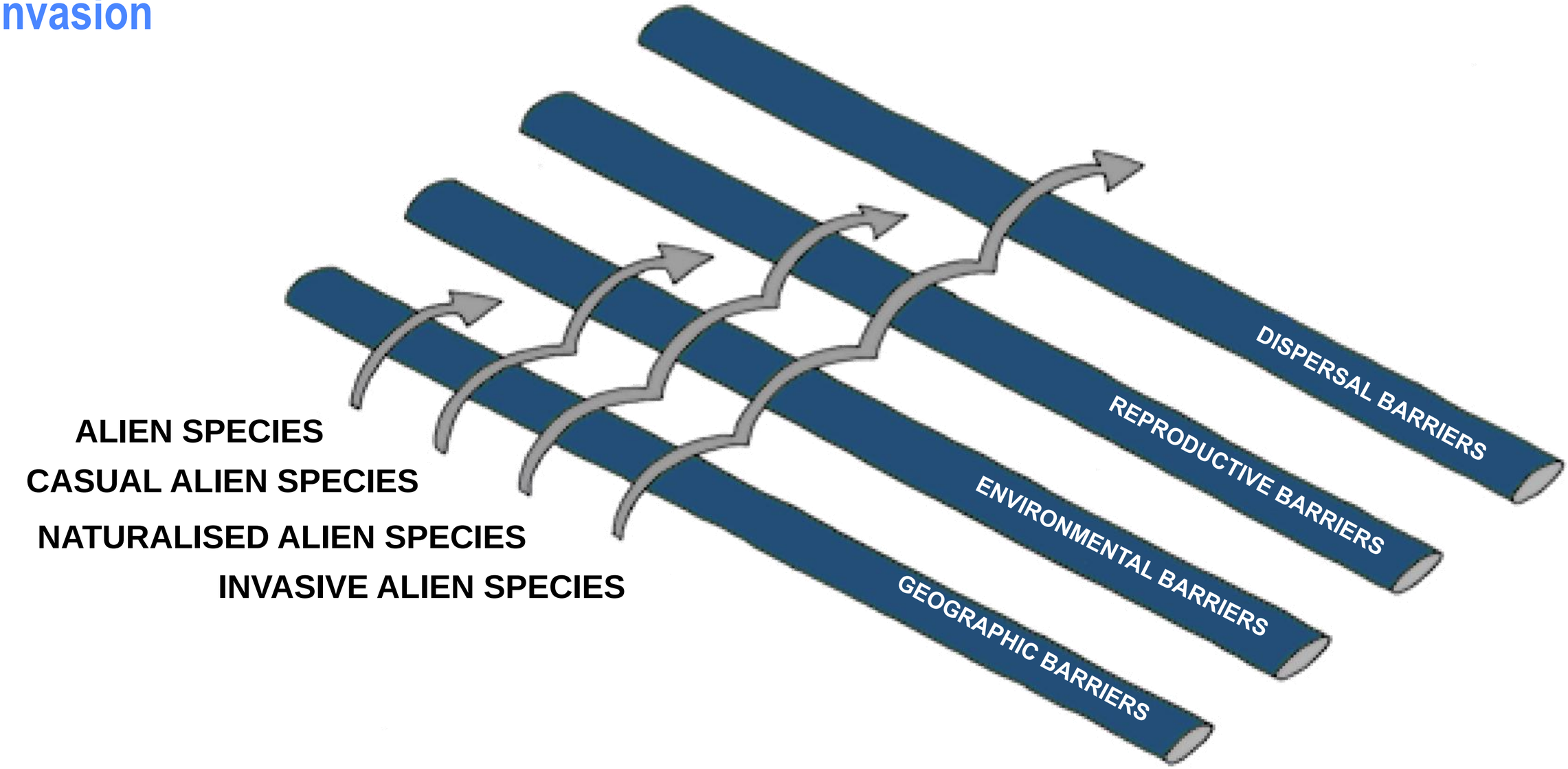
Signal Crayfish
Pacifastacus leniusculus

3.3

THE INVASION PROCES

stages of invasion



casual
alien species

Casual alien species is alien species which occurs in the new area only **sporadically**. It may occasionally reproduce but does **not form permanent populations** and is only maintained through repeated introductions.

Garden Cosmos
Cosmos bipinnatus

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naturalised
alien species

Naturalised species is an alien species which is **regularly reproducing** in the new environment and is **maintaining** its populations without human assistance or new introductions. Such species **does not (yet) cause noticeable damage** to the environment.

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Balfour's touch-me-not
Impatiens balfourii

invasive
alien species

Invasive alien species means an alien species whose introduction or spread has been found to **threaten or adversely impact upon biodiversity** and related **ecosystem services**.

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Himalayan Balsam
Impatiens glandulifera

Canadian Goldenrod
Solidago canadensis

Canadian Goldenrod
Solidago canadensis

Canadian Goldenrod
Solidago canadensis

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Audience Q&A

Session 1

ⓘ Start presenting to display the audience questions on this slide.

coffee break

We convene again in 10 minutes!

a warm-up
quiz

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a warm-up
quiz

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Which of the following statements about Japanese Knotweed is FALSE?

ⓘ Start presenting to display the poll results on this slide.

3.4

WHY SHOULD WE CARE ABOUT ALIEN SPECIES?

„If we look far enough ahead, the eventual state of the biological world will with alien species not become more complex but simpler - and poorer.“

Charles Elton, 1958

impacts
on biodiversity

Giant Knotweed
Fallopia sachalinensis

impacts
on biodiversity

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Lake Char
Salvelinus umbla

impacts
on health

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impacts
on the economy

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Brown marmorated stink bug
Halyomorpha halys

3.5

THE MAIN DRIVERS OF INVASIONS

global trade

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air
transport

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transport corridors

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habitat degradation

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climate change

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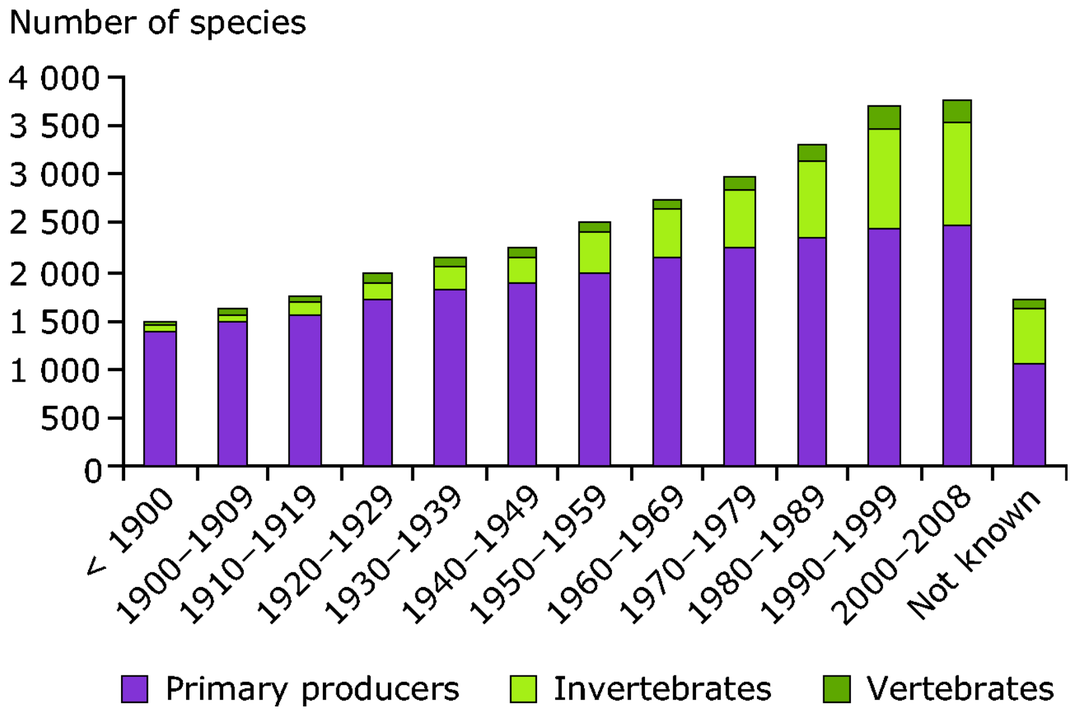
3.6

THE SCALE OF THREATS OF INVASIVE ALIEN SPECIES

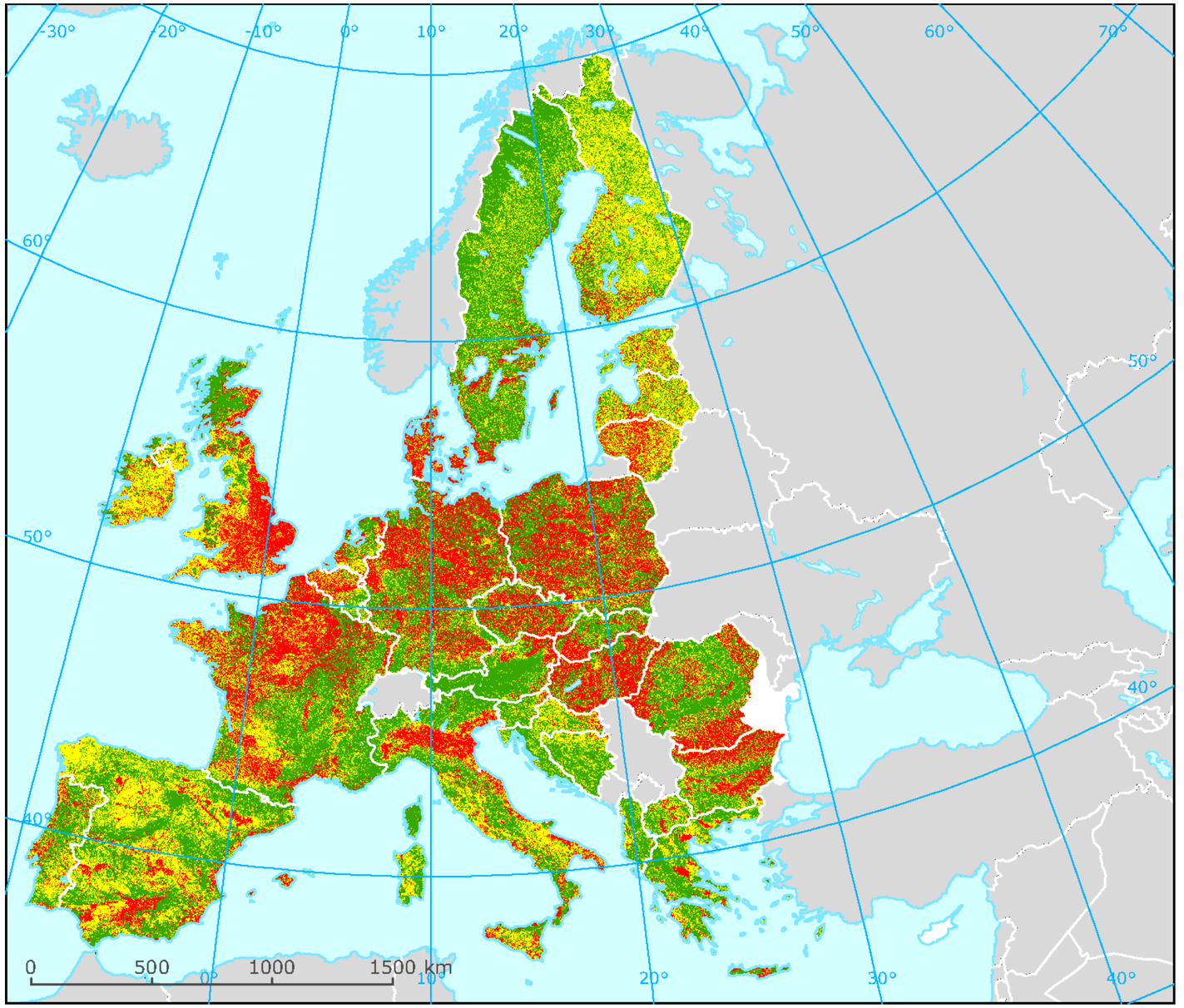
cumulative number of established terrestrial alien species

- **Plants Europe**. Most were introduced via **horticulture**.
- After the first world war increasing international trade - rapid growth in the number of **introduced invertebrates**, mostly as **contaminants or stowaways**.
- Many **vertebrates** were introduced **intentionally** (legally or illegally) for the purposes of **hunting or fishing**. represent **more than half of alien species in**



Source: EEA, Cumulative number of alien species established in terrestrial environment in 11 countries, 2009, last update in 2017

level of invasion by alien plants



European map estimating the level of invasion by alien plant species

Level of invasion (%)

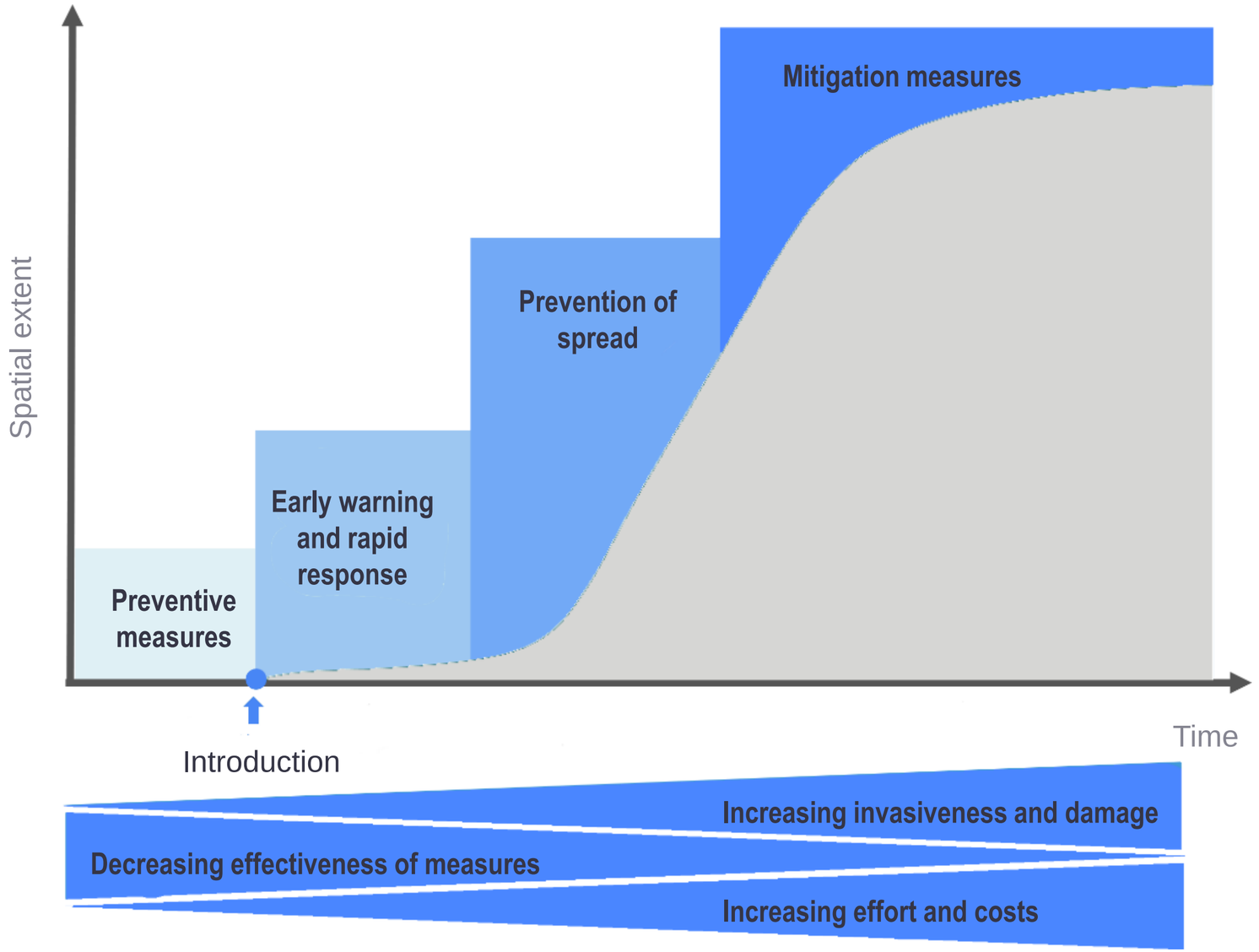
- < 1
- 1–5
- > 5
- No data
- Outside coverage

Source: EEA, European map estimating the level of invasion by alien plant species, 2015

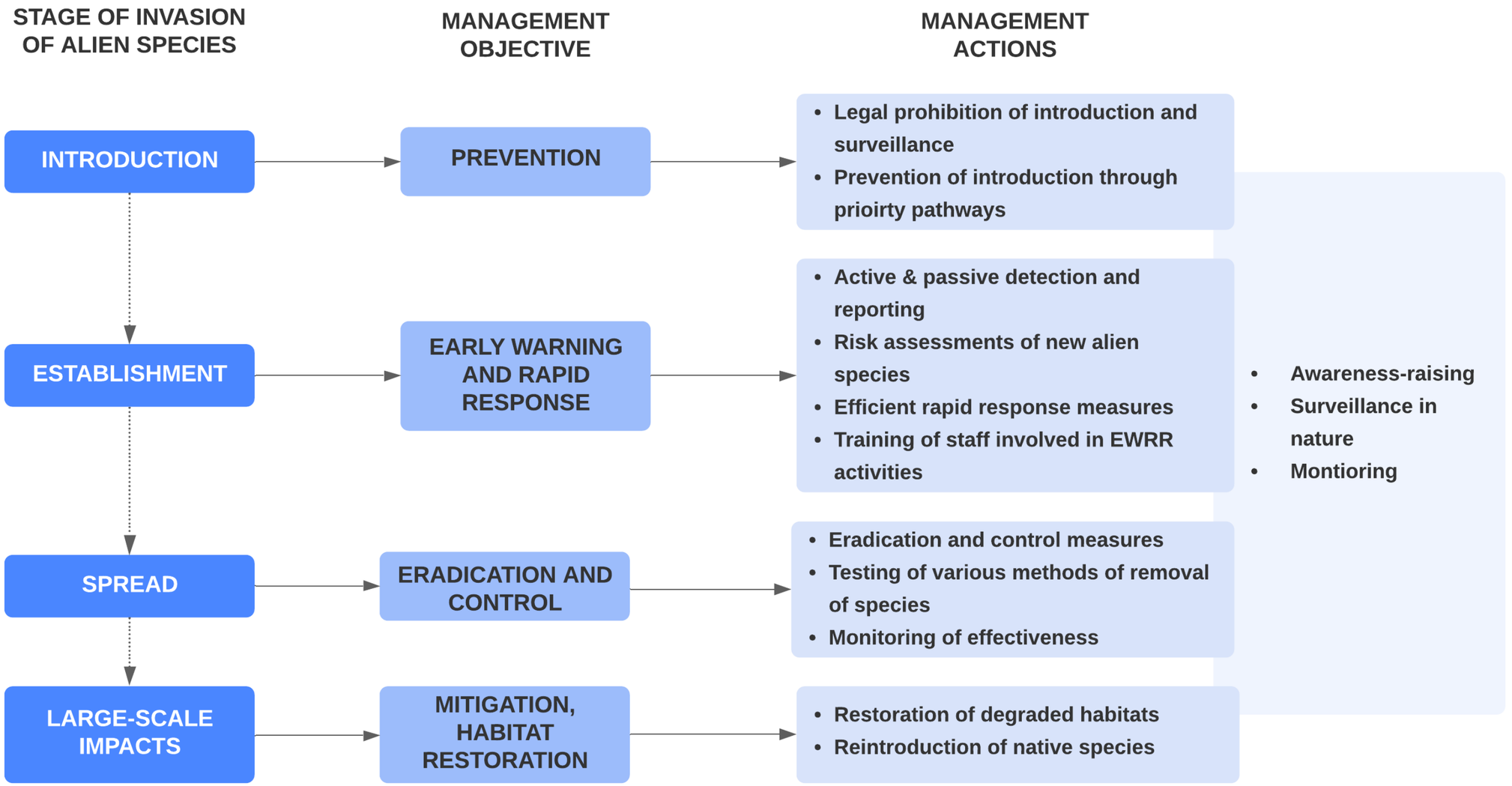
3.7

WHAT CAN WE DO ABOUT INVASIVE ALIEN SPECIES?

the exponential increase and management of IAS



management objectives
in relation to stages of invasion



management objective
prevention

- Identifying priority pathways and introducing measures to reduce new introductions (border controls, monitoring of entry points)
- One option is *strict legal prohibition* of import, transport, selling and/or possession of alien species (black list species) – **EU IAS Regulation!**
- Another option is **voluntary agreements** of trade association to stop selling certain invasive species.

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management objective

early warning and rapid response

- Mechanisms should be in place to enable **detection of alien species in the early invasion stages**.
- This requires a high level of **institutional capacity and clear division of roles**.
- Early warning and rapid response is embedded in the core of the EU IAS Regulation. Member states are obliged to ensure **EWRR for invasive species of Union concern**.

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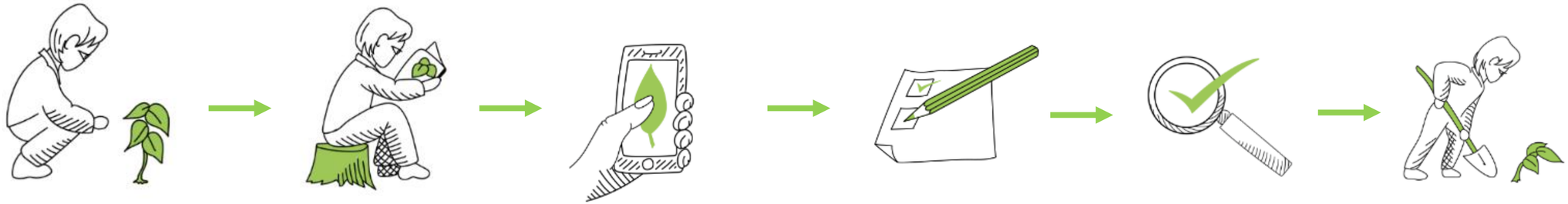
Eastern baccharis
Baccharis halimifolia

management objective

early warning an rapid response



1 Detection of an alien species

2 Identification of an alien species

3 Reporting of an alien species

4 Verfication of data

5 Preforming a risk assessment

6 Rapid response measures

illustrative example 3

Giant hogweed in Slovenia

Legend:

- still present, under eradication
- grown in botanical gardens
- likely eradicated, under monitoring
- ✕ sucesfully eradicated

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Giant hogweed
Heracleum mantegazzianum

management objective
eradication or control

- Mechanisms should be in place to enable **detection of alien species in the early invasion stages**.
- This requires a high level of **institutional capacity and clear division of roles**.
- Early warning and rapid response is embedded in the core of the EU IAS Regulation. Member states are obliged to ensure **EWRR for invasive species of Union concern**.

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illustrative example 4
species name

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Species name
Scientific name

illustrative example 4
indigo bush on Lonjsko polje

- Encroachment of Indigo bush after **abandonment of agricultural land** in 1990s.
- Several project to **revitalise grasslands**.
- Cooperation with local farmers to **use revitalised land for grazing**.
- Still at least **5200 ha** has to be revitalised.

Indigo bush (*Amorpha fruticosa*) eradicatioon site at Lonjsko polje

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Questions and Answers of Session 2

slido

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Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.

lunch break

next session starts at in 30 minutes

do not forget to switch off cameras ☺

04

GROUP WORK:
HOW CAN WE EFFECTIVELLY MANAGE IAS?

Instructions for breakout groups. Please, listen carefully.

goals of the workshop

Participants from different sectors discuss **open issues and obstacles** in management of concrete species …

… and **propose solutions** which are needed for more effective management.

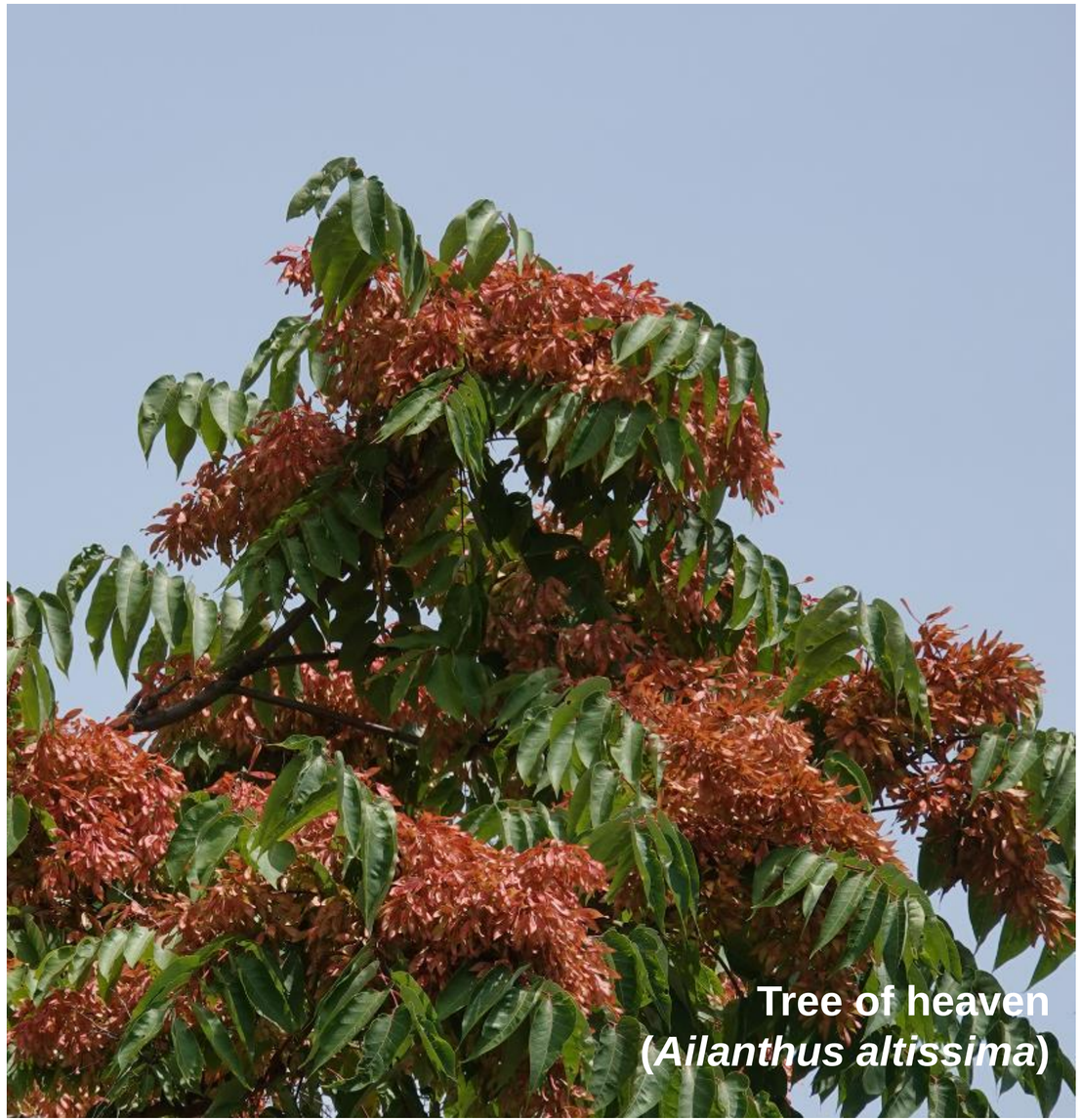
the example species
for the workshop

American goldenrods
(*Solidago canadensis, S. giganeta*)

Common milkweed
(*Asclepias syriaca*)

example species
for the workshop

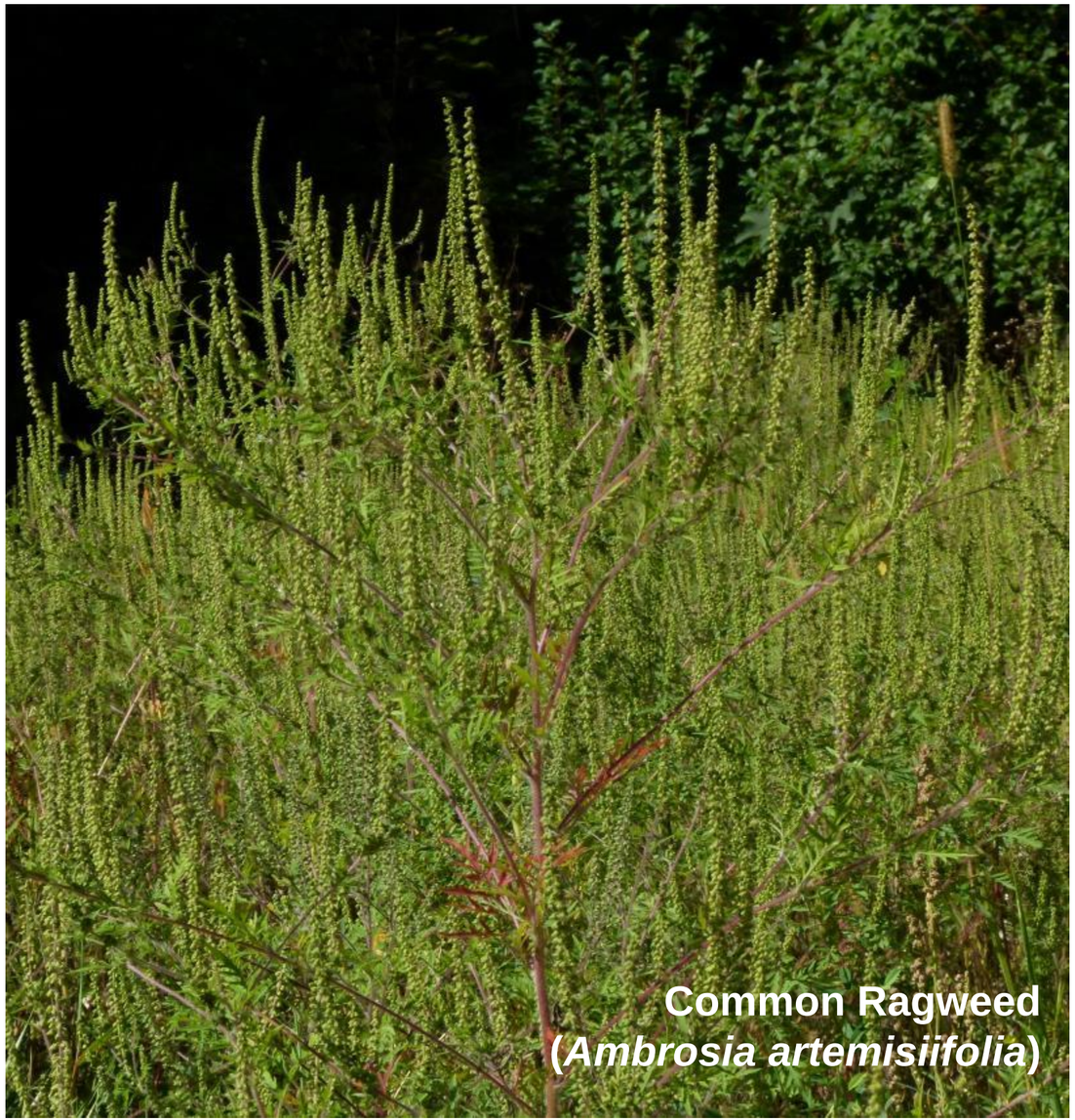
Indigo bush
(*Amorpha fruticosa*)



Tree of heaven
(*Ailanthus altissima*)

example species
for the workshop

Japanese knotweed
(*Reynoutria japonica*)



Common Ragweed
(*Ambrosia artemisiifolia*)

work in breakout rooms

- The chair of the group will briefly introduce the species.
- The group should discuss current obstacles to effective management of the species.
- Think about possible solutions. What to we need to implement these solutions? Be specific. Think about possible roles of various sectors.
- The chair of the group will make notes in the shared ppt.

technical instructions

- We‘ve already divided you into groups.
- Please, accept an invitation to a breakout room.
- After the end of the work group, return back to the common session.

Are the
instructions clear?

Breakout rooms

Plenary sessions starts in 30 minutes.

05

PLENARY SESSION:
HOW CAN WE EFFECTIVELLY MANAGE IAS?

Presentations of the breakout groups, wrap up of the webinar.

Reporting from the working groups

A brief summary of discussions in the working groups

We will e-mail you

After the end of the training you will receive a copy of a training course manual, which covers the topic of today‘s webinar.

You can e-mail us

If you have any questions, ideas for cooperation, lessons leant you would like to share with us, you can contact us at: jana.kus@zavod-symbiosis.si

evaluation
question 1

slido

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Do you feel that the training was providing useful overview of invasive alien species management?

ⓘ Start presenting to display the poll results on this slide.

evaluation
question 2

slido

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Did you find the discussion in the working group useful for finding solutions to IAS management?

ⓘ Start presenting to display the poll results on this slide.

Thank you for your attention!

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list of resources

Franz Essl, Stefan Dullinger, Piero Genovesi, Philip E Hulme, Jonathan M Jeschke, Stelios Katsanevakis, Ingolf Kühn, Bernd Lenzner, Aníbal Pauchard, Petr Pyšek, Wolfgang Rabitsch, David M Richardson, Hanno Seebens, Mark van Kleunen, Wim H van der Putten, Montserrat Vilà, Sven Bacher, A Conceptual Framework for Range-Expanding Species that Track Human-Induced Environmental Change, *BioScience*, Volume 69, Issue 11, November 2019, Pages 908–919, https://doi.org/10.1093/biosci/biz101

Clare Shine, Nattley Williams and Lothar Gündling (2000), A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species. IUCN, Gland, Switzerland Cambridge and Bonn. xvi + 138 pp.

Spassov N, Acosta-Pankov I (2019) Dispersal history of the golden jackal (*Canis aureus moreoticus* Geoffroy, 1835) in Europe and possible causes of its recent population explosion. Biodiversity Data Journal 7: e34825. https://doi.org/10.3897/BDJ.7.e34825

Trouwborst, A., Krofel, M. & Linnell, J.D.C. Legal implications of range expansions in a terrestrial carnivore: the case of the golden jackal (*Canis aureus*) in Europe. *Biodivers Conserv* **24,** 2593–2610 (2015). https://doi.org/10.1007/s10531-015-0948-y