IAS Thematic Half Day · COP17 · Yerevan, 24 October 2026

09:40–10:45 · Session 1

Understanding pressures and impacts and identifying synergies between IAS and other Targets of the GBF

Moderators: Dr Roseli Pellens, MNHN,
and Dr Arnaud Albert, OFB



Water hyacinth and water lettuce. Photo: Gerard Peltre



Photo: Yohan Petit, CBN de Corse

IAS Thematic Half Day · COP17 · Yerevan, 24 October 2026

Session 1

Dr Roseli Pellens

MNHN



Photo: Yohan Petit, CBN de Corse

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Setting the scene: on the need for coordinated action to reduce pressures on biodiversity to achieve Goal A

Dr Roseli Pellens, Muséum national d'Histoire naturelle (MNHN)

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The G7 working group on invasive alien species



Born at the G7 Workshop on Invasive Alien Species, Tokyo, 20–22 November 2023, under the Japanese G7 Presidency

Our shared commitments

G7 Statement on Invasive Alien Species, Tokyo 2023

- Strengthen global, regional and bilateral collaboration
- Develop research, shared databases and information systems
- Engage the whole of government and society, including Indigenous Peoples and local communities
- Build capacity, especially in developing countries and small island States



G7 Workshop on Invasive Alien Species, Tokyo, November 2023



Photo: Yohan Petit, CBN de Corse

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Session 1

Prof Helen Roy

University of Exeter and UKCEH

Dr Aníbal Pauchard

University of Concepción and IEB



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IPBES Thematic Assessment on Invasive Alien Species and their Control: the problem, solutions, and linkages with other recent assessments

Helen Roy, University of Exeter and UK Centre for Ecology & Hydrology,
Aníbal Pauchard, University of Concepción and Institute of Ecology and Biodiversity (IEB)

UK Centre for Ecology & Hydrology

20 AÑOS IEB INSTITUTO DE ECOLOGÍA & BIODIVERSIDAD

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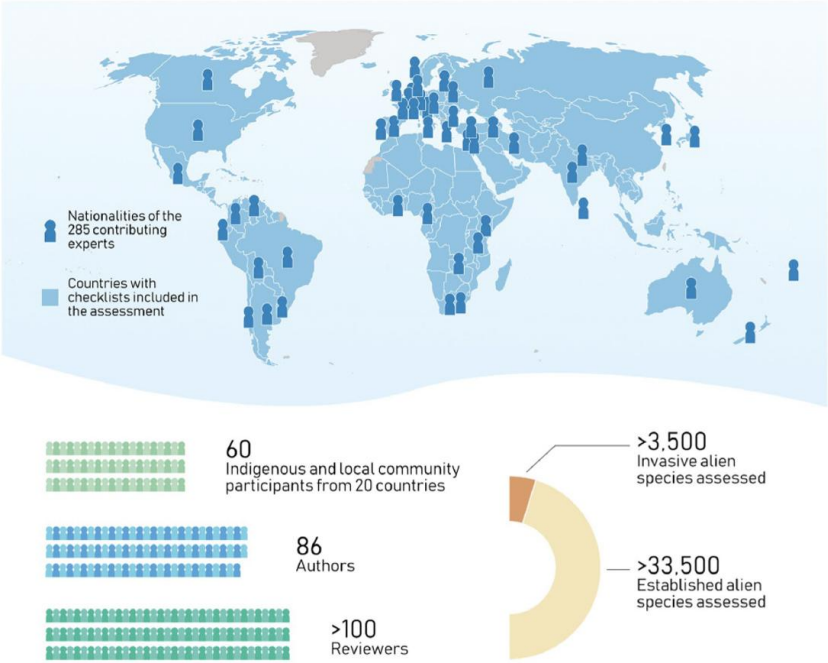
IPBES Report on Invasive Alien Species and their Control

Developed over 4 years

Produced by a multidisciplinary team of 86 experts and many contributing authors

Engagement with Indigenous and local knowledge

Produced by a multidisciplinary team of 86 experts from 47 countries **and 200+ contributing authors**



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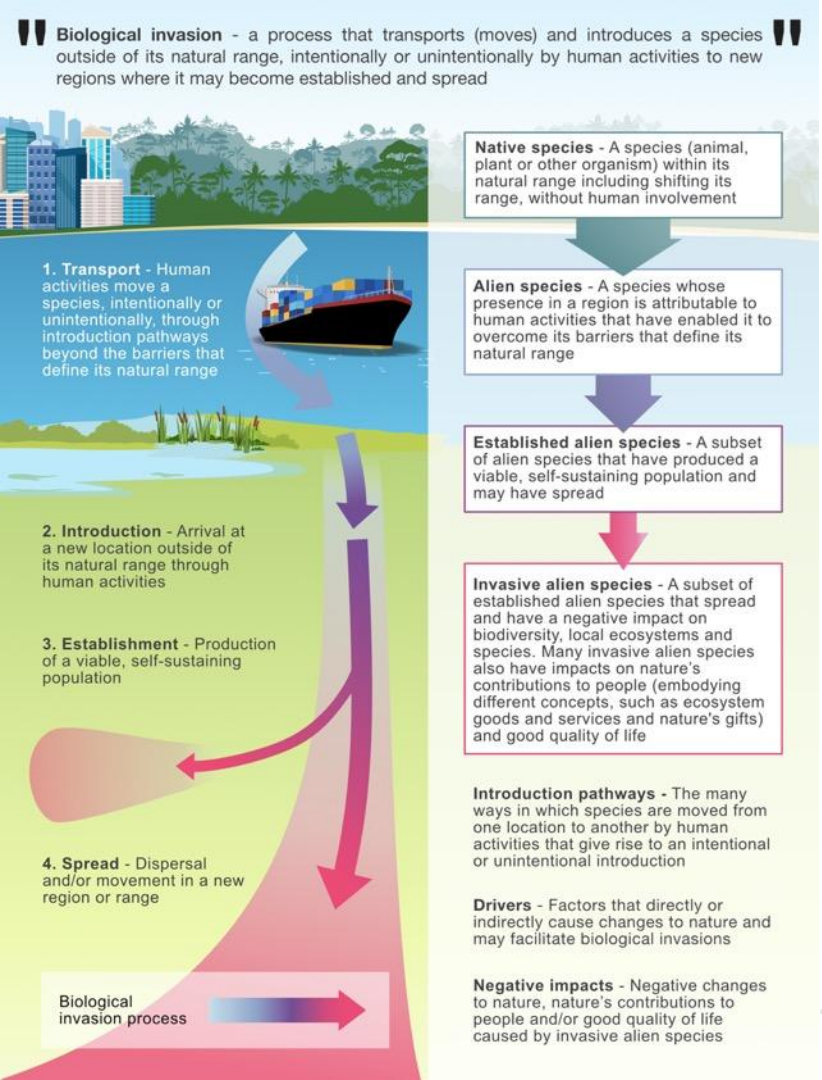
Invasive alien species are one of the 5 major drivers of biodiversity loss

Alien species are animals, plants, and other organisms that have been introduced by human activities to new regions

Invasive alien species are a subset of alien species, known to have established and spread with negative impacts on nature. Many invasive alien species also have impacts on people





Critical Definitions

Native species
Alien species
Established alien species
Invasive alien species

"Biological invasions" is a term used to describe the process involving the intentional or unintentional transport or movement of a species outside its natural range by human activities and its introduction to new regions, where it may become established and spread.

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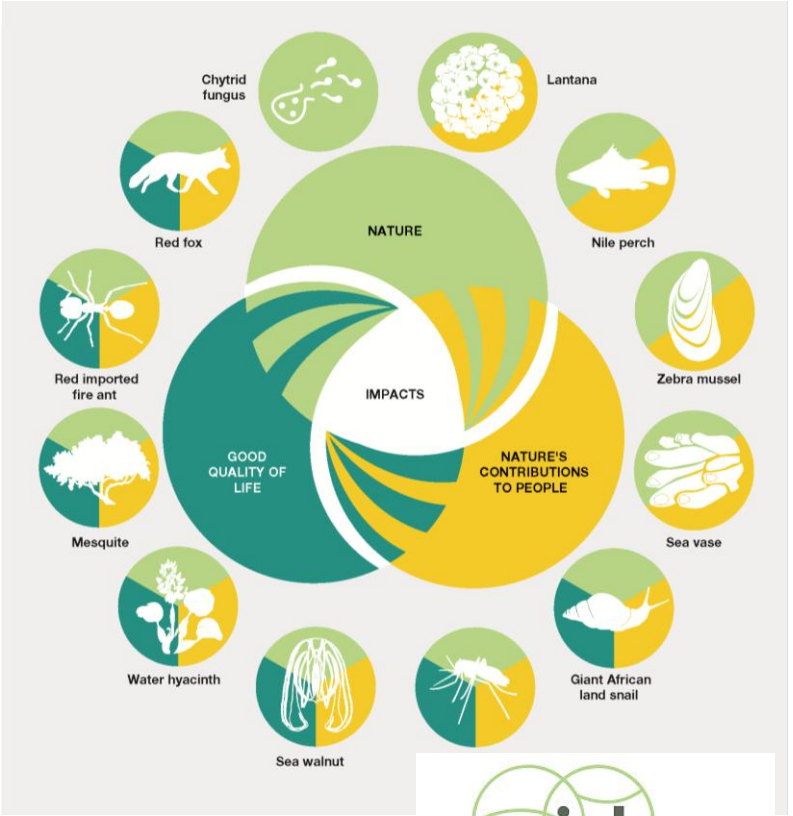
People and nature are threatened by invasive alien species in all regions of Earth

- **37,000 established alien species** have been introduced by human activities worldwide
- **200 new** alien species every year
- **3,500 invasive alien species**, with negative impacts on nature, and also, in some cases, on people
- More than **2,300 invasive alien species** are found on lands of Indigenous Peoples across all regions of Earth



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Current policies have been insufficient in managing biological invasions and preventing and controlling invasive alien species

Although most countries (80%) have targets for the management of biological invasions within their national biodiversity strategies and action plans

83% of countries do not have national legislation or regulations directed specifically toward the prevention and control of invasive alien species.

Nearly half of all countries (45%) do not invest in management of invasive alien species



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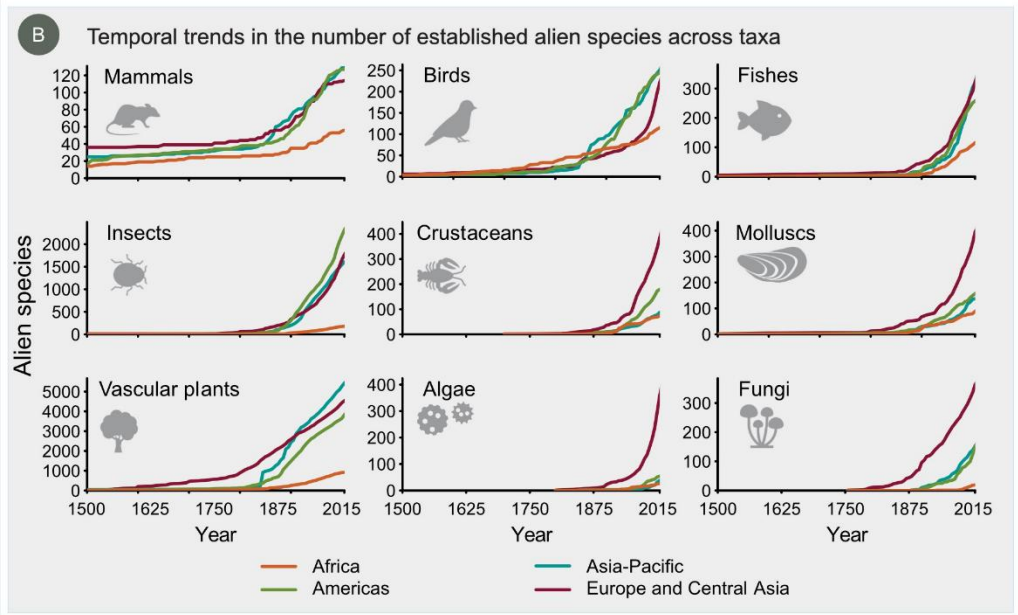
The threats from invasive alien species are increasing significantly in every region



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Some numbers on impacts



of **global species extinctions** have been caused, solely or alongside other drivers, by invasive alien species



is the estimated **global annual costs** of biological invasions in 2019



of impacts on **nature** and **good quality of life** are **negative**



of impacts on **nature's contributions to people** are **negative**

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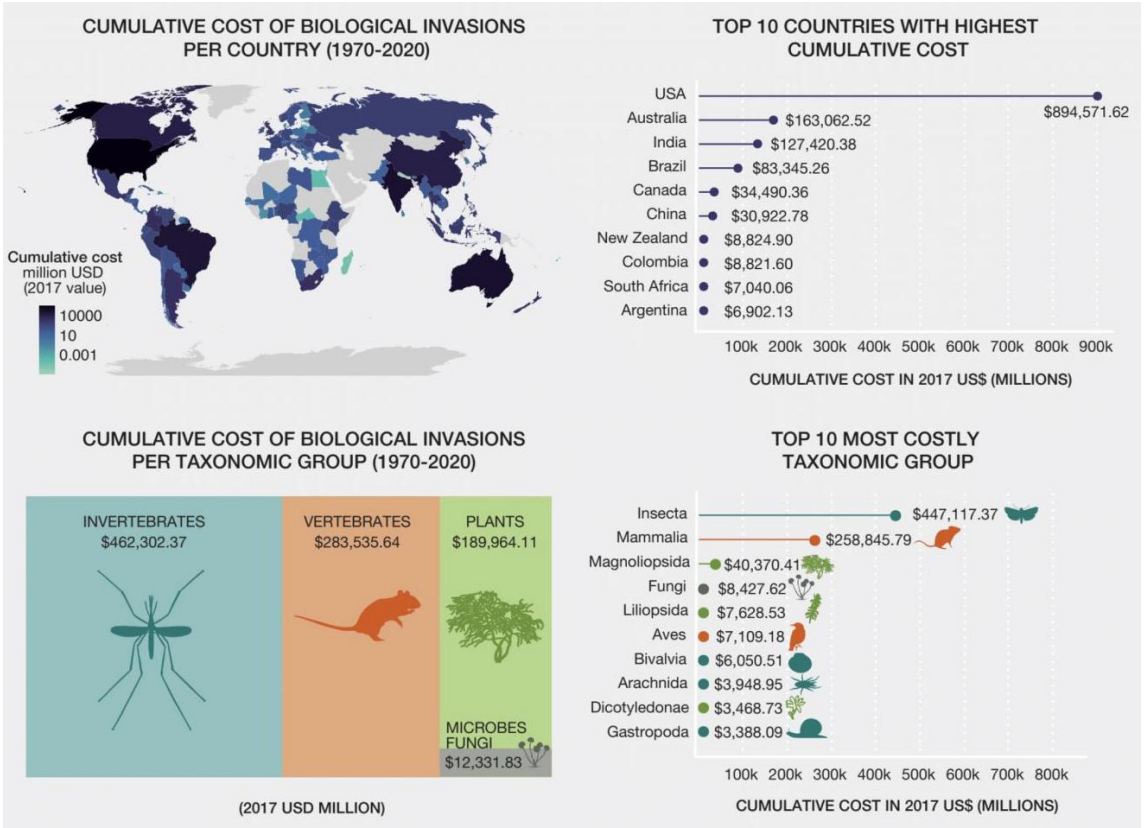
Economic costs of biological invasions:

Impacts on Health



Health is a major component of the economic costs

People at the heart of the problem…

- Many human activities facilitate the transport, introduction, establishment and spread of invasive alien species
- If things remain unchanged, by 2050 the total number of alien species globally is expected to be about 36% higher than in 2005







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…People at the heart of the solution

- Biological invasions and their adverse impacts can be prevented and mitigated through effective management
- There are **three management options**:

1. Management of **pathways of introduction** and spread of invasive alien species
2. Management of **target invasive alien species** at either local or landscape scales
3. **Site-based** or ecosystem-based management





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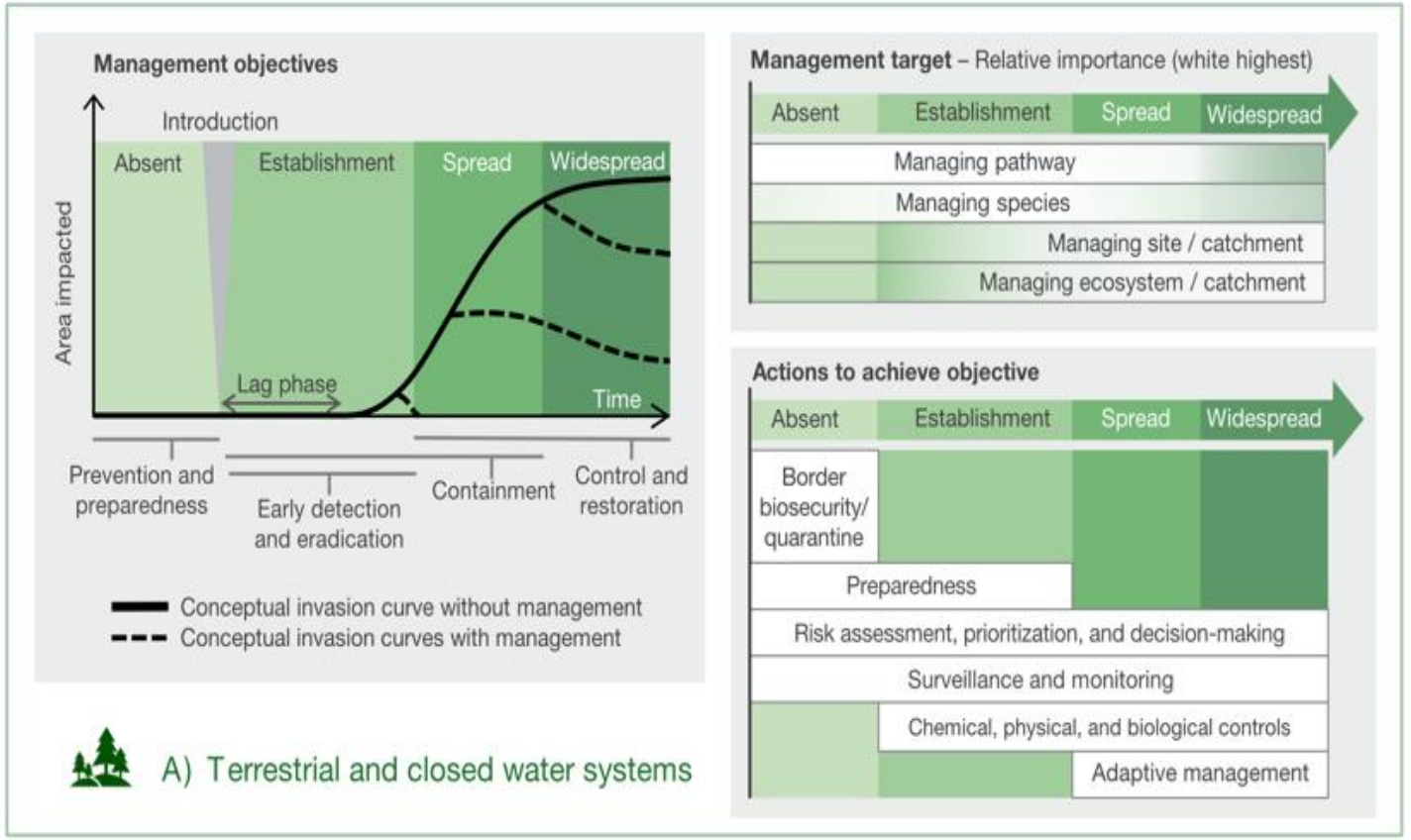
Conceptual diagram of management -invasion continuum



Prevention and preparedness are the most cost-effective options



- Prevention can be achieved through pathway management, including strictly enforced import controls, pre-border, border and post-border biosecurity, and measures to address escape from confinement.

- Prevention is particularly important on islands, and it is also critical in marine and connected water systems, where most attempts at eradicating or containing invasive alien species have mostly failed.

- Sustained and adequate funding, capacity building, technical and scientific cooperation and transfer of technology, monitoring, quarantine and inspection facilities are necessary for effective prevention measures.

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Other management options can also be effective



- Eradication has been successful, especially for small and slow-spreading populations of invasive alien species, especially in isolated ecosystems
- Containment and control can be an effective option for invasive alien species that cannot be eradicated for various reasons in terrestrial and closed water systems, but most attempts in marine and connected water systems have been largely ineffective
- The recovery of ecosystem functions and nature's contributions to people can be achieved through adaptive management, including ecosystem restoration in terrestrial and closed water systems

INTEGRATED GOVERNANCE

- Strategic actions to prevent introduction and impact of invasive alien species include:
  1. Enhancing **coordination and collaboration** across international and regional mechanisms
  2. Developing and adopting effective and achievable **national strategies**
  3. Sharing efforts and commitment and understanding the specific role of **all actors**
  4. Improving **policy coherence**
  5. Broad engagement across all stakeholders and **Indigenous Peoples and local communities**
  6. **Resourcing** innovation, research and technology
  7. Supporting **information systems**, infrastructures and data sharing

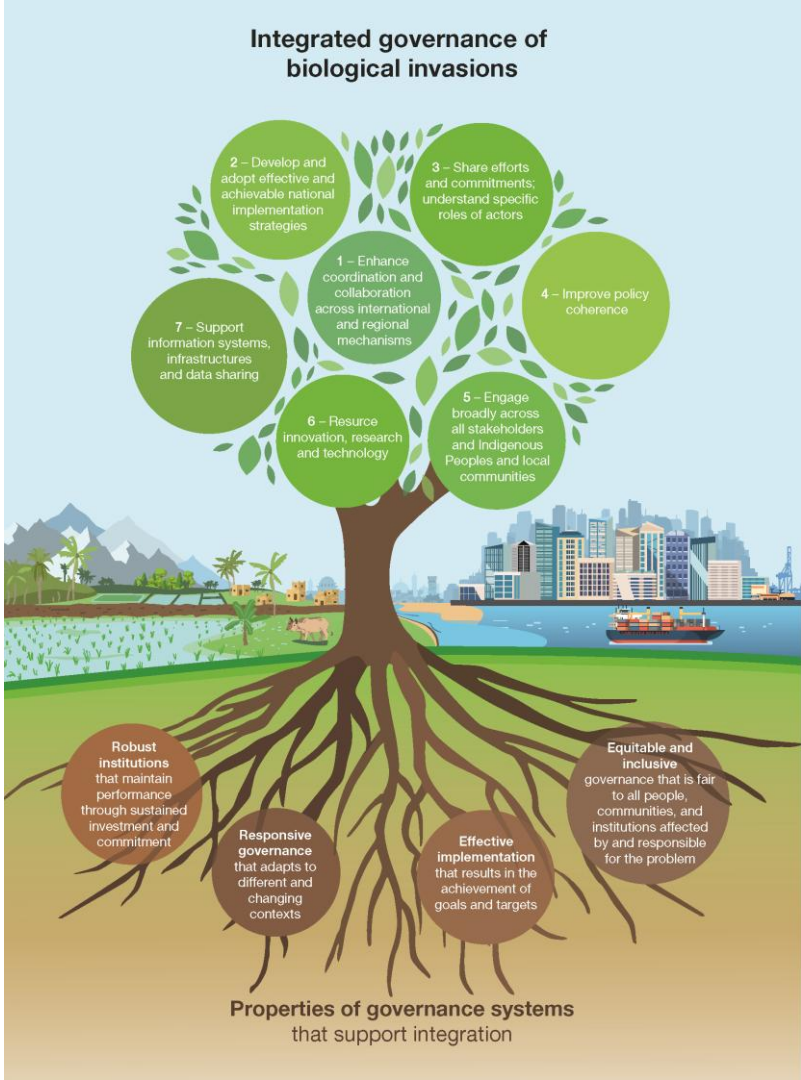
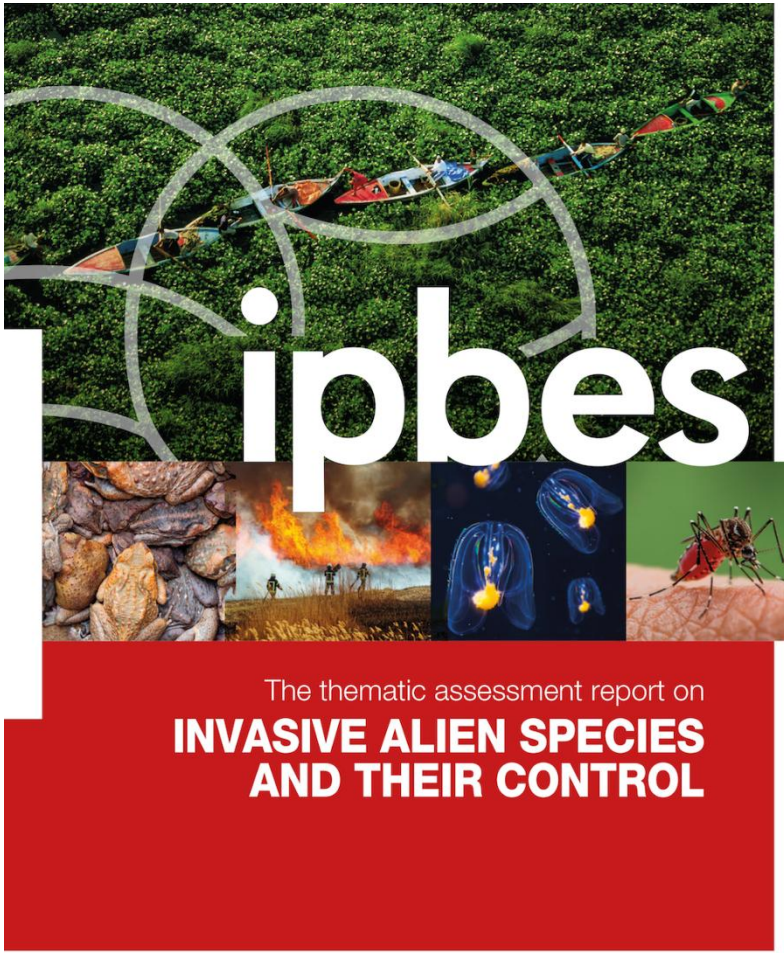


Figure SPM.7

There is compelling evidence for immediate and sustained action

With sufficient resources and long-term commitment, preventing and controlling invasive alien species are attainable goals that will yield significant long-term benefits for people and nature.



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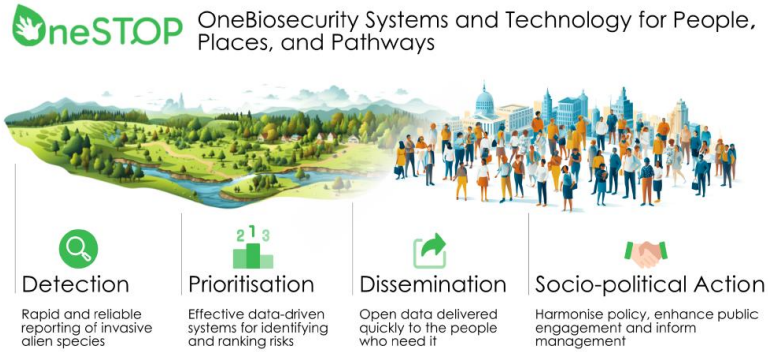
Impacts from the IPBES IAS Assessment







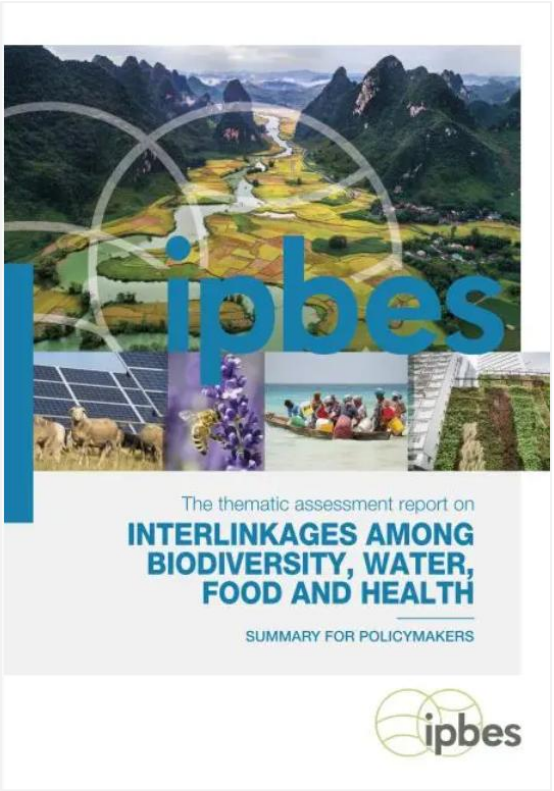








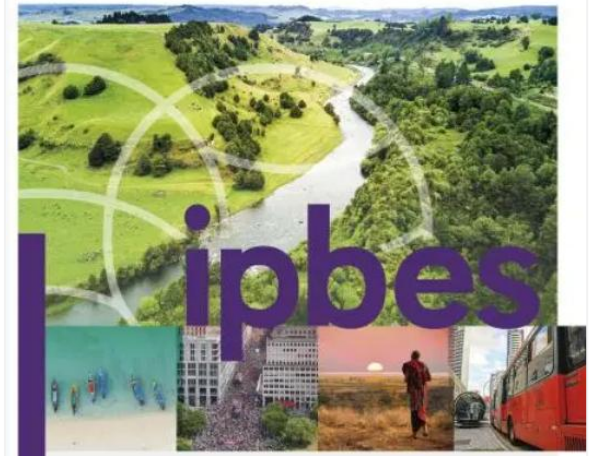
IPBES Nexus Assessment



A TRENDS IN INDIRECT DRIVERS AND THEIR IMPACTS ON TRENDS IN DIRECT DRIVERS

Indicators of indirect driver		Trend in indirect driver	Impact on trend in direct driver: Land-/sea-use change	Unsustainable exploitation	Climate change	Pollution	Invasive alien species
Economic	GDP	↑	↑↑	↑↑	↑↑	↑↑	↑
	Material intensity	↘		↓	↓	↓	
	Trade	↑	↑↑	↑↑	↑	↑	↑↑
	Poverty	↓	—	—	—		—
Demographic	Population	↗	↑↑	↑↑	↑↑	↑↑	
	Urbanization	↗	↑	↑	↑	↑	↑
Institutional	Regulations (environmental)	↑	—	—	—	—	—
	Armed conflicts	↑	~	~	↑	↑	
Cultural	Knowledge/literacy	↗					
	Per capita consumption	↗	↑↑	↑↑	↑↑	↑↑	↑
Technology	Renewable energy (solar and wind)	↑	↑	↑↑	↓	~	
	Use of ICT	↑		↑↑	~	↑	↑

IPBES Transformative Change Assessment



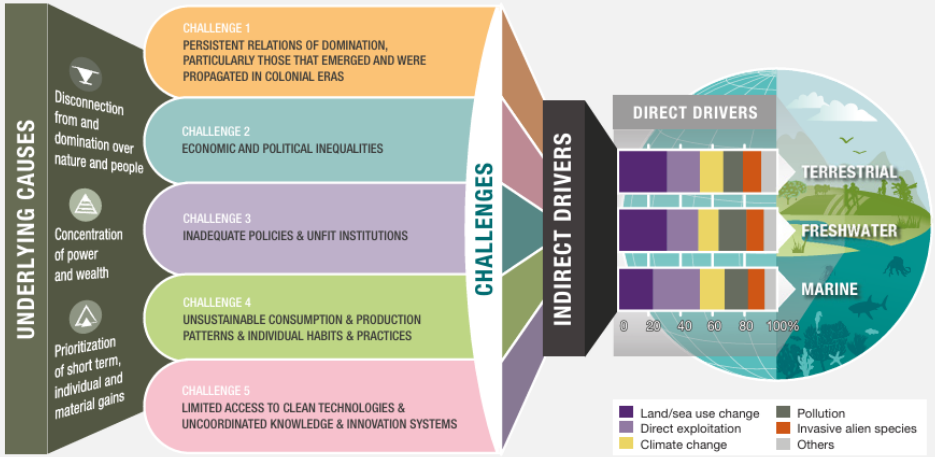
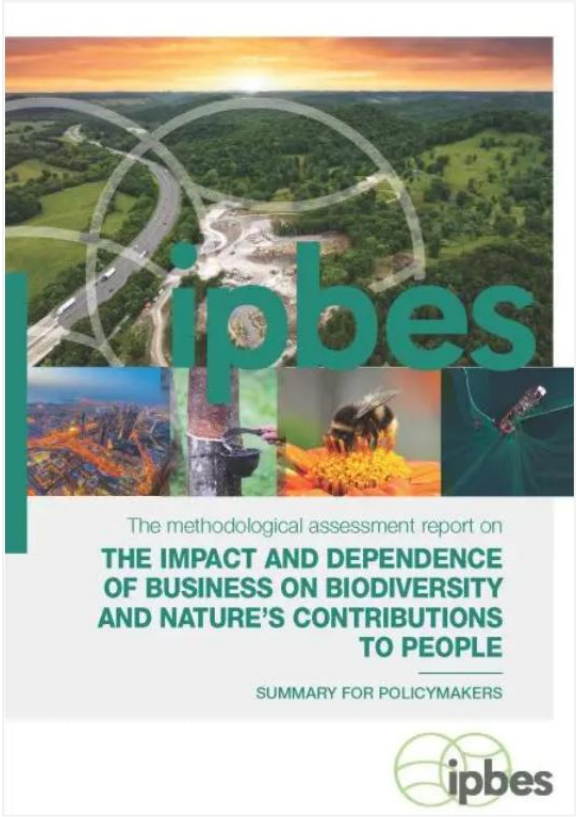
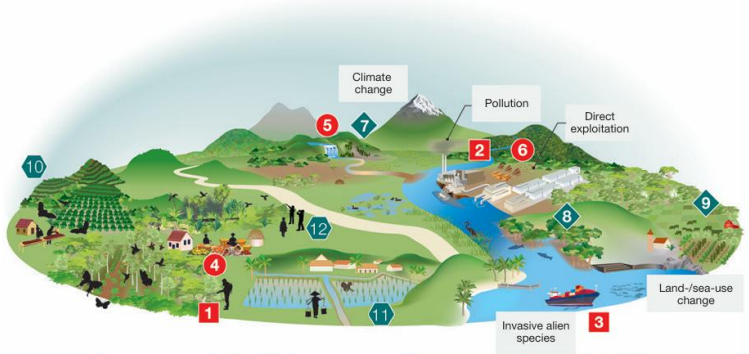


Figure 4 1 **Relationship between the five main challenges to transformative change, the underlying causes of biodiversity loss and the direct drivers of global change.**

By identifying these interrelated and pervasive challenges and understanding how they manifest across different contexts (barriers), the chapter demonstrates that each challenge also represents a starting point for catalyzing transformative change. Such a process involves new ways of overcoming barriers, including through active disruption of views, structures and practices that reinforce the challenges and harm biodiversity. This Figure builds on Figure SPM.2 of the IPBES Global Assessment of Biodiversity and Ecosystem Services (IPBES, 2019).

IPBES Business and Biodiversity Assessment





	Risks ⊖	Opportunities ⊕
Impacts	1 Intensive forestry relies on pesticides with a negative impact on non-target pollinators, creating reputational risk with nearby communities 2 Furniture manufacture discharges chemicals into freshwater ecosystem, creating risk of non-compliance with permit 3 Transportation and shipping spreads invasive alien species, creating compliance risks	7 Sustainable forest management reduces soil erosion, creating an opportunity for payments for ecosystem services from nearby hydropower facility 8 Investments in the protection, restoration and sustainable use of mangroves can provide cost-effective alternatives to grey infrastructure 9 IIntroducing native trees in pastures devoted to cattle ranching increases milk production and animal well-being
Dependencies	4 Indigenous-led fruit farm depends on wild pollinators, creating risk to crop yield if pollinator abundance falls 5 Hydropower depends on standing forest for soil stabilization and erosion control, creating risk if deforestation leads to an increase in sediment 6 Furniture manufacture value chain depends on supply of high-quality timber, creating risk if supply fails	10 Coffee farms depend on bats as predators of pests, creating an opportunity to increase yields with sustainable habitat management 11 Agriculture depends on freshwater abstraction, creating an opportunity to reduce costs through sound management 12 Ecotourism depends on endemic species, creating an opportunity to increase income through collaboration with nearby communities to manage habitat

Figure SPM 4 **Examples of the intersections between impacts, dependencies, risks and opportunities**

Thank you

Helen Roy, University of Exeter and UK Centre for Ecology & Hydrology,
Aníbal Pauchard, University of Concepción and Institute of Ecology and Biodiversity (IEB)

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Ms Marianela Araya Quesada

SCBD



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Global Review: Target 6 and the targets addressing pressures on biodiversity

Marianela Araya Quesada, Secretariat of the Convention on Biological Diversity

Convention on Biological Diversity

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Global report on collective progress in the implementation of KMGBF



Provides an assessment of collective progress towards the implementation of the Framework at the halfway point between the adoption of the Framework and 2030.

Overarching message.

The Framework has generated unprecedented global engagement and commitment. However, <u>the world is not yet on track to achieve the 2030 targets or mission or the 2050 goals or vision</u>

Convention on Biological Diversity

Kunming - Montreal
GLOBAL BIODIVERSITY FRAMEWORK

Why progress on the various targets should not be considered in isolation?



Targets are interdependent and collectively designed to address biodiversity loss as a system

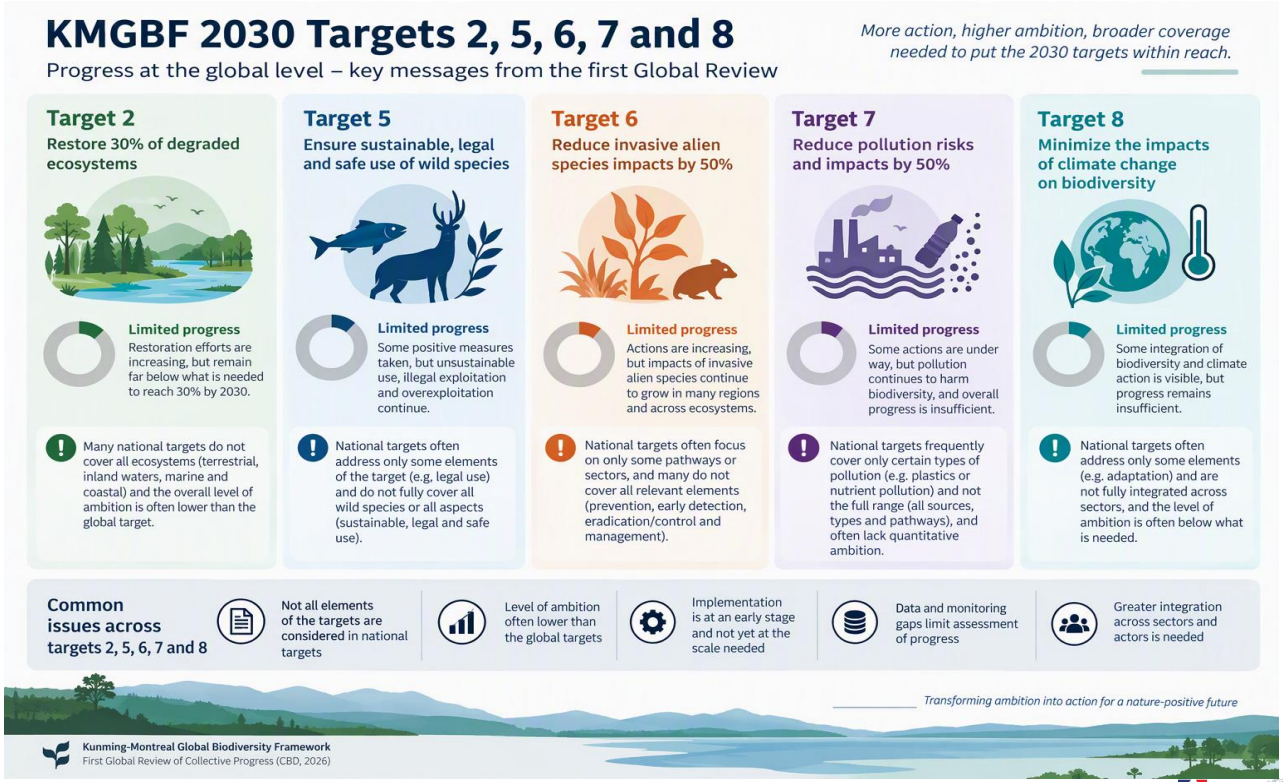
Targets **mutually reinforce** and support **each** other

Progress on Target 2 (ecosystem restoration) can contribute to Target 4 (species recovery), and Target 11 (ecosystem functions and services).

Conversely, weak progress on pressures such as land-use change or IAS or Pollution, can undermine restoration and conservation gains.

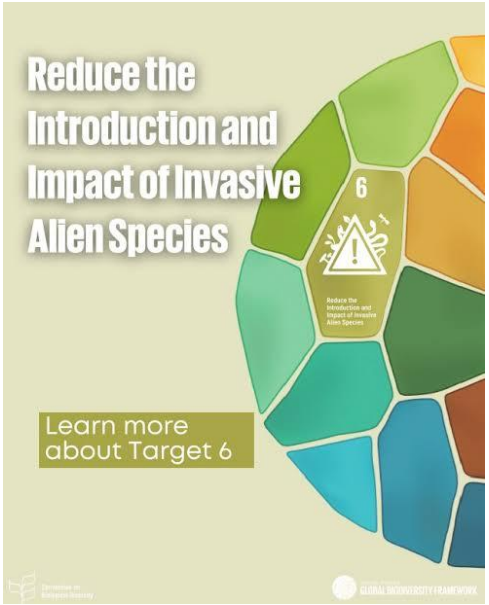
Progress on some Targets related to pressures on biodiversity





Why is Target 6 important for the successful implementation of the Kunming-Montreal Global Biodiversity Framework?





Invasive alien species are one of the main direct drivers of biodiversity loss.

They pose a threat to food security, human health and economic activities.

Globalization has made the movement of species easier and quicker by creating new introduction pathways.

The role of Target 6 in implementing the Global Biodiversity Framework



Kunming - Montreal
GLOBAL BIODIVERSITY FRAMEWORK

Implementing Target 6 is essential to safeguard biodiversity, sustain ecosystem services on which humanity depends, and fulfill our collective commitments
under the Kunming-Montreal Global Biodiversity Framework.

Efforts to address IAS will contribute to other targets







Addressing Target 6 will have a direct effect on the success of the other Targets of the KMGBF

The role of Target 6 in Implementing the Kunming-Montreal Global Biodiversity Framework

Reducing threats to biodiversity





Target 2 Restore 30% of all Degraded Ecosystems

Preventing reinvasion and spread of IAS that undermine restoration outcomes improves the long-term effectiveness of restoration investments, and enhances ecosystem functions and services, ecological integrity and connectivity.



Target 7 – Reduce Pollution to Levels That Are Not Harmful to Biodiversity

Prioritizing prevention and early action on invasive alien species, reduces reliance on chemical control measures, thereby avoiding secondary pollution. Restoring ecosystems affected by invasive alien species enhances nature-based solutions for filtering and mitigating pollutants.



Target 8 – Minimize the Impacts of Climate Change on Biodiversity and Build Resilience

Reducing synergistic impacts between climate change and invasive alien species, enhances ecosystem resilience and adaptive capacity, and safeguards nature-based solutions for climate mitigation and adaptation.

Key message









Target 6 is not an isolated ambition but a keystone action that helps unlock progress across the entire framework and in other frameworks.

Addressing IAS also intersects with the SDGs,



Thank you

Marianela Araya Quesada· marianela.araya@un.org

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Mr David Walkem

Invasives Canada

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Climate Change, Wildfire & Invasive Species in British Columbia

An Indigenous Perspective on Impacts and Response

David Walkem, Invasives Canada

INVASIVES CANADA

ISC Invasive Species Council of BC

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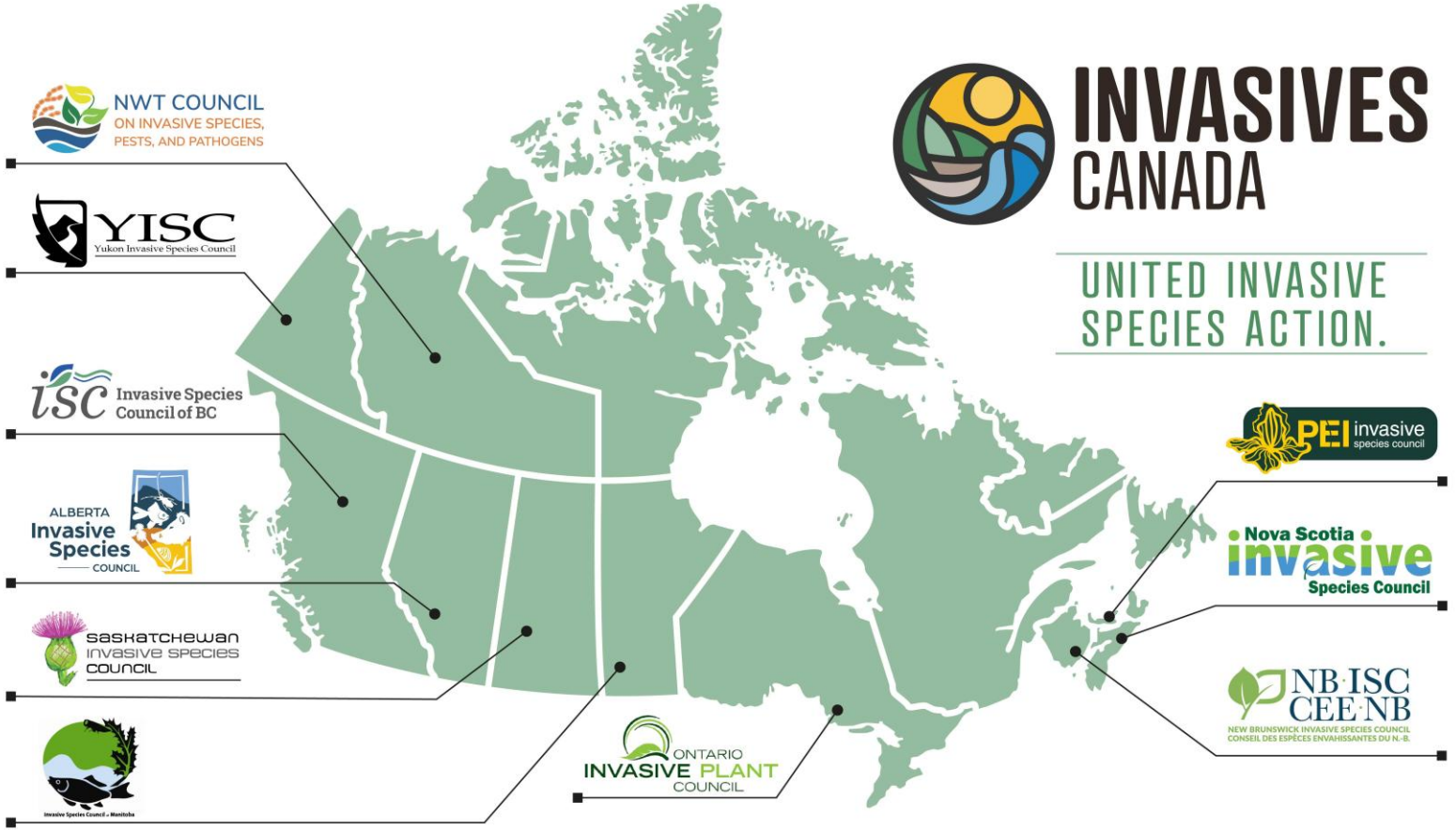
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SASKATCHEWAN
INVASIVE SPECIES
COUNCIL
Invasive Species Council of Manitoba
ONTARIO
INVASIVE PLANT
COUNCIL
INVASIVES
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PEI invasive
species council
Nova Scotia
invasive
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CONSEIL DES ESPÈCES ENVAHISSANTES DU N.-B.



Nlaka’pamux Traditional Territory



Geological and Ecological Diversity

- Fraser and Thompson River watersheds support numerous salmonid species, white sturgeon and suckers
- Riparian zones host critical vegetation like willows, cottonwood, and sedges
- Lower elevations feature semi-arid grasslands with bunchgrasses, rough fescue, sagebrushes and diverse wildflowers
- Higher elevations host Douglas-fir, ponderosa pine, spruce, and western redcedar forests, offering medicines and material for traditional practices



Nine Years of Fire

Nlaka’pamux Territory (2017-2026)

- Major fires > 3,745 ha
- Hundreds of smaller fires
- Over 18,000 km of disturbed soil caused by fireguards





Nine Years of Fire:



What's Causing These Fires?

- Climate Change:
    - Hotter temperatures
    - Drought
    - Changes to snowmelt timing
- Poor Fire Management
    - 100 years of fire suppression
    - = Fuel buildup
- Lack of Indigenous input
    - Eg. No cultural burns
- Human Activity



Climate: Extreme Flooding



- Wildfires and logging remove forestcover
  - Forested landscapes intercept rain, absorb and store water.
  - Snowmelt is slower in forested areas
  - Burnt soil doesn’t absorb as much water

- Climate change speeds snowmelt
  - All snow melts by May
  - More frequent extreme weather events
  - Atmospheric river in BC 2021

- Extreme flooding spreads invasive species
  - Japanese knotweed in Fraser River



Climate: Drought

- 2026: Interior BC experiencing ‘Exceptional Drought
  - Many areas in region received less than 50% normal monthly precipitation
  - 2026 saw lowest recorded streamflow in Nicola River
- 2021, 2023, 2024: Exceptional Drought
  - Record rainfall and streamflow lows
- Long term predictions call for more frequent and more severe drought periods in years to come



Climate: Food Sovereignty

- Access to fishing
    - rivers drying up
- Access to game species
    - wildfire impacts on deer
- Access to medicine and berry crops
    - Impacted by drought, fires and invasives







Climate: Invasive Species

- Invasives can benefit from climate change
- Invasives heighten risk / impacts of extreme events
    - Flooding
    - Wildfire
    - Fuel Loading
- Extreme events spread invasives
    - Post wildfire recovery
    - Flooding events
    - Wildfire suppression activities









What's Being Done



- Guardian Program
  - Beaver dam analogs
  - Removing invasives
  - Monitoring invasives
  - Japanese beetle
  - Partnerships
  - Cultural burns
  - Restoration post fire



Local Action to Global Challenges



- Climate impacts invasive species
- Invasive species impact climatic events
- Both Climate and Invasives Impact Indigenous people
- Importance of collaboration & engaging Indigenous communities

This is happening in communities across the GLOBE.



Thank you

David Walkem · execdirector@invasivescanada.ca

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Dr Franck Courchamp

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Dr Christophe Diagne

IRD France



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Economic, ecological and health impacts of biological invasions

Dr Franck COURCHAMP, CNRS (France)
Dr Christophe DIAGNE, IRD (France / Senegal)

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Partager la science
Transformer l'avenir

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Paradox of invasions: major impacts, still minor awareness



We believe this comes from a lack of **grasp of impacts**,
which hinders **research**, **management** and **communication**

We need **global, quantitative syntheses**



improve public **communication** and **compel** policymakers



provide standardized **values** for **better understanding** of the impacts

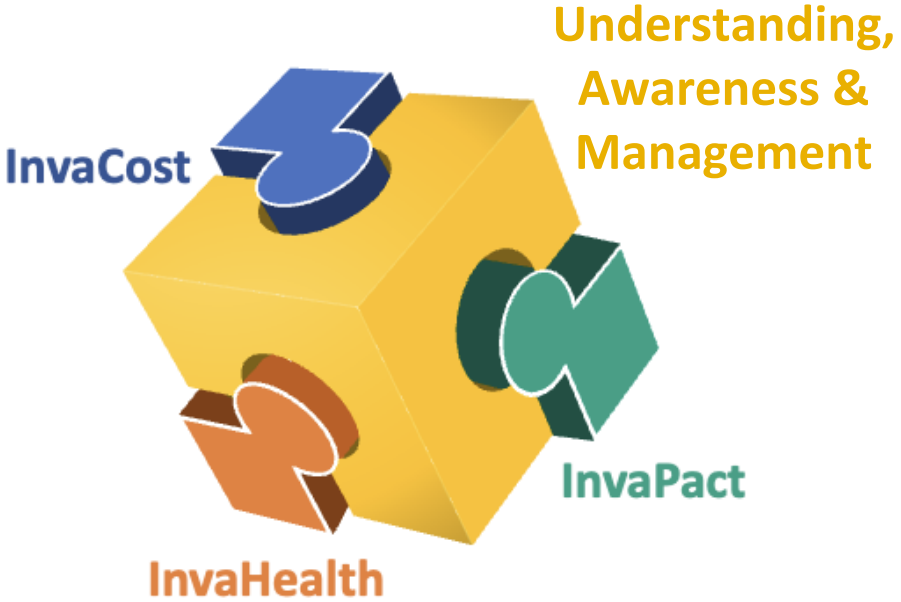


support efficient and cost-effective **decision-making**

Paradox of invasions: major impacts, still minor awareness



Since 2014, we set up to create **three collaborative consortia** to synthesize the **multidimensional impacts** of invasions at a **global** scale

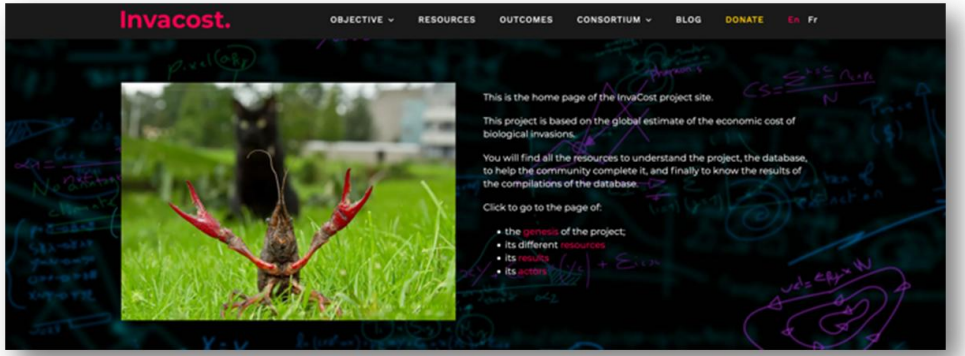


1 – Economic costs (InvaCost)

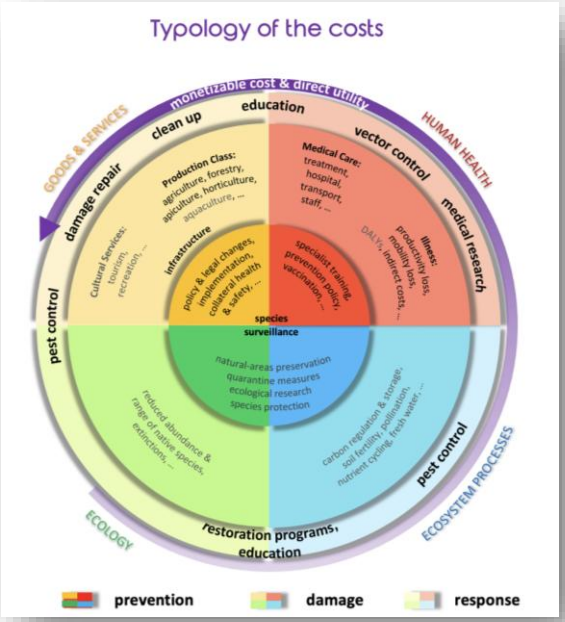


1-Economics

- A new, integrative **typology** + **global database**
- **>13,500 standardized costs**, with 65 descriptors each
- From **~2,000 sources** (both **scientific** and **grey** literature)
- Damage and/or management costs for **988 IAS in 182 countries**



http://invacost.fr/



A total of 81 published studies are based on the InvaCost database



1-Economics



The costs are massive



1-Economics

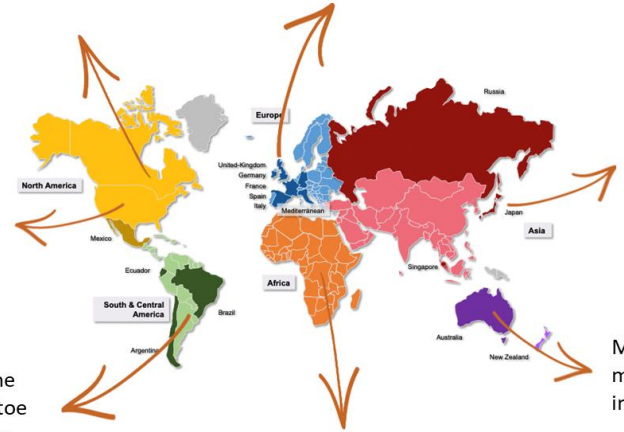
IAS cost globally a conservative minimum of

US$ 2,168 billion

(1970-2021 -- based on the latest version of *InvaCost*)

Damages by the zebra and quagga mussels in Canadian lakes from 1991 to 1997

Yield losses in agriculture and health costs due to Ambrosia in Western Europe from 2012 to 2017



100,000 yearly hospitalisations due to the Red Imported Fire Ant in the USA

Potential cost of the Brown Tree Snake if it were to invade this area

Control program of the invasive tiger mosquitoe in South America from 1990 to 2030

Management costs of invasive mammals in Australian islands in 1950

Waterways blocked by the floating primrose-willow in 14 African countries since 1995

The costs are massive



1-Economics

Article

High and rising economic costs of biological invasions worldwide

https://doi.org/10.1038/s41586-021-03405-6
Received: 8 April 2020
Accepted: 28 February 2021
Published online: 31 March 2021
Check for updates

Christophe Diagne[1], Boris Leroy[2], Anne-Charlotte Vaissière[1], Rodolphe E. Gozlan[3], David Roiz[4], Ivan Jarić[5,6], Jean-Michel Salles[7], Corey J. A. Bradshaw[8] & Franck Courchamp[1]

Biological invasions are responsible for substantial biodiversity declines as well as high economic losses to society and monetary expenditures associated with the management of these invasions[1,2]. The InvaCost database has enabled the generation

US$ 163 billion estimated in 2017

a cost largely exceeding…



… the **gross domestic product** of **50 out of 54** African countries

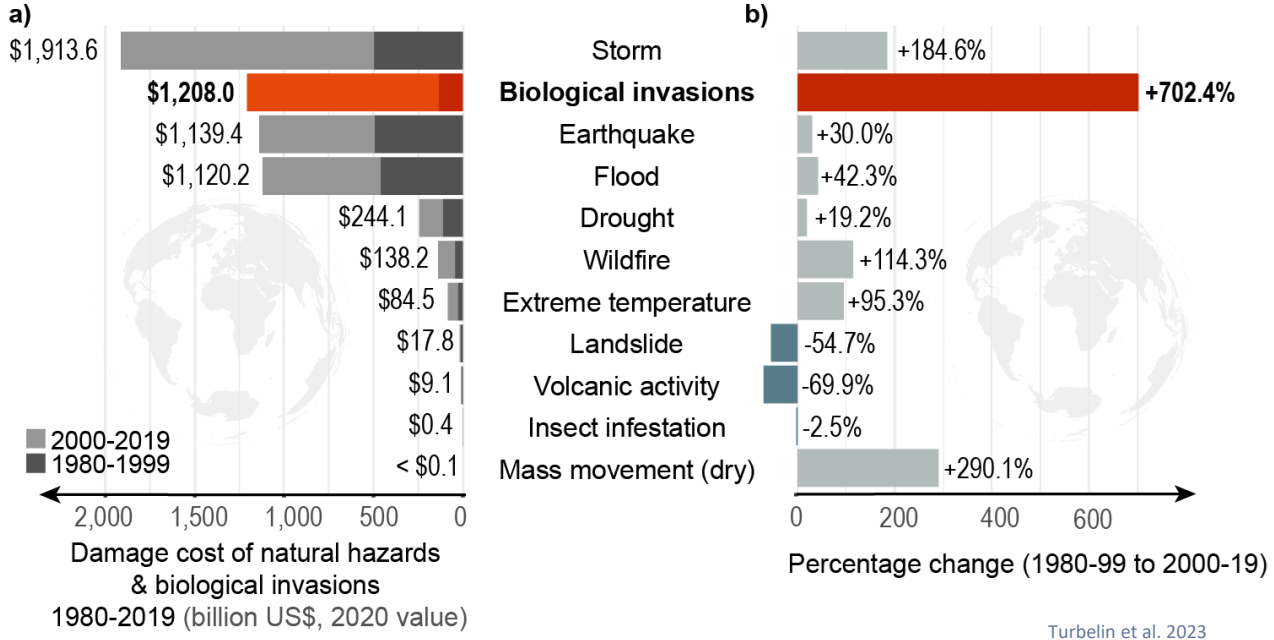
World Health Organization

UNITED NATIONS

… **20 times higher** than the total funds available in 2016–2017

The costs are massive

comparable with **those** of **natural hazards**



Turbelin et al. 2023

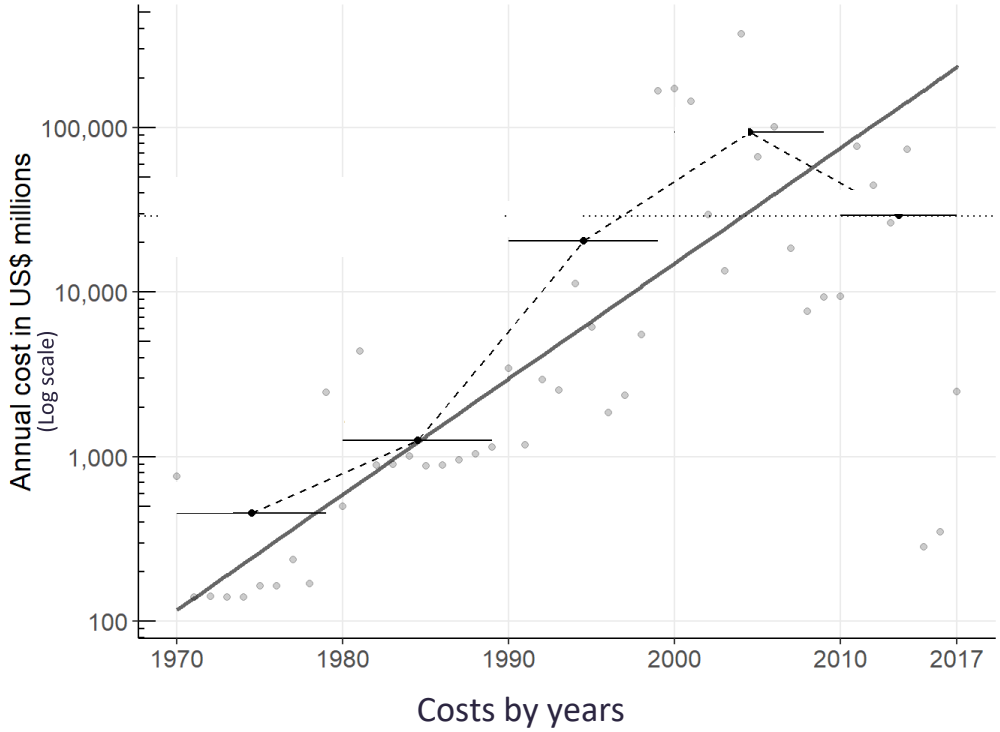
Natural hazards and biological invasions damage costs (1980–2019)

1-Economics

The costs are increasing exponentially



1-Economics



X4 every 10 years

The costs are increasing exponentially



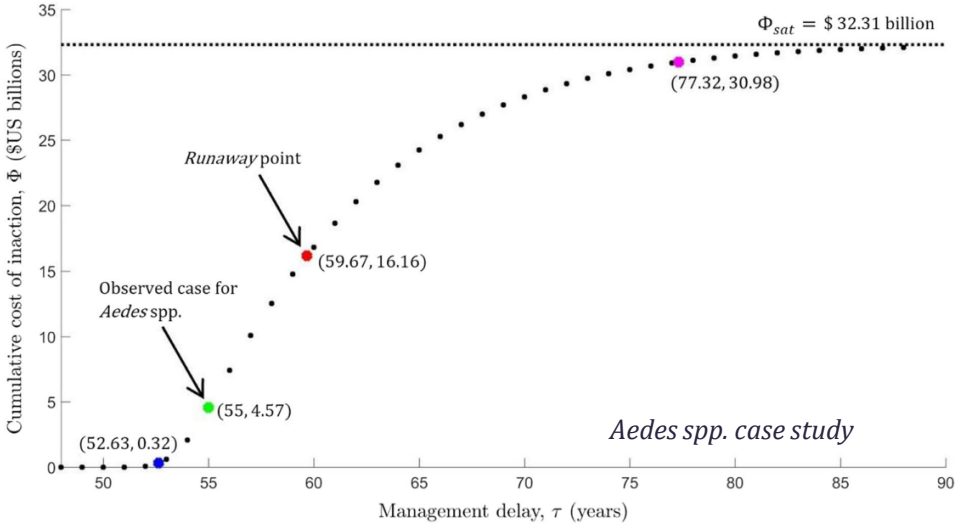
1-Economics

Cost of inaction = the extra expenditure caused by delaying management

$4.57 billion

cost of inaction after a
55-year management delay

After ~50 years of slow growth, costs rose by **≥2 orders of magnitude** within **~7 years**.



Ahmed et al. (2022), Biological Invasions. doi:10.1007/s10530-022-02755-0

The longer we wait to manage, the costlier it becomes

The costs of management are relatively low



1-Economics

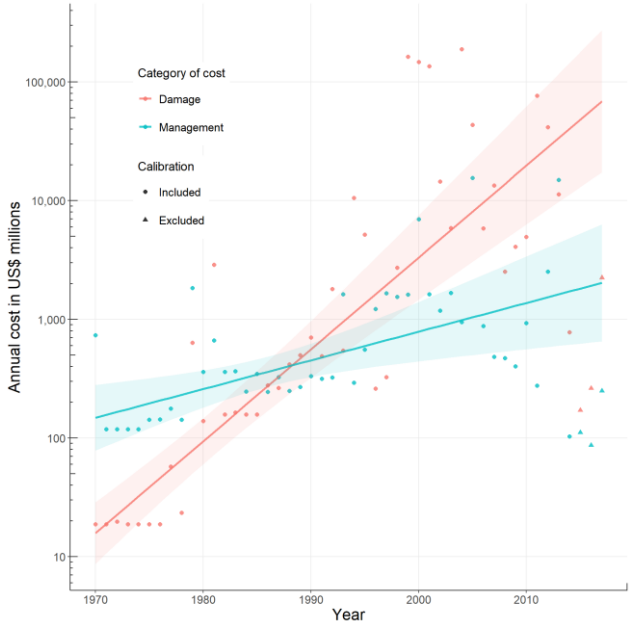
Costs of **damages** & **losses**



10 times higher than

Costs of **prevention** & **management**

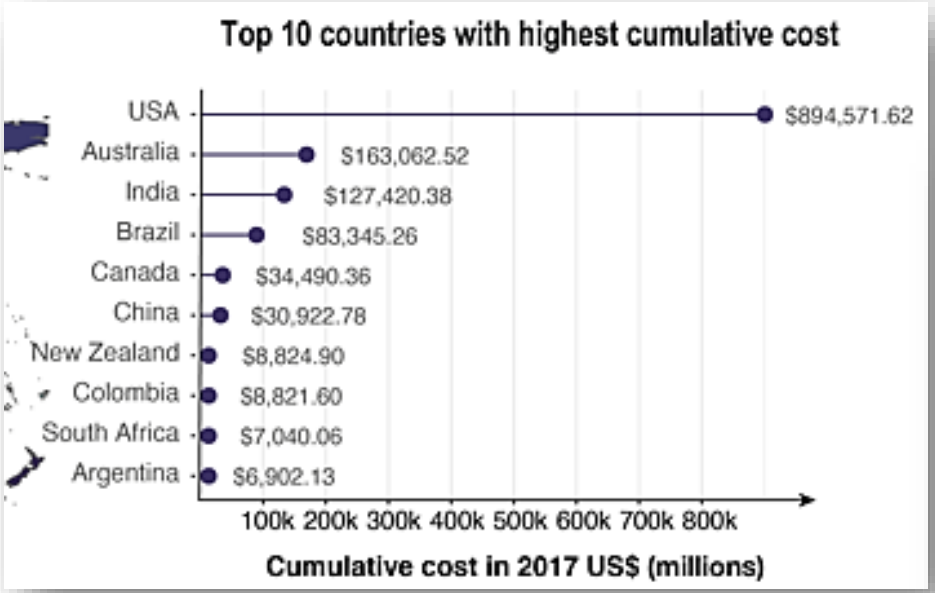


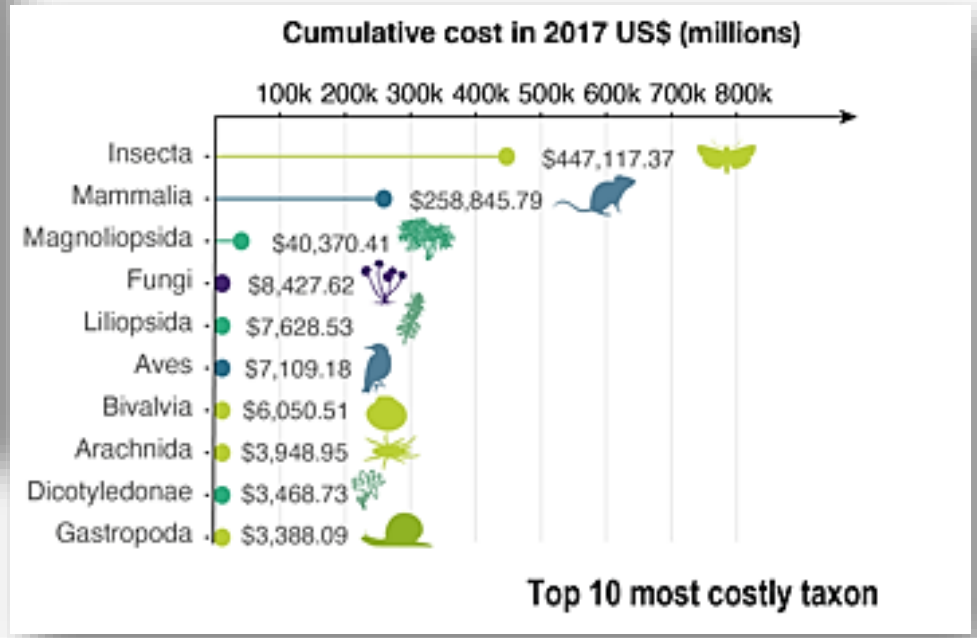


The costs are unevenly distributed



1-Economics





The costs are unevenly distributed



1-Economics

Reported costs by primary sector

$509 billion

Agriculture

$134 bn

Forestry

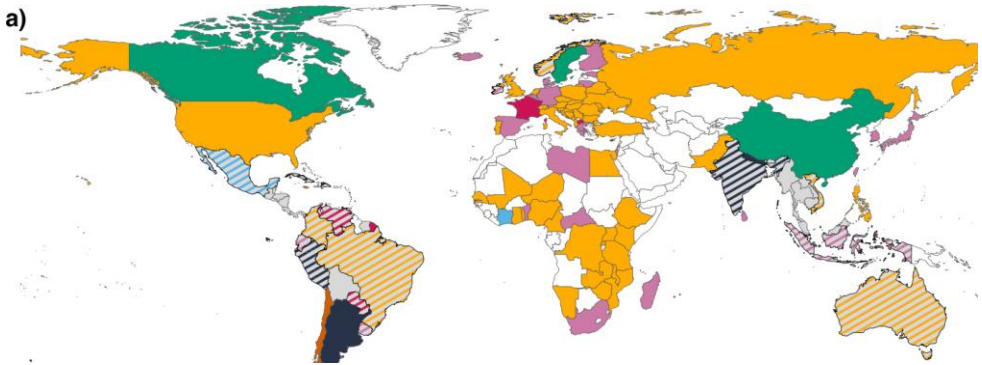
$1.3 bn

Fisheries

79%

of reported costs across these three primary sectors

The most impacted sector differs from country to country



■ Agriculture ranks first in **46 of 123 countries**

Turbelin et al. (2024), Global Environmental Change. doi:10.1016/j.gloenvcha.2024.102858

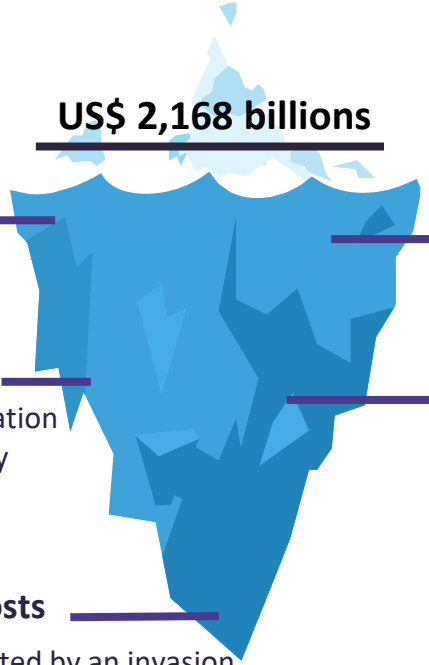
Agriculture bears the largest reported burden, but national profiles differ sharply

The costs are massively underestimated



1-Economics

5 sources of under-estimation



Less robust costs
- Less reliable costs
- Extrapolated costs

Missing cost estimations
- Taxonomic gaps
- Geographic gaps
- Temporal gaps

Unaccessible costs
- Unaccessible documentation
- Confusion in terminology (e.g., pest vs invasive)

Non monetized costs

For example, for health:
- Revenue losses
- Salary of health and research staff
- Education losses

Non-monetizable costs
- Value of a species impacted by an invasion
- Value of an ecosystem disturbed by an invasion

2 – Ecological impacts (InvaPact)



2-Ecology

Trends in
Ecology & Evolution

CellPress

Opinion

Typology of the ecological impacts of biological invasions

Laís Carneiro[1,*], Boris Leroy[2], César Capinha[3,4], Corey J.A. Bradshaw[5,6], Sandro Bertolino[7], Jane A. Catford[8,9], Morelia Camacho-Cervantes[10], Jamie Bojko[11], Gabriel Klippel[1], Sabrina Kumschick[12,13], Daniel Pincheira-Donoso[14], Jonathan D. Tonkin[15,16], Brian D. Fath[17,18], Josie South[19,20], Eléna Manfrini[1,2], Tad Dallas[21], and Franck Courchamp[1]

- **>3,500** invasive alien species
- **19** impact types
- **12** impact mechanisms
- **110** major ecosystem types

→ An infinity of ecological effects

↓

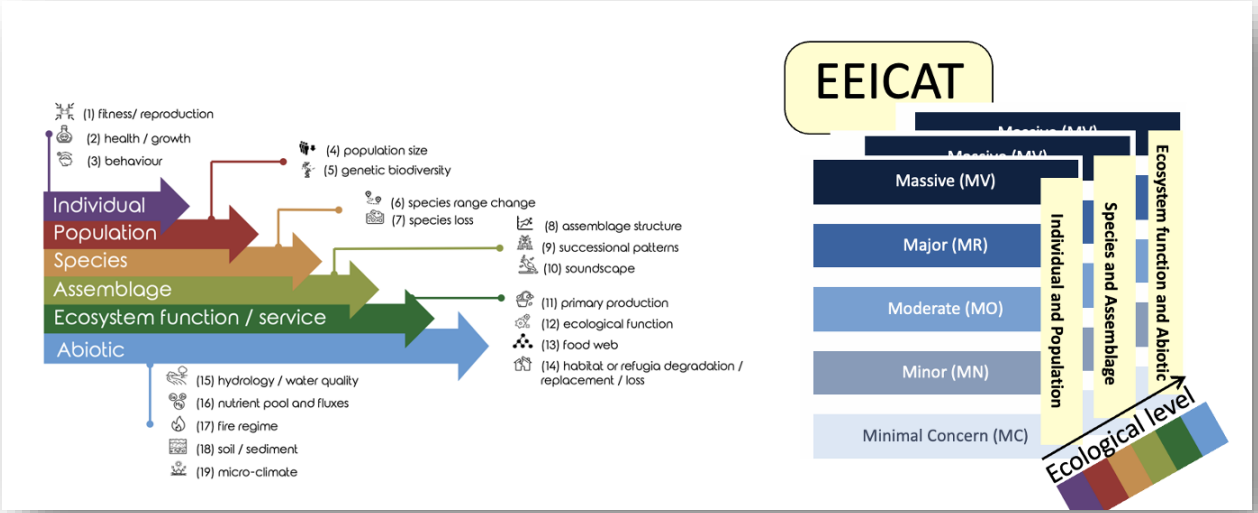
No common, standardized metric

2 – Ecological impacts (InvaPact)



2-Ecology

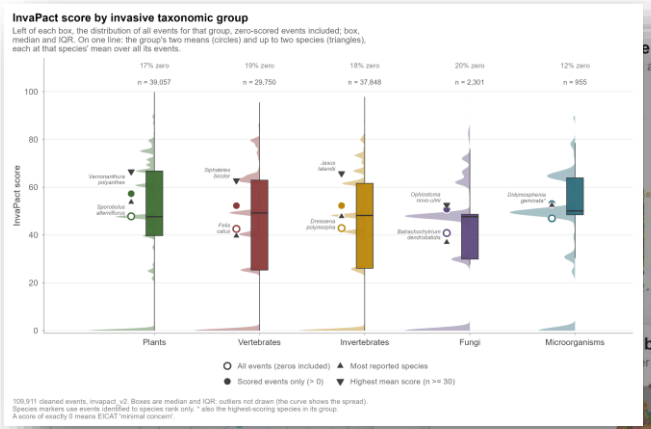
- A new **typology** + **standardized metric** to quantify all impacts on a [0-100] scale
- A **designed** and **validated** human-supervised LLM to **automatically extract** impacts from the published literature, with fewer errors than human experts
- **~160,000 impacts** with 55 descriptors each, from **3,682 IAS** in **191 countries**

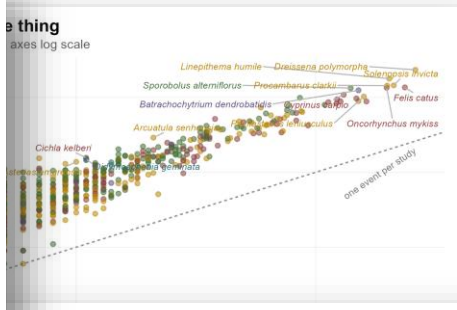


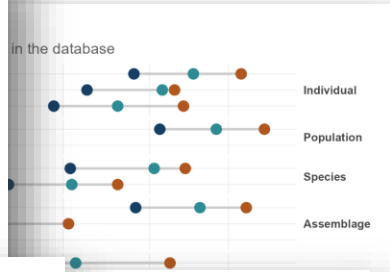
2 – Ecological impacts (InvaPact)

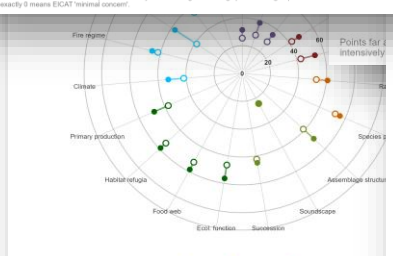


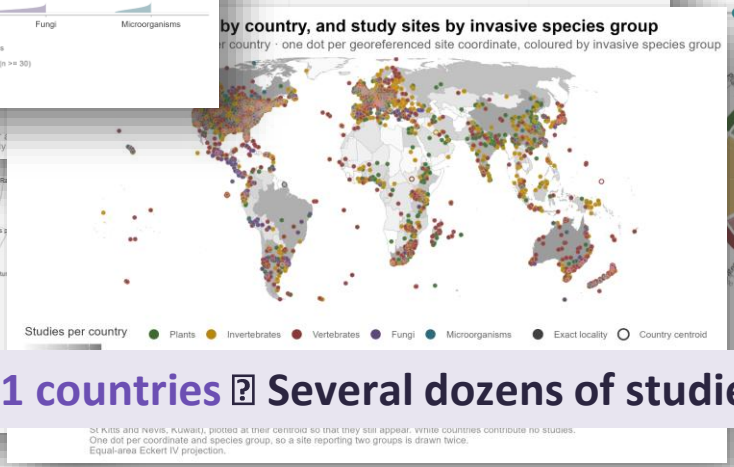
2-Ecology

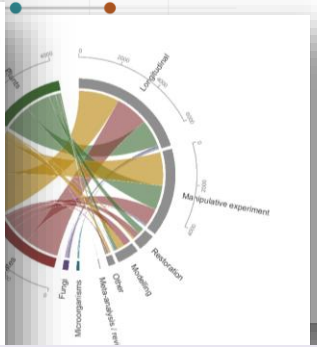












>160 researchers from 51 countries ⍰ Several dozens of studies in preparation

3 – Health impacts (InvaHealth)



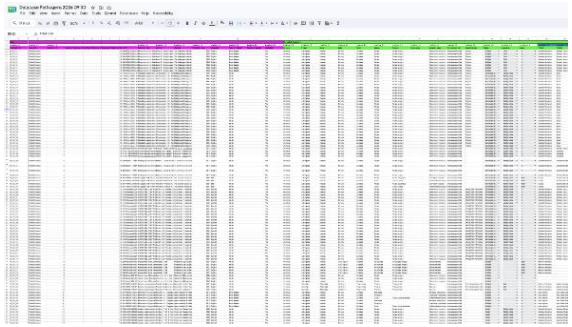
3-Health

A new **typology** + **global database** of standardized health impacts & their economic costs

Typology for the mechanisms through which invasive species negatively affect human health

Louis Simon[a,b*], Ruth F. Hunter[a], Ross N. Cuthbert[b], Lynsey Patterson[a], Paul Caplat[b], Elena Angulo[c], Corey J. A. Bradshaw[d,e], Franck Courchamp[f], Pierre Courtois[g], Melina Kourantidou[h, i], Paulina A. Pontifes[j], David Renault[k], David Roiz[l], Anna Turbelin[m], Christophe Diagne[n+], Guillaume Latombe[o+]

In review (The Lancet Planetary Heath)



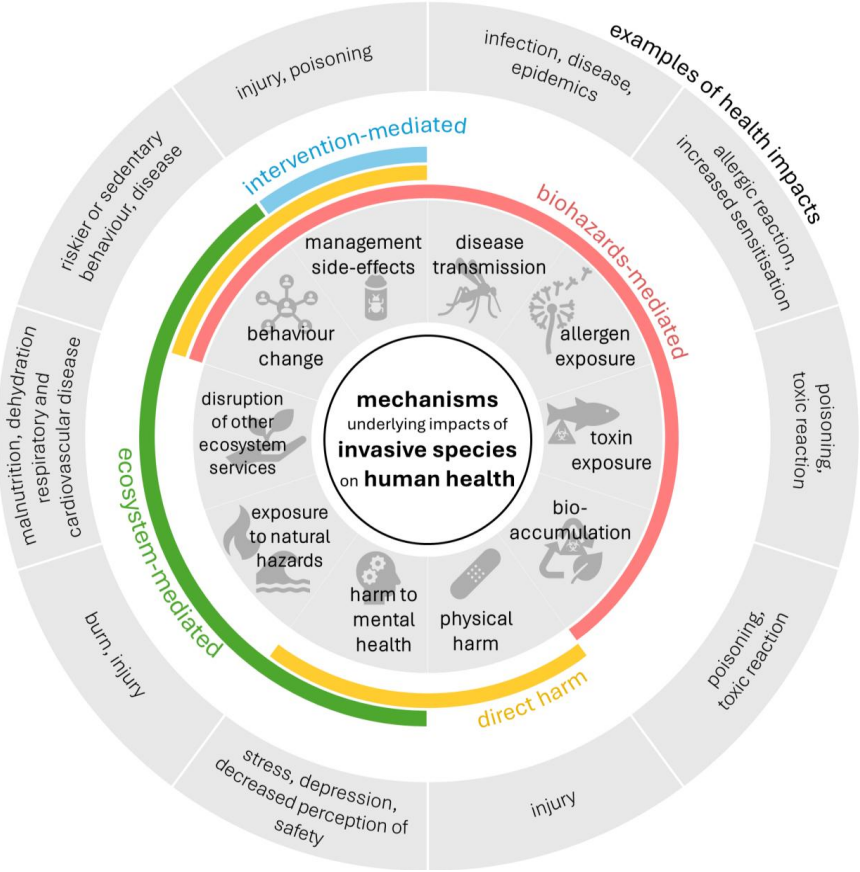
(currently under construction, expected mid-2027…)

InvaHealth

3 – Health impacts (InvaHealth)



3-Health



Thank you

Dr Franck COURCHAMP, CNRS (France) · franck.courchamp@cnrs.fr
Dr Christophe DIAGNE, IRD (France / Senegal) · christophe.diagne@ird.fr

InvaCost

InvaPact



Photo: Yohan Petit, CBN de Corse

IAS Thematic Half Day · COP17 · Yerevan, 24 October 2026

15 minutes

Exchange with the audience

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

MUSÉUM NAL HIST NATURELLE

OFB
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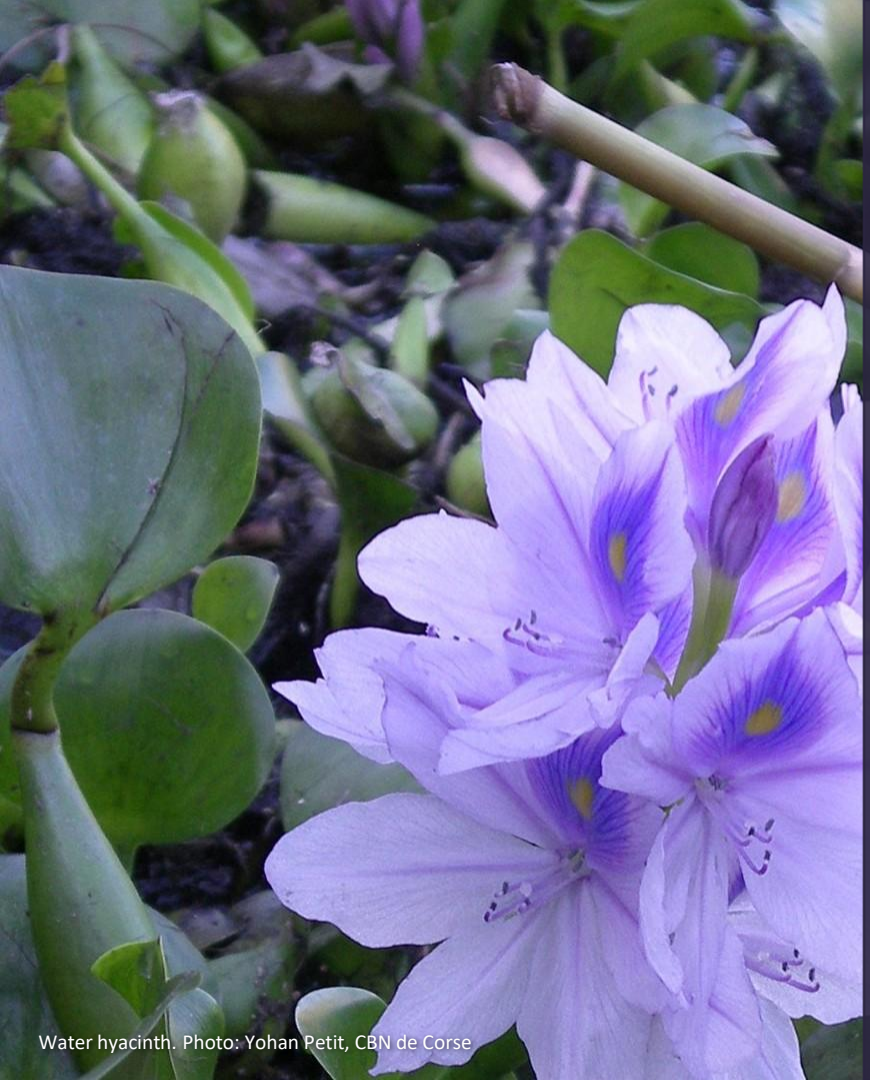
ÉVIAN 2026



Water hyacinth. Photo: Yohan Petit, CBN de Corse

IAS Thematic Half Day · COP17 · Yerevan, 24 October 2026

10:45–11:05

Coffee break

Session 2 starts at 11:05

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