ALIEN INVASION: ASSESSING THE FUTURE THREAT OF INVASIVE SPECIES AFTER THE IPBES REPORT

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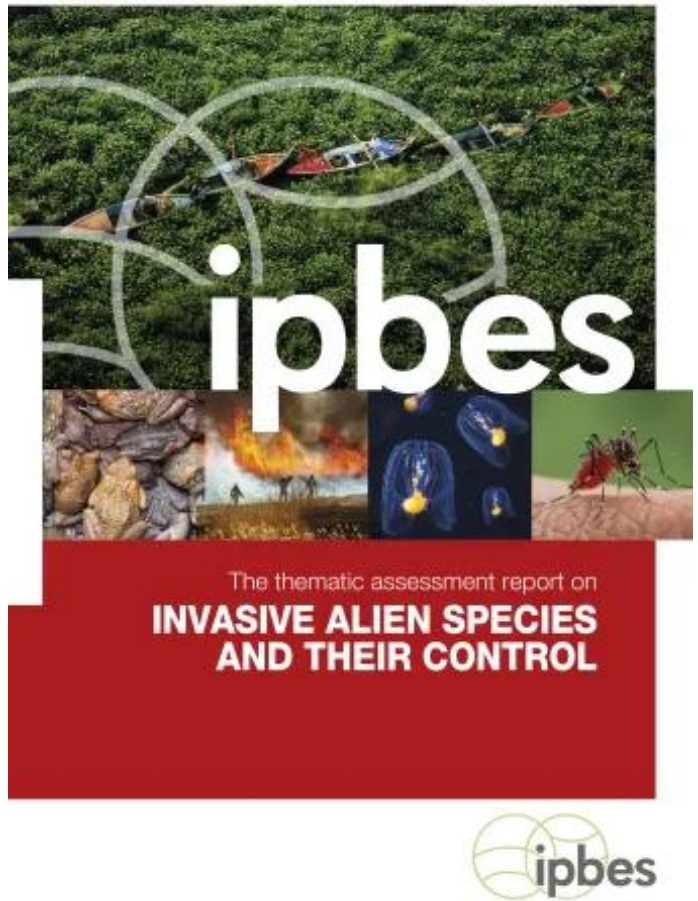

ipbes
The thematic assessment report on
INVASIVE ALIEN SPECIES
AND THEIR CONTROL
ipbes

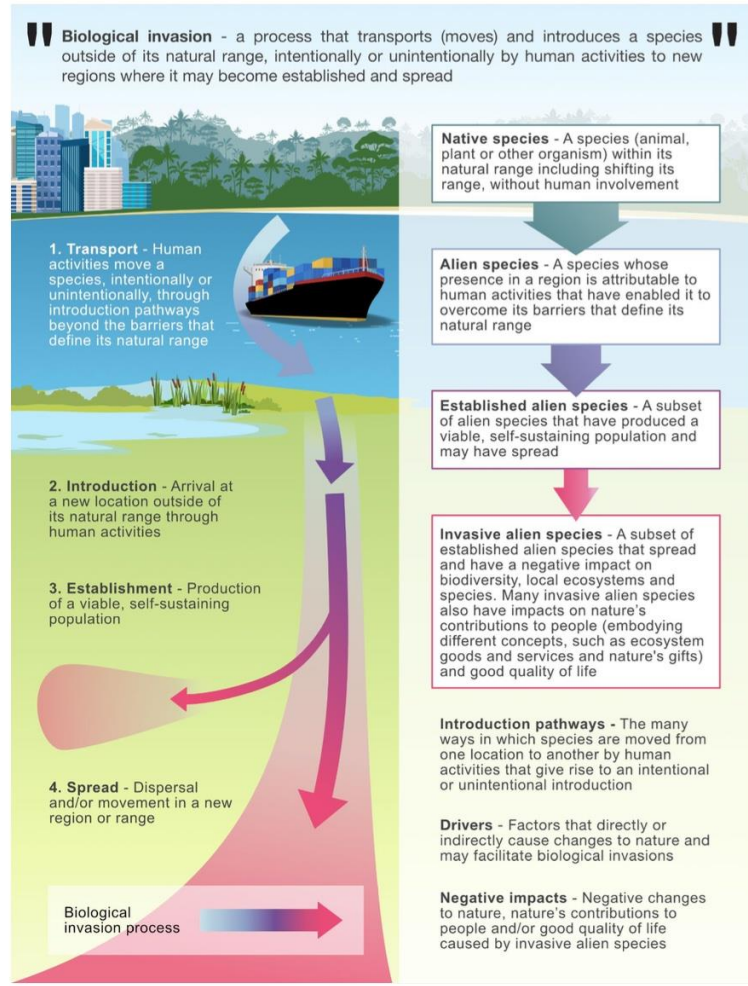


Figure SPM.1. Key concepts within the biological invasion process.[7] Invasive alien species are one of the main direct drivers of change in nature. The biological invasion process comprises the following stages: transport, introduction, establishment, and spread (or dispersal). Definitions of native, alien, established alien and invasive alien species are provided. Indirect and other direct drivers of change facilitate biological invasion.

[7] This assessment acknowledges that countries have different national and local legislation to address biological invasions which may include different definitions suitable for national and local contexts.

- *Assessment Report on Invasive Alien Species and their Control* finds that alongside dramatic changes to biodiversity and ecosystems, the global economic cost of invasive alien species exceeded $423 billion annually in 2019, with costs having at least quadrupled every decade since 1970.

- The authors of the report emphasize that not all alien species become invasive – invasive alien species are the subset of alien species known to have become established and spread, which cause negative impacts on nature and people.

- About 6% of alien plants; 22% of alien invertebrates; 14% of alien vertebrates; and 11% of alien microbes are known to be invasive, posing major risks to nature and people.

- People with the greatest direct dependence on nature, such as Indigenous Peoples and local communities, are found to be at even greater risk. More than 2,300 invasive alien species are found on lands under the stewardship of Indigenous Peoples – threatening their quality of life and even cultural identities.

- The IPBES experts point to the generally insufficient measures in place to tackle these challenges. While 80% of countries have targets related to managing invasive alien species in their national biodiversity plans, only 17% have national laws or regulations specifically addressing these issues.

- This also increases the risk of invasive alien species in neighboring States. The report finds that 45% of all countries do not invest in managing biological invasions.

Species

37,000: alien species established worldwide

200: new alien species recorded every year

3,500: invasive alien species recorded globally, including 1,061 plants (6% of all alien plant species), 1,852 invertebrates (22%), 461 vertebrates (14%) and 141 microbes (11%)

37%: proportion of known alien species reported since 1970

36%: anticipated increase in alien species by 2050 compared to 2005, under a “business-as-usual” scenario (assumes past trends in drivers of change continue)

> 35%: proportion of alien freshwater fish in the Mediterranean basin that have risen from aquaculture

Impacts

- 34%: proportion of impacts reported in the Americas (31% Europe and Central Asia; 25% Asia Pacific; 7% Africa
- 75%: impacts reported in the terrestrial realm (mostly in temperate and boreal forests and woodlands and cultivated areas)
- 14%: proportion of impacts reported in freshwater ecosystems
- 10%: proportion of impacts reported in the marine realm
- 60%: proportion of recorded global extinctions to which invasive alien species have contributed
- 16%: proportion of recorded global extinctions in which invasive alien species have been the sole driver
- 1,215: local extinctions of native species caused by 218 invasive alien species (32.4% were invertebrates, 50.9% vertebrates, 15.4% plants, 1.2% microbes)
- 27%: invasive alien species impacts on native species through ecosystem properties changes (24% through interspecific competition; 18% through predation; 12% through herbivory)
- 90%: global extinctions on islands attributed mainly to invasive alien species
- >$423 billion: estimated annual economic cost of biological invasions, 2019
- 92%: proportion of economic costs of biological invasions attributed to invasive alien species damaging nature's contributions to people and good quality of life (with the remaining 8% of costs related to biological invasion management)
- >2,300: invasive alien species documented on lands managed, used and/or owned by Indigenous Peoples
- 400%: rise in the economic cost of biological invasions in every decade since 1970

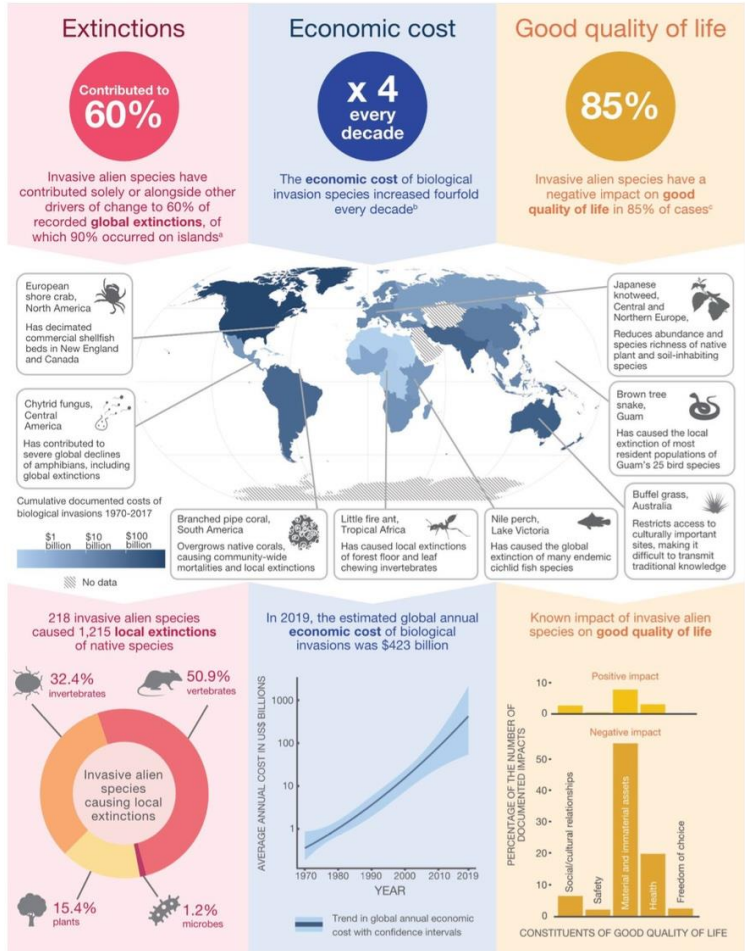
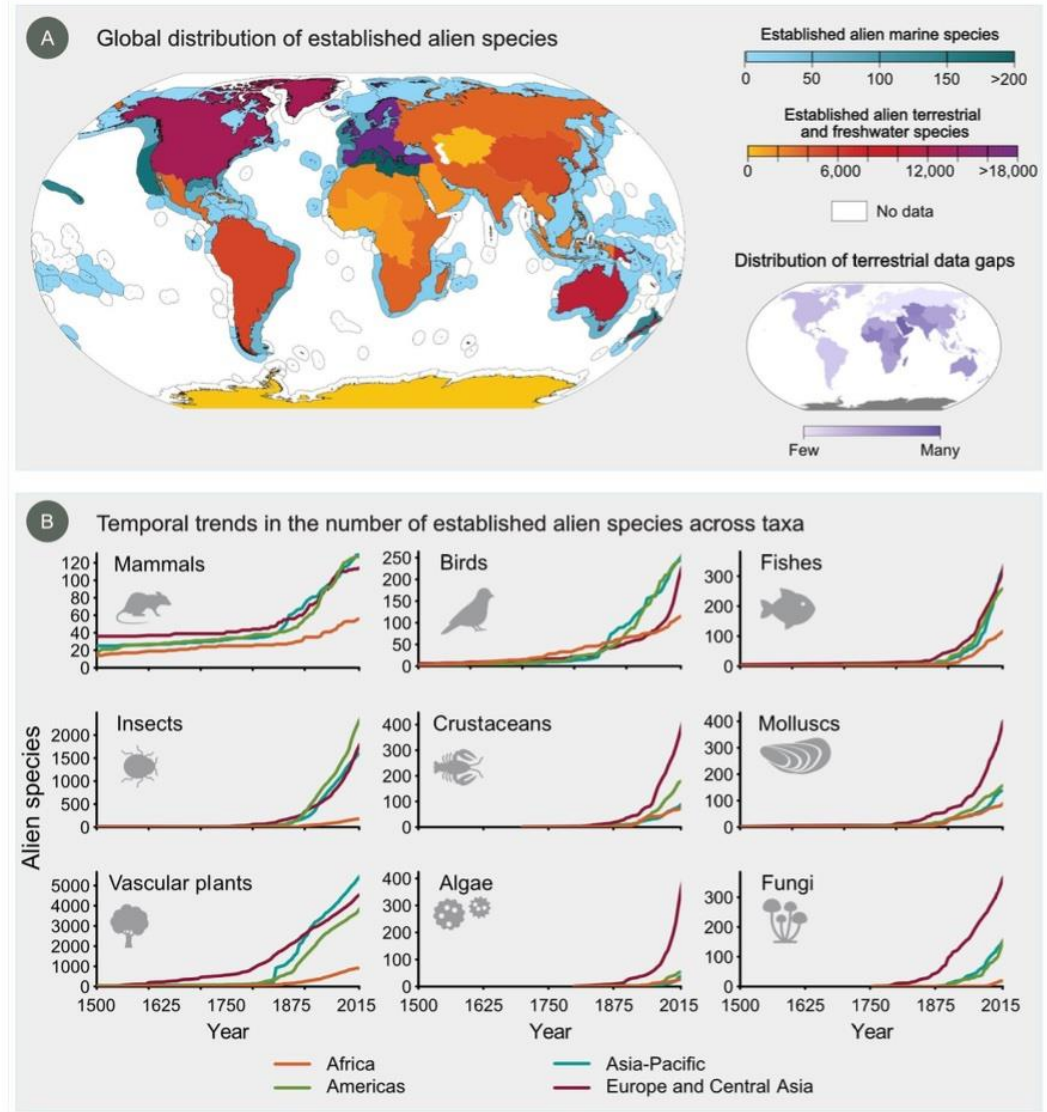


Figure SPM.3. Extent of the problems caused by invasive alien species. Illustrative examples of the impacts of invasive alien species on native species (red; left column), on the economy (blue; centre column) and on good quality of life (yellow; right column). The top row illustrates the documented numbers of global and local extinctions of native species attributable to which invasive alien species contributed (left); the rate of increase in the economic cost of biological invasions per decade (centre); and the percentage of cases where the impact of invasive alien species on good quality of life is reported as negative (right). The map in the centre row shows the documented cumulative economic cost of invasive alien species per IPBES subregion from 1970 to 2017. Case studies illustrate a variety of impacts of invasive alien species on both nature and good quality of life in different geographic regions, taxonomic groups and realms, but are not meant to be representative. The bottom row shows the taxonomic distribution (i.e.,


A
Global distribution of established alien species
Established alien marine species
0 50 100 150 >200
Established alien terrestrial and freshwater species
0 6,000 12,000 >18,000
No data
Distribution of terrestrial data gaps
Few Many
B
Temporal trends in the number of established alien species across taxa
Mammals
Birds
Fishes
Insects
Crustaceans
Molluscs
Vascular plants
Algae
Fungi
Alien species
Year
Africa
Americas
Asia-Pacific
Europe and Central Asia

a) Negative impacts on nature's contributions to people		
Species	**Taxa**	**Nature's contributions people (number of documented impacts)**
Pontederia crassipes (water hyacinth)		Energy (2); Food & feed (32); Freshwater quantity (19); Options (2); Physical experiences (4); Water quality (18)
Solenopsis invicta (red imported fire ant)		Biological processes (13); Energy (3); Food & feed (35); Learning (1); Materials (12); Options (4)
Dreissena polymorpha (zebra mussel)		Energy (17); Freshwater quantity (4); Materials (13); Medicinal (2); Ocean acidification (1); Options (8); Water quality (7)
Bactrocera dorsalis (Oriental fruit fly)		Food & feed (41)
Impatiens glandulifera (Himalayan balsam)		Biological processes (9); Freshwater quantity (4); Pollination & dispersal (5); Soils formation (22)
Robinia pseudoacacia (black locust)		Biological processes (13); Soils formation (27)
Chilo partellus (spotted stem borer)		Food & feed (37)
Lissachatina fulica (giant African land snail)		Food & feed (36)
Reynoutria japonica (Japanese knotweed)		Soils formation (33)
Cyprinus carpio (common carp)		Food & feed (28)

Top 10 Most Widespread Invasive Alien Species Worldwide

Organism group	Taxon	Number of regions
Vascular plant	*Pontederia crassipes* (water hyacinth)	74
Vascular plant	*Lantana camara* (lantana)	69
Mammal	*Rattus rattus* (black rat)	60
Vascular plant	*Leucaena leucocephala* (leucaena)	55
Mammal	*Mus musculus* (house mouse)	49
Mammal	*Rattus norvegicus* (brown rat)	48
Vascular plant	*Ricinus communis* (castor bean)	47
Vascular plant	*Ailanthus altissima* (tree-of-heaven)	46
Vascular plant	*Robinia pseudoacacia* (black locust)	45
Vascular plant	*Chromolaena odorata* (Siam weed)	43

The number of regions where a species has been recorded and classified as invasive based on GRIIS (Pagad et al., 2022). Note this table only refers to the distribution of invasive alien species and not their impacts.

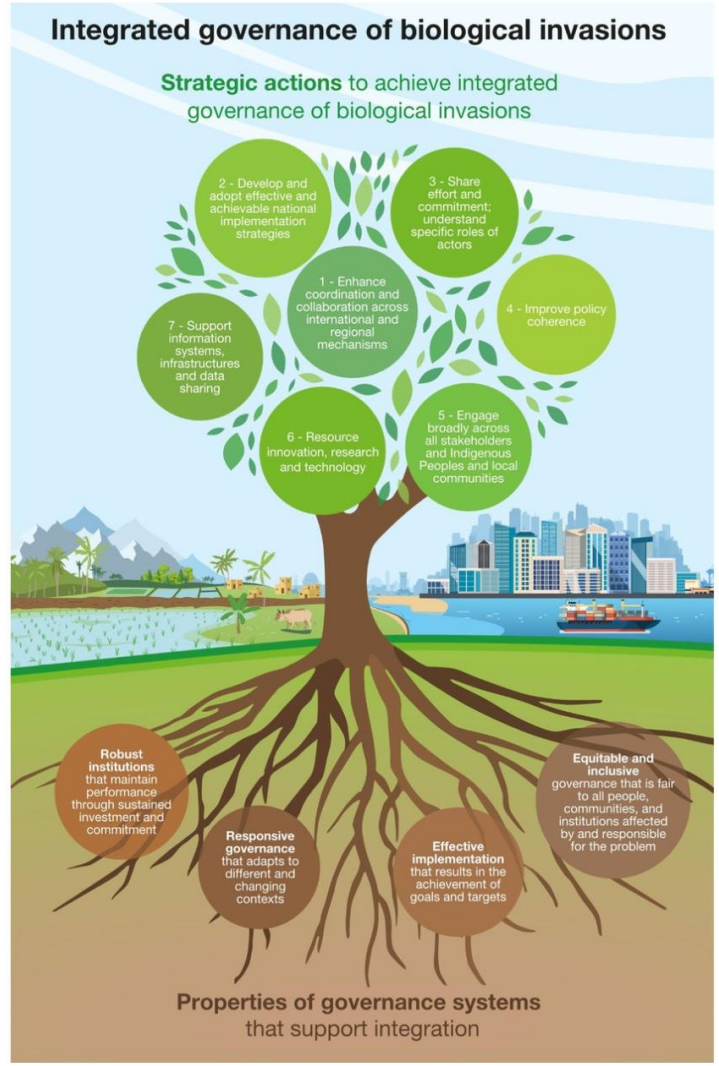


Figure SPM.7. Integrated governance of biological invasions. A context-specific Integrated governance approach of biological invasions is enabled by a governance system with properties that support integration, and a set of strategic actions that together are designed to bring about the progress needed to meet national and international goals

Reservas da Biosfera de Portugal

#ParteDoPlano

Dia Internacional para a Biodiversidade 2024

THE KUNMING-MONTREAL GLOBAL BIODIVERSITY FRAMEWORK OUTLINES 23 TARGETS FOR 2030. In short:

1.Conserve and manage 30% of the world's lands, waters, coastal areas, and oceans, with a focus on vital biodiversity areas. Currently, only 17% of land and 10% of marine areas are protected.

2.Restore or begin restoring 30% of degraded ecosystems on land and in water.

3.Minimize the loss of important biodiversity areas and ecosystems with high ecological integrity.

4.Halve global food waste and reduce overconsumption and waste generation.

5.Cut excess nutrients and reduce the risk from pesticides and hazardous chemicals by 50%.

6.Phase out or reform subsidies harmful to biodiversity by 2030, totalling at least $500 billion per year, while promoting positive incentives for conservation.

7.Secure at least $200 billion annually for biodiversity-related funding from all sources by 2030.

8.Increase financial support from developed to developing countries, particularly the least developed countries, small island states, and transitioning economies, to at least $20 billion annually by 2025 and $30 billion by 2030.

9.Prevent the introduction of invasive species and reduce their establishment by half. Eradicate or control invasive species on islands and priority sites.

10.Mandate large companies and financial institutions to transparently disclose their biodiversity-related risks, dependencies, and impacts in their operations, supply chains, and portfolios.

Without these actions, the ongoing species extinction rate, already many times higher than historical averages, will continue to accelerate.