

## Impacts of invasive alien species on Nature, Nature's Contributions to People, Sustainable Development, and Good Quality of Life



# Assessemnt of Alien Invasive Alien Species and their control

[www.ipbes.net](http://www.ipbes.net)



# What is IPBES?

IPBES is a **independent intergovernmental body** established by member States in 2012

Its mission is to **strengthen knowledge foundations** for better policy through science, for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development

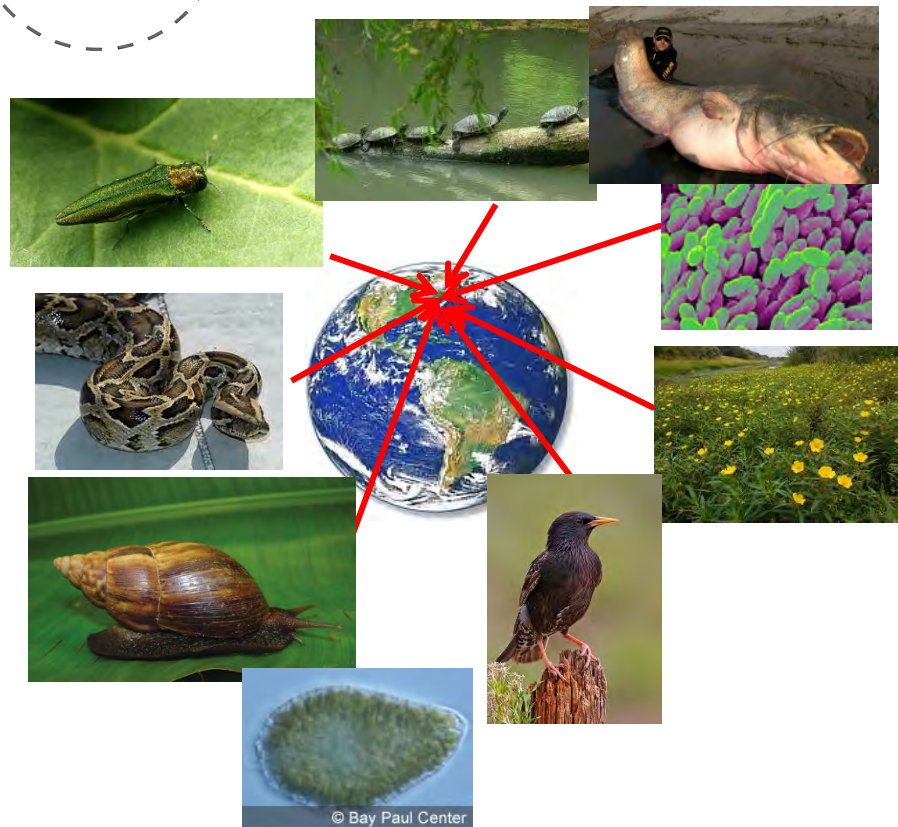
IPBES provides policymakers with:

- **tools and methods** to protect and sustainably use these vital natural assets
- objective **scientific assessments** on the state of knowledge

## Guiding questions (Ch 4)

1. •What are the impacts, risks and benefits of invasive alien species for biodiversity and ecosystem services, sustainable development and human wellbeing?
2. •How can we better quantify environmental, economic and social costs? What are they?
3. •How can we best understand cultural losses associated with IAS?
4. •What can ecological economics contribute to the study of IAS?
5. •How can we increase the consideration to alien pathogens/diseases?

# Taxa of concern



Terrestrial invertebrates  
 Terrestrial vertebrates  
 Amphibians  
 Terrestrial plants  
 Freshwater invertebrates  
 Freshwater vertebrates  
 Freshwater (aquatic) plants  
 Marine invertebrates  
 Marine vertebrates  
 Marine (aquatic) plants  
 Pathogens and microbes

# Mechanisms of impacts on Nature

Competition

Predation

Hybridisation

Transmission of disease

Parasitism

Poisoning/toxicity

Bio-fouling

Grazing/herbivory/browsing

Chemical impact on ecosystem

Physical impact on ecosystem

Structural impact on ecosystem

Indirect impacts through interactions with other species

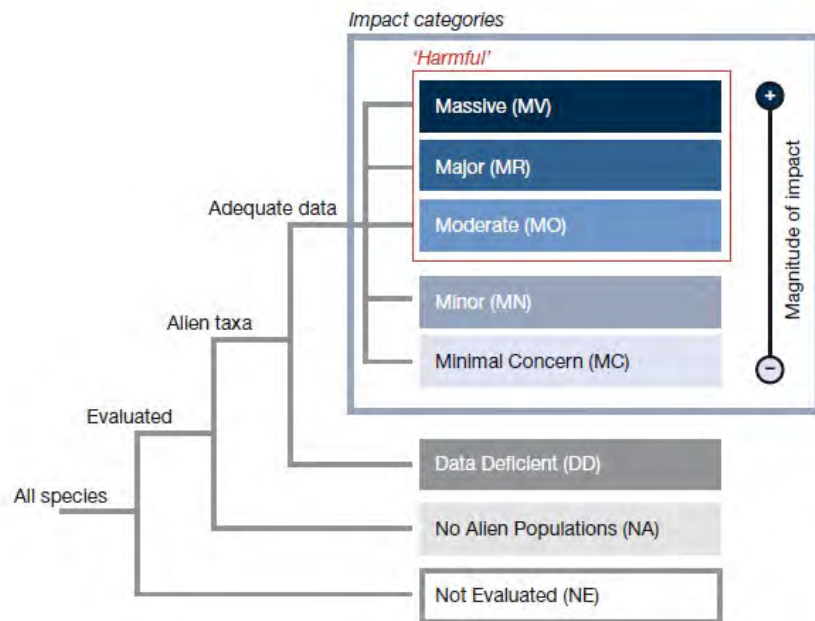


# Impact scores



IUCN EICAT Categories and Criteria

The Environmental Impact Classification for Alien Taxa (EICAT)



Individual assessments at appropriate  
SPATIAL and TEMPORAL SCALE

Overall category

Study 1 –	Minor	Massive
Study 2 –	Moderate	
Study 3 –	Data Deficient	
Study 4 –	Minor	
Study 5 –	Moderate	
Study 6 –	Massive	
Study 7 –	Moderate	
Study 8 –	Major	

(Blackburn et al., 2014; Hawkins et al., 2015)

# Impacts on Nature Contribution to People

1. Habitat creation and maintenance
2. Pollination and dispersal of seeds and other propagules
3. Regulation of air quality
4. Regulation of climate
5. Regulation of ocean acidification
6. Regulation of freshwater quantity, location and timing
7. Regulation of freshwater and coastal water quality
8. Formation, protection and decontamination of soils and sediments
9. Regulation of hazards and extreme events
10. Regulation of detrimental organisms and biological processes
11. Energy
12. Food and feed
13. Materials, companionship and labor
14. Medicinal, biochemical and genetic resources
15. Learning and inspiration
16. Physical and psychological experiences
17. Supporting identities
18. Maintenance of options



(Díaz et al. 2018)

ILK



# Impacts on Good Quality of Life

## Constituents of human well-being

### Safety

### Examples

Personal safety  
Secure resource access  
Security from disasters

### Material and immaterial assets

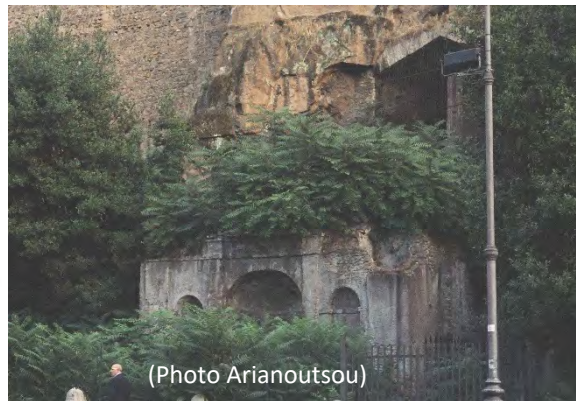
Adequate livelihoods  
Sufficient nutritious food  
Shelter  
Access to goods

### Health

Strength  
Feeling well  
Access to clean air and water

### Social, spiritual and cultural relations

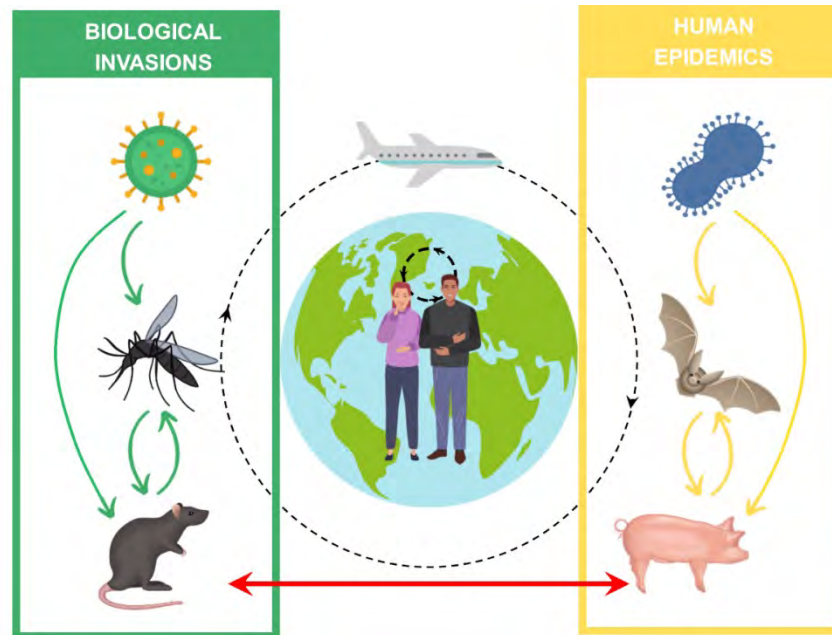
Social, spiritual and cultural practice  
Mutual respect  
Friendship



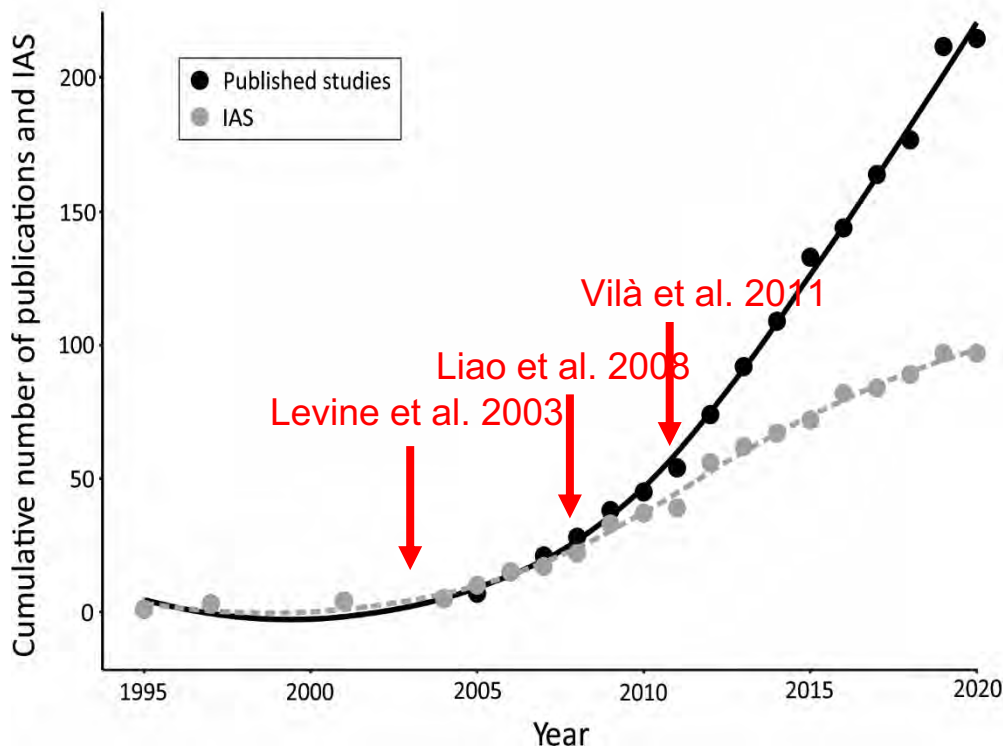
(Bacher et al. 2017)

## Viewing Emerging Human Infectious Epidemics through the Lens of Invasion Biology

MONTSERRAT VILÀ<sup>✉</sup>, ALISON M. DUNN, FRANZ ESSL, ELENA GÓMEZ DÍAZ<sup>✉</sup>, PHILIP E. HULME<sup>✉</sup>, JONATHAN M. JESCHKE, MARTÍN A. NÚÑEZ, RICHARD S. OSTFELD, ANÍBAL PAUCHARD, ANTHONY RICCIARDI, AND BELINDA GALLARDO



# Plant impacts on Nature in Europe



ISI Web of  
**KNOWLEDGE**  
Transforming Research

# Most studied species

97 IAS



IAS	Publications
<i>Fallopia japonica</i>	13
<i>Impatiens glandulifera</i>	30
<i>Solidago gigantea</i>	15
<i>Robinia pseudoacacia</i>	18
<i>Acacia longifolia</i>	12
<i>Acacia dealbata</i>	8
<i>Quercus rubra</i>	9



# Thank you!

