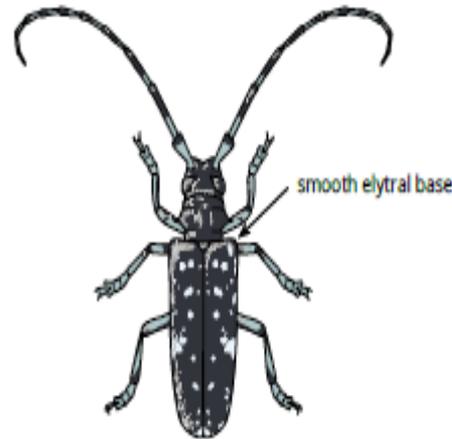
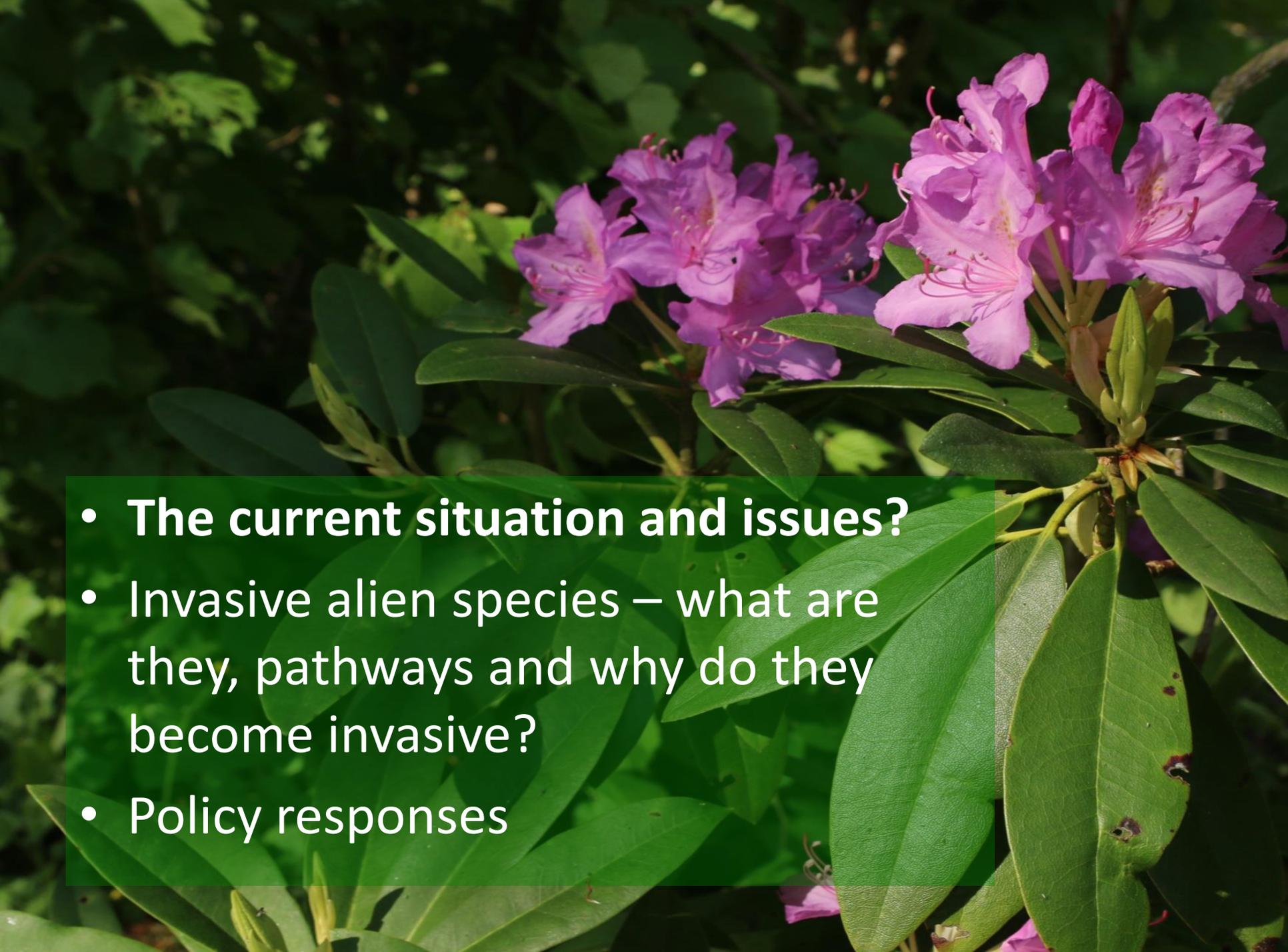


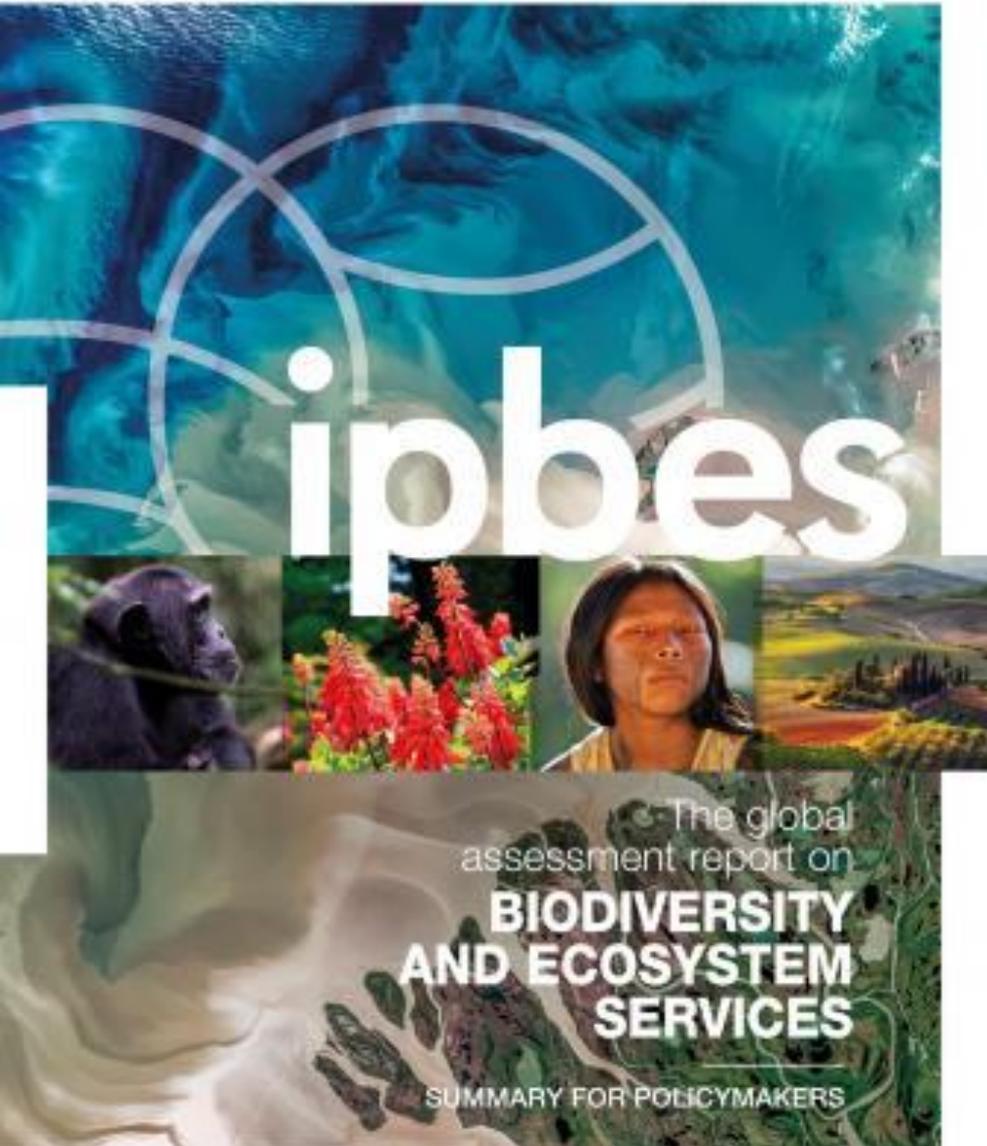
Invasive species: one of the biggest threats to global biodiversity?



- 
- **The current situation and issues?**
 - Invasive alien species – what are they, pathways and why do they become invasive?
 - Policy responses

UN Global Assessment Report

(IPBES, 2019)



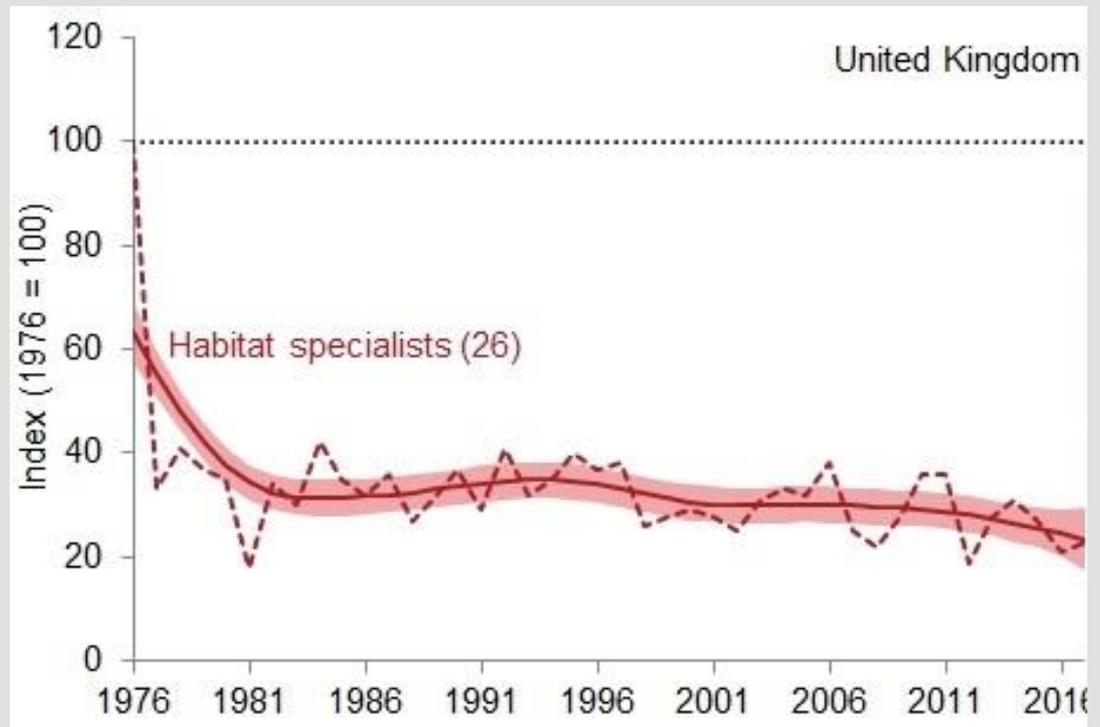
- alien species have increased by 40 per cent since 1980
- ~20% of the Earth's surface is at risk of invasions
- Rate of introduction of new invasive alien species shows no signs of slowing

An aerial photograph showing a city with dense buildings and infrastructure in the background, transitioning into a lush green landscape with rolling hills and dense forests in the foreground. The text is overlaid on the bottom half of the image.

tion in global indicators of ecosystem extent and condition against their estimated
elines
dreds of times: the extent to which the current rate of global species extinction is
pared to average over the last 10 million years, and the rate is accelerating
ion: species threatened with extinction, many within decades
): vertebrate species driven to extinction by human actions since the 16th century
se since 1970 in numbers of invasive alien species across 21 countries with
ords



*‘No let up
in the loss
of nature
in the UK’*



The total
number of
breeding birds
in the UK has
fallen by **44**
million
since 1967.



#StateOfNature



Over the past ten years
1 in 3 species have
decreased in numbers.



#StateOfNature

A close-up photograph of several purple flowers with bright yellow centers, growing in a lush green field. The background is a soft-focus green hillside under a clear sky.

STATE OF NATURE

OF 8,431 UK SPECIES ASSESSED,
ONE IN SEVEN IS AT RISK
OF EXTINCTION.



Or 15% - and 133 have already gone extinct since records began



Climate change



Urbanisation



Pollution



Woodland management



Fisheries



Invasive non-native species



Freshwater management



Agricultural management





Climate change



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Invasive non-native species



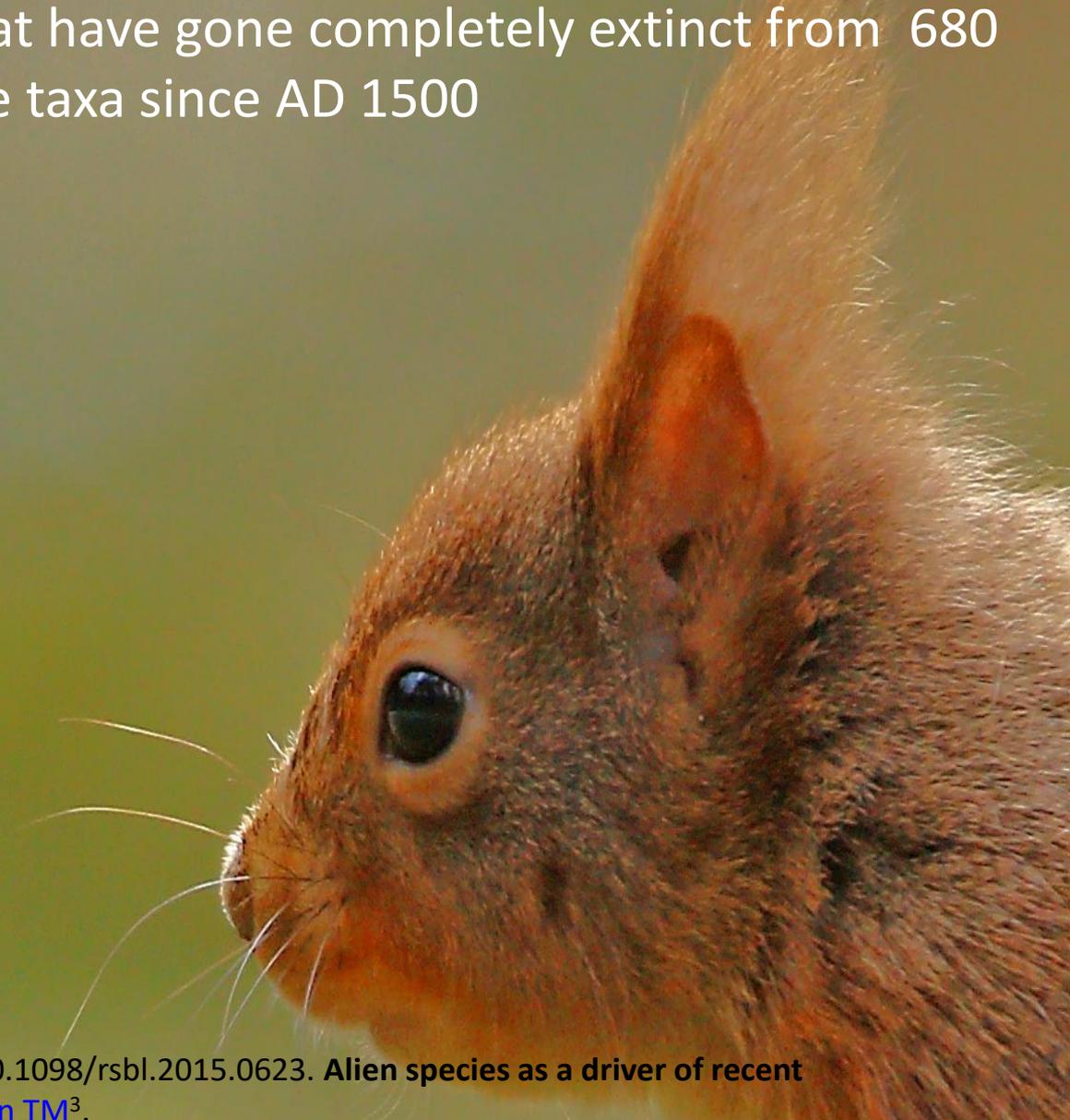
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Alien species are the second most common threat
associated with species that have gone completely extinct from 680
these taxa since AD 1500



[Biol Lett.](#) 2016 Feb;12(2):20150623. doi: 10.1098/rsbl.2015.0623. **Alien species as a driver of recent extinctions.** [Bellard C¹](#), [Cassey P²](#), [Blackburn TM³](#).

Global economic costs of IAS and their management cost are more than

US\$ 70 billion per year.

Europe = 12 BN Euro

COSTS



**Cost to the UK economy
= £1.8 billion+ per year**

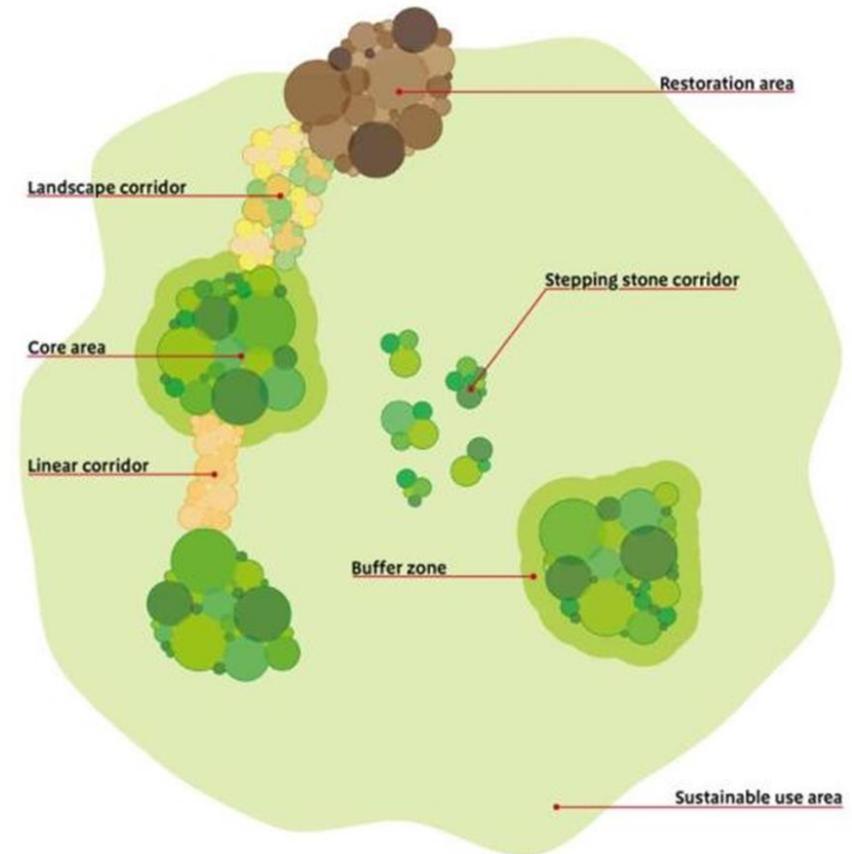
Source: EAC 2019

More, bigger, better and joined up

Core Areas

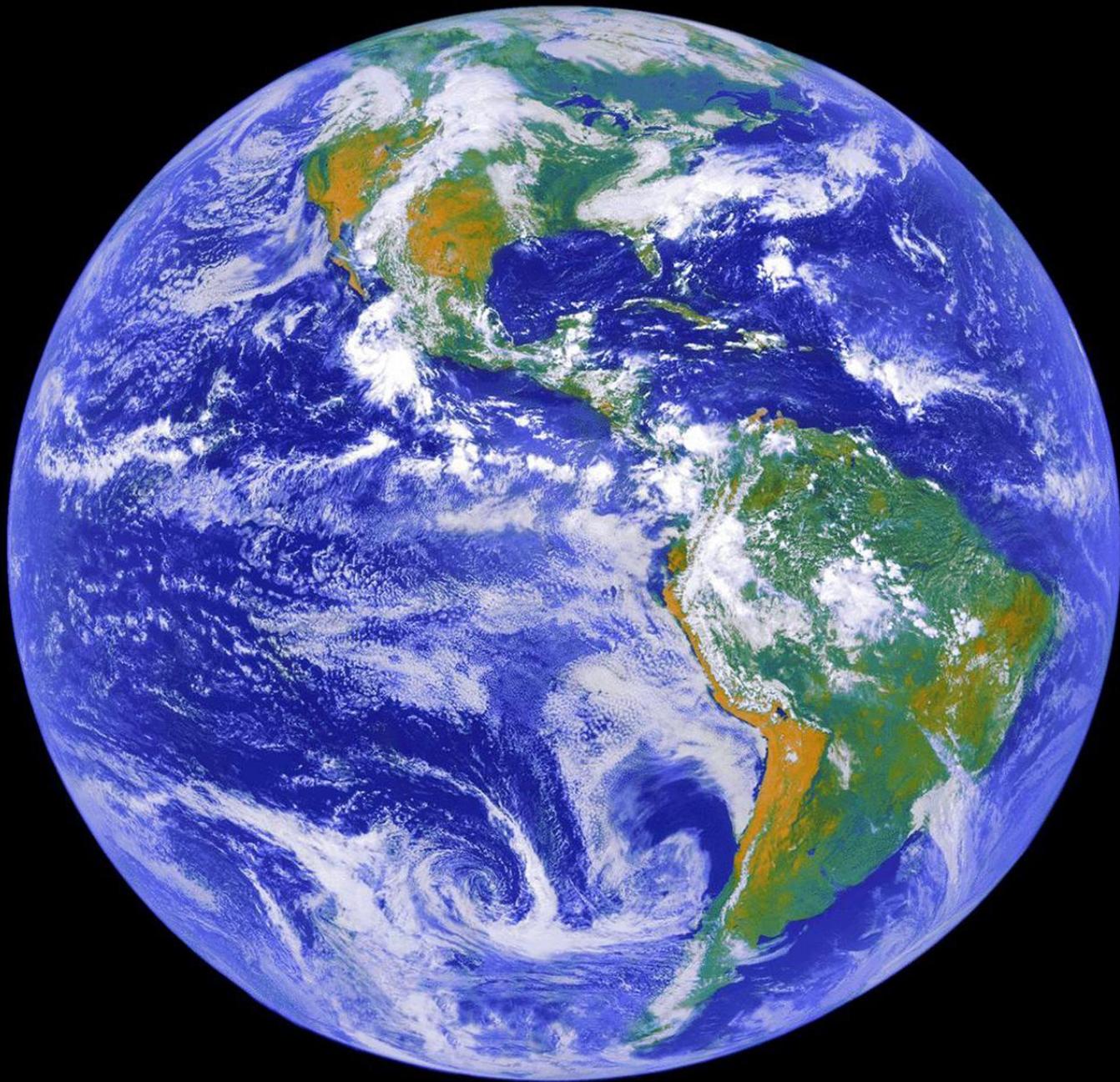
Connectivity
zones

Opportunity
Areas (for
ecological
restoration)



- 
- The current situation and issues?
 - **Invasive alien species – what are they, pathways and why do they become invasive?**
 - Policy responses





Pathways

Intentional release

- Biological controls
- Fisheries
- Hunting
- Forestry
- Live food
- recreation

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- Dispersal along corridors (roads, rail, canals)

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- Zoos and parks etc
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Unaided dispersal

- Exacerbated by human disturbance of natural habitats

'Escape' and 'Release' are most important for plants and vertebrates



While for invertebrates, algae, fungi and micro-organisms unintentional transport pathways prevail

Wolf-Christian Saul, Helen E. Roy⁵, Olaf Booy⁶, Lucilla Carnevali, Hsuan-Ju Chen⁸, Piero Genoves, Colin A. Harrower, Philip E. Hulme, Shyama Pagad, Jan Pergl and Jonathan M. Jeschke., *Journal of Applied Ecology*, 2017 **Assessing patterns in introduction pathways of alien species by linking major invasion data bases**, 54, 657–669

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- Rapid reproduction rate
- Difficult to disentangle from other factors
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- **Asexual** reproduction
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What makes a species invasive?

Fecundity

Hardiness - able to survive unfavourable conditions - ruderals

No single common set of traits –
complex and degree of chance – many dynamic factors

Evolve and adapt

- **Asexual reproduction**

Powers of dispersal

Escape from natural enemies

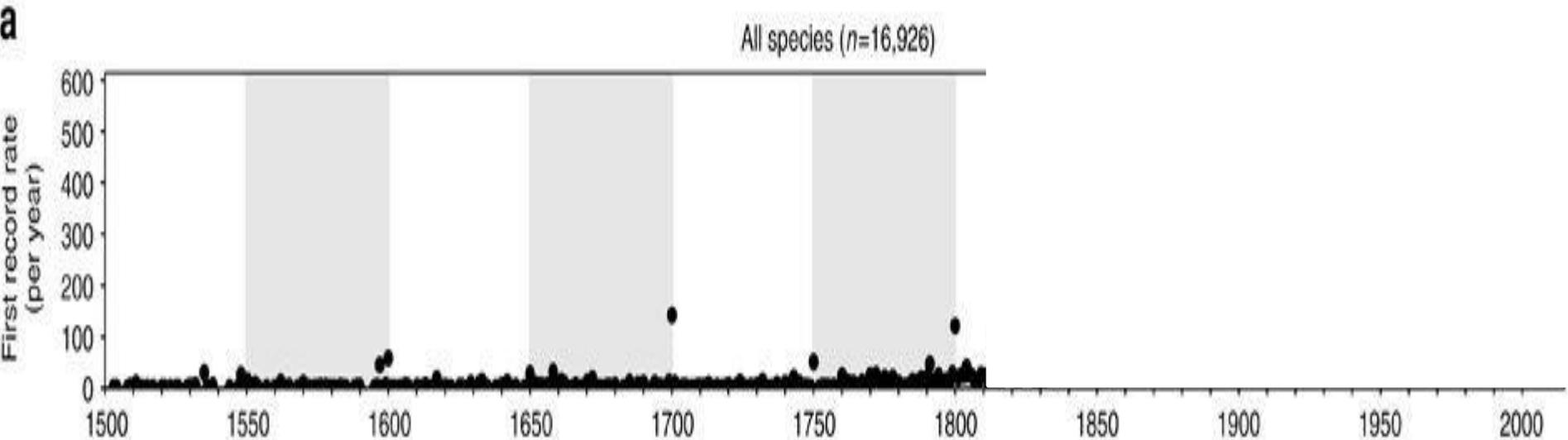
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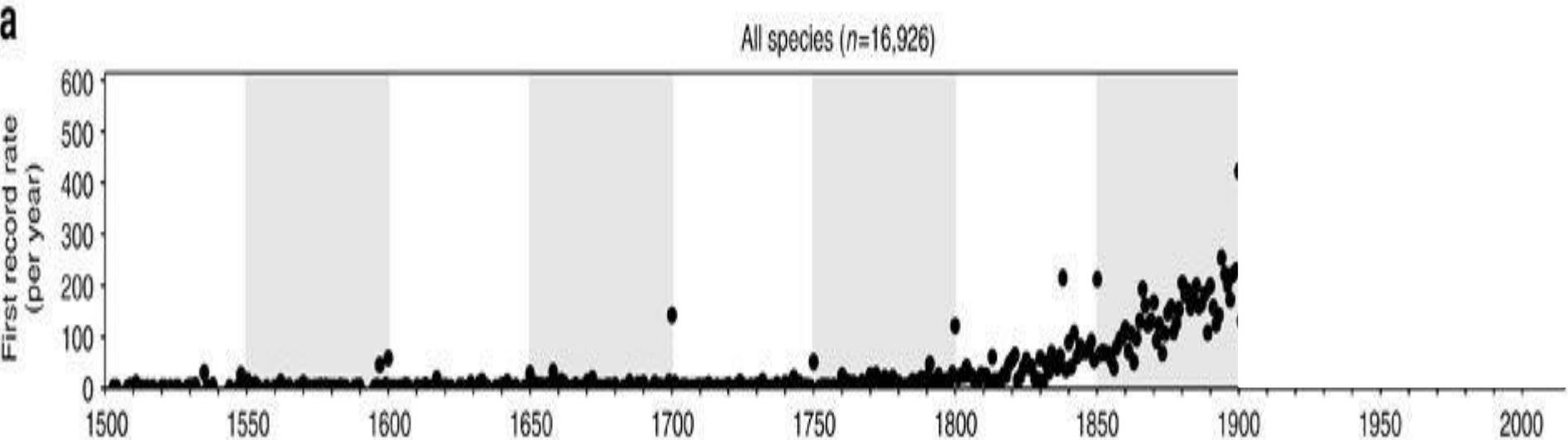


“over one third of all introductions in the past 200 years occurred after 1970 and the rate of introductions is showing no sign of slowing down”



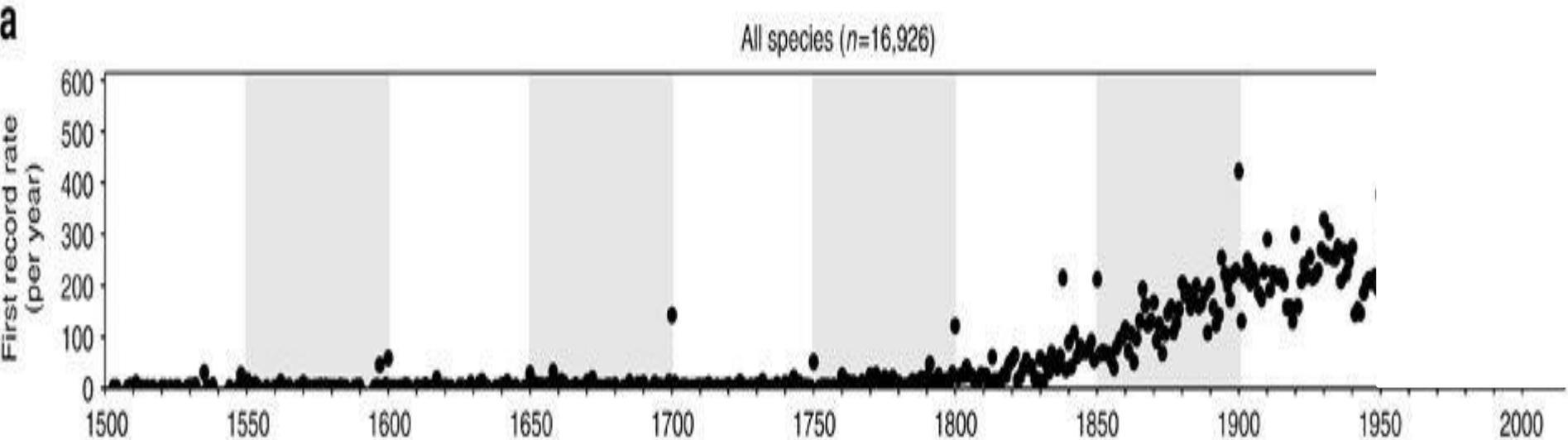
Seebens, H., Blackburn, T., Dyer, E. *et al.* No saturation in the accumulation of alien species worldwide. *Nat Commun* **8**, 14435 (2017). <https://doi.org/10.1038/ncomms14435>

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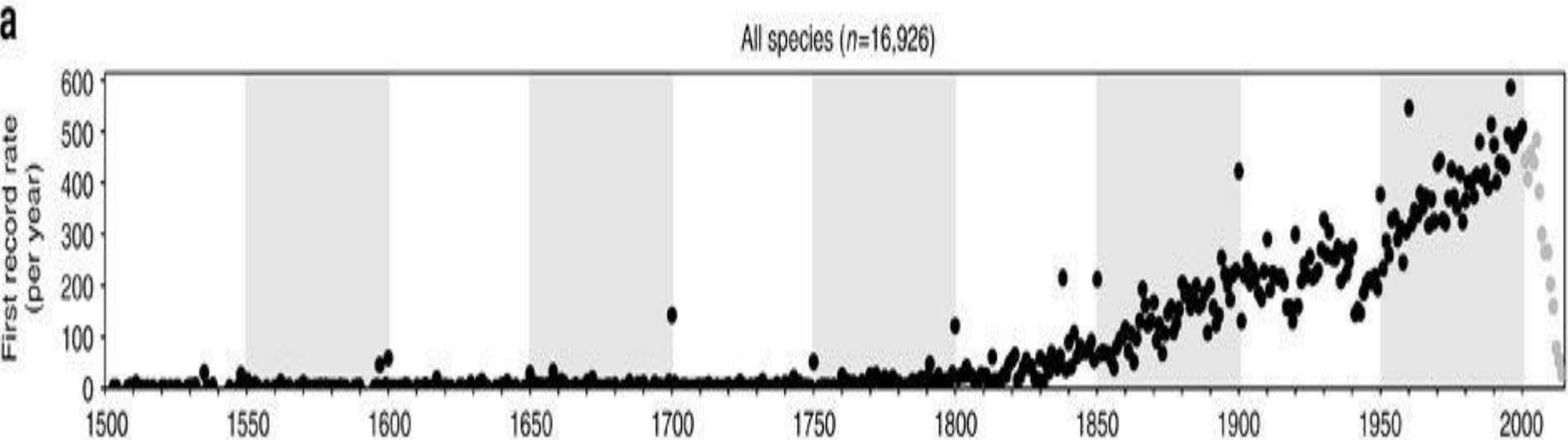
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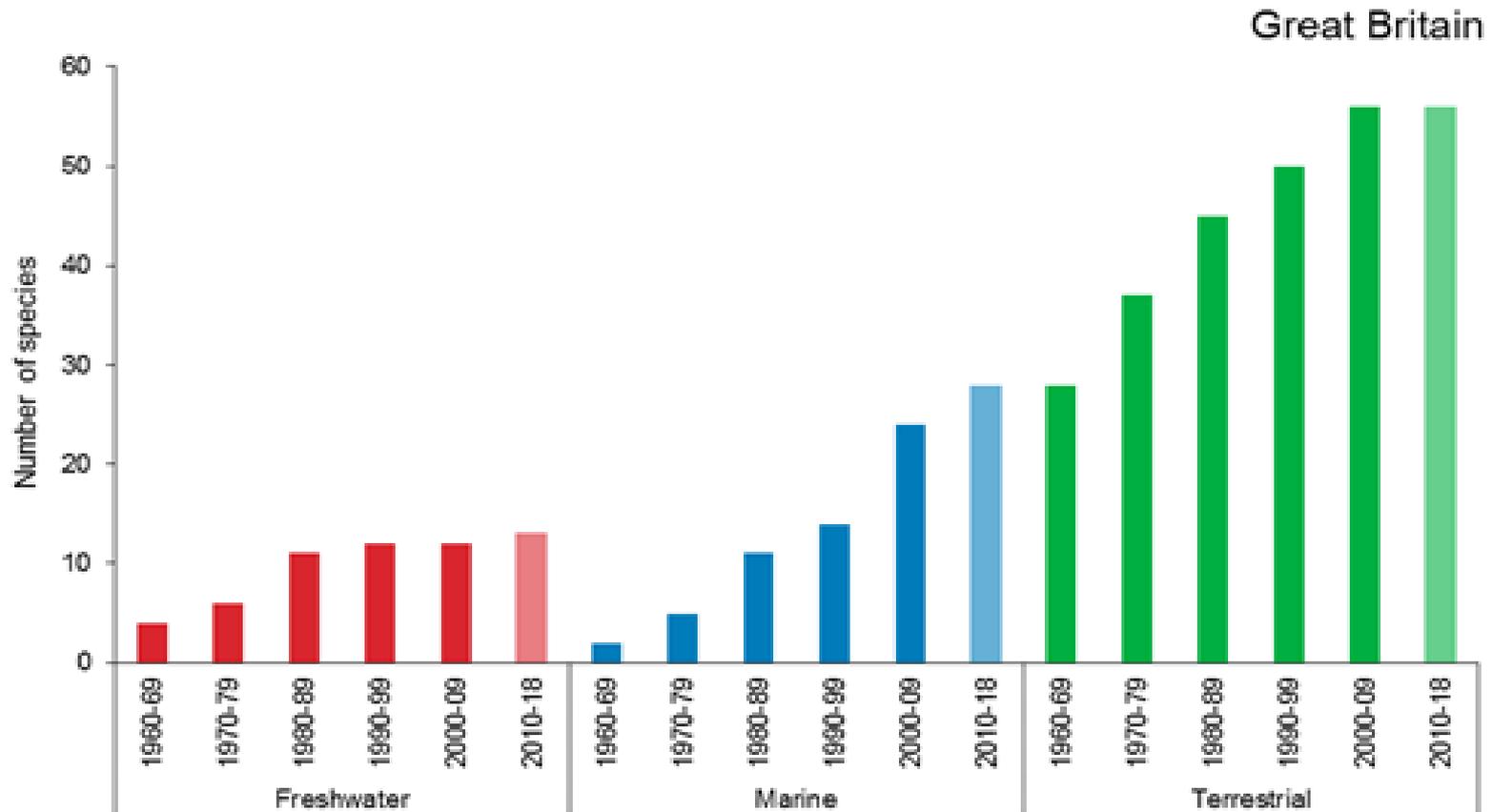
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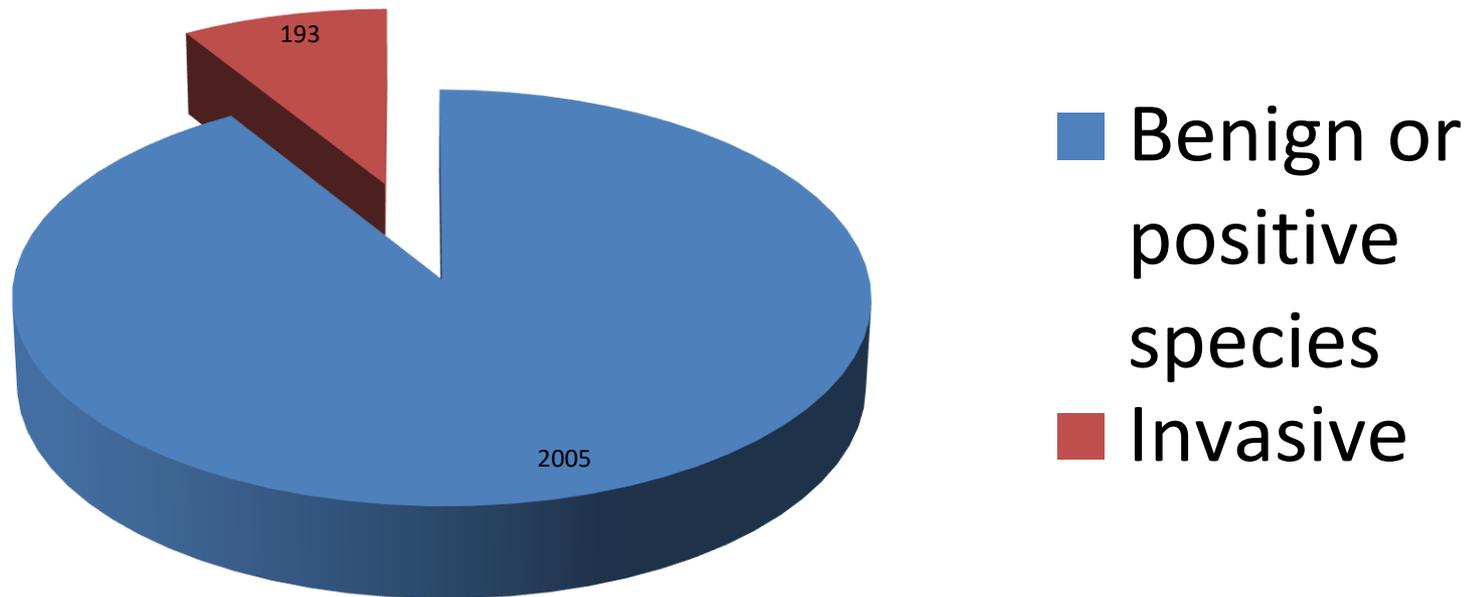
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Number of invasive non-native species established in or along 10% or more of Great Britain's land area or coastline, 1960 to 2018.



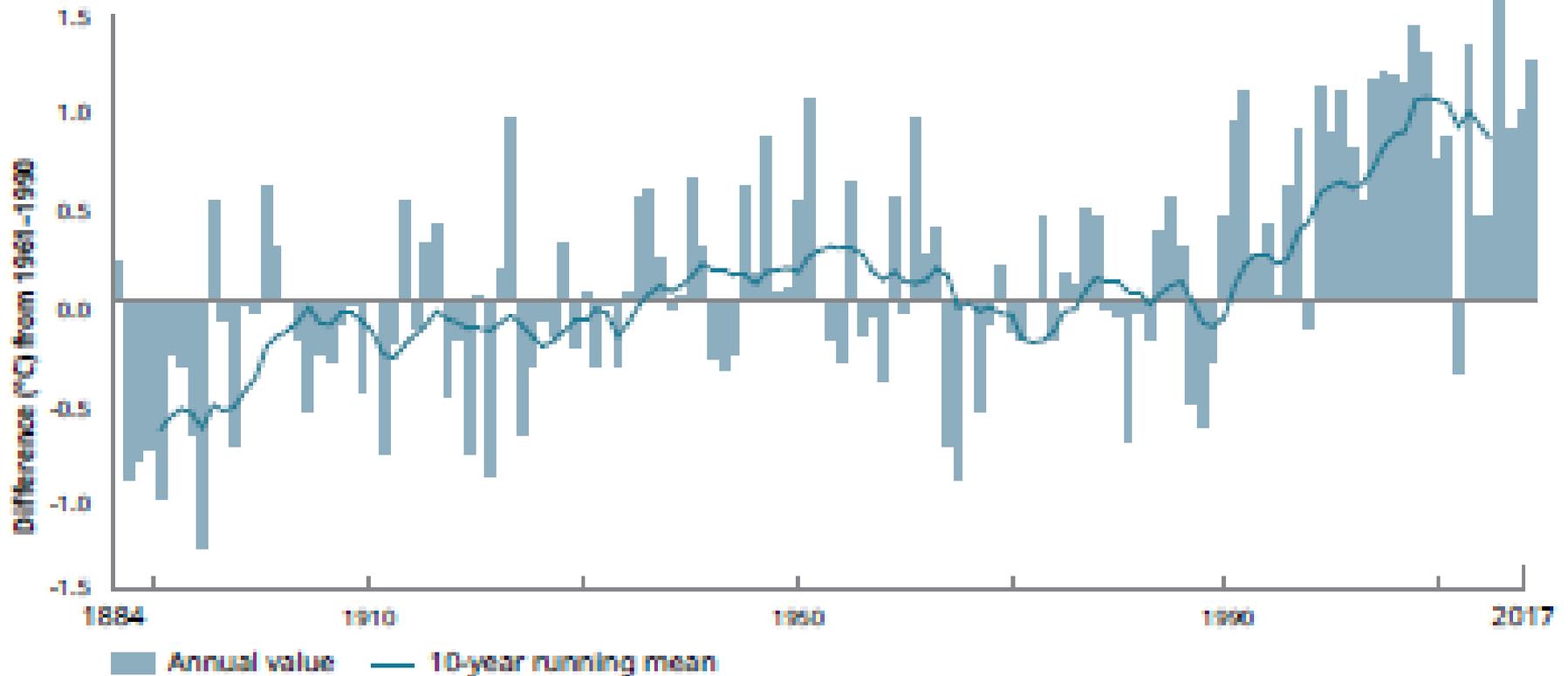
Source: JNCC / Botanical Society of Britain & Ireland, British Trust for Ornithology, Centre for Ecology & Hydrology, Marine Biological Association, National Biodiversity Network

3,208 alien species in Great Britain –
4% seen as invasive (15% elsewhere)



Caution!

Time series of average UK land temperatures in °C since 1884, expressed as anomalies relative to the 1961 to 1990 average³





Extra Cream ICE CREAM

CAUTION



BUT Species are moving
northwards at a rate of
6.1km every 10 years

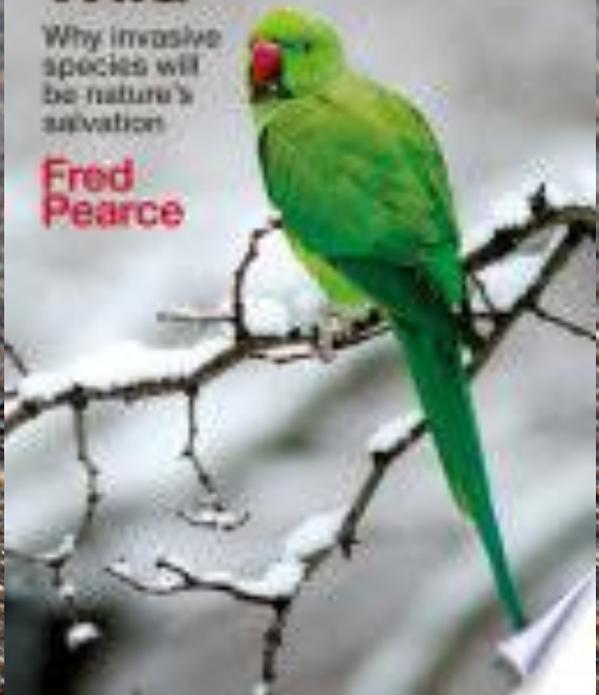


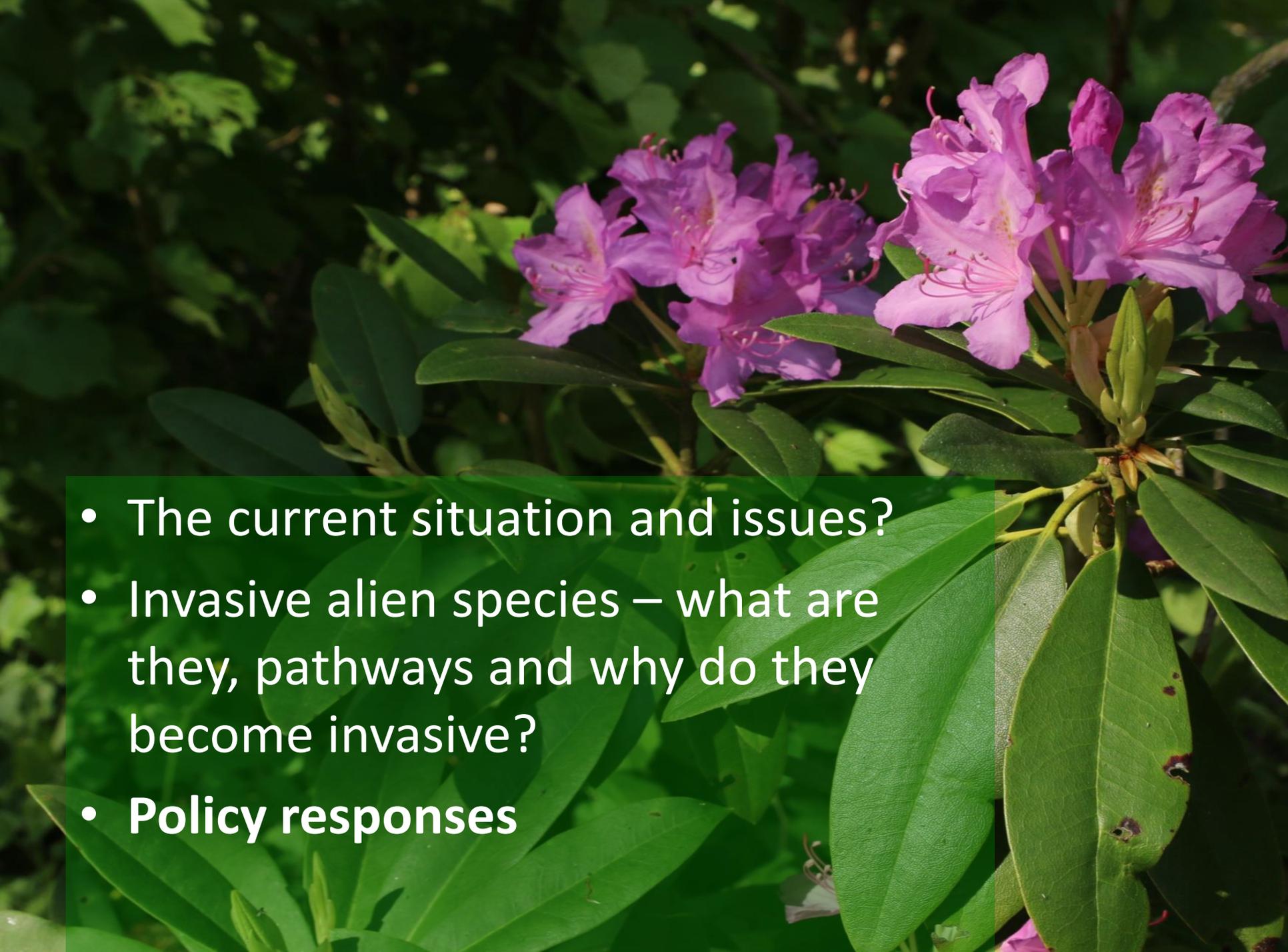
The New Wild

Why invasive species will be nature's salvation
by Fred Pearce

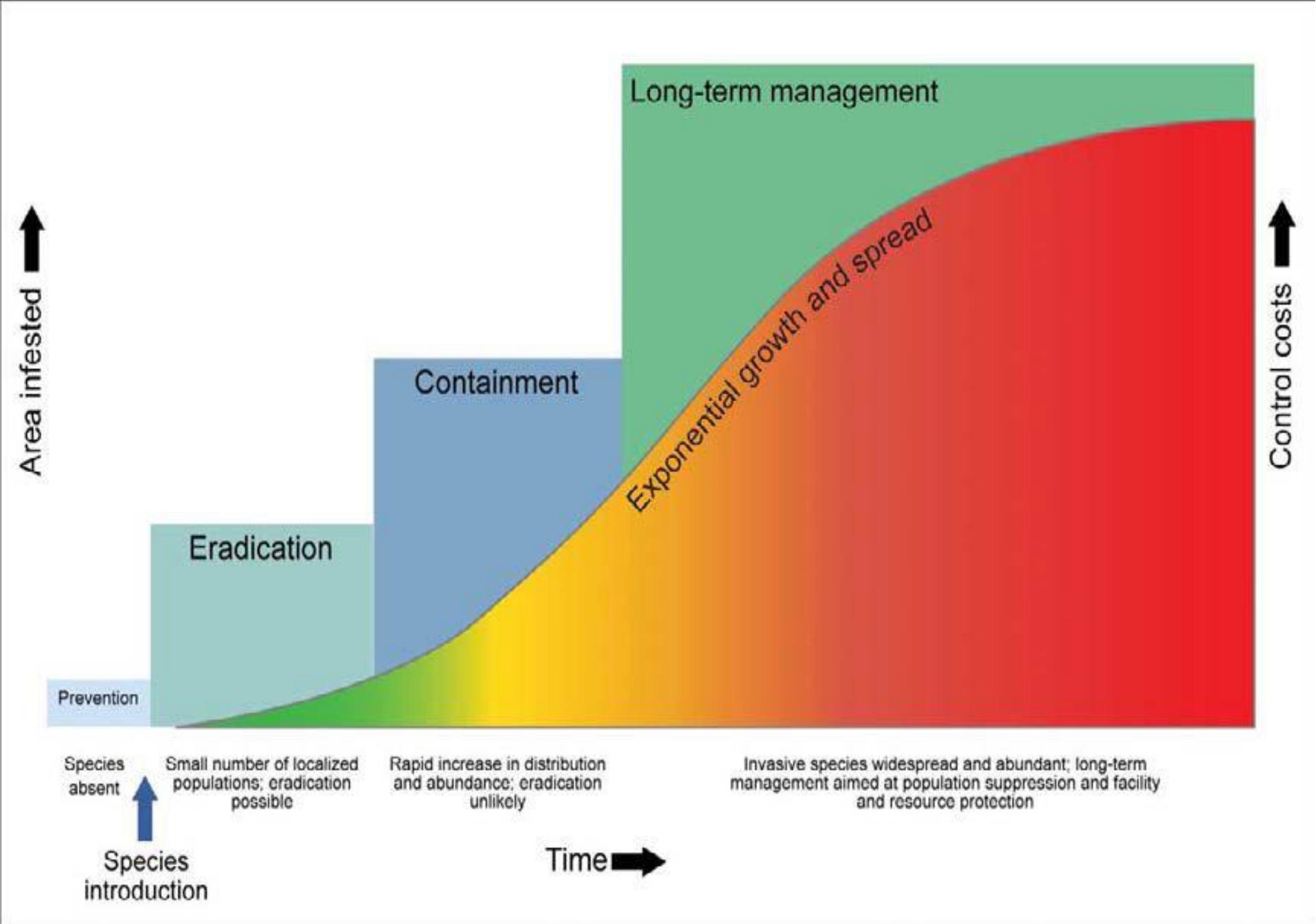
Why invasive species will be nature's salvation

Fred Pearce



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Aitchi Target 9



EU Regulation 1143/2014 on Invasive Alien Species



[Regulation \(EU\) 1143/2014 on invasive alien species](#) (the IAS Regulation) entered into force on 1 January 2015, fulfilling Action 16 of [Target 5 of the EU 2020 Biodiversity Strategy](#), as well as [Aichi Target 9 of the Strategic Plan for Biodiversity 2011-2020](#) under the Convention of Biological Diversity.

The core of the IAS Regulation is the [list of Invasive Alien Species of Union concern](#) (the Union list).

The IAS Regulation provides for a set of measures to be taken across the EU in relation to invasive alien species included on the Union list. Three distinct types of measures are envisaged to combatting IAS:

- **Prevention**
- **Early detection and rapid eradication:**
- **Management**



The Great Britain Invasive Non-native Species Strategy

August 2015

“The UK will continue to uphold international obligations and also as a responsible partner nation working closely with other countries to protect our native wildlife and forestry landscapes for future generations to enjoy”



Department
for Environment
Food & Rural Affairs



The Scottish
Government



Llywodraeth Cymru
Welsh Government

We will continue to support the general management actions being taken to manage widely spread species in England and Wales but will further consider how we can address a number of points raised in consultation regarding:

1. The need to take measures to control these species.
2. The need to take measures where feasible, and to ensure that any necessary lethal control measures are taken.
3. The need to take measures to control invasive alien species (IAS).
4. The need to take measures to control widely spread species.

Specified kinds of animals, to keep widely spread animal species in facilities located in areas where the species are absent.

In the light of welfare concerns raised in response to consultation, we will not permit IAS species to be kept in facilities set up with the express purpose of animal welfare. This is to ensure that any animals kept in this way their welfare needs are met.

It is not proposed to permit the release of IAS species for the purposes of research. It will be an offence to release any of the species listed under the Principal Regulation, including those widely spread in England and Wales from 1 December 2019.

**The Invasive Alien Species
(Enforcement and Permitting)
Order 2019**

The 14 species identified as being widely spread in England and Wales and requiring management are:

Plants

- Nuttall's waterweed
- Chilean rhubarb
- Giant hogweed
- Floating pennywort
- Himalayan balsam
- Curly waterweed
- American skunk cabbage
- Parrot's feather

Animals

- Egyptian goose
- Chinese mitten crab
- Muntjac deer
- Signal crayfish
- **Grey squirrel**
- all subspecies of "slider terrapins"

Key points from EAC 2019



House of Commons
Environmental Audit Committee

Invasive species

First Report of Session 2019

*Report, together with formal minutes relating
to the report*

*Ordered by the House of Commons
to be printed 15 October 2019*





Invasive Alien Species Colonisation Prevention: Your guide to early detection and rapid response



Edited by

Nikki Robinson Red Squirrels United, The Wildlife Trusts

Craig Shuttleworth Red Squirrels Trust Wales

