



How ecology helps us understand and address biodiversity loss

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Photo: Andrew Kelly



Photo: Simon Berrow



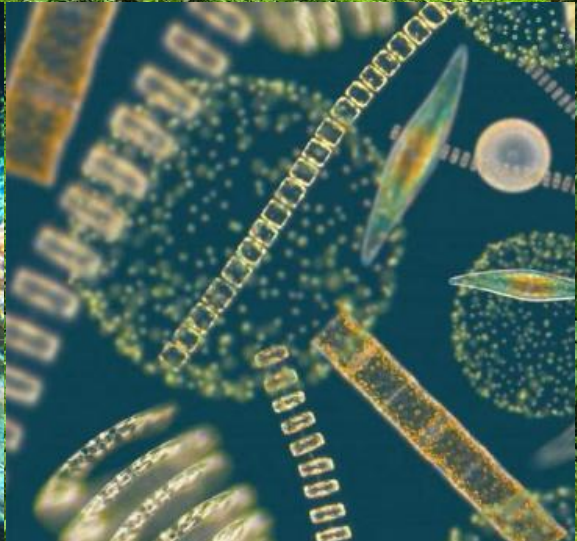
Photo: Becky Giesler



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Photo: Wikimedia commons



Biodiversity loss in Ireland

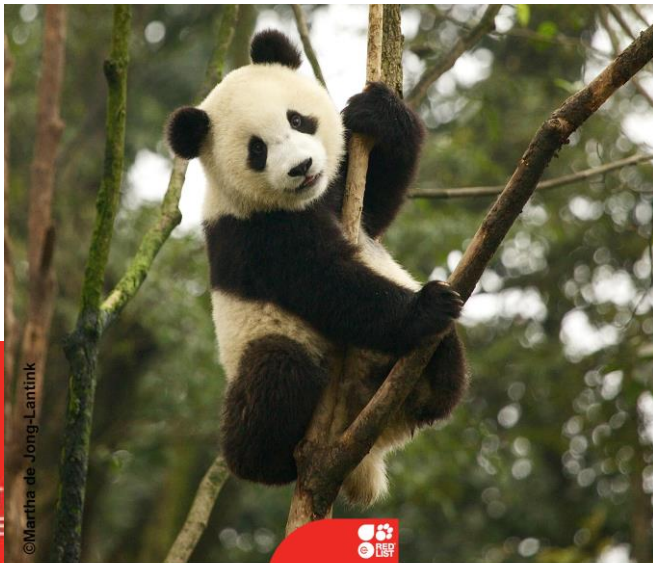


85% Protected Habitats in unfavourable condition; 46% with a declining trend.

Overwintering waterbirds declined by 40% (500,000) since 90s

20% breeding birds in long term decline; 30% are stable/increased

Semi-natural grasslands: ~30% of area monitored lost in last 10-15 yrs



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 **RED LIST**
 REGIONAL RED LIST
 CARNIVORES IN THE
 Compiled by David Mallon and Kevin

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	< VULNERABLE >	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX



ARABIAN PENINSULA



The IUCN Red List of Threatened Species™

Ireland
 Red List No. 10
 **RED LIST**
 THE SCOTLAND LIST OF THREATENED SPECIES

Vascular Plants





Ireland
 Red List No. 12
 **RED LIST**
 THE SCOTLAND LIST OF THREATENED SPECIES

NPWS

Terrestrial Mammals



 Northern Ireland Environment Agency

 NUI Galway OF Gaillimh

An Roinn Cultúir, Oidhreachta agus Gaeltachta
 Department of Culture, Heritage and the Gaeltacht

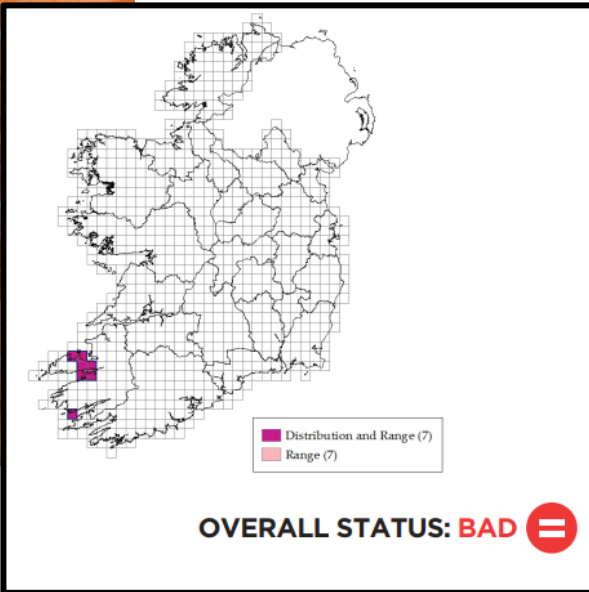
Species endemic to Ireland

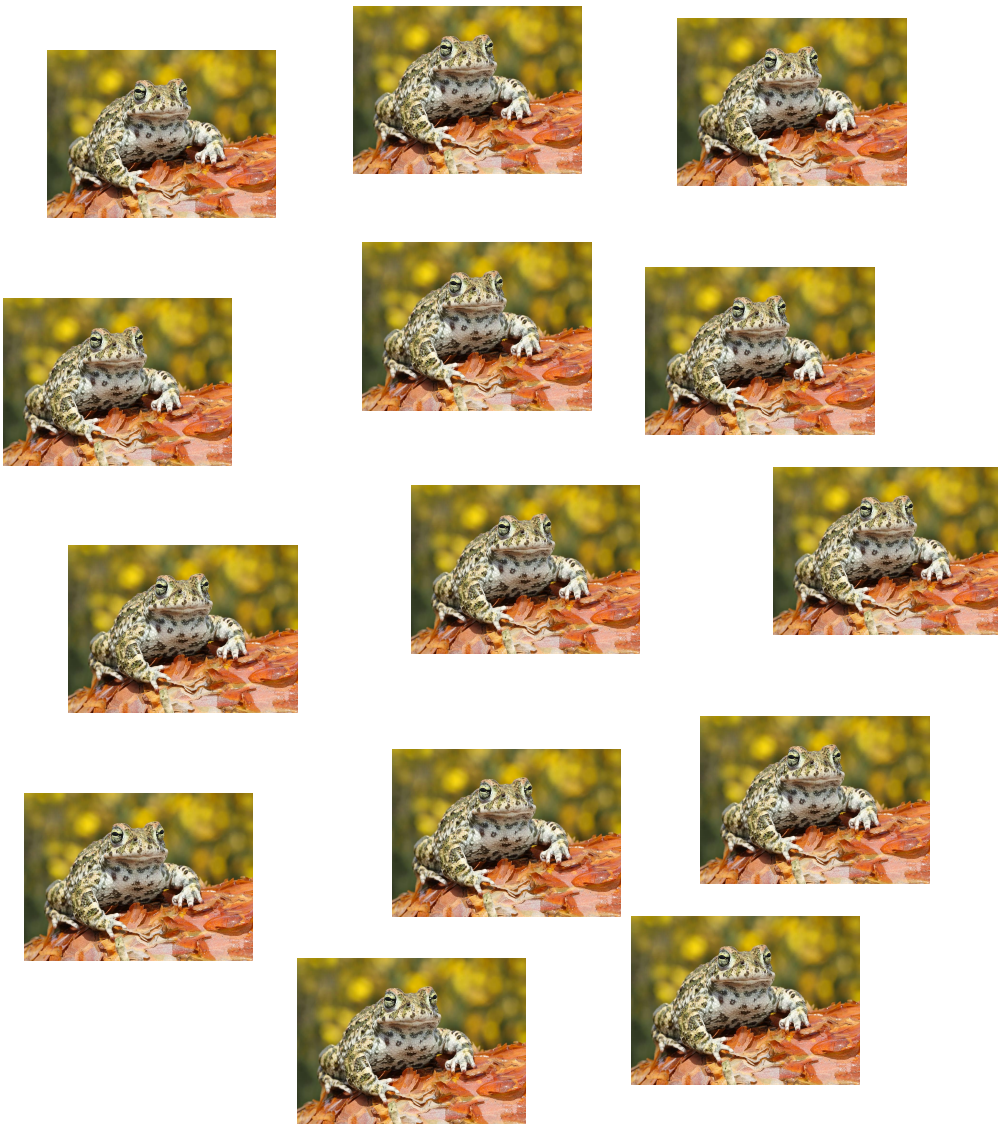


Ecology – from *oikos* (home) – the scientific study of the relationships among organisms and between them and their environment (Allaby 1994)



Natterjack toad





Population
decline



Minimum Viable Population?



Within individuals

metabolism, physiology, immune system, DNA, etc.





Individuals

behaviour, growth, reproduction





Community

prey, competitors, predators, parasites





Ecosystem

energy, nutrients, productivity, decomposition

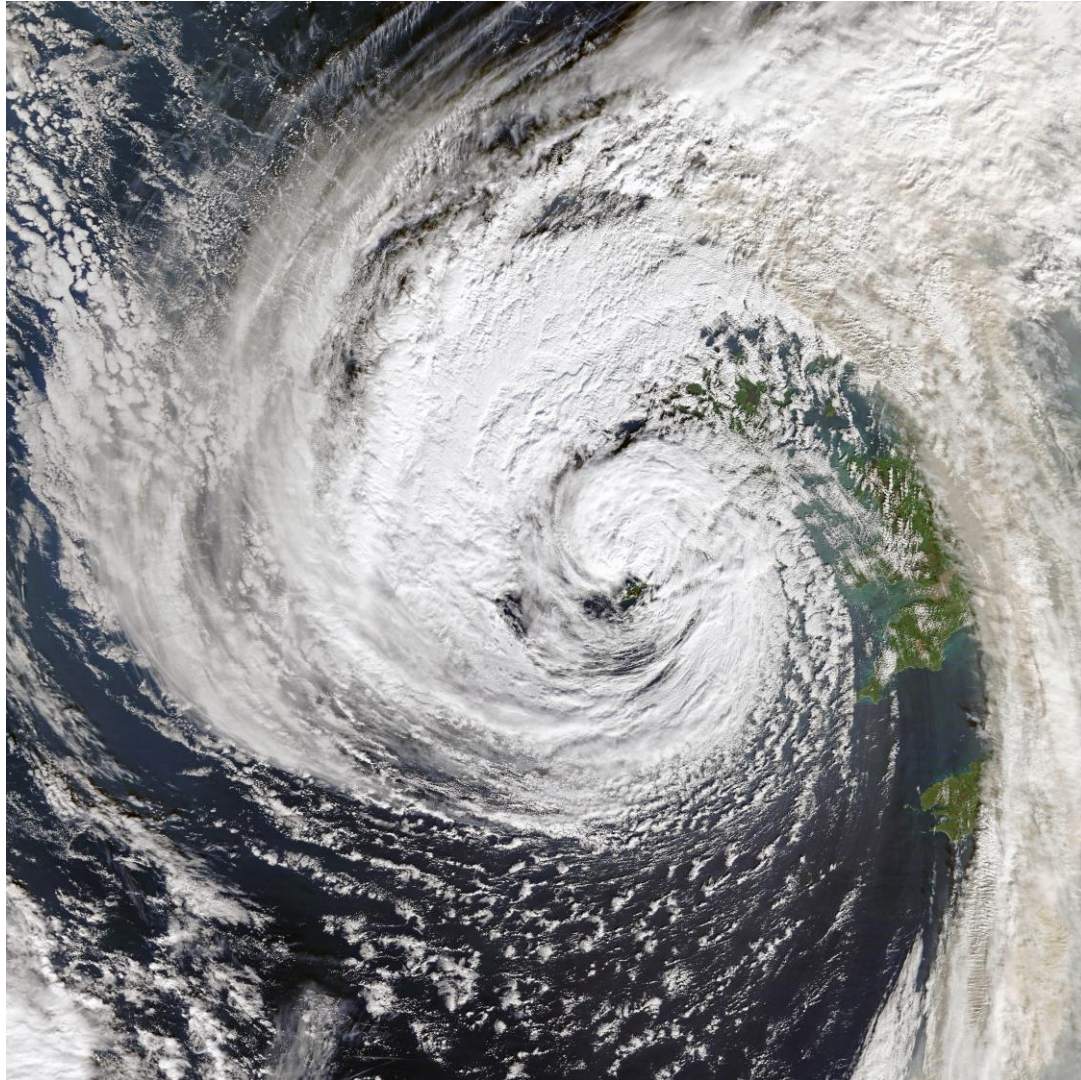




Landscape

comprised of many interacting ecosystems

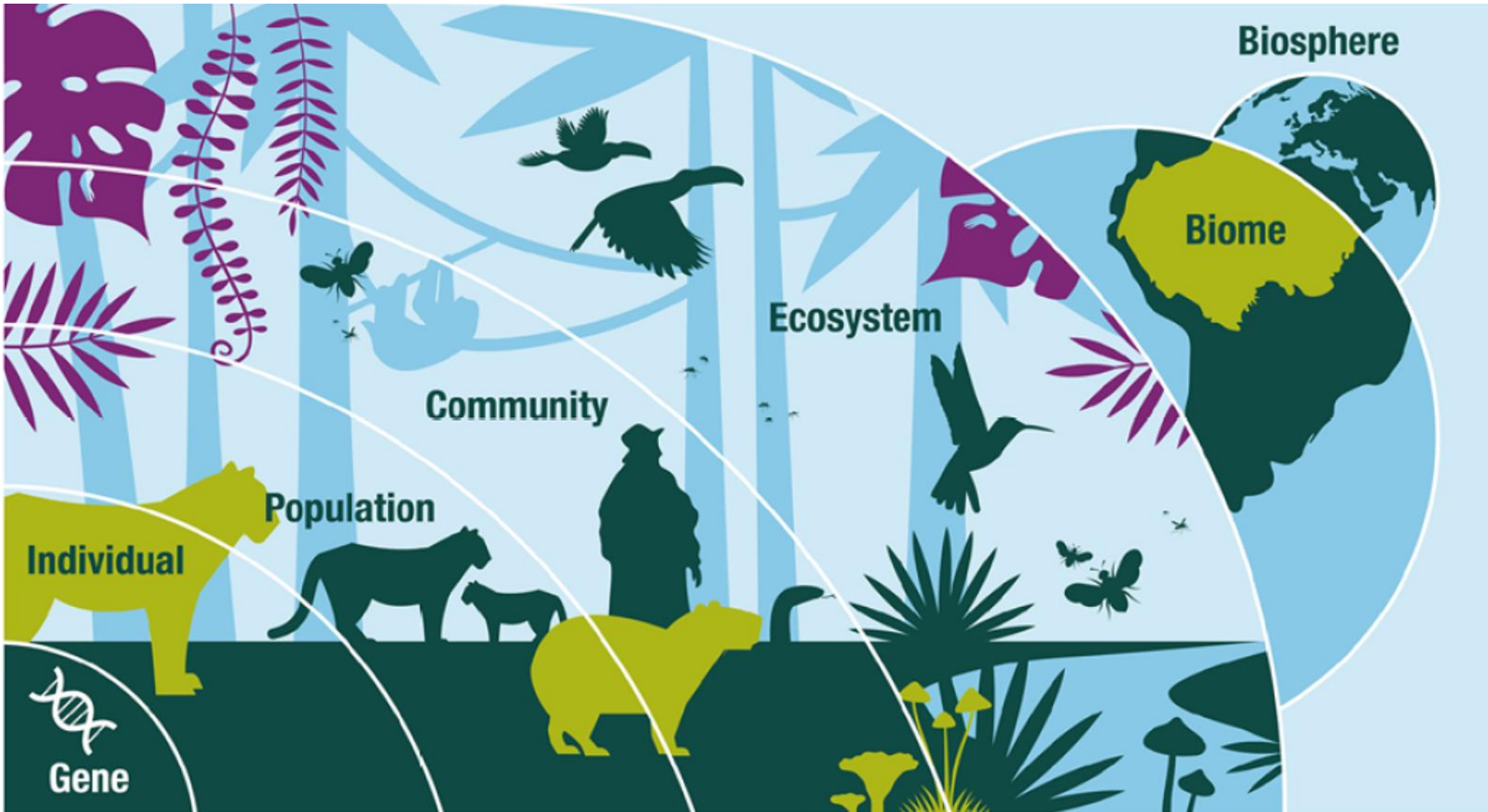




Biosphere

atmosphere, climate, ocean circulation, etc





Five main threats to biodiversity



Habitat Loss



Overexploitation



Pollution



Invasive
Species



Climate Change

Habitat loss



Overexploitation



Pollution



Pollution



Invasive species



Rhododendron

Gunnera

Japanese Knotweed



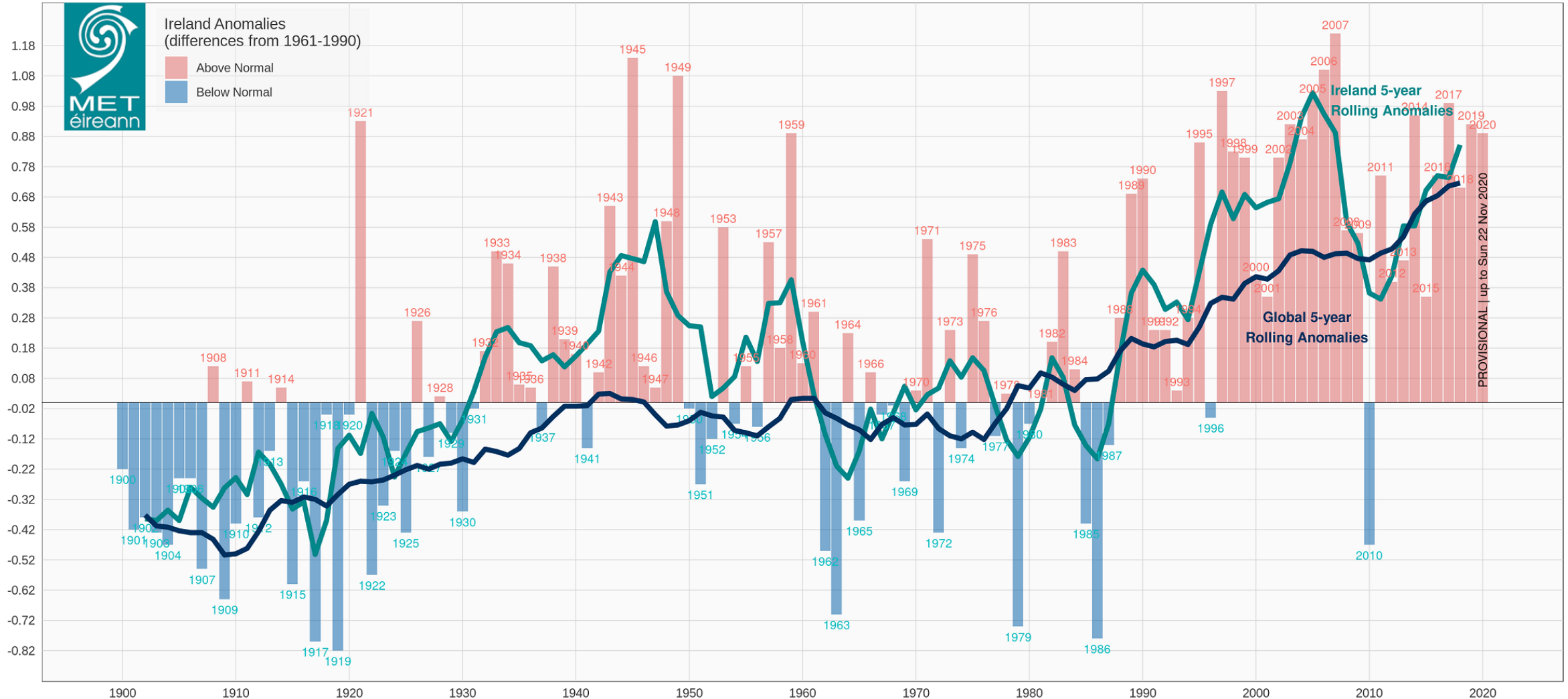
Didemnum





Climate has warmed in Ireland by 0.9 °C since 1900

Ireland Annual Air Temperature Anomalies (°C) 1900 and 2020*



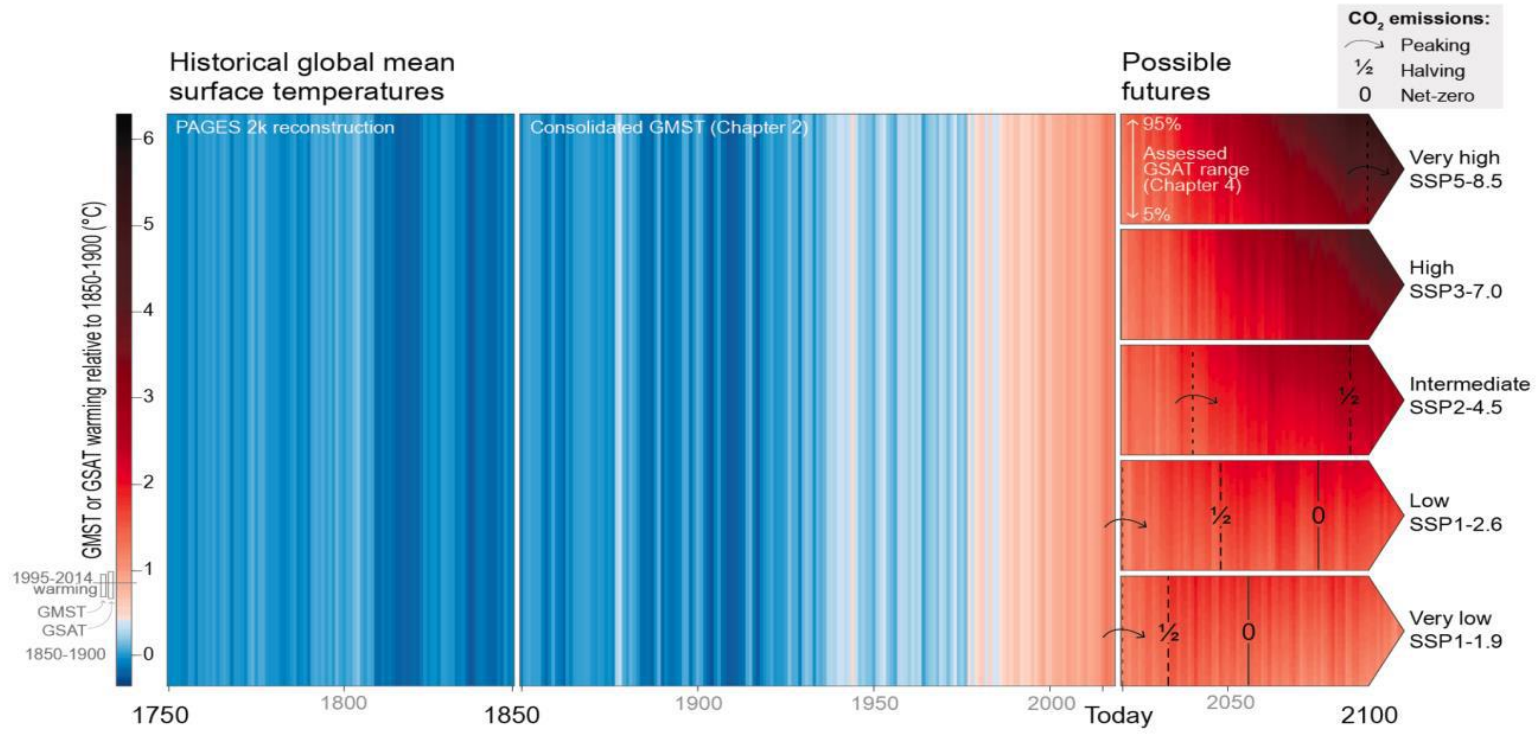
Climate change impacts in Ireland

Spring time life cycle events are happening earlier

- New leaves are emerging from buds earlier
e.g. Beech tree
- Overwintering birds are departing sooner
e.g. Whooper swan
- Spring immigrating birds are arriving sooner
e.g. Swallow
- Insect activity is happening sooner
e.g. Flame Carpet Moths



Future climate change threats in Ireland



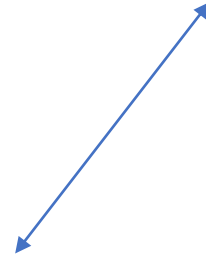
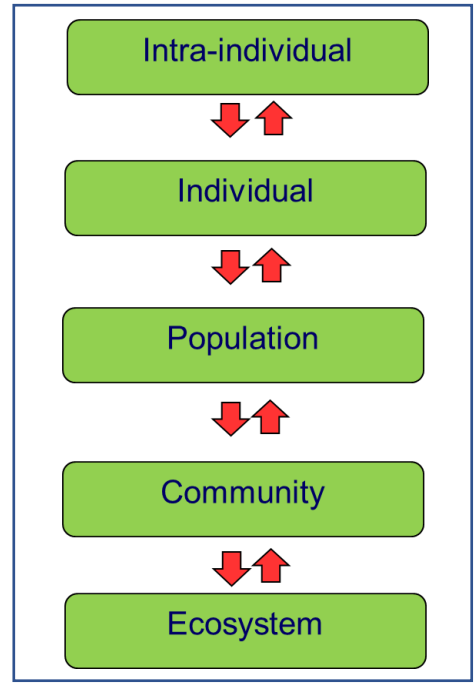
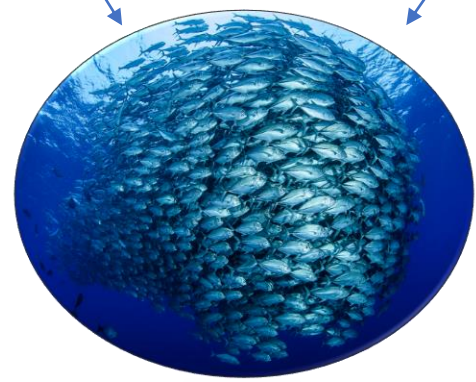
Coastal Habitats



Wetlands/Peatlands



Ecology helps us understand impacts



Sensitivity and resilience



Intermediate Disturbance can promote diversity



Species are like rivets holding ecosystems together

Ecosystem = airplane



Species = rivets holding plane together



Keystone species = critical rivet, e.g. holding wings on



Image source: pixabay.com







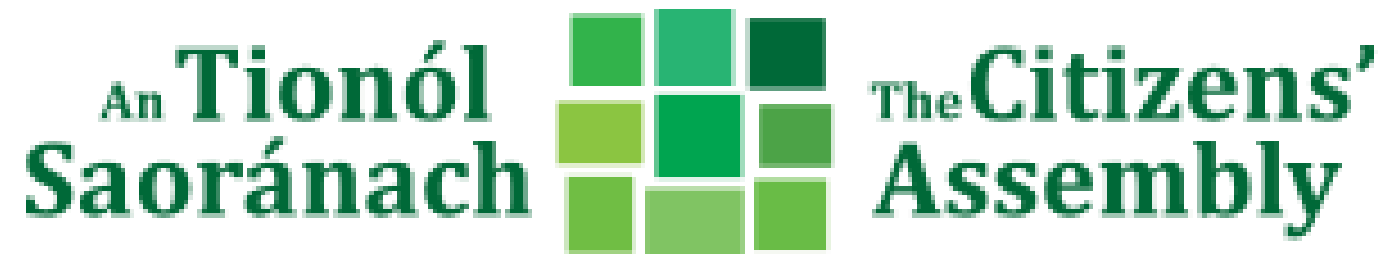
Ecology can also inform solutions!



EXPANDING IRELAND'S MARINE PROTECTED AREA NETWORK

A report by the Marine Protected Area Advisory Group
for the Department of Housing, Local Government and Heritage
October 2020





An **Tionól**
Saoránach

The **Citizens'**
Assembly



Figure 6.5 Percentage of habitats impacted by pressure/threat categories of medium and high importance
(Source: NPWS, 2019)

