climatechampions
local learning communities

BECOMING A CLIMATE CHAMPION

SDG 15 Life on land

Co-funded by the
Erasmus+ Programme
of the European Union

WELCOME!

This module is part of the Climate Change Community Champions course, and is dedicated to Biodiversity.

We will explore questions like:

- What is Biodiversity?
- What does Biodiversity do for us? What are the threats to biodiversity?
- What can we do for Biodiversity?

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01

Understanding Biodiversity?

SDG specifically addressed in this course

Good health and well-being

Ensure healthy lives and promote well-being for all at all ages

Quality Education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Sustainable Cities and Communities

Make cities and human settlements inclusive, safe, resilient and sustainable

Responsible Consumption and Production

Ensure sustainable consumption and production patterns

Climate action

Take urgent action to combat climate change and its impact

The current Module

Life on Land

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Source: Shutterstock World Day

SGD 15

15 LIFE ON LAND

Context - Sustainable Development Goal 15 – Life on Land

Overarching goal

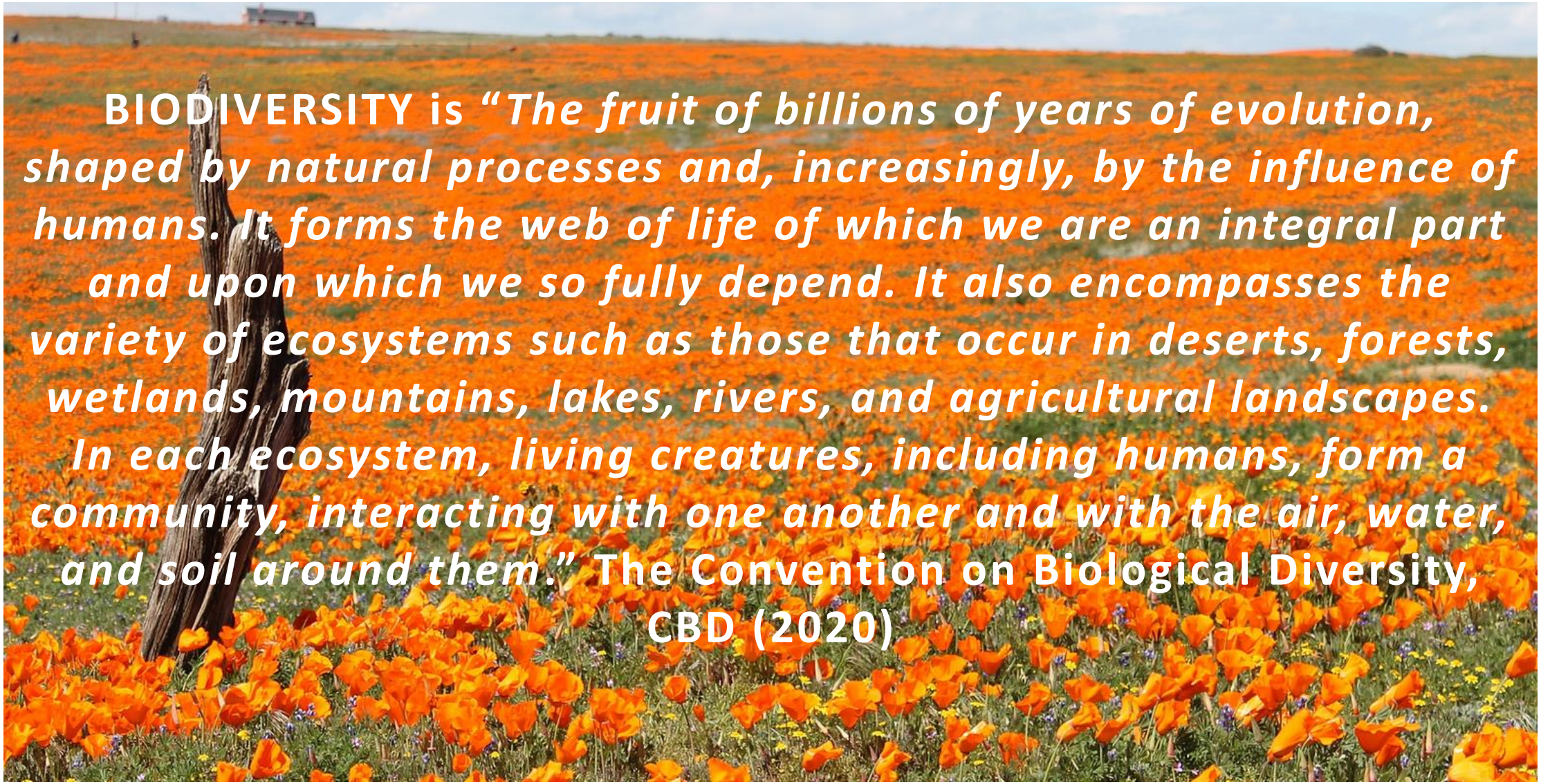
"Preserving diverse forms of life on land requires targeted efforts to protect, restore and promote the conservation and sustainable use of terrestrial and other ecosystems.

Goal 15 focuses specifically on

- ***managing forests sustainably,***
- ***halting and reversing land and natural habitat degradation,***
- ***successfully combating desertification and***
- ***stopping biodiversity loss.***

All these efforts combined aim to ensure that the benefits of land-based ecosystems, including sustainable livelihoods, will be enjoyed for generations to come."

UN Environment Programme


BIODIVERSITY is “The fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which we are an integral part and upon which we so fully depend. It also encompasses the variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes. In each ecosystem, living creatures, including humans, form a community, interacting with one another and with the air, water, and soil around them.” The Convention on Biological Diversity, CBD (2020)

You've probably seen the headlines …

World's food supply under 'severe threat' from loss of biodiversity

Plants, insects and organisms crucial to food production in steep decline, says UN

World's food supply under 'severe threat' from loss of biodiversity
Plants, insects and organisms crucial to food production in steep decline, says UN

David Attenborough: collapse of civilisation is on the horizon

Naturalist tells leaders at UNclimate summit that fate of world is in their hands

David Attenborough: Collapse of civilization is on the horizon
Naturalist tells leaders at UNclimate summit that fate of world is in their hands.

Plummeting insect numbers 'threaten collapse of nature'

Plummeting insect numbers 'threaten collapse of nature'

1. So ... what is Biodiversity?

Biodiversity is a term that refers to the variety of life on earth and includes:

1) Ecosystem Diversity

How many Different Ecosystems are there?

2) Species Diversity

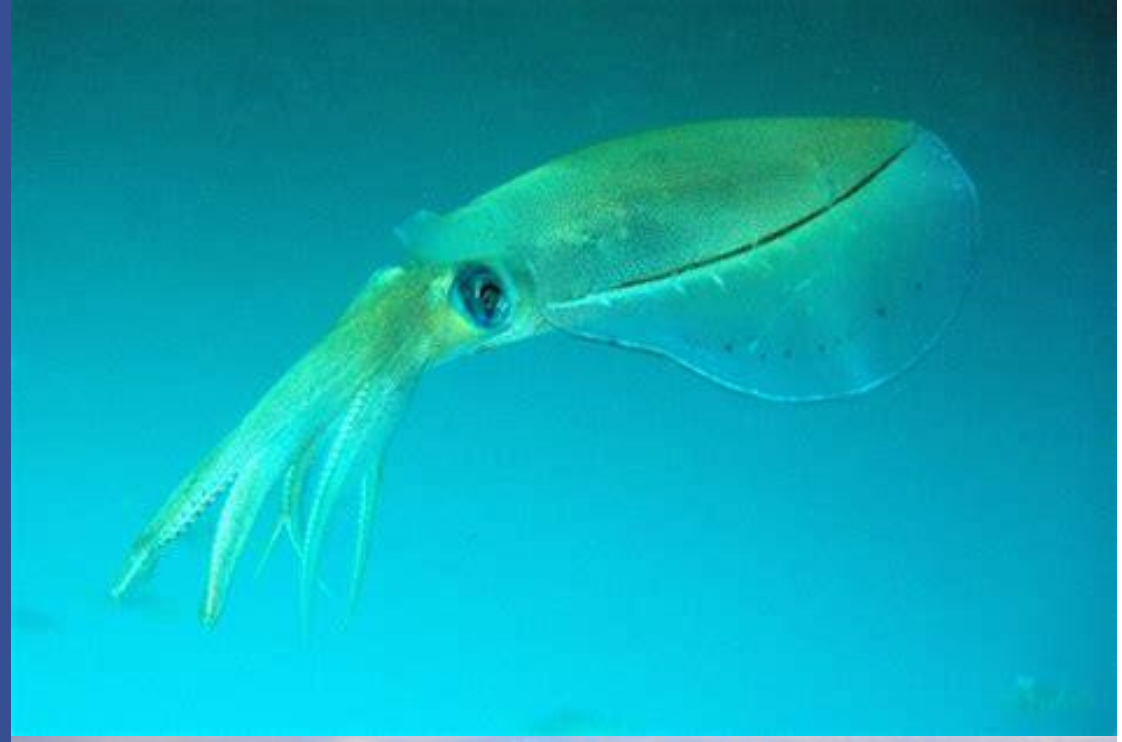
How many different Species are there in those ecosystems?

3) Genetic Diversity

How genetically diverse are those species

1) Ecosystem Diversity

- **Ecosystem** = the interactions between living things and the places where they live.
- **Habitat** = the natural home or environment of an animal, plant, or other organism.
- **Species Evolve** to live in **unique ecosystems.** Squid can't live in a forest!
- **Ecosystem destruction** and **habitat destruction** reduce biodiversity, and play a huge part in driving species to extinction



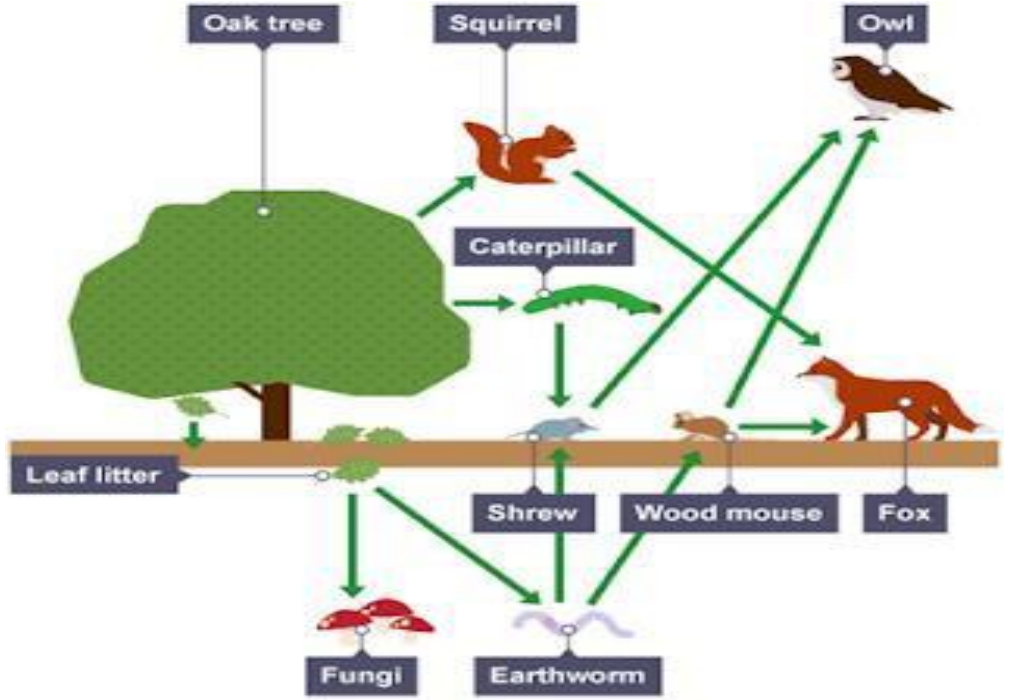
2) Species Diversity

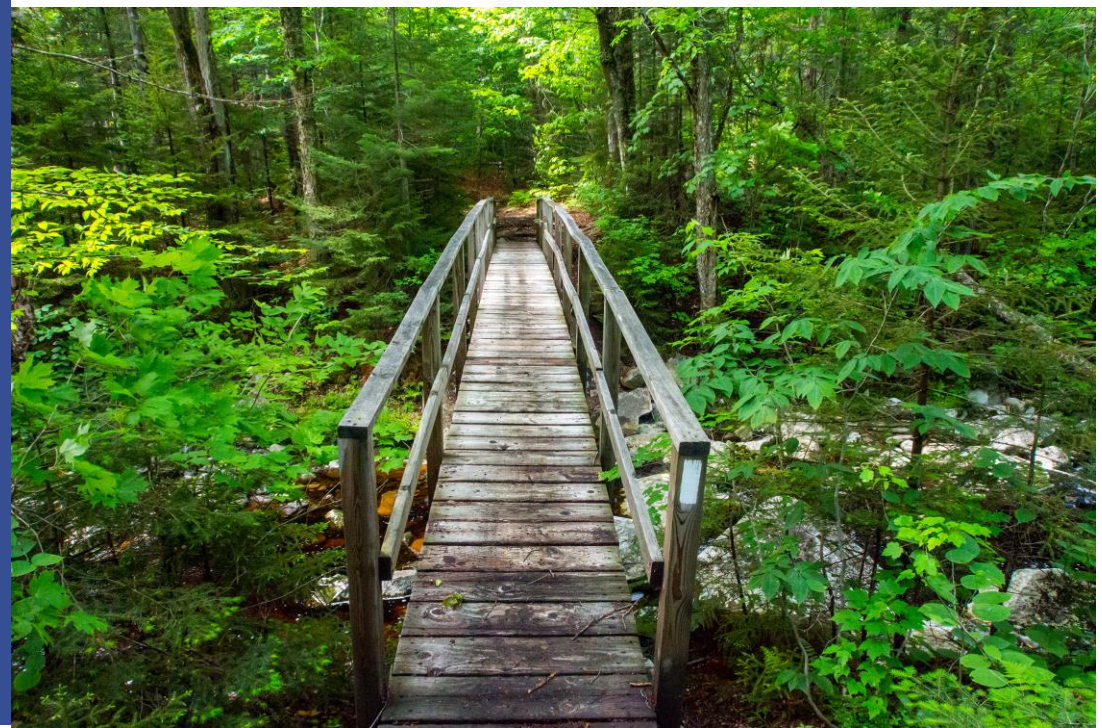
Species diversity = The diversity of **species** living in an ecosystem.

A forest with only one species of tree is less biodiverse than mixed woodland.

Each living thing in a functioning ecosystem has a certain role to play

- Less species diversity = less habitat for other species.
- Less species diversity = breaks in the food web.





Local Learning Communities

2) Species Diversity

Example: In the Scottish highlands, **wolves** were **hunted to extinction**.

… with **no predators**, the deer population **expands**.

… hungry **deer eat** all the greenery, including **young trees**.

… with no trees, there's no **habitat** for **birds** and **bats** and other forest species.

… with **no bats and birds** to eat them, **or other insects** to compete, areas of the highlands are flooded with **biting midges** all summer.

Vancouver Costal Sea Wolf

Midges swarms

3) Genetic Diversity

Genetic Diversity refers to **the range of different inherited traits within a species**.

In a species with high genetic diversity, there would be many individuals with a wide variety of different traits.

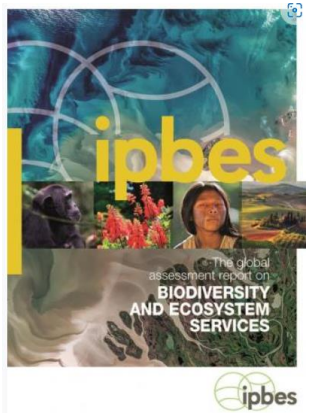
Genetic diversity is critical for a population to adapt to changing environments.

Genetic diversity in potato breeds. Image from International Potato Centre (CIP)

Genetic diversity is needed for **population health**. **Inbreeding** makes species **vulnerable** to infectious disease & genetic disorders.
Genetic biodiversity allows species to **evolve and adapt** in response to threats.
E.g. **Irish famine** – the potatoes available had **low genetic biodiversity** and all of them shared a **genetic weakness** to **potato blight.**
Agrobiodiversity = biodiversity of domesticated species. **Very important** for food security.

The Scale of the issue…

The 2019 IPBES Global Assessment Report on Biodiversity and Ecosystem Services lays out the severity of the Biodiversity crisis clearly…



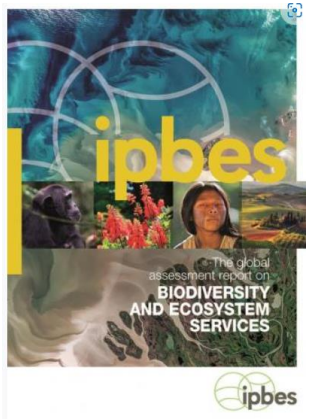
75% of the land area is very significantly altered

66% of the ocean area is experiencing increasing cumulative impacts

>85% of wetland area has been lost

85% of protected habitats are in unfavourable condition

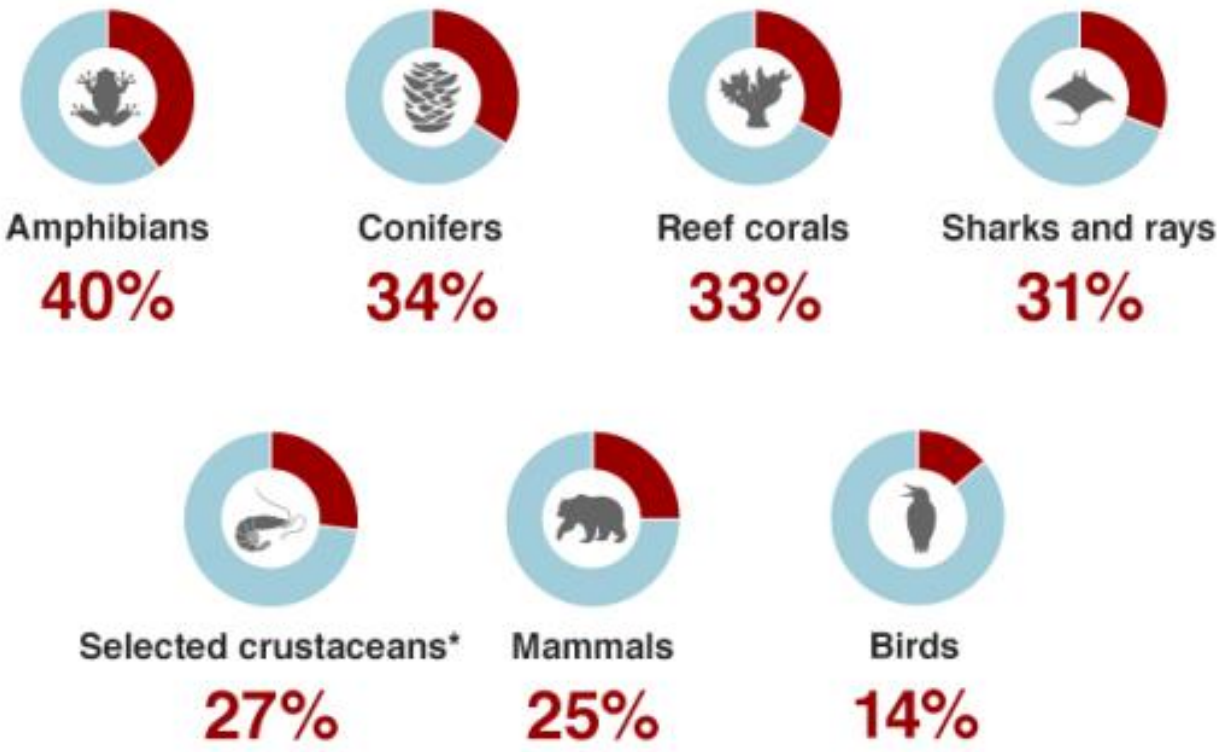
The Scale of the issue…



Up to 1 million species are now threatened with extinction…

One in four species are at risk of extinction

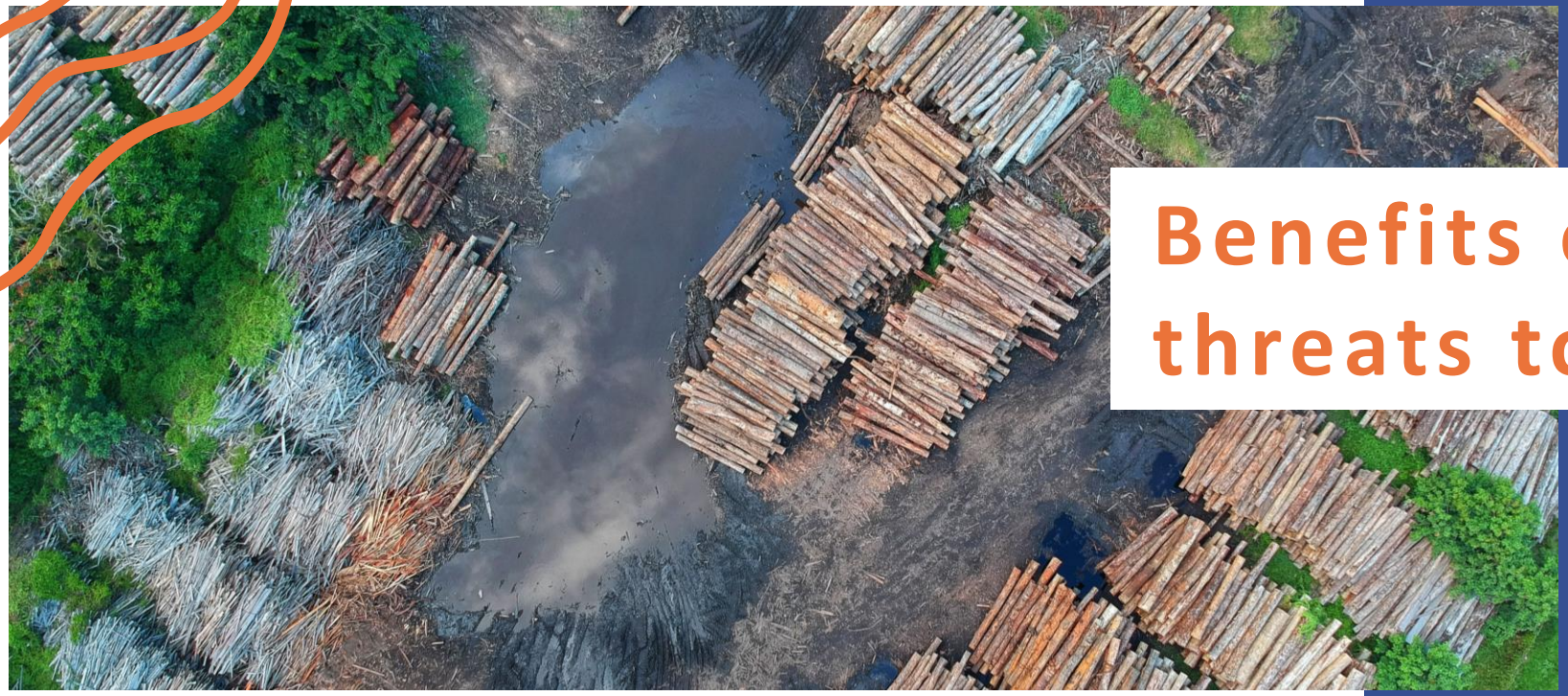
Species assessed by the IUCN Red List



Today, 90% of the World's sea birds are estimated to have fragments of plastic in their stomach; in 1960 it was 5 per cent

Image Source

02



Benefits of and threats to Biodiversity

Biodiversity is Our Life Support System Providing…

Food and Water

Clean Air

Shelter

Clothing

Medicines

Protection from Natural Hazards

Spirituality

Leisure / Recreation


"We rely on biodiversity to stay healthy. Biodiversity sustains our food supply, is a source of medicines, and supports the provision of clean air and fresh water while also contributing to economic development, cultural and spiritual enrichment. It is now also widely recognized that biodiversity is affected by climate change, with negative consequences for human well-being, but biodiversity, through the ecosystem services it supports, also makes an important contribution to both climate change mitigation and adaptation. As all people require freedom from illness as well as social, emotional, physical, spiritual and cultural well-being, we cannot have healthy societies without biodiversity." United Nations Decade on Biodiversity

Linking Nature and People…

Ecosystem services = the range of services which ecosystems provide us with. Examples include **pollination**, **clean water**, and **pollution control.**

When **ecosystems** are **damaged,** the **quality of these services** are **damaged** too.

- What **natural resources** do **you** rely on?
- Why is the natural world **important** to **you**?

Let’s look deeper at Ecosystem Services

PROVISIONING
Food, water, raw materials, medicines

CULTURAL
Aesthetics, recreation, physical and mental health and well-being, spiritual/religious values

REGULATING
Regulate climate, air and water, filter pollution, purify waste, power noise levels, moderate extreme events, regulate pests & diseases, pollinate plants

SUPPORTING
Produce oxygen, soils, nutrient cycling, water cycling and provisioning of habitat

What does that look like in terms of cost? **Natural Capital** as a concept places an economic value on the services Ecosystems provide, putting the scale of the issue into perspective

Climatic Stability

Decline in staple crop yields in SE Asia and Africa that would result from a 4 degree Celsius rise in global temperatures

25 – 40%

Decline in Australian agricultural income caused by the 2002 / 2003 drought

46%

Pollination

Proportion of the most productive crops, including most fruits and oilseeds, which are animal-pollinated

70%

Estimated cost to US producers in 2007 due to collapse of Bee colonies $15 billion

$15 Billion

Water retention & Flood control

Cost of flooding linked to deforestation which destroyed c.25 million hectares of crops in Bangladesh, China, India, and Vietnam in 1998

$23 Billion

Soil Quality and Retention

Amount of cropland abandoned due to soil erosion in the past 40 years 1.5 billion hectares

1.5 Bn. Ha.

Economic cost of soil Erosion in Europe

€ 53

Per Hectare per year

Pest & Disease Control

Annual losses caused by mismanaged or accidental species introductions as agricultural pests in the US, UK, Australia, South Africa, India and Brazil

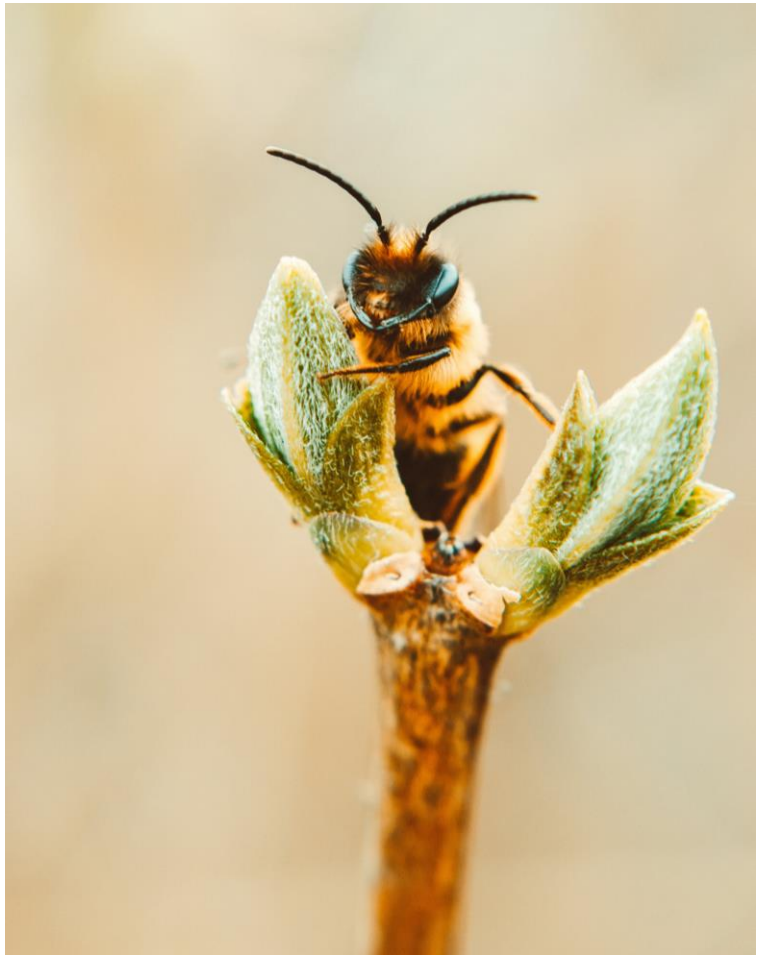
$100 Billion

Adapted from Source

Ecosystem Service Spotlight: Biodiversity = Resilience

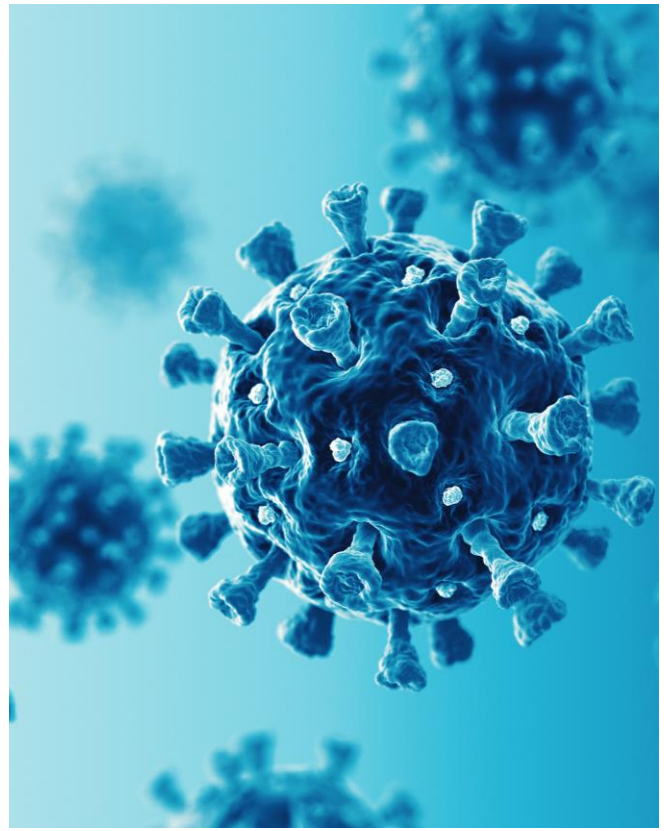
Did you know that Biodiversity makes more resilient ecosystems?

Climate change is bringing with it more extreme weather events, both wet and dry, moderate and extreme, and brief and prolonged. In a 2015 study, it was found that plots of land with just a few species present had their productivity reduced by 50% during climate extremes, whereas this effect was halved with a greater number of species. **This means that restoring Biodiversity will increase the resilience of our land as we experience changing weather events. So, at community level, we can play a key role in restoring Biodiversity.**



Ecosystem Service Spotlight: Health and Disease

The COVID-19 pandemic has shown us just how significantly disease and virus can alter our lives.
Did you know that the solution also lies in Biodiversity?
Zoonotic disease or pathogens refers to infections that are shared between animals and people and include corona virus, the Spanish flu, Lyme disease and monkey pox to name a few. In fact, more than 60% of human pathogens are zoonotic in origin.
It has been proven that increasing Biodiversity reduces infection prevalence as the pathogen has more species to pass through. To learn more about how climate, biodiversity and health and wellbeing are linked check out Module 4 on SDG 3



The main causes of biodiversity loss:

01 Habitat Loss and Degradation

02 Invasive species and disease

03 Overexploitation (over-fishing, over-hunting)

04 Pollution

05 Climate change

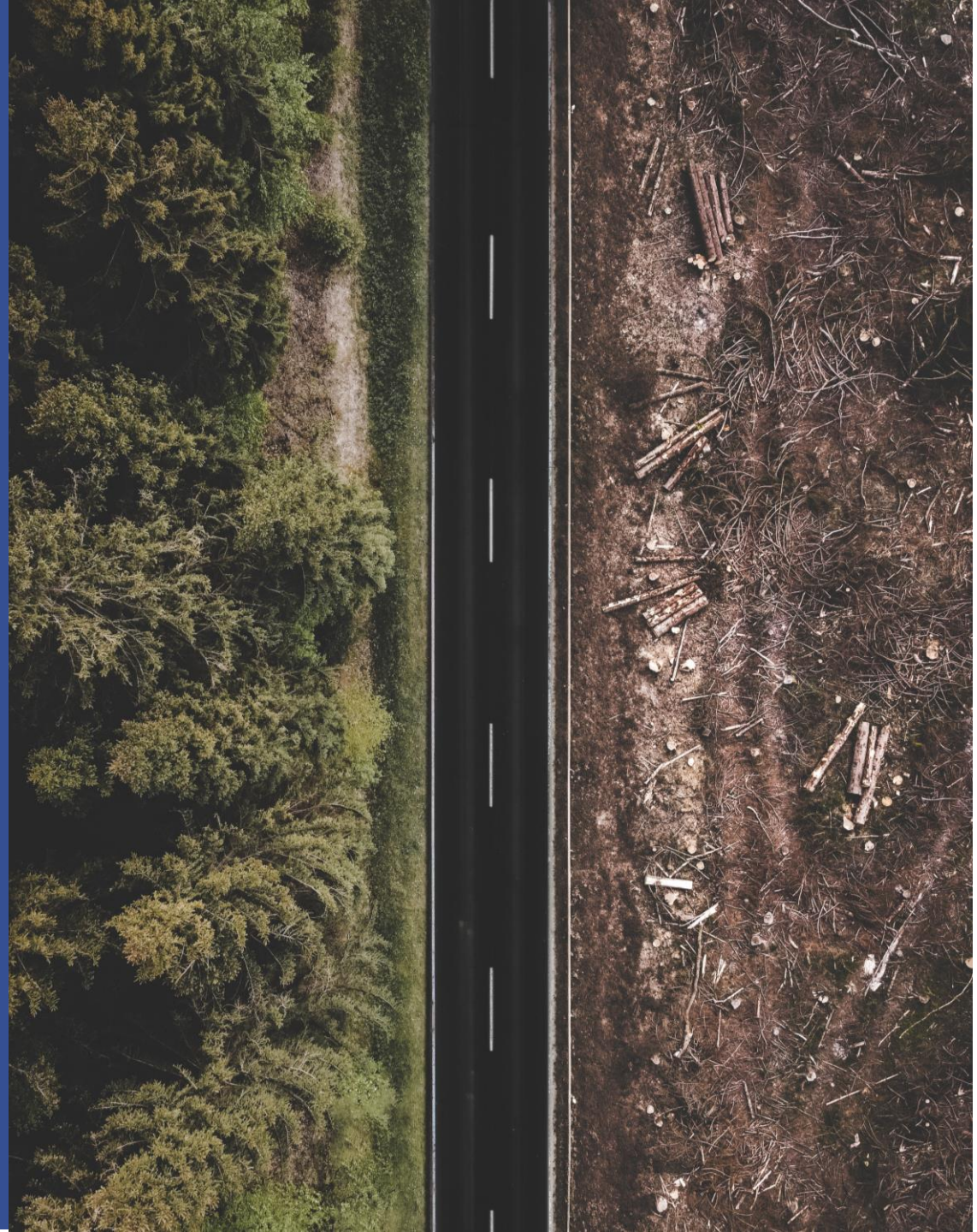
Over the following slides, let's look at each cause in more detail. Please reflect on your own community and if each cause of biodiversity loss is evident.

1) Habitat Loss and Degradation

Changes in land and sea use results in the complete removal, fragmentation, or reduction in quality of the key habitats for plants, animals and other organisms.

This is caused by many different human activities including unsustainable agriculture, transportation, residential and commercial development, energy production and mining; while disruptions to streams and rivers have detrimental effects on freshwater habitats

Source: WWF Living Planet Report 2020



2) Invasive species and Disease

Human globalisation has brought with it the globalisation of disease and different species. Invasive species can compete with native species for space, food and other resources, can turn out to be a predator for native species, or spread diseases that were not previously present in the environment.

The extinction of the Dodo due to the introduction of pigs, dogs, cats and other species is a famous example of the effect of alien species.

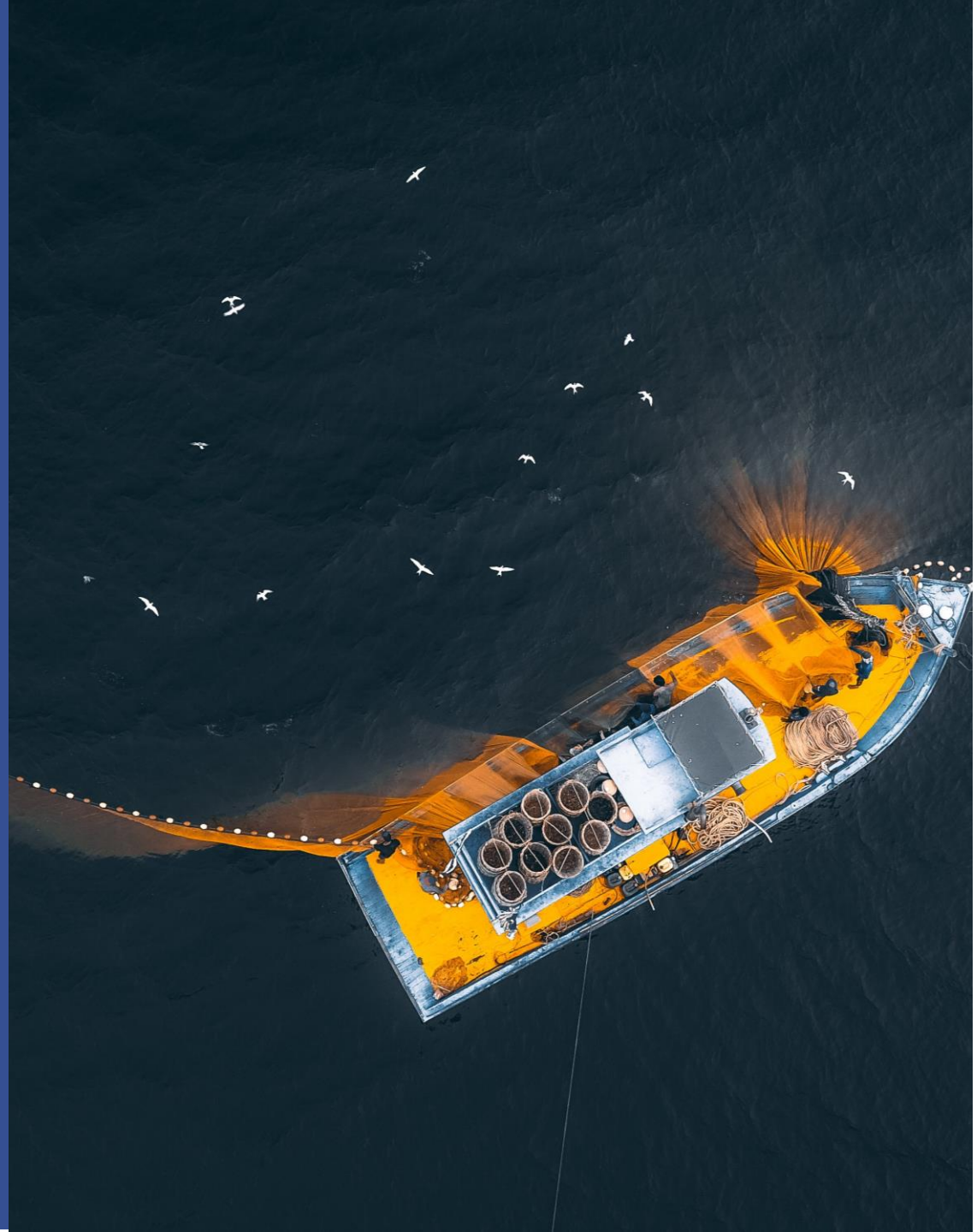
What non-native species are present in your local ecosystems?

Source: WWF Living Planet Report 2020

3) Overexploitation (Over-fishing and hunting)

There are both direct and indirect forms of overexploitation. Direct overexploitation refers to unsustainable hunting and poaching or harvesting, whether for subsistence or for trade. Indirect overexploitation occurs when non-target species are killed unintentionally, for example as bycatch in fisheries.

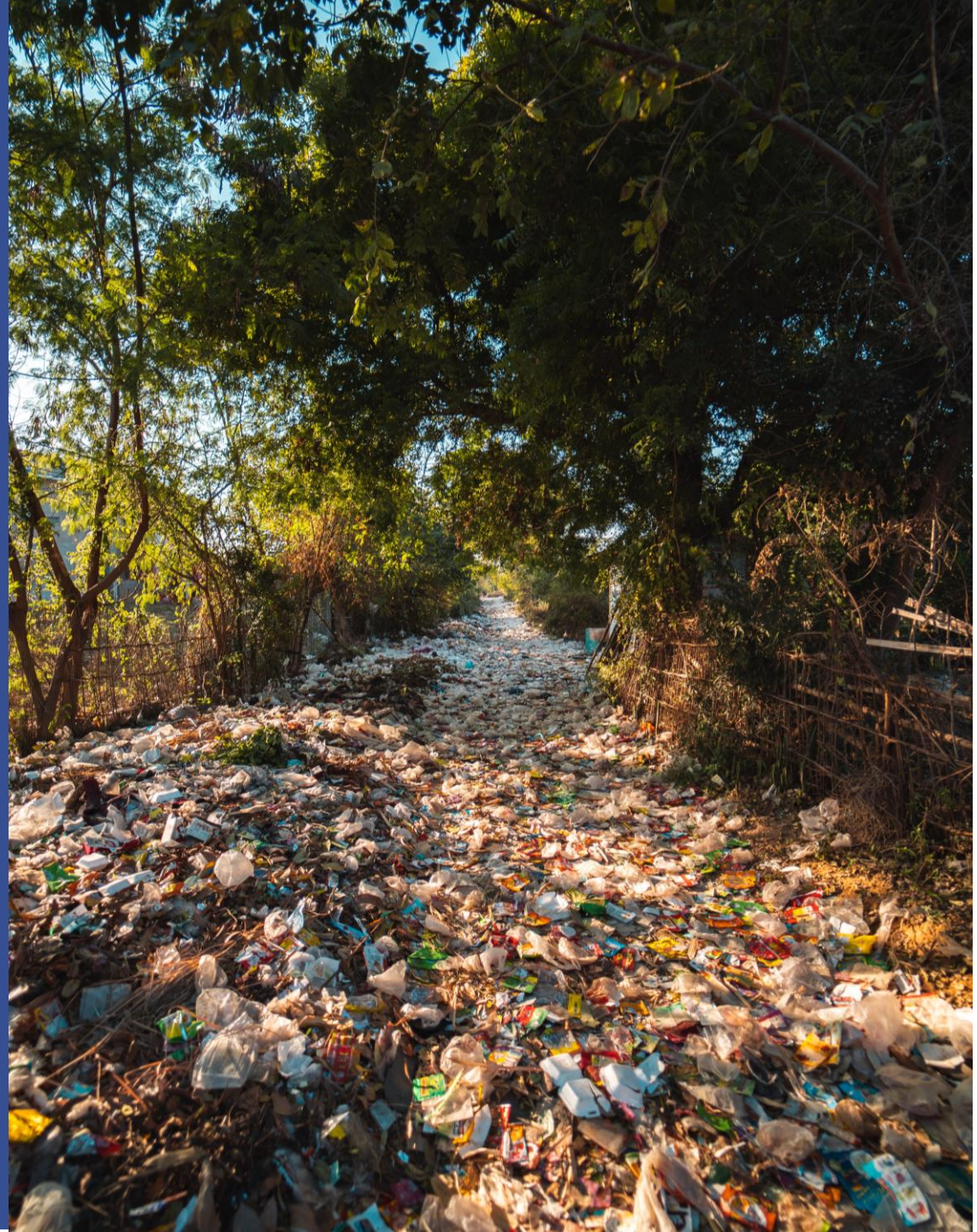
Source: WWF Living Planet Report 2020



4) Pollution

Pollution can directly affect a species by making the environment unsuitable for its survival (this is what happens, for example, in the case of an oil spill). It can also affect a species indirectly, by affecting food availability or reproductive performance, thus reducing population numbers over time.

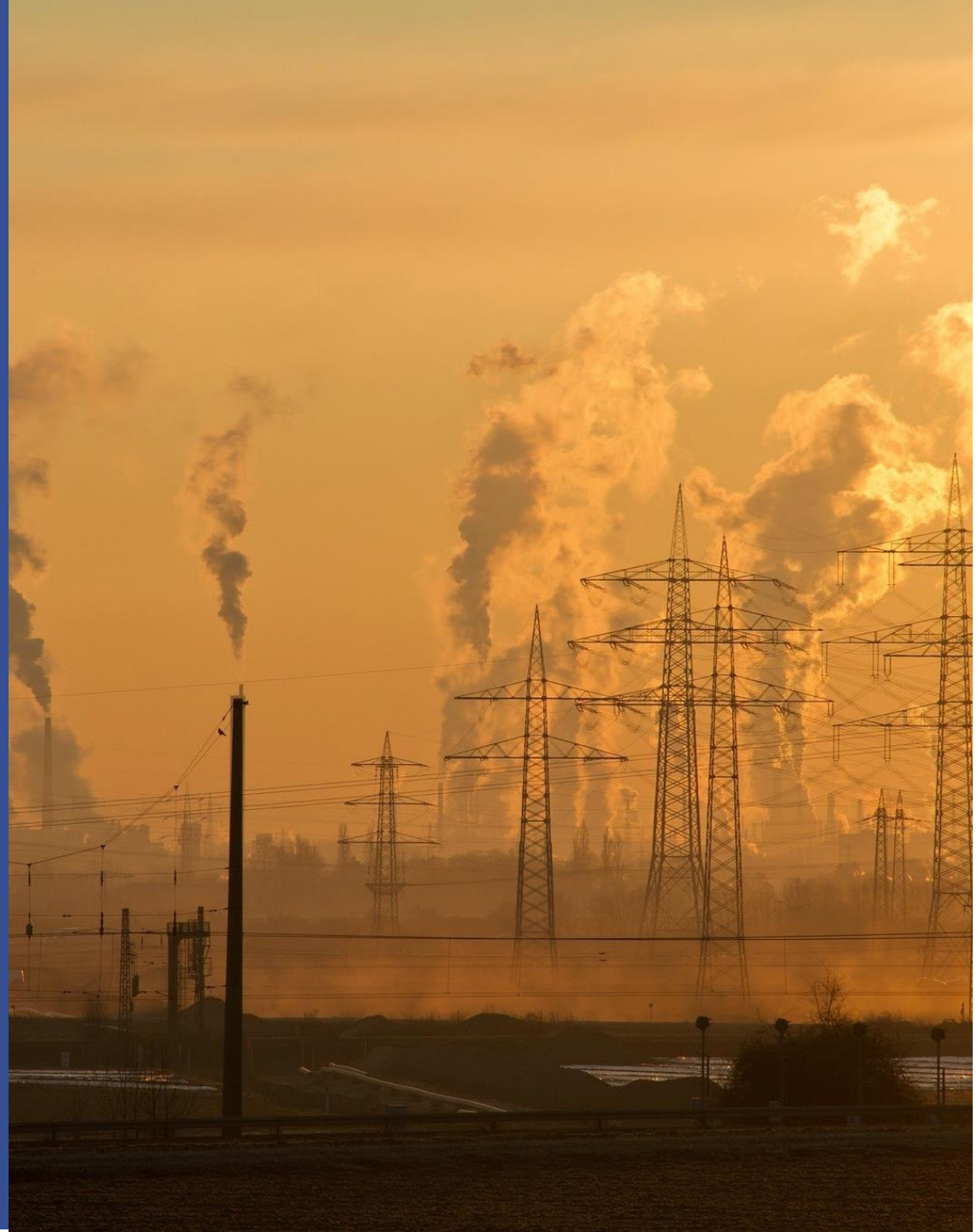
Source: WWF Living Planet Report 2020



5) Climate Change

As temperatures change, some species will need to adapt by shifting their range to track suitable climate. The effects of climate change on species are often indirect. Changes in temperature can confound the signals that trigger seasonal events such as migration and reproduction, causing these events to happen at the wrong time (for example misaligning reproduction and the period of greater food availability in a specific habitat).

Source: WWF Living Planet Report 2020



Like climate change, biodiversity loss is anthropogenic in nature, meaning it is driven by human activity.

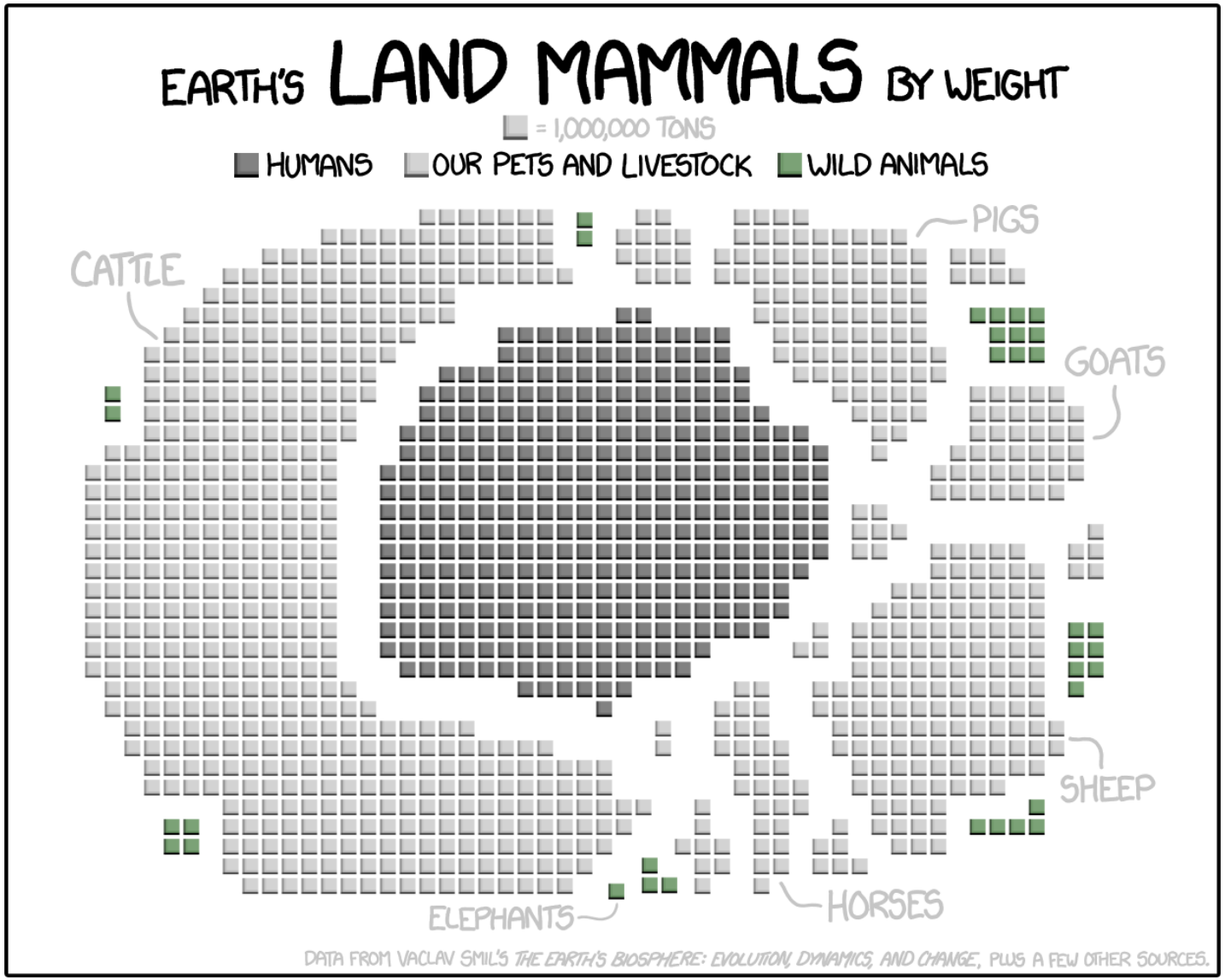
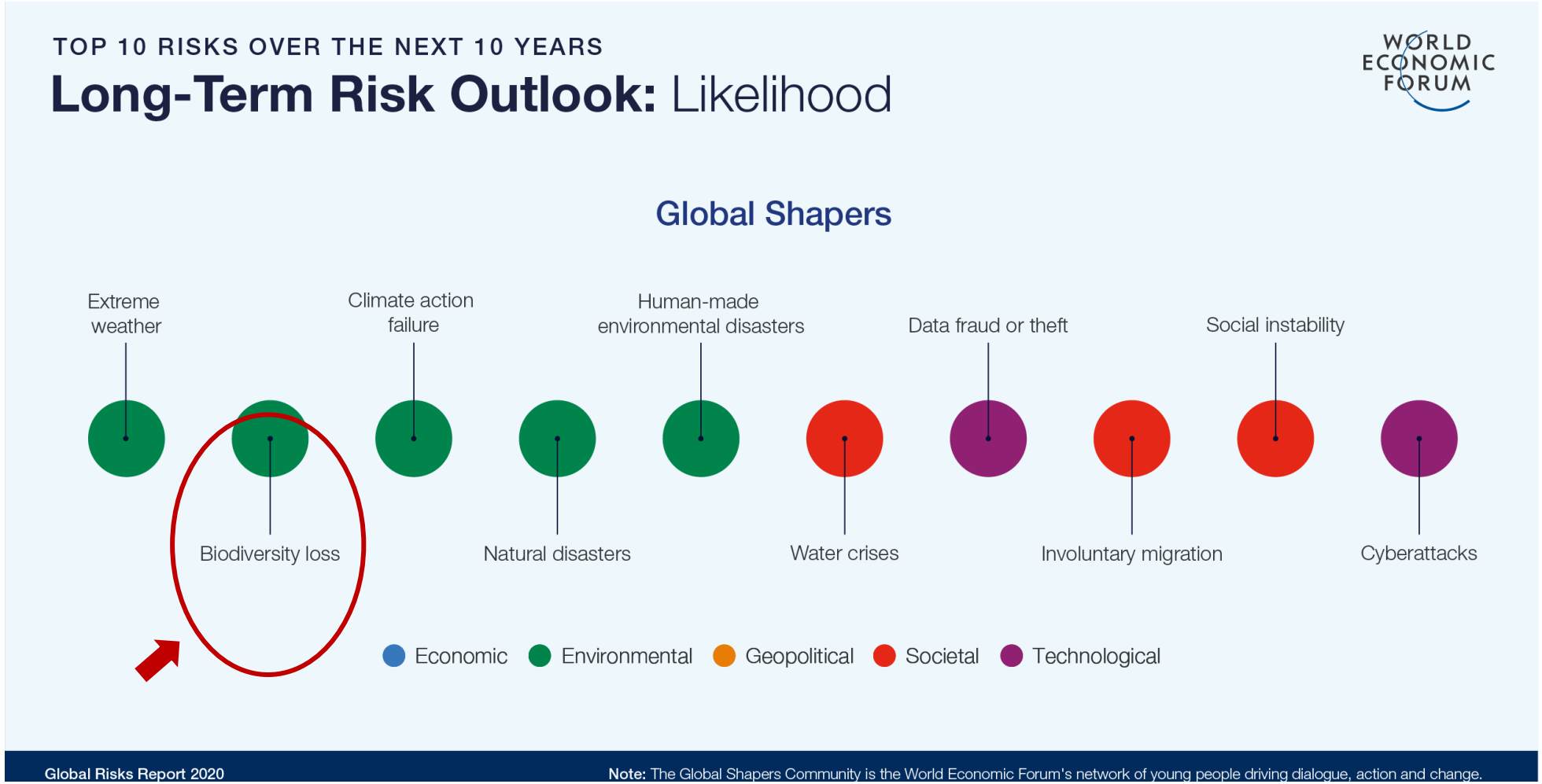


Image Credit: XKCD https://xkcd.com/1338/

WATCH: Immediate Action Needed to Stop the extinction crisis

We need IMMEDIATE action to stop extinction crisis, David Attenborough - BBC - YouTube

The Severity of Biodiversity loss is reflected in its inclusion in the World Economic Forum Global Risk Report. Notice how environmental factors dominate the top risks



Local Learning Communities

Ecosystem Spotlight: Roscommon, Ireland

Raised Bog – globally, peatlands are **incredibly rare** (we're blessed!)

- Threatened by turf cutting, peat extraction for compost, drainage, peat fires….

Freshwater ecosystems – Rivers, lakes, ponds, and turloughs all have their own unique ecosystems.

- Threatened by farm runoff, forestry runoff, other pollution, invasive species …

Peatland In Roscommon

Ecosystem Spotlight: Roscommon, Ireland

Hedgerows, ‘scrub’ & Road Verges – a refuge for a variety of plant species and the animals who rely on them! Hedgerows are homes, corridors, and larders for wildlife.

- Threatened by excessive agricultural spraying, pollution from roads, heavy cutting.

Grassland – ‘unimproved’ grasslands are excellent habitat for ground nesting birds, pollinators, etc.

- Threatened by changing farming practices including excessive fertiliser use, overstocking, more frequent cutting…

03

Biodiversity and Climate Change

01

Climate Change recapped

In order to first understand how climate and Biodiversity are interlinked, we need to first revisit as little science from our Module 2 on SDG13

02

How does climate change impact Biodiversity?

In section 2 of this module, we learnt how climate change is affecting Biodiversity as species struggle to adapt to the changing temperatures

03

How can Biodiversity help mitigate Climate Change?

Just as the changing climate has an effect on Biodiversity, improving Biodiversity also makes an important contribution to both climate mitigation and adaptation

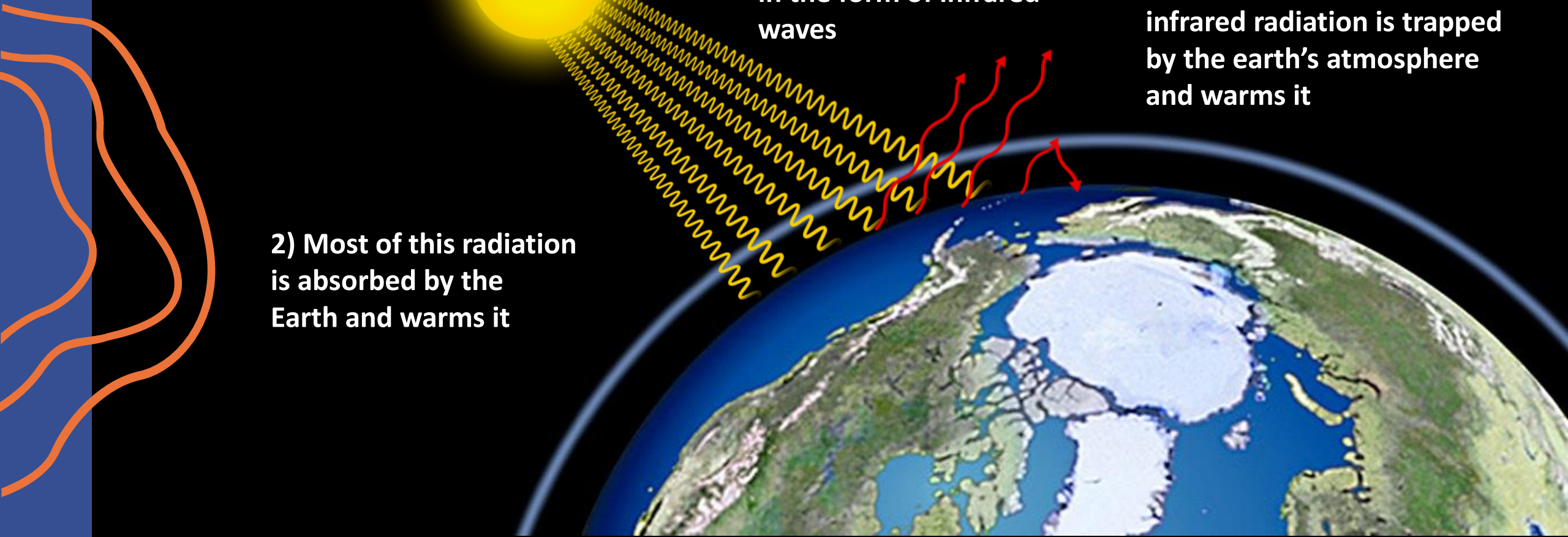
1) Climate Change recapped: The Science

1) Solar radiation in the form of light waves pass through the atmosphere

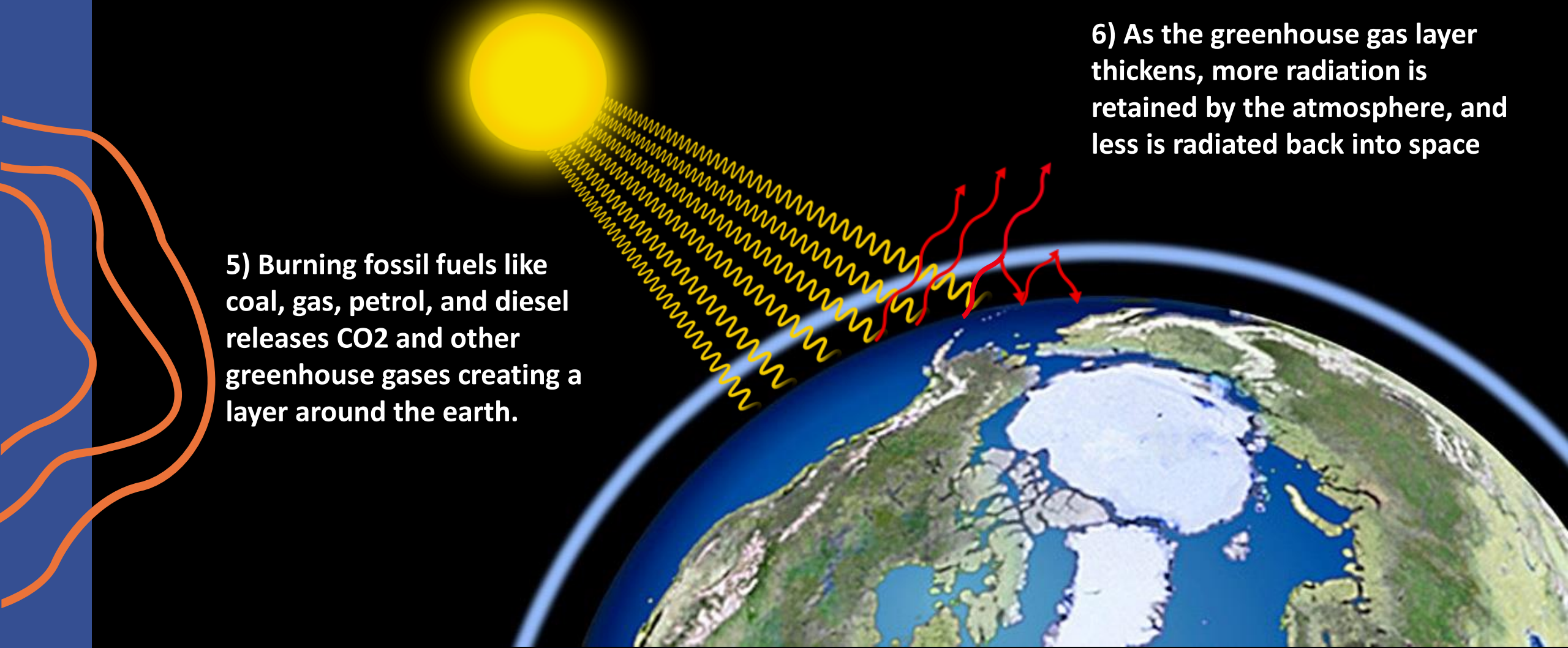
2) Most of this radiation is absorbed by the Earth and warms it

3) Some energy is radiated back into space by the earth in the form of infrared waves

4) Some of this outgoing infrared radiation is trapped by the earth's atmosphere and warms it



1) Climate Change recapped: The Science

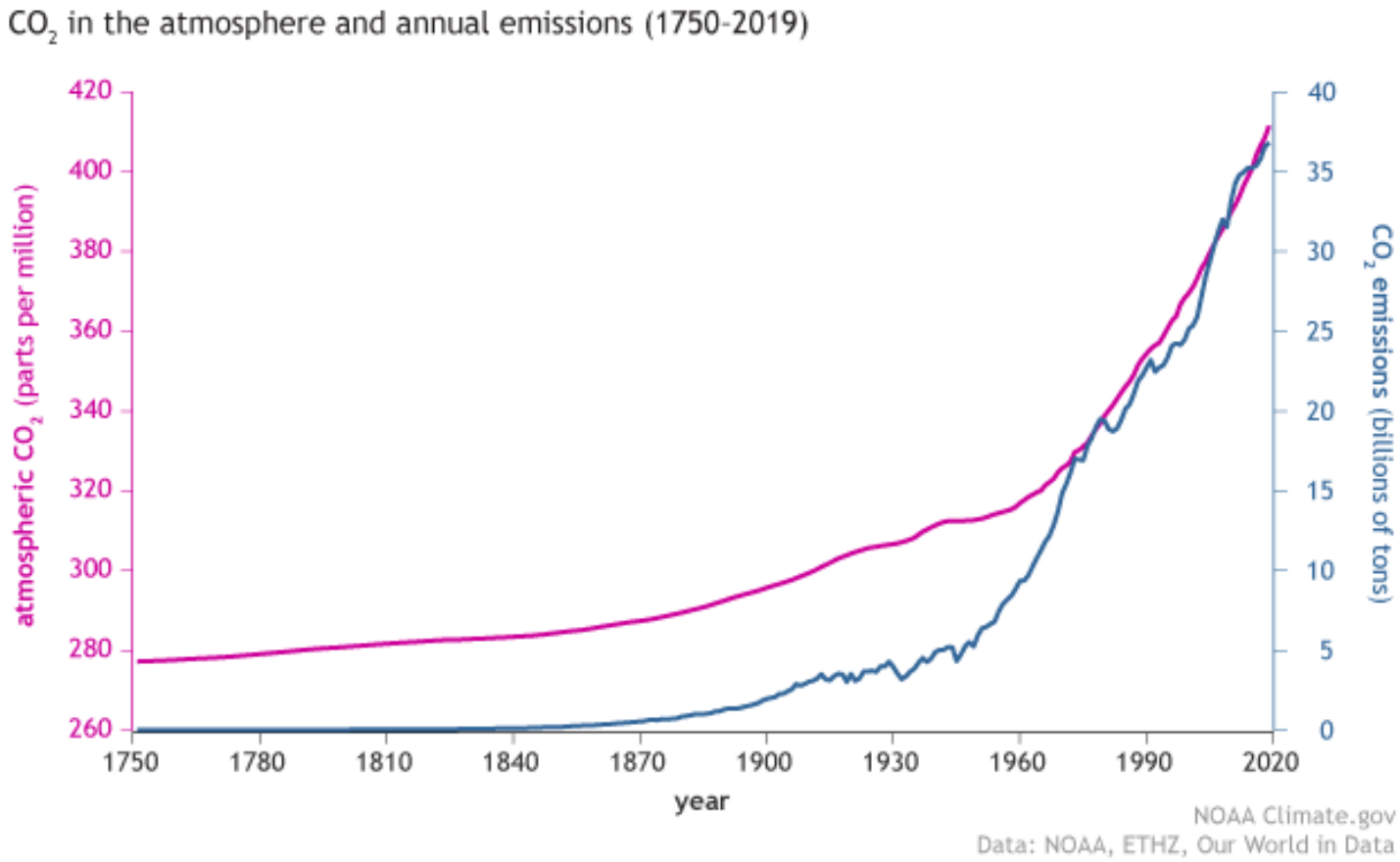


5) Burning fossil fuels like coal, gas, petrol, and diesel releases CO2 and other greenhouse gases creating a layer around the earth.

6) As the greenhouse gas layer thickens, more radiation is retained by the atmosphere, and less is radiated back into space

1) Climate Change recapped: The Science

97% of climate scientists agree that man made pollution is causing climate change and the science is clear to see when we look at the Emissions and atmospheric CO2



2) How does climate change impact Biodiversity

Up to 1 million plant and animal species are at risk of extinction in the next few decades due to anthropogenic climate change.

One of these species that face extinction is the hawksbill sea turtle who's population has decreased by 80% over the last century and scientists fear that the rising ocean and sand temperatures along with beach destruction from rising sea levels could lead to their complete extinction.

Source: WWF

How Does Climate Change Impact Biodiversity?

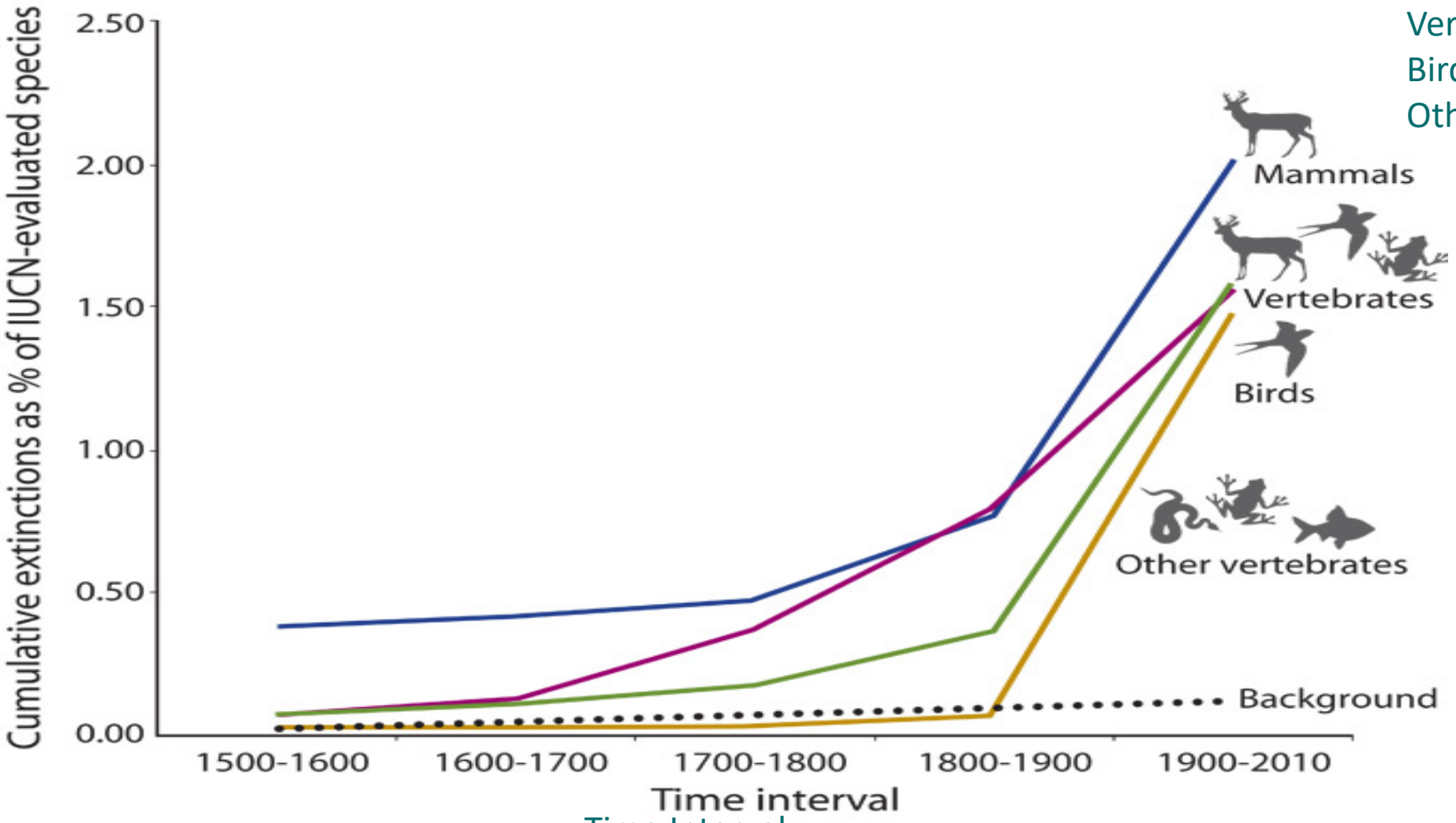
Present day **species** evolved to deal with **present day conditions**.

They can evolve again, but **evolution** is **very slow** (it takes millions of years), and **climate change** is happening **very fast** (it takes less than 100 years)

Millions of **vulnerable species** aren't able to keep up with the changes, and **are going extinct.**

% of species that go extinct a year:

Cumulative extinctions as% of IUCN evaluated species



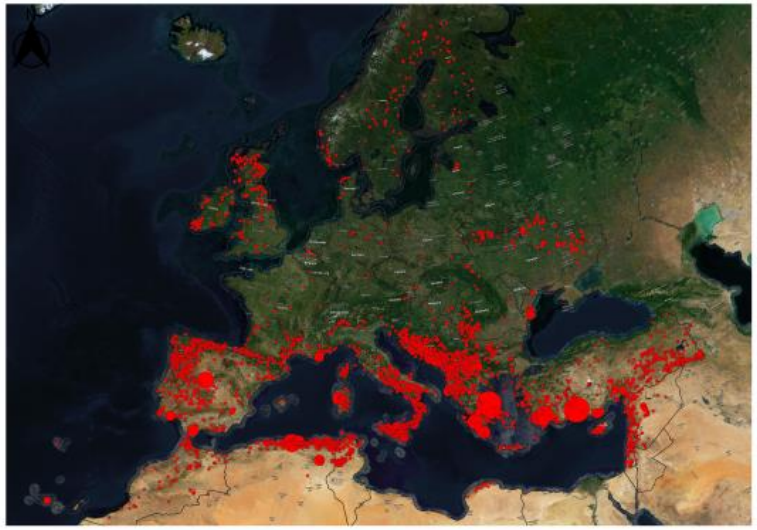
Time Interval

Mammals
Vertebrates
Birds
Other Vertebrates

Local Learning Communities

Climate change is altering and destructing Ecosystems

Rising global temperatures are altering ecosystems and **forcing species into new environments** accelerating the rate of extinction. In the summer of 2022 Europe saw its most severe drought in decades, with 45% of the bloc's territory under drought by mid-July, with experts warning that dry winters and searing summers fueled by global heating will mean water shortages are the new normal. These droughts are bringing with it severe forest fires throughout Europe which are detrimental to ecosystems.



Forest Fires in the pan-European region in 2021

Sweden Battles 50 Wildfires with Help of Firefighters Across Europe

July 23, 2018 by Niklas Magnusson

CBS NEWS Login

WORLD ›

Death toll rises to 91 in deadly Greece wildfire

JULY 29, 2018 / 2:04 PM / CBS/AP

MATI, Greece – Fire officials in Greece raised the death toll from a wildfire that raged through a coastal area east of Athens to 91 and reported that 25 people were missing Sunday, six days after Europe's deadliest forest fire in more than a century.

Latvia

22.07.2018

Extreme heat has made the job difficult for Latvian firefighters, as hundreds of hectares have been scorched in the west of the country. Meteorologists have said that unfavorable conditions will continue for two weeks.

Climate Champion Spotlight: Horse Forest Firewatchers Team

The city pine forest of Thessaloniki named “Say Sooh” in Greece is vulnerable to forest fires that occur almost entirely during the summertime, when temperatures are high and the pine needles are dry and flammable. Volunteers’ patrols across the forest paths are thus vital. Moreover, the members of the Horse Forest Firewatchers Patrol develop their riding skills and learn to love both horses and the nature while simultaneously offering a great service to the community through their volunteers patrolling work.

Image Credit

These extreme weather events that are linked to Climate Change are not just reserved for countries in tropical regions, but we are experiencing the effects in Europe already…

Climate crisis made deadly German floods 'up to nine times more likely'

Study reinforces the hard evidence that carbon emissions are the main cause of worsening extreme weather

A damaged railway bridge five weeks after the flooding of the River Ahr in Rech in the Ahrweiler district of Germany on 19 August. Photograph: Friedemann Vogel/EPA

The record-shattering rainfall that caused deadly flooding across Germany and Belgium in July was made up to nine times more likely by the climate crisis, according to research.

Forest fires rage across Europe as heatwave sends temperatures soaring

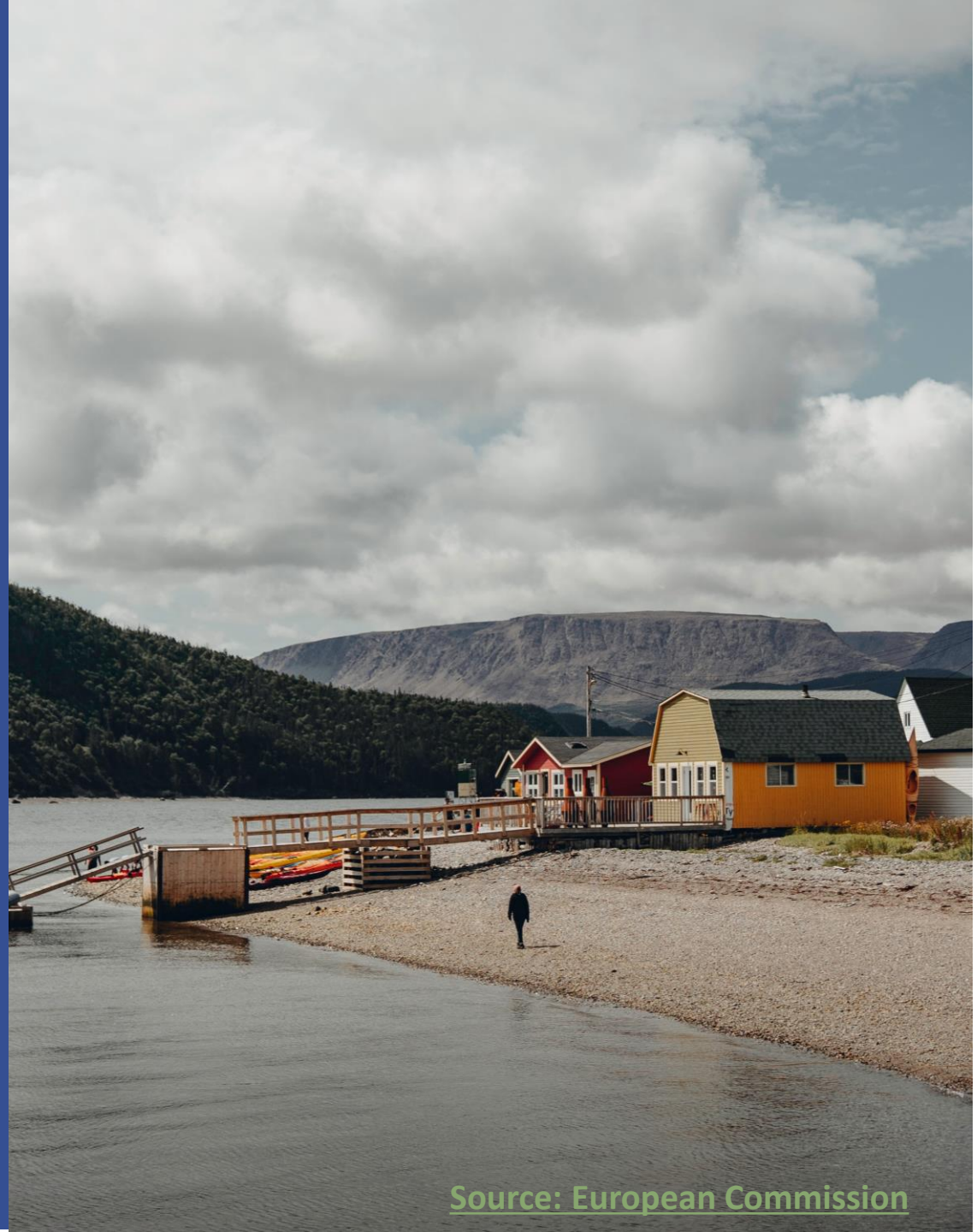
Civil defence authorities battle blazes that have forced evacuation of thousands of people across continent

Wildfires spread through western Europe as temperatures reach mid-40Cs – video

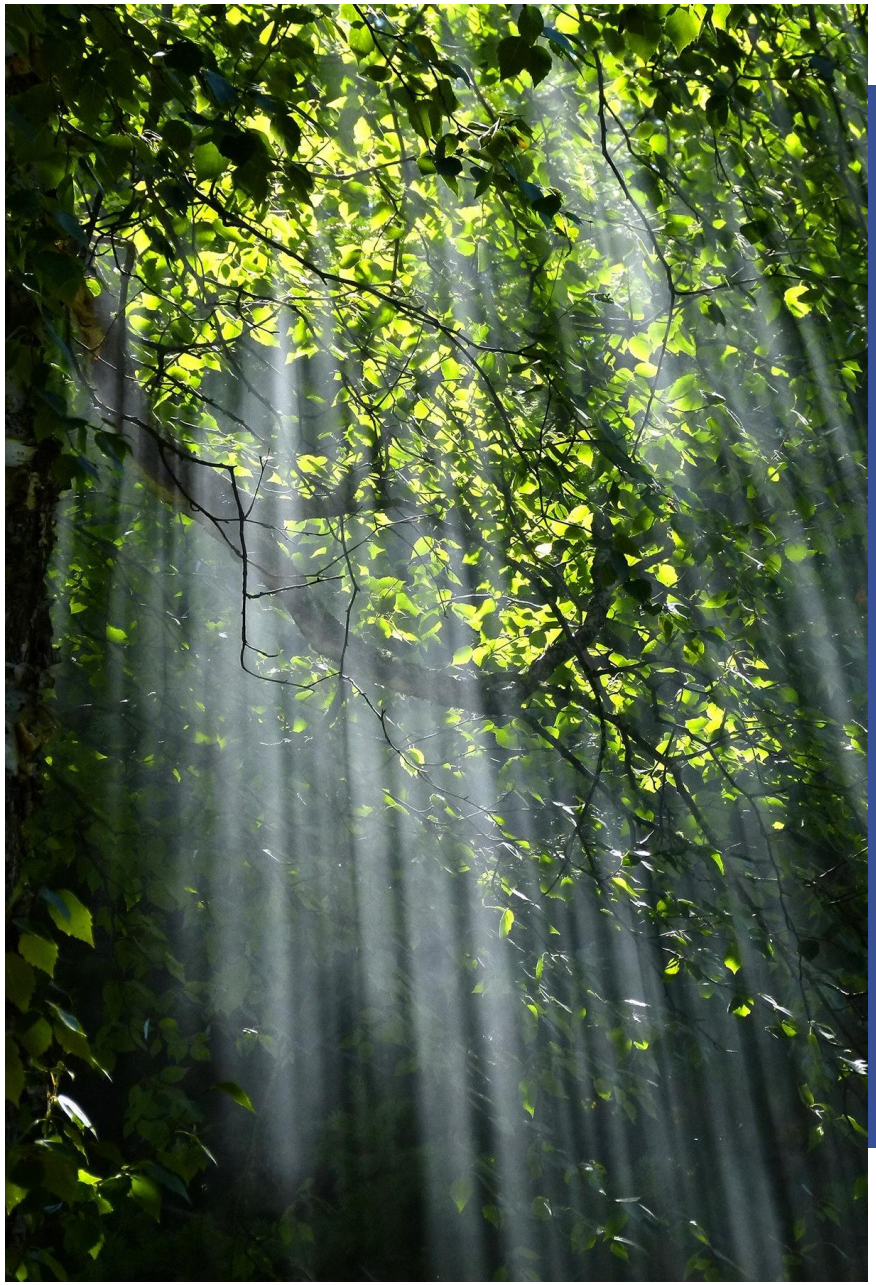
3) How can Biodiversity Help Mitigate Climate Change?

We cannot address biodiversity loss without tackling climate change, but it is equally impossible to tackle climate change without addressing biodiversity loss. Protecting and restoring Ecosystems helps us mitigate climate change through the following:

1. **By reducing the extent of climate change through Carbon Sinks**
2. **By helping us deal with the impacts of climate change**



Source: European Commission



1) Biodiversity can reduce the extent of climate change through Carbon Sinks

Despite the threats posed by climate change to biodiversity, we also know that natural habitats play an important role in regulating climate and can help to absorb and store carbon. Forests, peatlands and other habitats are major stores of carbon. Protecting them can also help us limit atmospheric greenhouse gas concentrations.

Overview of the Carbon Cycle

Carbon is essential to all life on Earth – it's in our DNA, in the food we eat and the air we breathe. The amount of carbon on Earth has never changed but where carbon is located is constantly changing – **it flows between the atmosphere and organisms on Earth as it's released or absorbed**. This is known as the carbon cycle – a process that has been perfectly balanced for thousands of years.

A **carbon sink absorbs** carbon dioxide from the atmosphere. The **ocean**, **soil** and **forests** are the world's largest carbon sinks.

A carbon source releases carbon dioxide into the atmosphere. Examples of carbon sources include the burning of fossil fuels like gas, coal and oil, deforestation and volcanic eruptions.

Now, increased human activity is upsetting the balance. We're releasing more carbon into the atmosphere than the Earth's natural carbon sinks can absorb. Our continued reliance on fossil fuels for energy means billions of tonnes of carbon are released into the atmosphere every year. The importance of carbon sinks has never been greater.

Source

Forests

The world's forests absorb **2.6bn tonnes of carbon dioxide every year**. Yet despite their vital importance, an area the size of a football pitch is destroyed every second. Check out the video below to learn more about the importance of protecting and restoring forest ecosystems and the role communities play in it

Check out the link in the video below to learn more about forest restoration projects in your country https://restor.eco/

Source

Soil

Soil hosts one of the largest reservoirs of biodiversity on Earth: up to 90% of living organisms in terrestrial ecosystems, including some pollinators, spend part of their life cycle in soil habitats. The Earth’s soils contain about 2,500 gigatons of carbon—that’s more than three times the amount of carbon in the atmosphere and four times the amount stored in all living plants and animals.

Even more importantly, no massive investment is needed to sequester carbon in soils, just better education on land management and agricultural practices and protecting our peatlands and permafrost's

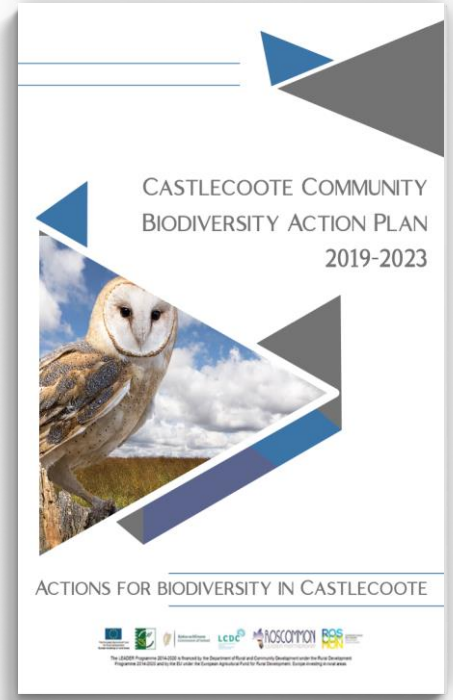
Ocean

The ocean has sucked up about a quarter of the carbon dioxide released into the atmosphere since we began burning fossil fuels for energy during the Industrial Revolution.
Phytoplankton are the main reason the ocean is one of the biggest carbon sinks. These microscopic marine algae and bacteria play a huge role in the world’s carbon cycle - absorbing about as much carbon as all the plants and trees on land combined. By reducing plastic waste reaching the water we can help keep these phytoplankton's healthy

Climate Champion Spotlight: Castelcoote Bog Case Study

Peatlands across the globe have been artificially drained for centuries and made ‘more productive’ through harvesting the peat for fuel and using the land for agriculture. This process results in billions of tonnes of Carbon Dioxide being released into the atmosphere each year.

Projects such as the Castelcoote Bog Study return these peatlands to their natural form and record and protect the flora and fauna of these essential ecosystems. By restoring and protecting these wetlands and other carbon sinks in your community we can help to stem the rapid increase in carbon globally



2) Biodiversity helps us deal with the impacts of climate change

The impacts of climate change on man are largely mediated by natural systems, whether it be floods, droughts, forest fires or storms; nature has a solution.

Biodiversity and Water Management (Floods and Water insecurity)

Wetlands, forests and overall healthy soil biodiversity helps the land deal with inconsistent water supply. Soil and forest biodiversity helps filter water and regulate soil erosion while wetlands can act as water stores and absorb spikes in times of floods, preventing damage to surrounding ecosystems and in turn acting as a source of water in times of drought. Maintaining these essential ecosystems is highly important when dealing with the effects of climate change.

Source

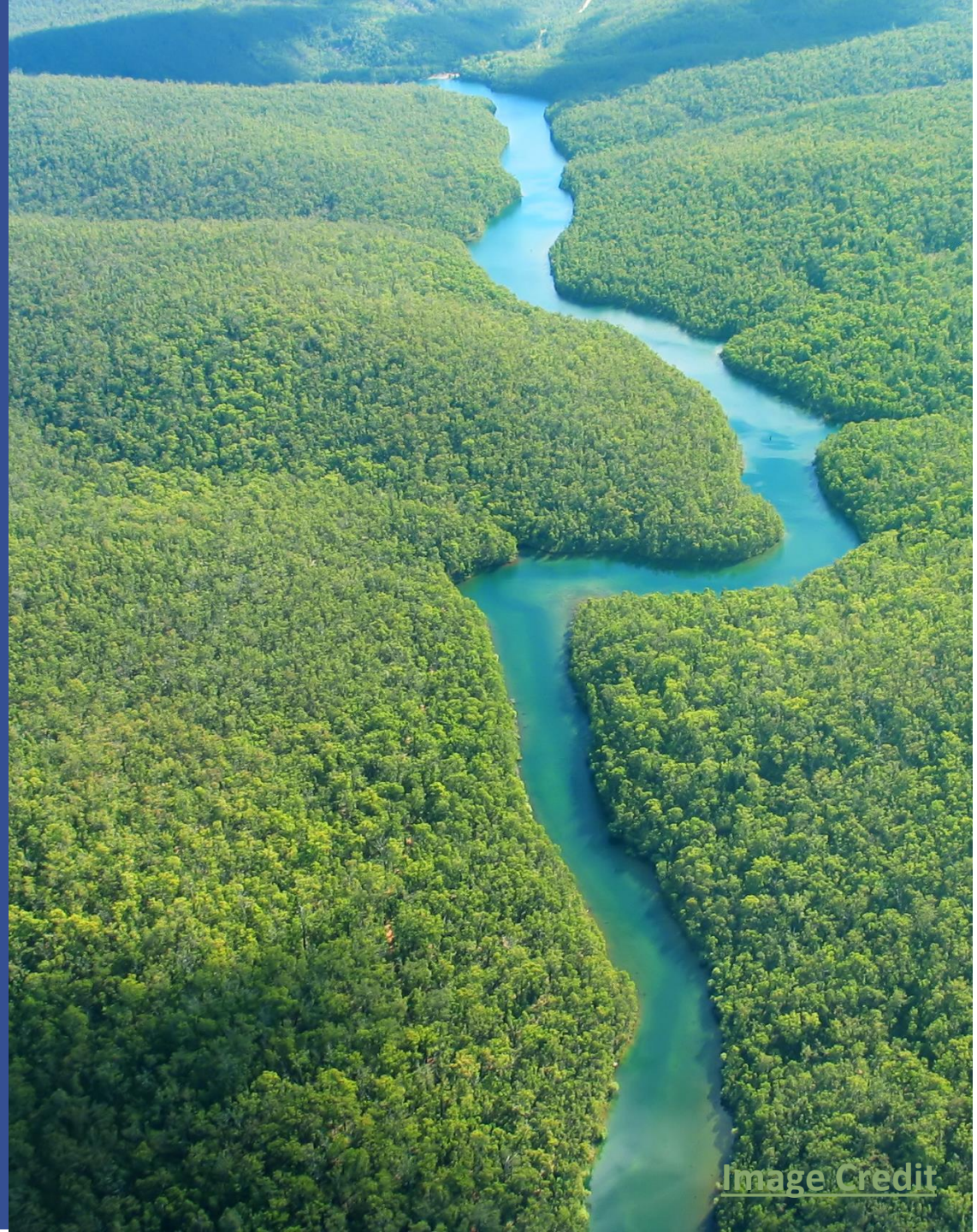


Image Credit

Biodiversity and Wildfires

Due to climate change bringing about more favourable conditions for wildfires, we cannot rely solely on Biodiversity to combat wildfires (check out horse forest firewatchers in our case studies) , but it is true that more biodiverse forest ecosystems do a better job of dealing with **natures tinder – Leaf litter**

In a healthy forest ecosystem, **each species plays a different role**: The trees (producers) provide shade and clear space on the forest floor for different species of plants to grow (producers). This is **maintained by herbivores** (primary consumers) who in turn are maintained by predators (secondary consumers). The grazers break down foliage and leaves before they become leaf litter. Importantly on the forest floor there is a **healthy sub-soil ecosystem consisting of insects, worms, fungi and bacteria (detritus feeders and decomposers) who convert leaf litter and other organic waste into nutrients for the producers above. When in equilibrium this cycle stops leaf litter from building up and thus forest fires.**

Biodiversity and Extreme Weather Events

We have already discussed how biodiverse ecosystems are more resilient to change, and so by promoting biodiversity in our communities and through responsible consumption of global goods we can ensure we prepare our planet best for the changes to come.

Remember from Section 2…

‘In a 2015 study, it was found that plots of land with just a few species present had their productivity reduced by 50% during climate extremes, whereas this effect was halved with a greater number of species. **This means that restoring Biodiversity will increase the resilience of our land as we experience changing weather events.’**

Image Credit

04

Actions for Change

We are the solution!

Biodiversity loss, like **climate change** is **anthropogenic**.

Anthropogenic = caused by **human action** and **human inaction.**

What we **do,** and what **we fail to do.**

We are in the middle of a **mass extinction event** caused by **recent** changes in **human behaviour.**

We can fix the problems by **changing our behaviour again.**

THINK GLOBAL, ACT LOCAL

PATRICK GEDDES

Are you able to make an impact on biodiversity loss?

Remember the **5 causes** of biodiversity loss…

01	Habitat Loss and Degradation
02	Invasive species and disease
03	Overexploitation (over-fishing, over-hunting)
04	Pollution
05	Climate change

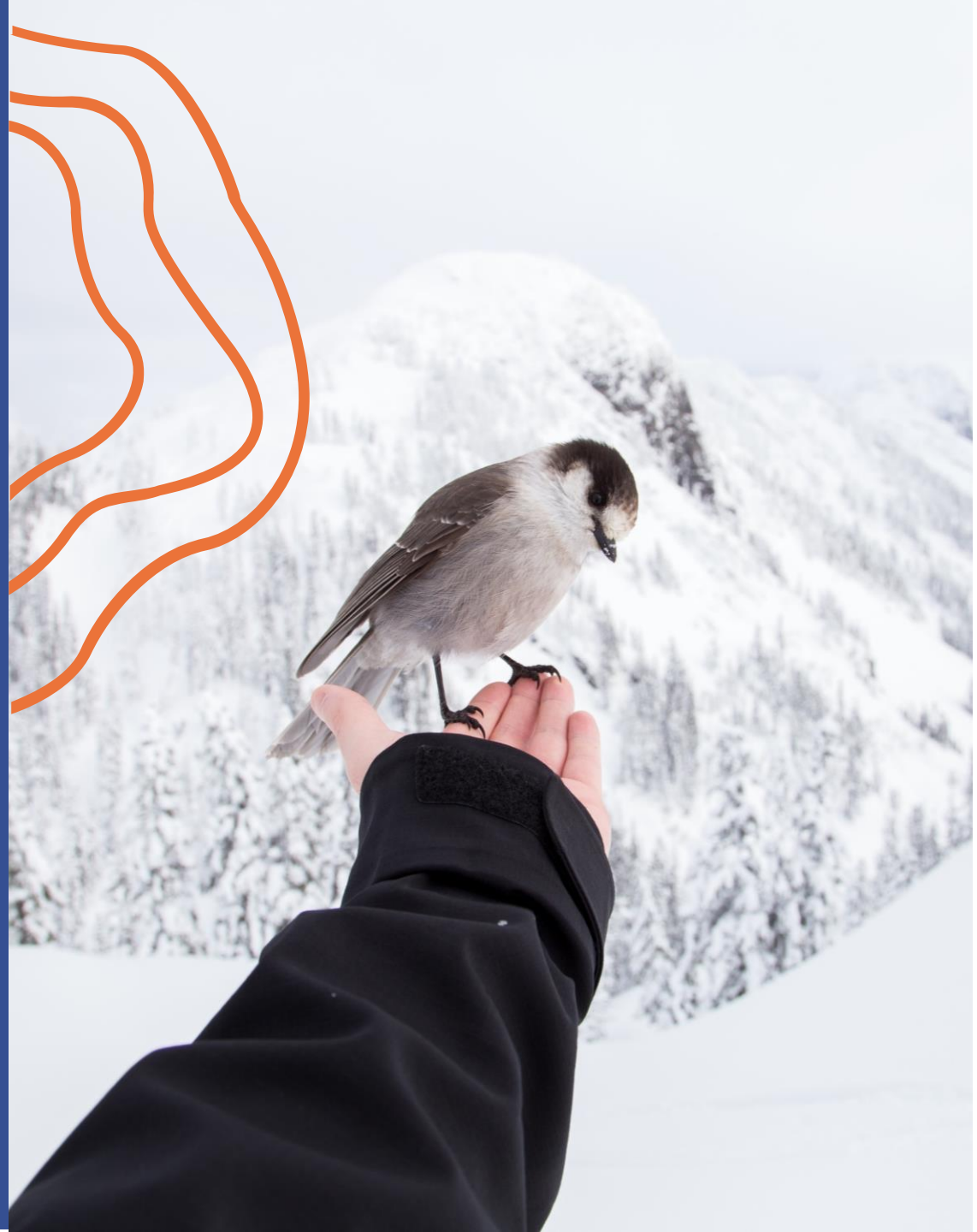
How can **you** tackle these in **your locality and community?**

Think Global, Act Local!

The best place to start is **where you are**

The best people to work with are **the ones you know**.

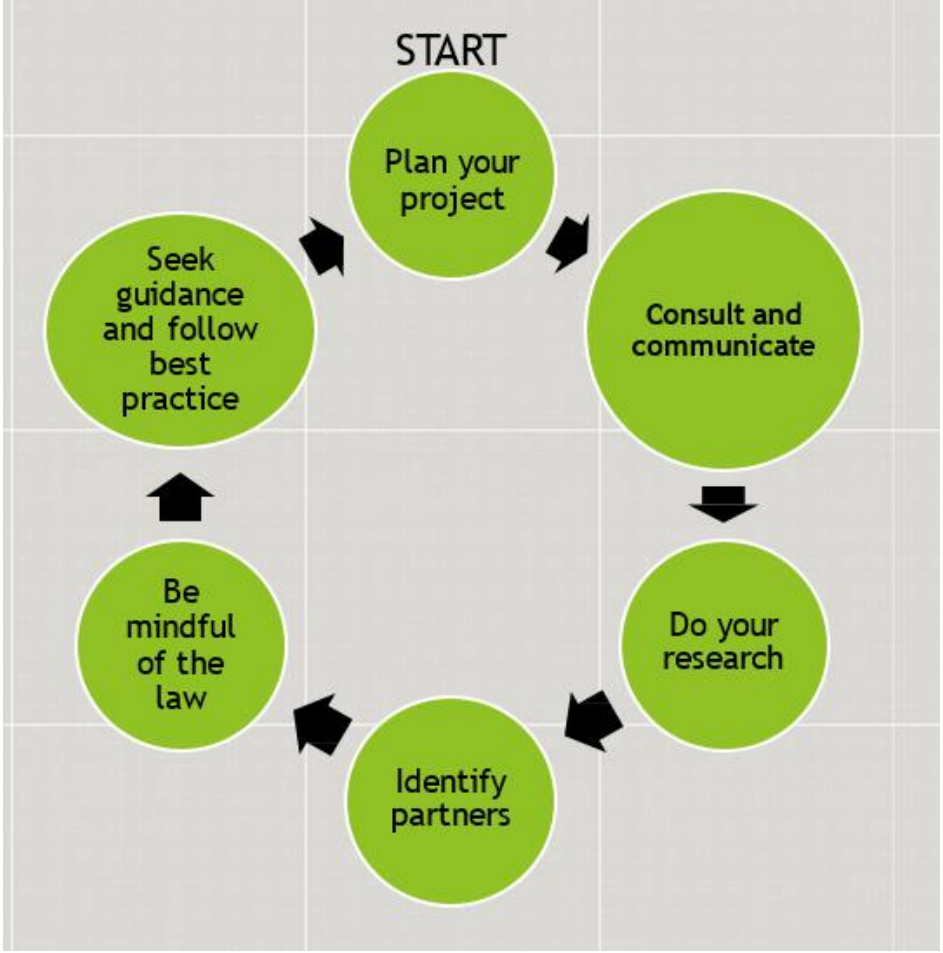
You can make the biggest impact by making changes in your **local communities**, **local industries**, and **local way of life**.



Designing Local Projects

Working with a group:

- **Multiplies your impact,**
- **Shares ideas,**
- **Inspires others to take action,**
- **Saves effort!**



HOW …

- Plan your project
- Consult & Communicate
- Do your research
- Identify partners
- Be mindful of the law
- Seek guidance and follow best practice

Raising awareness of Biodiversity

- Tell people about this great module you just completed!
- Share the statistics.
- Learn about your local habitats, raise awareness.
- Nature walks.
- Citizen science projects.
- Bird watching events.
- Seasonal Festivals – for harvests, etc.
- Wildlife photography competitions.
- Wildlife art competitions.

Local Action for Biodiversity

1. Biodiversity conservation and management

Find and protect semi-natural habitats, rare and native species.
Create Biodiversity Action Plans and Habitat Management plans.

2. Enhancing areas of low biodiversity value

Habitat creation – dig ponds, plant woodland.

3. Invasive species control

Learn how to identify and remove invasive species which threaten local biodiversity.

Local Action for Biodiversity

4. Wildlife facilitation

Provide food, nests, etc, for species with threatened ecosystems. E.g. bat boxes, bird feeders, bee banks.

5. Raising awareness

Community educational amenities and events, citizen science

6. Celebration and Enjoyment

Trails, biodiversity parks, guided walks! Fun is a strong motivator.

Community biodiversity action: Irish fleabane *Inula salicina*

The shores of Lough Derg (Co. Tipperary) have the last population of Irish fleabane in the country.

Terryglass Community Project to establish new populations.

National Botanic Gardens grow the plant - Plants transplanted.

Community monitor the plant.

Sponsored by the Heritage Council.

Local Learning Communities

Protecting Biodiversity in Road Verges and Hedgerows

You can help by doing less! – Less cutting and less spraying.

There may be local and regional laws and campaigns to protect biodiversity in hedgerows and verges.

Ireland has outlawed the cutting, burning, or other destruction of hedgerows during the main bird nesting season – but illegal cutting continues.

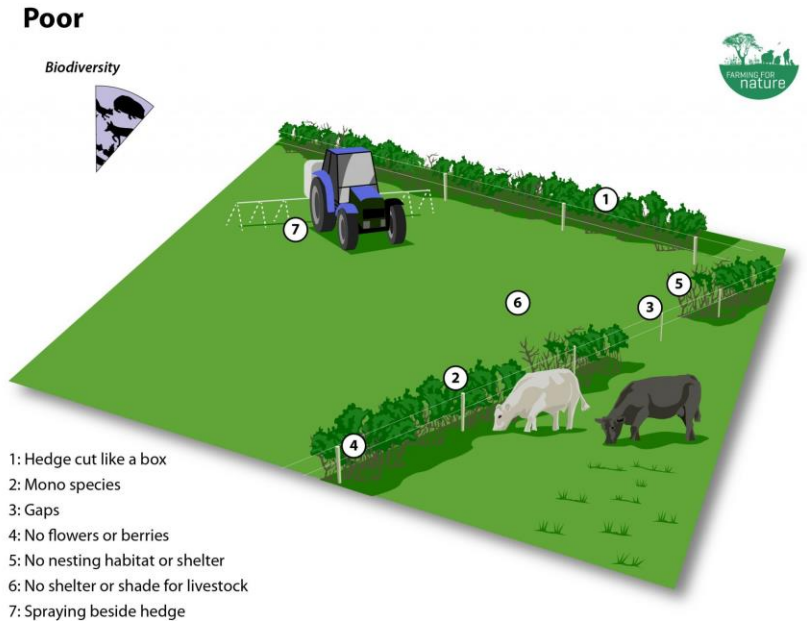
Talk to local landowners and councils about the importance of protecting these habitats.

Hedgerow Management

Farming for Nature has some excellent resources for farmers interested in protecting the biodiversity on their land.

These slides share their guidance for maintaining hedgerows for biodiversity!

More information available on their website: https://www.farmingfornature.ie/your-farm/resources/best-practice-guides/hedgerow-management/

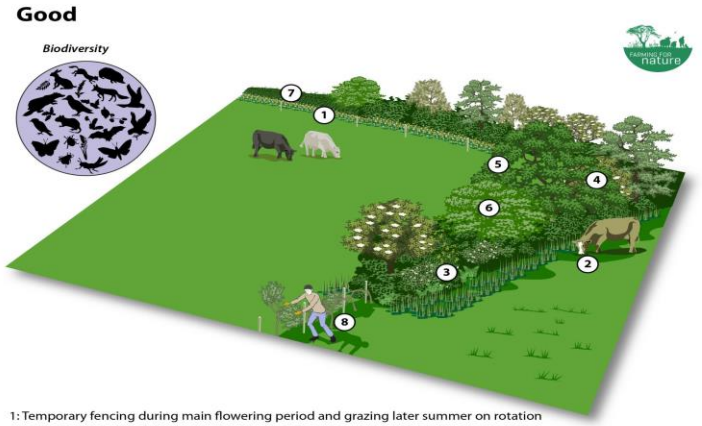


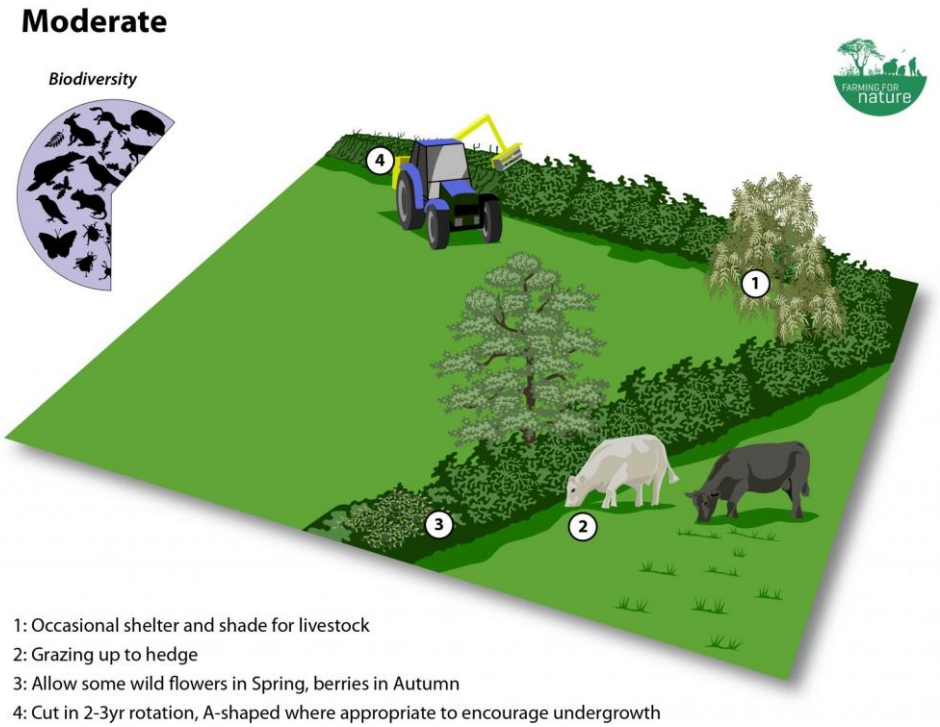
Example of poor biodiversity:

1. Hedge cut like a box
2. Mono species
3. Gaps
4. No Flowers or berries
5. No nesting habitat or shelter
6. No Shelter or shade for the livestock
7. Spraying beside hedge

Example of good biodiversity

1. Temporary fencing during main flowering period and grazing later summer on rotation.
2. When hedgerow is fully mature, allow cattle to graze to keep track encroaching scrub
3. Flowers in Spring, berries in Autumn
4. Ample shade and shelter for livestock
5. Allow to grow up and out
6. Good diversity of tree species
7. Trimmed back in sections only over an extended period
8. Laying hedge





Example of moderate biodiversity

1. Occasional shelter and shade for livestock
2. Grazing up to hedge
3. Allow some wild flowers in spring, berries in autumn
4. Cut in 2-3 year rotations. A - shaped where appropriate to encourage undergrowth.

‘Citizen Science is research carried out by members of the public who volunteer to collect scientific data’

Getting Started with Citizen Science

Look in your **locality**, talk to your **community**.

Decide what local **species or habitats** you would like to record.

Find out what **support** or **guidance** you can access. Many organisations support citizen scientists with training and resources!

Get organised – choose your goals, your roles, choose your deadlines and methods.

Learn how to correctly take a record and share your data.

Join an NGO or established recording group.

Citizen Science in Ireland

National Biodiversity Data Centre - Log your pollinator actions, Bee and butterfly monitoring schemes

Irish Wildlife Trust - Common Lizard survey and smooth newt survey

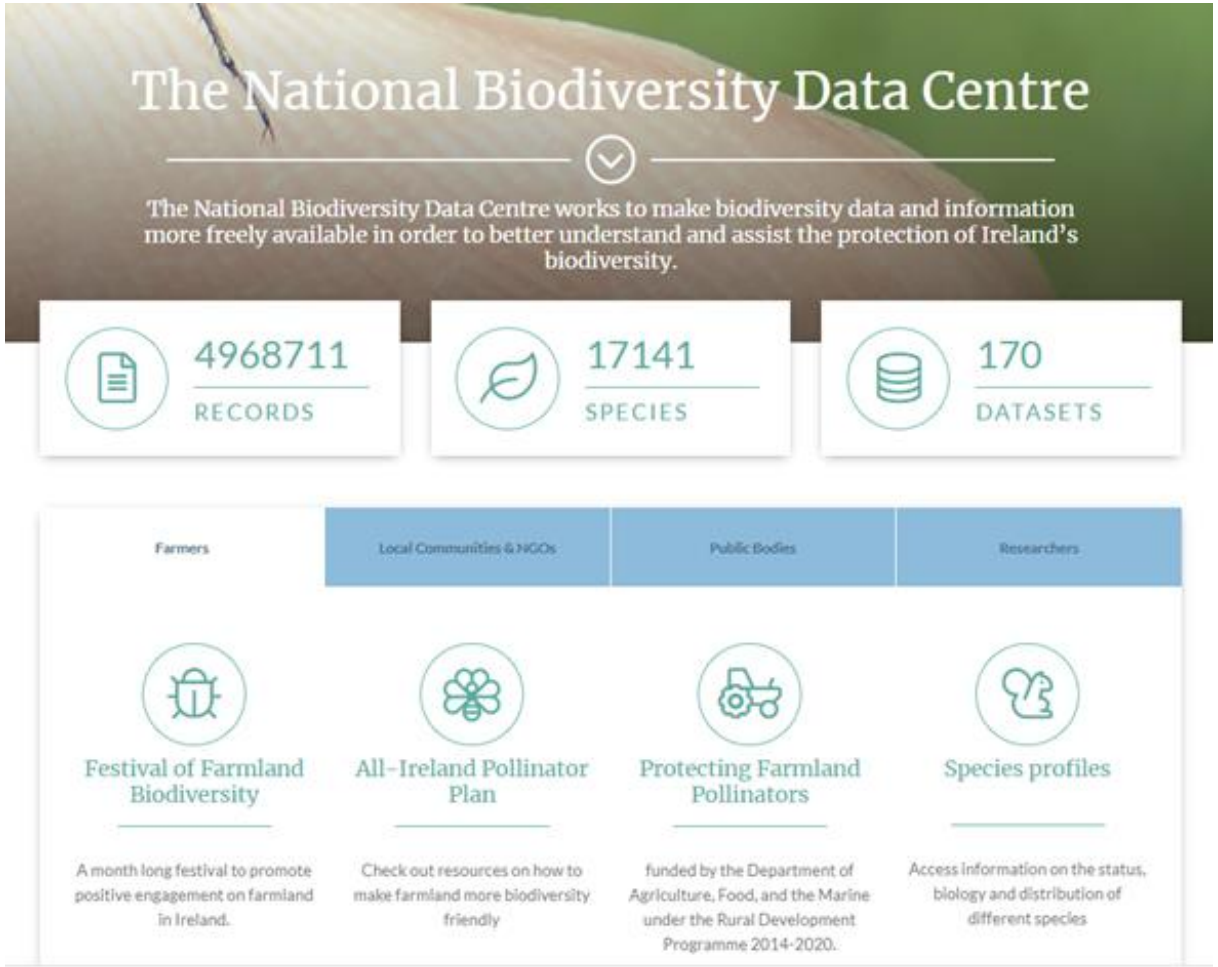
Birdwatch Ireland - Garden Bird Survey, Countryside Bird Survey, River Bird Survey

BSBI Plant recording

Bat Conservation Ireland - Daubenton's bat survey

National Biodiversity Data Centre

www.biodiversityireland.ie



Organisations providing support and guidance, Ireland

County Council:

- Heritage/Biodiversity Officer
- Community Water Officer
- NPWS Conservation Ranger

NBDC – Pollinator Plan Resources

Resources from NGOs

- Birdwatch Ireland
- Bat Conservation Ireland
- Irish Wildlife Trust

Heritage Council Guidance

- Conserving hedgerows
- Caring for Graveyards
- Birds, Bats and Buildings
- Ideas for Interpreting Heritage Sites

Local Learning Communities


“I have been inspired by the work of communities that are indeed far-seeing, […]It is crucial to our democracy that groups can and do act where they perceive a threat to the common good.”
- Michael D. Higgins, President of Ireland

05

Summary & Review ☺

Can you remember the answers to these questions?

- What is Biodiversity? What are the three kinds?
- What are the 5 main threats to Biodiversity?
- What are ecosystem services?
- How many species will go extinct in the next few years if we do nothing?
- What are the benefits of acting locally?
- What are the benefits of acting as part of a group?

References & Sources

1. https://www.volunteer.ie
2. https://www.theguardian.com/global-development/2019/feb/21/worlds-food-supply-under-severe-threat-from-loss-of-biodiversity
3. https://www.theguardian.com/environment/2019/feb/10/plummeting-insect-numbers-threaten-collapse-of-nature
4. https://www.theguardian.com/environment/2018/dec/03/david-attenborough-collapse-civilisation-on-horizon-un-climate-summit.
5. https://sciencing.com/examples-genetic-diversity-16445.html
6. https://www.merriam-webster.com/dictionary/undersea
7. https://en.wikipedia.org/wiki/Natural_landscape.
8. https://mammothmemory.net/biology/organisms-and-their-environment/ecosystems-organisms-and-their-environment/food-chain.html.
9. https://www.google.com/search?client=safari&rls=en&q=Image+Credit%3A+XKCD+https%3A%2F%2Fxkcd.com%2F1338%2F&ie=UTF-8&oe=UTF8.
10. https://cunningwolfsociety.com
11. https://www.irishcentral.com/travel/travel-tips/what-visitors-to-ireland-should-know-about-midges
12. https://www.bbc.com/news/av/uk-scotland-61921623
13. https://www.equaltimes.org/the-guardians-of-the-andean-potato?lang=en#.YwY0Cy8w1lA.
14. https://www.va.gov/WHOLEHEALTH/circle-of-health/index.asp
15. https://www.behance.net/gallery/31975789/Conservation-The-6th-Mass-Extinction
16. https://www.irishtimes.com/news/environment/major-peatland-restoration-initiative-is-anything-but-bog-standard-1.4418408
17. https://en.wikipedia.org/wiki/Natural_landscape.
18. https://www.horizontherapeutics.com/.
19. https://en.wikipedia.org/wiki/Shrublan

References & Sources

1. https://en.wikipedia.org/wiki/Bougainvillea.
2. https://www.kathimerini.gr/k/travel/1036262/i-santorini-anikei-kai-sta-psaria-tis/
3. https://en.wikipedia.org/wiki/Natural_landscape.
4. https://www.gmfus.org/news/acid-rain-lessons-germanys-black-forest.
5. https://www.oneearth.org/ecoregions/iberian-sclerophyllous-and-semi-deciduous-forests/
6. https://www.gettyimages.ie/photos/ibiza-island.
7. https://www.explore-share.com/trip/rila-mountains-bulgaria-3-day-guided-hike/
8. https://en.wikipedia.org/wiki/Marbled_polecat.
9. https://choice.npr.org/index.html?origin=https://www.npr.org/2019/05/06/720654249/1-million-animal-and-plant-species-face-extinction-risk-u-n-report-says
10. https://www.google.com/searchbyimage/upload.
11. https://www.va.gov/WHOLEHEALTH/circle-of-health/index.asp
12. https://www.behance.net/gallery/31975789/Conservation-The-6th-Mass-Extinction
13. https://www.irishtimes.com/news/environment/major-peatland-restoration-initiative-is-anything-but-bog-standard-1.4418408
14. https://en.wikipedia.org/wiki/Natural_landscape.
15. https://www.horizontherapeutics.com/.
16. https://en.wikipedia.org/wiki/Shrublan
17. https://en.wikipedia.org/wiki/Bougainvillea.
18. https://www.kathimerini.gr/k/travel/1036262/i-santorini-anikei-kai-sta-psaria-tis/
19. https://en.wikipedia.org/wiki/Natural_landscape.
20. https://www.gmfus.org/news/acid-rain-lessons-germanys-black-forest.
21. https://www.oneearth.org/ecoregions/iberian-sclerophyllous-and-semi-deciduous-forests/
22. https://www.gettyimages.ie/photos/ibiza-island.
23. https://www.explore-share.com/trip/rila-mountains-bulgaria-3-day-guided-hike/
24. https://en.wikipedia.org/wiki/Marbled_polecat.
25. https://choice.npr.org/index.html?origin=https://www.npr.org/2019/05/06/720654249/1-million-animal-and-plant-species-face-extinction-risk-u-n-report-says
26. https://www.google.com/searchbyimage/upload.

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local learning communities

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THANK YOU

Any questions?

ClimateChampions.how