SUPPLY CHAIN SUSTAINABILITY SCHOOL

Welcome & introductions

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Biodiversity Training Deck

Ross Primmer

Biodiversity Training Deck Agenda

In today's session we are going to cover:

- **What** is Biodiversity?
- **Why** should you care about biodiversity?
- Biodiversity and **Infrastructure**
- **Natural Capital** & **Ecosystem Services**
- **How** Can You Help?

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What Is Biodiversity?

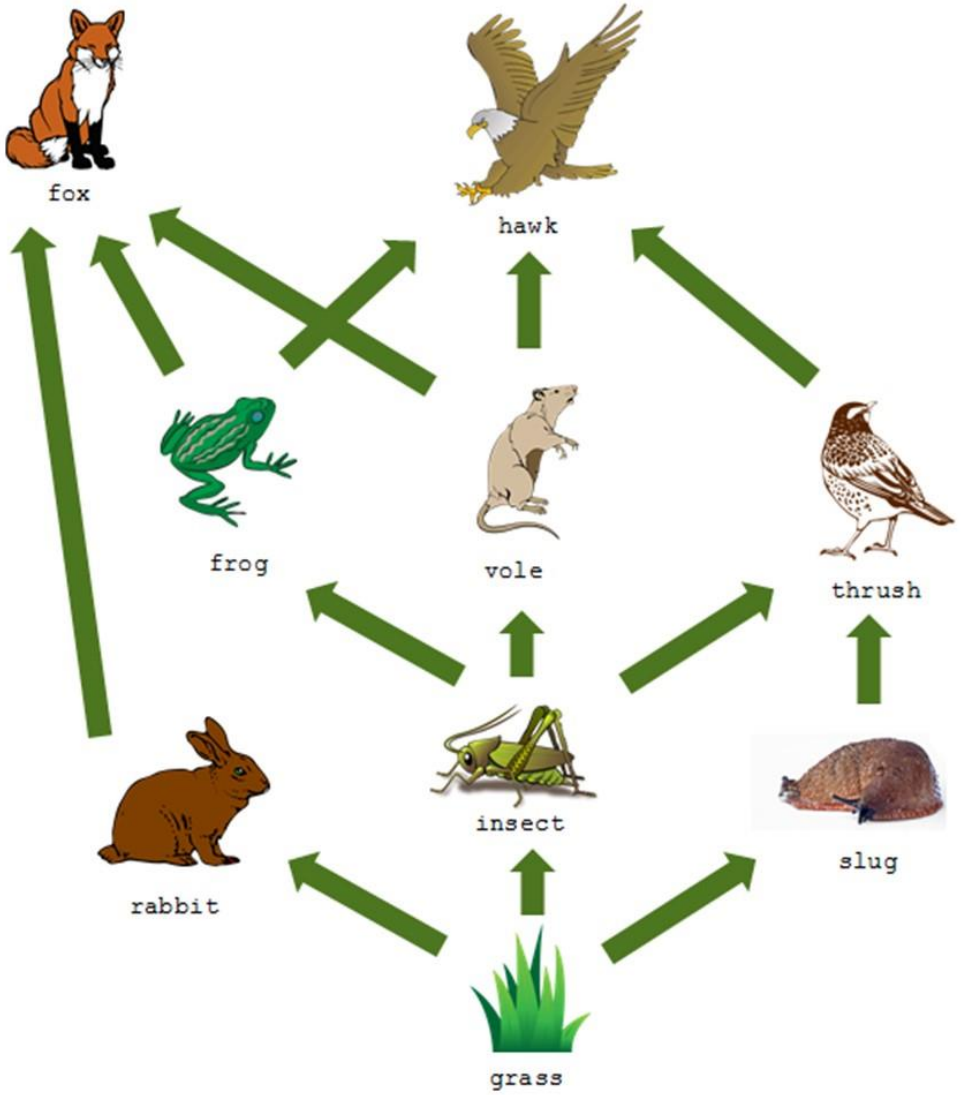
Menti Word Cloud:

What does biodiversity mean to you?

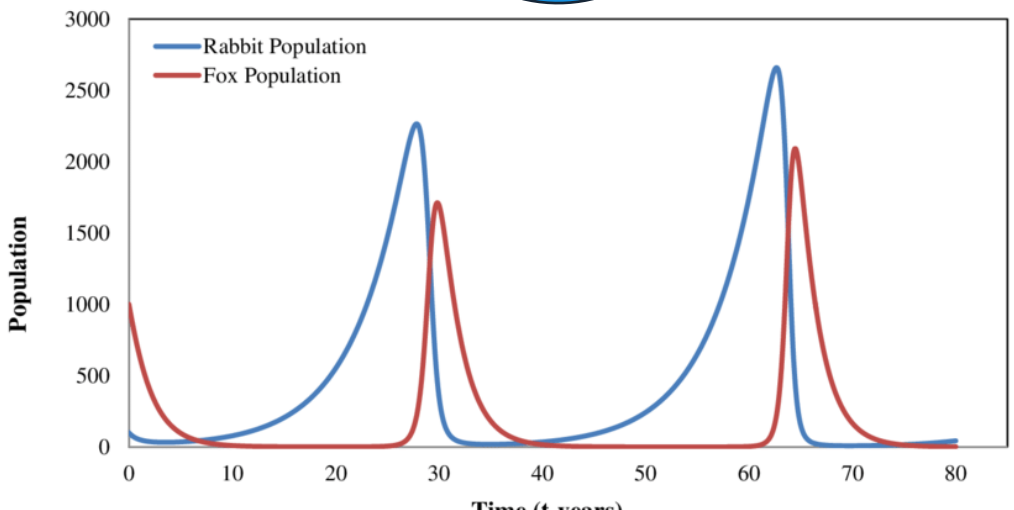
Biodiversity – First Principles

- A **species** is a type of plant or animal – *e.g. a badger.*
- A **habitat** is the environment in which a particular animal lives – *e.g. woodland on a potential development site where a badger lives.*
- An **ecosystem** is the system in which a community of groups or animals live and interact with each other - e.g. *deciduous woodland, which badgers are part of.*
- **Biodiversity** is the term which describes the number of and diversity within species, or variety of life in an ecosystem – e*.g. deciduous woodland is a highly biodiverse ecosystem.*

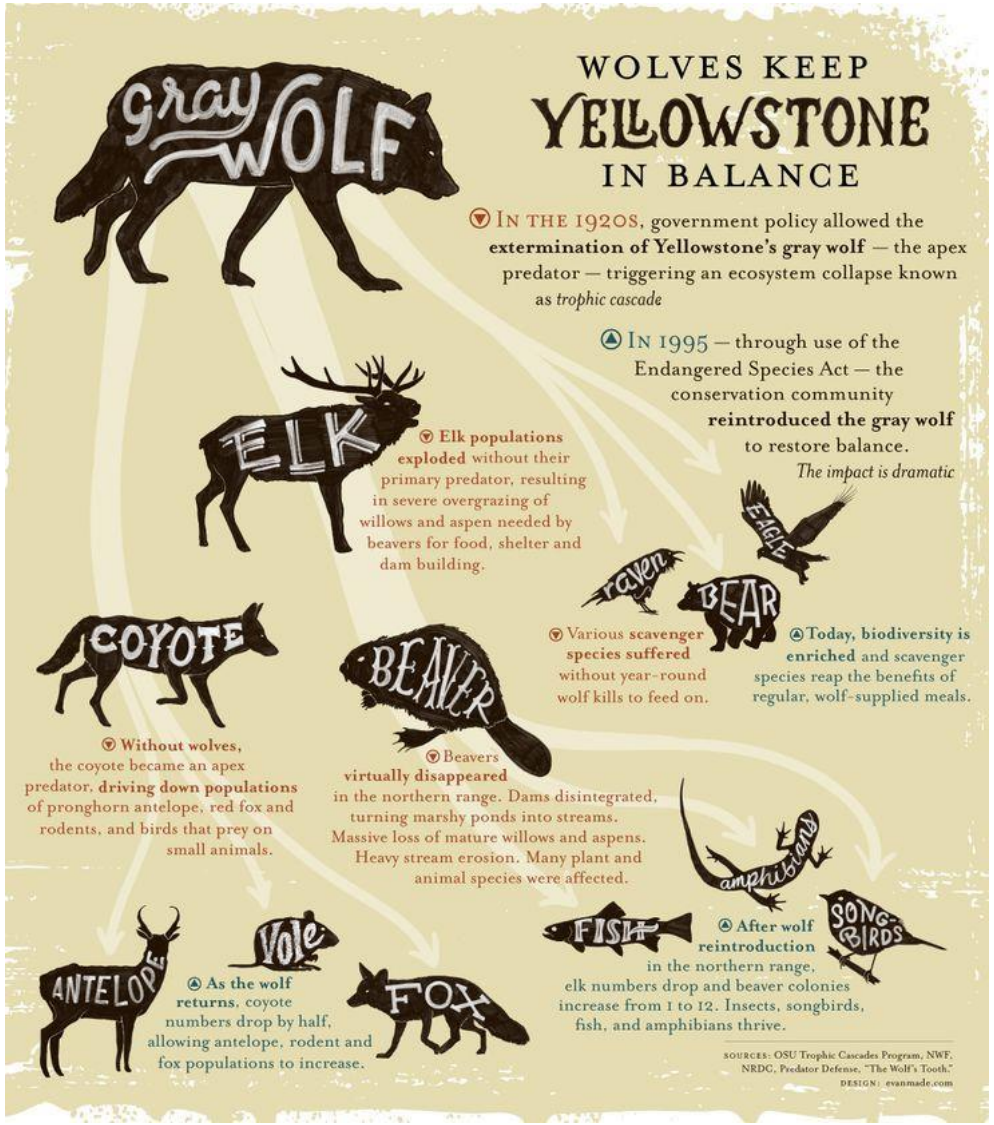
Relationships between species – the basics



What would happen if one of the species in this basic food web was removed?



The interconnectedness of everything

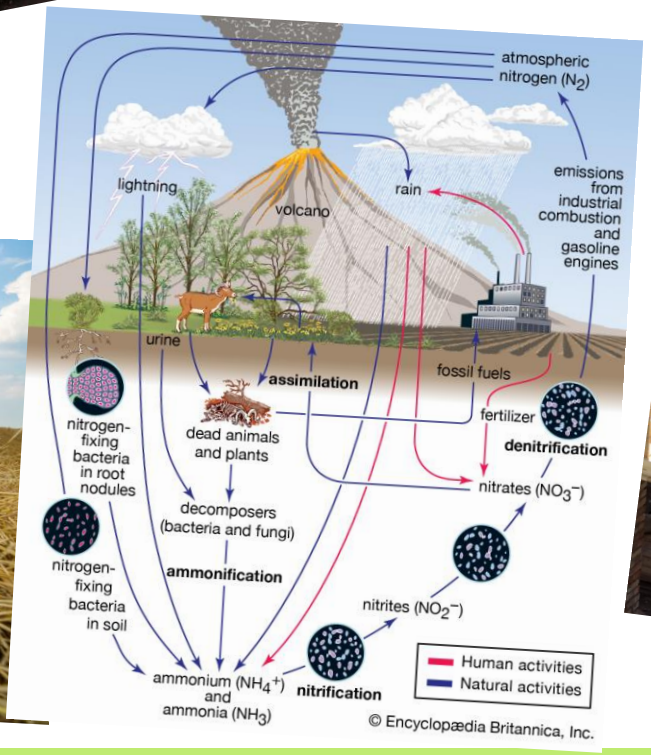


Beavers can prevent flooding (amongst other things!)

Wolves benefit Yellowstone National Park

The interconnectedness of everything

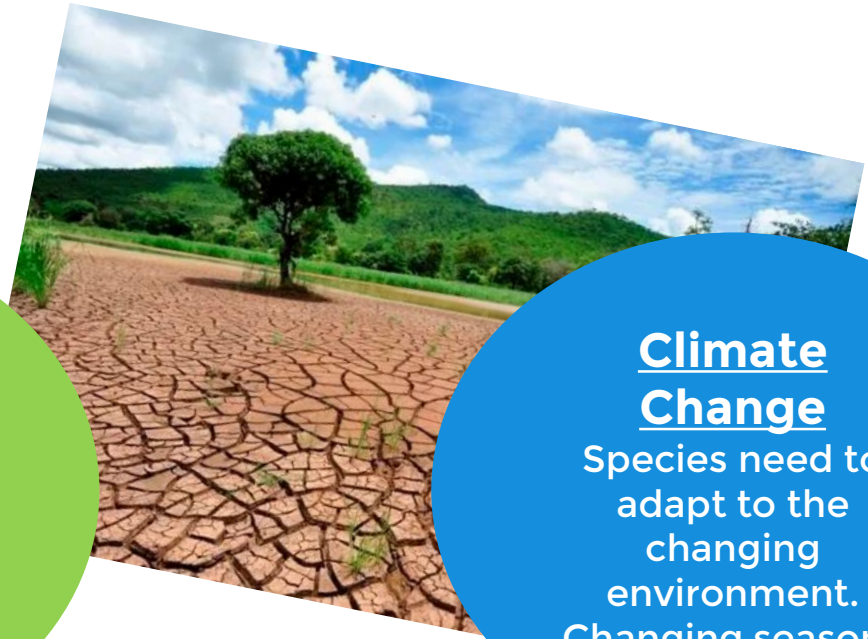
Humans are connected to!!



What is Happening (WWF Living Planet Report)

Changes in land and sea use
resulting in habitat loss and degradation

Species over-exploitation
through direct hunting and loss of non target species



Climate Change
Species need to adapt to the changing environment. Changing seasons

Invasive species and disease
Which compete with native species for space and resources

Pollution
Making an environment unsuitable for survival, food ability or biology

What can you see in this picture?

50% of supermarket products have palm oil in them

Menti: By how much did a recent WWF report state that biodiversity has declined 1970-2014

50%

25%

60%

42%

Menti Code:
7651 0292

By how much did a recent WWF report state that biodiversity has declined 1970-2014

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How much has insect biomass declined in Germany between 1989-2013

74%

80%

25%

42%

Menti Code:
7651 0292

How much has insect biomass declined in Germany between 1989-2013

74%

80%

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42%

Bees on trucks in the USA

Hand pollination in China

What is Biodiversity: Section recap

- Biodiversity is the term used to describe living things
- There are many complex and sometimes unexpected relationships between species
- Globally biodiversity is in decline and a number of human activities are contributing to this

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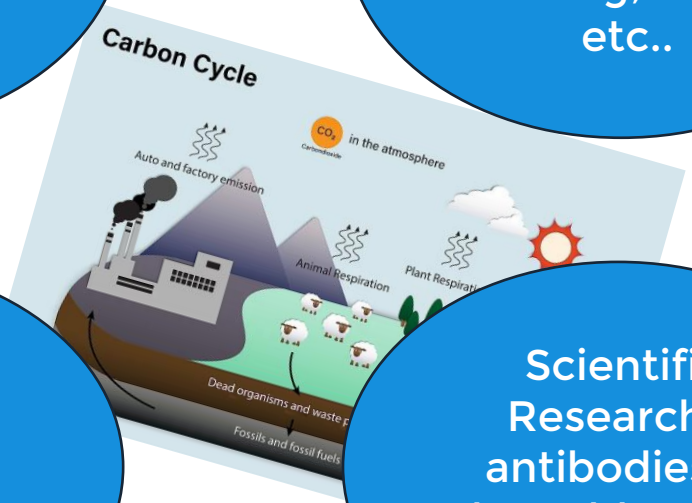
Why should you care?

Why is Biodiversity Important?

The food we eat, the clothes we wear etc..

Maintaining the earth's life support systems

Protection from extreme weather – flooding, storms etc..

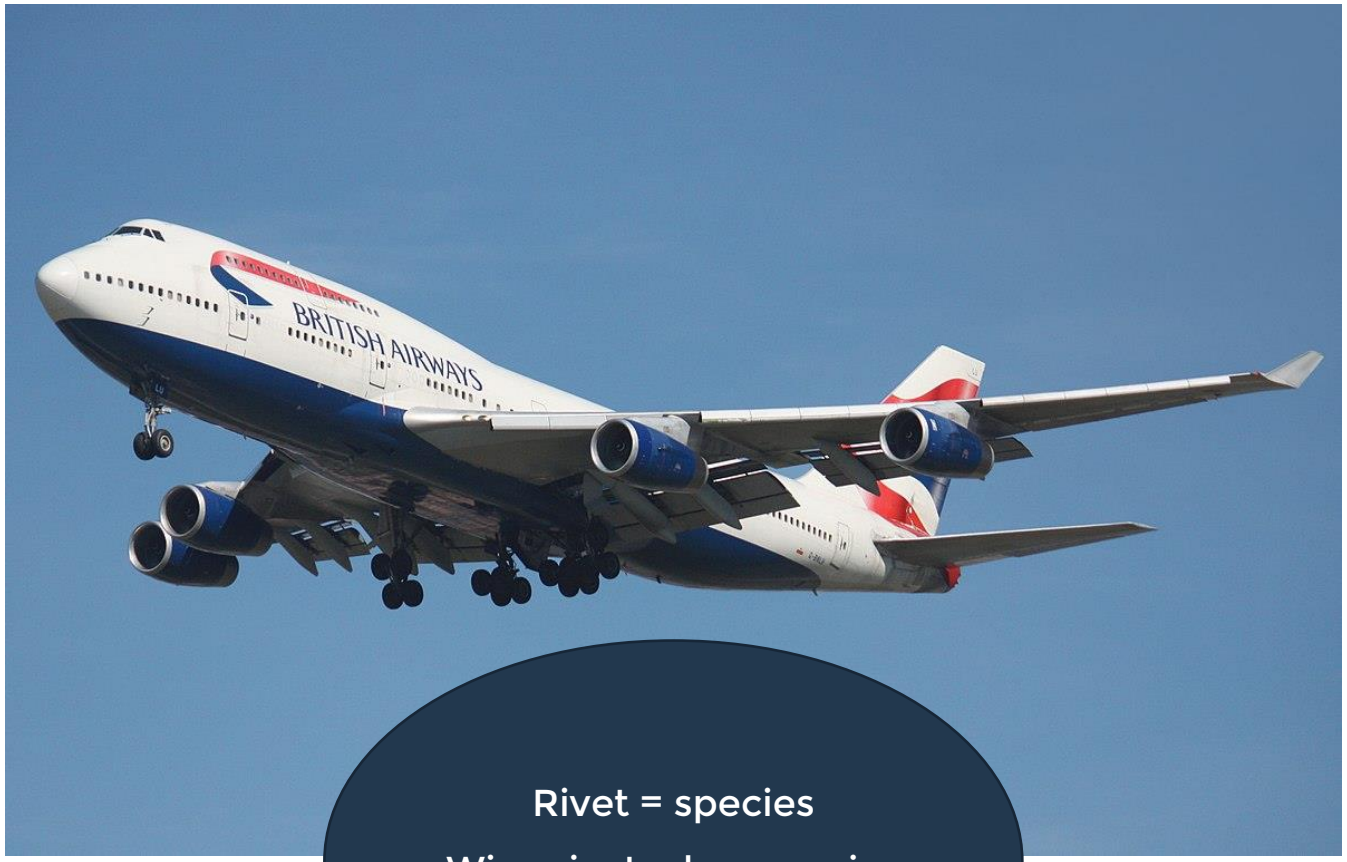


Absorbing CO2

Our mental health

Scientific Research – antibodies in Llama blood can neutralise C-19

The Rivet Hypothesis



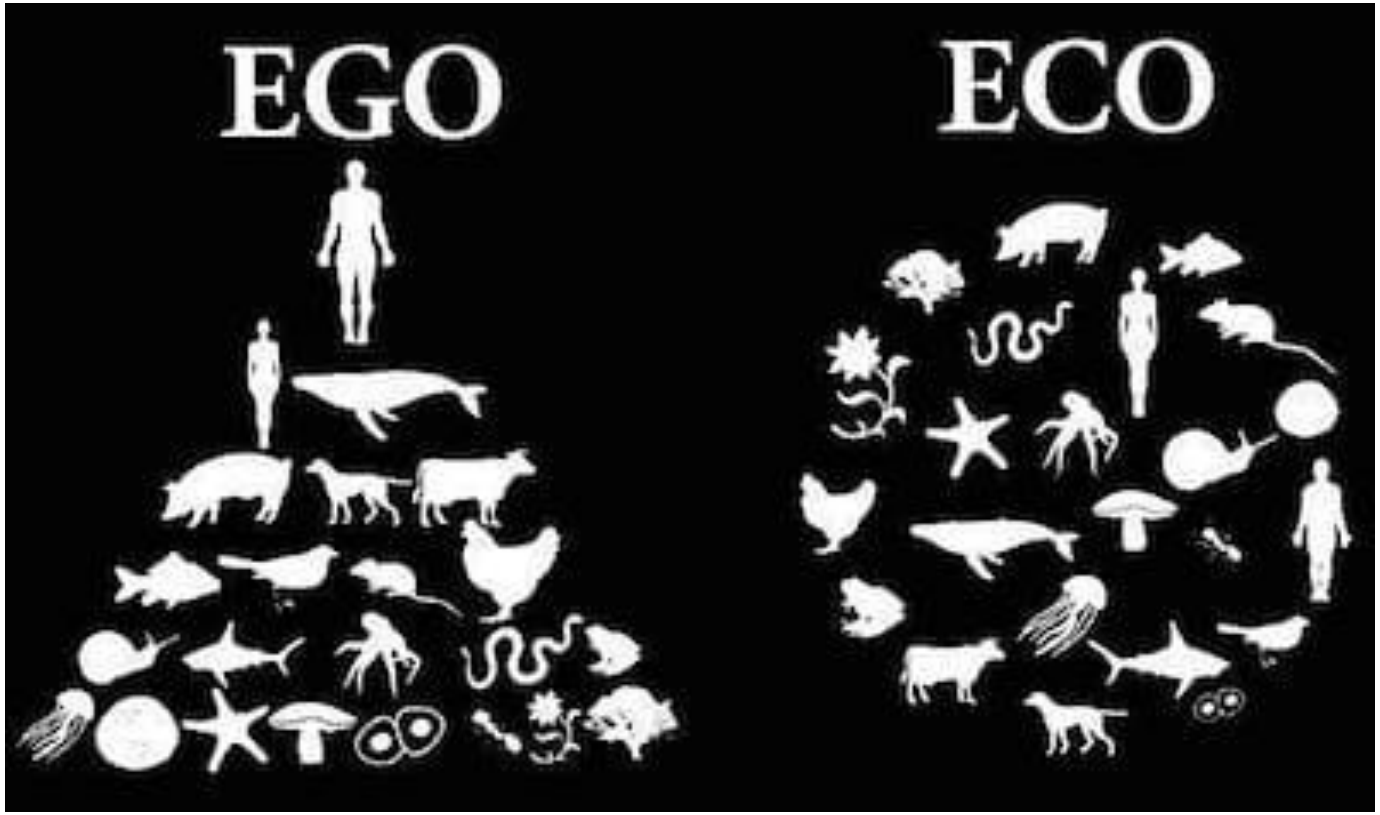
Rivet = species

Wing rivet = key species

Flight = ecosystem

- Aeroplanes have millions of rivets (like we have species on earth)
- If you were to pop one or two rivets out then everything would be fine
- Some rivets are more important than others (key species)
- How many rivets can you take out……?

Why is Biodiversity Important?



There are a number of messages in this graphic

Fundamentally, humans are as much part of nature as any other species.

Negative impacts on biodiversity affect the earth's ability to sustain life and will ultimately impact us.

Why should you care: Section recap

- Humans are biodiversity!
- We rely on biodiversity for a wide range of goods and services
- Biodiversity is key to the earth's ability to sustain life!

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Biodiversity & Infrastructure

Biodiversity in Infrastructure

Construction workers have a fantastic opportunity to drive biodiversity benefits on projects

The Golden Rule is to think about biodiversity as soon as possible on any project.

Thinking about biodiversity early will make it easier to drive positive project outcomes.

Impacts

Some scenarios where National Highways may have an Impact…

- **Design** – consider biodiversity as early as possible!
  - Site selection
  - Habitat fragmentation
  - Nature based solutions?
- **Construction**
  - Site works – e.g. deveg, groundworks
  - Materials
  - Use of plant
- **Operation**
  - Use of asset
  - Planned maintenance

Challenges & Opportunities

Drainage

Environmental Degradation

Direct mortality

Disturbance

Air Quality & Climate

Habitat Fragmentation

Direct loss – construction and resource use

Green Bridge – Banff National Park, Canada

Dormouse bridge - Japan

Biodiversity & Infrastructure

Protected Species

- **Protected Species**: Statutory requirements for the protection of certain species and habitats. Some of the most common include:
    - Nesting birds
    - Great Crested Newts
    - Bats
    - Reptiles
    - Badgers
    - Specific Trees through TPOs (Tree Protection Orders)

Protected species are identified during ecology surveys but it is always important to remain vigilant. ***If you are ever in doubt, ask!***

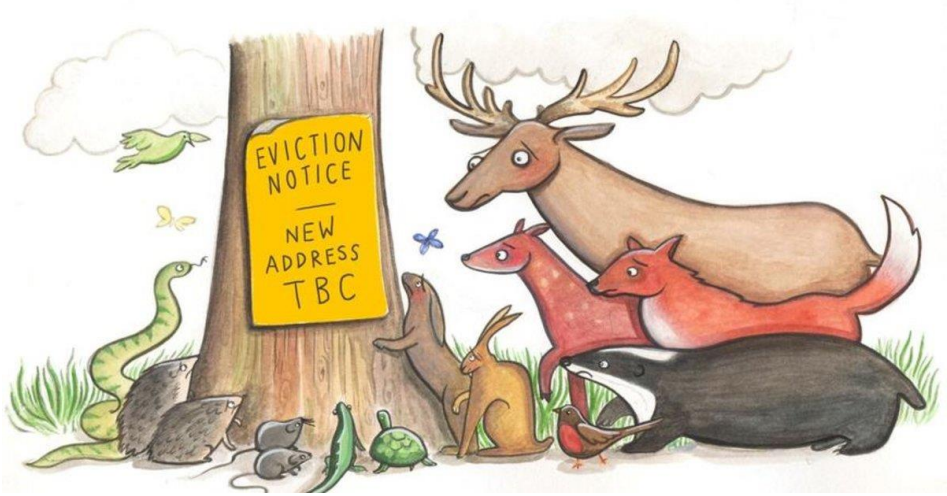
Biodiversity & Infrastructure

Invasive Species

- **Invasive species:** some species cause problems in the natural environment. These invasive species are not native to the UK and can cause problems in the natural environment. Common examples include:
    - Rhododendron
    - Japanese Knotweed
    - Himalayan Balsam
    - Giant Hogweed
    - Grey Squirrel

Invasive species which represent a project risk will be identified during ecology surveys. **Invasive Species Management Plans** should be developed to mitigate potential negative impacts and spread.

The Biodiversity Mitigation Hierarchy



Least Preferable

OFFSET impacts & losses

RESTORE any habitats that are destroyed

MINIMISE any impacts you will have, e.g. during de-vegetation

AVOID direct impacts to species & habitats

Most Preferable

Net Gain – First Principles

- Works at ‘habitat’ level
- Understand what your biodiversity units baseline is using the Defra biodiversity metric 3.0
- ‘Irreplaceable’ Habitat exempt from BNG requirements.
- Does not replace any existing protections
- Prioritise your activities using the biodiversity mitigation hierarchy
- Make a plan and implement activities/mitigation measures to achieve biodiversity Net Gain.

Biodiversity value (+ve)
(-ve)
Biodiversity impact
No Net Loss
Net Gain

Offset
Remediation
Minimisation
Avoidance
Least preferred
most preferred

Activity – what impacts does National Highways have and how can they be reduced?

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Natural Capital and Ecosystem Services

Natural Capital

Natural Capital is the world's stock of natural resources, which might be utilised for human needs it includes:

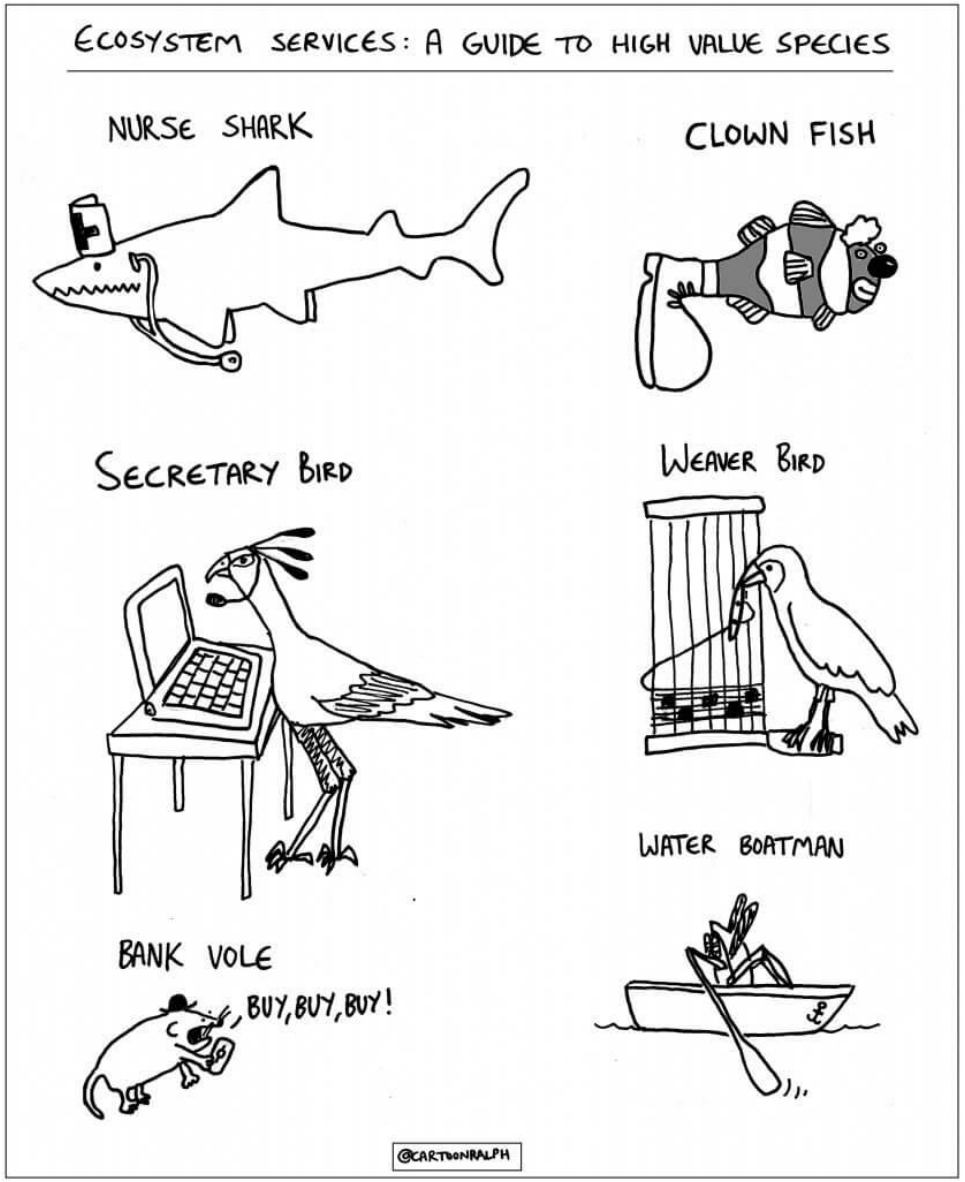
- **Resources** - renewable and non-renewable materials. This includes everything from clean air to forests to fossil fuels.
- **Sinks** - that absorb, neutralise or recycle wastes.

In 2019 the ONS estimated that the UK's Natural Capital we can currently value equates to £1.2 trillion

Ecosystem Services

Ecosystem Services are the free! services provided by ecosystems that make human life both possible and worth living. They can be categorised as:

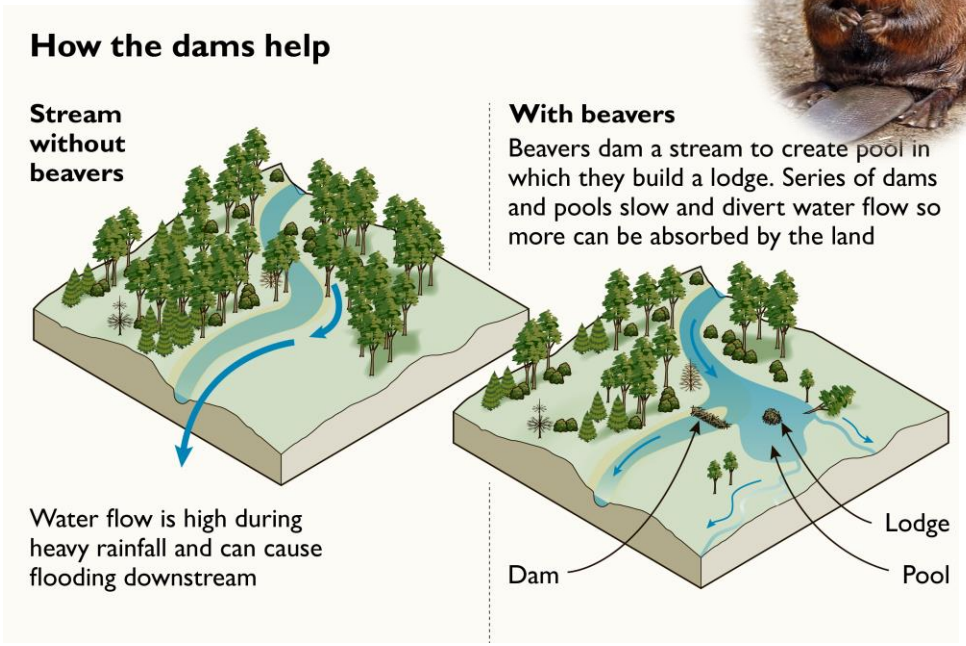
- **Provisioning:** products obtained from ecosystems, including food, raw materials and energy.
- **Regulating:** benefits from the regulation of ecosystem processes, including purification of air/water, climate regulation and flood control.
- **Supporting:** services necessary to support all other ecosystem services and function. Include nutrient cycling, soil formation etc..
- **Cultural:** non material benefits people obtain from ecosystems – such as recreation, health & wellbeing



Ecosystem Services

Example Ecosystem Services:

- **Pollination** – essential for agriculture
- **Photosynthesis** – absorbing CO2 from the atmosphere
- **Water attenuation** – reducing flooding and protecting homes and business'
- **Wellbeing** – the NHS is researching "green social prescriptions"



Globally, Ecosystem services are conservatively estimated to be worth $33trillion - 1.8 times global GNP

Why are Natural Capital & Ecosystem Services Useful?

It enables governments to account for nature's role in the economy and human well-being.

For businesses, it informs efficiency, sustainability, and managing risks in their supply chains

A Natural Capital and Ecosystem Services approach can be used to place a financial value on nature

This can be used in decision making

It is an interesting concept – should nature be commodified?

Should we prioritise for human need or traditional biodiversity based conservation?

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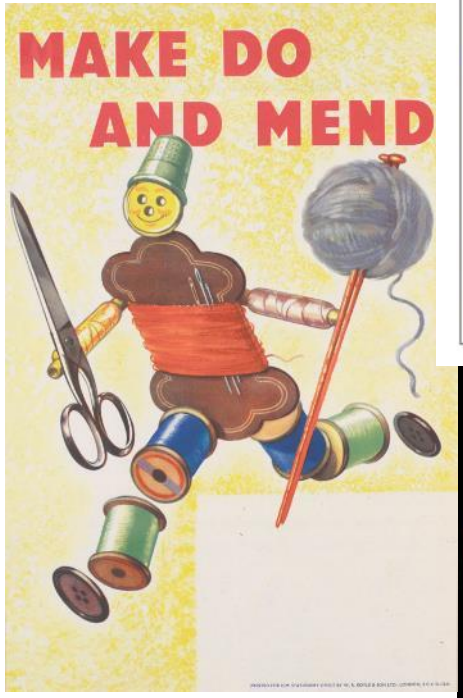
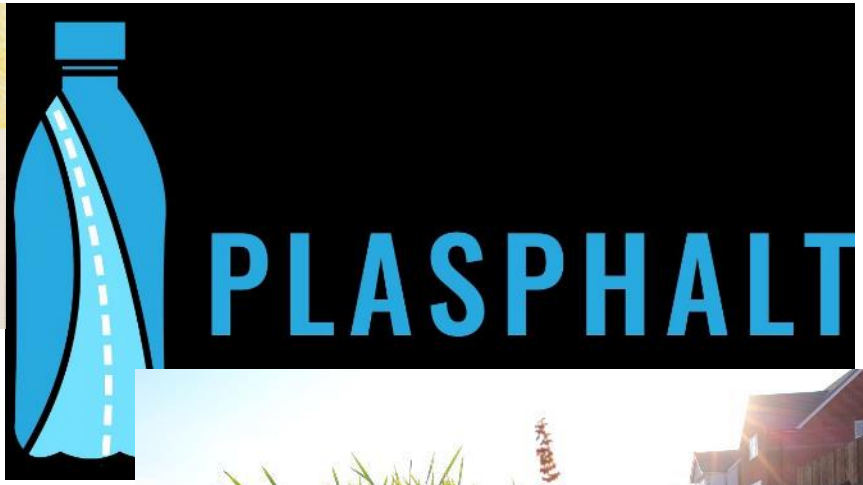
How can you help?

How can you help Biodiversity?

FSC

PALM OIL FREE





How can you help Biodiversity?

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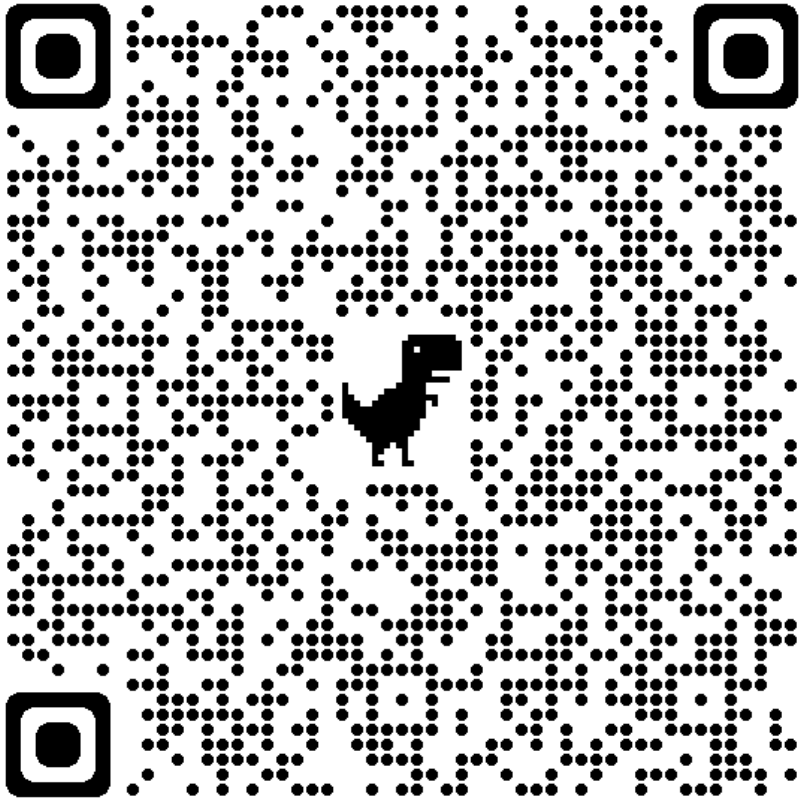
Feedback Form



Thank you

Any questions?

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