The ecological breakdown: the *good*, the *bad* and the *ugly*

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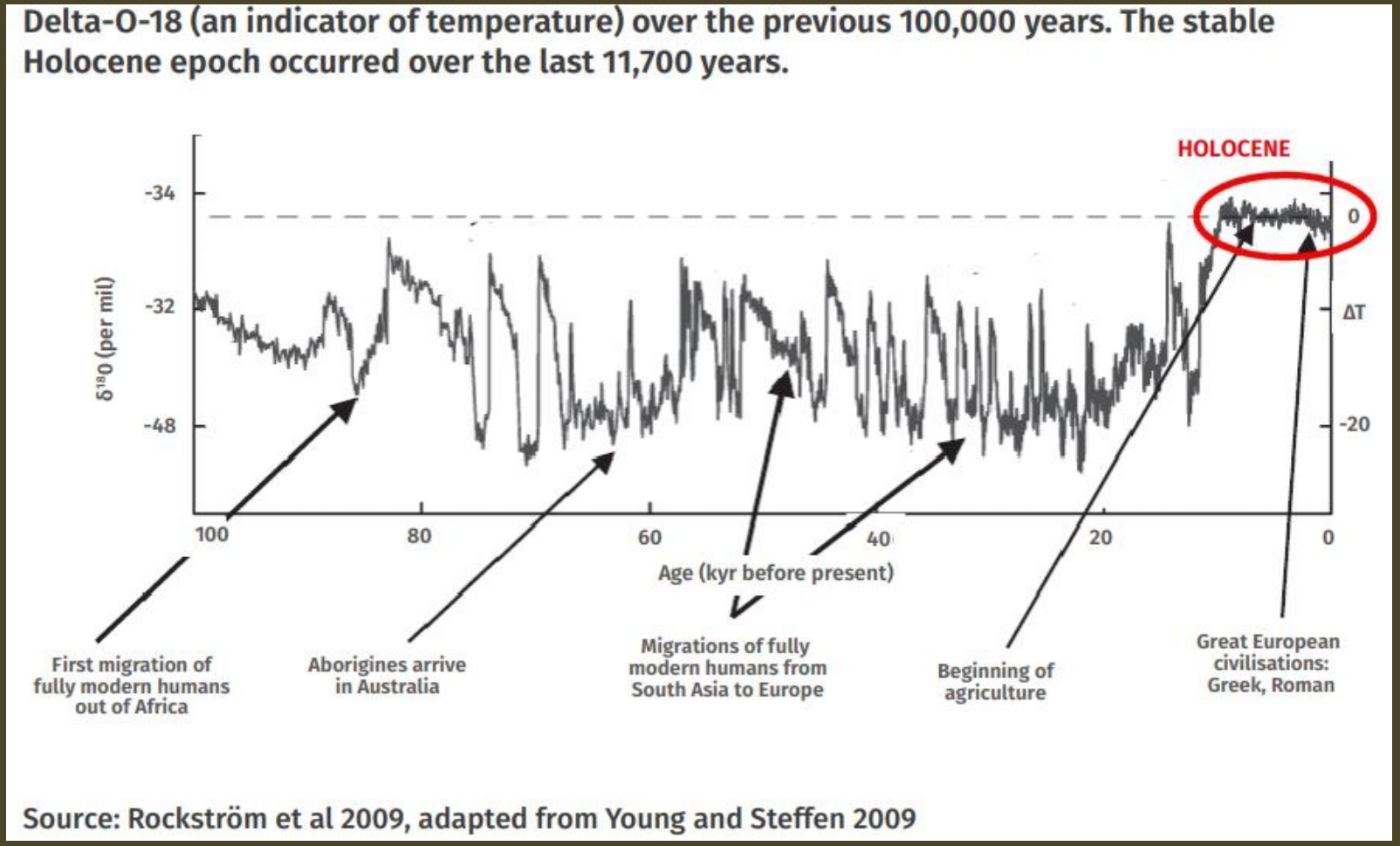
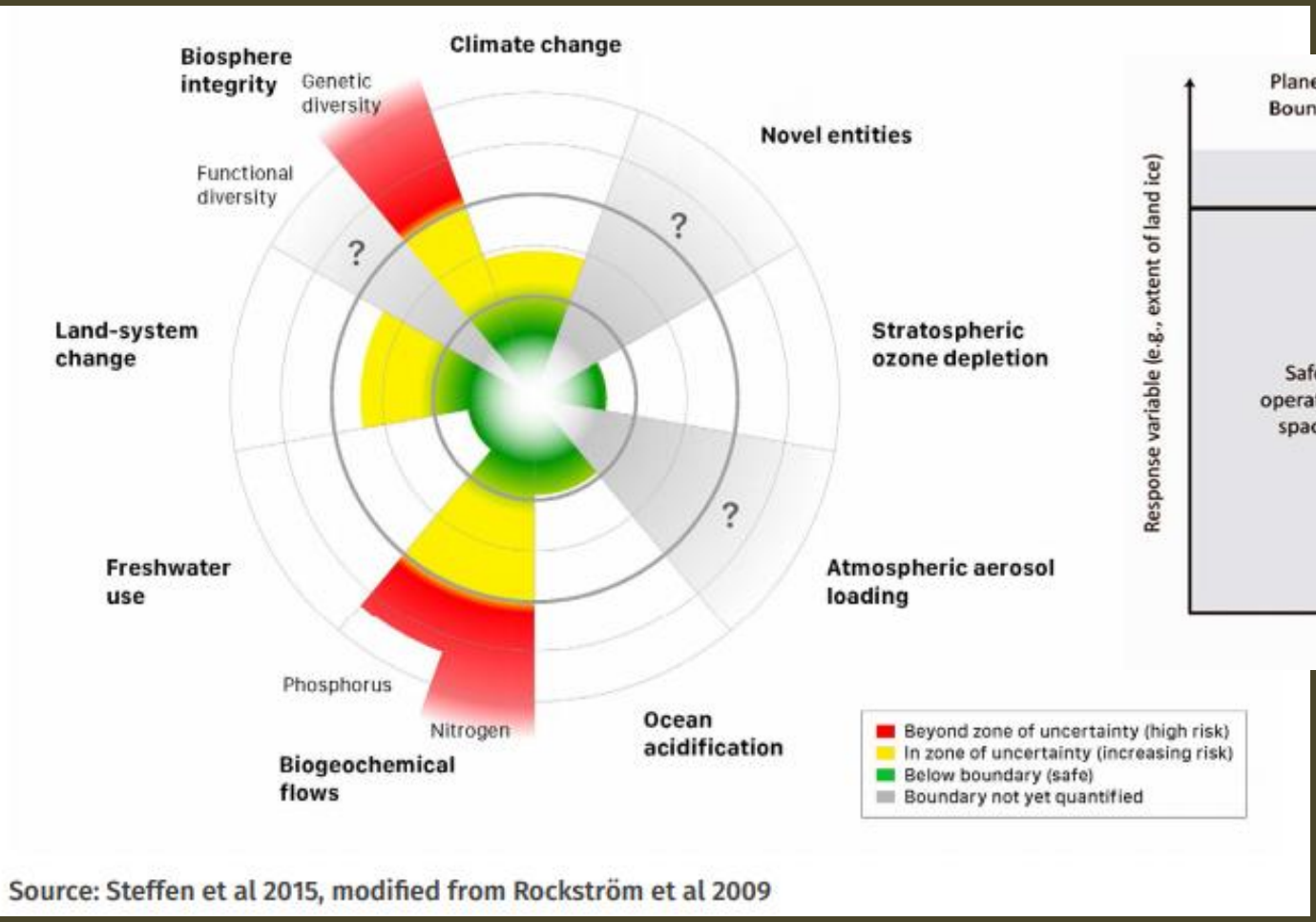
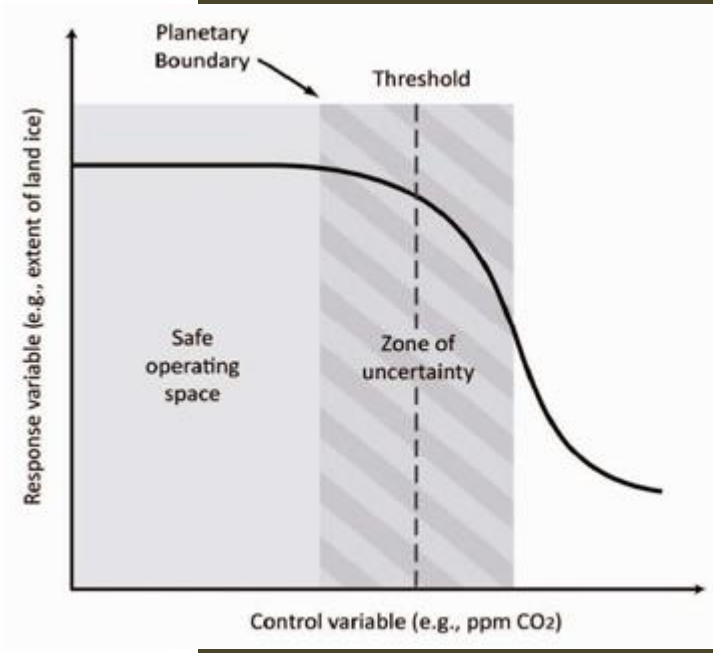
Doom and gloom

11,700 years of stability



And now...





Quantifying the state of nine natural systems

Biosphere integrity

The "6th Mass Extinction"

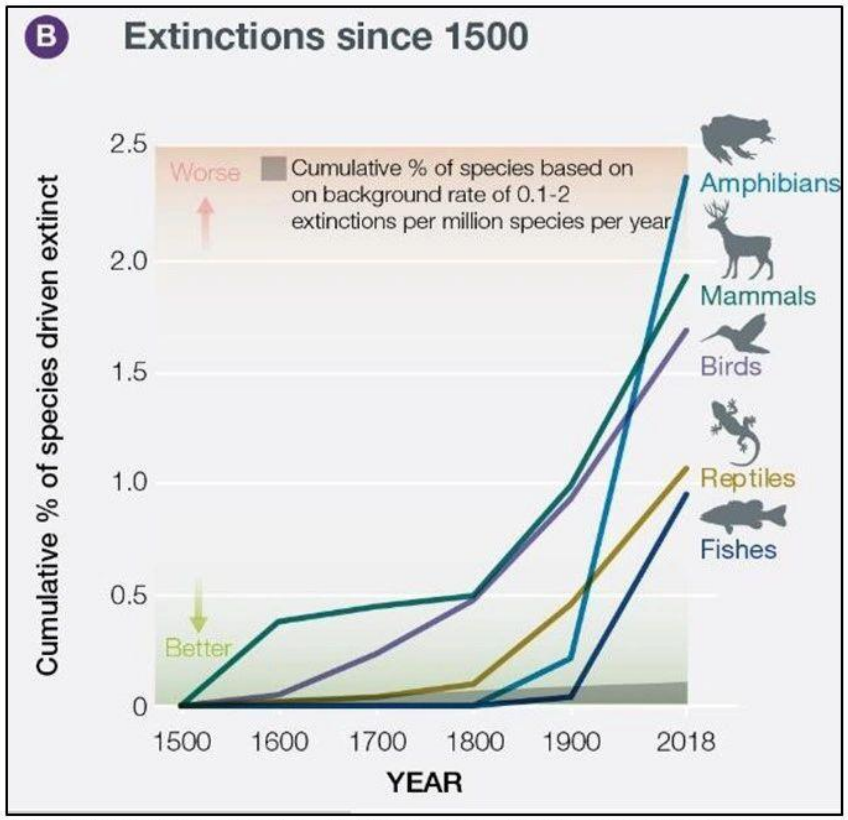


Figure 3 (B) - Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

- Up to 58,000 species lost each year
- Vertebrate populations have declined by 60 per cent between 1970–2014
- 40% of insect species are declining

A dramatic reduction in genetic diversity available to withstand change

Biosphere integrity

Environmental change is increasing in **scale** and in **speed**

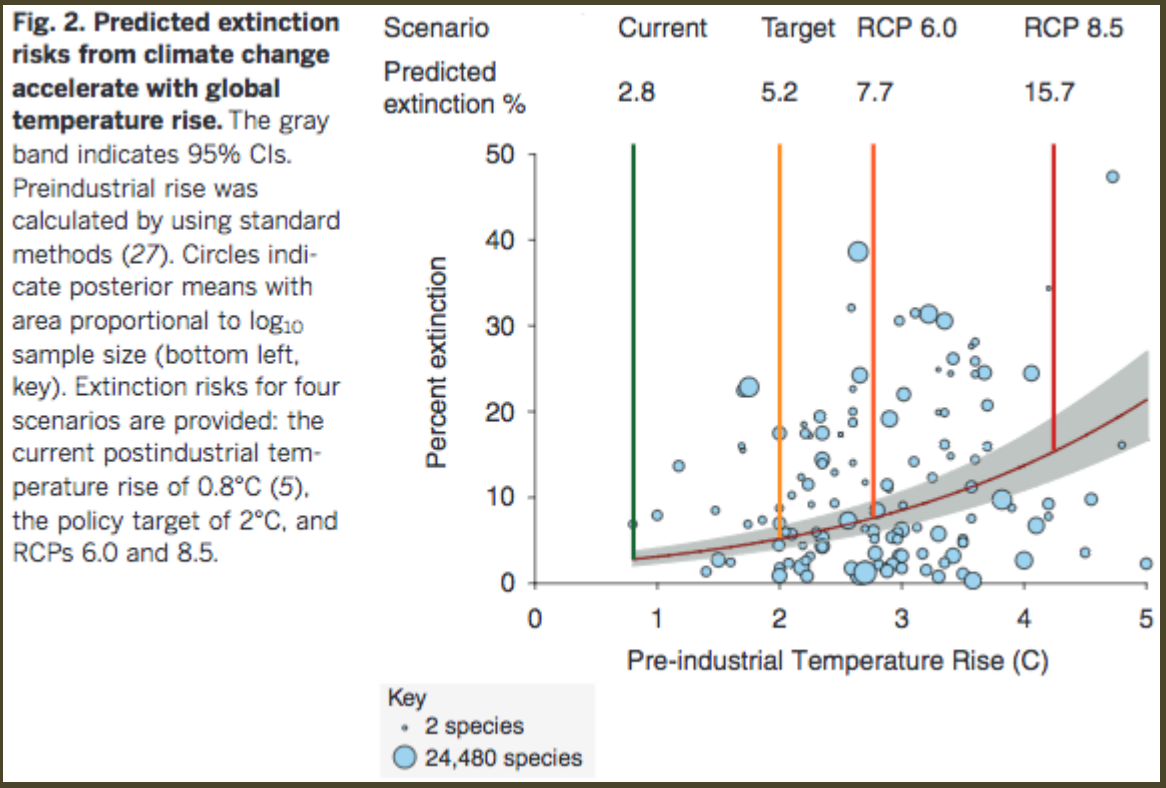
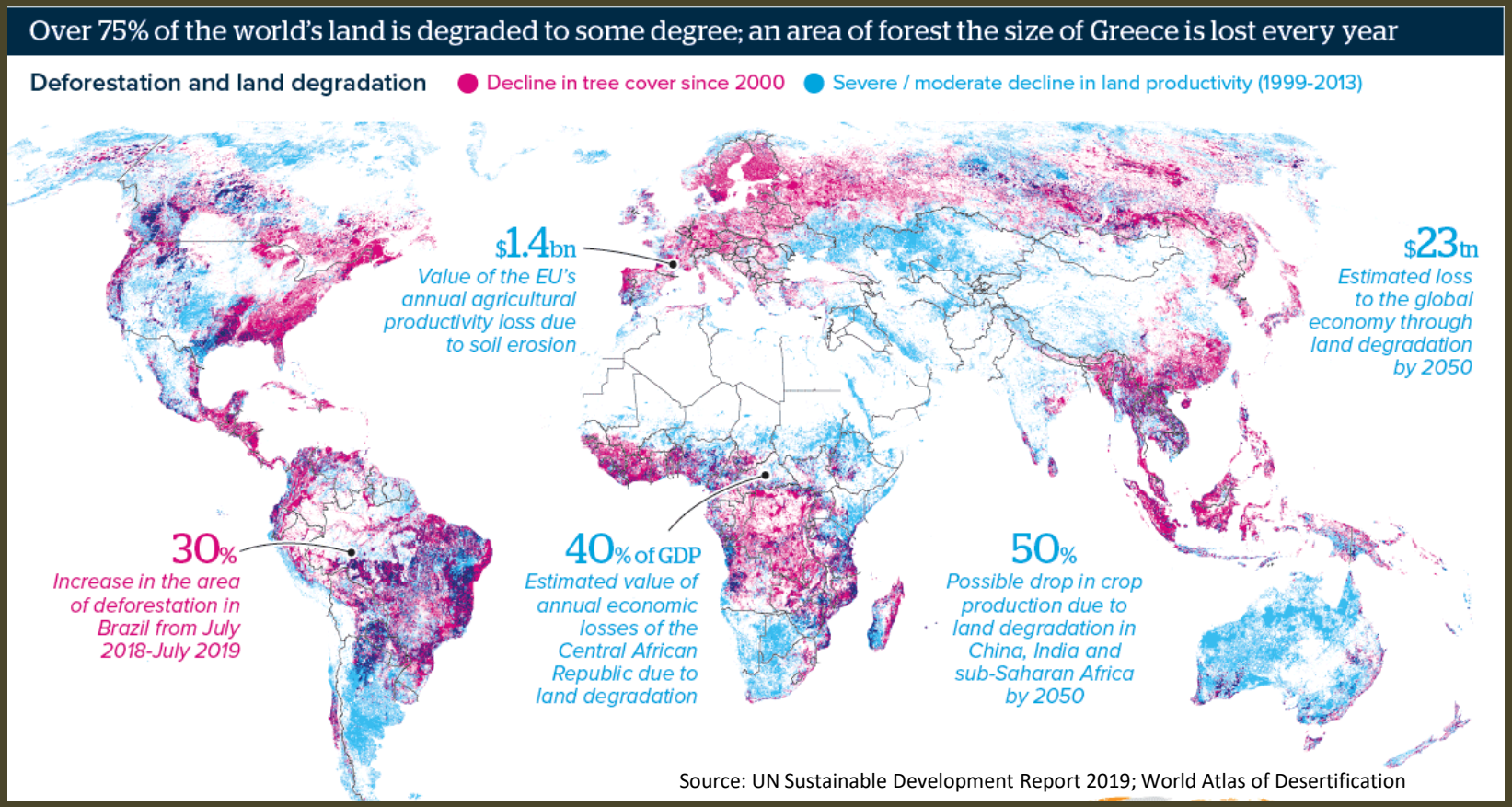


Fig. 2. Predicted extinction risks from climate change accelerate with global temperature rise. The gray band indicates 95% CIs. Preindustrial rise was calculated by using standard methods (*27*). Circles indicate posterior means with area proportional to $\log_{10}$ sample size (bottom left, key). Extinction risks for four scenarios are provided: the current postindustrial temperature rise of 0.8°C (*5*), the policy target of 2°C, and RCPs 6.0 and 8.5.

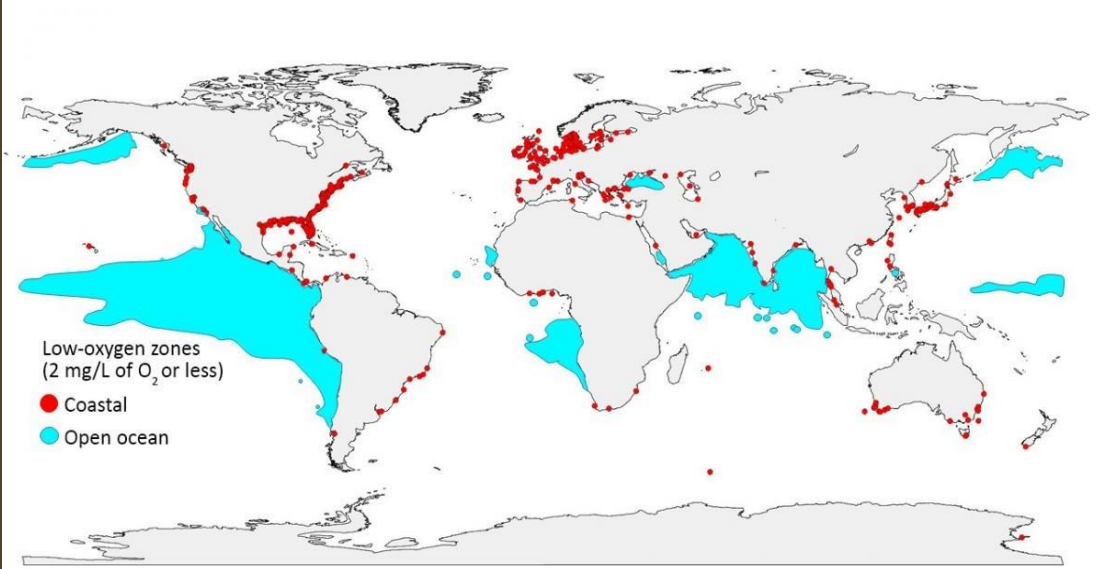
Land use



Topsoil is being lost 10 to 40 times faster than it is being replenished by natural processes

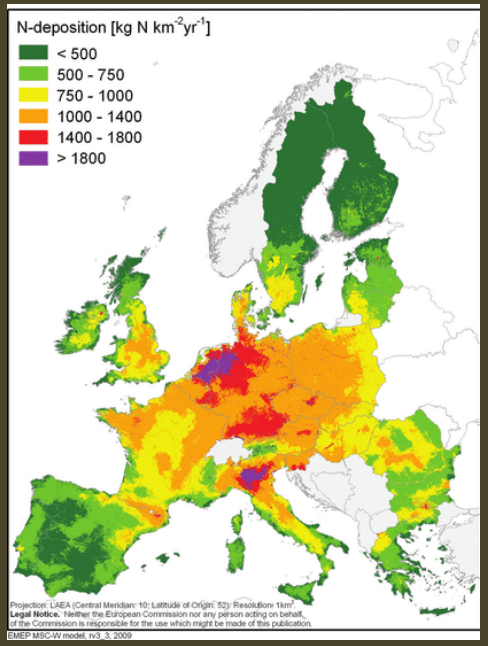
Chemical flows

- **Phosphorus** & **nitrogen** run-off from fertiliser use ends up in the sea, reducing the availability of oxygen
- On land, **nitrogen deposition** can decrease the diversity of plants, lichens and mosses



(GO2NE working group)

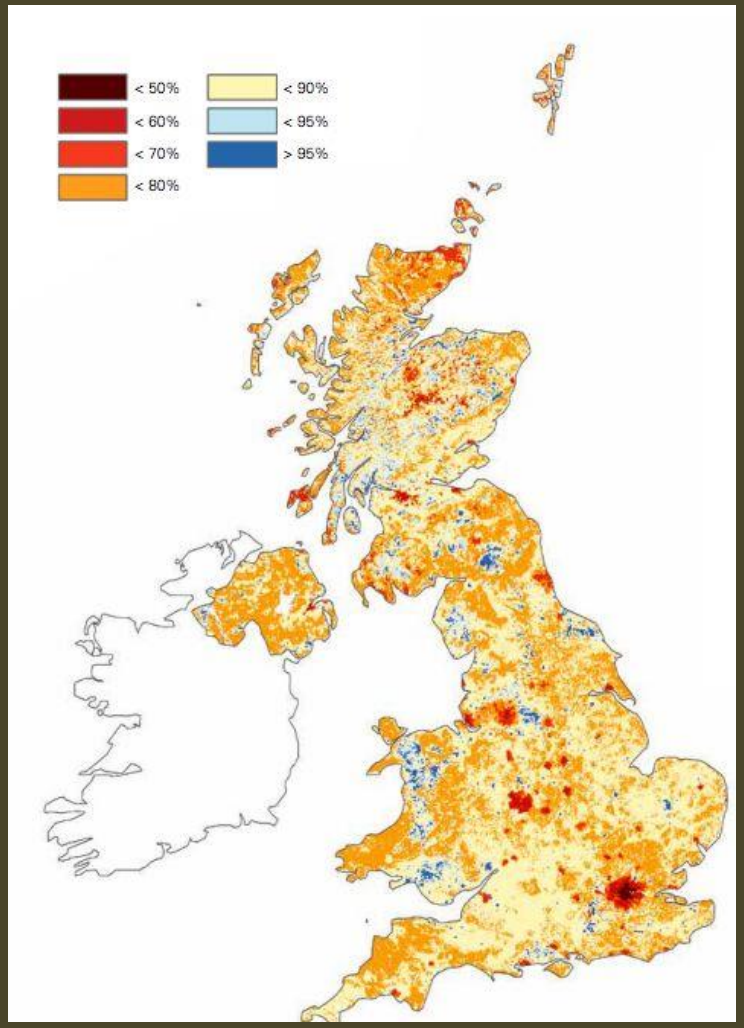
"Dead zones" have quadrupled since 1950, now covering an area the size of the UK



Nitrogen deposition in Europe

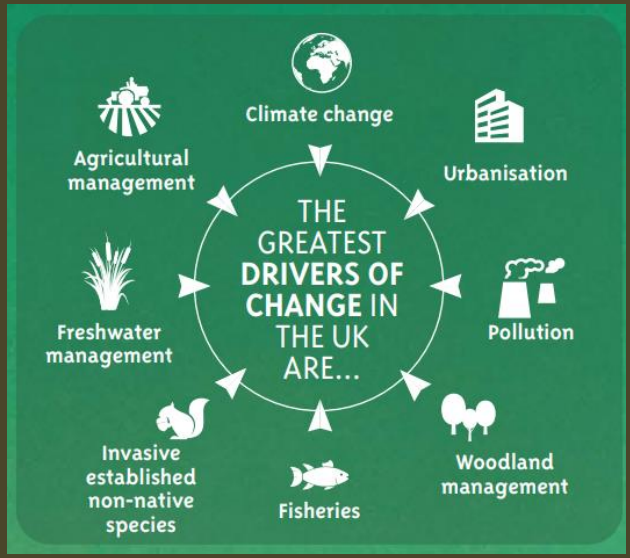
The situation of the UK

"*One of the most nature-depleted countries in the world*", ranked 189 out of 218 countries for **biodiversity intactness**

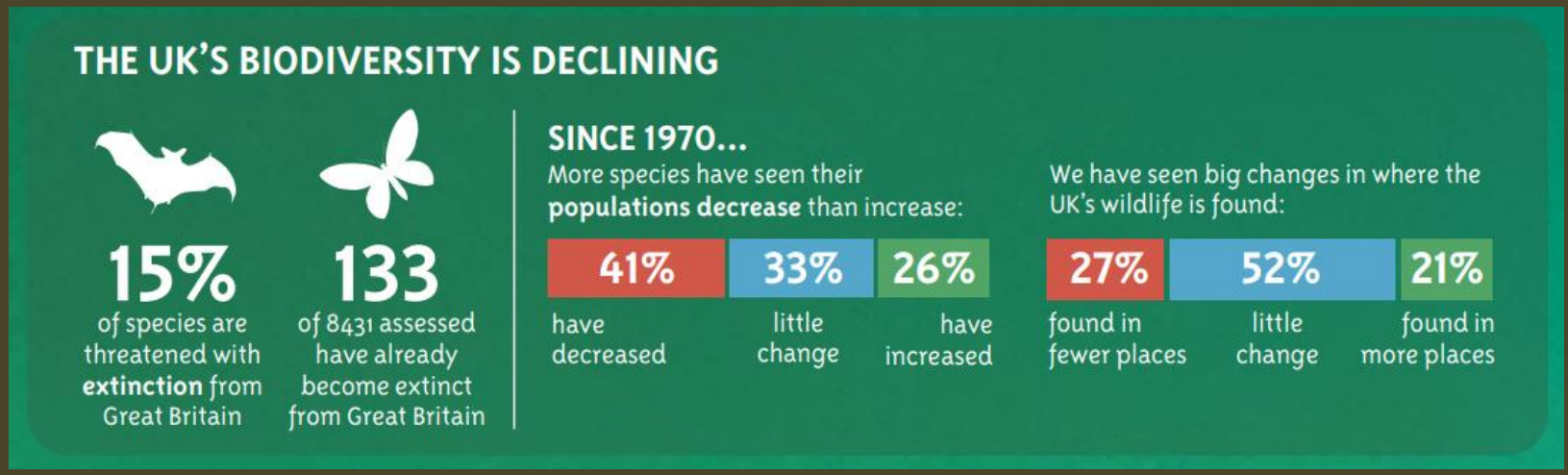


The situation of the UK

- **One in seven species** threatened with extinction
- 41% of **species** studied have experienced decline since 1970
- 17 per cent of **arable land** shows signs of erosion (Environment Agency 2004; SSLRC 2000)



State of Nature, 2019



Consequences of the ecological breakdown

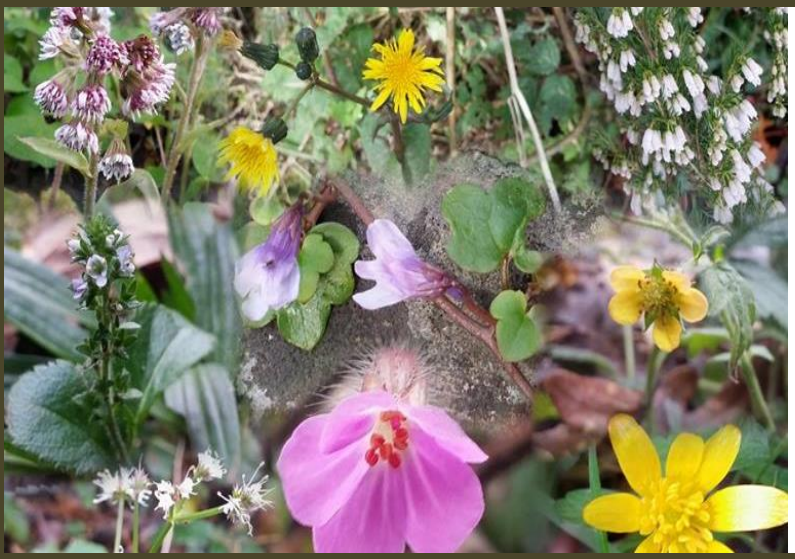
<u>The impacts will be felt at local and global level:</u>

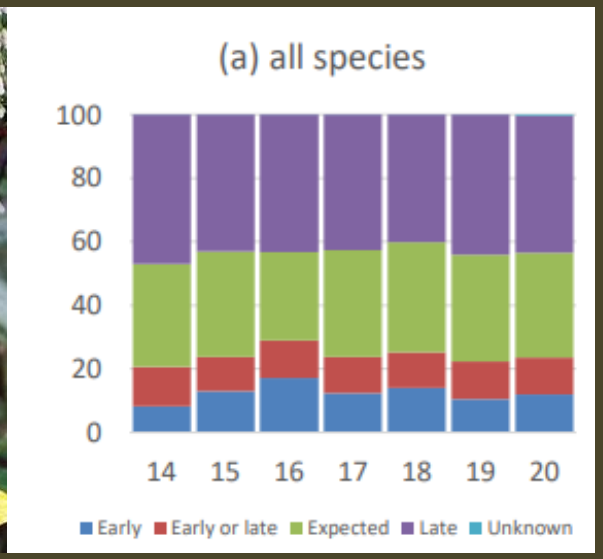
- extreme weather disrupting infrastructure & impacting health
- loss of insect biodiversity & soil degradation threatening food supply
- displaced populations causing political unrest

...

Impacts are already felt on biodiversity in the UK

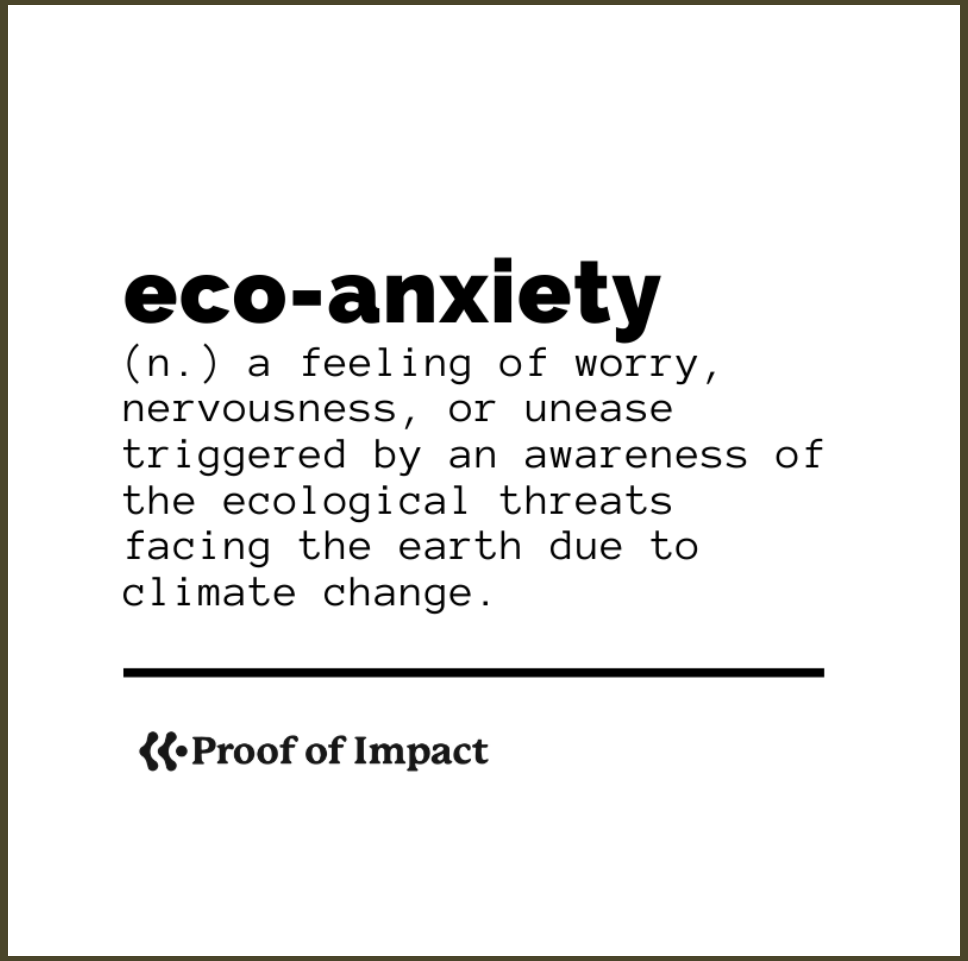
- Shift in geographical and time range
- New migratory species arriving from the continent
- Drought is affecting the growth rate of trees





Proportion of species flowering early, late or as expected around New Year, BSBI New Year Plant Hunt 2014-2020

Are we doomed?

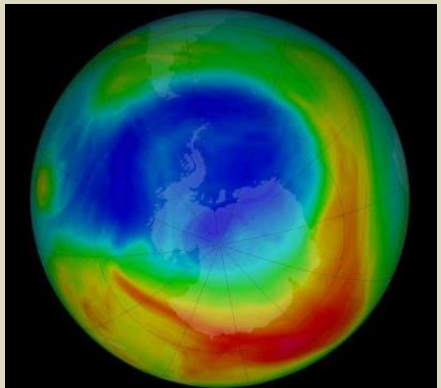


Hope

<u>Can environmental change be reversed at all?</u>

The hole in the **ozone layer**, which filters UV radiations was dramatically reduced in size thanks to the Montreal Protocol (1987) which banned the production of chlorofluorocarbons

On a smaller scale, **rewilding** has proved effective in creating habitat for threatened species, increasing population size and chances of survival – see for example the purple emperor butterfly at Knepp Castle, Sussex

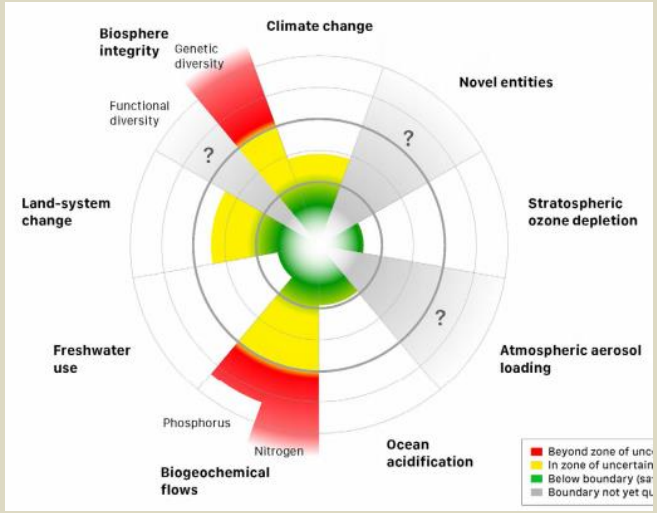


Can the horticultural industry help cope with environmental change?

...or is it part of the problem?

- peat use is still widespread
- it often relies on imported plants, which could carry pests or diseases
- introduced plants may become invasive
- the transport of plants by land/air bears significant carbon costs
- plants are not always selected with biodiversity in mind
- growing often requires single-use plastics, large quantities of electricity, water, pesticides and fertilisers
- poor plant selection, “fast plant fashion” can lead to waste

Horticulture could in fact contribute to reversal at several levels



- Biosphere integrity
- Biochemical flows
- Land-system change
- Freshwater use

Promoting a healthy use of land

Working with nature

Adopting sustainable practices

Sourcing plants with care

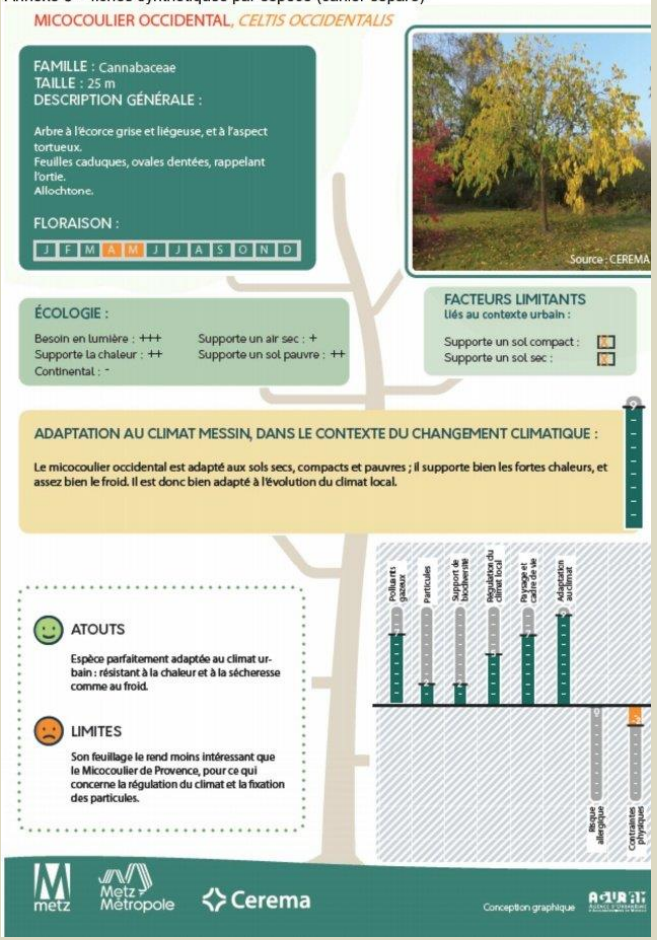
Replanting Britain: 'It's about the right tree in the right place'

Less than £1 per person a year is spent on planting English trees, but past mistakes loom large

Please donate to our appeal here

▲ Avenue of lime trees at Marbury Country Park: native broadleaf woodlands are preferred. Photograph: John Hopkins/Alamy

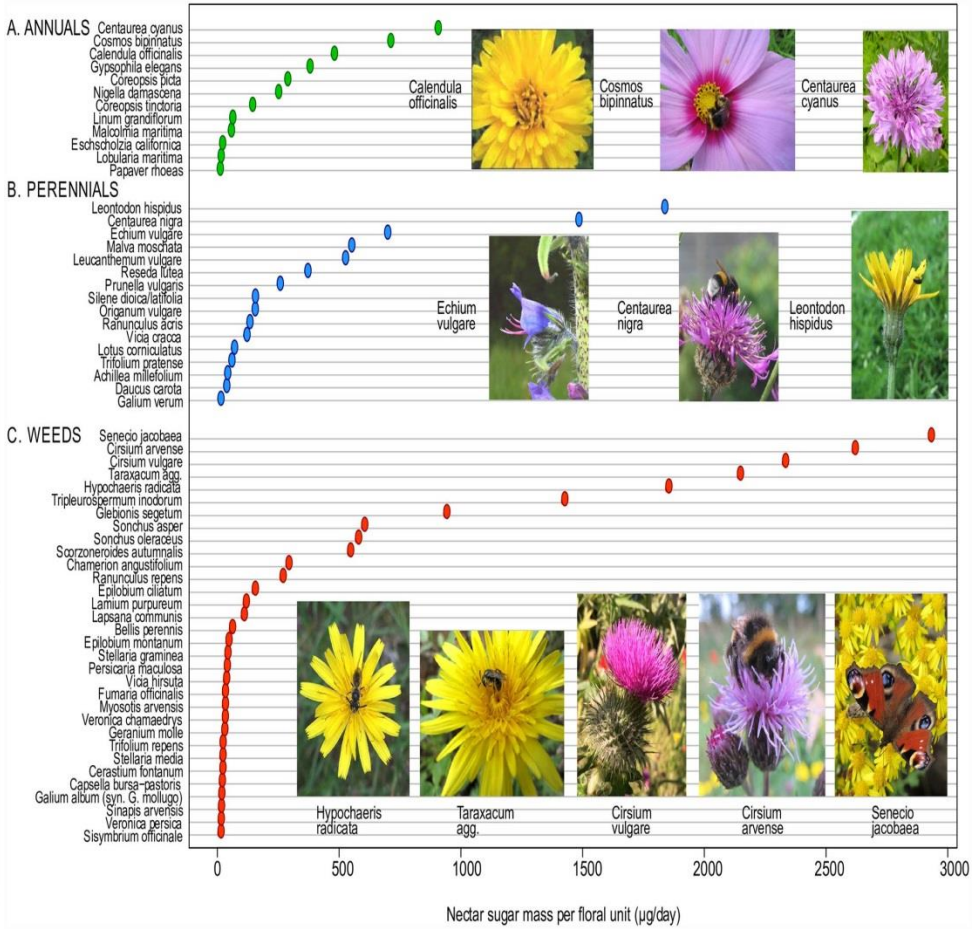
Annexe 3 – fiches synthétiques par espèce (cahier séparé)



Learning from science

And rethinking some practices...

Research from Paris by Isabelle Jajoz found wild bee abundance was reduced within 500m of urban apiaries due to impacts of high density honey bee colonies. In central London your never more than 500m from a rooftop apiary so makes you wonder how that effects our wild pollinators.



Hicks et al. 2016


Thank you