



# **Why are we failing to respond to the climate and environmental crisis?**

**Prof. Piotr Skubała, Ph.D.**  
**University of Silesia in Katowice, Faculty of Natural Sciences**  
**Institute of Biology, Biotechnology and Environmental Protection**

Fot. Piotr Skubała





**Sigmund Jahn, astronaut**

***„Before I flew I was already aware of how small and vulnerable our planet is; but only when I saw it from space, in all its ineffable beauty and fragility, did I realize that humankind’s most urgent task is to cherish and preserve it for future generations”***





**The most important message in the history of mankind**



# The most important message in the history of mankind



**Sixth mass extinction in Earth's history**

# The most important message in the history of mankind



## Sixth mass extinction in Earth's history

***„biological annihilation”***



# The three most shocking facts about extinction

A satellite image of Earth, centered on the African continent. The landmasses are shown in shades of brown and green, surrounded by deep blue oceans. White clouds are visible swirling over the oceans and parts of the continents. The image is partially obscured by a white text box in the center.

**Wildlife biomass in the past and today**



# Wildlife biomass in the past and today

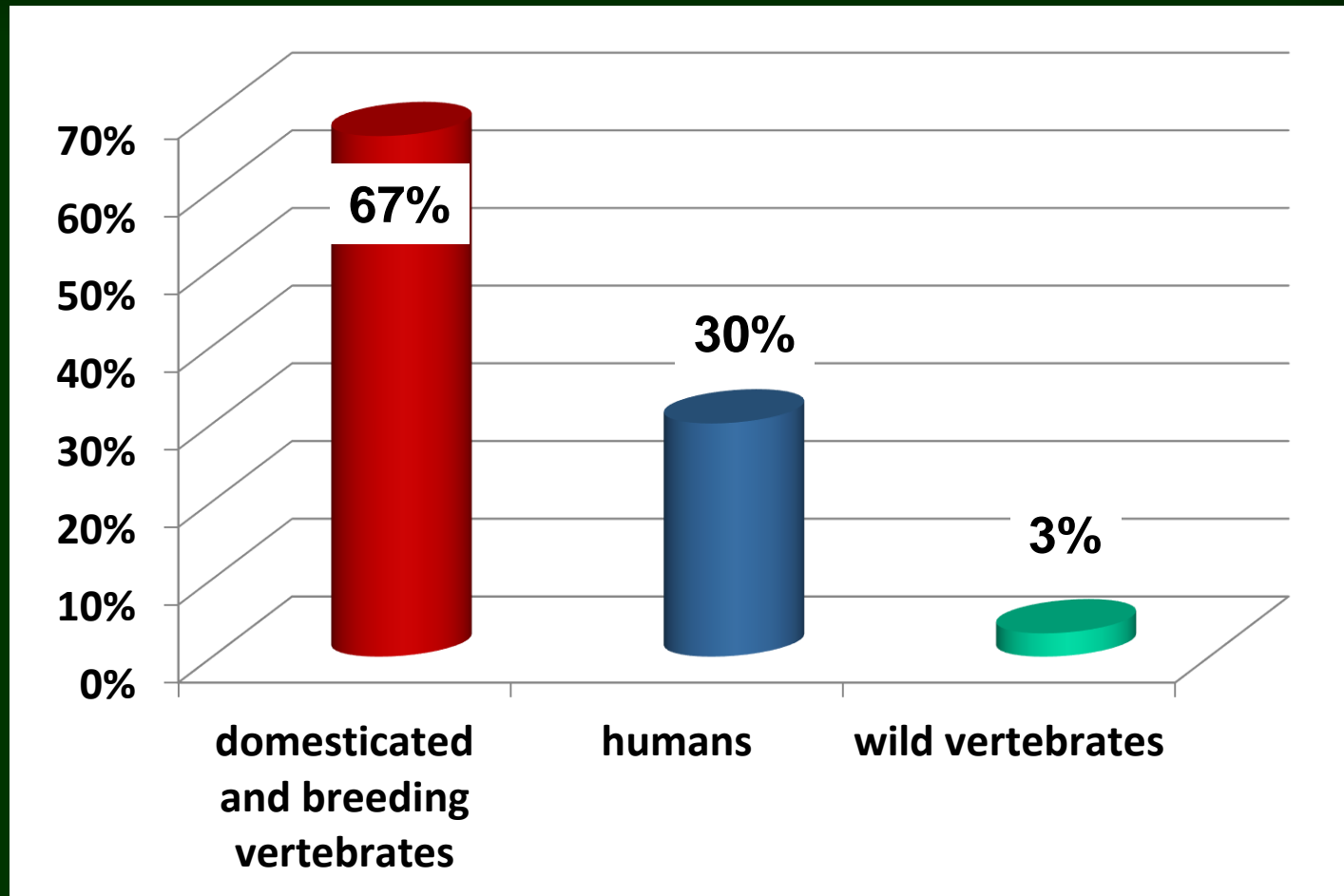
## Harvesting the Biosphere: The Human Impact

VACLAV SMIL

THE HUMAN SPECIES has evolved to become the planet's dominant organism in what has been, on the biospheric time scale of billions of years, a very brief period. Less than 2.5 million years have elapsed since the emergence of our genus (with *Homo habilis*), and *Homo sapiens* became identifiable about 200,000 years ago (Lewin 2005). The shift from subsistence foraging (hunting and gathering) to settled existence energized by cultivated plants and domesticated animals began shortly after the end of the last glaciation (less than 10,000 years ago); afterward our capacities for expansion, extraction, production, and destruction began to grow rapidly with the emergence of the first complex civilizations (Cochran and Harpending 2010). After millennia of slow gains during the Pleistocene era and the early part of the Holocene,<sup>1</sup> global population began to multiply as it commanded increasing flows of energy owing to many technical and social innovations. Quantitative reconstructions of these long-term trends are uncertain but they capture the magnitude of specific advances and their relentless growth.

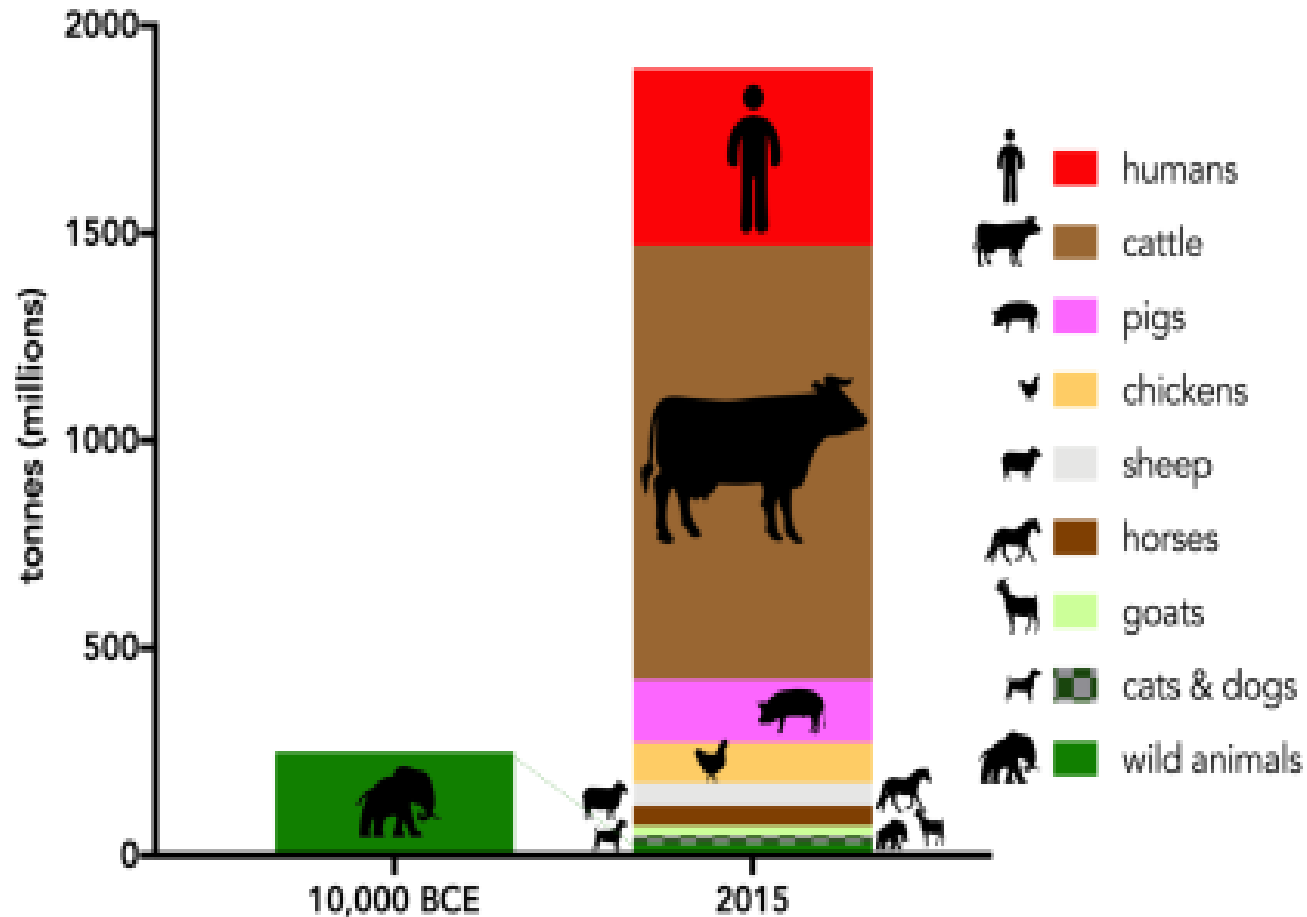
Smil V. 2011. Harvesting the Biosphere. The Human Impact. Population and Development Review 37(4): 613-636.

## Wildlife biomass in the past and today



Smil V. 2011. Harvesting the Biosphere. The Human Impact. Population and Development Review 37(4): 613-636.

# Wildlife biomass in the past and today



**Biomass of humans and domesticated animals**  
- 0.1% of the mass of terrestrial vertebrates

# Biomasa dzikich zwierząt w przeszłości i dzisiaj



***"When I am doing puzzles with my daughters, the picture usually shows an elephant next to a giraffe and a rhino. However, if we wanted to keep the true proportions, it should be a cow next to a cow, and then a chicken "***

**Prof. Ron Milo (one of the leaders in research on the global biomass of organisms on Earth)**



# The three most shocking facts about extinction

A satellite image of Earth, showing the African continent and surrounding oceans. The image is centered on the African continent, with the Atlantic Ocean to the west and the Indian Ocean to the east. The landmasses are brown and green, while the oceans are blue. White clouds are scattered across the surface.

**Decline in biomass with human appearance**

# Wildlife biomass in the past and today

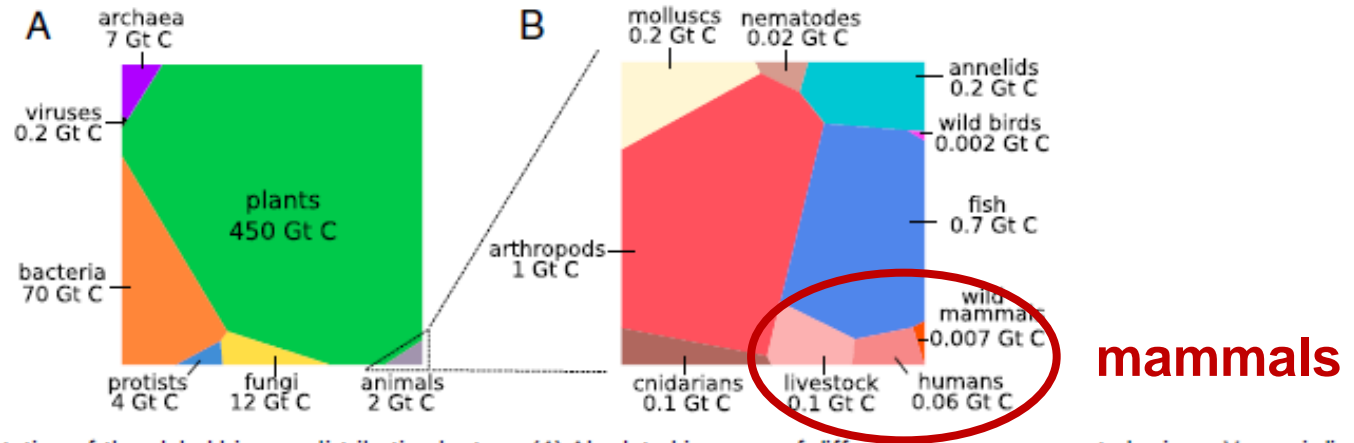


Fig. 1. Graphical representation of the global biomass distribution by taxa. (A) Absolute biomasses of different taxa are represented using a Voronoi diagram, with the area of each cell being proportional to that taxa global biomass (the specific shape of each polygon carries no meaning). This type of visualization is similar to pie charts but has a much higher dynamic range (a comparison is shown in *SI Appendix, Fig. S4*). Values are based on the estimates presented in Table 1 and detailed in the *SI Appendix, Fig. S1*. (B) Absolute biomass of different animal taxa. Related groups such as vertebrates are located next to each other. We estimate that the contribution of reptiles and amphibians to the total animal biomass is negligible, as we discuss in the *SI Appendix*. Visualization performed using the online tool at [bionic-vis.biologie.uni-greifswald.de/](http://bionic-vis.biologie.uni-greifswald.de/).

Bar-On Y.M., Phillips R., Milo R. 2018. The biomass distribution on Earth. PNAS 115 (25): 6506-6511.

# Wildlife biomass in the past and today



From the beginning of civilization, we caused a reduction in biomass:

- all organisms by **50%**

- wild mammals by **83%**

Bar-On Y.M., Phillips R., Milo R. 2018. The biomass distribution on Earth.  
PNAS 115 (25): 6506-6511.

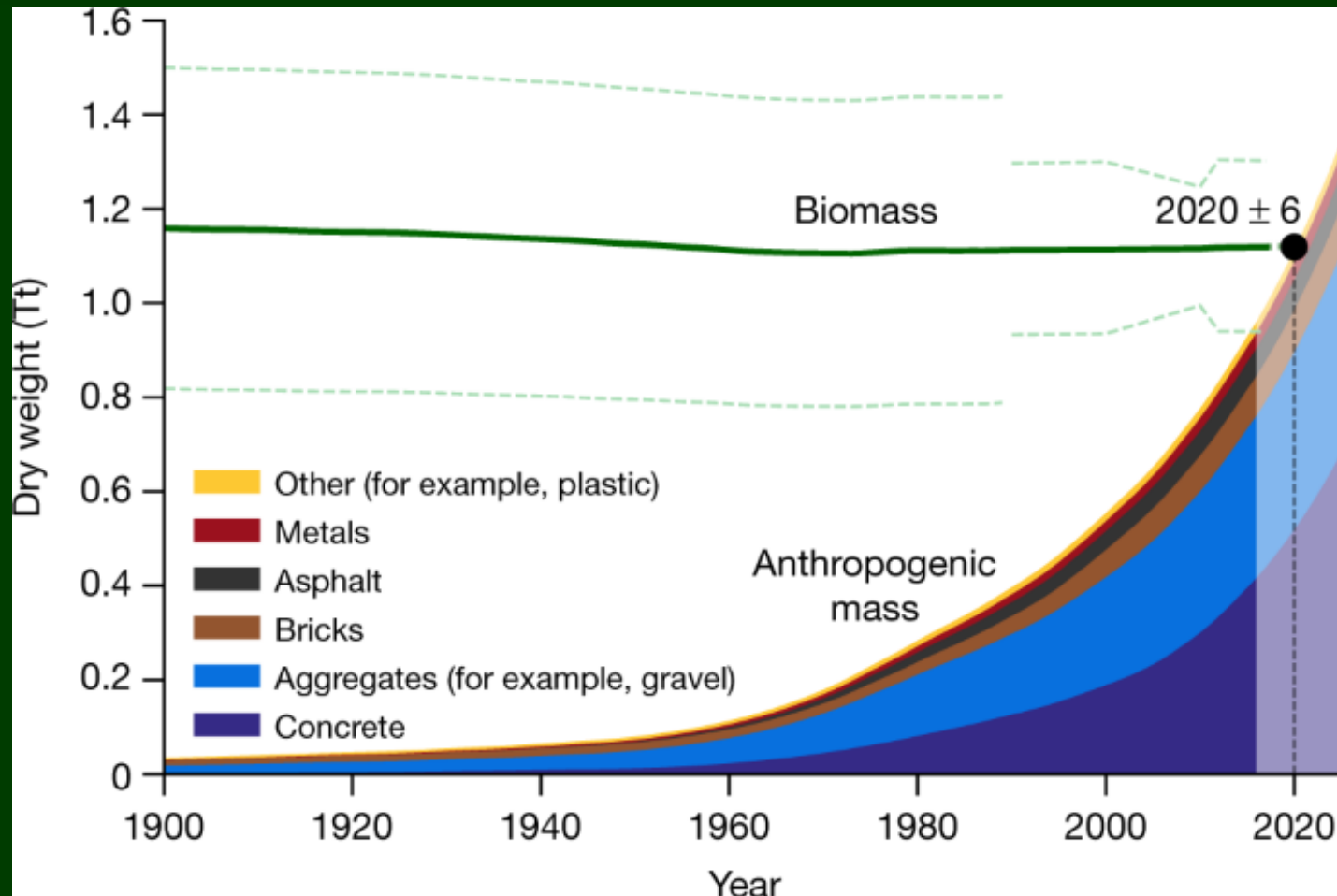
# The three most shocking facts about extinction



**Biomass of living organisms on Earth  
and anthropogenic mass**

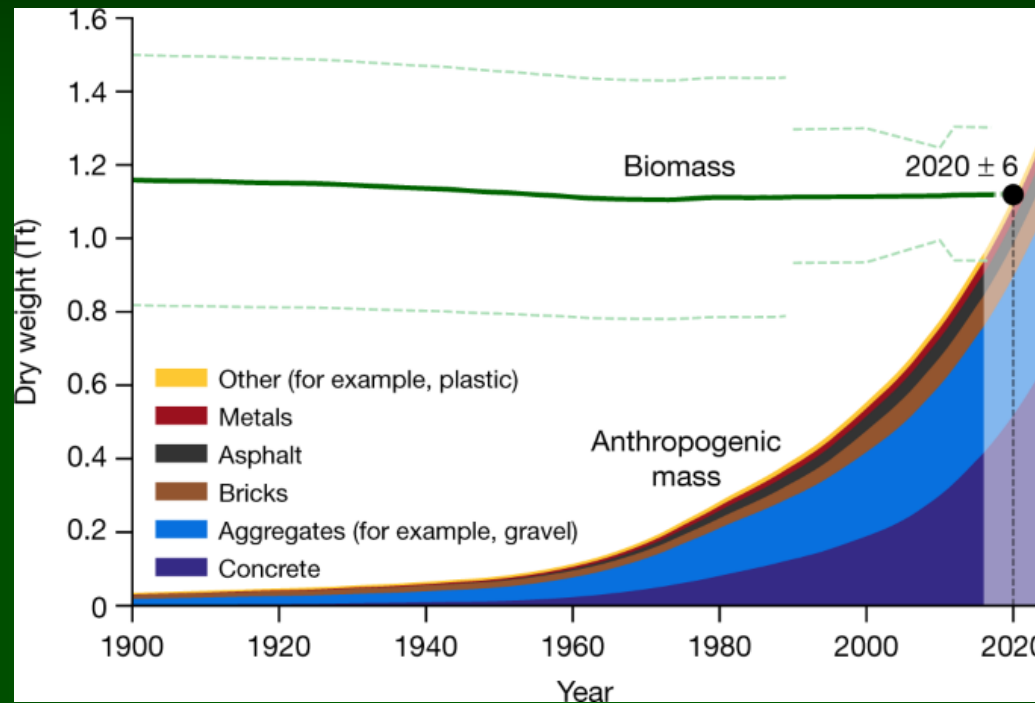


# Biomass of living organisms on Earth and the anthropogenic mass



Elhacham, E., Ben-Uri, L., Grozovski, J. et al. 2020. Global human-made mass exceeds all living biomass. *Nature* 588: 442–444, <https://doi.org/10.1038/s41586-020-3010-5>

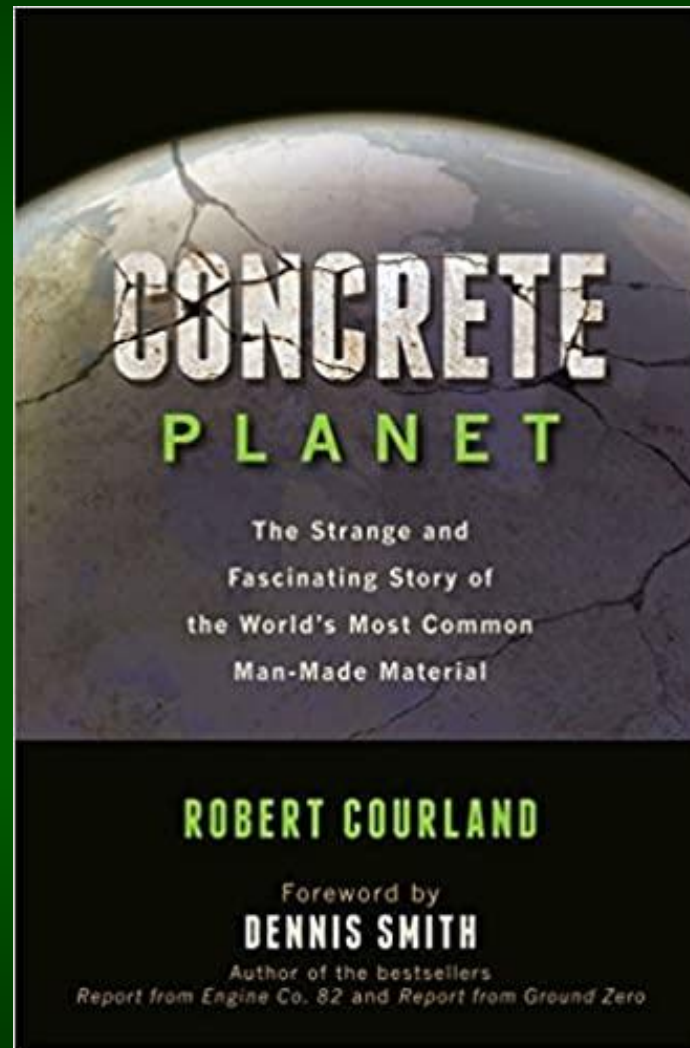
# Biomass of living organisms on Earth and the anthropogenic mass



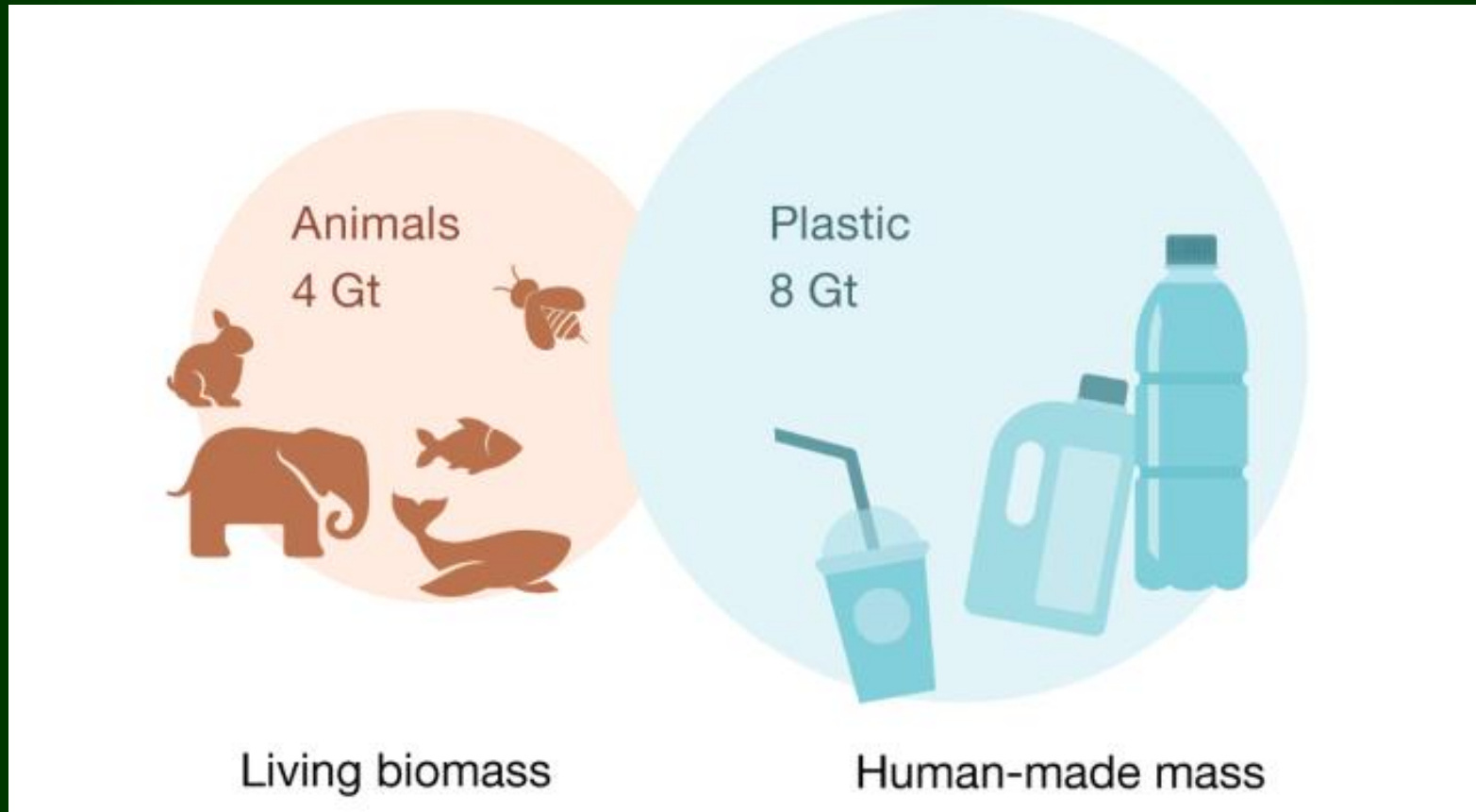
**1 kg concrete - 1 m<sup>2</sup>**

Elhacham, E., Ben-Uri, L., Grozovski, J. et al. 2020. Global human-made mass exceeds all living biomass. Nature 588: 442–444, <https://doi.org/10.1038/s41586-020-3010-5>

# Biomass of living organisms on Earth and the anthropogenic mass



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# The disappearing world



**Animal photos with as many pixels as there are still alive animals of a given species**



**Indian elephant (*Elephas maximus indicus*): 20,000-25,000**





**Pygmy chimpanzee, bonobo (*Pan paniscus*): 10,000-50,000**



**Blue whale (*Balaenoptera musculus*): 10,000-25,000**





**Eastern lowland gorilla (*Gorilla gorilla gorilla*): 17,000**

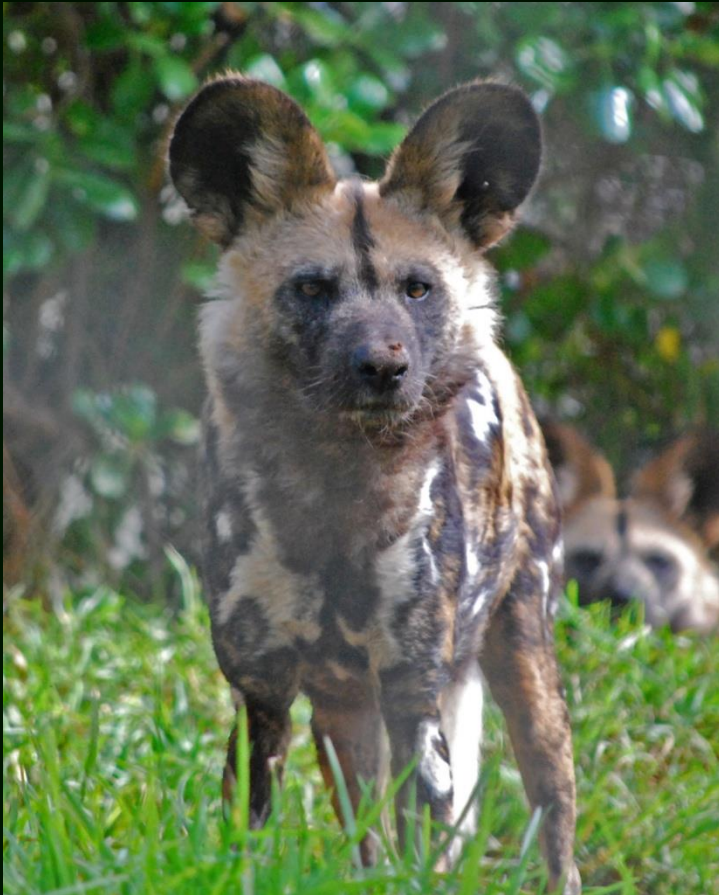


**Black rhinoceros (*Diceros bicornis*): 5,000**

[https://pl.wikipedia.org/wiki/Nosoro%C5%BCec\\_czarny#/media/Plik:BlackRhino-USFWS.jpg](https://pl.wikipedia.org/wiki/Nosoro%C5%BCec_czarny#/media/Plik:BlackRhino-USFWS.jpg)

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)





**Lycaon (*Lycaon pictus*): 3,000-5,500**

[https://pl.wikipedia.org/wiki/Likaon\\_pstry#/media/Plik:African\\_wild\\_dog2.jpg](https://pl.wikipedia.org/wiki/Likaon_pstry#/media/Plik:African_wild_dog2.jpg)

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)

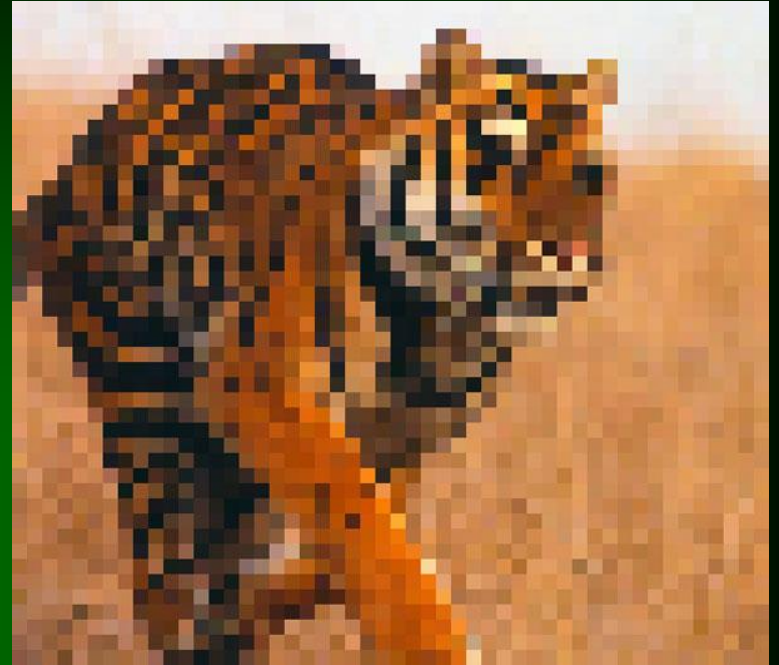


**Green sea turtle (*Chelonia mydas*): 3,000-5,500**

[https://pl.wikipedia.org/wiki/%C5%BB%C3%B3%C5%82w\\_zielony#/media/Plik:Green\\_Sea\\_Turtle\\_grazing\\_seagrass.jpg](https://pl.wikipedia.org/wiki/%C5%BB%C3%B3%C5%82w_zielony#/media/Plik:Green_Sea_Turtle_grazing_seagrass.jpg)

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)





**Bengal tiger (*Panthera tigris tigris*): 2,500**

[https://pl.wikipedia.org/wiki/Tygrys\\_bengalski#/media/Plik:Panthera\\_tigris\\_tigris\\_edited2.jpg](https://pl.wikipedia.org/wiki/Tygrys_bengalski#/media/Plik:Panthera_tigris_tigris_edited2.jpg)

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)

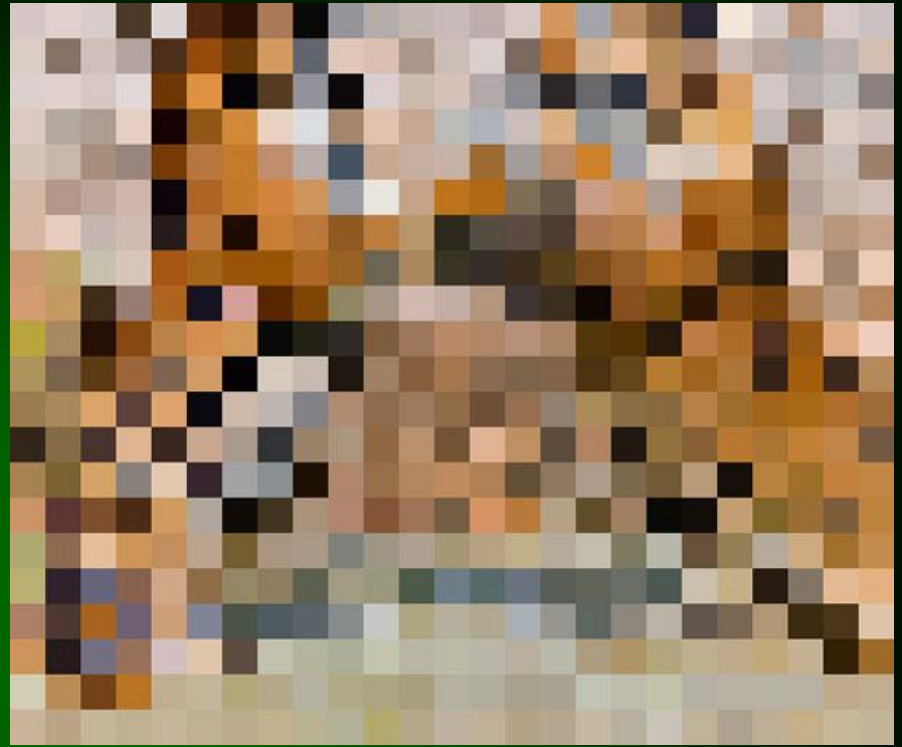




**Borneo pygmy elephant (*Elephas maximus borneensis*) - 1500**

<https://www.ndtv.com/world-news/borneo-pygmy-elephant-shot-70-times-tusks-removed-2109670>

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)

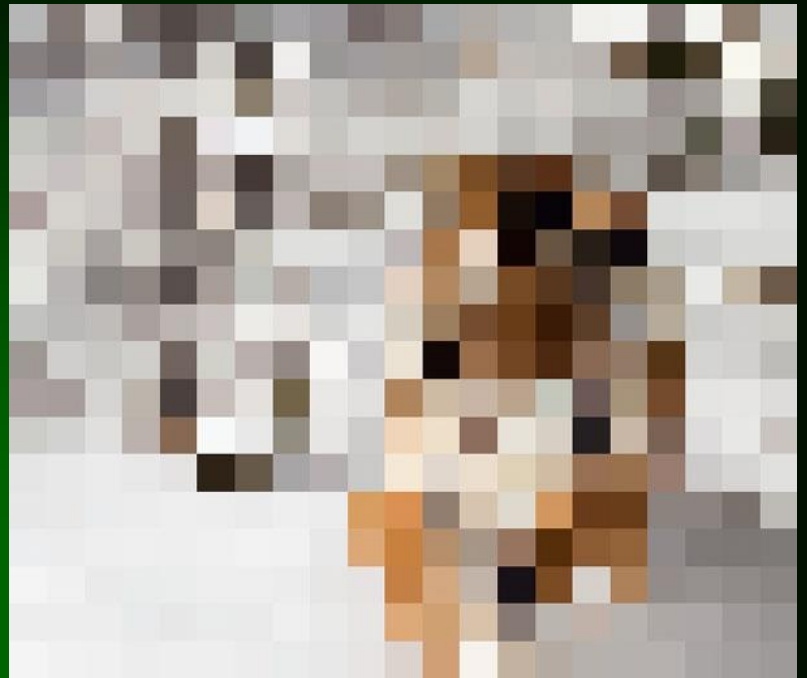


**Indochinese tiger (*Panthera tigris corbetti*): 600-650**

[https://pl.wikipedia.org/wiki/Tygrys\\_indochi%C5%84ski#/media/Plik:Indochinese\\_Tiger.jpg](https://pl.wikipedia.org/wiki/Tygrys_indochi%C5%84ski#/media/Plik:Indochinese_Tiger.jpg)

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)





**Siberian tiger (*Panthera tigris altaica*): 450**

[https://pl.wikipedia.org/wiki/Tygrys\\_syberyjski#/media/Plik:Panthera\\_tigris\\_altaica\\_in\\_Lodz\\_Zoo\\_1.jpg](https://pl.wikipedia.org/wiki/Tygrys_syberyjski#/media/Plik:Panthera_tigris_altaica_in_Lodz_Zoo_1.jpg)

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)



**Amur leopard (*Panthera pardus orientalis*): 60**



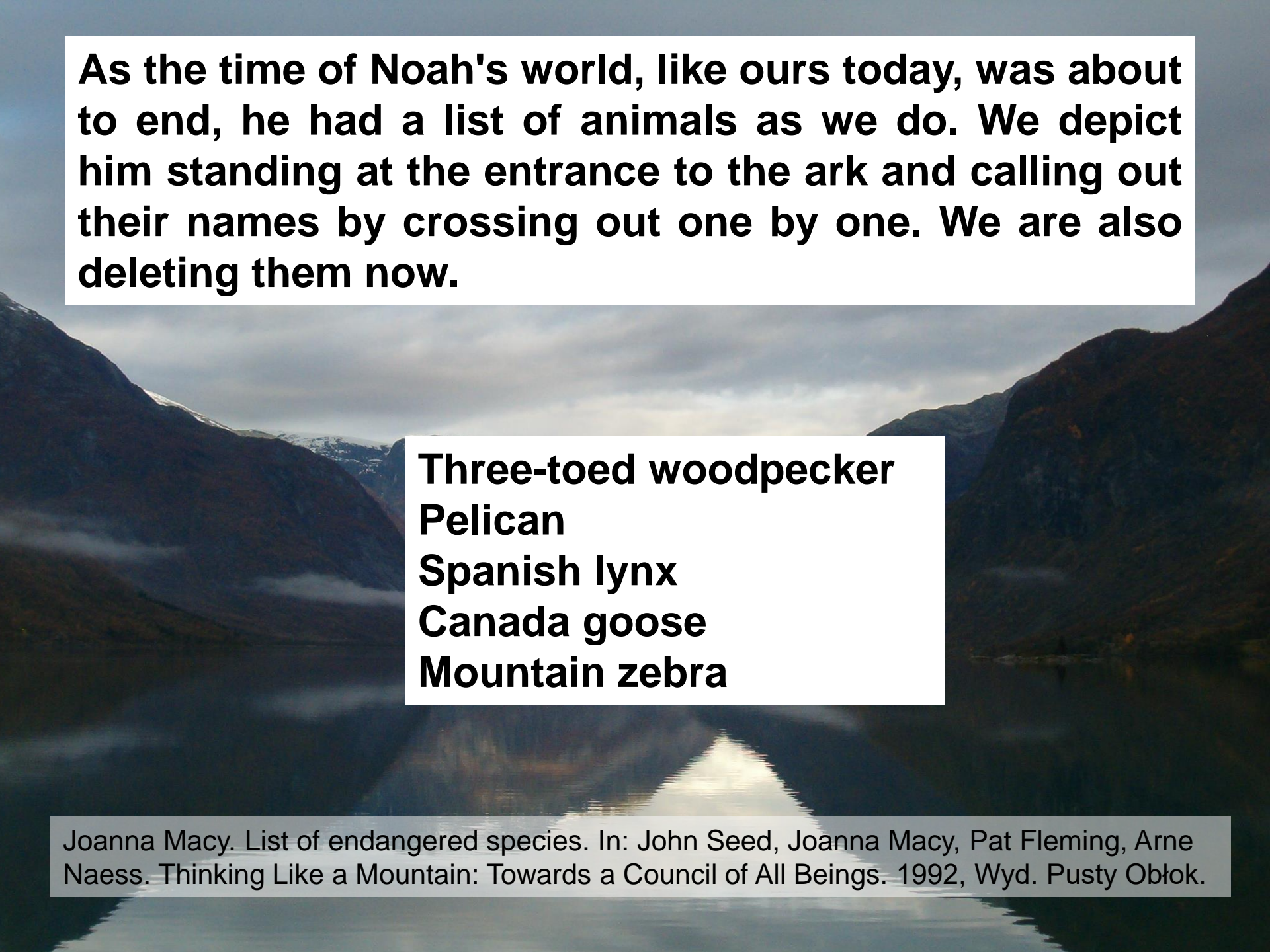


## Javanese rhinoceros (*Rhinoceros sondaicus*): 60

<https://news.mongabay.com/2018/03/javan-rhino-population-holds-steady-amid-ever-present-peril/>

[https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm\\_source=google&utm\\_medium=organic&utm\\_campaign=organic](https://www.boredpanda.com/endangered-animals-pixels-extinction/?utm_source=google&utm_medium=organic&utm_campaign=organic)





**As the time of Noah's world, like ours today, was about to end, he had a list of animals as we do. We depict him standing at the entrance to the ark and calling out their names by crossing out one by one. We are also deleting them now.**

**Three-toed woodpecker  
Pelican  
Spanish lynx  
Canada goose  
Mountain zebra**

Joanna Macy. List of endangered species. In: John Seed, Joanna Macy, Pat Fleming, Arne Naess. Thinking Like a Mountain: Towards a Council of All Beings. 1992, Wyd. Pusty Obłok.

**Today, Noah's drama comes alive again, but the film seems to run backwards - the animals disappear.**

**ferret  
curlew  
cougar  
wolf**

Joanna Macy. List of endangered species. In: John Seed, Joanna Macy, Pat Fleming, Arne Naess. Thinking Like a Mountain: Towards a Council of All Beings. 1992, Wyd. Pusty Obłok.



**Dinosaur at the United Nations. He gives a speech in the short film "Do not advocate for extinction". A social campaign**



<https://www.youtube.com/watch?v=VaTgTiUhEJg>

# What are the main causes of sixth mass extinction?



# BIG KILLERS

## COMMENT

**BOOKS** Journey through the microbiological jungle within us **p146**

**EDUCATION** Boosting creative teaching in India's schools **p148**

**DIVERSITY** The forgotten women of Antarctic research **p148**

**FINDING** Recognize the reach and needs of interdisciplinary research **p148**



A container of seized African elephant tusks in Malaysia.

## The ravages of guns, nets and bulldozers

The threats of old are still the dominant drivers of current species loss, indicates an analysis of IUCN Red List data by **Sean Maxwell** and colleagues.

**T**here is a growing tendency for media reports about threats to biodiversity to focus on climate change.

Here we report an analysis of threat information gathered for more than 8,000 species. These data revealed a contrasting picture. We found that by far the biggest drivers of biodiversity decline are overexploitation (the harvesting of species from the wild at rates that cannot be compensated for by reproduction or regrowth) and agriculture (the production of food, fodder,

fibre and fuel crops; livestock farming; aquaculture; and the cultivation of trees).

Early next month, representatives from government, industry and non-governmental organizations will define future directions for conservation at the World Conservation Congress of the International Union for Conservation of Nature (IUCN). High on the agenda for political leaders, non-governmental organizations, conservationists and many others will be taking steps to turn the 2015 Paris

climate agreement into action. It is also crucial that the World Conservation Congress delegates — and society in general — ensure that efforts to address climate change do not overshadow more immediate priorities for the survival of the world's flora and fauna.

### ON THE LIST

Since 2001, the categories and criteria of the IUCN Red List of Threatened Species — a standard for the evaluation of extinction —

Maxwell S.L., Fuller L.A., Brooks T.M., Watson J.E.M. 2016. The ravages of guns, nets and bulldozers. *Nature* 536: 143-145.



# What are the main causes of sixth mass extinction?

## BIG KILLERS

*Overexploitation and agriculture are the most prevalent threats facing the 8,688 threatened or near-threatened species from comprehensively assessed species groups on the IUCN Red List.*

OVER-  
EXPLOITATION

6,241  
SPECIES  
AFFECTED

AGRICULTURAL  
ACTIVITY

5,407

URBAN  
DEVELOPMENT

3,014

INVASION  
AND DISEASE

2,298

POLLUTION

1,901

SYSTEM  
MODIFICATION

1,865

CLIMATE  
CHANGE

1,688

HUMAN  
DISTURBANCE

1,223

TRANSPORT

1,219

ENERGY  
PRODUCTION

913

**Analysis of 8688 endangered or near-threatened extinction species (IUCN Red Book)**

Maxwell S.L., Fuller L.A., Brooks T.M., Watson J.E.M. 2016. The ravages of guns, nets and bulldozers. *Nature* 536: 143-145.

# What are the main causes of sixth mass extinction?



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and agriculture are the most prevalent threats facing threatened or near-threatened species from comprehensively groups on the IUCN Red List.



*Dicerorhinus sumatrensis* and *gorilla* are being harmed by poaching. *Acinonyx jubatus* and *Lutra sumatrana* are being affected by poaching activity.

The common hippopotamus (*Hippopotamus amphibius*) and leatherback turtle (*Dermochelys coriacea*) are being affected by droughts and high temperatures.

# What are the main causes of sixth mass extinction?



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## BIG KILLERS

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In the future, **climate change** will become a dominant threat.

Maxwell S.L., Fuller L.A., Brooks T.M., Watson J.E.M. 2016. The ravages of guns, nets and bulldozers. *Nature* 536: 143-145.



# What are the main causes of sixth mass extinction?



## The Global Ecosystem Assessment (6th May 2019)

1. Changes in land and sea use
2. Direct exploitation of organisms
3. **Climate change**
4. Pollution
5. Invasion of alien species

# Planetary boundaries



# Planetary boundaries



**Johan Rockström**  
(Stockholm Resilience Centre)



**Will Steffen**  
(Australian National University)

**Planetary boundaries - a concept involving Earth system processes that contain environmental boundaries.**

**„Safe operating space for humanity“**

Rockström J. et al. 2009. A safe operating space for humanity. Nature 461: 472-475.

# Planetary boundaries



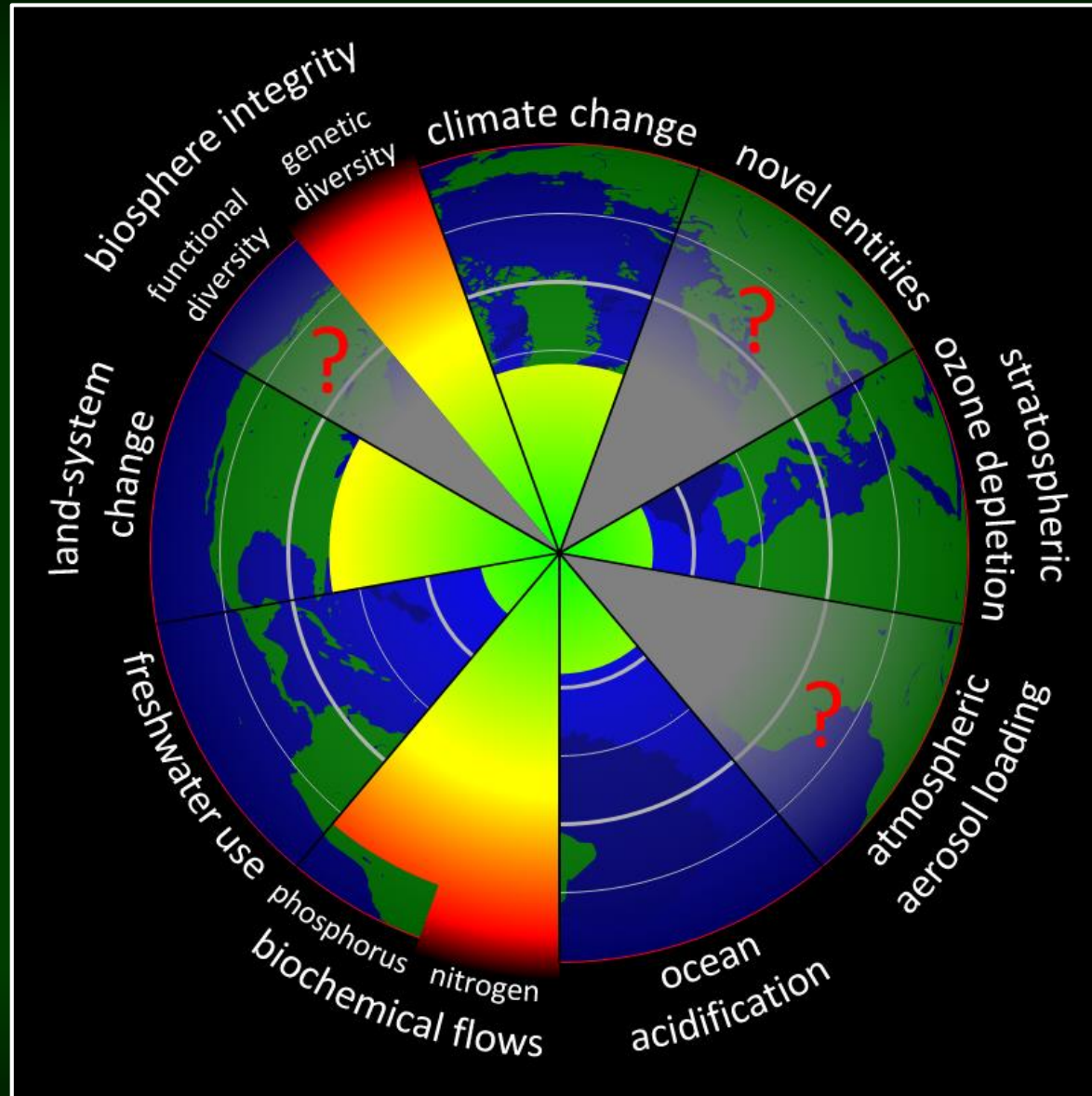
## **9** planetary boundaries

**Crossing certain biophysical thresholds could have disastrous consequences for humanity.**

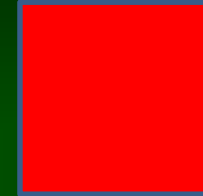
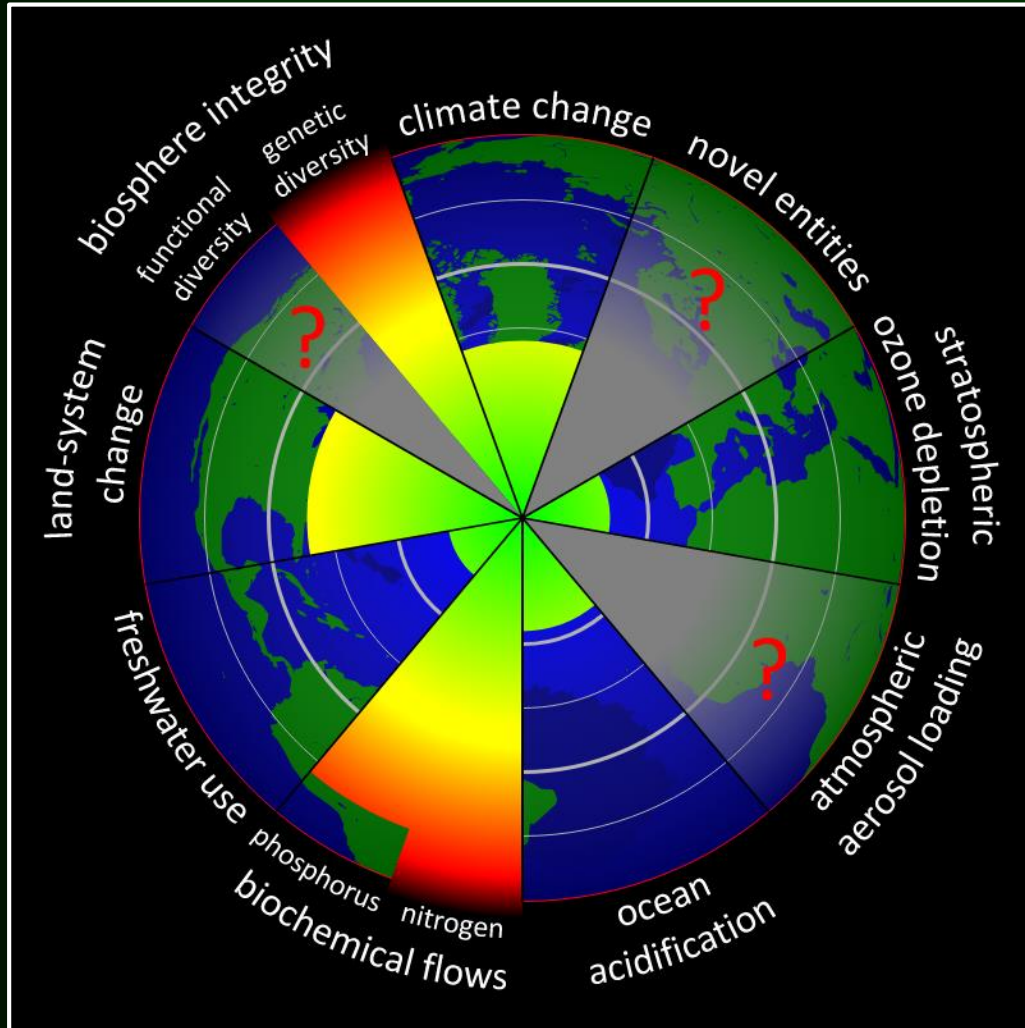
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# Planetary boundaries

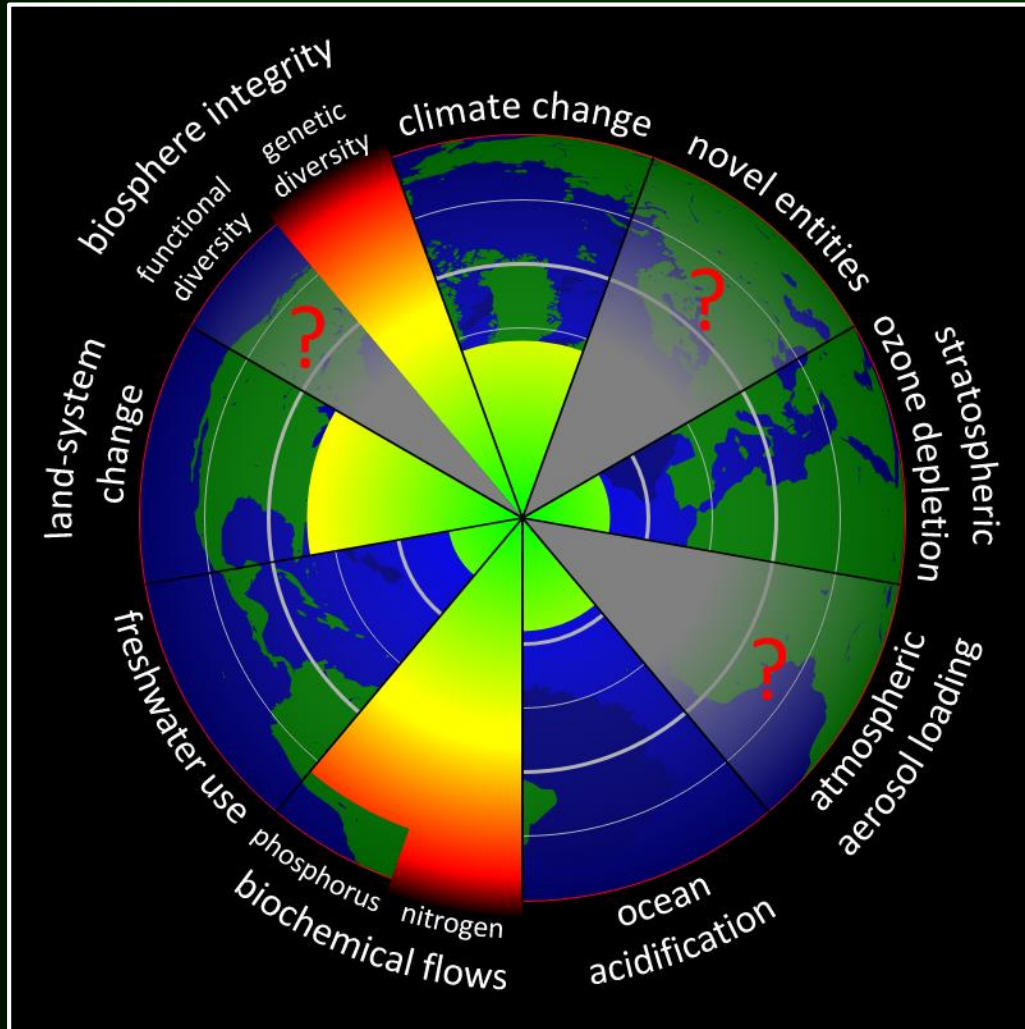


# Planetary boundaries



**Biodiversity**  
**The nitrogen and phosphorus cycle**

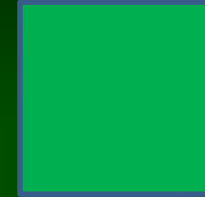
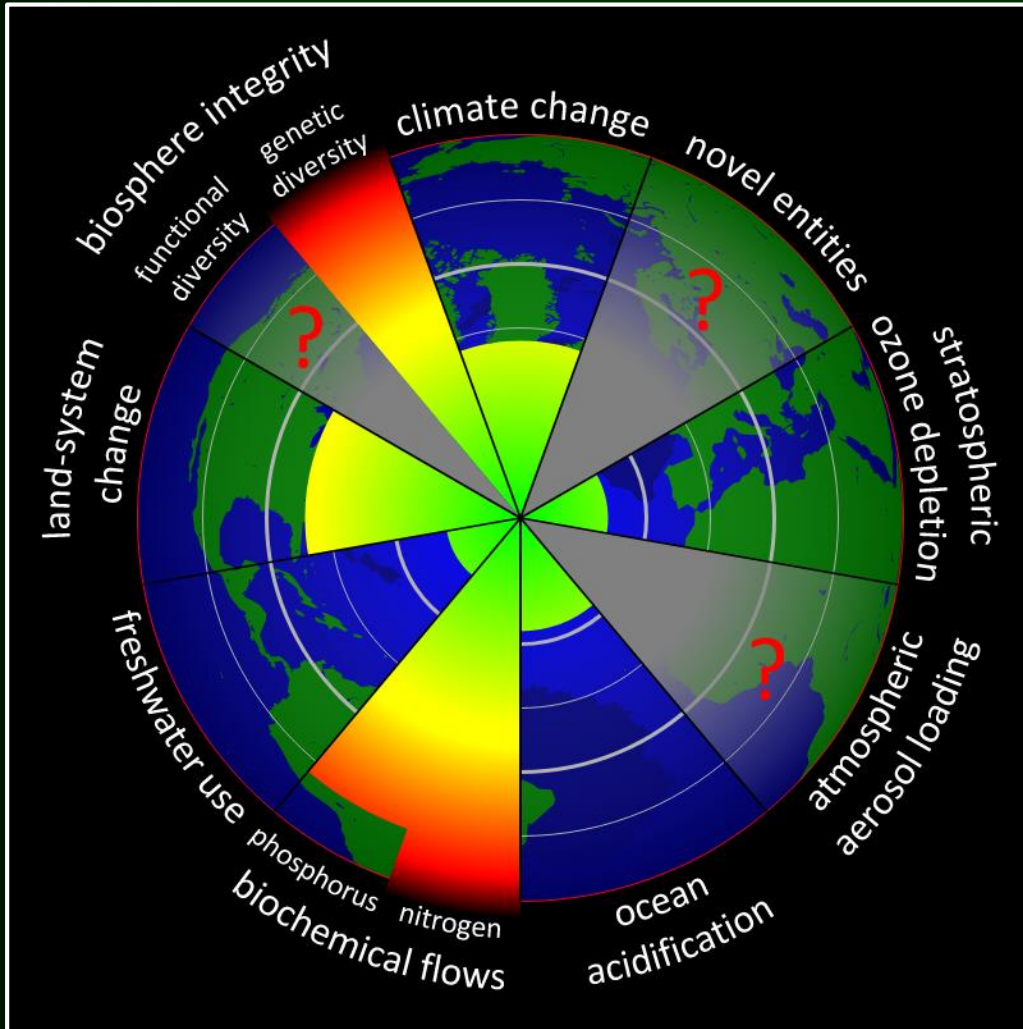
# Planetary boundaries



**Climate change  
Deforestation**

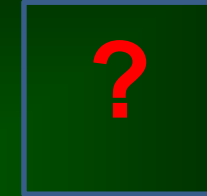
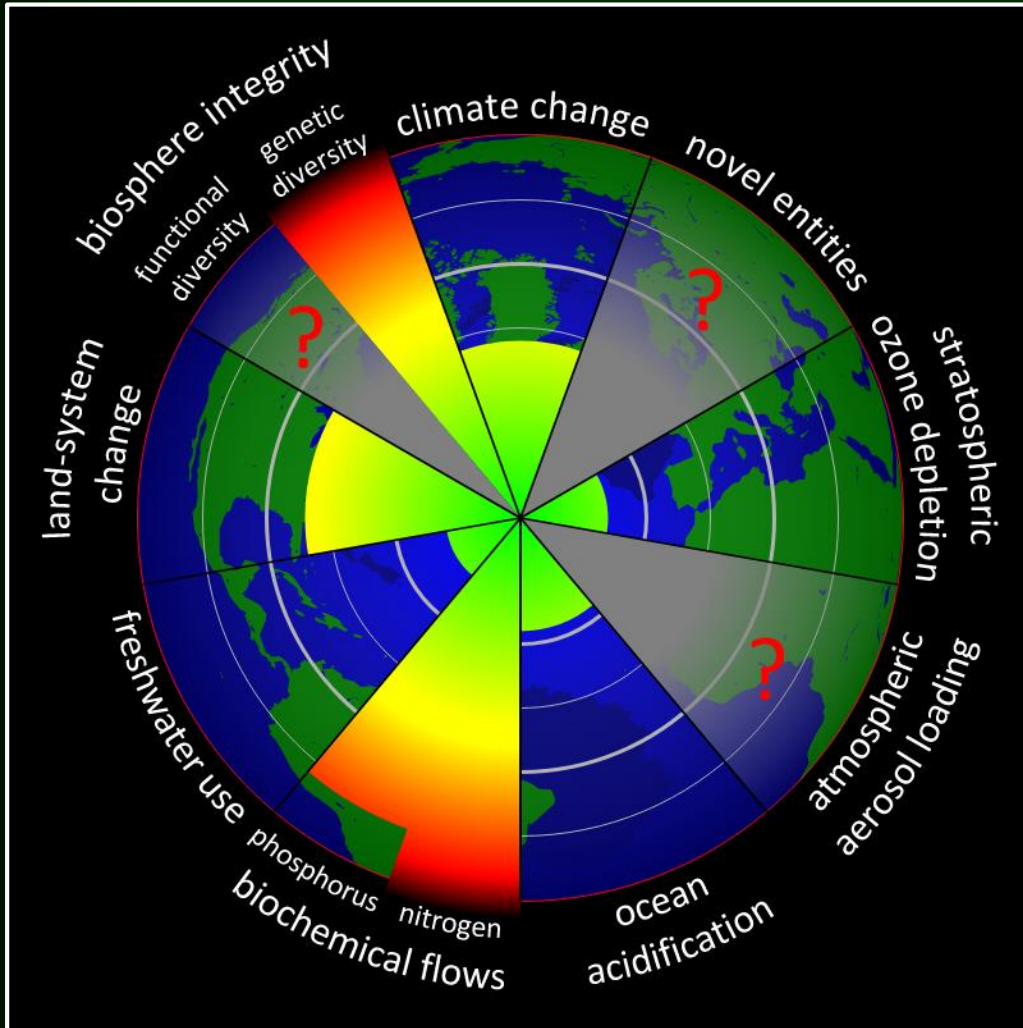


# Planetary boundaries



**The ozone layer**  
**Ocean acidification**  
**Fresh water resources**

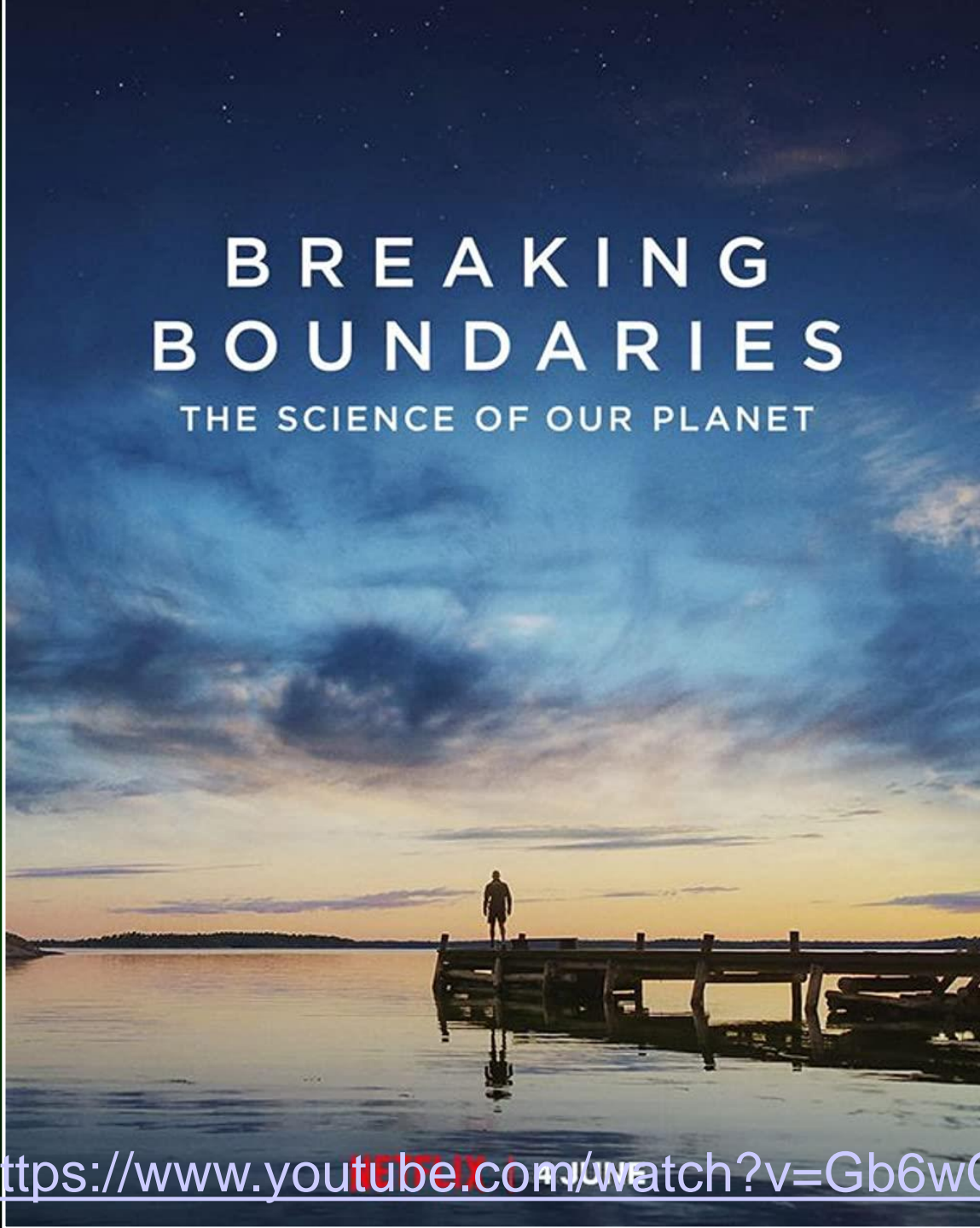
# Planetary boundaries



**Air pollution**  
**New substances in the environment**

# BREAKING BOUNDARIES

THE SCIENCE OF OUR PLANET



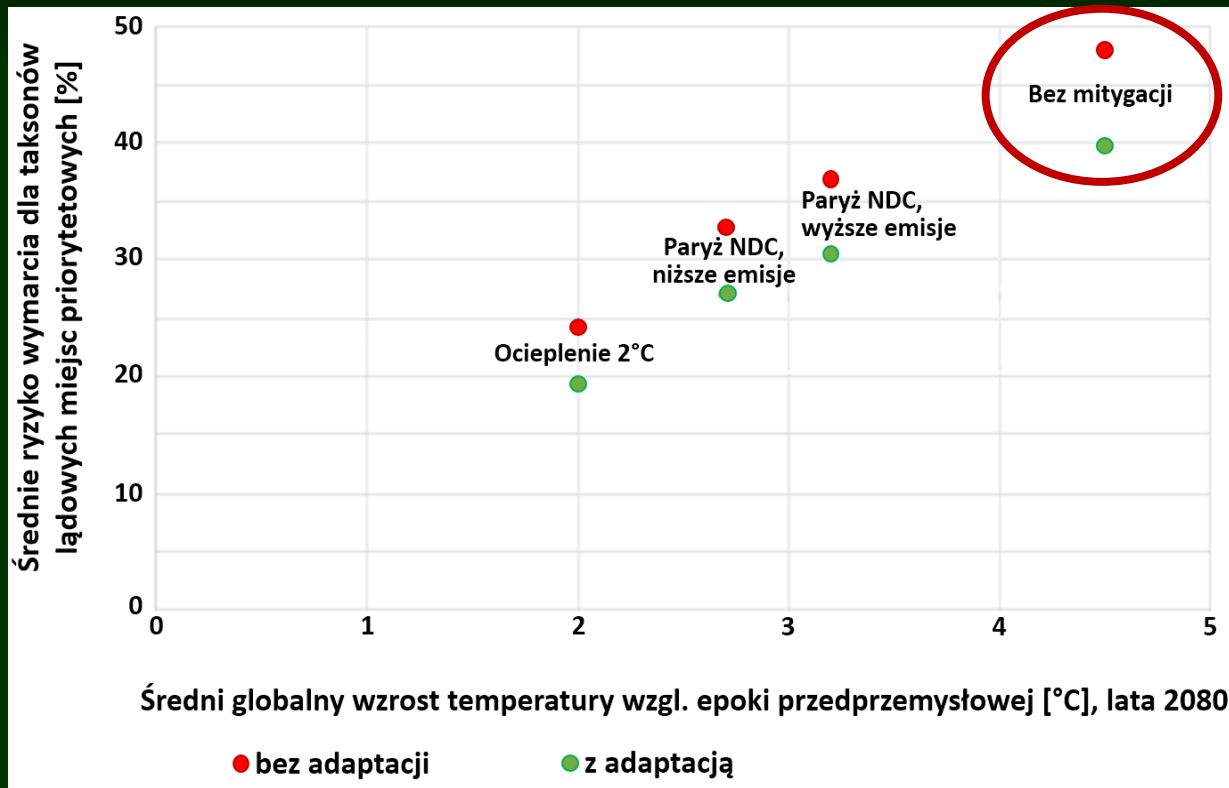
<https://www.youtube.com/watch?v=Gb6wQtNjblk>



# Causes of extinction of species and climate change



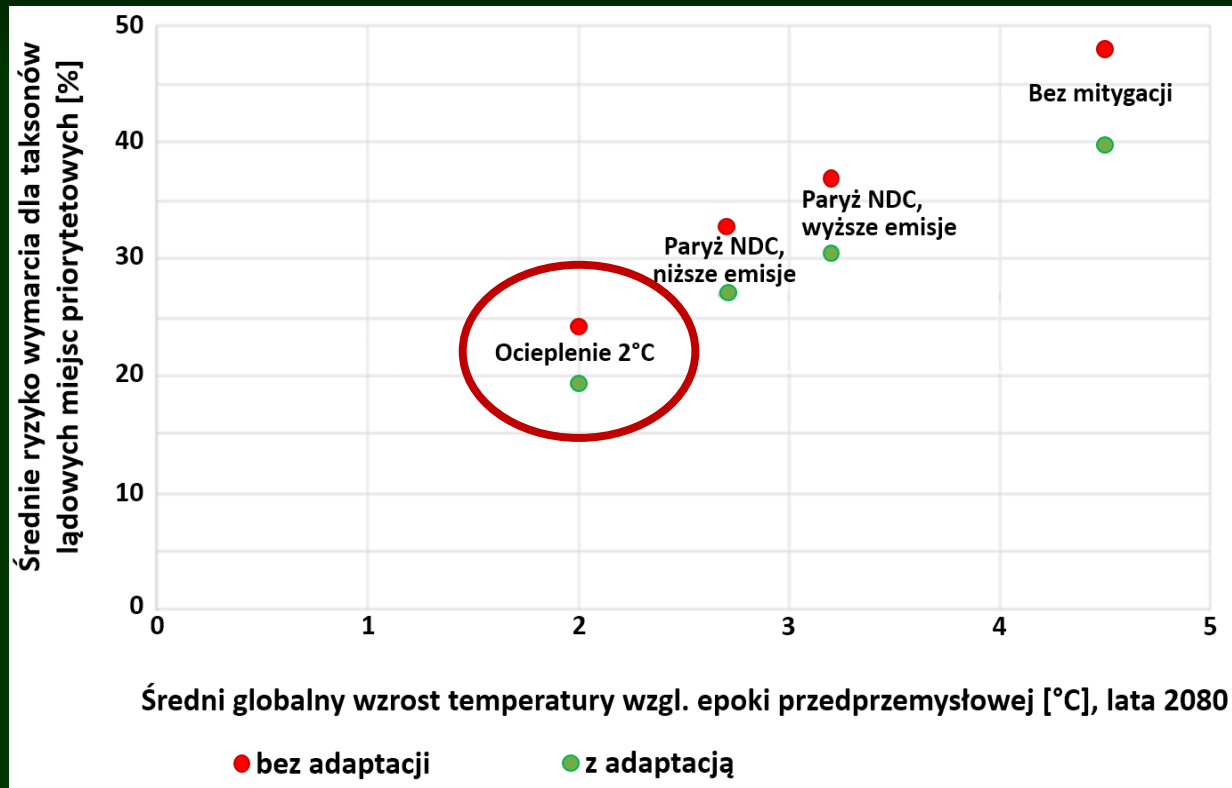
# Causes of extinction of species and climate change



**50%** of species will become extinct - temperature increase by 4.5°C

Warren R. et al. 2018. The implications of the United Nations Paris Agreement on climate change for globally significant biodiversity areas. *Climatic Change* 147: 395-409.

# Causes of extinction of species and climate change



**25%** of species will become extinct - temperature rise to 2°C

Warren R. et al. 2018. The implications of the United Nations Paris Agreement on climate change for globally significant biodiversity areas. *Climatic Change* 147: 395-409.

# **What are the results of contemporary research on global climate change?**





# What are the results of contemporary research on global climate change?

## Is global warming caused by humans?



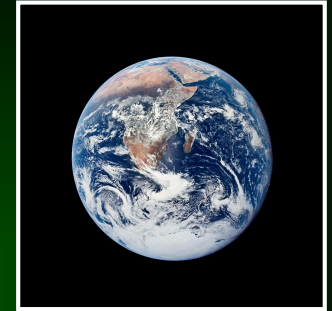
# What are the results of contemporary research on global climate change?



**How have we been responding to the environmental and climate crisis so far?**



# International environmental policy



**70. XX century - there are no limits to growth**

**80. XX century - there are boundaries, but we are far from reaching them**

**90th XX century - probably soon we will reach the limits of growth, but markets and technology will solve our problems**

**XXI century - we reach the limits of growth, but we need to support economic development, because it will prepare future generations for **disaster****



# CLIMATE CHANGE

## A TIMELINE

© 2009 by the author

"CLIMATE  
CHANGE  
ISN'T REAL"

OOPS



OK, CLIMATE CHANGE  
IS REAL, WE'RE JUST  
NOT CONVINCED IT'S  
CAUSED BY HUMANS

FUCK



## **“Politicians Discussing Global Warming”**

This provocative sculpture in Berlin was created by artist Isaac Cordal in 2011 to bring attention to the mounting issues caused by climate change

# Steps mankind must take to achieve sustainability



**Scientists around the world are declaring a climate emergency**

# World Scientists' Warning of a Climate Emergency - 2019

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Short-lived pollutants

Nature

Food

## World Scientists' Warning of a Climate Emergency

FREE

William J Ripple ✉, Christopher Wolf ✉, Thomas M Newsome, Phoebe Barnard,  
William R Moomaw Author Notes

*BioScience*, biz088, <https://doi.org/10.1093/biosci/biz088>

**Published:** 05 November 2019

12,868 scientists from 156 countries have signed the appeal

Ripple W. J., Wolf Ch, Newsome T. M., Barnard P., Moomaw W. R. 2019. World Scientists' Warning of a Climate Emergency. *BioScience*, biz088, <https://doi.org/10.1093/biosci/biz088>



# World Scientists' Warning of a Climate Emergency - 2019

**Urgent action is needed**



**Power engineering.** Reducing the consumption of fossil fuels and replacing them with low-emission renewable sources.

**Short-term air pollution.** Emissions of methane, hydrofluorocarbons, soot and other SLCP pollutants should be rapidly reduced.

**Nature.** It is imperative that the earth's ecosystems are protected and restored.

# World Scientists' Warning of a Climate Emergency - 2019

**Urgent action is needed**



**Food.** It is necessary to change our eating habits, we have to eat more plants and less animal products.

**Economy.** Transforming world economies into ones that are independent of fossil fuels. It is imperative to break with the relentless pursuit of economic growth and prosperity

**Population.** Stabilize the global human population using approaches that ensure social and economic justice.

# Steps mankind must take to achieve sustainability



**„The Global Deal for Nature”**

# „The Global Deal for Nature”

**30%** - lands and oceans under protection until 2030

**50%** - lands and oceans under protection until 2050



Dinerstein et al. 2019. A Global Deal For Nature: Guiding principles, milestones, and targets. Science Advances 5 : eaaw2869



# „The Global Deal for Nature”

**14.7%** of the land area under protection

**7.5%** of the world's oceans are protected



# Steps mankind must take to achieve sustainability



## The European Green Deal

# The European Green Deal



**2030** - reduction of CO<sub>2</sub> emissions by 55%

**2050** - zero CO<sub>2</sub> emissions



# Steps mankind must take to achieve sustainability



**The EU Biodiversity Strategy for 2030**



# The EU Biodiversity Strategy for 2030



## The new EU-wide Biodiversity Strategy will:

- > Establish protected areas for at least:



**30%**  
of land in  
Europe



**30%**  
of sea in  
Europe

With stricter protection of remaining EU primary and old-growth forests legally binding nature restoration targets in 2021.

At least 1/3 of protected areas – representing 10% of EU land and 10% of EU sea – should be **strictly protected**.



# Nature Is Speaking – Julia Roberts is Mother Nature



<https://www.youtube.com/watch?v=WmVLcj-XKnM>

<https://www.conservation.org/nature-is-speaking/julia-roberts-is-mother-nature>

[https://en.wikipedia.org/wiki/Julia\\_Roberts](https://en.wikipedia.org/wiki/Julia_Roberts)



**Will we be able to take effective action?**

A satellite image of Earth showing the African continent and surrounding oceans, with a white text box overlaid.

**Feel like a part of the biosphere**



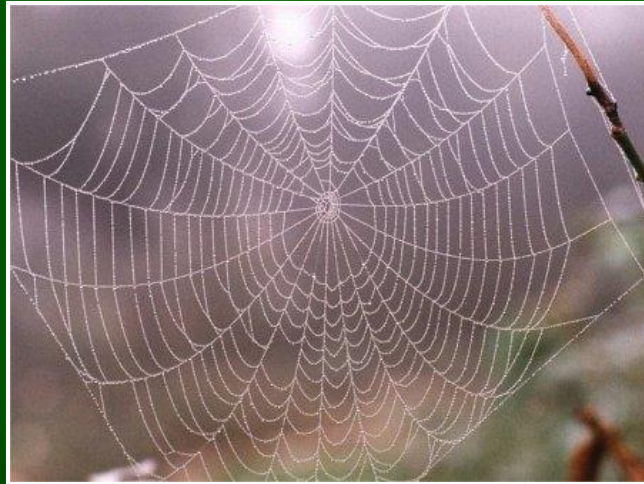
## Feel like a part of the biosphere



## Feel like a part of the biosphere

***"... there are no truly lonely beings. All creatures are, in a sense, related to and dependent on all the rest "***

*Lewis Thomas (1913-1993, doctor, poet)*



Dowd M. 1991. Earthspirit. Twent - Third Publications, Mystic, Connecticut.

## Feel like a part of the biosphere

*“Never allow children to imagine that anything exists as a separate thing. Make it clear to them from the beginning that all of life is dependent. Show them the **relationships** in the forests, in the fields, in the ponds, in the streams, in the village and the country around them.”*

**Aldous Huxley**  
1894-1963, English novelist and essayist

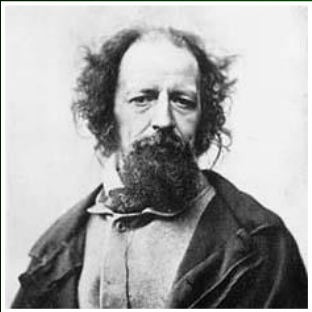


Hatley K. 1993. A Neo-Humanist Model of Education. *New Renaissance* 4, 1: 10-13.

## Feel like a part of the biosphere

***„Nature, red in tooth  
and claw”***

***„Nature, green in root  
and flower”***



Lord Alfred Tennyson (1809-1892)  
British poet

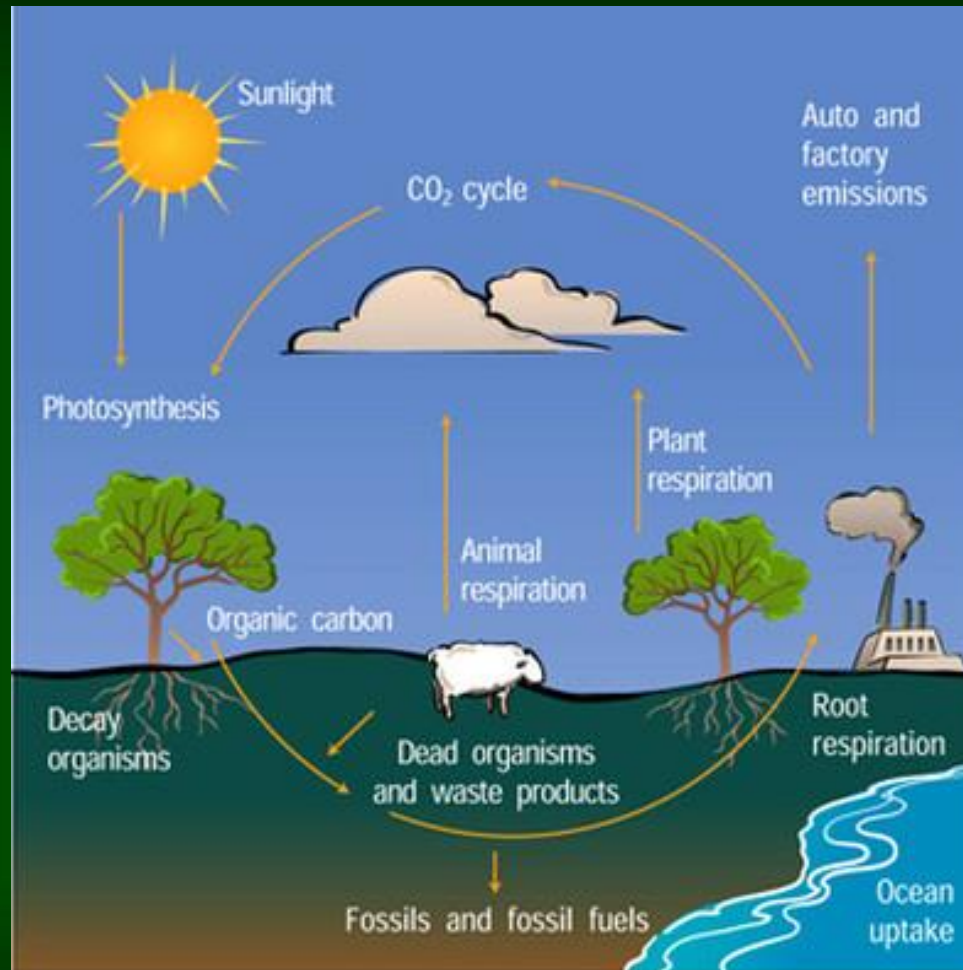
Tennyson A. 1849. Memoriam A.H.H.

Douglas Boucher  
biologist, University of Quebec

Fausto-Sterling A. 1993, Is Nature Really Red in Tooth and Claw? Discover 14 (April 1993): 24-27.



# Feel like a part of the biosphere



## Feel like a part of the biosphere

How many years does it take for almost 100% of our matter to be replaced?



**7-8 years**



**Feel like a part of the biosphere**

**Man and nature constitute an integral whole**

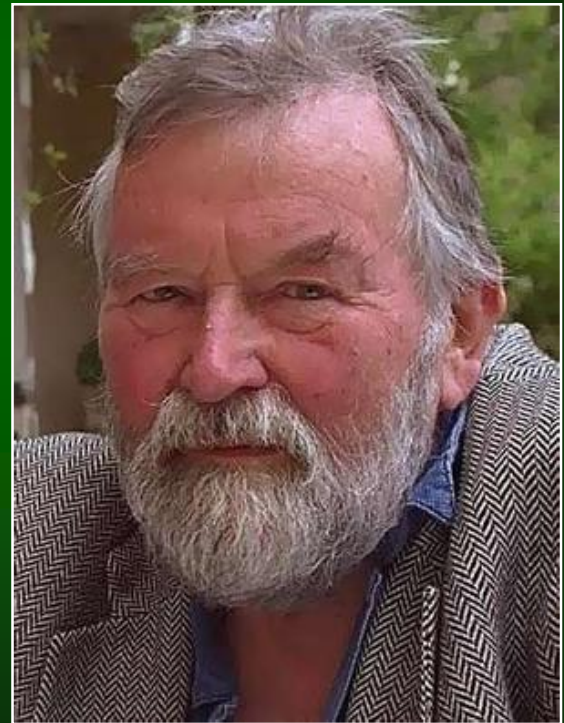


Feel like a part of the biosphere

*"As long as nature is perceived **as something alien**, separate, outside of us and not in us, it is lost to us"*

John Fowles (1926-)

writer

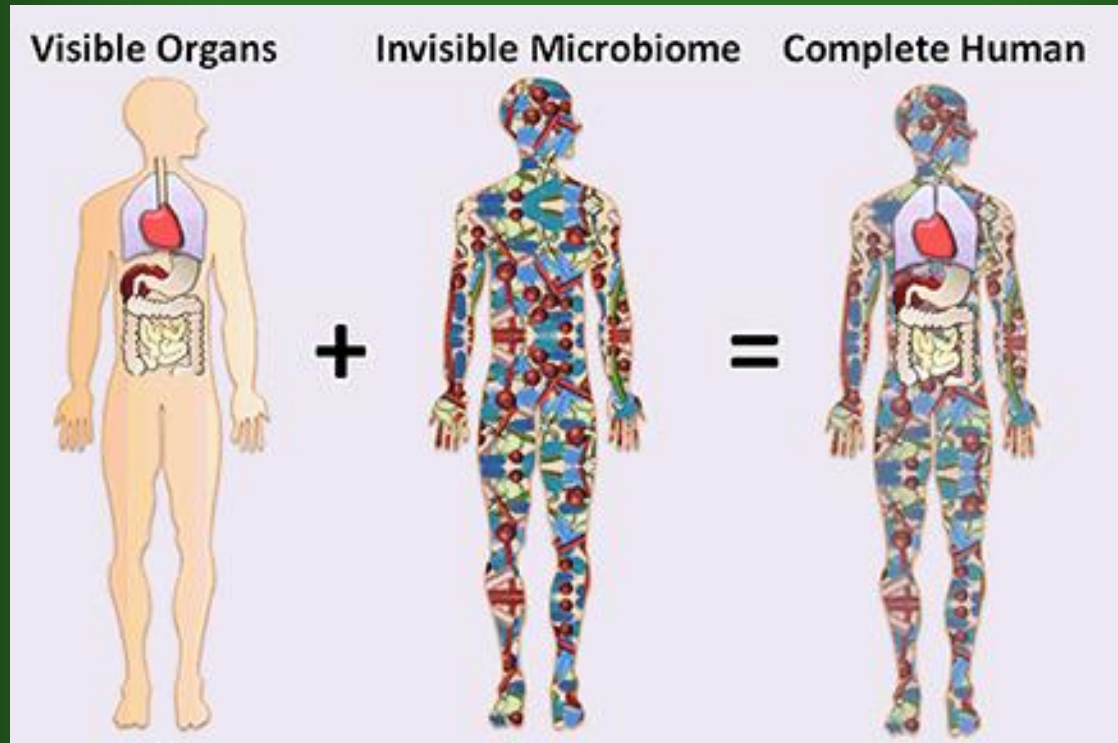


FOWLES J. 2000. The Tree. Vintage, London.



# Feel like a part of the biosphere

## Human – holobiont (superorganism)



# Feel like a part of the biosphere



**Human – holobiont  
(superorganism)**

bacteria

viruses

archaea

protists

fungi

mites

parasites

**The human body - a complex ecosystem (biosphere)**

## Feel like a part of the biosphere



***Whether we like it or not, we humans are linked to each other and to all plants and animals around the world. Our lives connect with each other. (...) Plants, animals and microbes worked together for a very long time. (...) The willingness to cooperate developed in the process of evolution. Organisms that did not interact with others died.***

***Cooperation is our nature. The key to survival "***

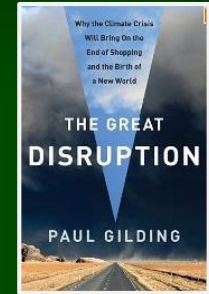
Sagan C. 2001. Miliardy, miliardy. Rozmyślania o życiu i śmierci u schyłku tysiąclecia. Wyd. Prószyński i S-ka, Warszawa.

**Will we be able to change the system?**





# Will we be able to change the system?



Paul Gilding - an Australian environmentalist, consultant, and author

***„Again and again, we respond to problems late, but dramatically – and, crucially, effectively. Slow, but **not stupid**”***

**Paul Gilding. „The Great Disruption: Why the Climate Crisis Will Bring On the End of Shopping and the Birth of a New World”. Bloomsbury Press 2011.**

Will we be able to change the system?

„crisis”



危機

Will we be able to change the system?

„crisis”

危機

danger

Will we be able to change the system?

„crisis”

危機

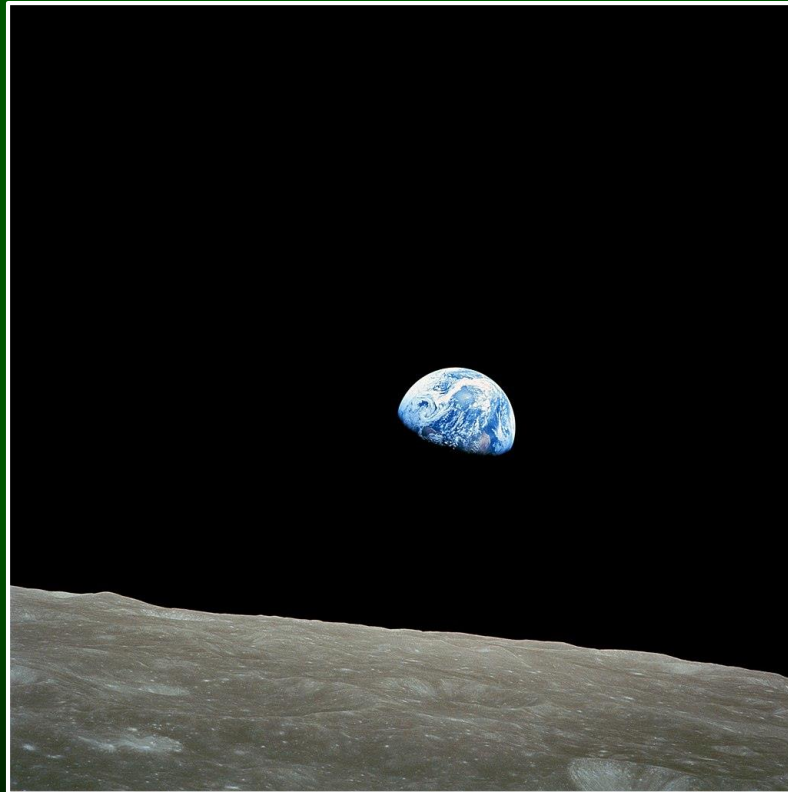
danger

second chance



# Will we be able to change the system?

**We are now faced with the opportunity to create  
a future that will be better**



# Will we be able to change the system?



„It's the end of the world as we know it (and I feel fine)”  
R.E.M.



[http://www.youtube.com/watch?v=\\_eyFiCIAzq8](http://www.youtube.com/watch?v=_eyFiCIAzq8)

[http://www.pinger.pl/szukaj/po\\_tagu?t=R.E.M.](http://www.pinger.pl/szukaj/po_tagu?t=R.E.M.)



# **Why are we failing to respond to the climate and environmental crisis?**

**Prof. Piotr Skubała, Ph.D.**  
**University of Silesia in Katowice, Faculty of Natural Sciences**  
**Institute of Biology, Biotechnology and Environmental Protection**

Fot. Piotr Skubała