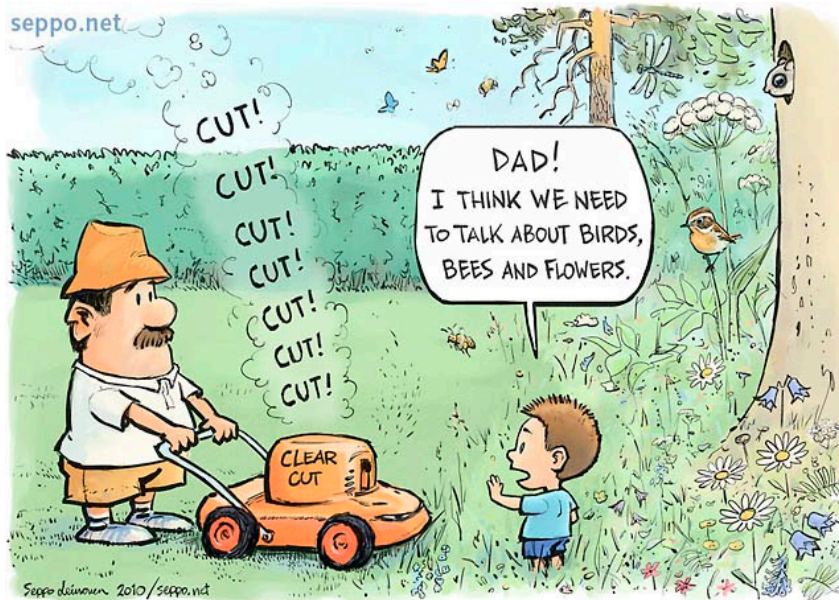




# National status and future for terrestrial biodiversity



Jacob Heilmann-Clausen  
Climate thursdays, SDU,

22 sept 2022



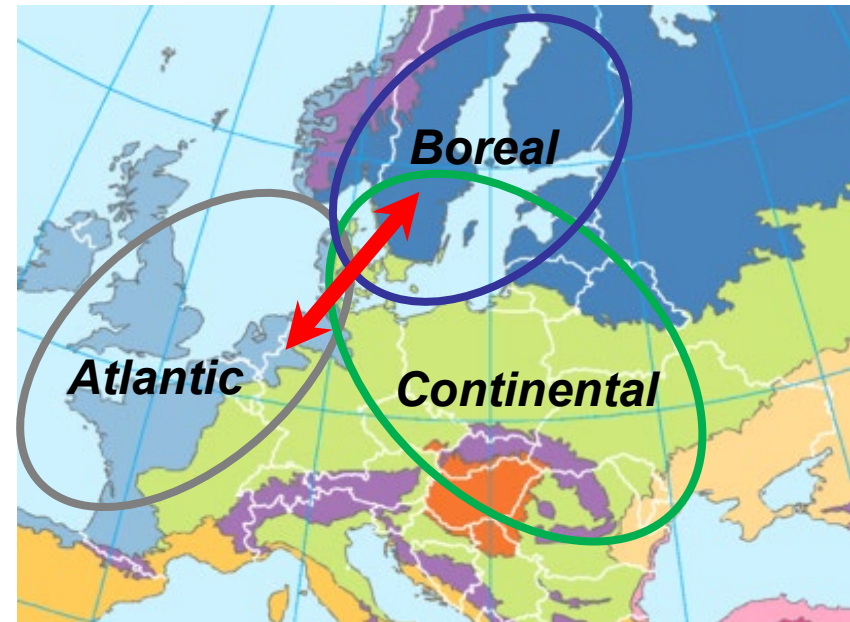
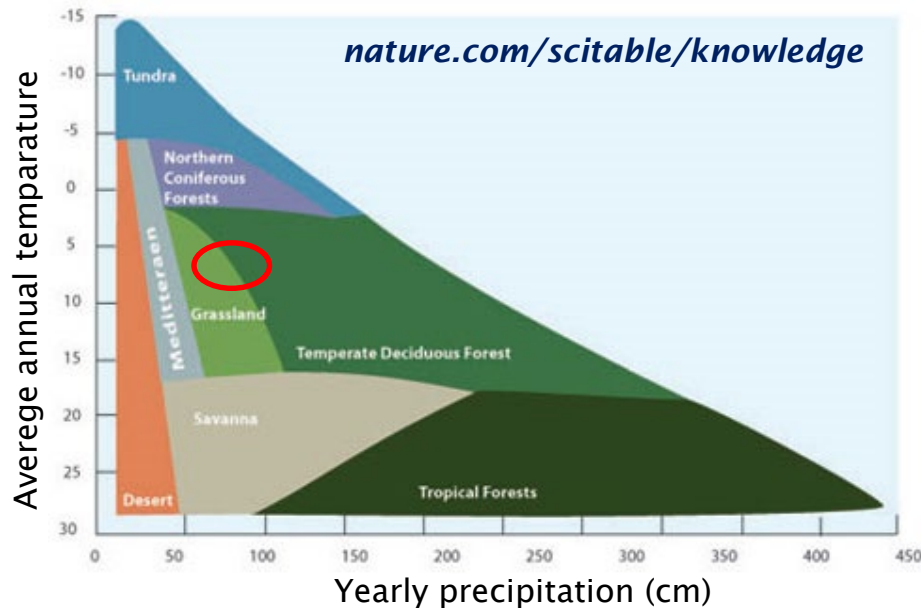
# Biodiversity in Denmark - setting the scene

A transient climatic region

Dispersal corridor for species on the move

- E.g. migratory birds
- Climate change refugees

Fertile soils and a big agricultural influence



# How many species in Denmark?

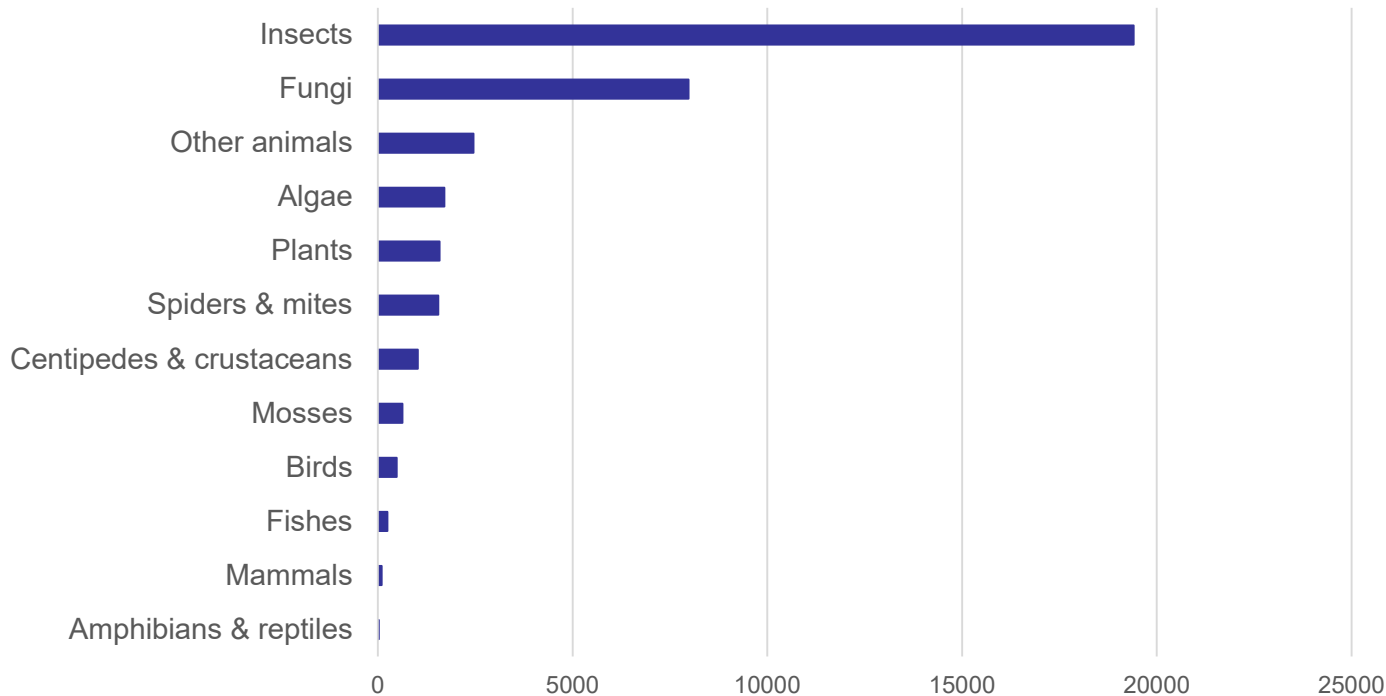


J.B.S Haldane

**The Creator Has an Inordinate Fondness for Beetles**



Number of species in Denmark





# Threat status of Denmark's species

One out of four species under threat  
Most threatened (and total) species in forest habitats

RE (middle spotted woodpecker)

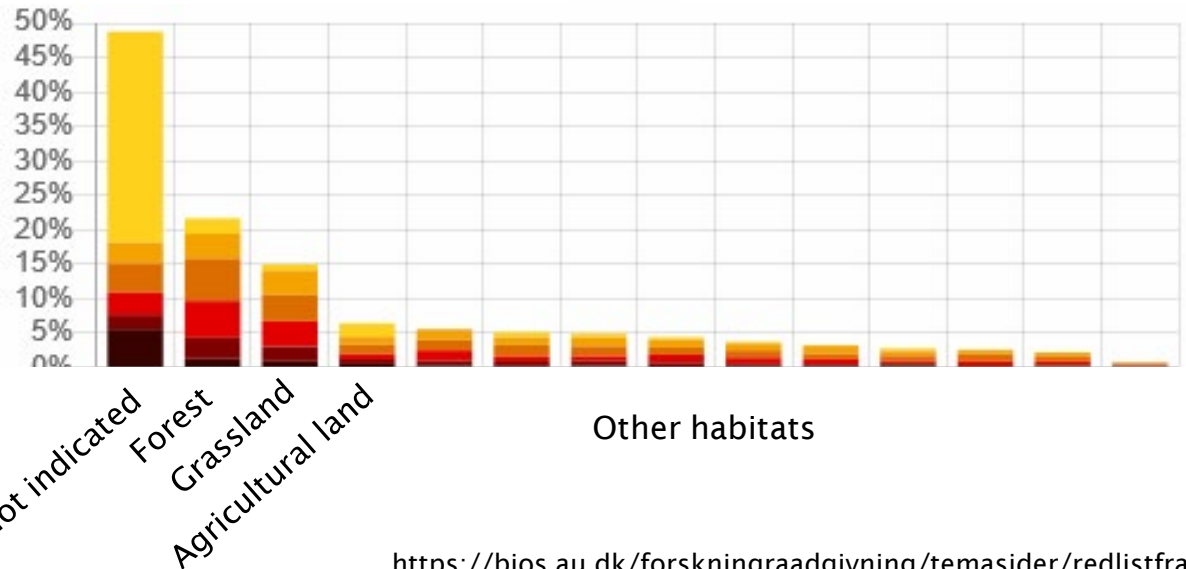


NT (wood cow-wheat)



- Regionally extinct
- Critically endangered
- Endangered
- Vulnerable
- Near threatened
- Data deficient
- Least concern

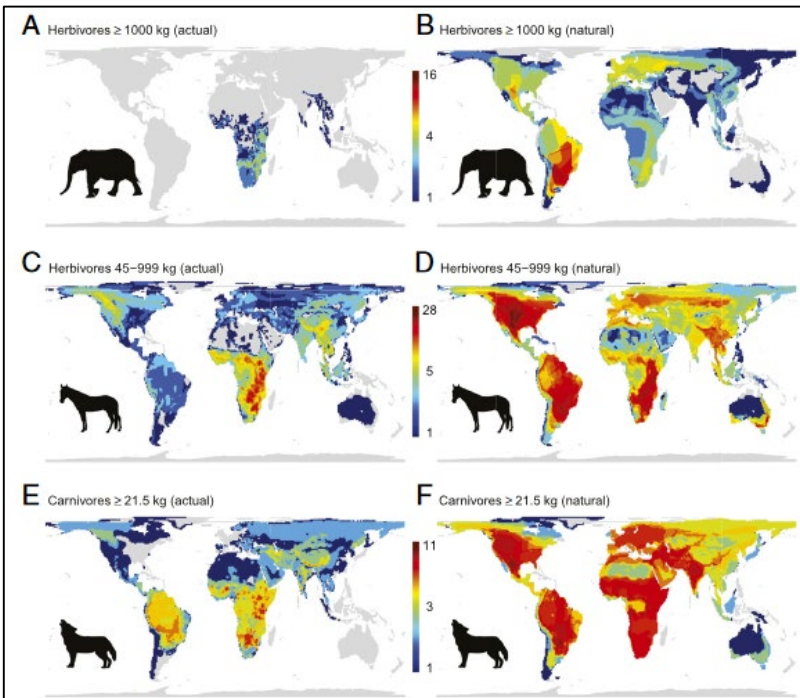
Share of species assessed



# Loss of large mammals

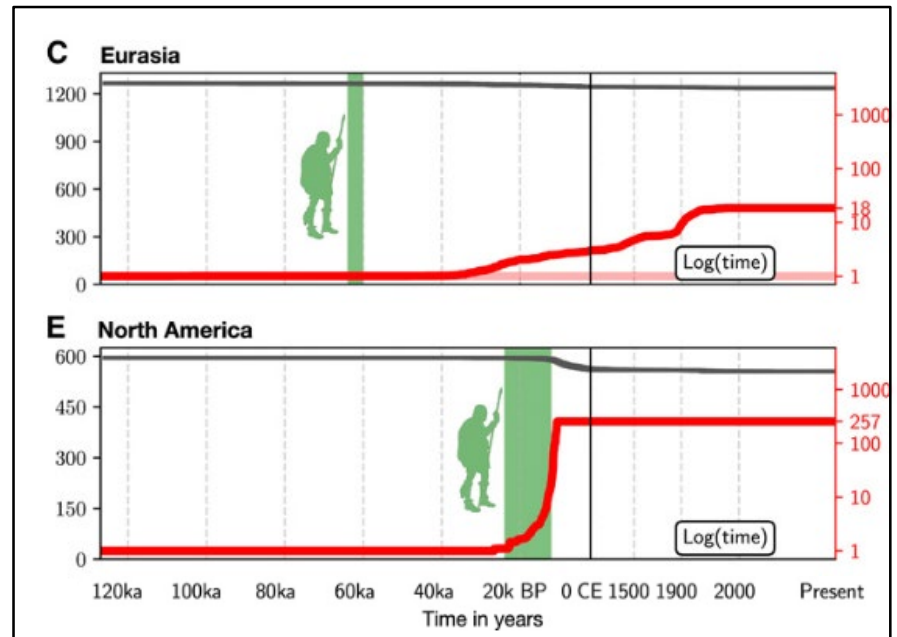
Massive loss of large mammals during the last glacial cycle  
 Relative importance of climate change vs humans highly debated  
 Consequences to ecosystem functioning and management?

Present fauna                      Modelled present fauna  
 (without extinctions)



Svenning et al. (2016). *PNAS*

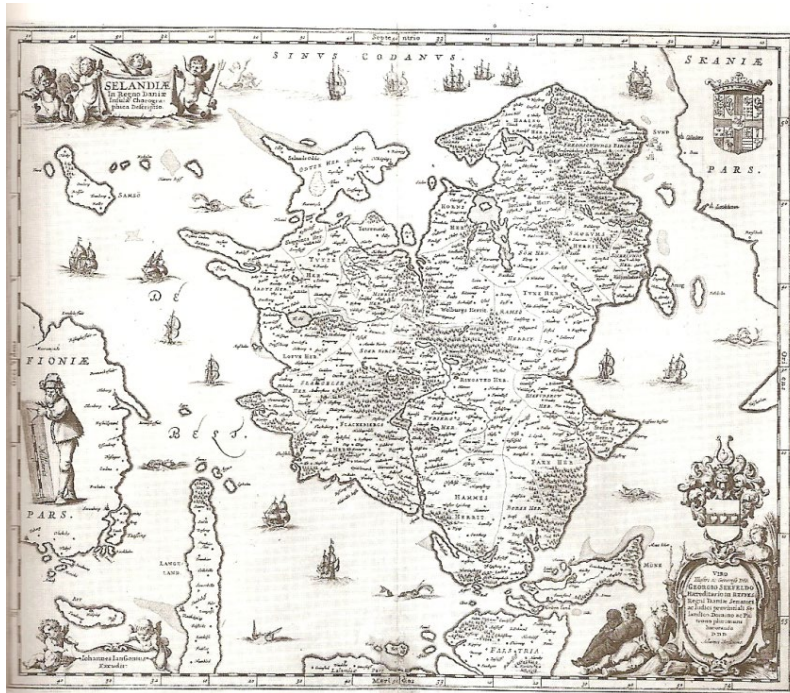
Loss of megafauna vs human expansion



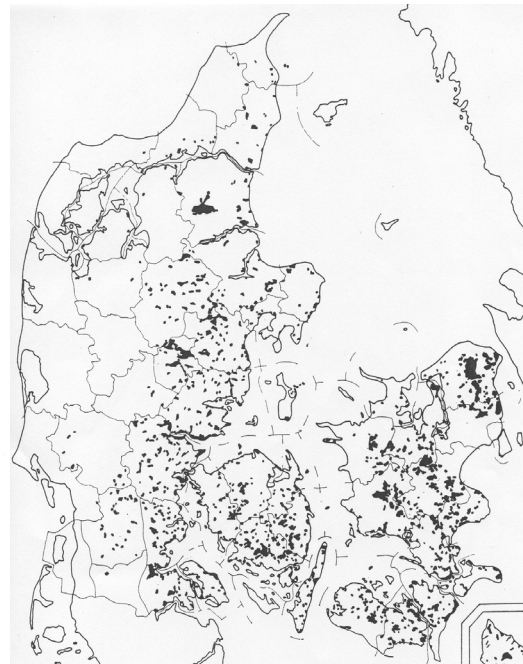
Andermann et al. (2020). *Science Advances*

# Loss of forest due to human landuse

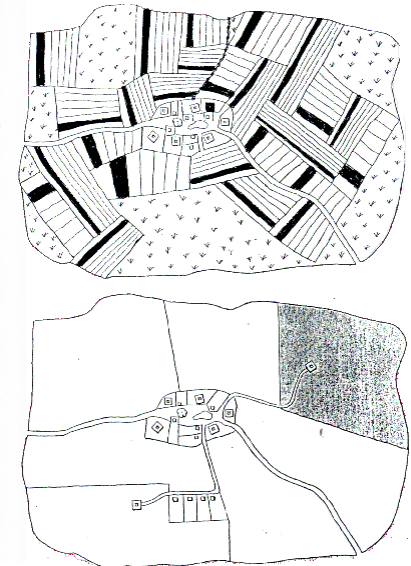
- Ca 4000 bc: first conversions to agriculture
- 16th century: Spatial arrangement of forest +/- as now (but larger)
- 1780–1805: Loss of 30% of wooded area in Denmark due to landscape reforms
- 1800: Forest minimum, 4 % forest cover



Hans Willumsen Lauremburg -1647



Søren Ødum - 1967



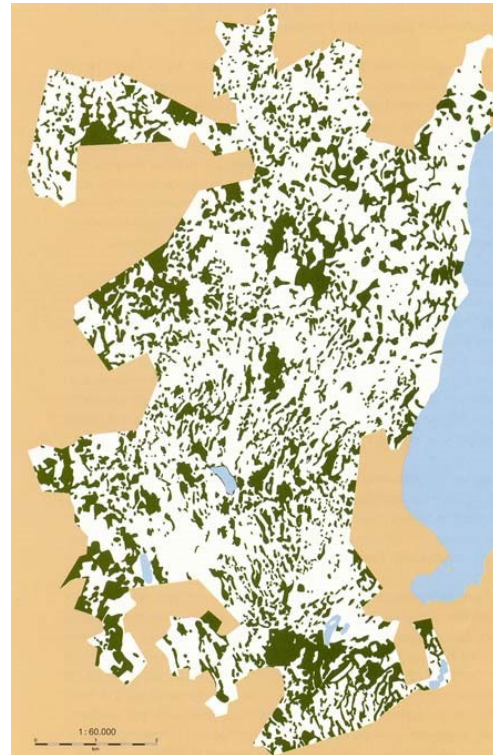


# Loss of processes and habitats within natural areas

- Loss of deadwood (especially since 1500)
- Loss of veteran trees (especially since 1800)
- Loss of wetlands due to drainage (especially since 1750)
- Loss of transitions between open land and forest (since 1805)



Gribskov 1857-8



Gribskov 1988



# Loss of open natural habitats

1780-ies:

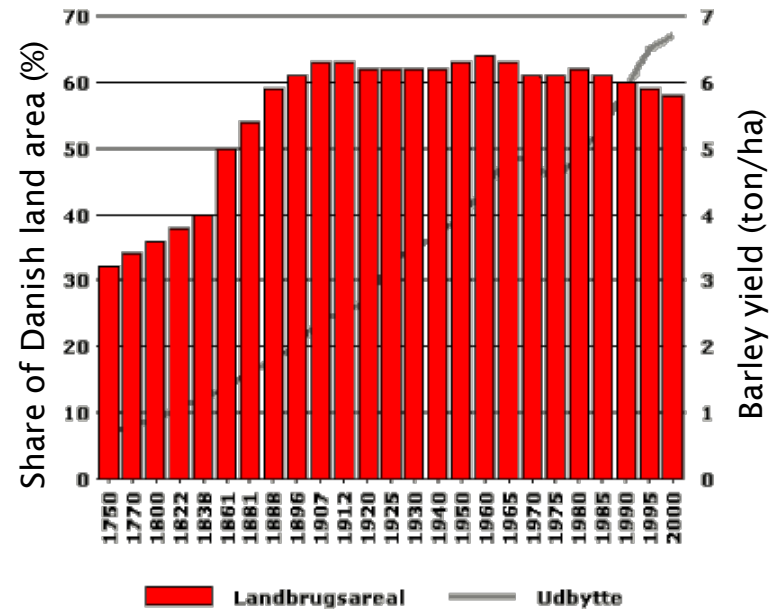
- Drifting sands: 3% of Danish land area
- Heatlands: >25% of land area, Jutland
- Conversion to plantations: 1790-1920
- Conversion to farmland: 1750-1900



Schiøtt 1899 (red.). Danmarks Natur



P.C. Skovgaard, Parti fra udkanten af Tisvilde Skov, 1845

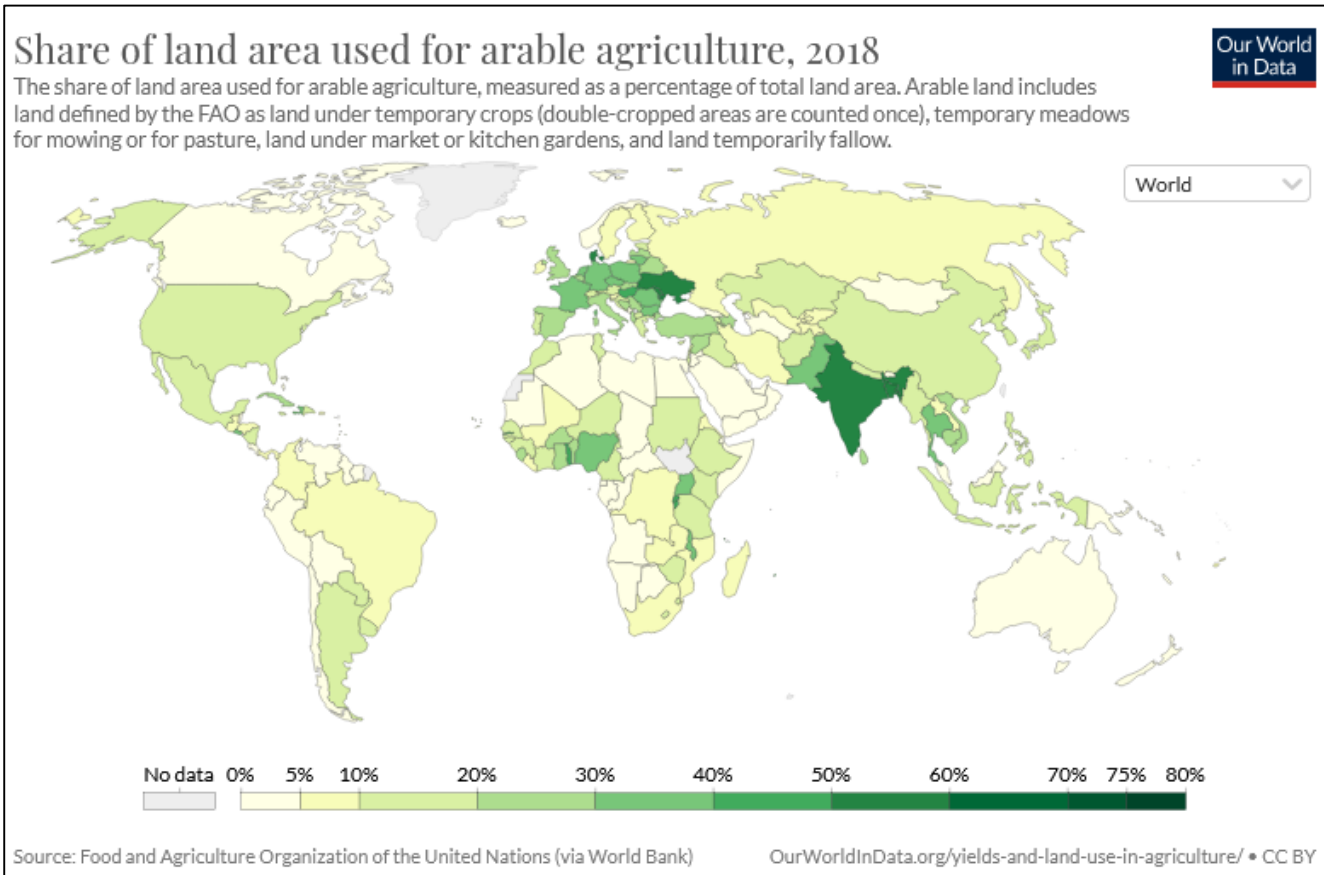




# Intensive agriculture

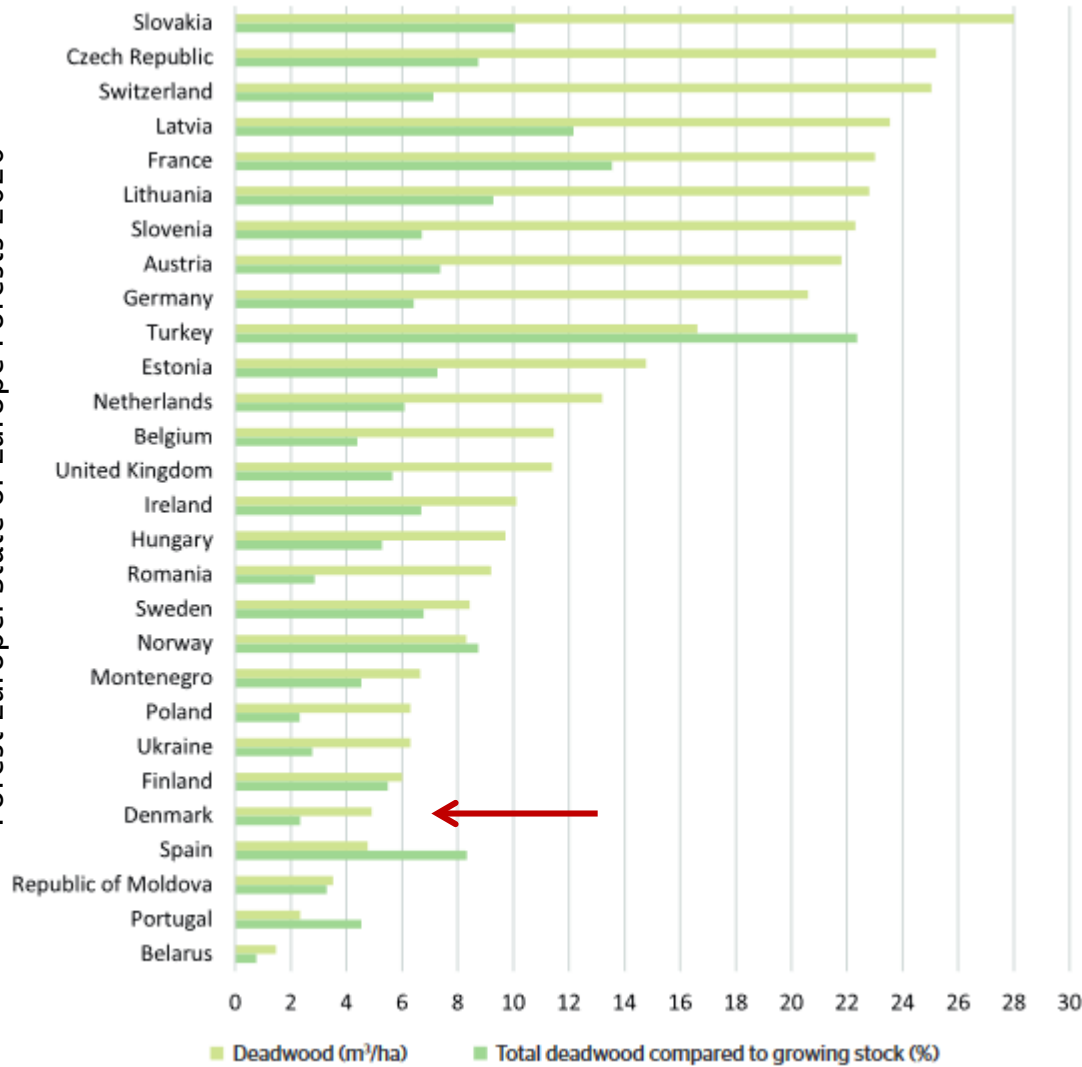


One of the top five nations in the world when it comes to the relative share of land under the plough



# Efficient forestry

Forest Europe: State of Europe Forests 2020



Strong tradition of efficient forestry

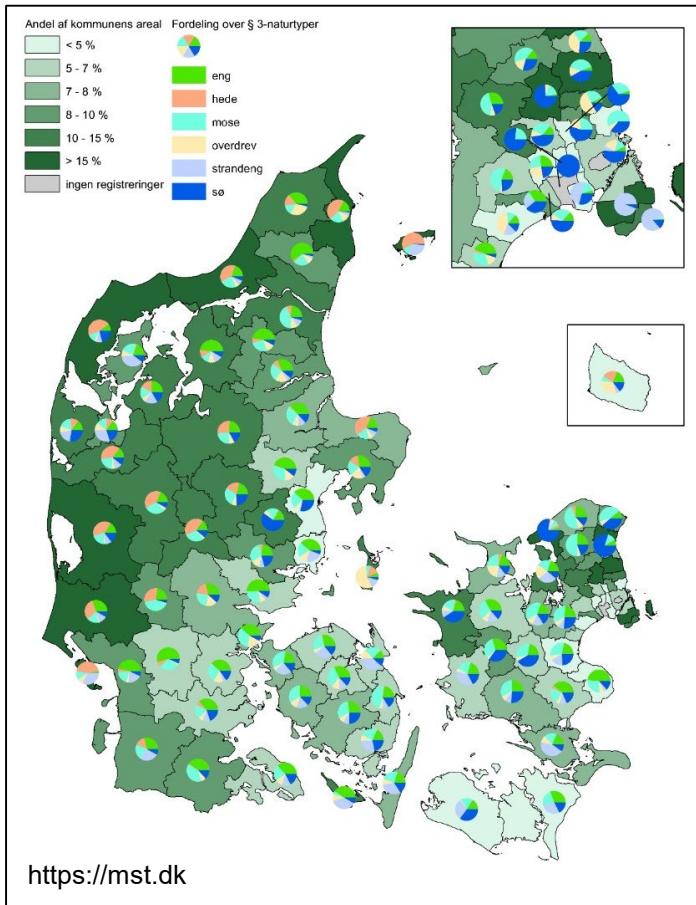
Dead wood amounts only slightly higher for EU protected forest types, except low productive swamp-forest types:

- Beech forests (6–8 m³/ha)
- Alder swamp forest (13 m³/ha)

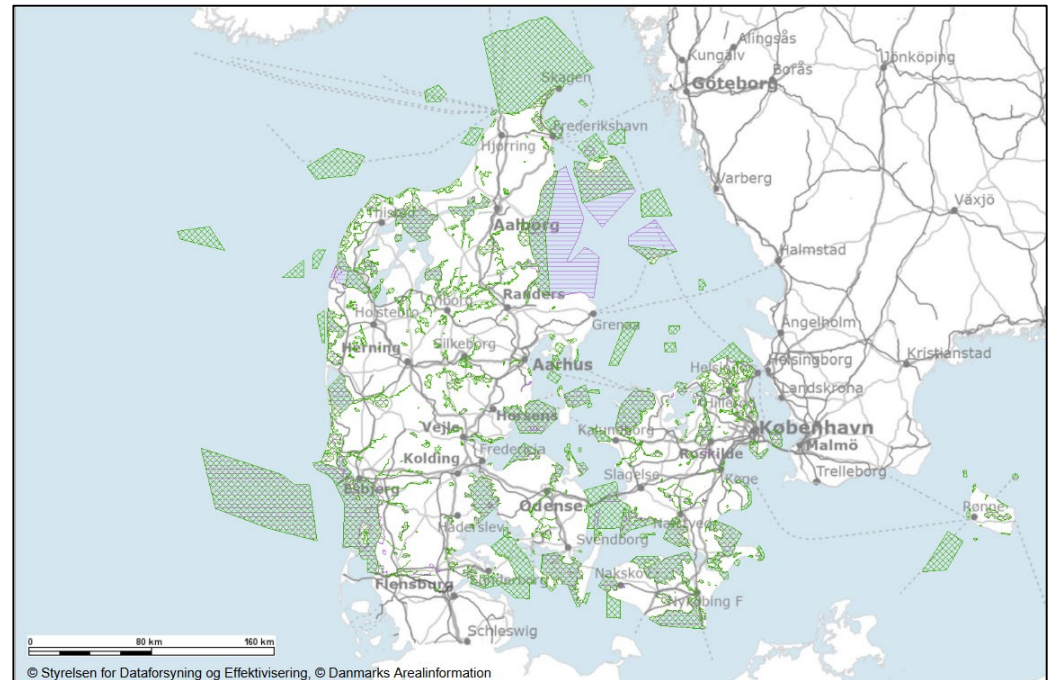
# Conservation status – a lot of protected land?

Nature protection law §3:  
Protects bogs, grasslands,  
heatlands, lakes

EU habitat directive/Nature 2000:  
Protects certain types of freshwater,  
marine and terrestrial habitats



10,3 % of land area



12 % of land area, 8 % of sea area

Protection against **active** land use **change**  
**Not a protection against land use**



# A best estimate of reality

Very few areas in close to natural condition  
Most natural conditions present in coastal areas and lakes



# Protection of natural forests in Denmark

1992:

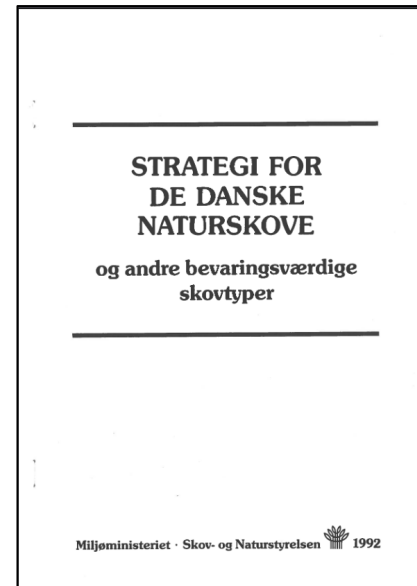
- 500 ha of forest protected against management

Strategy to increased protected areas by 2000:

- 5.000 ha unmanaged forest (1.2 ‰ of land area)
- 4.000 ha traditional management systems

2012:

- 7.500 ha protected unmanaged forest (1.7 ‰ of land area)
- of which ~ 50 % coniferous forest or non-forested areas



# New goals

Non-intervention forest: 75.000 ha  
Nature-nationalparks: 60.000 ha



Considerable overlap

~2 % of land area



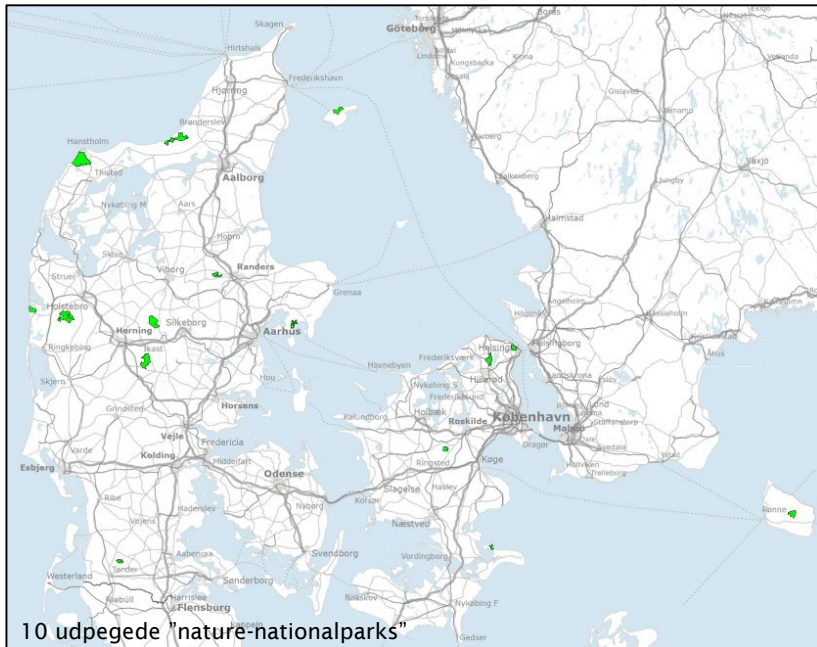


# Is it ambitious?

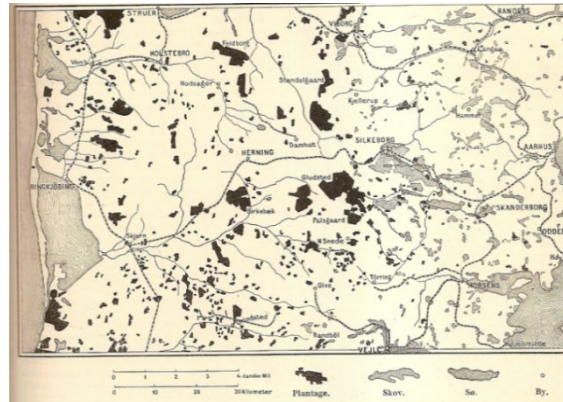
Well...

EU goals:

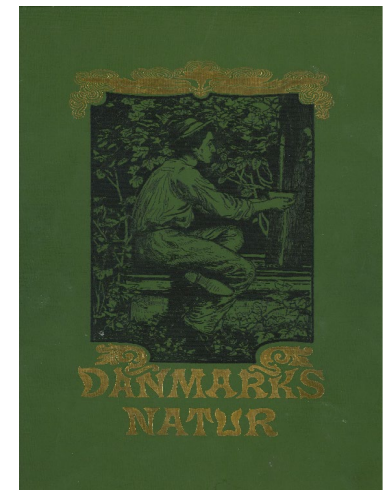
- 10 % wild nature (429.330 ha)
- 30 % nature (1.2 mill. ha)



200.000 ha of bogs drained in the 1870ies (lex.dk)



Reforestation of >100.000 ha heathlands and dunes in Jutland from 1850-1900



Julius Schiøtt 1899 (red.)

# Is it possible to increase ambitions?

Yes! > 500.000 ha which could be effectively protected at low cost

Forside Serier Analyse Indsigt Investor Økonomi Debat Top job Podcast E-avis Seneste nyt

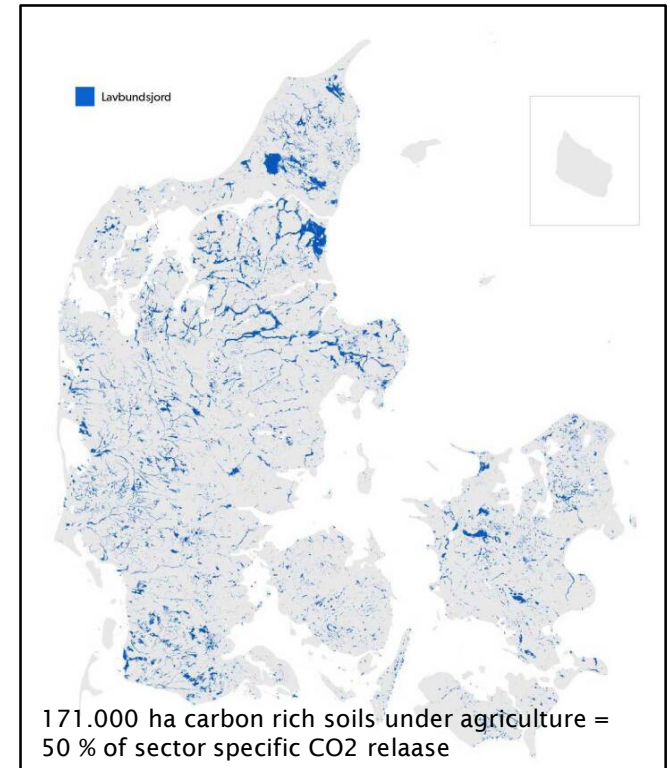
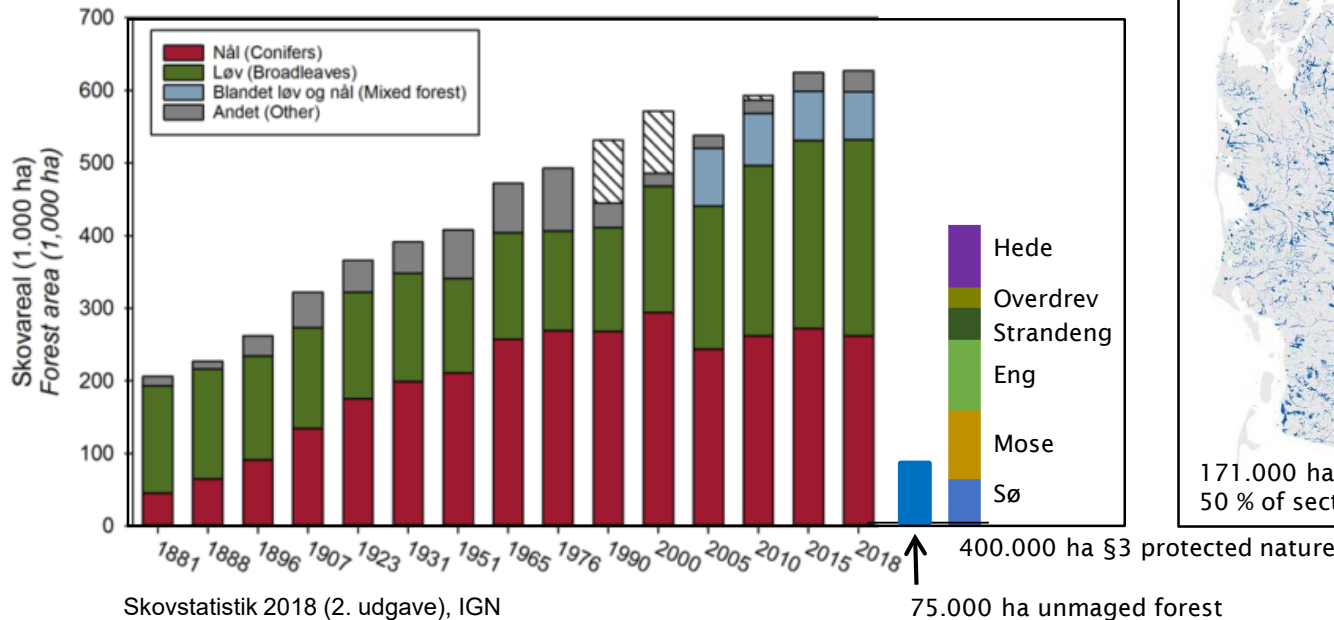
88% ↓ Novo Nordisk B 762,20 0,12% ↑ Novozymes B 416,90 2,58% ↑ Pandora 468,30 0,84% ↑ Rockwool International B 1.596,00

## Biodiversitet skal behandles på lige fod med klimakrisen

Konsekvenserne af det manglende fokus på biodiversitet kan have mindst lige så store konsekvenser for vores økonomier og samfund som klimakrisen. Derfor skal der handles nu, og vi i Danske Bank vil sætte skub i udviklingen.

DEBAT | 21.06.2022 KL. 08:45

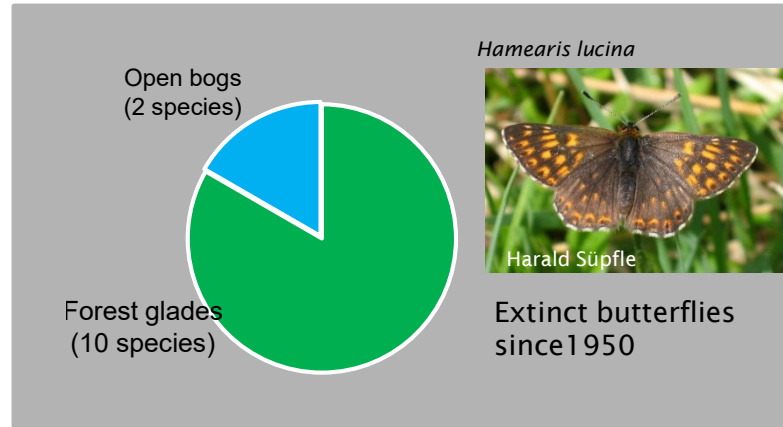
Finans 21 juni 2022





# Changing paradigms for managing nature

## Traditional management



## Nonintervention reserves



Sydlangeland

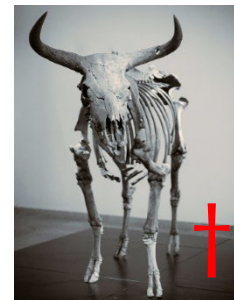


Restoration of natural processes



Abruzzo National Park, Italien

Mitigating effects of landuse, elevated CO2 and nitrogen loads & the extinction of large herbivores





# Is it dangerous?



The stand of "Bevar de Danske Skove" at Naturmødet

- Challenging 200 yrs separation of forests from the open landscape
- Reversing >6.000 yrs efforts to optimize nature to deliver on our material needs
- Loss of control
- Loss of identity
- Loss of rights
- Loss of public support
- How do we restore nature from agricultural land and managed forest?
- How do we set goals for dynamic nature?

Challenging our perspective on large mammals as part of nature

ERHVERV

**Dorthe er klar til at fodre sultne dyr i omstridte naturnationalparker: - Jeg glemmer aldrig lugten af død hest**





Thanks for the attention  
- questions welcome