

Insects in a changing world

What's happening, why, and how can we help?

Klimaseminar, Rannveig M. Jacobsen

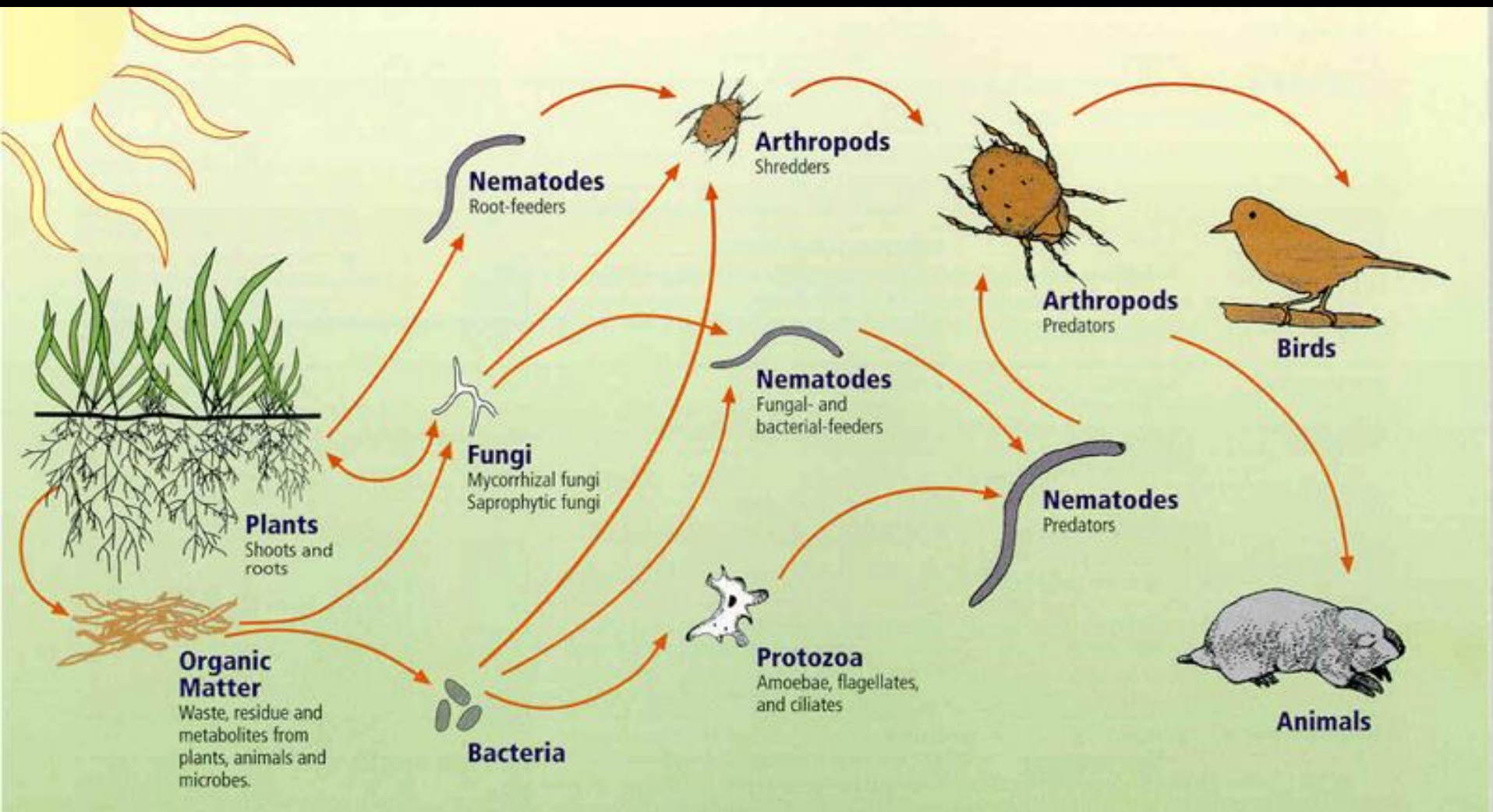




Pollination



Decomposition



Food web; eat and be eaten

Fewer insects now than before?





Benz: By Reinhold Möller, CC BY-SA 4.0
Kia: By Thesureshg - Own work, CC BY-SA 4.0



Insects

This article is more than 6 months old

Car 'splatometer' tests reveal huge decline in number of insects

Research shows abundance at sites in Europe has plunged by up to 80% in two decades

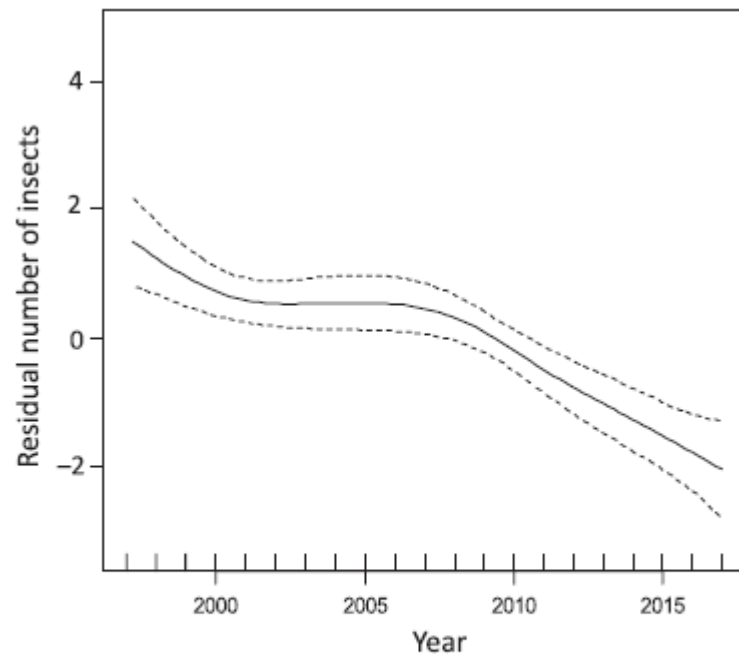


FIGURE 1 The residual number of insects from a general additive mixed model at Kraghede, Denmark during 1997-2017 after controlling for the variables listed in Table 1. The line is the regression line and the band is the 95% confidence interval

2017

RESEARCH ARTICLE

More than 75 percent decline over 27 years in total flying insect biomass in protected areas

NRK

Logg inn



English

Norge Siste nytt Dokumentar Klima NRK Ytring

euronews.

75 prosent av alle insekter forsvunnet: – Den mest dramatiske nyheten på flere år

Antall insekter i tyske naturreservater har stupt de siste 27 årene, ifølge en ny studie. – Dette er virkelig ikke bra, sier norsk forsker om funnene.



Sofie Gran Aspunvik
@sofieaspunvik
Journalist

Publisert 19. okt. 2017 kl. 20:03

Artikkelen er mer enn to år gammel.

BEKYMREDE FORSKERE: Den tyske studien har kartlagt hvordan den totale mengden insekter har utviklet seg de siste 27 årene. Konklusjonen overrasker og bekymrer forskere.

FOTO: PAUL KLEIVEN / NTB SCANPIX

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GERMANY

Decline of insects in Germany is 'frightening', scientists warn

COMMENTS

By Euronews • last updated: 31/10/2019



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available at www.sciencedirect.com



journal homepage: www.elsevier.com/locate/biocon

2006



Rapid declines of common, widespread British moths provide evidence of an insect biodiversity crisis

Kelvin F. Conrad^{a,*}, Martin S. Warren^b, Richard Fox^b, Mark S. Parsons^a, Ian P. Woiwod^a

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J Insect Conserv (2007) 11:367–390
DOI 10.1007/s10841-006-9053-6

ORIGINAL PAPER

Predicting extinction risk of butterflies and moths (Macrolepidoptera) from distribution patterns and species characteristics

Markus Franzén · Mikael Johannesson

2007

Received: 7 September 2006 / Accepted: 14 November 2006 / Published online: 6 February 2007
© Springer Science+Business Media B.V. 2007



Review

Worldwide decline of the entomofauna: A review of its drivers

Francisco Sánchez-Bayo^{a,*}, Kris A.G. Wyckhuys^{b,c,d}

2019

73 studies documenting decline

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Environment

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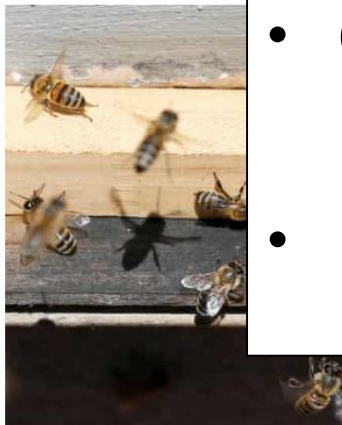
'Insect apocalypse' predicted for Earth, conservationists warn

Is the Insect Apocalypse Really Upon Us?

Claims that insects will disappear within a century are absurd, but the reality isn't reassuring either.

ED YONG FEBRUARY 19, 2019

Report claims 400,000 insect species face extinction due to use of pesticides



rer:
se truer alt liv på



sect

vernere beskriver som en insektapokalypse.

fått alarmklokkene til å ringe
mener det vil få alvorlige konsekvenser
tve utviklingen ikke stanses.

WILDLIFE POPULATION DECLINE BETWEEN 1970 AND 2010

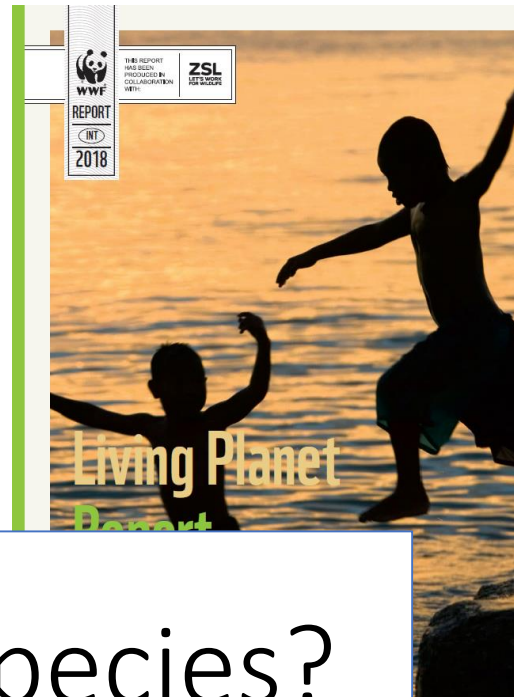
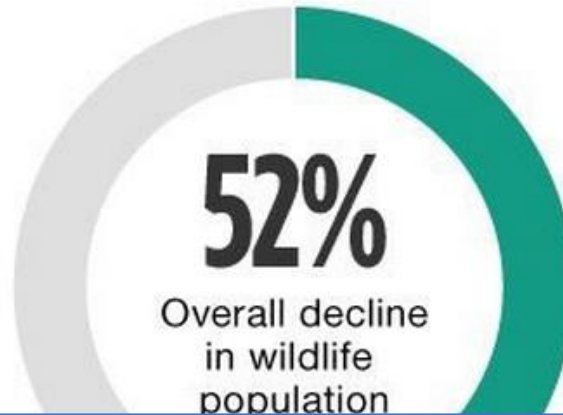


76%

Freshwater species

39%

Terrestrial species



Why are we losing wild species?

Defaunation in the Anthropocene

Rodolfo Dirzo^{1,*}, Hillary S. Young², Mauro Galetti³, Gerardo Ceballos⁴, Nick J. B. Isaac⁵, Ben Collen⁶

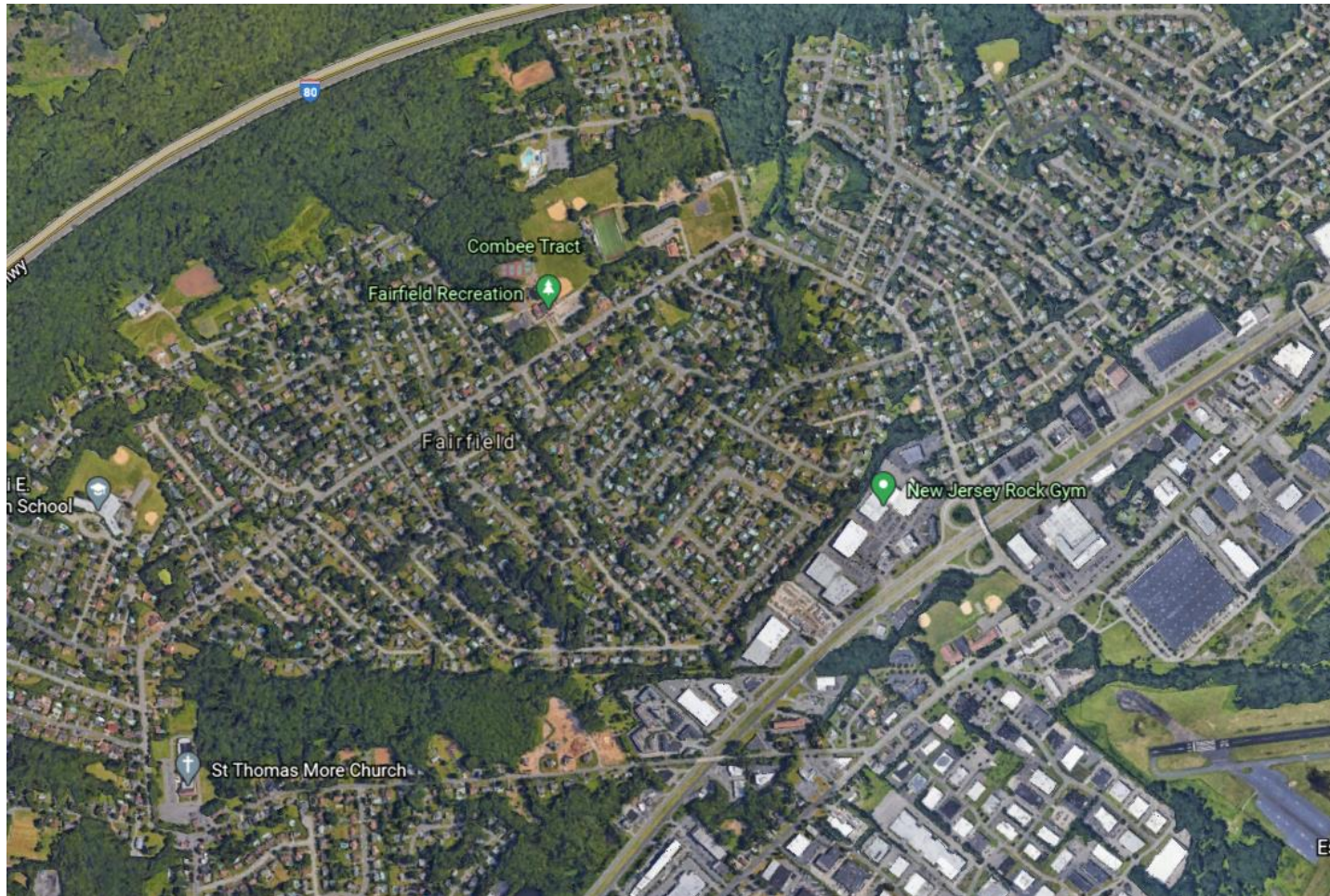
+ See all authors and affiliations

Science 25 Jul 2014:
Vol. 345, Issue 6195, pp. 401-406
DOI: 10.1126/science.1251817

Den sjette masseutryddelsen

Why are we losing insects?

Loss and fragmentation of habitat



Why are we losing insects?

Intensification of agriculture

Larger monocultures
Fewer field edges
More/new pesticides
More fertilizer use

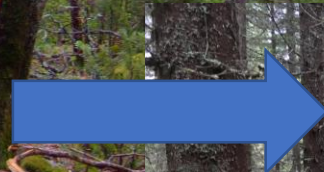


Why are we losing insects?

Intensification of forestry

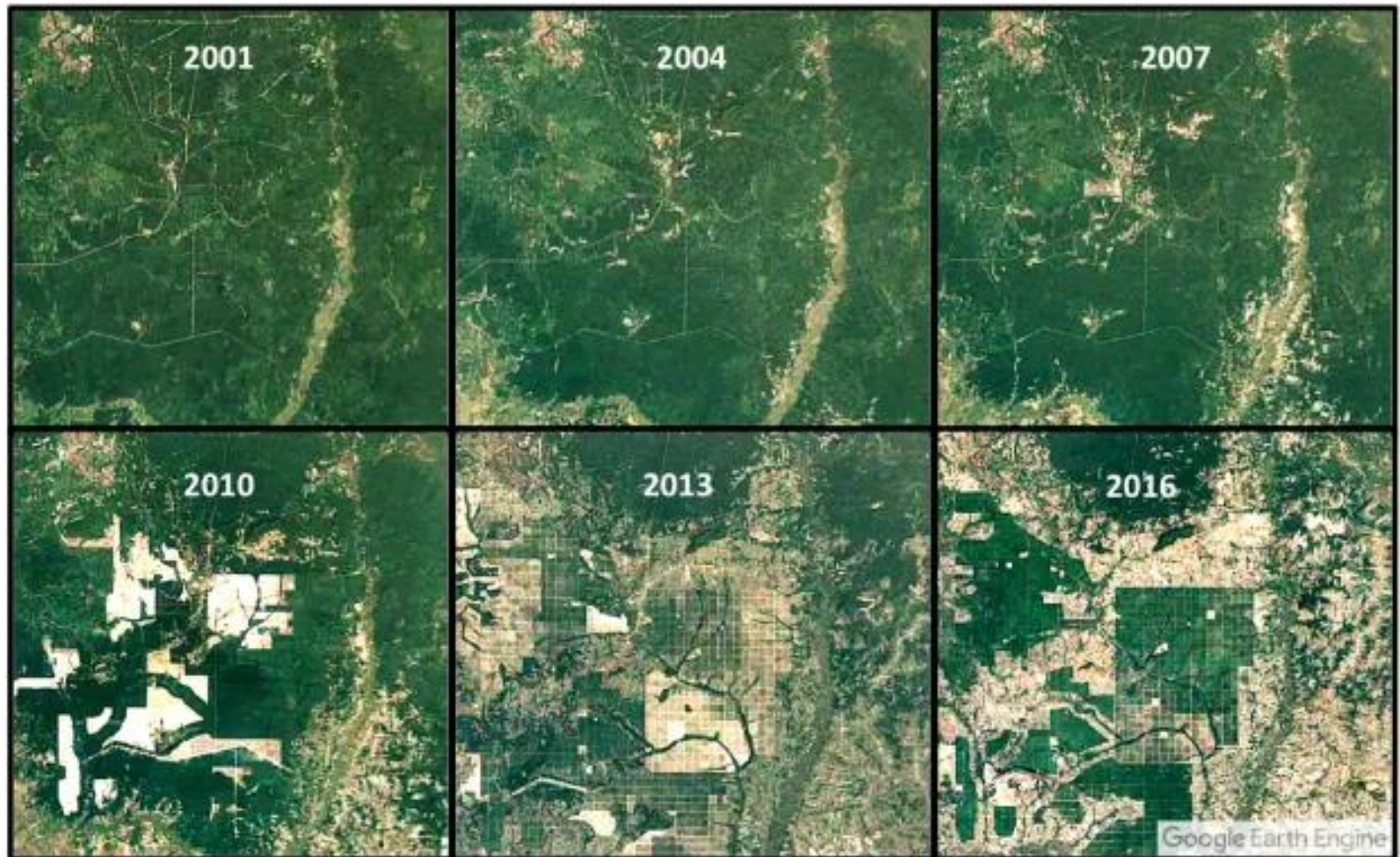


Clear-cutting
Tree planting
Alien tree species
Pesticides, fertilizer
Soil scarification



Why are we losing insects?

Deforestation (mainly the tropics)



Why are we losing insects?

Climate change



Why are we losing insects?

Pollution



© Shutterstock

Why are we losing insects?

Invasive species

Harlequin ladybird



*Buff-tailed
bumblebee*



*Argentine
ants*



What now?

Aftenposten

A-magasinet

Osloby

Sport

Meninger

Søk



Meny

Insekter dør som fluer. Nå skal Norge ut og telle insekter.

Til våren starter den aller første kartlegging av alle landets insekter.



1549

NINA Rapport

Nasjonal overvåking av insekter

Behovsanalyse og forslag til overvåkingsprogram

Jens Åström, Tone Birkemoe, Torbjørn Ekrem, Anders Endrestøl, Frode Fossøy, Anne Sverdrup-Thygeson, Frode Ødegaard



NINA

Norsk institutt for naturforskning

What now?



Bumble bees are expected to benefit from Germany's insect protection efforts. NABU/HELGE MAY

€100 million German insect protection plan will protect habitats, restrict weed killers, and boost research

By [Gretchen Vogel](#) | Sep. 6, 2019, 12:10 PM

What now?

We know what to do!

Protect natural areas;
old-growth forest, meadows, wetlands, rainforest etc



© Shutterstock

What now?

We know what to do!

Support small-scale, low-intensity agriculture



© Shutterstock

What now?

We know what to do!

More measures for biodiversity in forestry,
e.g. retention of trees/dead trees, woodland key habitats



Foto: Anne Sverdrup-Thygeson

What now?

We know what to do!

Reduce CO₂-emissions to reduce climate change



© Shutterstock

What now?

We know what to do!

In general; make room for insects!



Why aren't we doing it?

A close-up photograph of a green dragonfly resting on the palm of a human hand. The dragonfly has a bright green head and thorax with black markings, and a long, segmented abdomen with alternating green and black bands. Its four transparent wings are spread out, showing a delicate network of veins. The human hand is light-skinned and positioned with the palm facing up. The background is a soft-focus green, suggesting a natural outdoor setting. The word "Takk!" is written in a green, sans-serif font in the lower-left area of the image.

Takk!

What now?

We know what to do!

- Protect natural areas; *old-growth forest, meadows, wetlands, rainforest etc*
- Support small-scale / varied agriculture
- Increased retention of trees / dead trees in forestry
- Reduce CO₂-emissions to reduce climate change
- Avoid known harmful practices, e.g. pollution

In general; make room for insects!

Different trends for:

- **Taxonomic groups**
- **Species with different traits**
- **Geographic areas**



Fewer insects now than before.

Review

Worldwide decline of the entomofauna: A review of its drivers

Francisco Sánchez-Bayo^{a,*}, Kris A.G. Wyckhuys^{b,c,d}