

VETERAN TREES SUPPORT BIODIVERSITY AND ECOSYSTEM SERVICES

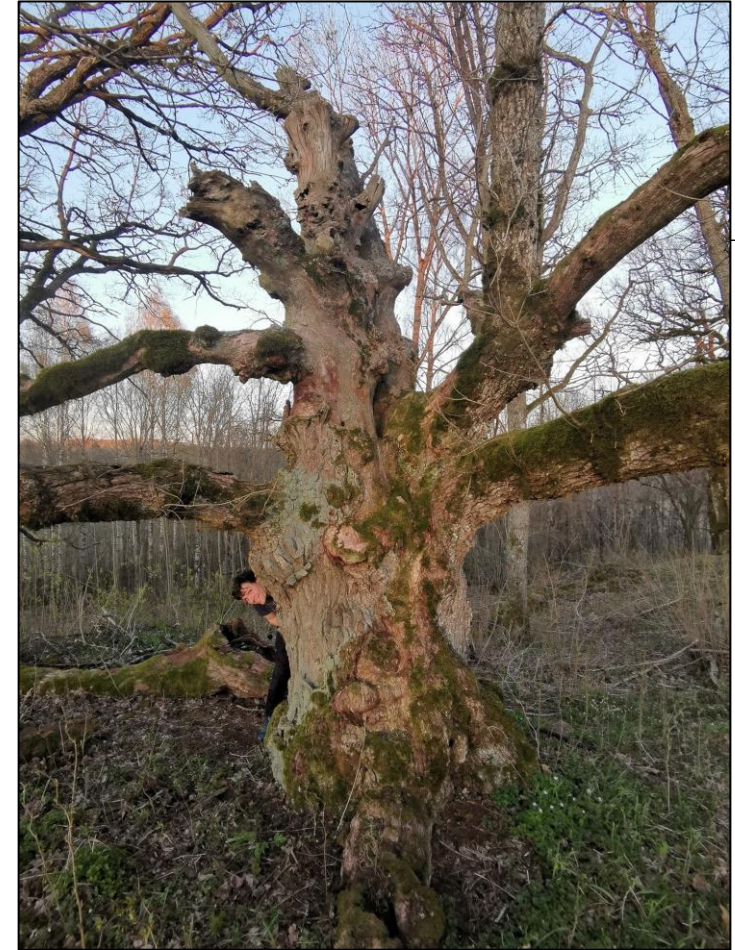


OUTLINE

- State of biodiversity
- Why we need biodiversity
- What is so special about old trees
- Practical considerations

A BIT ABOUT ME

- BS in Biology, UAF
- Fisheries Management, ADFG Kodiak
- MSc in Ecology, NMBU and UNIS
- PhD in Ecology and Natural Resource Management, NMBU



Current World Population

8,017,690,244

[view all people on 1 page >](#)

TODAY

Births today
330,274

Deaths today
165,386

Population Growth today
164,888

THIS YEAR

Births this year
18,317,994

Deaths this year
9,172,793

Population Growth this year
9,145,200



RESEARCH ARTICLE

The biomass distribution on Earth

 Yinon M. Bar-On, Rob Phillips, and  Ron Milo

“Humans and livestock outweigh all vertebrates combined, excluding fish”

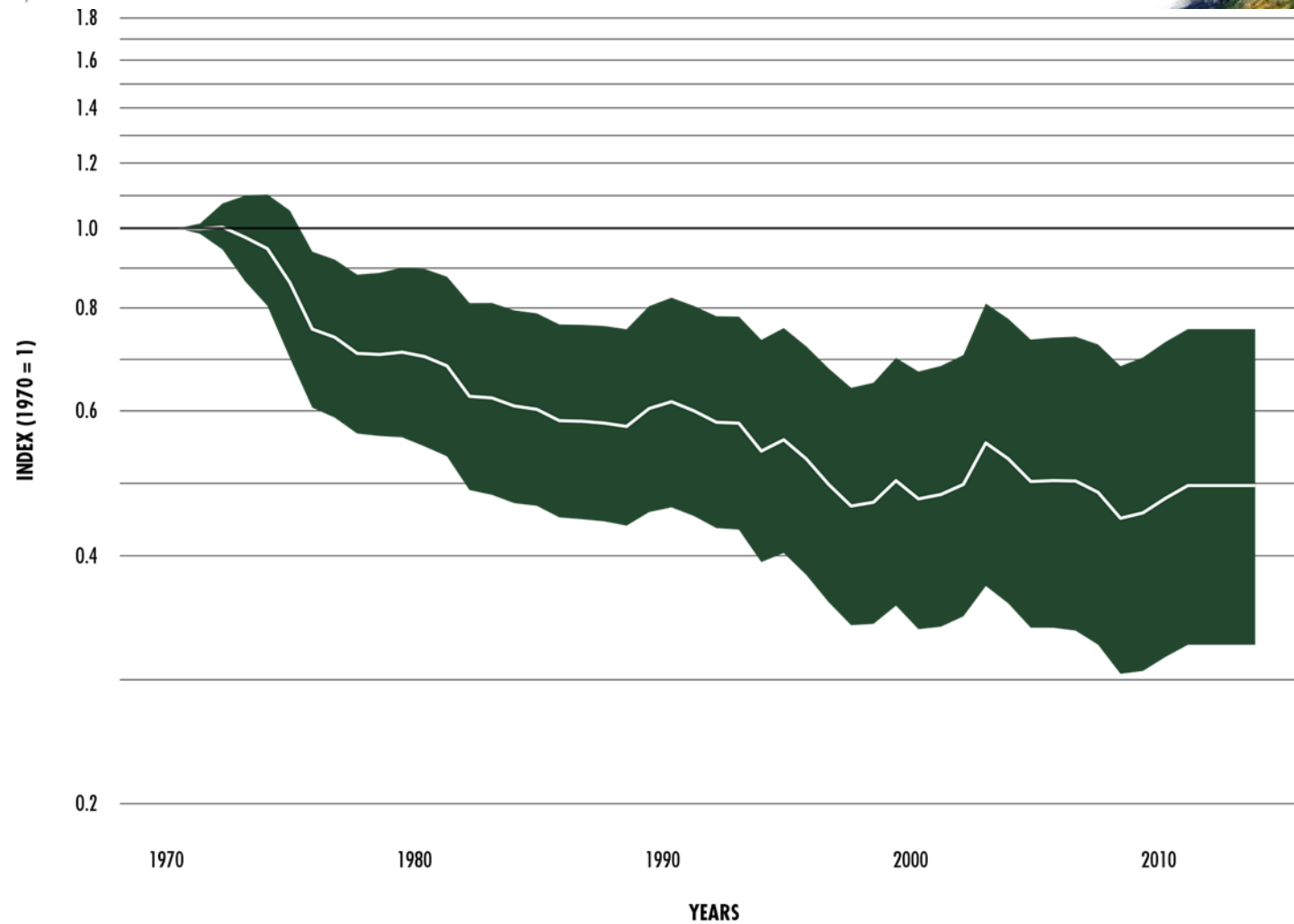




Living Planet Index, World

The Living Planet Index (LPI) measures the average decline in monitored wildlife populations. The index value measures the change in abundance in 31,821 populations across 5,230 species relative to the year 1970 (i.e. 1970 = 100%).

Our World
in Data

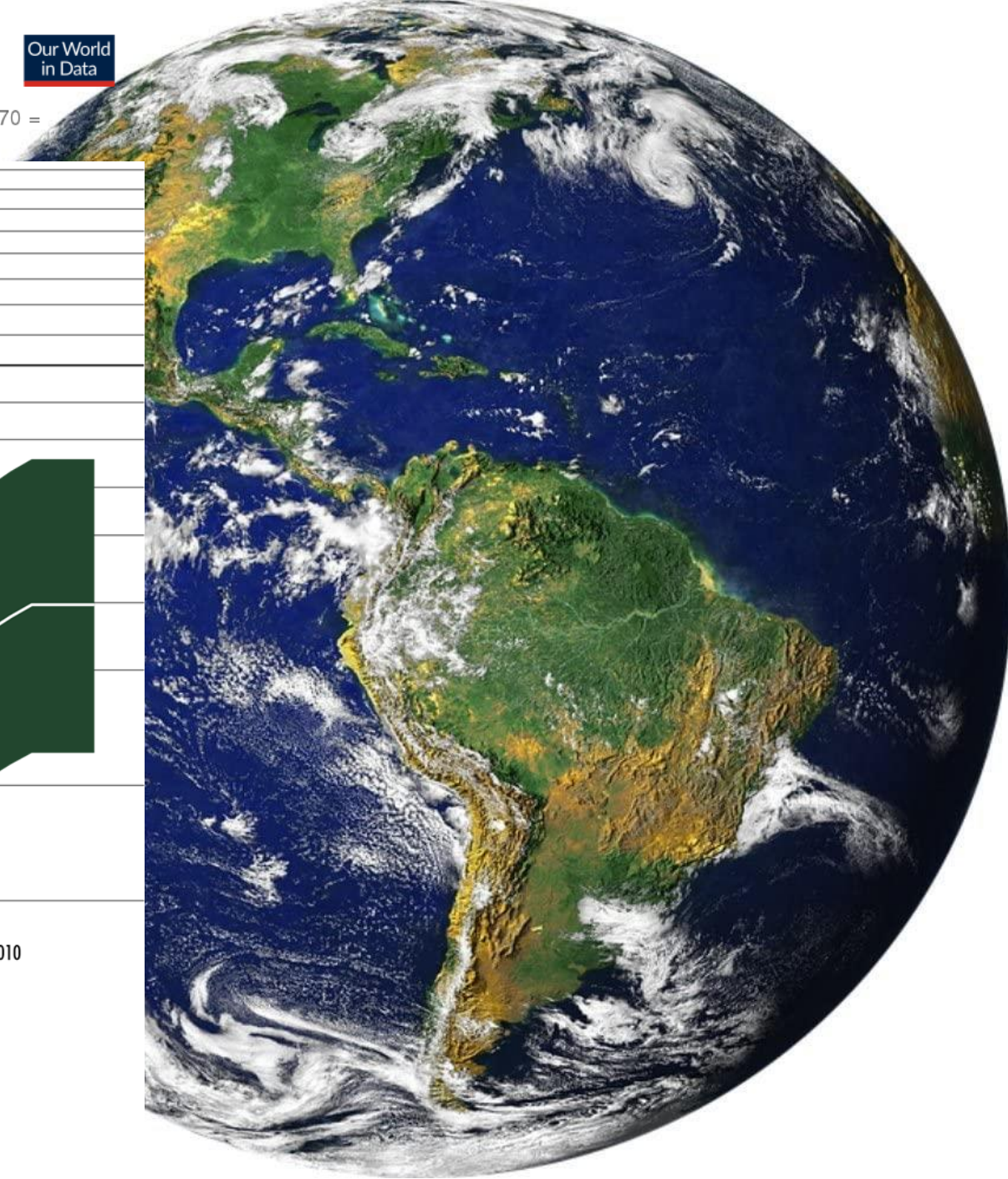


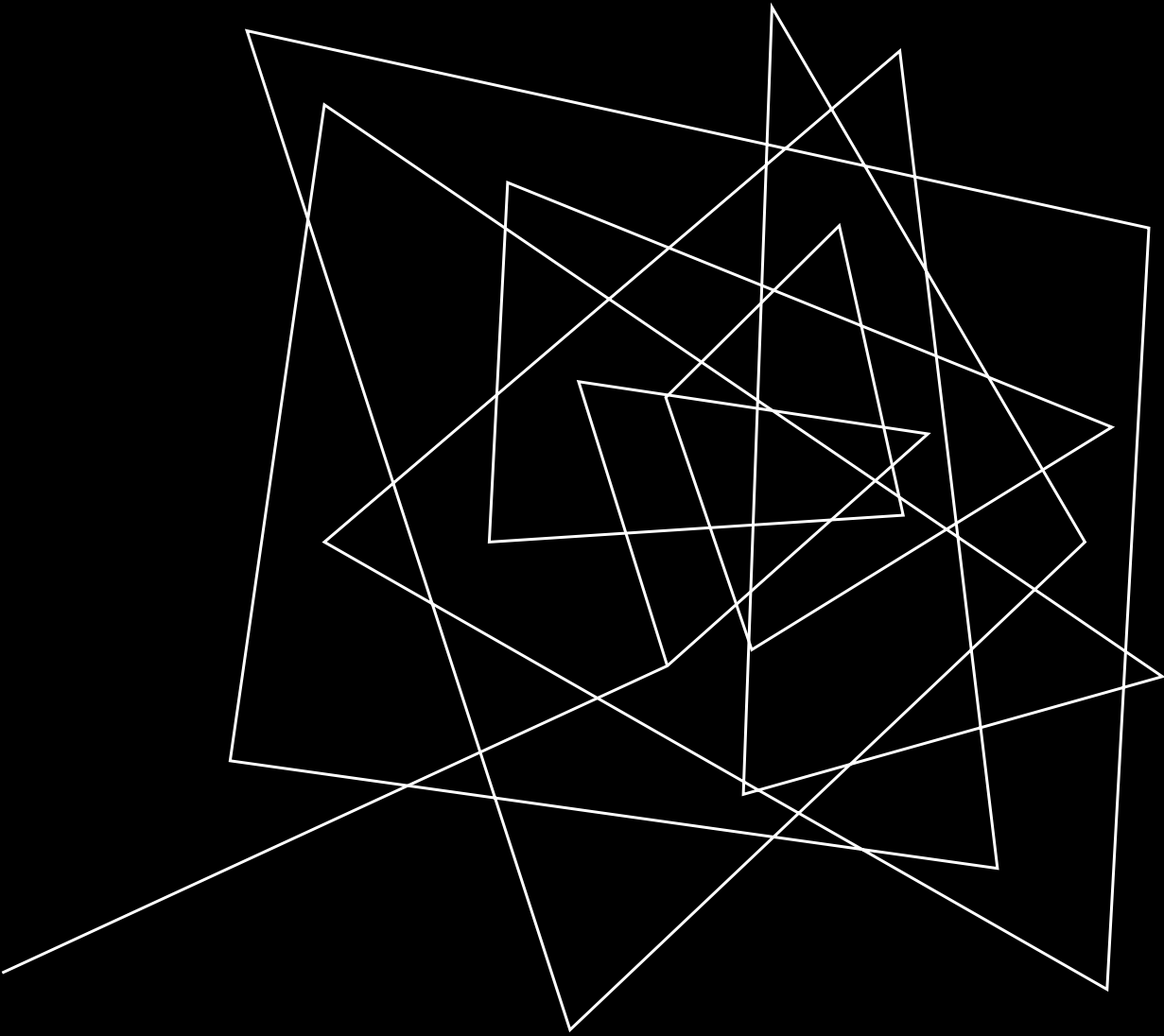
NOTE: Solid line shows the weighted index values; shaded region shows the 95 percent confidence interval for the index.

SOURCE: Green *et al.*, 2019a.

2023

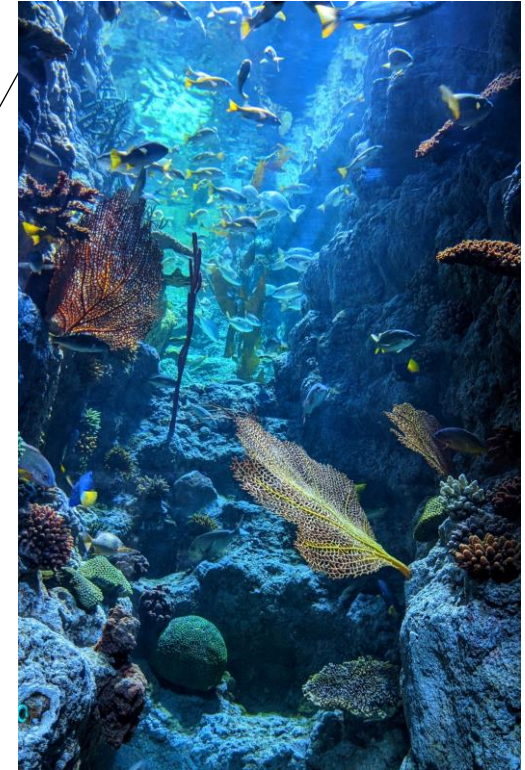
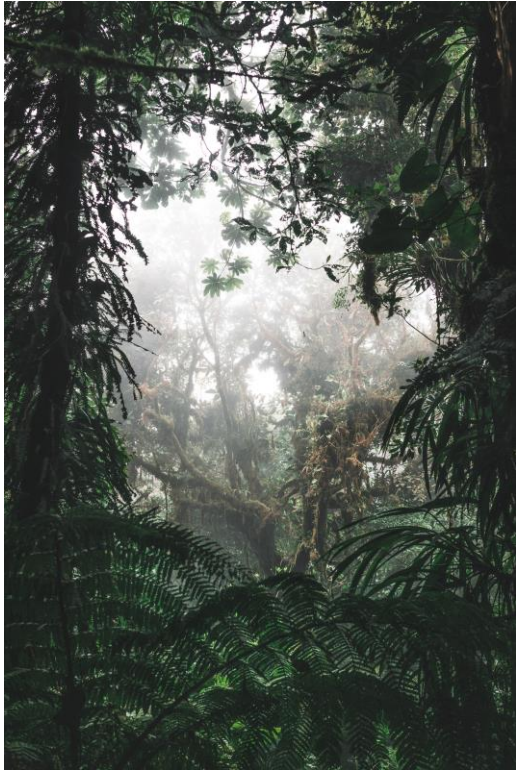
Veteran trees support biodiversity and ecosystem services





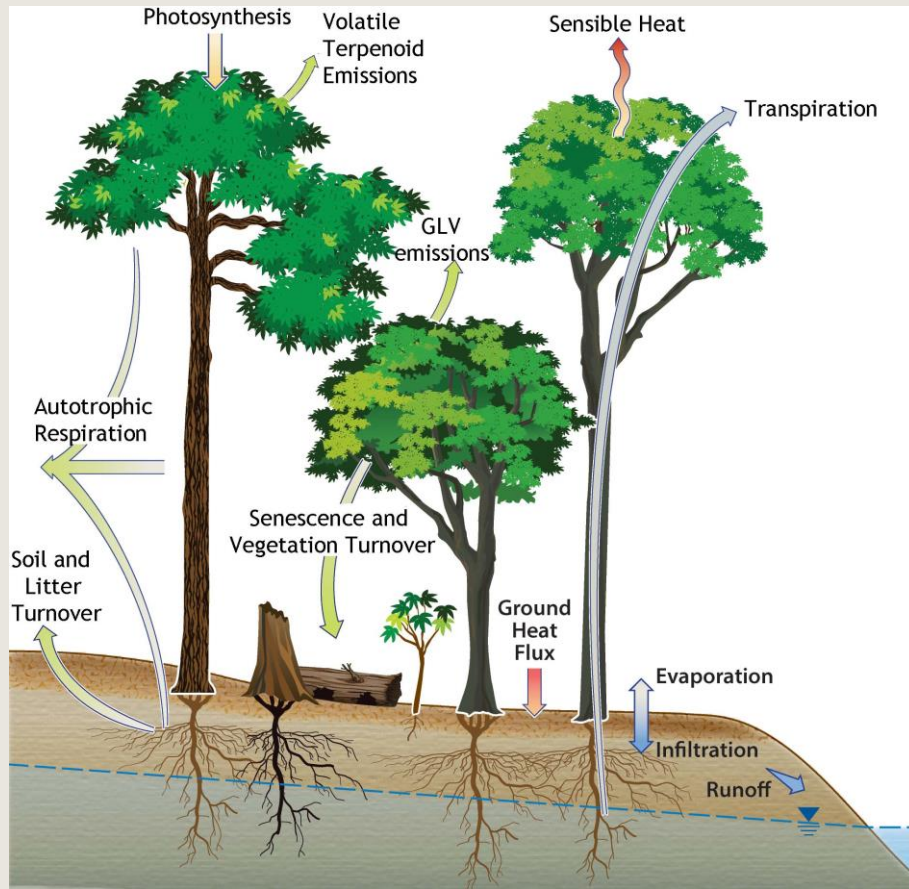
Why is losing
biodiversity
a problem?

Biodiversity has intrinsic value

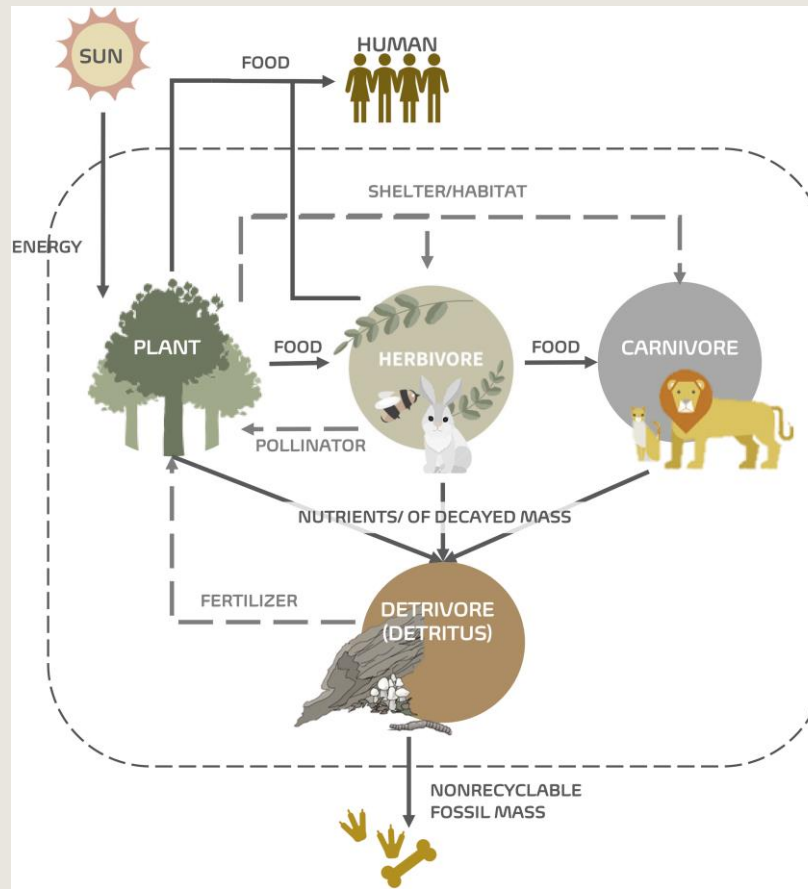


We need functioning ecosystems

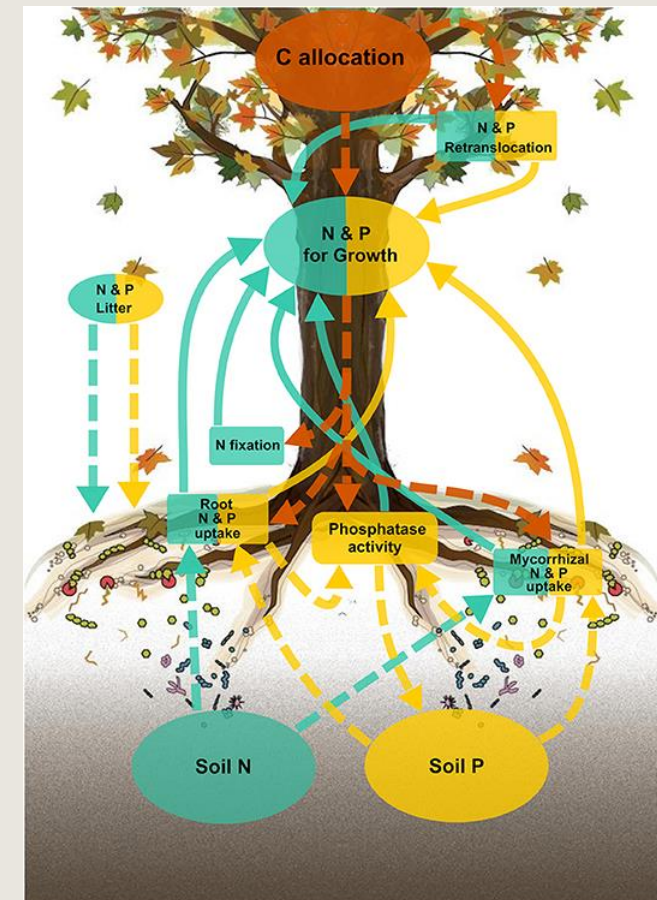
ECOSYSTEM FUNCTIONS AND SERVICES



[Jardine et al 2015](#)



[Lao et al 2020](#)



[Allen et al 2020](#)

WE NEED FUNCTIONING ECOSYSTEMS

All humans and societies are dependent on these processes

Ecosystem services

- Provisioning
- Regulating
- Supporting
- Cultural

These processes are interrelated and complex



WE NEED FUNCTIONING ECOSYSTEMS

All humans and societies are dependent on these processes

Ecosystem services

- Provisioning
- Regulating
- Supporting
- Cultural

Theses processes are interrelated and complex



Global Decline in Large Old Trees

David B. Lindenmayer,¹ William F. Laurance,² Jerry F. Franklin³



Contents lists available at ScienceDirect

Forest Ecology and Management

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



Veteran trees in decline: Stratified national monitoring of oaks in Norway

Rannveig M. Jacobsen^a, Tone Birkemoe^b, Marianne Evju^{a,*}, Olav Skarpaas^c, Anne Sverdrup-Thygeson^b

^a Norwegian Institute for Nature Research, Sognsveien 68, 0855 Oslo, Norway

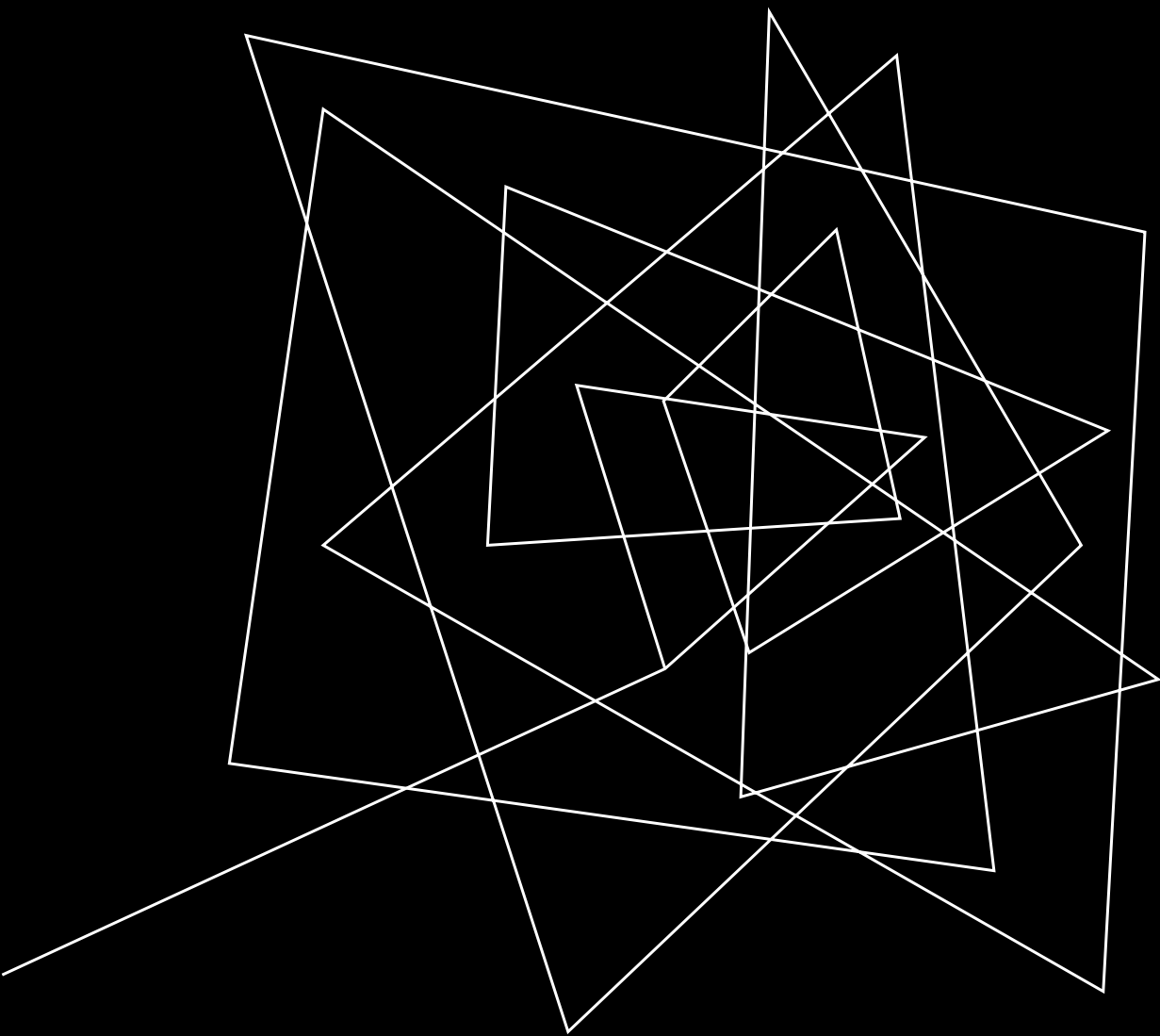
^b Norwegian University of Life Sciences (NMBU), Faculty of Environmental Sciences and Natural Resource Management (MINA), P.O. Box 5003 NMBU, 1432 Aas, Norway

^c Natural History Museum, University of Oslo, P.O. Box 1172 Blindern, 0318 Oslo, Norway

Loss of 7600 veteran oaks between 2012 and 2016

The loss of large old trees in many ecosystems around the world poses a threat to ecosystem integrity.





What is so
special about
old trees

CLASSIFICATIONS OF OLD TREES

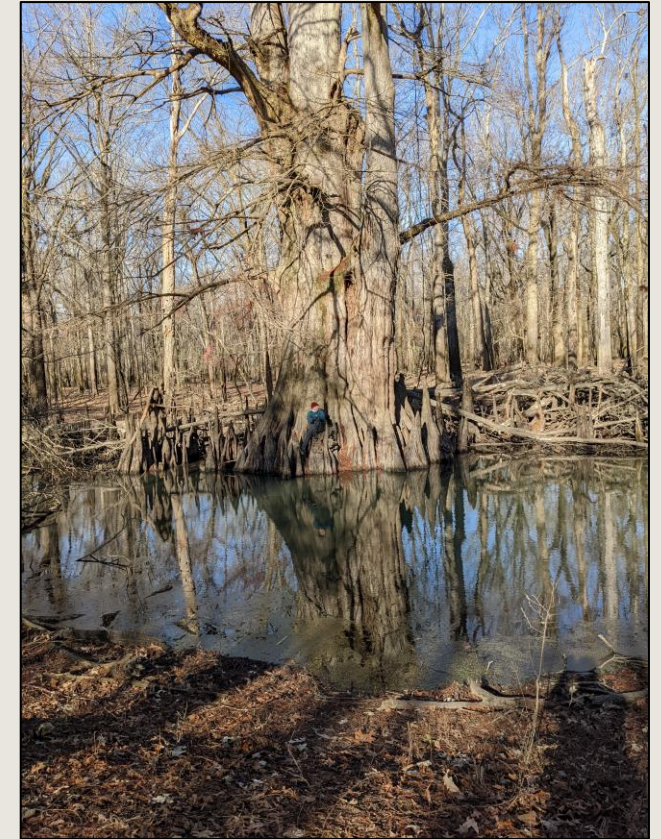
Habitat



Veteran



Ancient



Value

LANDSCAPES AND VETERAN TREES

Forest



Open landscape



Old Growth

Ancient woodland

Wood-pasture

Hedgerow

Chases and parks

Fields

Urban Trees

Human impact

BENEFITS OF VETERAN TREES

Cultural

Supporting

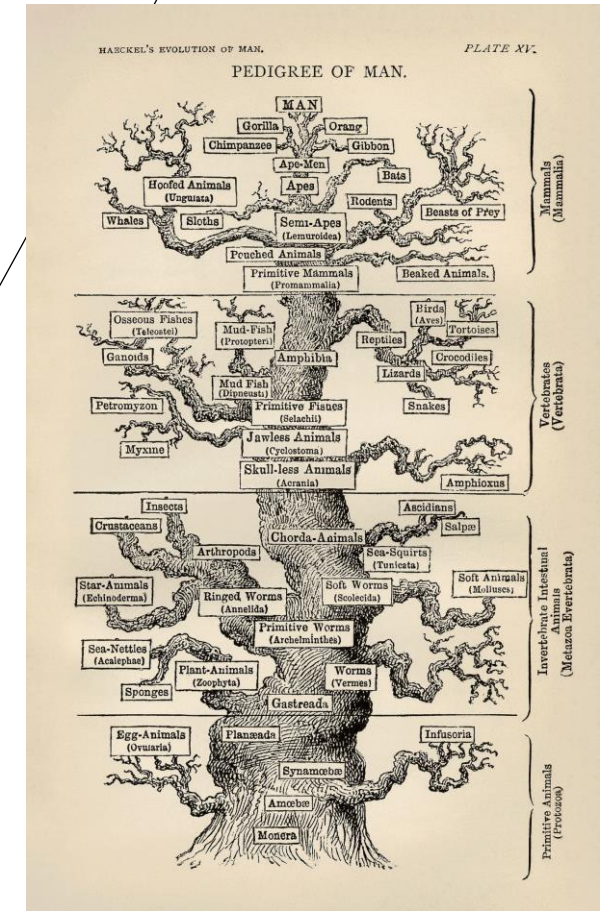
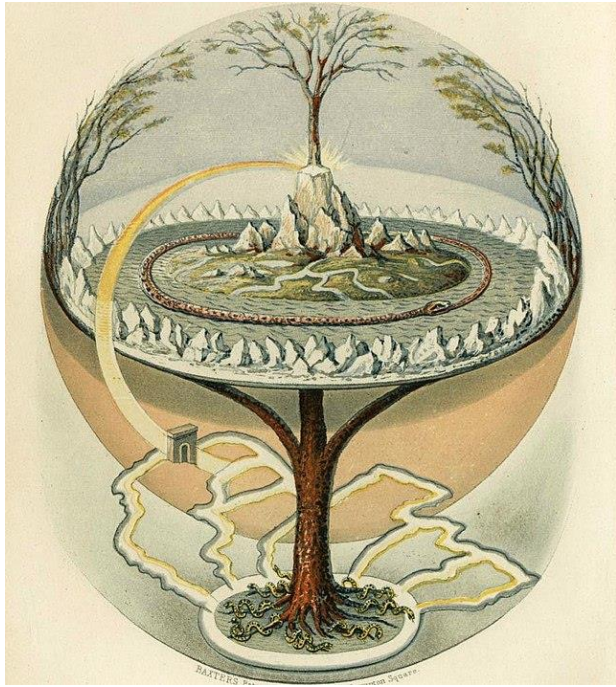
Provisioning

Regulating



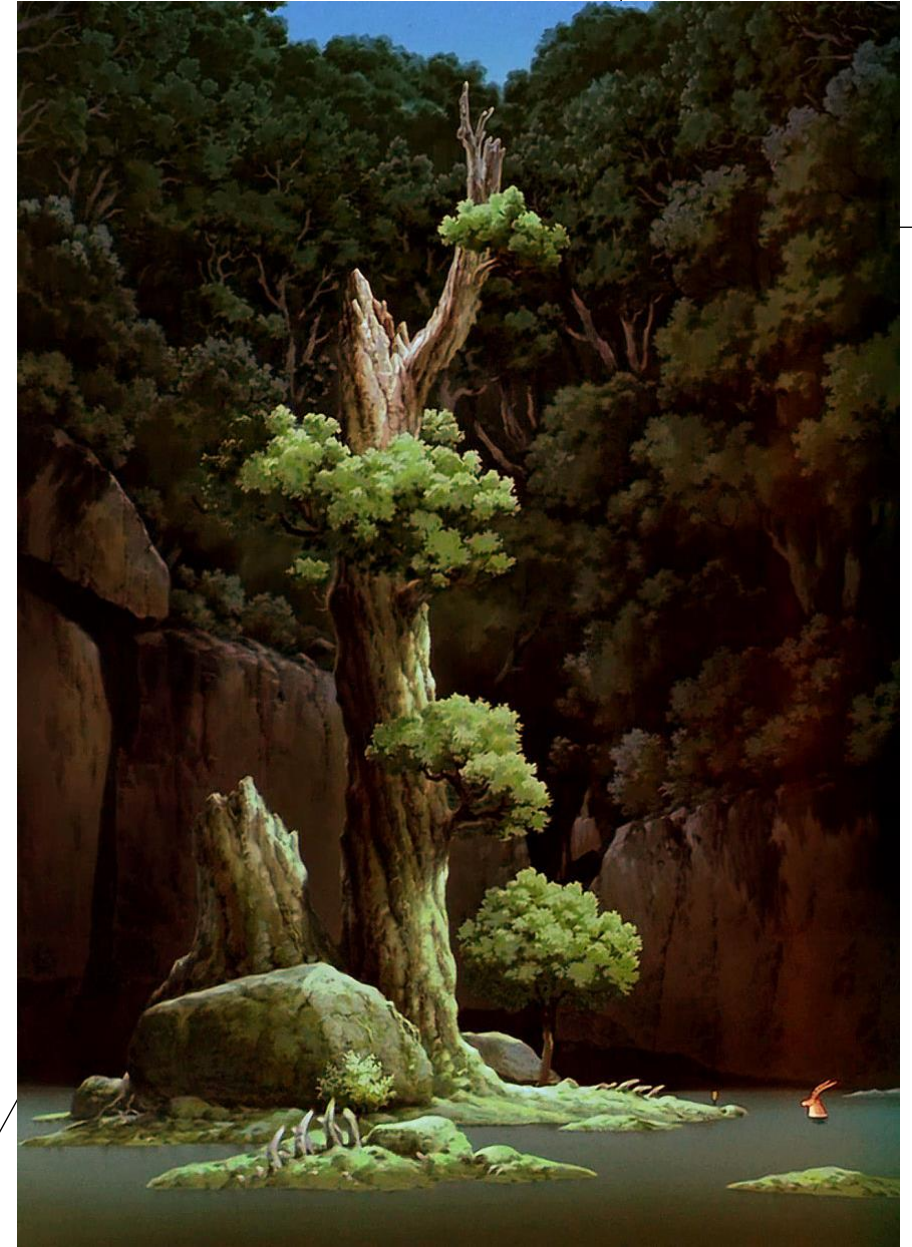
CULTURAL SIGNIFICANCE OF OLD TREES

- Central role through time and across cultures



CULTURAL SIGNIFICANCE OF OLD TREES

- Central role through time and across cultures
- Special entities



CULTURAL SIGNIFICANCE OF OLD TREES

- Central role through time and across cultures
- Special entities
- Historical link



CULTURAL SIGNIFICANCE OF OLD TREES

- Central role through time and across cultures
- Special entities
- Historical link
- Wonderful biodiversity



BENEFITS OF VETERAN TREES

Cultural

Supporting

Provisioning

Regulating



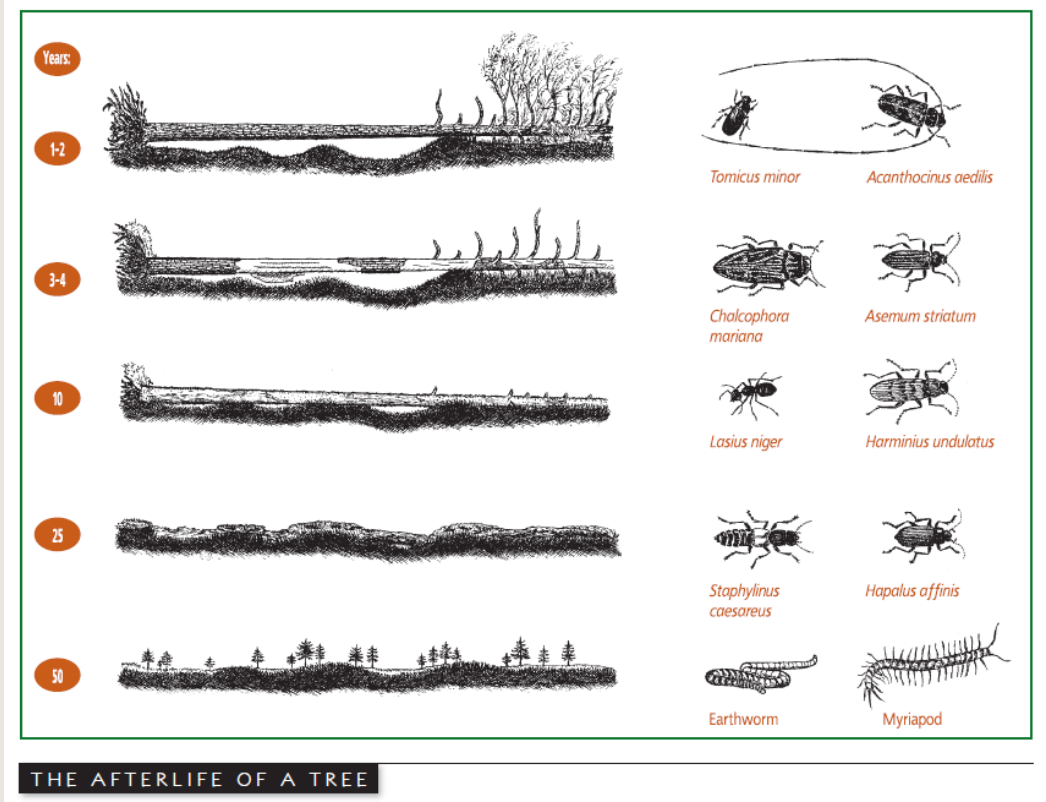
DEAD WOOD

Abundant

Full of energy

Diverse

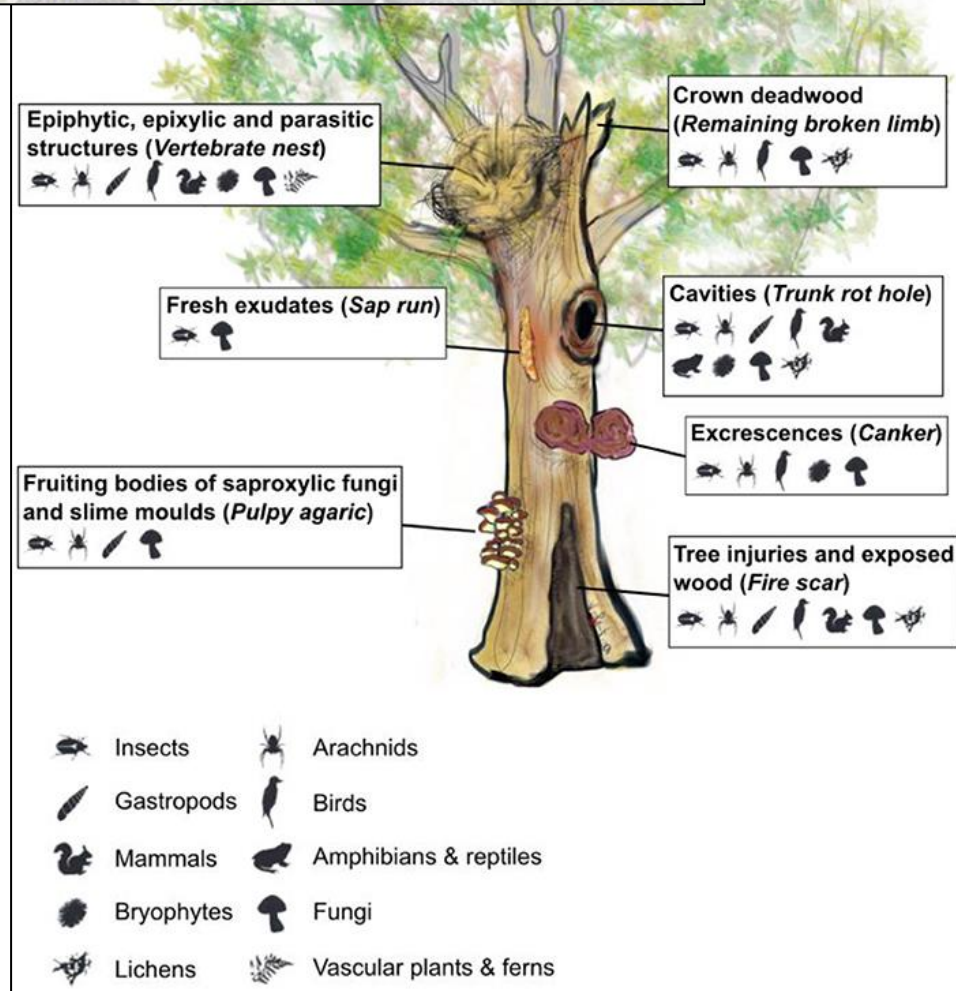
Breaks down slowly



Field Guide to Tree-related Microhabitats

Descriptions and size limits for their inventory

R. Büttler, T. Lachat, F. Krumm, D. Kraus, L. Larrieu



KEYSTONE STRUCTURES

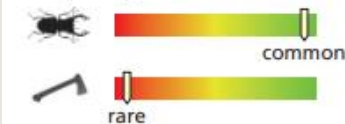
Trunk-base rot-hole (closed top, ground contact)

These cavities contain decomposed organic material, or treehole mould (the quantity of which depends on rot-hole development stage). The bottom of the cavity is in contact with the ground. Even so, the cavity entrance may be located relatively high up on the trunk. The cavity is protected from the external microclimate and rain (a roof is present).



Minimum size: Cavity entrance $\varnothing > 10$ cm

Frequency:



Replacement rate: very slow



Associated species:



TREE HOLLOWS

Slow development



2023

Stable and nutrient rich



Veteran trees support biodiversity and ecosystem services

Complex structure



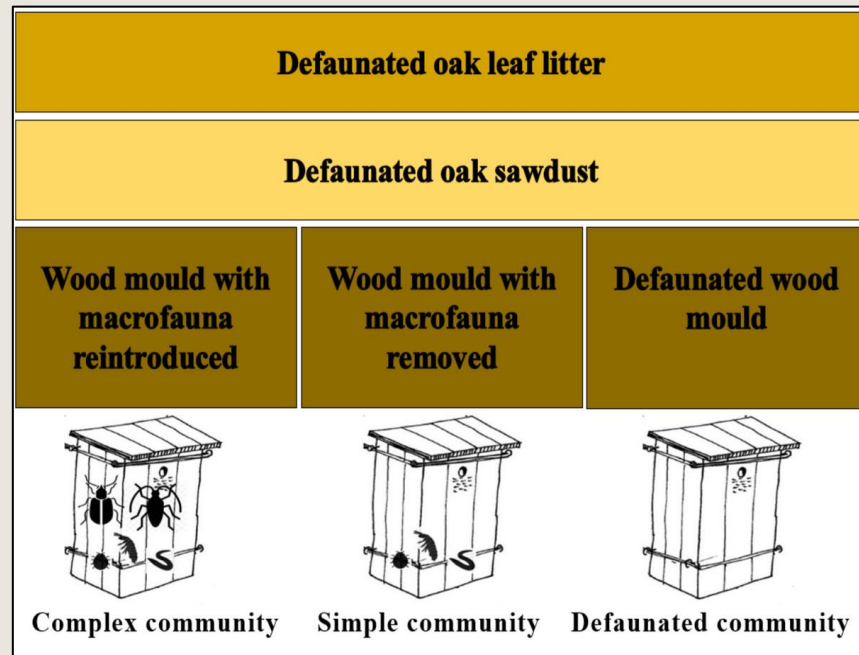
25

RESEARCH ARTICLE | [Open Access](#) | [CC](#) [i](#)

It takes a community to maintain a tree hollow: Food web complexity enhances decomposition and wood mould production

Ross Wetherbee [✉](#) Tone Birkemoe, Johan Asplund, Marek Renčo, Anne Sverdrup-Thygeson

First published: 19 July 2022 | <https://doi.org/10.1111/1365-2435.14146>



BENEFITS OF VETERAN TREES

Cultural

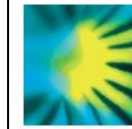
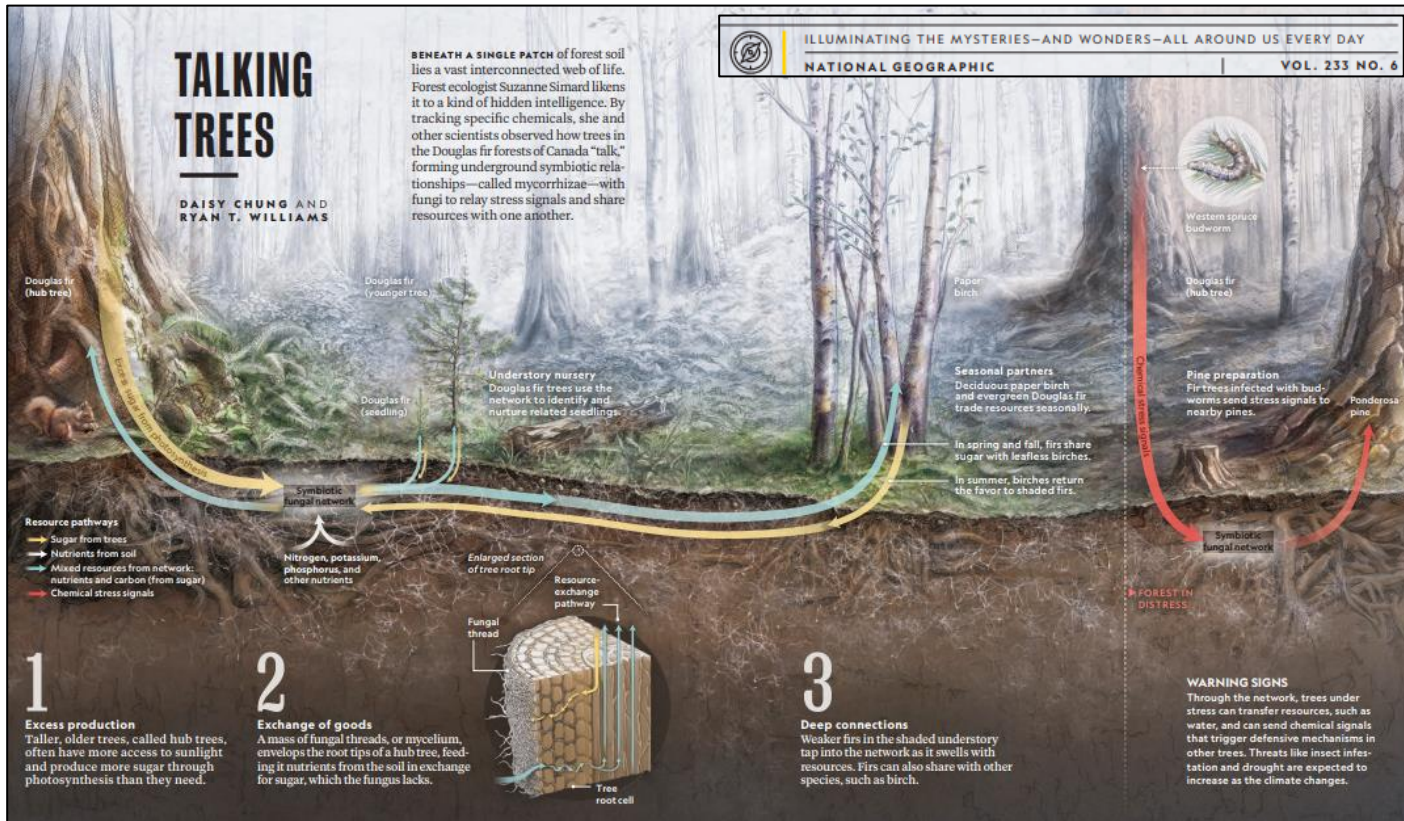
Supporting

Provisioning

Regulating



MOTHER TREES



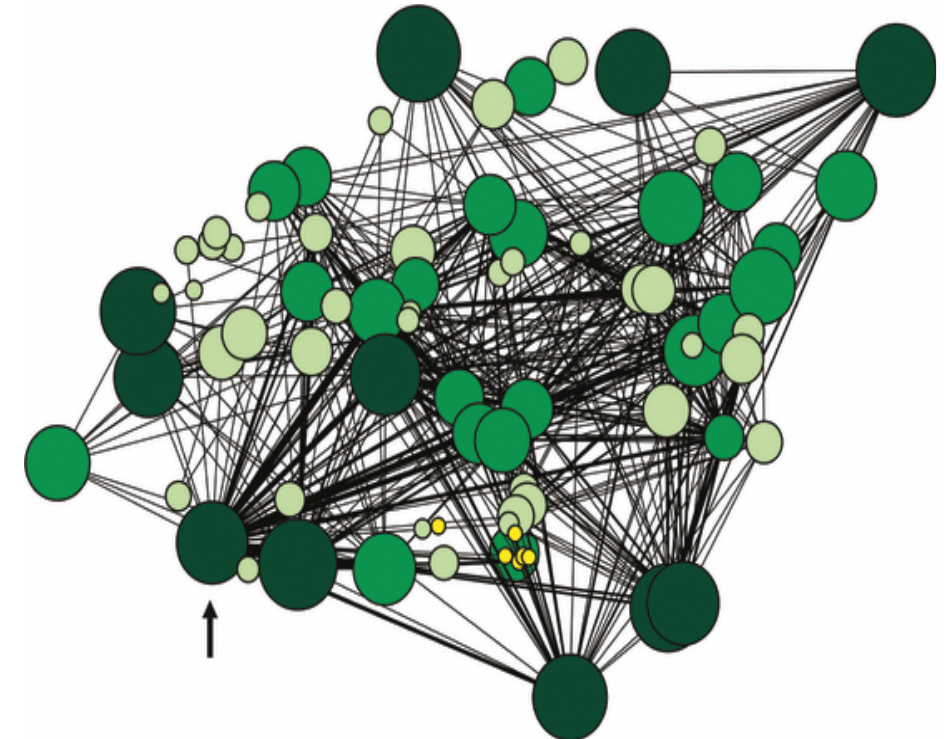
New Phytologist

Free Access

Architecture of the wood-wide web: *Rhizopogon* spp. genets link multiple Douglas-fir cohorts

Kevin J. Beiler, Daniel M. Durall, Suzanne W. Simard, Sheri A. Maxwell, Annette M. Kretzer

First published: 29 October 2009 | <https://doi.org/10.1111/j.1469-8137.2009.03069.x> | Citations: 123



VETERAN TREES PROMOTE POLLINATION

Ecology and Evolution

Open Access

ORIGINAL RESEARCH |  Open Access |  

Hollow oaks and beetle functional diversity: Significance of surroundings extends beyond taxonomy

Ross Wetherbee , Tone Birkemoe, Olav Skarpaas, Anne Sverdrup-Thygeson

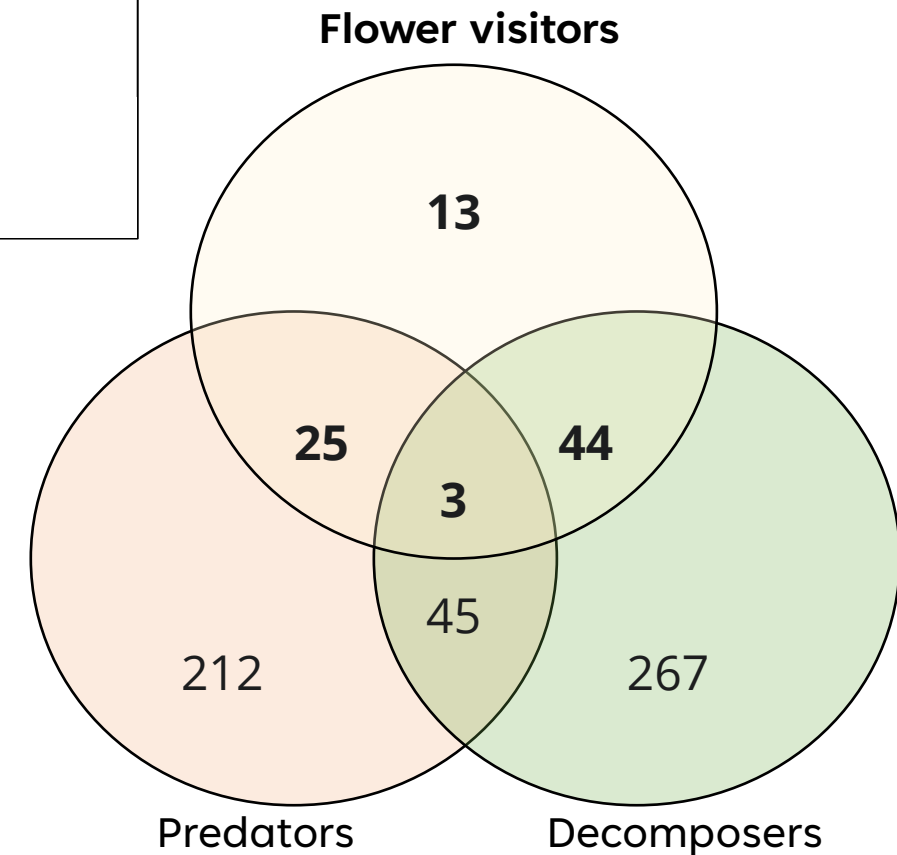
First published: 08 January 2020 | <https://doi.org/10.1002/ece3.5940>



Volume 10, Issue 2

January 2020

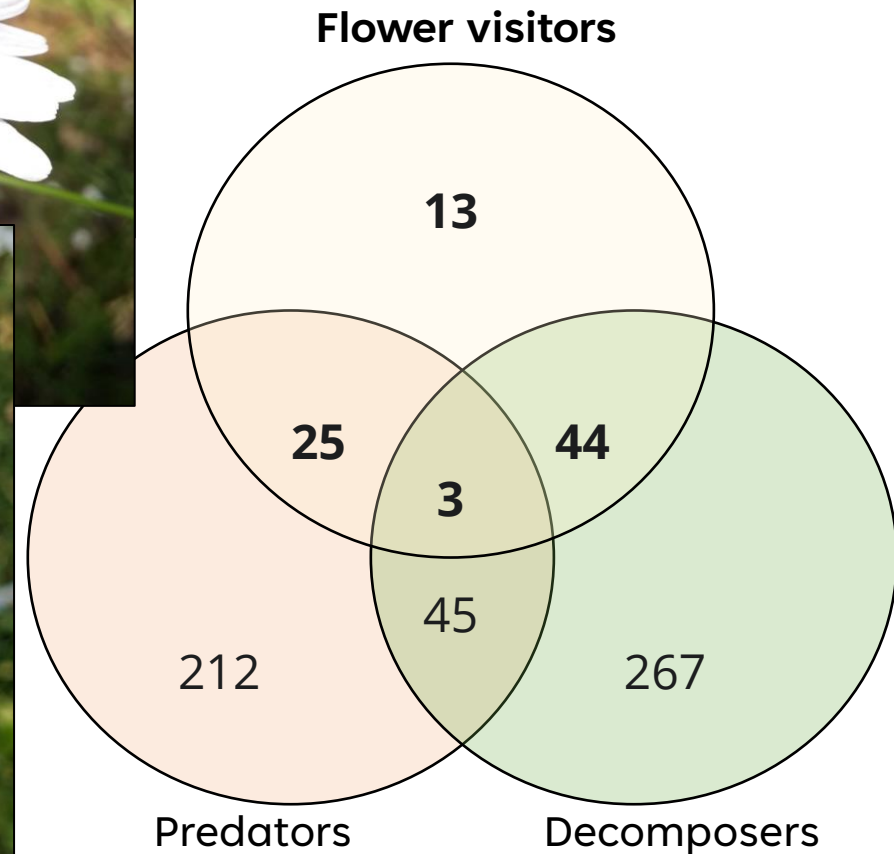
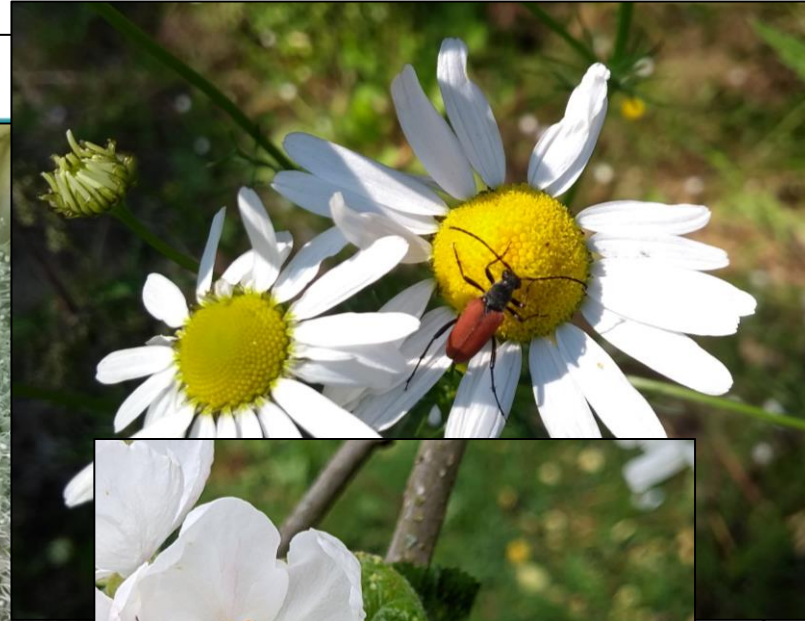
Pages 819-831



VETERAN TREES PROMOTE POLLINATION

A REVIEW OF THE POLLINATORS ASSOCIATED WITH DECAYING WOOD, OLD TREES AND TREE WOUNDS IN GREAT BRITAIN

Steven Falk 2021



BENEFITS OF VETERAN TREES

Cultural

Supporting

Provisioning

Regulating

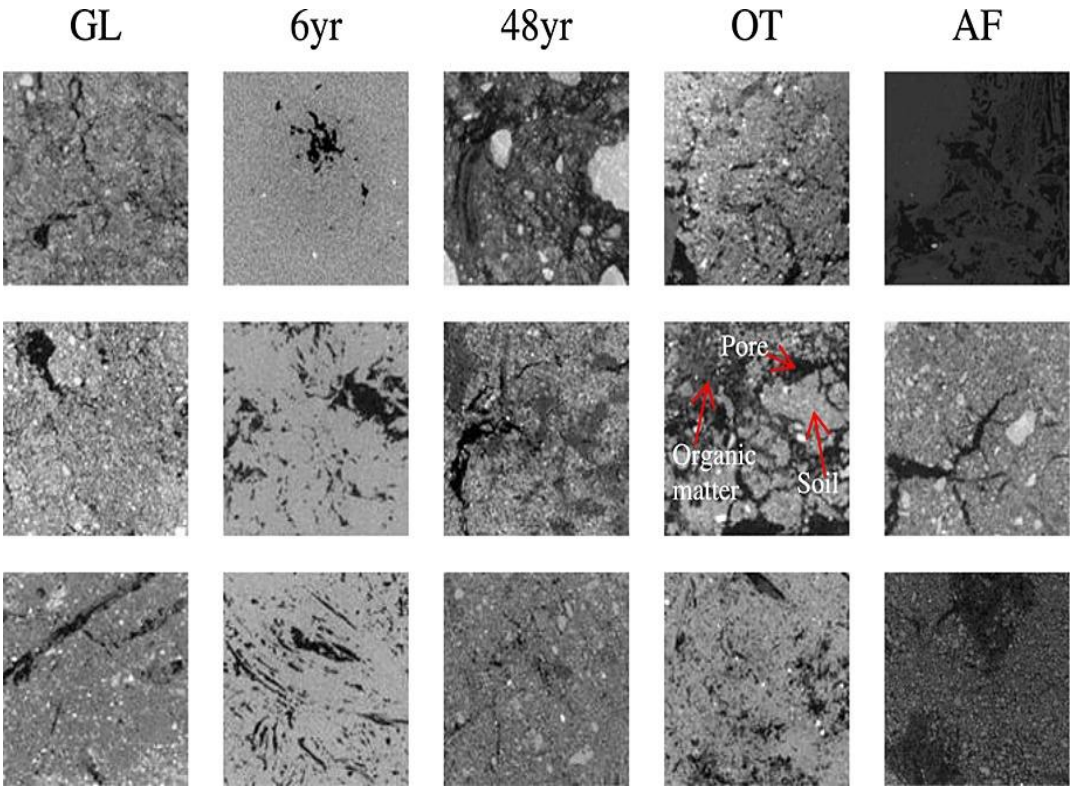


Rainfall infiltration and soil hydrological characteristics below ancient forest, planted forest and grassland in a temperate northern climate

Nicole A. L. Archer✉, Wilfred Otten, Sonja Schmidt, A. Glyn Bengough, Nadeem Shah, Mike Bonell

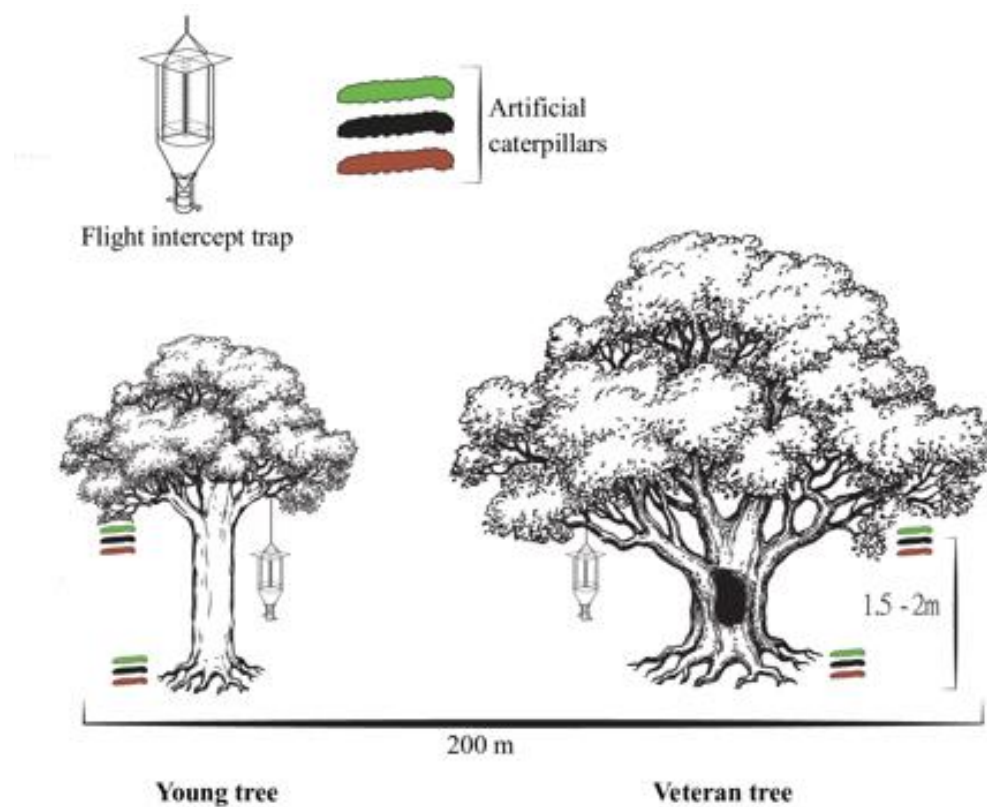
First published: 19 June 2015 | <https://doi.org/10.1002/eco.1658> | Citations: 26

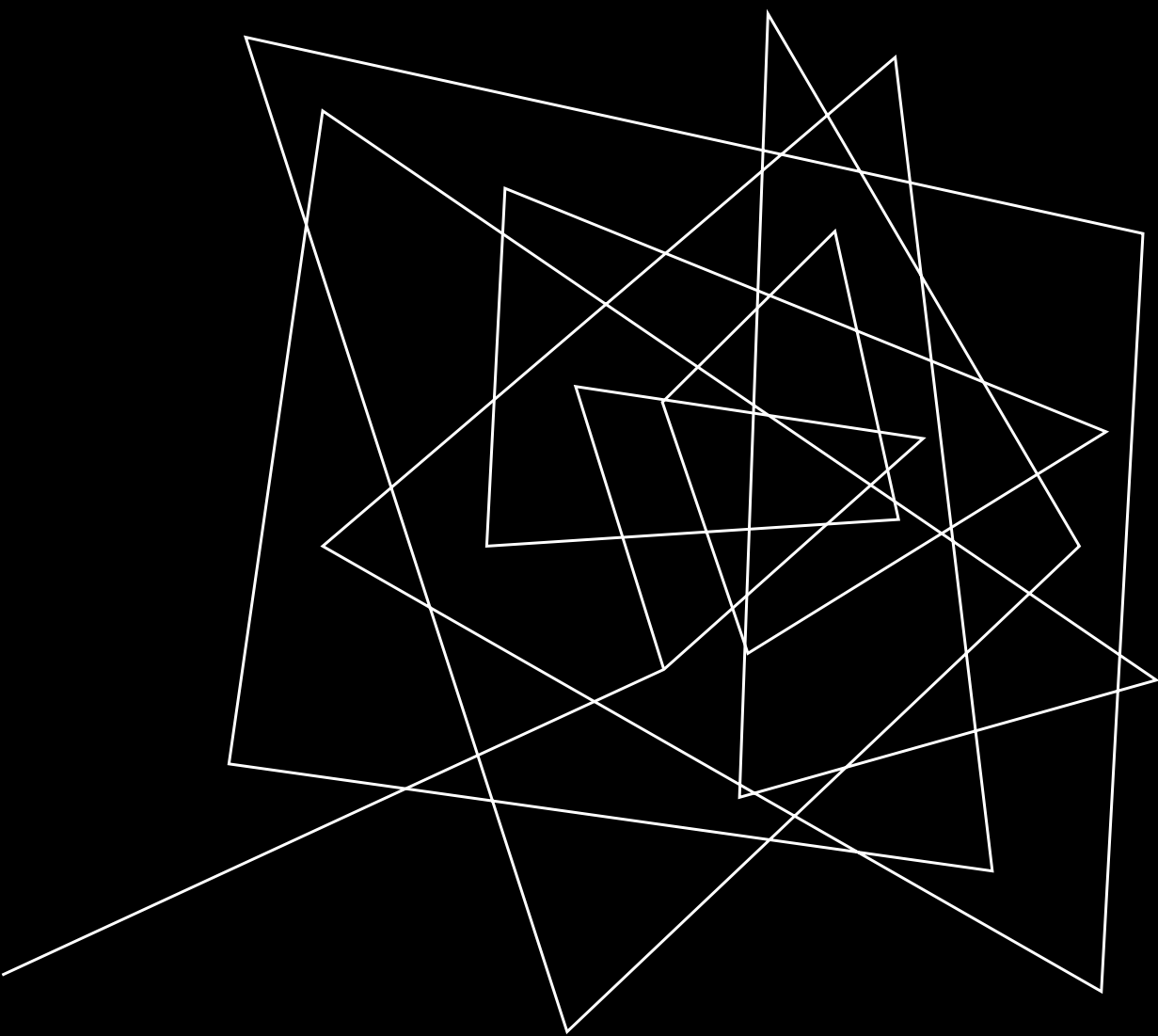
a) Grassland	b) 6 year old plantation	c) 48 year old plantation	d) Old individual trees	e) Ancient Forest
Thick root mat down to 0.08 m. Little organic matter below 0.10 m.	Compact structureless peat to ~0.30 m depth. Undecomposed layer to 0.25 m. Below 0.25 m peat slightly decomposed turning a darker brown.	Organic layer down to 0.08 m. Many coarse roots (>5mm diameter) within 0.3m depth	Organic decomposed layer down to 0.30 m near to tree trunks and 0.08 m in open areas. Coarse roots up to 100 mm diameter present within 0.3m depth.	Organic decomposed layer >0.30 m near to tree trunks, shallower in open areas. Coarse roots found near the soil surface and at depths below 0.3m up to 200mm.



OPEN Veteran trees are a source of natural enemies

Ross Wetherbee✉, Tone Birkemoe & Anne Sverdrup-Thygeson





Practical
considerations

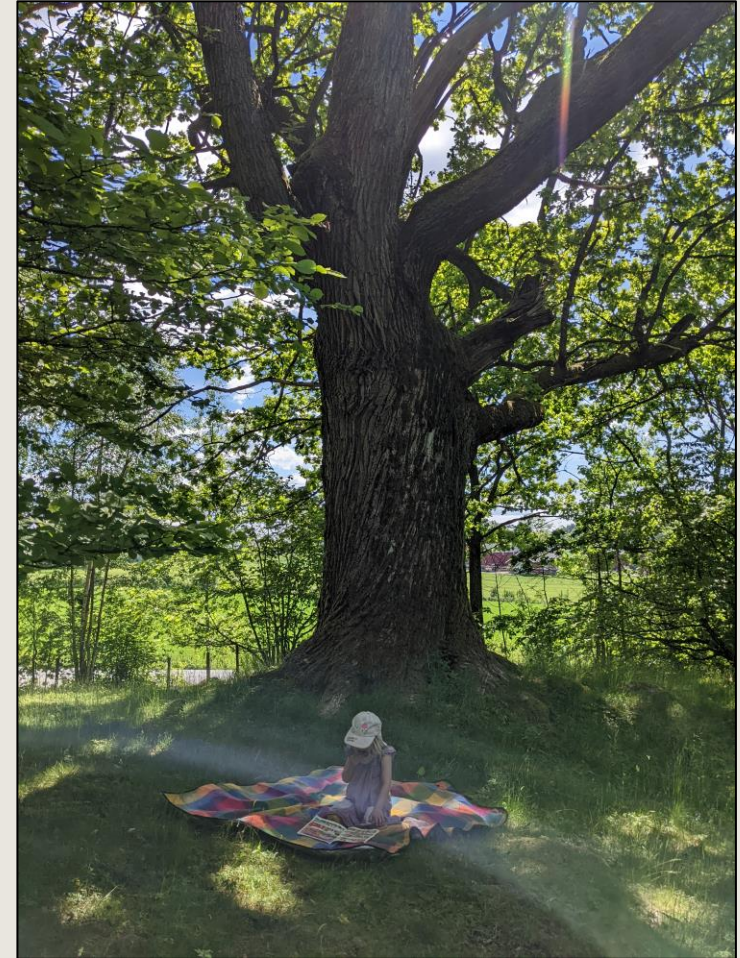
UNIQUE CHALLENGES OF CONSERVING LARGE, OLD TREES

Adapted for stability and
longevity

Growing in places that were
hospitable in the past

Trees have different
management needs

Communities also need to be
considered



SOME SOLUTIONS

Landscape level

- Mapping and monitoring
- Protection of areas where large old trees are most likely to occur
- Promote recruitment

Tree level

- Preventing deliberate removal
- Managing surroundings
- Individual, tree-based solutions



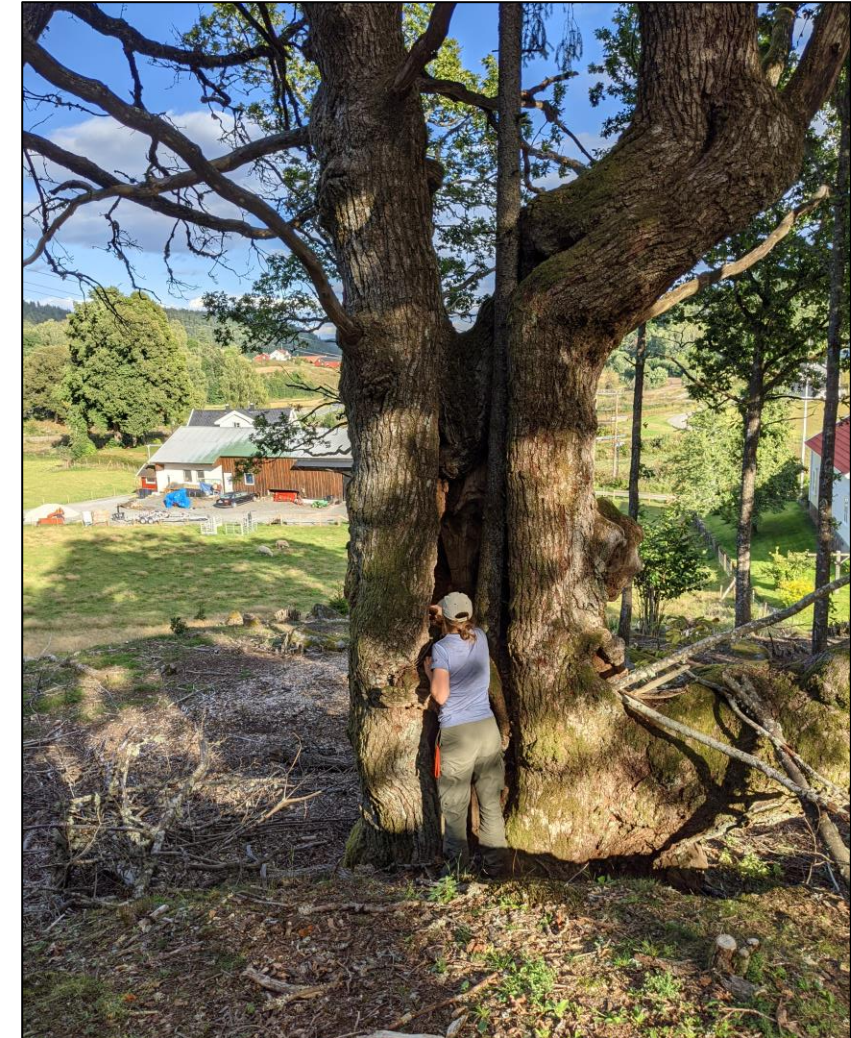
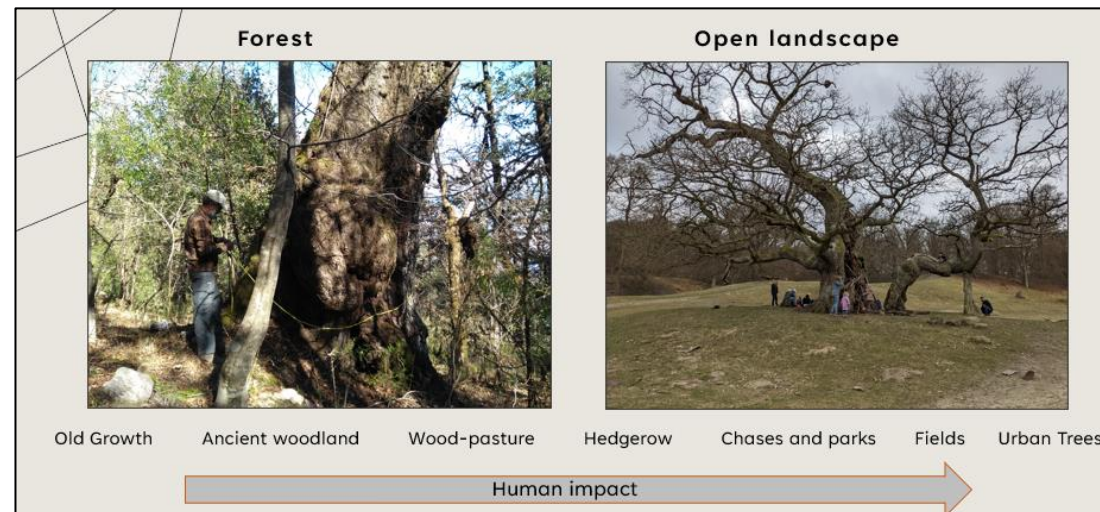
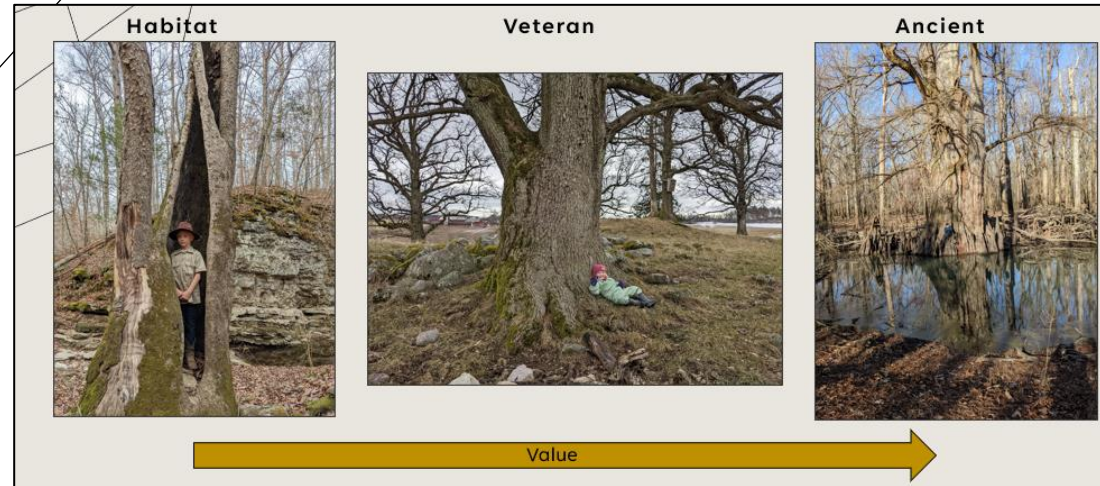
Contents lists available at ScienceDirect

Forest Ecology and Management

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



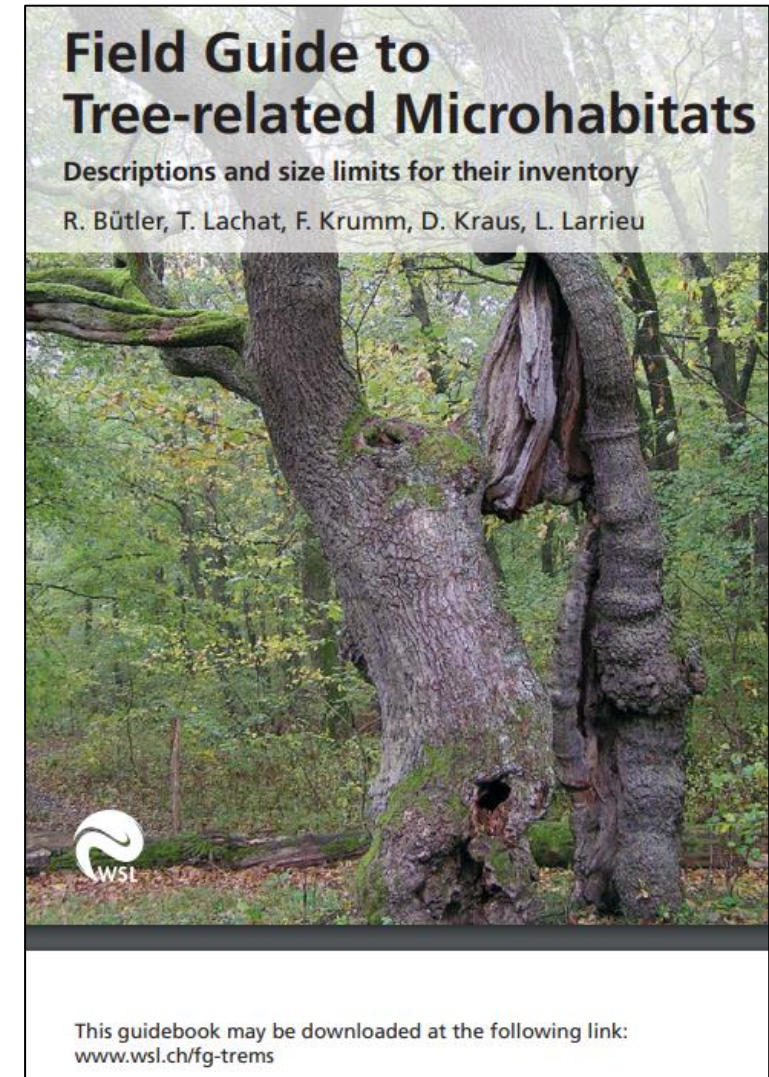
SOME SOLUTIONS: 1st consider for the tree



SOME SOLUTION: Surroundings



SOME SOLUTIONS: Microhabitats



SOME SOLUTION: **Share the joy!**



THANKS FOR YOUR ATTENTION



Field Guide to Tree-related Microhabitats

Descriptions and size limits for their inventory

R. Büttler, T. Lachat, F. Krumm, D. Kraus, L. Larrieu



This guidebook may be downloaded at the following link:
www.wsl.ch/fg-trems



[Home](#) [Who We Are](#) [What We Do](#) [Ancient Trees](#) [Resources](#) [News](#) [Events & Training](#) [Support Us](#)



Looking after our ancient trees

Help us secure the long term future of ancient and veteran trees through best practice in their management...



Monumental trees

[Main page](#) [Species](#) [Countries](#) [Photos](#) [Community](#) [More](#)

[Add new tree](#) [Upload photos](#) [Comment](#)



Already a member?

Username:
Password:

[Sign in](#)

Become a member

[Register](#)

Did you forget your password?

What is this site about?

Trees around us can be remarkable because of a number of reasons: some can be very large or tall, others are old or simply very beautiful.

On this site thousands of [photos](#), [measurements](#), and [location details](#) of often unknown [monumental trees](#) can be found of many species, like [giant sequoia](#), [oak trees](#), [sweet chestnut trees](#), and [many others](#).

Also you can [upload your own photos](#) or [add new trees](#). Have fun!

Number of trees in the register:
56910

Number of photos in the register:
139784

Number of measurements in the register:
107161

Number of exact coordinates in the register:
55702

Recent activity

2023-02-28

- 15:08 Frank Gyssling has uploaded a new image Grey Poplar in the street im Park Babelsberg, Potsdam, Brandenburg, Germany.



- 14:45 AlfredHuizinga has uploaded a new image Jeffrey's Pine along the Kolbaanweg nabij tankstation Tinq, Ermelo, Gelderland, Netherlands.



- 14:13 AlfredHuizinga has added a height measurement of a 15,50 m Jeffrey's Pine along the Kolbaanweg nabij tankstation Tinq, Ermelo, Netherlands.
- 14:12 AlfredHuizinga has added a girth measurement of a 2,34 m Jeffrey's Pine along the Kolbaanweg nabij tankstation Tinq, Ermelo, Netherlands.
- 12:17 Eriobotrya has added a height measurement of a ~31 m Norway Maple across from Rue de Chasseral, Chem. De l'Orestle, Switzerland.
- 12:17 Eriobotrya has added a girth measurement of a 2,61 m Norway Maple



Den lille håndboka om

HULE EIKER