Towards strict protection of primary and old-growth forests in the EU

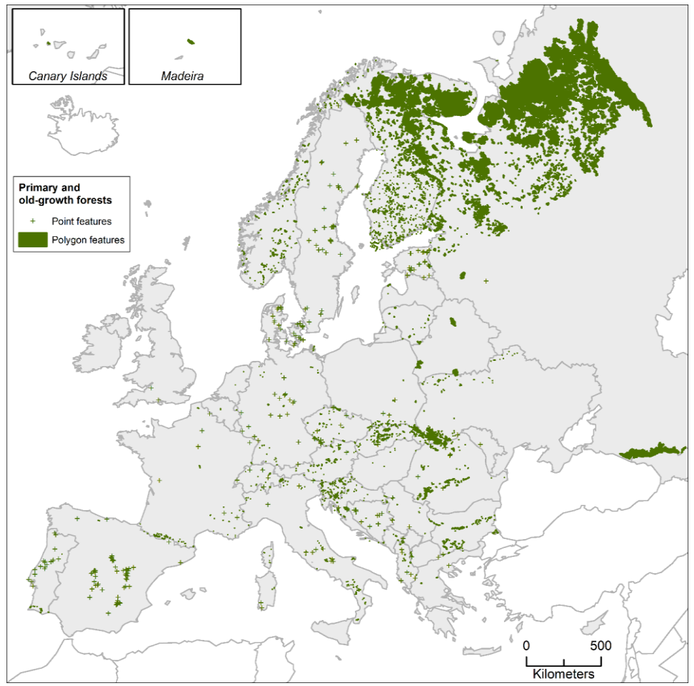
José I. Barredo

European Commission
Joint Research Centre
Forests and Bioeconomy Unit (JRC.D.1)

Old-growth forests in the context of climate policy: what is and what is not an old-growth forest? - International conference, October 12-13, 2023, Latvia

European Commission

Primary & OGF in the EU



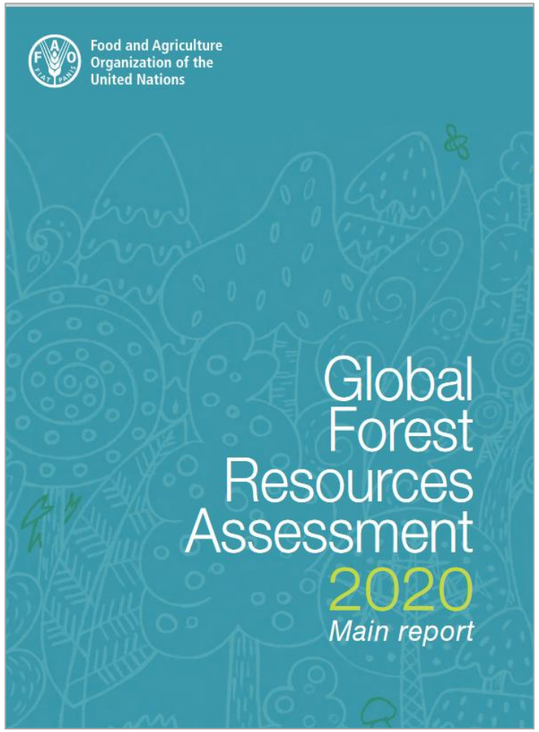
Documented primary and old-growth forests in Europe according to the **EPFD v2.0 (Sabatini et al. 2021)** and UNESCO's Primeval Beech Forests of the Carpathians and Other Regions of Europe (UNEP-WCMC 2021)

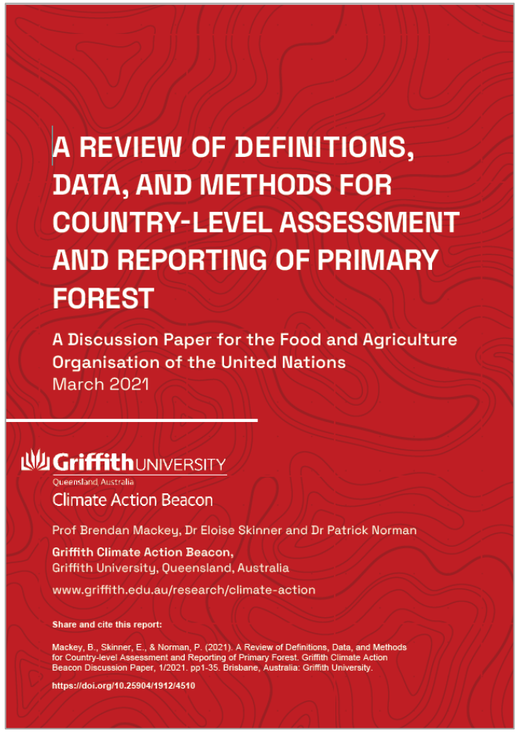
- Rare, small and fragmented
- 1.4 to 3.2 Mha, < **3%** of EU forest land area
- Key for biodiversity and climate services
- ~4.4 Mha to be mapped (> size of NL)

https://dx.doi.org/10.2760/797591

European Commission

European countries report the extent of primary forests





- Definition of PF broadly accepted
- But consistently measuring the area of PF among countries has proven to be challenging
- Wide range of methodologies to report on PF. Which have an impact on the area of PF reported
- Questions on the comparability of data among countries and applicability for policy decisions
- Need to increase consistency in data collection requirements → Enhance comparability of statistics among countries → Series of workshops 2020-2022

FAO FRA and other sources in European countries (examples)

	Primary forests (000 ha)			
Country	**EPFD V2.0**	**FRA-FAO (2020)**	**Other sources**	**Reference**
Bulgaria	57	704	-	-
Finland	1,000 – 2,815	203	1,600	The Finnish Nature Panel (2021)[1]
Romania	70	165	351 – 740	Munteanu et al. (2022)[2]
Sweden	38 Potential: 2,400	2,249	2,000	Andersson (2021)[3]
Latvia	4.8	17	-	-

[1] https://doi.org/10.17011/jyx/SLJ/2021/4
[2] https://doi.org/10.1111/cobi.13820
[3] https://skyddaskogen.se/wp-content/uploads/2021/06/skyddaskogen.se_forestry-at-the-edge-2020-final-lowres.pdf

EU Biodiversity Strategy to 2030, but not only

- To strictly protect all primary & OGF in the EU
- To strictly protect 10% of the EU's land (and sea) areas by 2030
  - Today only 3% of land is strictly protected in the EU
  - And around 87% of the '**known/mapped**' primary & OGF

- Proposal for a **Nature Restoration Law** (COM(2022) 304 final) → Trilogue
  - Restored areas could contribute to the EU targets on protected areas
  - In turn, protected areas can contribute to restoration targets, e.g. areas which can recover naturally by stopping pressures from human activities

- REDII**: Renewable Energy Directive** (Directive EU 2018/2001)
  - Biomass shall not be made from raw material obtained from **primary forests**, **highly biodiverse forests**, areas designated for protection
  - **Provisional agreement 20/3/2023** strengthens the bioenergy sustainability criteria. Forest biomass is not sourced from areas with importance from a **biodiversity** and **carbon stock** perspective

Towards strict protection of primary & OGF

- Biodiversity Strategy to 2030 [COM(2020) 380 final]
  - **It will be crucial to define, map, monitor and strictly protect all the EU's remaining primary and old-growth forests**

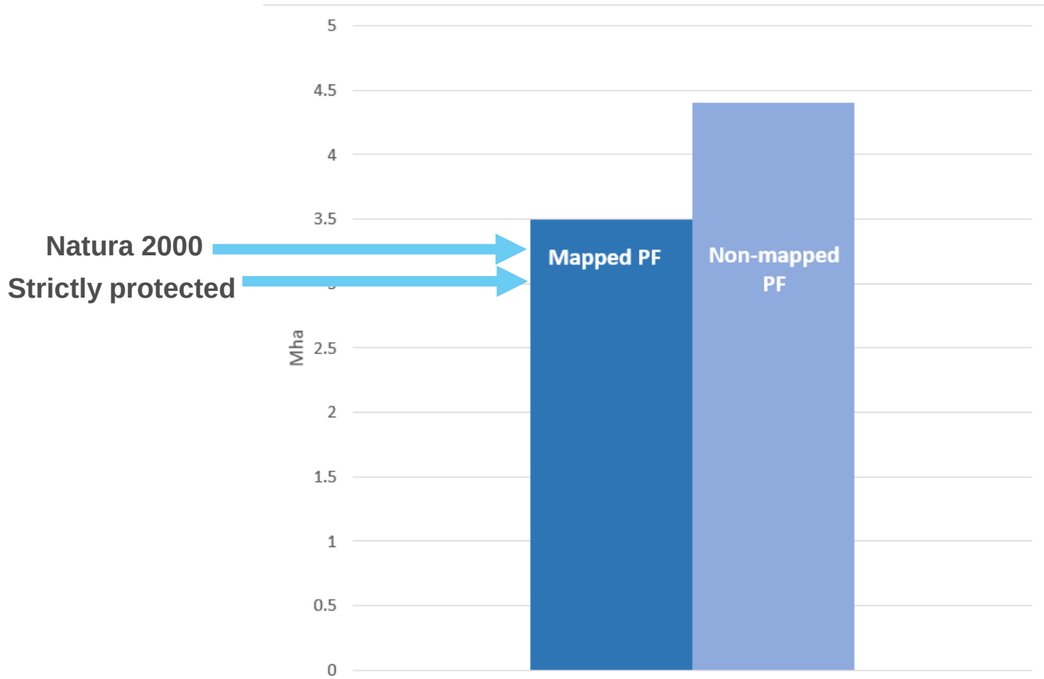
1) **To define**: Guidelines for Defining, Mapping, Monitoring and Strictly Protecting EU Primary and Old-Growth Forests[1]
2) **To map**: Key contribution from EU Member States using guidelines
3) **To monitor**: Remote sensing, NFI, ground surveys, …
4) **To strictly protect**: Member States, NADEG working group, other

[1] https://environment.ec.europa.eu/publications/guidelines-defining-mapping-monitoring-and-strictly-protecting-eu-primary-and-old-growth-forests_en

Protection level in primary & OGF in the EU

- **Mapped/known primary & OGF**
  - 1.4 to 3.5 Mha
  - 93% Natura 2000 Network
  - 87% strictly protected (i.e. IUCN Ia, Ib, and II)

- **Non-mapped primary & OGF**
  - ~4.4 Mha (high uncertainty)
  - **?%** Natura 2000 Network
  - **?%** strictly protected

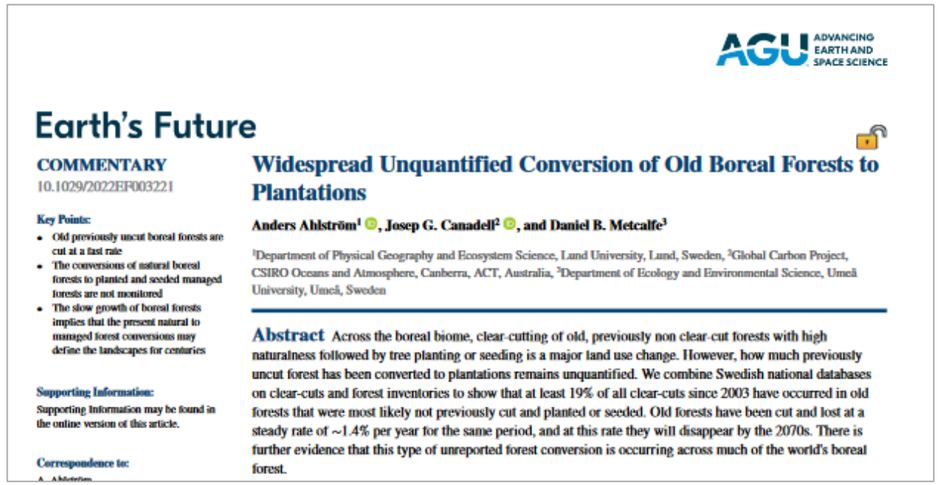


https://dx.doi.org/10.2760/797591

European Commission

In the meantime…

https://www.nytimes.com/interactive/2022/09/07/world/europe/eu-logging-wood-pellets.html



AGU ADVANCING EARTH AND SPACE SCIENCE

Earth's Future

COMMENTARY

10.1029/2022EF003221

Key Points:

- Old previously uncut boreal forests are cut at a fast rate
- The conversions of natural boreal forests to planted and seeded managed forests are not monitored
- The slow growth of boreal forests implies that the present natural to managed forest conversions may define the landscapes for centuries

Supporting Information:

Supporting Information may be found in the online version of this article.

Correspondence to:

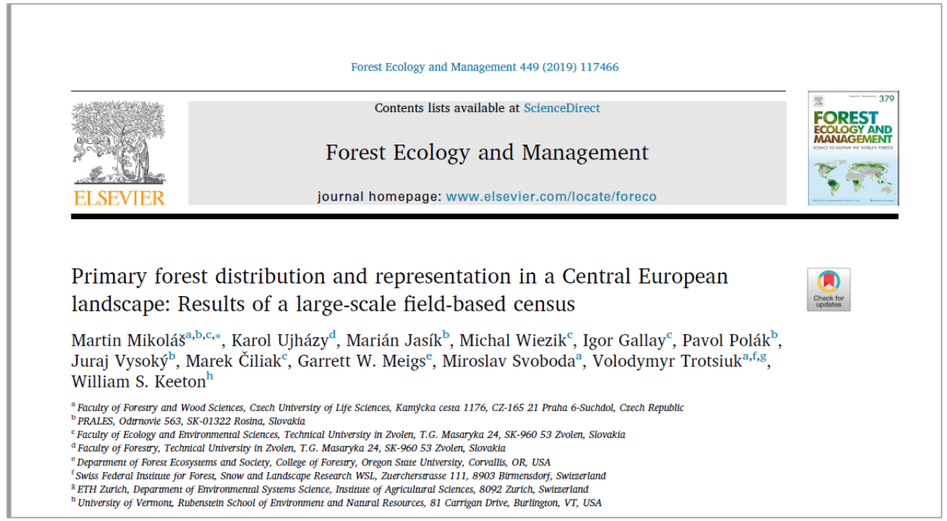
Widespread Unquantified Conversion of Old Boreal Forests to Plantations

Anders Ahlström[1], Josep G. Canadell[2], and Daniel B. Metcalfe[3]

[1]Department of Physical Geography and Ecosystem Science, Lund University, Lund, Sweden, [2]Global Carbon Project, CSIRO Oceans and Atmosphere, Canberra, ACT, Australia, [3]Department of Ecology and Environmental Science, Umeå University, Umeå, Sweden

Abstract Across the boreal biome, clear-cutting of old, previously non clear-cut forests with high naturalness followed by tree planting or seeding is a major land use change. However, how much previously uncut forest has been converted to plantations remains unquantified. We combine Swedish national databases on clear-cuts and forest inventories to show that at least 19% of all clear-cuts since 2003 have occurred in old forests that were most likely not previously cut and planted or seeded. Old forests have been cut and lost at a steady rate of ~1.4% per year for the same period, and at this rate they will disappear by the 2070s. There is further evidence that this type of unreported forest conversion is occurring across much of the world's boreal forest.

https://doi.org/10.1029/2022EF003221



Forest Ecology and Management 449 (2019) 117466

Contents lists available at ScienceDirect

Forest Ecology and Management

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

ELSEVIER

Primary forest distribution and representation in a Central European landscape: Results of a large-scale field-based census

Martin Mikoláš[a,b,c,*], Karol Ujházy[d], Marián Jasík[b], Michal Wiezik[c], Igor Gallay[c], Pavol Polák[b], Juraj Vysoký[b], Marek Čiliak[c], Garrett W. Meigs[e], Miroslav Svoboda[a], Volodymyr Trotsiuk[a,f,g], William S. Keeton[h]

[a] Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Kamýcka cesta 1176, CZ-165 21 Praha 6-Suchdol, Czech Republic
[b] PRALES, Odtrnovie 563, SK-01322 Rosina, Slovakia
[c] Faculty of Ecology and Environmental Sciences, Technical University in Zvolen, T.G. Masaryka 24, SK-960 53 Zvolen, Slovakia
[d] Faculty of Forestry, Technical University in Zvolen, T.G. Masaryka 24, SK-960 53 Zvolen, Slovakia
[e] Department of Forest Ecosystems and Society, College of Forestry, Oregon State University, Corvallis, OR, USA
[f] Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Zuercherstrasse 111, 8903 Birmensdorf, Switzerland
[g] ETH Zurich, Department of Environmental Systems Science, Institute of Agricultural Sciences, 8092 Zurich, Switzerland
[h] University of Vermont, Rubenstein School of Environment and Natural Resources, 81 Carrigan Drive, Burlington, VT, USA

https://doi.org/10.1016/j.foreco.2019.117466

European Commission

Key ecosystem services provided by primary & OGF

1 Conserving biodiversity
1A Higher number of forest-dependent species
1B More effectively sustain important large-scale ecological process
1C Higher functional diversity
1D Higher intra-species genetic diversity
1E Higher ability for species to undertake dispersal or retreat to refugia
1F Refuge for forest species from increased fire frequencies under changing climates
1G Increased key pollination and dispersal processes

2 Climate change mitigation
2A More above- and belowground carbon stored
2B More faunal complexity, which helps carbon storage and sequestration
2C Major carbon sequestration

3 Ensuring hydrological services are maintained
3A Effects on water runoff availability
3B Buffer human settlements against negative effects of extreme climatic events

4 Human health benefits
4A Reduced health impacts of wildfires
4B Reduced infectious disease risks
4C Increased mental health benefits

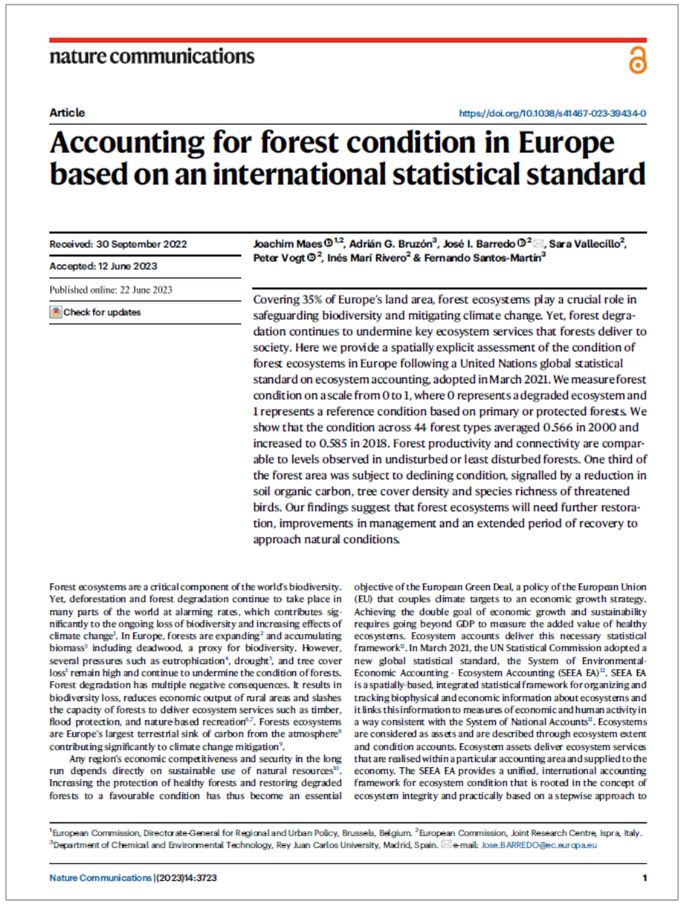
5 Regulating local and regional weather regimes
5A Effects on weather
5B Generation of rain and reduced risk of drought

<3%

Biodiversity and carbon storage

Proportionality tells us to look into the 97%

Primary & OGF as reference sites for forest ecosystem condition



nature communications

Article

https://doi.org/10.1038/s41467-023-39434-0

Accounting for forest condition in Europe based on an international statistical standard

Received: 30 September 2022

Accepted: 12 June 2023

Published online: 22 June 2023

Check for updates

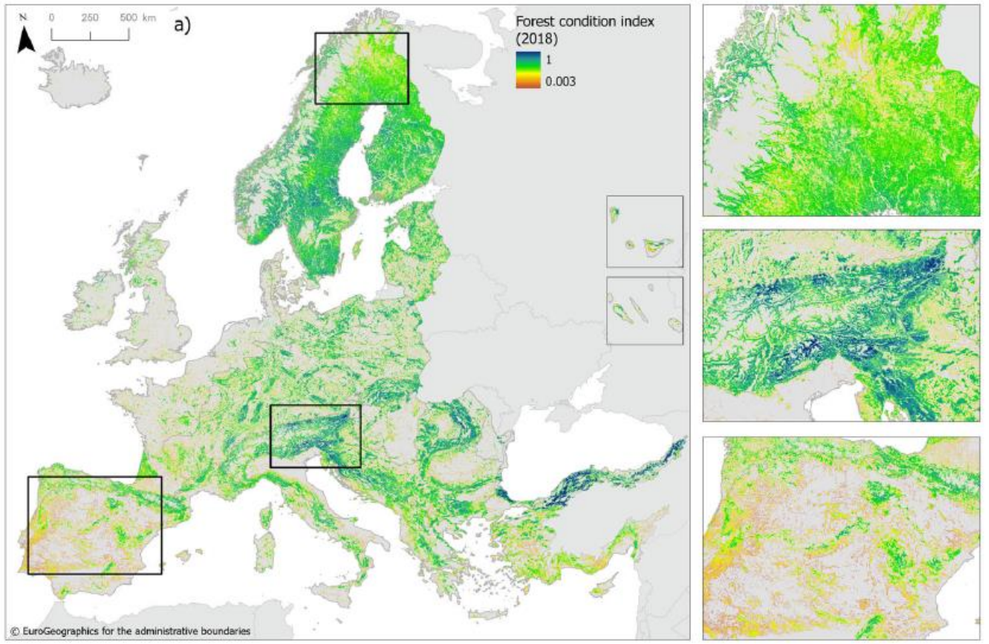
Joachim Maes[1,2], Adrián G. Bruzón[3], José I. Barredo[2] ✉, Sara Vallecillo[2], Peter Vogt[2], Inés Marí Rivero[2] & Fernando Santos-Martín[3]

Covering 35% of Europe's land area, forest ecosystems play a crucial role in safeguarding biodiversity and mitigating climate change. Yet, forest degradation continues to undermine key ecosystem services that forests deliver to society. Here we provide a spatially explicit assessment of the condition of forest ecosystems in Europe following a United Nations global statistical standard on ecosystem accounting, adopted in March 2021. We measure forest condition on a scale from 0 to 1, where 0 represents a degraded ecosystem and 1 represents a reference condition based on primary or protected forests. We show that the condition across 44 forest types averaged 0.566 in 2000 and increased to 0.585 in 2018. Forest productivity and connectivity are comparable to levels observed in undisturbed or least disturbed forests. One third of the forest area was subject to declining condition, signalled by a reduction in soil organic carbon, tree cover density and species richness of threatened birds. Our findings suggest that forest ecosystems will need further restoration, improvements in management and an extended period of recovery to approach natural conditions.

Forest ecosystems are a critical component of the world's biodiversity. Yet, deforestation and forest degradation continue to take place in many parts of the world at alarming rates, which contributes significantly to the ongoing loss of biodiversity and increasing effects of climate change[1]. In Europe, forests are expanding[2] and accumulating biomass[3] including deadwood, a proxy for biodiversity. However, several pressures such as eutrophication[4], drought[5], and tree cover loss[6] remain high and continue to undermine the condition of forests. Forest degradation has multiple negative consequences. It results in biodiversity loss, reduces economic output of rural areas and slashes the capacity of forests to deliver ecosystem services such as timber, flood protection, and nature-based recreation[7–9]. Forests ecosystems are Europe's largest terrestrial sink of carbon from the atmosphere[2] contributing significantly to climate change mitigation[3].

Any region's economic competitiveness and security in the long run depends directly on sustainable use of natural resources[10]. Increasing the protection of healthy forests and restoring degraded forests to a favourable condition has thus become an essential objective of the European Green Deal, a policy of the European Union (EU) that couples climate targets to an economic growth strategy. Achieving the double goal of economic growth and sustainability requires going beyond GDP to measure the added value of healthy ecosystems. Ecosystem accounts deliver this necessary statistical framework[11]. In March 2021, the UN Statistical Commission adopted a new global statistical standard, the System of Environmental-Economic Accounting - Ecosystem Accounting (SEEA EA)[12]. SEEA EA is a spatially-based, integrated statistical framework for organizing and tracking biophysical and economic information about ecosystems and it links this information to measures of economic and human activity in a way consistent with the System of National Accounts[13]. Ecosystems are considered as assets and are described through ecosystem extent and condition accounts. Ecosystem assets deliver ecosystem services that are realised within a particular accounting area and supplied to the economy. The SEEA EA provides a unified, international accounting framework for ecosystem condition that is rooted in the concept of ecosystem integrity and practically based on a stepwise approach to

[1]European Commission, Directorate-General for Regional and Urban Policy, Brussels, Belgium. [2]European Commission, Joint Research Centre, Ispra, Italy. [3]Department of Chemical and Environmental Technology, Rey Juan Carlos University, Madrid, Spain. ✉e-mail: Jose.BARREDO@ec.europa.eu



Forest ecosystem condition 2018

https://doi.org/10.1038/s41467-023-39434-0

European Commission

Take-home messages

- Primary & OGF forests have disappeared from large zones of the European continent
- These forests are critical for biodiversity and ESS, including climate regulation
- Large amount of carbon stored in their **living biomass**, **deadwood**, and **soils (i.e. SOC)**, and the habitat provided for imperilled species
- Living laboratories where natural processes are studied for designing restoration measures
- Benchmark for ecosystem condition studies
- **They are declining in the EU**

Thank you

European Commission