Europe's old-growth forests, such this one in Romania's Fagaras Mountains, lack sufficient protection.

Edited by **Jennifer Sills**

Protect old-growth forests in Europe now

Old-growth forests harbor high and unique biodiversity, store vast amounts of carbon, are important for water and nutrient cycling, and constitute a unique element of natural heritage (*1*). In the European Union, old-growth forest protection is now mandated by the EU Biodiversity Strategy for 2030. However, almost 3 years after the strategy's adoption, stakeholders and policymakers are still discussing definitions and legislative mechanisms, while old-growth forests continue to decline at alarming rates (*2*–*4*).

Many old-growth forests are logged before their identification and protection. In Sweden, for example, unprotected boreal old-growth forests have been cut at a rate that could lead to their disappearance within the next 50 years (*2*). Similarly, Romania harbors up to 738,000 ha of potential old-growth forest, but more than 90% of this area lacks strict protection (*5*). In Romania and elsewhere in Eastern Europe, logging continues across some of the continent's few remaining large landscapes dominated by temperate old-growth forests (*4*). Even protected old-growth forests are often salvage logged after natural disturbances (*6*).

In March, the European Commission suggested guidelines to map and protect old-growth forests by the end of 2029 (*7*). However, these guidelines are neither binding nor prescriptive. Given current widespread logging of old-growth stands, the EU is on track to fail its 2030 goals.

Pressure on Europe's biomass-rich old-growth forests is high and rising. Timber prices have increased (*8*). Compensation would encourage forest owners to adopt strict protection, but there are insufficient resources and tools to provide financial incentives (*9*). Because landowners anticipate that forest protection will increase in the future, and forest monitoring is sparse, they are motivated to log as much as possible before regulation tightens.

To improve protection, the EU should immediately implement a logging moratorium on areas potentially harboring old-growth forests, make resources available to detect old-growth forests, require member states to include old-growth protection in their national strategies, and provide equitable financial tools to ensure their effective protection (*10*). Exemptions from strict conservation could be considered only for stands managed by well-documented practices that support biodiversity. Without bold and swift action, Europe risks irreparable loss to its natural heritage.

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Credit credibility threatens forests

Addressing global warming requires increased investment in conserving and restoring carbon-dense natural habitats. Some companies that emit carbon have turned to certified carbon credits to offset their environmental impact. However, the effectiveness of carbon credits depends on the methods used to quantify them. If carbon credits do not accurately represent their environmental benefits, relying on them could exacerbate climate change (*1*). To ensure that carbon credits are robust, the methods used to calculate them must be improved.

So far, credits from tropical forest conservation have been generated by estimating project effects through comparisons with historical trends in reference areas identified by project proponents (*2*). However, there is considerable evidence that these methods substantially overestimate the degree to which projects are changing outcomes (i.e., their "additionality") (*3*–*5*).

Carbon crediting procedures also need to get better at accounting for the risk of increased emissions elsewhere. If food or timber production is prevented by a carbon offset project, that production and its carbon impacts may simply move to a different location (*6*, *7*). Most assessments of this

carbon "leakage" focus on rough estimates of small-scale leakage and ignore or greatly underestimate longer-range displacement of production (*8*).

Finally, the carbon credit system needs more robust ways of accounting for the impermanence of carbon held in vegetation and soils. Current certification methods try to underwrite credit permanence claims by maintaining a shared pool of nontradable credits which can be drawn from in the event of reversals (*9*). However, this system provides no incentive for future stakeholders to prevent carbon releases after credits have been issued (*10*).

Better methods are available. Additionality can now be estimated more reliably using statistical techniques developed over many decades in economics and public health to eradicate bias in estimating the counterfactual—i.e., what would have happened without the intervention (*11, 12*). Likewise, there are new methods to better adjust for leakage effects (*8*) and properly value impermanent storage (*10*). All of these improvements should be routinely deployed in credit quantification. Carbon credits can be a valuable tool for climate change mitigation and forest conservation, but their success depends on improving their credibility.

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COMPETING INTERESTS

A.B., D.C., S.K., A.M., and T.S. are directors of the Cambridge Centre for Carbon Credits (4C), a research partnership aimed at improving the robustness of estimates of the performance of carbon credit–generating projects. 4C directors also serve as unpaid members of the Cambridge Offsetting Working Group advising the University of Cambridge on their carbon offsetting decisions. P.H.S.B. and B.B.N.S. are respectively partner at and founder of Re.green, a company dedicated to restoring native ecosystems, and have an equity stock. C.W. and T.S. are funded by the Tezos Foundation gift to 4C (grant code NRAG/719).

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List child dependents on death certificates

Models suggest that at least 10.5 million children experienced COVID-19–associated orphanhood and caregiver loss in the first 2 years of the pandemic (*1*), and the numbers continue to grow (*2*). However, public health data cannot identify children experiencing orphanhood. More information about such children could facilitate the delivery of support, services, and loving care, minimizing the negative effects of orphanhood (*3–5*). To obtain this data, death certificates should include the number of children under the age of 18 living in the home of the deceased parent or caregiver.

Recording dependent children on death certificates has led to support for children in Brazil, where collecting names and ages of dependent children is standard practice for all adult deaths (*6*). In response to data on the numbers of children who lost caregivers during the pandemic, one municipality in São Paulo, Brazil passed legislation to identify children who lost one or both parents to COVID-19, assess their needs, and connect them with services such as grief counseling and psychosocial, educational, and economic support (*7*). Furthermore, 11 Brazilian states have ratified or are considering bills providing economic support for such children (*8*).

Other countries should adopt this model, which could be expanded to allow identification of children orphaned as a result of any cause of death. The World Health Organization (WHO) publishes an "International form of medical certificate of cause of death" with two parts (*9*). The first section, cause of death, must be completed by a doctor. The second section can be filled out by others and includes questions about where the death occurred and whether the deceased was pregnant. The WHO should add a question to the second section asking for the number of children under the age of 18 residing in the home.

To maximize the effectiveness of reporting dependents, countries must work to collect comprehensive death records. Only about two-thirds of the 55 million annual global deaths are registered in civil registration and vital statistics (CVRS) systems, but the WHO CVRS Strategic Implementation Plan aims to increase their use (*10*). Ensuring complete records that include dependents, regardless of the caregiver's cause of death, could standardize aid for orphaned children across the world.

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