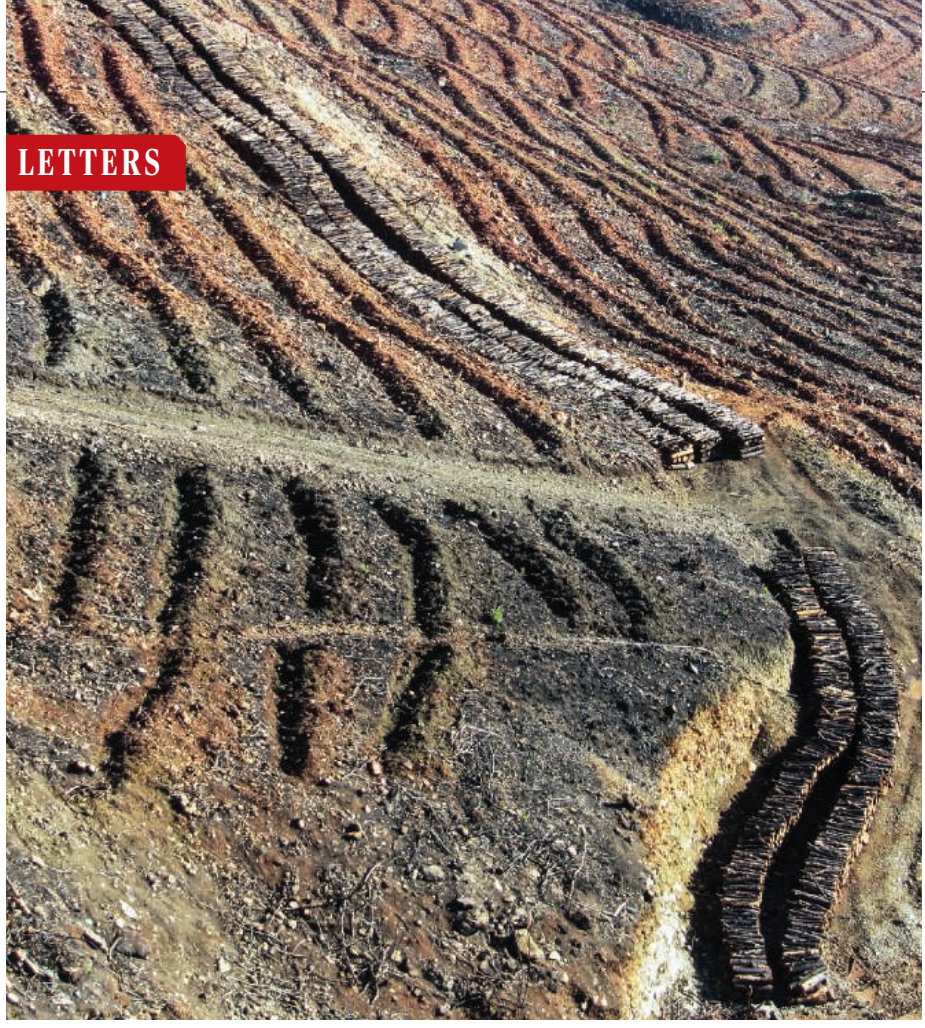

Postfire management in southwest Turkey includes logging, terracing, and planting new pine trees.

PHOTO: J.G. PAUSAS

Edited by **Jennifer Sills**

Turkish postfire action overlooks biodiversity

Turkey was hit hard by wildfires in 2021, with a record of about 203,000 ha burnt (*1*). Most of the area burnt was covered by Mediterranean *Pinus brutia* forests, and the intense fires killed most of the pines (*2*). However, this species has some closed cones that retain seeds until the heat of a fire releases them (*3*, *4*), allowing regrowth despite the death of the tree (known as postfire recruitment). A great diversity of other species in the area can also resprout or germinate after fire (*4*). Given that a high level of postfire regeneration will likely take place naturally (*3*), postfire management should focus on protecting the forest from aggressive human activities.

Instead, the Turkish General Directorate of Forestry has started postfire management with the salvage logging of dead trees. In many places, heavy machinery is being used and forest roads are being opened (*2*). Because Turkey's priority is timber production, logging is often followed by seeding or terracing and new tree planting.

These actions limit natural regeneration (*4*, *5*) and disrupt ecosystem function (*6*). In some cases, they degrade the soil (*7*) and convert a species-rich ecosystem into artificial afforestation. Given the wide extent of the 2021 fires, these actions may substantially increase the country's land degradation and fail to comply with United Nations objectives (*8*, *9*) and Turkey's commitments in the 2021 United Nations Climate Change Conference (*10*).

Postfire ecosystem dynamics data suggest that Mediterranean ecosystems are resilient to fire (*3*). Intense postfire management activities are required in only a few cases (*7*, *11*), such as in areas with fire intervals much shorter than the historical variability or with reduced resilience because of previous land uses. Before aggressive intervention, sustainable postfire management must take into account natural regeneration, biodiversity, and ecosystem function. We urge the Turkish General Directorate of Forestry to stop degrading ecosystems and pursue ecologically sustainable forest management.

Çagatay Tavsanoglu[1] and Juli G. Pausas[2]*
[1]Division of Ecology, Department of Biology, Hacettepe University, 06800 Beytepe, Ankara, Turkey. [2]Centro de Investigaciones sobre Desertificación, Consejo Superior de Investigaciones Científicas (CIDE-CSIC), 46113 Valencia, Spain.
*Corresponding author.
Email: juli.g.pausas@ext.uv.es

REFERENCES AND NOTES

1. European Forest Fire Information System of the European Commission Joint Research Centre, "EFFIS Annual Country Statistics for TR – Turkey" (2022); https://effis.jrc.ec.europa.eu/apps/effis.statistics/effisestimates. In the dropdown for zone, select "European non-EU countries," then select Turkey from the country list.
2. H. Ö. Tosun, "Antalya'da yanan ormanlar 100 milyon fidanla yeniden yeşerecek," AA (2021); https://www.aa.com.tr/tr/gundem/antalyada-yanan-ormanlar-100-milyon-fidanla-yeniden-yeserecek-/2354363 [in Turkish].
3. J. E. Keeley *et al.*, *Fire in Mediterranean Ecosystems: Ecology, Evolution and Management* (Cambridge University Press, 2012).
4. O. Ürker *et al.*, *iForest* **11**, 635 (2018).
5. A. B. Leverkus *et al.*, *J. Environ. Manage.* **133**, 323 (2014).
6. D. B. Lindenmayer *et al.*, *Science* **303**, 1303 (2004).
7. P. Pereira *et al.*, *Curr. Opin. Environ. Sci. Health* **5**, 26 (2018).
8. United Nations Decade on Ecosystem Restoration 2021–2030 (2021); www.decadeonrestoration.org/.
9. United Nations Department of Economic and Social Affairs, "The 17 goals" (2018); https://sdgs.un.org/goals.
10. UN Climate Change Conference UK 2021, "Glasgow leaders' declaration on forests and land use" (2021); https://ukcop26.org/glasgow-leaders-declaration-on-forests-and-land-use/.
11. A. B. Leverkus *et al.*, *Environ. Res. Lett.* **16**, 021003 (2021).

10.1126/science.abn5645

A sea of possibilities for marine megafauna

Known marine megafauna include more than 300 mammals, fishes, turtles, birds, and cephalopods, which play pivotal roles in ocean ecosystem functions (*1*). These species increase primary productivity, act as natural carbon reservoirs in climate change mitigation, represent ocean health sentinels and flagship species in conservation issues, and provide food and substantial economic benefits through impacts on the fishing industry and tourism (*1*, *2*). Yet, according to the International Union for Conservation of Nature (*3*), about one-third of marine megafauna are threatened with extinction (*1*, *4*) as a result of exposure to industrialized human-induced pressures such as direct or indirect catch, marine traffic, climate change, overfishing, and pollution ranging from plastics to noise. Protecting these species is paramount.

Positive steps have been taken toward ocean sustainability, such as whaling moratoria, recovery of populations near extinction, and the creation of marine protected areas worldwide. International agreements such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Convention on the Conservation of Migratory Species of Wild Animals, International Convention for the Prevention of Pollution from Ships, and Berne Convention (*4*) have promoted coordinated actions by multiple nations toward marine species conservation.

Turkish postfire action overlooks biodiversity

Çagatay TavsanogluJuli G. Pausas

Science, 375 (6579), • DOI: 10.1126/science.abn5645