

GUEST EDITORIAL

BIOFUELS AND TROPICAL FORESTS

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For a wood anatomist residing in a temperate country, tropical forests can be reduced to microscopic images of woods with wide vessels and indistinct or at least poorly cross-datable growth ring boundaries, elaborate parenchyma patterns and/or septate fibres, and a diversity of ray types and other subtle microscopic attributes. The functionality of all the variable microstructures of tropical woods is highly relevant for the understanding of tree biology and forest ecology as well as of the range of wood properties of the sustainably or unsustainably harvested timbers. I could easily fill 10 guest editorials about various aspects of comparative functional wood anatomy, but I fear that this specialized topic will not interest the broad readership of this journal.

My direct knowledge of tropical forests is limited to ecotouristic enjoyment of the FRIM canopy-walk and to having climbed a couple of observation platforms in emergent *Shorea* trees in Malaya and SE Kalimantan, so when I have an ax to grind about endangered and rapidly vanishing tropical forests, I do so as a citizen of the global village and not as a forestry expert. I vividly remember getting very concerned about the fate of tropical forests when at a meeting of IUFRO in Hamburg in 1970, a distinguished wood scientist presented a survey of world supplies and characteristics of true mahoganies belonging to the tree family of the Meliaceae, and their surrogates such as the Philippine mahoganies, the merantis, and other members of the Dipterocarpaceae in SE Asia and the IndoPacific. His message was that although true mahoganies were nearly exhausted, there was no reason for global concern because the Dipterocarpaceae supplies were virtually inexhaustible. I wondered whether, if New World and African mahoganies could be exhausted by our hunger for tropical hardwoods so easily, the same could not become true of SE Asian merantis. And indeed, in the

same prestigious research institute in Hamburg last year, I listened to a speaker who announced that in the international CITES community all the commercial timbers belonging to the Dipterocarpaceae are now serious candidates for becoming listed in one of the CITES appendices, thus effectively restricting international trade in these once so popular and omnipresent, and meanwhile endangered timber species.

The very high rate of disappearance of old growth tropical forests is not a matter of debate and can be clearly seen on satellite images. For instance in Borneo the threat to Dipterocarpaceae-dominated rainforests is immediately evident and we all know the reasons why: unsustainable logging, shifting cultivation and the interrelated large forest fires. In recent decades, large-scale conversion of natural forests to biofuel plantations, especially of oil palm, is an additional destructive actor in the (lost or nearly lost?) battle to conserve the last tropical lowland forests, never mind the Convention on Biological Diversity and national legislation to protect these forests. I fear that the use of palm oil in biodiesel, and of any other first generation biofuel such as sugarcane or *Jatropha*, will be accelerating the demise of the last remnants of good tropical forests to an unprecedented rate. All this, despite convincing evidence that forest conversion to plantations aggravates rather than mitigates carbon emissions, and that our planet is far too small to provide significant supplies of bioenergy from any type of first generation biofuel crop *and* to feed a growing world population. In temperate countries the subsidized use of corn and rapeseed will be equally disastrous.

Despite these scientific truths, the biodiesel locomotive has left the station, fueled by short-term economic motives and ill-advised subsidies in some parts of the world to put so-called green fuel in our tanks. The locomotive will be very

hard to stop. Forestry scientists should reverse this folly by developing alternative solutions that are sustainable and biodiversity-friendly. A good indicator for the quality and sustainability of our forests is their biodiversity. In the forthcoming Open Science meeting of *Diversitas* in Cape Town (October 13–16, 2009) we will bring together specialists from all over the world to analyse the measured and potential effects of biofuel production on biodiversity (www.diversitas-international.org). The problem is a global one, and by no means limited to tropical forests, but tropical forests are probably the most vulnerable

to the largely irreversible effects of misguided policy decisions on bioenergy.

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