

**JULIAN EVANS****Use and Abuse of Tropical Forests**

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Peter Moore's article 'The exploitation of forests' portrays the current destruction of tropical rain forest and the challenge that this is to committed Christians seeking to be good stewards of God's creation. The catalogue of harms that forest clearance brings are plainly spelt out and once again arrests our attention. But what can we do? What should we do?

The rate of tropical deforestation is alarming. In the early 1980s the U.N. Food and Agriculture Organization (FAO) estimated the destruction to be some 11.3 million hectares per year or a little less than one per cent of all tropical forest and savanna woodland. Up-to-date figures are expected later this year as part of the Tropical Forest Action Plan initiative and most observers believe the pace of clearance will have accelerated. This disappearance of forest cover in the tropics contrasts with temperate regions where, today, timber harvesting and tree cutting are more than balanced by new planting and natural regeneration; indeed, in Britain our forest estate has doubled in area in the last 70 years.

Media attention and the green movement tend to focus on loss of wet tropical forest formations (rain forest) and the laying waste of this, the world's richest ecosystem. But encompassed in the above figures is the loss of semi-arid bush, dry scrub and savanna woodland accounting for some one-third of the total. The distinction is drawn because the causes of destruction are starkly different: loss of rain forest stems largely from the pressure of western economic order—export of timber, clearance of land for ranching, oil palm, coffee and other plantations to pay for huge third world debts; loss of savanna woodlands mostly arises from local people's increasing need for firewood, fodder, building and fencing materials etc. and exacerbated by unpredictable climates—drought, flood, sandstorm, which all make life so precarious. These different problems require different solutions.

Solutions to the destruction of rain forest must begin first with essentially human and not ecological issues and on two levels. Often overlooked is the fact that some 200 million tribal peoples dwell within or immediately depend on rain forest for food, shelter and clothing. The shifting cultivation activities of many of them have brought international criticism and blame for forest destruction, but this a deception and a shifting of blame. Shifting cultivation farming on a long cycle is both entirely sustainable and a wise understanding of the fact, which Peter Moore stresses, that the bulk of stored nutrients in a forest ecosystem is not in the soil, which is often

relatively impoverished, but in the above-ground biomass. Clearance and burning small patches of forest every fifty years or so releases this accumulated nutrient store as 'fertilizer' for a few seasons' cropping, with the following long period of 'fallow' or neglect rebuilding it again. Only serious shortening of the cycle introduces degrade and impoverishment when the shifting cultivator has to return too soon to a previously worked patch. But this is what has been happening as his forest area has been restricted or its use curtailed owing to extrinsic factors causing its depletion. Care for rain forest must not neglect care for the people who live there.

The second human issue is one we all know—greed and corruption. Much tropical deforestation comes from illegal activities, nepotism, bad laws which only enrich the already wealthy, or using 'vast tracks' of forest to relieve overpopulated hot spots elsewhere through such schemes as transmigration. A timber concession, the granting or withholding of it, exposes the arbiters and decision makers to easy corruption. Cutting of trees and logs is not easy to monitor and the concession is difficult to police in its necessarily remote location far from where the rule of law usually has any sway. But behind even this temptation to greed is the need to service western loans used all too often to buy our luxuries, industrial ephemera and military hardware we are willing to sell. Hence, perhaps the vogue of debt for nature swaps salving conscience and conservation at a stroke!

I've sketched these issues because the question of rainforest destruction is far more than one of 'preservation' or stopping the felling however that may be achieved: we must begin with people and policies and politicians North and South. Simple technological answers are inadequate. Like King Solomon, leaders need great wisdom and, also like Solomon buying the finest cedars from Lebanon for God's temple (1 Kings 5), the objective is use not abuse. This includes use for wildlife conservation, for tribal peoples, for timber, for global climate support and so on, not necessarily all in one place but certainly some place for all.

An important example of technological inadequacy is the role of tree planting. Although logging of rain forest for timber is often not the primary cause of destruction, undoubtedly our importation and enjoyment of tropical hardwoods is an important contributory factor. Supplying these valuable timbers by raising them in plantation would elegantly divert some pressure from natural forest. But, with the singular exception of teak, this has proved difficult. Mahoganies, tropical cedars, rosewoods, merantis and so on do not, for varying reasons, grow very well in plantation: current research is overcoming several of the obstacles, but for the time being, and well into the next century, obtaining these slower growing timbers from natural forest is the only way. Moreover, the much sought after sustainable management of tropical rain forest, beyond careful selective logging of a stand and then leaving it for 40 or 50 years has, also, proved fraught. Managing these complex ecosystems is difficult though, without doubt,

protection of forest integrity from illicit encroachment is always the first step.

In semi-arid areas and savanna regions plantations have, on the whole, been much more successful. Indeed, across the tropics there are large areas of land of poor agricultural value or already degraded which are well suited to tree planting. Growing trees for fodder, firewood, pole and even industrial material is a straightforward technology provided it is underpinned by people's participation and involvement. Yields frequently exceed that of natural woodlands, though controlled management of the latter is an equally valuable 'technology' able to make an important contribution. There are now many examples of successful tree planting projects in the drier tropics and a whole new impetus, labelled social and/or community forestry, is now on most governments' agendas. While care must be taken not simply to replace natural woodland with exotic species, as mentioned there is never any need to clear forest just to make room for tree plantations, the use of what are often introduced species has an important place. Eucalypts, pines, acacias or casuarinas, can greatly augment the natural flora providing local needs quickly and effectively in just the way, I believe, Isaiah prophesied the change i.e. development from the less to the more productive and useful (Is. 55:13) 'Instead of the thornbush will grow the pine tree, and instead of brier the myrtle will grow.'

The measure of success in tree planting as part of social forestry schemes has led to (and benefitted from) the study of ways of using trees as part of farming systems, a use encapsulated in the ugly word 'agroforestry'. Many peoples have long grown trees for fruit, fodder, shade and shelter in traditional home gardens and understanding the science of this technology is almost the antithesis of single crop culture of western, temperate farming systems. Use of nitrogen-fixing species, applying pollarding and coppicing practices, choosing species for specific purposes, and cultivating a whole variety of food crops can all be brought together on one patch of ground creating a complex integrated unit. The complexity and integration of the whole often benefits the individual components creating a sustainable land use system.

Such agroforestry schemes are increasingly promoted in social forestry programmes and especially in the moister tropics where they are seen as possible buffer zones around threatened rain forests. They provide a half-way house between the practices of the shifting cultivator and sedentary farmer. Thus technology has a role to play in conserving the rain forest as well, a technology which essentially draws on tribal people's experience. What they found, and scientists after them, was that complexity and diversity, even when entirely composed of valued food and tree crops was a genuinely sustainable land use. The system mimics the natural forest in diversity of species, sizes and rotations i.e. the very structure which has proved so enduring and stable. Thus we learn and copy from what God created which, surely, is the essence of good stewardship (Gen. 1:26) and

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enables us to complete the verse in Isaiah quoted earlier (Is. 55:13) 'This will be for the Lord's renown, for an everlasting sign, which will not be destroyed'.

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