

The Fall of the Forest

Tropical tree losses go from bad to worse

By RICHARD MONASTERSKY

The numbers tell a chilling tale. Two new reports warn that the world's tropical forests are disappearing much faster than scientists and policymakers thought, despite increasing efforts to stem the destruction.

A decade ago, the United Nations Food and Agriculture Organization calculated that the forests encircling Earth's waistline were vanishing at a rate of 11.3 million hectares per year, and until now that figure has stood as the most authoritative estimate of tropical forest loss. "For most of the decade, that number has determined how people have analyzed the problem of deforestation," says Eric Rodenburg of the World Resources Institute (WRI) in Washington, D.C.

But last month, WRI released a new study based on a review of more recent information that indicates tropical deforestation now clears some 16.4 to 20.4 million hectares each year — an area almost the size of Washington state. And new figures released last month by the United Nations fit into the same range. The United Nations, now in the process of updating its 1980 report, has made a preliminary estimate that tropical deforestation lays waste to 17.1 million hectares per year. To put it another way, chopping and burning annually consume about 1 percent of the remaining rain forests and dry forests in the tropics, says Karna D. Singh, who coordinates the 1990 Forest Resources Assessment for the Food and Agriculture Organization in Rome. Singh says his team will not finish the final report for two years, and he cautions that the early calculations are "very provisional figures."

Whatever the final estimates, they will undoubtedly dwarf those of a decade ago, and deforestation experts list two possible reasons for the jump. For one, many countries are simply leveling more trees today than they were in the late 1970s. But accelerated deforestation may not tell the entire story. Because the most recent estimates rely on satellite data and other types of information not widely used in compiling the 1980 report, many forestry specialists suspect the earlier estimate failed to convey the full scale of the problem even then.

The 1980 report "clearly overestimated the amount of forestland left and underestimated the amount of deforestation,"

says Twig Johnson, director of the Office of Forestry, Environment and Natural Resources at the U.S. Agency for International Development in Arlington, Va.

Over the last several years, ecologists and conservationists have raised an international outcry over the scale of tropical deforestation and its devastating effects. The warm woodlands bordering the equator harbor more than half of the world's existing species, so forest destruction in this region drives the extinction of countless unique plants and animals. It also adds to Earth's greenhouse effect, spurs erosion of valuable topsoil and exacerbates deadly flooding in certain countries, notably Bangladesh and Thailand. Moreover, recent reports have shown that forest-clearing fires in Africa and South America spew severe pollution over once-pristine regions (SN: 3/31/90, p.196). And aside from contributing to environmental problems, unchecked deforestation displaces groups of woodland-dwelling people and robs tropical nations of valuable resources, such as rubber and fruit, that can be tapped without destroying the forest.

In the WRI report, Brazil weighs in with the greatest losses of any single country, although several studies cited in the report yielded markedly different assessments of those losses. A research team at the National Space Research Institute of Brazil, for example, calculated a staggering loss of 8 million hectares during 1987, based on infrared satellite images that reveal smoke from fires. Using different satellite data, a separate research group at the same organization came up with a much lower average rate of 1.7 million hectares each year over the last decade. In 1980, the United Nations estimated Brazilian deforestation at 1.4 million hectares per year.

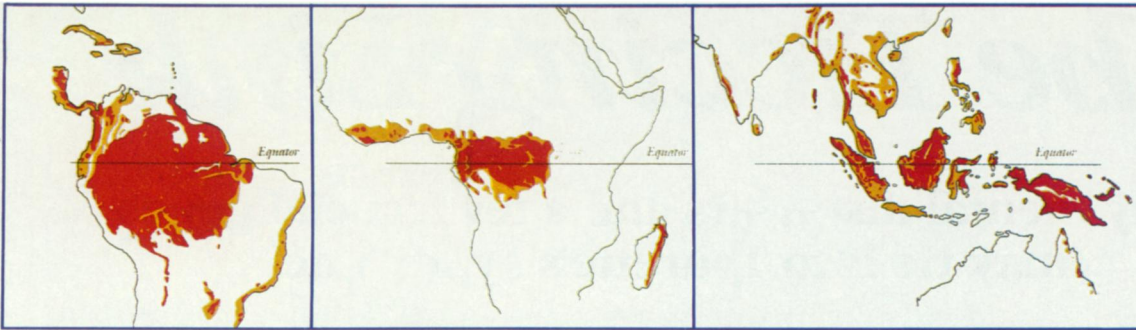
The debate over the relative merits of the Brazilian studies seems every bit as dense and tangled as the leafy canopy of the Amazonian forest. But specialists agree that deforestation in South America's largest nation peaked in 1987 and has declined since then, due to a variety of factors. In 1988, the Brazilian government rescinded old tax laws that encouraged forest clearing. At the same time, unusu-

ally wet conditions inhibited burning that year. Brazilian scientists also started using new satellite data to spot fires as they burn instead of months after the embers cool. Such "real-time" analysis allowed officials to dispatch armed rangers in helicopters to issue fines for illegal fires. While the government has yet to collect any of these fines, the new enforcement practice received widespread publicity in Brazil and helped stem forest clearing, says Ken Andrasko, senior forestry analyst at the EPA.

Concern over tropical deforestation usually focuses on Brazil, which has the world's largest intact tropical forests and the greatest amount destroyed each year. But India, Indonesia and Burma also lead the list. WRI's recent figures on deforestation show a dramatic rise from 1980 estimates in these countries, as well as in Cameroon, Costa Rica, the Philippines and Vietnam. Other nations high on the list of forest losses are Colombia, Ivory Coast, Thailand, Laos and Nigeria. While the total acreage cleared in the smaller countries may pale next to Brazil's deforestation, acreage comparison hides some disturbing facts. For instance, WRI estimates that as of 1983, Costa Rica was clearing 7.4 percent of its forest each year. This rate, if sustained, would destroy almost all of Costa Rica's forest before the end of the century.

Historically speaking, deforestation in the tropics echoes what happened long ago in the temperate forests of North America and Europe. Between the early 1600s and the early 1900s, settlers cut about one-third of the original forest covering the contiguous United States. But forest loss is sweeping the tropics at unprecedented speeds. "The people in the tropics are doing now in a very short period of time what we did over hundreds of years to fuel our development," says Andrasko.

The WRI says its estimates represent the best figures available, but admits they do not fully reflect the current state of tropical deforestation. To produce its global estimate, the organization looked at the most recent available studies using satellite data for eight countries where forest clearing has clearly escalated since the



Red indicates extent of remaining tropical rain forest; yellow shows rain forest cleared as of 1988. Does not include tropical dry forests.

late 1970s. But many of these studies lack data on deforestation during the second half of the 1980s.

To formulate its upcoming 1990 estimates, the United Nations group will not only draw together the latest available reports but will also gather its own data using satellite pictures and information about human population pressures in different areas, Singh told *SCIENCE NEWS*. The report will look within each country to assess deforestation by state or province, and will examine how local ecological habitats have fared in the face of forest loss. This information is critically important, says Singh, in highlighting the most disturbed areas that need protection.

In a sense, the deforestation threat reflects many different economic and social problems. The forces driving forest loss vary from country to country and from region to region within each partic-

ular nation. In general, though, Southeast Asian forests fall to provide fuelwood and timber, whereas South Americans generally burn forests to clear land for crops and cattle raising. "It's a complicated problem and there is no single, simple solution," Johnson says.

One major corrective effort, the Tropical Forestry Action Plan (TFAP), works with individual nations to protect remaining forests and to encourage sustainable use of woodland resources. Established in 1985 by the United Nations Food and Agriculture Organization, the World Bank, the WRI and other groups, TFAP boasts some successes. In Nepal, for example, it has coordinated diverse projects and helped the government integrate conservation with economic development. But critics charge that TFAP has supported unsound plans that actually enhance deforestation, and several con-

servation groups recently called for a moratorium of international funding for TFAP. Robert Winterbottom, a senior associate at WRI, acknowledges that the program has had problems with quality control. "There hasn't been sufficient scrutiny of the kinds of projects proposed under TFAP," he says. The organizations involved in establishing TFAP are now attempting to revamp the program.

Amid the dire news about deforestation, one encouraging note is emerging. Many people who live in the affected nations express a growing interest in protecting what remains of their forest resources. In a 1989 Harris poll commissioned by the United Nations, for example, more than 75 percent of those surveyed in Latin America, Asia and Africa voiced concern about the loss of trees and woodlands in their homeland and around the world. □

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