

## ■ ENVIRONMENT

# The Making of

Despite heroic efforts, Madagascar's splendid

By J. MADELEINE NASH TAOLAGNARO

**S**ILVERY AS DRIFTWOOD AND straight as tombstones, the stumps speak of a forest but recently deceased. "Do you know what's depressing?" says botanist Simon Malcomber as he surveys the devastation. "It's that all this happened within living memory."

It is still happening, as Malcomber discovers when he nears the Missouri Botanical Garden research site on the eastern edge of the Ranomafana National Park. Across a rushing river, a farmer has just hacked down a dense stand of trees. Two years from now, perhaps three, once the soil is depleted of nutrients, he will abandon this raw rhombus of clay and slash out another swatch. Soon he will move on again, hectare by hectare, converting lush cloud forest, with its mosses, tree ferns and towering hardwoods, into sun-scorched wasteland.

This is Madagascar, where scientists are racing the axes of peasants to inventory a dwindling storehouse of biological treasures. The value of what is being lost is incalculable, for this island, adrift in the Indian Ocean off the east coast of Africa, is a geo-

logical Noah's ark. Its species of flora and fauna have been separated from the African mainland for so many tens of millions of years that they have followed unique, even bizarre evolutionary paths. In emerald forests, giraffe weevils, odd-looking insects with elongated necks, prance among the leaves while rhinoceros chameleons with bulbous horns cling motionless to lichen-flecked tree trunks. High in the canopy, primitive primates known as lemurs indulge in harmonic sing-alongs and astonishing aerial leaps. Like 50% of its birds, 85% of its plants and 95% of its reptiles, Madagascar's 32 species of lemurs—including a mouse-size animal identified only this year—can be found nowhere else on earth.

Over the next few decades, the fate of these exotic creatures will be decided by some of the world's poorest people. In dozens of remote villages with long, assonant names, a battle is being fought for the hearts and minds of Malagasy farmers, loggers and fishermen. Borrowing a page from the U.S. Peace Corps, both the World Wildlife Fund and Conservation International are funding agronomy programs, providing literacy training and hiring medics to vaccinate children and dispense information about hygiene and birth control. "What we do sounds like development, and it is," concedes Roderic Mast, who heads the effort Conservation International began five years ago. "We can't talk about saving plants and animals until basic human needs are met."

The magnitude of the problem is daunting, for virtually everything Madagascar's 12 million people do in their daily struggle against hunger can harm the island's delicate ecosystems. Throughout the south, for example, the surreal landscape of the spiny forest is being stripped of new growth by villagers' goats and zebu, the humpbacked cattle that are the measure of local wealth. The signature trees, with their swirls of thorns and succulent leaves, are being turned into planks to build houses and charcoal to fuel cooking fires. Entire groves of ancient baobabs are giving way to scraggly stands of corn.

Uncontrolled pasture fires, set to encourage regrowth, also injure the forest.

**THREATENED NATURE:** Unique chameleons, above, and spiny trees with succulent leaves are among the irreplaceable treasures



**DESPERATE HUMANS:** The forests of Madagascar

particularly burns that take place late in the dry season when vegetation explodes like gunpowder. Even plants that are used for medicinal purposes are often gathered with hasty carelessness, pulled up by the roots or stripped of so much bark they fall prey to insects and disease.

World Wildlife Fund workers, based in the southern port city of Taolagnaro, are tackling these problems one by one. Ethnobotanist Nathaniel Quansah, a native of Ghana, for example, is working with pharmacologists at the University of Antananarivo to determine which parts of medicinally valuable plants contain the active compounds. "If we find these compounds in the leaves," he explains, "then we will try to persuade the community to spare the plant by using the leaves, not the roots."

DTEC1 (chameleon)

DTEC2 (trees)

TIME, NOVEMBER 21, 1994

## KEY:

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# an Eco-Disaster

animals and wondrous forests may be doomed



DTEC3 (Madagascan villager)

are being felled by people like this ax-wielding man and sold as charcoal at roadside stands

Mark Fenn, a former Peace Corps volunteer who is the organization's technical adviser in the south, is using satellite images to map the fire damage in and around Andohahela. Armed with the evidence, he hopes to enlist the help of village leaders in bringing pasture fires under better control. The forest, he explains over and over again, is vital to human habitation. After years of drought, he observes, "everyone relates to water, and Andohahela is the water tower for the rivers of the region."

Hundreds of kilometers to the north, near a remote redoubt teeming with reptiles and amphibians, Conservation International is encouraging villagers to develop alternatives to slash-and-burn agriculture. Over the past year, several experimental projects have sprung up around the Zahamena Re-

serve, including one that aims to restore fertility to rice fields by replanting them with nitrogen-fixing legumes. The viability of tree farming is also being explored. To boost local incomes, Conservation International fieldworkers have helped establish a cooperative to which farmers can sell their rice when they need cash, then buy it back at below-market prices.

But while the idea of linking development to conservation sounds straightforward, making it work frequently proves tricky. An irrigation project built for the inhabitants of Tsimelahy, a village near Andohahela, illustrates how well-intentioned efforts can backfire. As expected, the additional water provided by the project enabled farmers to grow more rice. The problem was they sold the rice to buy more

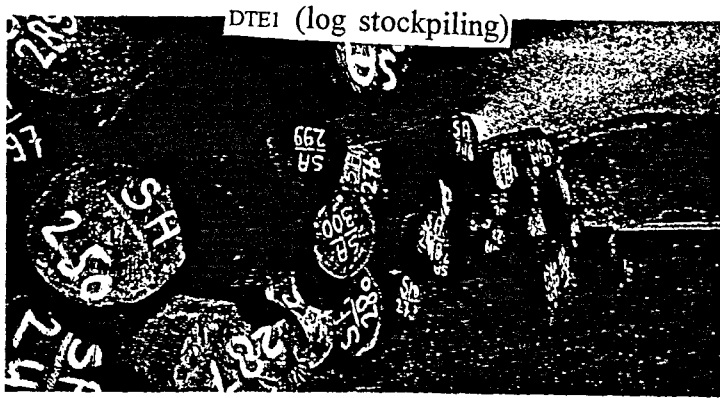
zebus, thereby increasing grazing pressure on the forest. A plan to bring environmental education to classrooms in the region ran into an equally unexpected hitch: fewer than 40% of children attend school.

Gaining the trust of the isolated communities that ring the embattled reserves is perhaps the most difficult challenge of all, and reservoirs of goodwill that have taken months to build can easily be poisoned by promises not kept. Around the Beza-Mahafaly Reserve in the southwest, for example, projects intended to win over the village of Analafaly either were never completed, as in the case of an irrigation canal, or were carried out so poorly, as in the case of several wells, that they never functioned properly. Recently a medical team appeared at one of Analafaly's eight hamlets with the intention of vaccinating the children there. The medics arrived without notice, to the irritation of the villagers, who sent them away until Katarzyna Kubzdela, a University of Chicago graduate student they knew and trusted, explained, in halting Malagasy, the health benefits.

What lies ahead for Madagascar? Among the few encouraging developments has been the election in 1993 of a government that put an end to nearly two decades of Marxist misrule. A few conservation-minded officials, apparently realizing that their destitute country's spectacular plants and animals are among its most notable assets, have expressed interest in promoting ecotourism to generate the income needed to protect the flora and fauna. Royalties from Western biotechnology and pharmaceutical firms interested in exploring Madagascar's forests for crops and drugs could also help. The island has already given the world the rosy periwinkle, a source of compounds used to fight childhood leukemia. Still to be exploited are thousands of other plants, including 50 species of coffee, some naturally decaffeinated, and termite-resistant trees. "In an era of gene splicing," notes Russell Mittermeier, the president of Conservation International, "such resources are invaluable."

Unfortunately, there is not much time left. Madagascar has one of the highest birthrates in the world, and its population is expected to double over the next three decades, putting excruciating pressure on the shrinking supply of arable land. So many of the slopes have been denuded of trees that by 2015, scientists predict, half of what remains will be lost, leaving a vulnerable patchwork with villages in between. Efforts to save individual reserves, commendable as they are, cannot change the dismal picture. Unless a massive one to help Madagascar is mounted, and soon, some of the world's most magical forests and magnificent animals seem destined to disappear forever.

TIME, NOVEMBER 21, 1994



## ■ ENVIRONMENT

# CHAIN SAWS INVADE EDEN

GLM—Vast, pristine forests in South America's sparsely populated Guyanas ought to be safe. Not so.

By EUGENE LINDEN PARAMARIBO

FROM HIGH ATOP A MASSIVE BALD ROCK called the Voltzberg, visitors to Suriname can look in awe at the same sight that greeted explorer Sir Walter Raleigh 400 years ago: an emerald forest that seemingly stretches to infinity in all directions. Even though the world has 11 times as many humans as it did in Raleigh's day, the north coast of South America still contains one of the largest unbroken tracts of tropical forest left in the world. Fewer than 50,000 people live in a natural kingdom larger than California that encompasses nearly all of Suriname, Guyana and French Guiana and is buffered by virgin rain forest in Brazil and Venezuela. Some parts of the woodland are so isolated from civilization that monkeys are more curious than fearful when they encounter humans.

That may soon change. The governments of Guyana and Suriname have begun to open huge tracts of forests for logging by timber and trading companies from Korea, Indonesia and Malaysia. Conservationists around the world are horrified at the prospect, aware that in southern Asia the loggers have ravaged forests, leav-

ing a legacy of eroded hills, silt-choked rivers and barren fields. If such exploitation cannot be prevented in sparsely populated countries like Guyana and Suriname, the environmentalists ask, can deforestation be stopped anywhere? For thousands of years, deforestation has presaged the fall of civilizations. Now, for the first time, humanity is facing the consequences of forest destruction on a global scale.

As the international logging juggernaut lurches toward Suriname and Guyana, several conservation groups have chosen to make a stand in this unspoiled part of the world. Some, like Washington-based Conservation International, are trying to show the two governments that large-scale logging is not the only way to get income from these magnificent forests. Another possibility is prospecting for natural medicines produced by the area's trees and flowers. San Francisco's Rainforest Action Network and Britain's World Rainforest Network have taken up the cause of the region's indigenous peoples threatened by logging. Even the World Bank, whose investments have led to deforestation elsewhere in the tropics, has become involved, encouraging Guyana to slow down the pace of logging and

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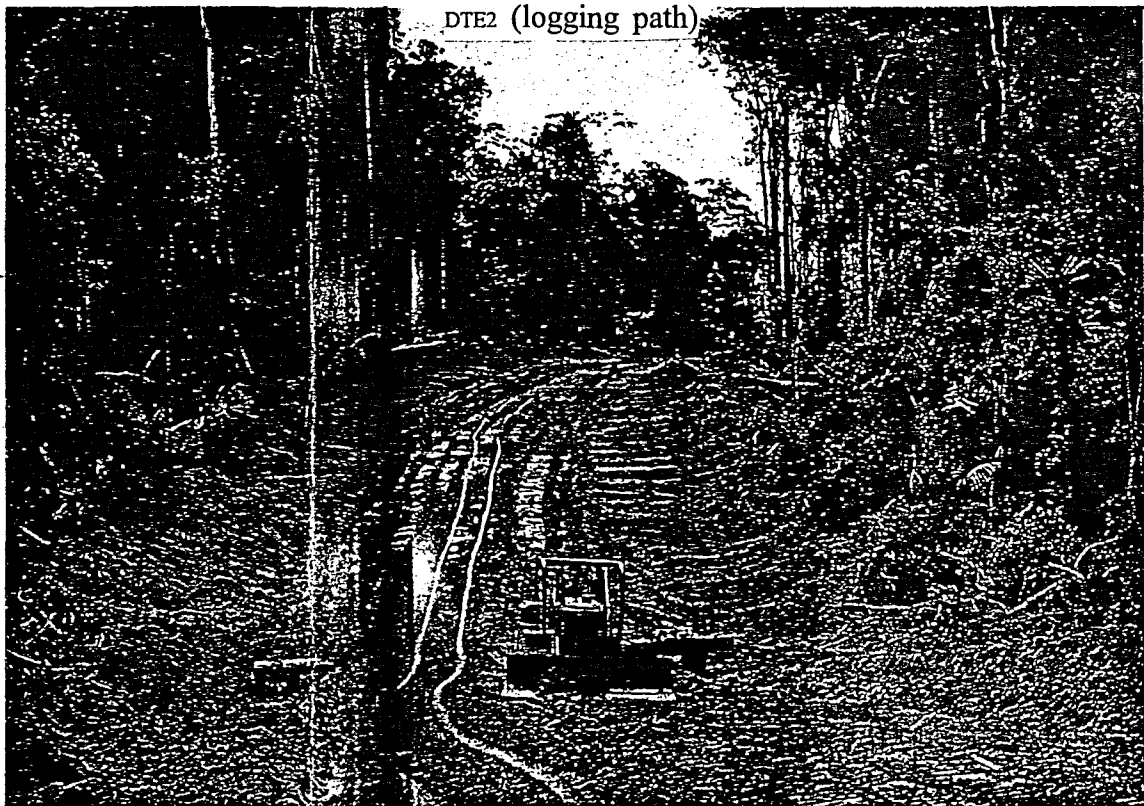
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DTE2 (logging path)

look at alternative means of development.

Only circumstance has protected the Guyanas, as the region is called, from the chain saws and bulldozers leveling forests elsewhere. Though colonized centuries ago by the British, Dutch and French, the area became known for its penal camps and slave rebellions and never had enough appeal to draw huge numbers of European settlers. Today the population of Suriname, Guyana and French Guiana totals only 1.3 million people, nearly all of whom live in coastal cities. Up to now the city dwellers have put little pressure on the forests or the few thousand indigenous Amerindians who live in the woodlands. But economic hardship and the lure of logging revenue have begun to make the region's natural treasures more vulnerable.

Suriname has been in political and financial turmoil almost from the time it gained its independence from the Netherlands in 1975. At first the Dutch and other foreign donors gave the new country generous aid, but they cut back sharply in the 1980s when Suriname suffered a series of coups and massacres. The violence culminated in a six-year civil war that led to the fall of the military regime of Lieut. Colonel Desi Bouterse in 1992.

Though peace holds at the moment, international donors are reluctant to resume large-scale aid until the government of President Ronald Venetiaan puts its tottering economic house in order. Production is in decline, the unemployment rate tops 20% and per capita annual income is only \$500. Rather than risk public unrest, the

government provides generous subsidies for fuel, food, water and telephone service. But the budget now exceeds revenues by 150%, and the government has been looking for easy sources of foreign exchange.

So officials were receptive in August 1993 when an Indonesian investment group named N.V. MUSA Indo-Suriname asked to buy the rights to Suriname's trees. Cash-starved regimes are fond of selling timber concessions because they can put money in a treasury at little immediate cost to the government, while other industries can take years to produce results. Timber operations often ultimately drain more money than they yield by burdening a nation's in-

frastructure and degrading precious natural assets, but it is easy for a sitting government to ignore these costs because they become a problem only for subsequent administrations.

The MUSA group boldly asked for timber rights to more than 15 million acres of Suriname, nearly one-third of the country. The Venetiaan administration avoided a messy political debate by instead granting a smaller concession of 375,000 acres near the Guyana border. MUSA then began logging without specifying how it will abide by Suriname's strict forestry code. Experts claim that the only profitable way to harvest MUSA's particular stretch of rain forest would be to

clear-cut the region, leaving behind a wasteland. Other Asian interests have also put in timber bids. The Malaysian investment group Berjaya Group Berhad is trying to secure rights to 7.5 million acres in Suriname.

Neighboring Guyana, also desperate for quick cash, has granted huge concessions to Asian logging consortiums. The former



BRG

BRG

TIME, AUGUST 29, 1994

**PATH OF DESTRUCTION:** Loggers have cut a swath through Suriname's once unspoiled woodlands without showing how they will abide by the country's strict forestry guidelines. Far left, logs are already piling up for shipment.

BRG  
British colony, a victim of years of Marxist economics, is poorer than any other Latin American nation except Haiti and is staggering under a \$2 billion foreign debt load, an amount 10 times its gross domestic product. In 1991 the government of President Desmond Hoyte granted a Malaysian-Korean joint venture called Barama Co. Ltd. the rights to log 4.2 million acres in the country's northwest. When voters elected former Marxist Cheddi Jagan as President in 1992, Guyanese conservationists urged him to revoke that concession; instead Jagan toured Southeast Asia at Barama's expense, and his government is considering bids that would put roughly 75% of Guyana's timber under foreign control.

PRE  
And what will Guyana get in return? Not much, if the agreement with Barama represents a precedent. Barama was granted a five-year tax holiday and will make only modest royalty payments. Within five years, this concession is expected to produce \$20 million to \$30 million annually for Guyana, but conservationists argue that this is a pittance for sacrificing nearly 10% of the country.

SUN  
Russ Mittermeier, president of Conservation International, argues that Guyana should consider development alternatives that produce income while leaving the forests in place. He notes that the country might receive royalty income equivalent to what will be generated by the Barama concession should even one species of tree yield a chemical that turns into a successful pharmaceutical compound. Another option is an ecotourism business that would take visitors to Guyana's spectacular natural wonders, including Kaieteur Falls. Unfortunately, outsiders have come up with few other suggestions. Says a World Bank official: "It's incredibly frustrating to think that there are so few alternatives to logging at present."

CON  
REC  
Both Guyana and Suriname have a coterie of conservationists who are aware that the area possesses something special in this crowded world. Says Brigadier General Joe Singh, chief of staff of Guyana's army and an influential voice in his small nation: "There is a commitment here to make sure that Guyana does not repeat the mistakes of other countries." To see examples of these mistakes, President Jagan need only take another look at the forests of the Asian nations bidding for Guyana's and Suriname's timber. And this time he might ask why consortiums from nations that once contained some of the largest tropical rain forests on earth now must look for wood 11,000 miles from home. ■

# TTL [Make Parks, Not War

GLM [In the midst of armed conflict, Nicaragua and its neighbors discover much in common in their rich but threatened environments .

Joshua Karliner

From the air Nicaragua seems a lush tropical paradise. A nation the size of Pennsylvania with a population of only 3 million, it has the two largest freshwater lakes in Central America and the largest pristine rain forest north of the Amazon basin. Ranking fourth in species diversity in Central America, it has at least 750 bird species, 200 mammal species, and 100 species of freshwater fish; it also harbors healthy populations of wildlife, such as the jaguar and harpy eagle, that are endangered or have disappeared elsewhere in the region. According to Jim Barborak, head of the wildlands unit at Costa Rica's Tropical Agricultural Research and Training Center (CATIE), "Nicaragua is not only the largest Central American nation, but has by far the greatest percentage and total area of intact ecosystems in the region." However, despite the emergence of impressive conservation programs in the past eight years, the area is threatened by war, economic crisis, and environmental destruction.

Before the 1970s, there were no national parks and only a few disjointed efforts at environmental protection. Towards the end of the forty-year Somoza family rule, Jaime Incer, considered the founder of Nicaragua's environmental movement, managed to persuade the government of Anastasio Somoza to establish Masaya Volcano National Park, which protects forty square kilometers of ex-

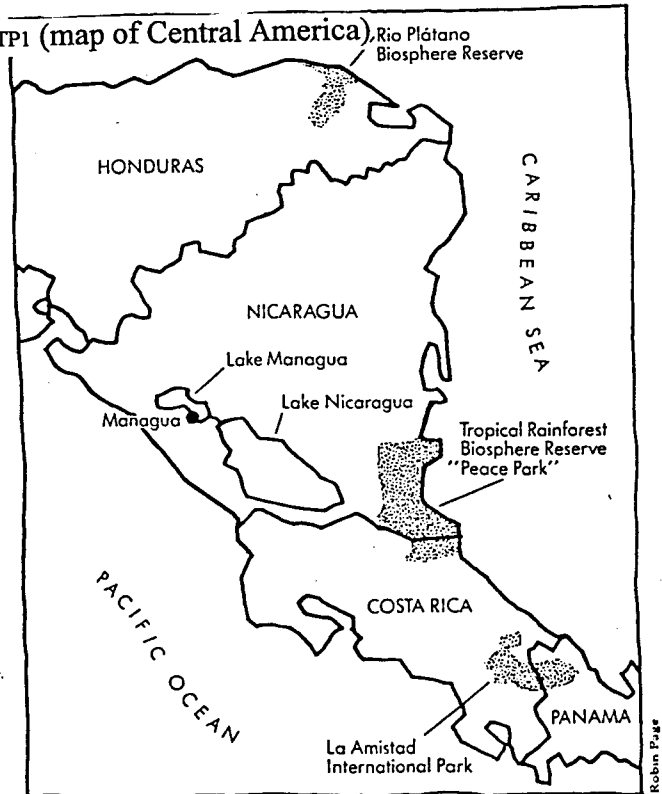
tremely rare, dry tropical forest. Incer was also one of a small group of environmentalists who unsuccessfully petitioned Somoza in 1976 to create a ministry of natural resources.

When the Sandinista government came to power in 1979, it moved quickly to nationalize the country's natural resources. Within two months, it created the Nicaraguan Institute of Natural Resources and the Environment

(IRENA), which is charged with environmental protection. Four months later, IRENA created the National Park Service, which its director, Lorenzo Cardenal, describes as "one of the youngest park services in the world."

IRENA was confronted immediately with Nicaragua's numerous environmental problems, which included deforestation, soil erosion, and species depletion. For example, between 1945 and 1960, the U.S.-owned Nicaraguan Long Leaf Pine Company had clear-cut and abandoned more than 3,000 square kilometers of coastal pines (*Pinus caribea*). In the 1950s and 1960s, a boom in cotton and beef cattle converted small farms and standing forest to pastures and cotton fields. Cotton, based on the Pacific coastal plain, displaced food-producing peasants and became a leading Nicaraguan export,

DTP1 (map of Central America)



Joshua Karliner is policy director for the Earth Island Institute's Environmental Project on Central America (EPOCA), based in San Francisco and New York City.

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The Santa Elena Peninsula on Costa Rica's Pacific coast was recently annexed to the Santa Rosa National Park. It had been the site of an airstrip built by Richard Secord to assist the Nicaraguan contras.

and the beef-cattle export industry pushed these peasants deep into the Caribbean coastal rain forest. The government promoted this process with colonization projects that gave peasants rain-forest land. Consequently, in the 1970s, 30 percent of Nicaragua's tropical rain forests disappeared.

Similarly, Nicaragua was a leader in the export of rare and endangered species from Central America. White-lipped peccary, white-tailed deer, hawksbill turtles, crocodiles, caimans, freshwater otters, jaguars, ocelots, margays, and lobster—all were extensively depleted or exterminated. And despite a 1969 agreement with Costa Rica and Panama to ban the exploitation of the endangered green turtle (*Chelonia mydas*), two processing plants owned by Somoza and a foreign corporation exported 225 metric tons of green turtle meat between 1969 and 1975. In 1976, Somoza finally bowed to international pressure and closed the factories.

Today, IRENA estimates that without effective action, Nicaragua's forests, and consequently much of its wildlife, could disap-

pear by 2050. Land reform has halted the colonization of rain forests, giving peasants arable land instead. Deforestation has been cut in half, but 500 square kilometers of tree-covered land still fall each year. Although foreign timber companies have not been allowed to operate since 1979, continuing deforestation is caused by domestic logging, development projects, slash-and-burn agriculture, and forest fires. Firewood cutting also is a severe problem in Nicaragua, one of the poorest and most underdeveloped nations in Latin America. (Wood accounts for more than 90 percent of all household fuel and 25 percent of industrial fuel.)

IRENA has implemented a variety of environmental protection and restoration programs to combat this destruction, including major reforestation projects, bans on the export of endangered species, and seasonal hunting bans. Yohan Ashuvud, Central America project representative for the International Union for Conservation of Nature and Natural Resources (IUCN), describes the spirit of this work as "a tremendous optimism,

a willingness to try new things—to create options for the future."

Since 1980, the National Park Service (NPS) has moved to preserve the remaining wildlands. In 1981, NPS made a wildlands inventory and targeted 18 percent of the national territory for park lands. While it has not reached this goal, which would give Nicaragua one of the highest percentages of protected areas in the world, the size of protected areas has tripled in the past six years, jumping from 0.5 to 1.6 percent of the national territory. In 1983, an additional twelve areas on the Pacific coast were declared natural reserves. Once these are under management, Cardenal hopes that they will combine with protected areas planned in central Nicaragua to cover 3 percent of the nation.

Cardenal, an ecologist trained at Managua's University of Central America, explains that conservation in Nicaragua is not a "romantic notion." NPS attempts to integrate environmental protection with the sustainable use of renewable resources. "Conservation in countries like ours has traditionally attempted to protect



Hatchling green turtles head toward the sea. U.S. environmentalists are working closely with the Nicaraguans to protect the endangered green and olive riddley sea turtles.

natural areas by making them sanctuaries and restricting access. . . . But we are determined that our park system will contribute to the development of our society, to the economic well-being and education of our people, as well as to the education of people around the world."

NPS has implemented this eco-development philosophy in the newly created Chococente-Rio Escalante Wildlife Refuge on the Pacific coast, which protects the nesting beaches of thousands of olive riddley sea turtles (*Lepidochelys olivacea*), as well as 40 square kilometers of dry tropical forest and mangrove. A World Wildlife Fund (WWF) report calls the sea turtle conservation project at Chococente "one of the best examples of integrated natural resource management in Central America." The project combines limited egg harvesting by local peasants, who sell the eggs as a delicacy, with a nationwide edu-

cation campaign, a system of bans and fines, and scientific research. This fall, the Environmental Project on Central America (EPOCA) is organizing a group of U.S. biologists to join Nicaraguan scientists in researching the riddley's behavior.

The unique values of the largely untouched Atlantic coast are especially appealing to international conservationists. According to WWF, Nicaragua's two largest tracts of broadleaf tropical rain forest, both on the Caribbean side of the country, have the potential to be "the largest extension of protected wildlands in the Central American isthmus." CATIE's Barborak concurs, saying that NPS has "the best opportunity in the region for setting up large managed wildlands capable of maintaining genetically viable populations of endangered and threatened species." Cardenal notes, "If there were peace, our dream is to protect at least 11 percent of our national

territory, or more than 13,000 square kilometers."

Cardenal considers the war Nicaragua's greatest environmental problem. In 1983, the contras kidnapped the administrator and two rangers of Saslaya National Park, forcing the closure of the nation's only tropical rain forest reserve. That same year, they burned more than 400 square kilometers of reforested coastal pine. In 1984, Marvin Jose Lopez, director of IRENA in the northern city of Ocotol, was ambushed and killed on a dawn inspection of a reforestation project. Numerous nurseries, research stations, and fire-control projects have been destroyed; and in the last three years, more than seventy-five government environmental and natural resource employees have been kidnapped or killed, with over thirty of the dead from IRENA and the State Forestry Corporation.

The building of roads, bridges and troop housing, and the tens of thousands of refugees fleeing the conflict, are doing irreparable harm on both sides of the Nicaraguan borders. Juan Blas Zapata, deputy director of Honduras's State Forestry Corporation (COHDEFOR), says that the military activity and refugees destroyed 1,000 square kilometers of rain forest in the past year, more than doubling Honduras's deforestation rate. COHDEFOR estimates that the 1986 U.S.-Honduran joint maneuvers, on the savannas at the Nicaraguan border, alone destroyed 10 percent of the nation's pine forests. In Costa Rica, where the Park Service had been trying to incorporate the Santa Elena peninsula into Santa Rosa National Park (near the Nicaraguan border), former U.S. General Richard Secord built a 1.2-mile-long contra-supply airstrip instead. In Nicaragua, helicopters, ground-based mobile rocket launchers, and shoulder-fired mortars all destroy patches of forest.

The war also has its indirect environmental impacts. At least 40 percent of the national budget is allocated to defense; this has



combined with a U.S. trade and credit embargo, depressed export prices on the world market, rising national debt, high inflation, and a growing black market to throw the economy into a tailspin. WWF notes that "the drain on the economy from the continued conflict has had a far-reaching negative impact. Government conservation programs are severely reduced and local people are increasingly tempted to exploit natural resources for fast, hard currency." In 1985, IRENA's budget was cut by 40 percent; it was reduced another 10 percent in 1986. Traffic in wildlife, such as parrots, which the government banned in 1980, is resurfacing on the international market.

U.S. economic sanctions also have had environmental impacts. Although Nicaragua was a leader in a regional fuelwood reforestation project, the Reagan administration ordered the U.S. Agency for International Development (USAID) to cut its funding for this effort in 1983. Today, USAID funds no projects in Nicaragua.

Still, both IRENA and NPS maintain ties with U.S. environmentalists. In 1986, Cardenal visited the United States on a tour organized by EPOCA. He had visited this country once before for a U.S. National Park Service training course, but met this time with environmentalists, scientists, members of Congress, and U.N. officials. He was hosted by NRDC, Greenpeace, the Environmental Policy Institute, World Resources Institute, the American Committee on International Conservation, WWF, the Nature Conservancy, and Sierra Club.

However, due to last-minute intervention by the State Department, Cardenal was denied meetings scheduled with the U.S. National Park Service, Fish and Wildlife Service, USAID, and the State Department's natural resources division. Robert Milne, the park service's chief of international park affairs, was ordered to rescind his invitation to Cardenal although, as Milne told the

*Washington Post*, he normally meets "anybody provided a U.S. visa, particularly among conservation colleagues." One item on their agenda was to have been the Masaya Volcano National Park, which receives 50,000 visitors a year and is located within an hour's drive of major population centers. In 1978, two specialists from the U.S. National Park Service had worked with Nicaraguan personnel in designing an education center for the park; now, with funding from WWF, UNESCO, the Catholic Institute for International Relations (UK), and the Nicaraguan government, it is finally nearing completion.

### In 1985, park officials in Nicaragua and Costa Rica came up with the idea of creating a "peace park."

IRENA's programs are supported by a number of international agencies. The United Nations Environment Programme is helping to clean up Lake Managua, where the U.S. chemical and pharmaceutical corporation, Pennwalt, dumped an estimated forty tons of mercury between 1968 and 1981. The Inter-American Development Bank is financing a reforestation project for the country's decimated coastal pines; the Organization of American States is funding watershed management planning; and CATIE and IUCN are backing NPS. IRENA also receives aid from a number of national governments, notably Sweden, Norway, Denmark, the Soviet Union, France, the Netherlands, Cuba, and Mexico. Private citizens and nongovernmental organizations in the United States,

\*UNESCO's Man and Biosphere program has cooperated with sixty-five countries in establishing some 244 biosphere reserves, many of them in Central America.

Europe, and Canada volunteer on reforestation and other environmental projects. Yet, compared to the environmental problems Nicaragua faces, the level of international assistance is quite low.

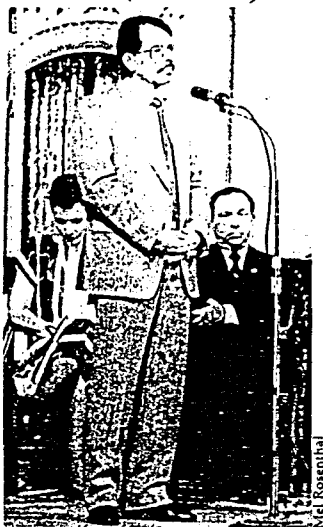
A number of governments and international organizations have begun to promote international cooperation through conservation. In 1985, parks officials from Nicaragua and Costa Rica came up with the idea of creating a "peace park": an international demilitarized biosphere reserve in the tropical rain forest on their border.\*

Precedents already exist for international parks and biospheres in Central America. Costa Rica and Panama are working to establish La Amistad Park while Honduras is managing the Rio Platano Biosphere Reserve in the Mosquitia rain forest. Under the program's guidelines, biosphere reserves are intended for multiple use; they stipulate strict preservation in the core zone, along with research, tourism and sustainable development in the outer peripheries. Such parks fit in with Nicaragua's national parks strategy, which is attempting to combine preservation with the acute need for economic development.

A young howler monkey, a rare and endangered species in Central America.



## DTP5 (Saavedra)



Nicaraguan President Daniel Ortega Saavedra at Riverside Church in New York.

IUCN has encouraged discussions on the proposed park. In 1986, it sponsored a visit to Costa Rica by IRENA director Julio Castillo to explore joint management of such resources as sea turtles, wetlands, and rain forests. For example, a semiaquatic ecosystem of swamps and lowlands covers about 700 square kilometers along the San Juan River border; home to the crocodile, caiman, and garpike, it also is on the Atlantic flyway and serves as winter habitat to migratory North American songbirds, including tanagers, warblers, kingbirds, and vireos. In Costa Rica, the region is protected in part by the Cano Negro Wildlife Refuge, managed by the Department of Wildlife.

In 1986, discussions narrowed to focus on the proposed "peace park" in the Atlantic rain forest. While many of the forests on the Costa Rican side of the proposed area have been cut already, two protected zones are under management. Both the Tortuguero National Park and the Barra de Colorado Wildlife Refuge shelter valuable flora and fauna.

On the Nicaraguan side, the rain forest is one of the wettest areas in Central America, receiving up to six meters of rainfall annually. It is also one of the last and largest remaining stands of pristine tropical forest in the region, extending up the Atlantic coast and covering approximately 4,500 square kilometers. It encompasses the important San Juan River watershed and the smaller watersheds of the Indio, Maiz and Punta Gorda Rivers. Virtually uninhabited and unexplored, only about 80 percent of the species of fauna and 45 percent of the species of flora have been identified.

Following Castillo's trip to Costa Rica, Nicaraguans were quick to support the border-reserve initiative. The Nicaraguan Association of Biologists and Ecologists (ABEN), a 450-member professional society, and the National University's School of Ecology and Natural Resources endorsed the proposal. As support grew inside

Nicaragua, it gained high-level recognition within the government; on World Environment Day, June 1986, President Daniel Ortega Saavedra publicly announced his backing of the park. That September, more than fifty leading environmentalists in the United States wrote the two governments, urging them to sign a bilateral accord establishing the park.

However, Nicaragua's State Forestry Corporation (CORFOP) and the Ministry of Industry had made other arrangements. In August they quietly signed a letter of intent, granting a twenty-year concession to a Costa Rican logging firm to clear-cut 3,200 square kilometers of virgin rain forest in the heart of the Nicaraguan side of the proposed reserve. The lumber produced by the concession, which was to be processed in Costa Rica, would have doubled Nicaragua's annual timber output and helped it meet pressing foreign exchange obligations. Costa Rica also would have benefited from the Nicaraguan timber; official estimates predict that by 1994, no commercially exploitable forest will remain in that country, forcing the Costa Ricans to begin importing wood.

When ABEN learned of the concession, it commenced a vigorous

press campaign, denouncing the deal as a precursor to ecological disaster. ABEN's protest was joined by the Nicaraguan Agronomists Association and the Lawyers Guild, which called the concession unconstitutional. Nicaragua's new constitution safeguards the right to a healthy environment and stipulates that the country's resources shall be managed rationally for the benefit of Nicaraguans.

Delegates to the First Central American Environmental Action Conference, an event organized by ABEN and EPOCA with backing from IUCN, CATIE, UNEP, UNESCO and others, also denounced the agreement. The more than 150 environmentalists attending—from every Central American nation, as well as from South America, Europe and the United States—endorsed the biosphere reserve, declaring that shared management of natural resources "is a concrete contribution to easing regional tensions and bringing countries closer together."

The U.S. delegation to the conference included Marion Edey (founder of the League of Conservation Voters), Hazel Wolf (National Audubon's Outstanding Conservationist of 1985), Randy Hayes (executive director of the Rainforest Action Network), and Steve Sawyer (executive director of Greenpeace-USA). Sawyer, "It's time that the U.S. environmental movement recognize that it has a crucial role to play in resolving the Central American environmental crisis."

Central American delegates to the conference, the first regional environmental conference in a decade, formed a network for conservation and sustainable development. Called REDES ("networks" in Spanish) and based in Managua, it is receiving support from international conservation groups, supports the biosphere reserve, and intends to address environmental issues throughout Central America.

The controversy left the government divided. CORFOP and the Ministry of Industry, which

DTP6 (Cardenal)



Lorenzo Cardenal, Nicaragua's director of national parks.

had not consulted IRENA or any other ministry before granting the concession, argued in April that the agreement was not environmentally destructive. However, during the conference in May, Minister of Education Fernando Cardenal addressed participants as Ortega's representative and reiterated the president's support for the peace park. In June, Ortega suspended the concession. Cardenal told THE AMICUS JOURNAL that "a broad-based effort convinced the government to change its position. The concession's cancellation demonstrates the government's determination to protect the environment."

Yet, skepticism reigns on the Costa Rican side of the San Juan River. Ramiro Sanchez, the timber mogul who signed the deal with Nicaragua, says that he has not been notified officially of the cancellation. Sanchez told a Costa Rican weekly that he will begin clear-cutting for "the most ambitious forestry project in Central America" in February 1988. Given such contradictory information, many Costa Ricans, according to one environmentalist there, "are taking a wait-and-see attitude."

ABEN, however, is not waiting. It is lobbying the National Assembly for legislation to establish a park in the area, and planning an international seminar on the San Juan River watershed in December. Working through REDES, ABEN has contacted its Costa Rican counterparts at the Neotropical Foundation and begun to form a bilateral commission composed of governmental and non-governmental representatives. The commission will meet with a number of internationally respected scientists during the December seminar to explore the feasibility of the international biosphere reserve. "Joint management of the watershed," says Cardenal, "could serve as a bridge of reconciliation between the two governments."

Most environmentalists familiar with the issue agree that for the proposed biosphere reserve to become a reality, peace is a fundamental prerequisite. Central American delegates to the Managua environmental conference sent this message to the presidents of the region in a statement that read in part: "As scientists and citizens of the region, we would like to express our deep concern over the effects of the regional arms race. Not only is there a great loss of human life from militarism, but opportunities for a dignified, sustainable development that respects national sovereignty are also lost."

Recent statements by Costa Rican President Oscar Arias Sanchez indicate that he may be heeding the message. In a recent ceremony marking the annexation of the Santa Elena peninsula (site of Secord's airstrip) into Santa Rosa National Park, Arias asked, "What do we do with this region of conflict? We make it into an area to study nature. We don't send soldiers with instruments of death. We send students, scientists and naturalists with the instruments they need for their intellectual work."

But despite the fact that all five Central American leaders signed the Arias peace plan in August—a plan calling for the cessation of

aid to "irregular forces and insurrectionist movements... as an indispensable element to achieving a stable and lasting peace in the region," the Reagan administration continues to push for aid to the contras. Thus, Hazel Wolf believes that "the most important thing that U.S. environmentalists can do for conservation in Nicaragua is demand that the government end aid to the contras and lift the economic embargo."

CATIE's Barborak also thinks that U.S. environmentalists should be more involved in supporting Nicaragua's environmental programs. "It is interesting that many U.S. conservation groups have long been active in Asia and Africa in countries which don't necessarily maintain political philosophies shared by the U.S. Why, then, is it that in Nicaragua, a country with which we share many more resources, such as migratory birds, U.S. groups have not taken advantage of the opportunities?" □

## Fund for Environmental Journalism

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For further information, contact Ms. Lynn O'Malley, NRDC, Room 4500, 122 East 42nd Street, New York, N.Y. 10168.

## SPECIAL REPORT

## TTL- [What Good Are Ancient Forests?

GLM- [Global resources, global concern

Elliott A. Norse

Rio de Janeiro, March 8—Brazil and seven other South American nations that form the Amazon Pact today denounced "foreign meddling" on the issue of preserving the rain forest they share.

The pact nations . . . threw their full support behind Brazil, which has been accused by environmentalists and industrialized countries of failing to protect the world's largest rain forest . . . The general secretary of Brazil's Foreign Ministry, Paulo Tarso Flecha de Lima, described the environmentalist accusations as part of "a campaign to impede exploitation of natural resources in order to block [Brazil] from becoming a world power."

"The developed countries are not the most prodigious examples when it comes to the environment," he added. (Mac Margolis, "Amazon Nations Back Brazil on Rain Forest," *Washington Post*, March 9, 1989)

Picture the following: At the edge of the Asian, African, or Latin American rain forest, the birds have stopped singing, the mammals have fled as men armed with chainsaws fell the giant trees. Then they burn the land and plant intensively managed crops that cannot support sensitive forest species. In short order, a highly complex ecosystem, whose interacting parts had survived and evolved through eons of change, is gone.

Elliott Norse is an ecologist formerly with the Wilderness Society, Washington, D.C., and author of *Ancient Forests of the Pacific Northwest* to be published in March by Island Press.

Americans have heard a lot about tropical deforestation. We have learned that forest ecosystems moderate climate, create soils, protect water supplies, break down pollutants, generate new medicines, and provide homes for millions of kinds of living things. We have seen that cutting ancient forests benefits some people, but that the costs are longlasting, often permanent, and are paid by everyone. But many of us do not realize that the destruction of ancient forests is not confined to desperately poor tropical countries. Precisely the same thing is happening to the ancient forests of our own lush, green Pacific Northwest.

As Haiti, El Salvador, and Ethiopia have, our government is now eliminating the last sizable tracts of lowland virgin (uncut) forest in the contiguous United States: the ancient (old growth) forests of western Washington, western Oregon, and northwestern California.

It is not hard to understand why ancient forests are cut. The giant trees are among the world's finest sources of timber. And although the timber market is plagued by sharp fluctuations, when prices are high, the timber industry brings hundreds of millions of dollars annually into the Northwest's economy. It provides jobs and a way of life for more than 100,000 workers.

Just as cotton shaped the environment, economy, sociology, and politics of the Deep South, timber shaped them in the Northwest. So important was the cotton culture to planters, mill owners, and workers that they fought the deadliest, most divisive war in our history to preserve it, and our nation still suffers from its effects more than a century later. But in the end, the

cotton culture disappeared, a victim of new technology, substitute products, ecologically unsound land management, competition from other regions, and overwhelming political opposition to its practices.

The same problems now face the Northwest's timber industry. Like the cotton industry during its decline, the timber industry is fighting to maintain the old way of doing business. Its political influence is still enormous, but it is facing a mounting wave of public concern for the future of our ancient forests.

And for good reason. These crown jewels of America's forests are being destroyed and fragmented much faster than previously thought. About 87 percent are already gone, a loss far greater than that of the wetlands and tropical rain forests whose destruction has garnered far more attention. At current rates of logging, all unprotected ancient forest in western Washington and Oregon will be gone by the year 2023. The last stands in the Olympic, Gifford Pinchot, and Siskiyou National Forests will be gone by 2089 and could be irreparably fragmented by the early 1990s.

For sensitive species such as spotted owls, the fragments that remain uncut will likely be too small and isolated. Genetically distinct populations and species will face extinction.

Ancient forests provide gourmet foods and promising treatments for disease. They build rich soils and prevent their loss through erosion. They cleanse pollutants from the air. They forestall greenhouse warming by storing more carbon than any other terrestrial eco-

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COL - CALL FOR COLLABORATION		REC - RECOMMENDATION		



Great Sitka Spruce, Cascade Head, Oregon.

system. They prevent floods and provide clean water for young salmon and municipal water supplies. They harbor the genetic diversity needed to sustain timber production in a changing world.

No less important, ancient forests have a transcendent aesthetic and religious value in the inner landscapes of natives and newcomers alike. Their majesty inspires comparison with the great cathedrals. Their haunting beauty and solace attract growing numbers of Northwesterners and visitors who seek connection with a wild world that is everywhere gone or going fast. Ancient forests are a national and international resource of the highest value.

Ancient forests are disappearing because our friends, neighbors, customers, and constituents are logging them. Timber built the Northwest, and the timber industry has almost always had its way. A century ago it acquired the best forests and liquidated them. Most old growth that remains is on lands managed by the Forest Service and the Bureau of Land Management (BLM), ostensibly to benefit all Americans. Unfortunately, although federal laws require these agencies to balance various uses, their actions show that they manage our forests mainly to benefit the timber industry.

Agency officials point out that Congress (under pressure from the

industry) requires the sale of excessive amounts of timber. To hasten the removal of our remaining old growth, Congress has lavishly funded an environmentally damaging system of logging roads. Sometimes reluctantly, but more often not, the agencies that comply with Congress's directives are "mining" the ancient forests, destroying them forever, rather than managing them as a renewable resource. Although something resembling ancient forests (to the untrained eye) might replace them, logging destroys them forever because the management agencies will not allow forest lands the many centuries needed to produce old growth once more. Ancient forests are being cut as if there is no tomorrow.

Not surprisingly, their fate has generated intense controversy, and, as in most controversies, truth has often been a casualty. Some environmentalists have ignored the economic concerns of the timber industry that must be heard. Some have exaggerated numbers of species that depend on old growth before scientific evidence can verify these estimates or have overused words such as "fragile" and "unique." This hyperbole is unnecessary and counterproductive. The reality is that ancient forests provide so many benefits to so many people besides fallers and mill workers—from deep spiritual values to promising anticancer medicines to nontimber economic benefits—that there is an increasingly powerful political argument for their conservation.

On the other side, the timber industry has never hesitated to use specious arguments to avoid its inevitable weaning from logging ancient forests. Some elements of the industry have portrayed the old growth question as a simple choice between wasting decadent trees to please a handful of environmental radicals versus providing lumber, paper, and jobs for the good of all. The industry has disseminated blatant falsehoods about the benefits of logging to wildlife. It has painted an overly

# SPECIAL REPORT

an optimistic picture of its future, given that it depends so heavily on a fast-disappearing resource that is not being replaced. It has

blamed mill closures on environmentalists to divert attention from its own management failures. And it has not justified the need to cut

the last publicly owned old growth when it could have provided an ample supply of second growth on lands it cut decades ago. The industry's influence has long protected it, but now, as the imminent end of the old growth approaches, it is time to reappraise the cost of its privileged position.

The dispute over the fate of ancient forests contrasts different values and views of the future. At one end are people who clamor for the fastest possible conversion of ancient forests to cash. At the other end are people who feel that ancient forests have intrinsic value that cannot adequately be expressed in dollars. In between are those who seek ways to maintain both timber production and the special benefits of ancient forests on a sustainable basis. But many North-westerners do not fit the stereotypes. Not everyone in the industry favors liquidating the last old growth; most environmentalists recognize the role of timber in the Northwest's changing economy, and the federal officials who make the decisions are not always in the middle.

The Northwest has a unique opportunity to preserve its diverse biota and forest ecosystems while maintaining a steady flow of timber. Most developed nations have forever lost the chance to maintain viable portions of their original forests. And Third World nations face such serious economic pressures and shortages of trained manpower that prospects for sustaining their ancient forests are slim.

In contrast, the Northwest still has some intact old growth, and our country has sound laws that can balance the interests of various groups, present and future ones. At present, however, there is little semblance of balance: On lands owned by the American people, the timber industry is logging at a record rate, ancient forests are fast disappearing, and yet, ironically enough, industry jobs are declining.

To ensure that Americans derive maximum benefits from our ancient forests, the major players—timber



Two decades ago, the spotted owl was one of the least known birds of North America. Today, it is at the center of public controversy over the future of old growth forests in the Pacific Northwest, where an estimated total of 2,900 pairs of northern and California spotted owls reside (a third subspecies is located in the Southwest). The secretive birds inhabit mid- to low-elevation virgin forests dominated by Douglas fir. Since most of the remaining virgin forests are on national forests, the fate of the species depends on harvesting plans for these lands. The federal government is in the process of deciding whether to list the northern spotted owl as a threatened species, and how much virgin forest to set aside for its protection. Researchers estimate that in Oregon a pair of spotted owls require an average of 2,300 acres, while in Washington their territorial needs average 3,800 acres.

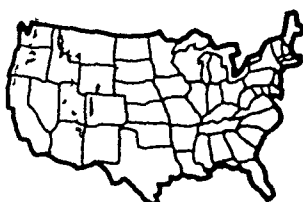
# DTA3 (U.S.A's forests)



1620



1850



1989

## VIRGIN FORESTS: HOW MUCH HAVE WE LOST?

companies, other forest users, conservationists, states, counties, large cities, local communities, Congress, the agencies that manage public lands—need to reexamine the values of public forest lands and our options for maintaining them.

Our decision makers especially need to reexamine the tacit, all but universal assumption that all other values are subordinate to timber production. The National Forest Management Act of 1976 clearly states that timber is only one of the important products of our national forests, yet the current practice of equating timber management with forest management will eliminate all but 6 percent of the ancient forests in our lifetimes. Further, rushing to cut everything now not only guarantees loss of their extraordinary environmental values; it guarantees harm to the timber industry in the future as well.

The fate of the ancient forests is not just a local or regional issue, one in which only Northwesterners are affected. In a world where developments abroad increasingly influence what happens here, it is a national and global issue for at least four reasons.

First, the future of the Pacific Northwest is tied to the Pacific Rim. The Pacific Rim economy will continue to expand international trade and attract people who value the Northwest's combination of vibrant economy and superb quality of life. Economic growth will

depend substantially on the region's ability to sustain amenities—the close proximity to nature, the beautiful vistas, the extraordinary air and water quality, the diverse, high-quality recreational opportunities—that give it an advantage over competing regions.

Second, the health of Northwest forests is intimately linked to climate, but climate is changing. Climatic change will affect coastal human and ecological communities, agriculture, tree plantations, and natural forests. And these forests play a unique role in preventing climatic change. Changing climate jeopardizes so many interests, especially those dependent on long-lived resources such as trees, that it could actually create a climate of cooperation between previously conflicting interests: the timber industry and environmentalists.

Third, how we manage our forests sets a precedent for other nations. The United States is a world leader in conservation, and our government encourages other nations to conserve their forests in the face of pressures to liquidate them. Just as other countries look to our achievements in science, technology, economics, and culture, they watch carefully how we treat our natural resources. If our nation wants Brazil, Colombia, Ecuador, Peru, and Bolivia to save the ancient forests of the Amazon basin, we must demonstrate the will to conserve our own ancient forests. Prospects for convincing

others depend on the example we set in our own Pacific Northwest.

And fourth, lest we forget, the national forests and BLM lands are owned by all the American people, not just the timber industry or the residents of timber-dependent communities. They need to be managed as the extraordinary valuable resources they are, to benefit all Americans now and forever.

At a time of rapid change and uncertainty, our chances of having an economically vital, livable Pacific Northwest depend on preserving our options. Because Northwestern forests recover from disturbances so slowly compared with crops, livestock, fisheries, or game populations, the effects of today's decisions will be visible for many lifetimes. It is foolish to fritter away our options in hope that someone might be able to fix things someday. A more prudent way to provide enough timber, water, fisheries, wildlife, and recreation is to develop a sustainable strategy for preserving and managing our forestlands.

Sustainable forestry means more than ensuring a steady timber flow. It means protecting our forests and keeping them healthy to provide options for meeting our future needs. All of us—rangers and senate staffers, lawyers and citizen activists, loggers and backpackers—are shaping the world for generations to come. Undoubtedly they will judge us on how well we preserved their options. □



COVER STORY

DTR1 (forest)

# SOUTH-EAST ASIA'S TREMBLING RAINFORESTS

by JOHN LAIRD

**B**ulldozers and logging trucks roll into the virgin forests of Borneo in increasing numbers. Villagers seeking a living from the fringes of vanishing forests in Thailand are in conflict with land-hungry commercial plantation developers. Desperation in overpopulated Philippines and Vietnam drives peasants to encroach further upon forested watersheds, further undermining ecological stability. The forests of South-East Asia are under tremendous pressure, and the end is not yet in sight.

There is simply just not enough agricultural land to meet demand, and modern technology and a lust for big profits spur commercial logging—with its extremely wasteful practices and little regard for sustainability.

Forest management experts at an international workshop\* in Bangkok April 1990 added a sobering reminder:

\*Technical Workshop to Explore Options for Global Forest Management held in Bangkok, 2-12 April by the Thai Government with the support of UNEP and other international organizations.

that the problem of deforestation is massive, and reversing it will take nothing less than restructuring and administration and redefining national and global economic priorities.

They concluded that Asia, Latin America and Africa together were likely to see a significant net reduction in forest cover between 1990 and 2050, and that this missing as unachievable the target established at the Noordwijck Conference on Atmospheric Pollution in December 1989 for a net global increase in forest area of 12 million hectares a year by the year 2000.

Some 200 million hectares on the two continents could be forested through regeneration, farm forestry and plantations by 2050; and one scenario suggested that almost 100 million hectares of otherwise endangered forest could be maintained through better, funded implementation of wide-ranging initiatives.

But the experts were still not optimistic that such actions could reverse the predicted net loss of global forests. Deforestation throughout the world's tropical zone has accelerated according to preliminary FAO figures, from an

annual rate of 0.6 percent in 1980 to 1.2 percent of forests—or almost 17 million hectares a year—in 1990. The break-down was Africa 1.7 percent, Asia 1.4 percent and Latin America 0.9 percent.

Then there is forest degradation, a reduction in the extent and quality of the forest cover through indiscriminate logging, inappropriate road construction techniques and forest fires. Degradation often opens forests to deforestation by peasant farmers.

The remaining forests where there has been no logging (at least in the past 10 to 20 years) comprises 39 million hectares in Indonesia, 14 million hectares in Myanmar (formerly Burma), 14 million in Papua New Guinea, 7.5 hectares in Malaysia, 6.7 million of which are in Sabah and Sarawak, and 3 million hectares in the Philippines.

A key issue is what to do about the shifting (and sedentary) cultivators practicing slash-and-burn agriculture, which many experts see as the greatest immediate threat.

At least 11 million hectares of permanently upland forests are being lost to new shifting cultivators in

Our Planet, Volume 6, Number 4 (1991)

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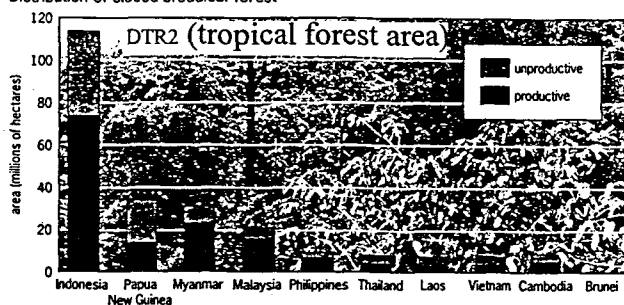
SLN - SOLUTION

SPN - SPECULATION



## Forests of South-East Asia: facts and figures

Distribution of closed broadleaf forest

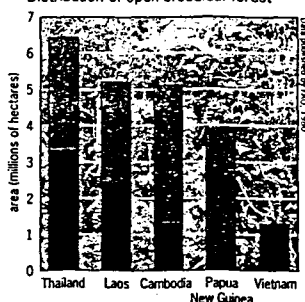


Insular South-East Asia, particularly Indonesia and Malaysia, contains the largest and most commercially-valuable forests of the region: the closed broadleaf forests—or tropical rainforests.

South-East Asia, including Papua New Guinea, has 361 million hectares (18.7 percent) of the world's tropical forest total of 1,935 million hectares, found in Africa, Asia and Latin America. This figure for South-East Asia includes coniferous and bamboo forests, and shrub formations, as well as the broadleaf forests given above. (FAO is currently preparing its 1990 assessment of forest resources, to be released before the end of 1991.)

## DTR3 (monsoon forest area)

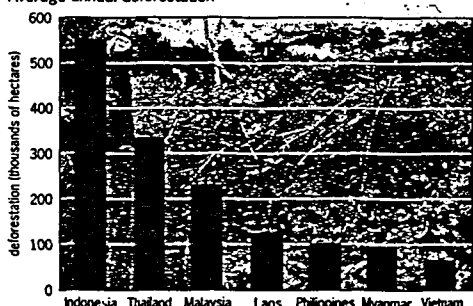
Distribution of open broadleaf forest



Continental South-East Asia (except for Myanmar, containing closed broadleaf forest—predominantly teak) contains open broadleaf forest, sometimes referred to in that region as monsoon forests. These forests are mixed broadleaf, and formations with a continuous, dense grass layer and 10 percent or more of the area covered by tree crowns (less dense than tropical rainforest.)

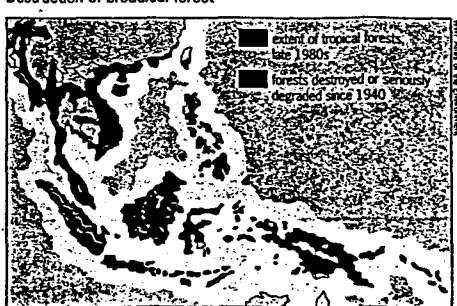
## DTR4 (SEA annual deforestation)

Average annual deforestation



## DTR5 (SEA longterm deforestation)

Destruction of broadleaf forest



South-East Asia at any one time. Total land affected by the practice is perhaps 20 times that amount. The number dependent on shifting cultivation is at least 24 million in the region. In Indonesia the figure is perhaps 10 million and, in Vietnam, 5 million.

Thailand is widely regarded as the most deforested country in South-East Asia, and Suwan Puangsamlee of the National Environment Board's (NEB) Natural Resources Division believes that

shifting cultivators are the main cause.

The NEB has a major programme to classify and protect all the country's watersheds, but has a big problem over what to do about hill tribes and their slash and burn cropping. Agricultural and birth control programmes are needed, Suwan believes, but there are no plans at present.

'The population of these shifting cultivators is growing very fast, about 2.5 percent per year, compared to about

1.2 percent for the whole country. They are more concerned about money than they were before—they are wearing jeans, have trucks—therefore they need more land.'

In the Malaysian State of Sarawak, such cultivators now use chain-saws as their slash and burn operations have grown from patch operations to large-scale deforestation.

Indonesia is moving to resettle shifting cultivators. President Suharto, >



BRG SLN  
on 28 May 1990, renewed his appeal for an end to nomadic slash-and-burn farming 'because it is against our policy of replanting forests and preserving the environment.'

He was inaugurating a giant project, under the Government's Industrial Plantation Forest (HTI) policy, to plant 300 000 hectares of degraded forest in south Sumatra with rapidly growing trees over five years. The project will absorb up to 100 000 workers—shifting cultivators or transmigrants from overcrowded Java. Each farmer would get 2.5 hectares of land to grow the recommended trees and plant food crops between them.

For Indonesia, the question is how to use forest resources that are so vast

that no-one gave much thought to deforestation until recently. Forestry is the centre-piece of the Government's development plan, which allocates 70 percent of Government revenue for forestry development in the provinces. The HTI policy is a major component of that, aiming for 1.5 million hectares of timber estates producing pulp and paper for export by the end of its fifth five-year plan in 1994.

BRG  
Indonesia banned log exports in 1985. Instead, it promoted domestic processing and created a wood-based panel industry. Export of logs earned about \$1.55 billion in 1979 (a peak year), whereas export of wood-based panels earned \$2.135 billion in 1988. The challenge here is less wasteful pro-

cessing to conserve wood and boost income.

Lukito Daryadi, Senior Assistant to the Minister of Forestry, said the Government raises \$4300 million annually for reforestation from a royalty of \$10 per cubic metre of timber cut. The cost of reforesting one hectare is \$1000.

PREVIEW  
The target is sustainable forest management by the year 2000. Although some officials acknowledge this is too ambitious.

'By planting these [industrial] forests, we decrease the pressure on the natural forests,' said Daryadi. 'Now we have big training projects with international organizations and have nurseries producing 5–10 million seedlings per year, with more nurseries

### The Javanese rhino: symbol of biodiversity

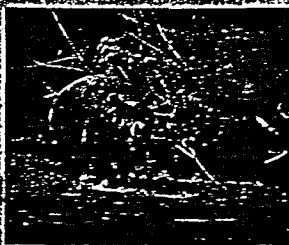
Tropical forests around the world contain half of the world's biological diversity, a vast treasure-house of millions of animals, birds, insects and plants.

Fortunately, governments in South-east Asia recognize fully on the importance of nature reserves and sanctuaries for preserving wildlife. Unfortunately, despite its protected status, wildlife has too often been pushed to the brink of extinction.

Practically every country has a symbolic species of wildlife that has either become extinct or is endangered because man has decimated its habitat. In Indonesia it is the Javanese rhinoceros—a thick-skinned, forest-loving animal that previously ploughed mainland Asia from India to Indochina. Now, some 55 remain on Indonesia's densely populated and deforested island of Java, and perhaps 15 remain in Vietnam.

The Javanese rhinos remaining in Indonesia undoubtedly owe their existence to the Dutch colonial administration, which established the Ujung Kulon nature reserve in 1921, and to one Hoogerwerf, the godfather of conservation in Indonesia. Covering 76 000 hectares, Ujung Kulon is Java's westernmost point and was made a National Park in 1980.

In a study of Ujung Kulon, con-



The Javanese rhino—wrought to the verge of extinction by man's destruction of its habitat.

servationist Kathy MacKinnon wrote that the park provided 'a last refuge for more than 50 species of rare plants and species of wild dog, leopard, banteng, three primates which occur only in Java, more than 250 bird species, and populations of rare amphibians, fish and reptiles.'

The Javanese rhino disappeared from Ujung Kulon by 1965. In the early years of the reserve, protection for wildlife was weak and the numbers of the Javanese rhino declined to 25 through poaching, wrote MacKinnon. Since then, the Directorate General of Forest Protection and Nature Conservation and the World

Wide Fund for Nature (WWF) have worked together to strengthen the protection of the park.

The population of the Javanese rhino increased to 32 by 1980. But between 1981 and 1982 five died, apparently from a disease introduced by domestic cattle entering the park.

Today, the park's wildlife is again under pressure with agricultural encroachment nibbling away at the eastern boundaries of the forest.

Another potential and imminent threat has appeared: a proposal to remove rhinos from the park for captive breeding. Foreign biologists have an interest in getting Javanese rhinos—good headlines, good profits, says WWF/Indonesia conservationist Mike Griffiths. 'They justify it by calling it captive breeding. But they ignore the fact that numbers have doubled in the past 20 years.'

Large mammals such as elephants and rhinos breed far less prolifically in captivity than they do in the wild. There is thus a danger that such attempts might further endanger the species.

coming. The big companies have their own nurseries and we will invite foreign corporations to come into plantations. The target is to plant 20 million hectares in critical areas.'

The biggest complaint about Indo-

nesian forestry, acknowledged in the current five-year plan for forestry, is about the destructive practices of private logging concessionaires, who lease large tracts of production forest for logging, but ignore forest development and

conservation. A total of 574 concessionaires lease 25 percent of the land area of Indonesia, but the bulk of this area is controlled by just 25 large companies.

Says Dr Mohamed Ahmed Elra-sheed, a manpower planning and

## The plight of the Penan people of Sarawak

Throughout South-East Asia, tribal people dwelling in tropical forests—as well as other communities on the fringes of forests—have had their livelihoods threatened from the rush to profit from logging and large-scale plantation silviculture.

Unwritten customary rights among such people preceded formal legal codes. They recognized land tenure, whether communally or individually, and often provided rules for sustainable use of the forest for the community's benefit. Such rights, however, are more and more frequently coming into conflict with the officially-promoted demands of development.

Much international publicity was generated by the case of the forest-dwelling Penan tribespeople of the Malaysian state of Sarawak on the island of Borneo, which holds the world's second largest tropical rainforest after the Amazon basin.

The Penan complained that after more than 10 years of intensive logging in Sarawak, their forest had been badly damaged. Non-timber trees which supplied fruits and nuts, and a whole range of wild vegetables and medicines had been destroyed by logging activities using heavy machinery. Forest animals such as the wild boar which the Penan hunted, and materials such as rattan were becoming scarce. In short, the livelihood of the Penan, as a nomadic people living in harmony with the forest, was being threatened.

More than 200 Penan and other natives of Sarawak were arrested for blocking logging roads in protest. They took their case to the Malaysian courts, and environmental activists brought it to the attention of the world.

The Land Code of Sarawak recognizes native customary land rights. Yet when timber licences are issued, there is no demarcation of the boundaries of our

customary lands, to exclude our lands and forest from logging activities, the native representatives complained to a council meeting of the International Tropical Timber Organization in November 1990.

This was disputed by the State Government of Sarawak, which said the Code did not recognize claims of native customary rights since rights over forests and over land were two different things.

The State Government, however, said it was committed to the welfare of tribal people by providing them with the benefits of education, health services,

gainful employment and transport infrastructure. Although our firm policy is to bring all rural natives into mainstream society in the long term, the Government has never forced and will not force the nomadic Penan, for example, to settle down.

The State Government announced it would reserve two large forest areas to cater for the traditional needs of the Penan community, additional to the Gunung Mulu National Park where the Penan now have the right to practise their traditional way of life.

The Penan, however, are still distressed by their encounter with civilization. The domestic requirements of tribal



A Penan tribeswoman from Sarawak, Malaysia. The Penan are fighting to stop the intensive commercial logging on their customary lands that is threatening their traditional way of life.

people everywhere for small timber, fuelwood, fodder, and other products should be the first charge on forest produce. But will the logging interests pay more attention to those requirements than they have so far paid to their commitment to sustainable forest management?



development specialist attached to an FAO project in Jakarta. Concessionaires are mining the resource. Their main interest is profits. They have no regard for the forest beyond that. Soil is compounded and made hard by heavy machines and small trees are crushed, despite the rules and regulations for rehabilitation, regulating machines and safeguarding remaining trees. On-site supervision and control is extremely difficult in dense rainforest such as that found in Kalimantan, on Borneo Island.

In neighbouring Sabah and Sarawak, the rush for short-term profit is also very evident. Logging from those two states makes Malaysia the world's largest exporter of logs, having increased exports from 16 million cubic metres in 1977 to 23 million cubic metres in 1987.

Following the eruption of controversy over threats to the livelihood of the Penan tribespeople from rapidly expanding logging, the International Tropical Timber Organization sent a mission to Sarawak in 1989. It concluded that the forest management in Sarawak was not sustainable, but nevertheless was of a higher standard than in most tropical timber producing countries and in some developed countries.

It recommends a reduction in area of the annual cut, better control over concessionaires and illegal encroachments, improved planning for watershed management and the expansion of the permanent forest estate by 1.5 million hectares.

In peninsular Malaysia, 95 percent of deforestation is under control of the Government which has created large plantations producing rubber, palm oil, coconuts and cocoa. A balance has been achieved: the plantations perform ecological functions associated with forests, such as preventing erosion from rainfall, regulating water flow, and helping to stabilize climate; biological diversity of the natural forest in flora and fauna, however, is lost and must be compensated for elsewhere.

Thailand is at a turning point in its policy towards forest management. Following decades of exploitation, logging was totally banned in 1989 following disastrous floods in the south due to deforestation.



Every week, 100 or more ships bring timber from Indonesia's outer islands to this port in Jakarta.

Some 10 million villagers 'illegally' occupy degraded forest land owned by Thailand's Royal Forestry Department. The task is how to launch large-scale programmes of reforestation—especially through community-based agroforestry—which will benefit the rural poor and stem deforestation.

However, Government policy on land use in Thailand has been strongly influenced by the commercial interests of the wealthy elite, which prompted large-scale logging in the first place and have now been transformed into a bid for large-scale private plantation establishment.

The independent Thailand Development Research Institute (TDRI) assessed the situation. 'Large-scale commercial forestry does not alleviate

poverty since it fails to distribute the benefits of the enterprise to the local population. Nor does it recognize traditional rights or any interest or capability on the part of local communities to manage resources around them.'

Indeed, despite Thailand's wealth of agricultural land, productivity is low by Asian standards—reflecting chronic lack of education and support for impoverished rural farmers. Better yields would mean less deforestation.

A 1990 study by TDRI suggested that an increase in real per capita income of about \$50 results in a reduction in deforestation of 16 000 hectares.

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continued from page 8

BRG1 SPC2 — Thus, the forest loss could be cut in half by simply raising the provincial income per capita by 50 percent; this is not a difficult task in a country with a 10 percent real growth rate', said the study.

Dr Dhira Phantumvanit, Director of the Natural Resources Division of the

Thailand Development research Institute, points out the regional dimension of the deforestation question. 'How can we pool resources? You cannot address the tropical forest issue from within national boundaries. For example, Thailand is now importing logs from Laos, Myanmar and Malaysia. What are realistic levels for the whole region? The alternative implies that Thailand can solve its problem [a

shortfall in the supply of timber] at the expense of other countries.'

Non-governmental organizations have taken a lead: some 200 work at present on forestry-related issues involving local communities in Thailand. Such is the enthusiasm for tree planting that these local initiatives may cover an even larger area than that covered by the older Government programmes.

### Thailand sets its sights on community forestry

In Thailand, deforestation is so far advanced that the main task is to set up systems of reforestation with villagers as the central participants and sole beneficiaries. The struggle is to redirect outdated thinking of officialdom and set up new legal and contractual models, as well as to empower and motivate villagers.

Under the right conditions, villagers are quite capable of realizing sustainable forest management through their own efforts as shown in a case study documented by an NGO. Project for ecological recovery in Toong Yao village in the northern Province of Lampoon.

In 1923 some villagers moved into the Toong Yao fleeing drought. Having learned from their hardships the importance of natural forests, they laid aside an area of a little less than 10 hectares in their new home to preserve the local watershed. In 1991 this area has grown to 160 hectares and become the Nam Jam Forest with a catchment stream feeding farmers' rice fields. Over the years the villagers evolved a system of community law to protect the forest. In 1953 they formalized it in a written agreement specifying conservation measures, punishments for violators and the boundaries of the forest.

An irrigation organization is responsible for maintenance of the local *muang* (a traditional irrigation system which consists of a small upland reservoir and a delicate network of canals and small channels feeding rice terraces in the valley). It keeps a watch on the forest while a village committee has the power to administer the law and punish offenders.

Toong Yao's community conservation law forbids the cutting of any trees for any

purpose within Nam Jam forest proper, even for house construction or fuel collection. Cutting for those purposes is permitted in the surrounding area, but with certain restrictions. For house building, each person is entitled to cut only enough wood. He must specify the exact amount to be cut and when it will be cut, and must select trees over a wide area.

Villagers derive other benefits from their managed forest: a cool, moist climate; herbal medicines; vegetables; mushrooms; bamboo and honey. Conservation consciousness is maintained through day-to-day interaction with the forest and through environmental teachings and stories which villagers pass on from generation to generation.

There are other examples of Toong Yao's independent achievement around northern Thailand. A village of Phayao Province, said, 'Villagers have to be

allowed to look after the forest themselves, to divide it up into catchment and ordinary use areas, under rules they themselves set up. The Government doesn't have to come into this at all. All the Government needs to do is to recognize village organizations as having the legal right to manage forests as they see fit.'

An area of protected forest in northern Thailand, now the only remaining heavily forested region of the country.



Says Vithoon Permpongsacharoen, Director of the Project for Ecological Recovery, 'The Government is now paying attention to NGOs because our activities are supported by the public. We are now part of the policy-making process.'

In Indonesia, a previous atmosphere of confrontation is giving way to one of cooperation. A few years ago, NGOs such as the Indonesian Environmental

fit directly from the trees they are asked to plant. Yet there is a yawning void in the middle, awaiting the thousands of trained and motivated middle managers, and the massive infusions of finance that are needed.

In Indonesia, Dr Elrasheed believes that a newly-completed, comprehensive proposal awaiting consideration could put forestry on a completely sustainable basis. It calls for \$800 million for per-

*'There are many stories in South-East Asia of profitable, unseen relationships between senior officials or their families, and commercial interests, that result in activities which go against governments' stated social or ecological goals.'*

Forum felt they were not getting the attention that a popular movement deserved from the Government. But things are improving. Government agencies are more forthcoming in providing information to NGOs, discussing policies with them and including NGOs in these policies.

On the others side of the fence, officials throughout the region wish the NGOs would begin to look beyond simple conservation of trees to the social and economic issues which lie behind deforestation.

One likely area of support for the region's forests lies with the Global Environment Facility (see Our Planet Volume 3, Number 3 1991). This is a fund, jointly established and administered by UNEP, UNDP and the World Bank, that aims to provide investment funds for projects which redress global environmental problems in developing countries.

Still, in South-East Asia, only about one-tenth of the trees cut are being replanted. Most governments involved have knowledgeable, expert staff at top levels, and fine ecologically-sound policies written on paper. Impoverished farmers are responsive when they bene-

sonnel development throughout the forestry sector—government and private—to strengthen the universities, and research and training centres, and to build new ones. Every aspect of the problem—from sustainable forest management, ecological preservation, efficient industrial use and administration—would be covered.

More transparency is needed in officials' dealings with logging and plantation interests. There are many stories in South-East Asia of profitable, unseen relationships between senior officials or their families, and commercial interests, that result in activities which go against governments' stated social or ecological goals.

Finally, there is the question of a new perspective on environment and life. Says the FAO's senior forestry official for South-East Asia, Dr Y. Sudhakara Rao, 'Human societies are organized towards consumption. Blaming government departments for not stopping deforestation is very naive, because it requires a whole, big social movement, including land reform, to tackle local hunger and economic demands.'

## Forests: a matter of life or death

The late Seub Nakhasathien was 40 years old when he then took his own life in September 1990. He was in charge of the Huay Kha Khaeng wildlife sanctuary which he had sought to have registered as a UNESCO World Heritage sight. In the early 1980s, a dramatic rescue mission to save wildlife being drowned by water building up behind a hydro electric dam altered the rest of his life.

The frustration inspired him in his later, successful, campaign against the huge Nam Choan dam which would have further destroyed wildlife and their habitat. His fiery support for Thailand's forests had made him a national figure, but disillusionment over corruption and the attempted shooting of two of his game wardens took their toll. On 5 June 1991 he was posthumously awarded the UNEP Global 500 award.

A provincial news chief for Thai Rath newspaper (Thailand's largest Thai-language daily) was shot dead in Lat Phrao District of Bangkok last night, police said. Vithoon Kawayapanik, 58, who wrote under the name Lek Phet about illegal logging in the north and northeast of the country, was shot in the face at point-blank range at Indrak Market on Ram Indra Road by a man riding a motorcycle. Eyewitnesses said the gunman had apparently been waiting under a footbridge for Mr. Vithoon, who lived nearby. Sources said the murder was probably linked to his articles on illegal logging. He had received death threats.

The Bangkok Post 17/5/91  
The shifting cultivators, those with no land, the poor, they are literally in the backwoods. They put pressure on forests but you cannot blame them. It is an unstoppable phenomenon, connected with poverty. They may ask, 'Who are you conserving forests for? We have to survive.' This needs big programmes of poverty alleviation. We cannot otherwise stop this human tide from cutting forests.

Dr Y. Sudhakara Rao  
Senior FAO forestry official  
for South-East Asia

# TTL [ Guardians of the forest

Beatrice Lacoste, Jorge Illueca and Jaime Hurtubia

**W**estern Ecuador is one of the world's less well-known cradles of civilization. Seven thousand years ago the people of the area were among the first farmers in the Americas, growing maize and cotton. Two skeletons, apparently embracing – the 'Amantes de Sumpa' or Sumpa Lovers – found in Santa Elena, come from this period.

Later, the 5,000-year-old Valdivian culture invented the earliest known ceramic, and the people organized themselves into farming and ceramic-making village communities. Three thousand years ago retention walls were built for reservoirs to supply water during the dry season.

The Cuangala culture of 2,000 years ago had large centres where exotic products were bartered between the Andean highlands and Peru. Spondilus shells, salt, wax, kapok, honey, fish and wood were exchanged for gold, silver, obsidian and copper.

All these civilizations were sheltered and nourished by the once heavily-forested Chongon-Colonche mountain range which stretches 95 kilometres northwest from Guayaquil to the coast. The vegetation of this tropical dry forest, home to rare animals and plants, acts as a water collector and regulator, trapping moisture-laden air entering the continent from the Pacific Ocean.

But today, only 4 per cent of the original forest cover of the coastal plains and hill ranges still exists. Its recuperation is crucial for the long-term survival of the communities in the region. The Chongon-Colonche project, which works closely with local communities, seeks to preserve the ecological balance and to restore the threatened cultural values of the area.

## A RICH CULTURAL HERITAGE

Deforestation began thousands of years ago when communications were by river and sea, but it was limited,

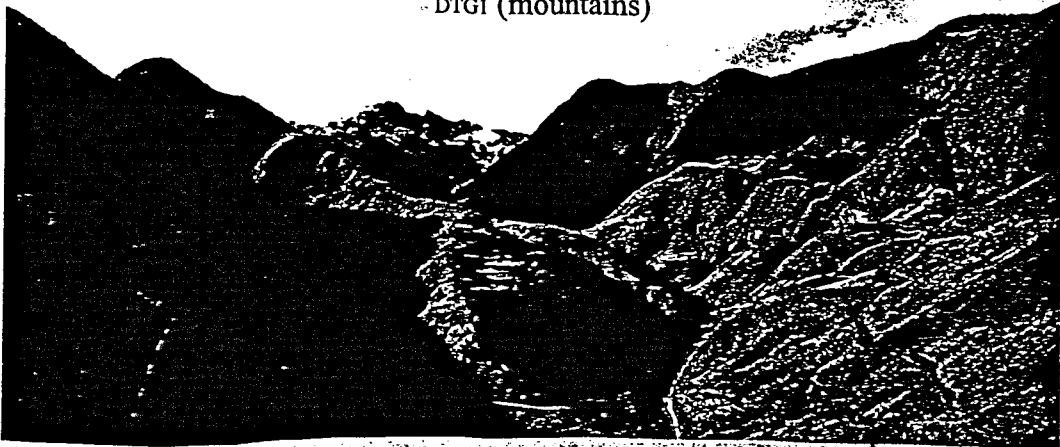
allowing plants and trees to regenerate naturally. The wealth of archaeological finds shows that there was a larger rural population in the coastal region then than there is now. These healthy, well-fed, creative and productive cultures were drastically reduced by the introduction of European diseases.

The forests were not significantly affected until the middle of the 20th century. There was moderate timber exploitation during colonial times, principally around Guayaquil where one of the first boat building yards of the Spanish Crown was installed.

Farmed lands increased but generally stretched no further than 2-3 kilometres from the river banks. Merchants, settlers and farmers lived along the coast and Manglaralto became a customs point and port of export for tagua (used in the manufacture of buttons) and toquilla straw (for hats).

An oil company, using local labour, started work on the Santa

DTGI (mountains)



Sam Syngue/Panor Pictures

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### KEY:

TTL - TITLE  
THR - THREAT  
EVN - EVALUATION  
SGN - SUGGESTION  
COL - CALL FOR COLLABORATION

GLM - GLIMPSE  
TLI - TECHNICAL LEAD-IN  
ONP - ONGOING PROJECT  
SUM - SUMMARY

PRB - PROBLEM  
SPC - SPECIFIC CLAIM  
PRE - PREDICTION  
CON - CONCLUSION  
REC - RECOMMENDATION

SET - SETTING  
GCL - GENERAL CLAIM  
CNS - CONCERNS  
ANX - ANXIETY

PRO - PROPHECY  
BRG - BRIDGING  
SLN - SOLUTION  
SPN - SPECULATION

# F.O.C.U.S

Elena peninsula. For the first time the local inhabitants, en masse, entered into a boss/employee business relationship. During the second and third decades of this century a system of railways was built; this had a marked impact on forests as the wood for most of the sleepers was taken from the coastal area. Charcoal manufacture, too, intensified production to meet heavy demand.

During the Second World War the European markets were closed, agricultural borders opened up and plastic struck a mortal blow to the tagua industry. The oil company significantly lowered its production, and much of the workforce went back to working as carpenters and furniture makers. Today, more than 800 craftsmen using their acquired experience transform fine, endemic woods into furniture and doors. As local wood has become scarce, timber has been brought in from Esmeraldas and the Amazon.

The greatest devastation has occurred over the last decades. Between 1958 and 1988, research shows, great extensions of the road system, population growth and demand for resources have caused the indiscriminate destruction of forests. Roads have been used to transport timber and farmers have abandoned their thousand-year traditions to become lumberjacks and timber extractors.

The deforestation has brought about changes in the local climate. There have been increasingly prolonged droughts, bringing on irreversible desertification. The regional economy is so affected that it is posing a threat to national security. The level and quality of life has decreased and people are migrating, temporarily or permanently, to the cities.

Deforestation was never controlled. Indeed it was unthinkingly motivated by an Agrarian Reform Law that



DTG2 (village)

encouraged total destruction of forests as a prerequisite for obtaining title deeds to land.

## CHONGON-COLONCHE: A COMMUNITY PROJECT

In an effort to save what little forest cover remains in the range, Nature Foundation (Guayaquil chapter), a private body, has established two crucial projects: the Forest Reserve of Cerro Blanco and the Chongon-Colonche project.

Just 14.5 kilometres from Guayaquil, Cerro Blanco offers a centre for environmental education and ecotourism with initiation trails, guided walks, a camping area and a tree nursery which cultivates native plant species used for reforestation. The 2,000 hectare reserve has had a positive reception from schools, tourists and the general public.

The Chongon-Colonche project works with the strong social ties of the 'comunas' or rural communities. There are 32 of these small administrative districts on the western slopes of the range, but only one on the eastern slopes.

Here, as elsewhere, conservation projects must always work with the local communities if they are to be successful in the long term. An eco-development project with the conscious participation of the main protagonists, who have inhabited the

area for generations, will be able to protect the remnants and increase the forest cover.

The 'comunas', successors of the indigenous settlements, have a democratic parliamentary process that facilitates the transfer of necessary technology for reforestation, conservation and the appropriate management of resources.

Training courses are organized yearly for forestry committees, tree nurserymen, community promoters, teachers and reforestation squads. The infrastructure for the nurseries is being installed on the initiative of each interested 'comuna'. They are small self-controlling units, and their basic aim will be the reforestation of their own community lands.

The reforestation plan is carried out through forestry committees, which coordinate and supervise land clearing and preparation, hole digging and planting. Mobile nurseries are to be installed to collect naturally germinated seedlings from the wild. These are planted near where they were collected, ensuring suitable conditions for their survival. All planting is done with mixed indigenous species including timber and fruit trees.

The range has important rivers that provide water for the coastal valley and sustain agriculture, so river basins and river headwaters receive priority in these plans. Aerial surveys and social, bio-physical and cartographic analyses are all used in the project.

If humanity is to achieve sustainable development and follow the path of enlightened change, it must do so on the basis of partnership. As everyone is affected, everyone must be involved. The Chongon-Colonche community project will not only save forests and valuable plants and animals, but restore traditional cultural and ethical values.



## **Appendix 2**

### **Articles on the current debate on climate change**

THE SYDNEY MORNING HERALD  
FRIDAY, OCTOBER 24, 1997

## ■ BLEAK OUTLOOK

# Climate under a cloud as Clinton goes into reverse

## COMMENT

PAUL BROWN

London: President Bill Clinton's decision to dump United States promises made on climate change at the Earth Summit in 1992 has thrown into turmoil the international negotiating process on cutting greenhouse gases.

The new targets announced in Washington have put back by 13 years the pledge to stabilise emissions at 1990 levels by the turn of the century. This was made by President George Bush in Rio de Janeiro.

The new limits are so weak, compared with even the most pessimistic predictions of what the US would offer in the current negotiations, that two years of hard work by 150 countries towards reaching an agreement in December are now irrelevant.

Ten days of talks opened in Bonn on Wednesday in preparation for the signing of a world agreement in Kyoto, Japan, in December. They were working on target dates as early as 2005 for real reductions in carbon dioxide emissions by developed countries such as Australia, the US and those in the European Union.

The 35 countries comprising a grouping called the Alliance of Small Island States were still demanding a 20 per cent reduction by 2005, although this was always unrealistic.

Another measure of the gap between Washington and the rest of the world was a demand tabled on Wednesday by China and the G77 group of developing countries for 7.5 per cent cuts by 2005, and 15 per cent by 2010, as a minimum starting point.

Mr Clinton's proposals to return carbon dioxide levels to

### GREENHOUSE GAS CUTS WHERE THE WORLD STANDS

#### ■ US Stabilise

Industrialised world's output of carbon dioxide and other greenhouse gases at 1990 levels between 2008 and 2012, followed by further unspecified reductions by 2017

■ EU Stabilise emissions at 1990 levels by 2000, cutting emissions by 15% of 1990 levels by 2010

■ Japan 5% reduction by 2012

■ Pacific Island nations 20% reduction by 2005

■ China and developing nations 7.5% reduction by 2005 and 15% by 2010

■ Australia No mandatory targets

1990 levels by 2013 are a slap in the face for more than 140 countries which support reductions from the turn of the century.

Americans produce 22 per cent of the world's carbon dioxide emissions. This means that little can be practically achieved in Kyoto unless the Clinton Administration signs up to it. The EU's target of a 15 per cent reduction in greenhouse gas emissions by 2010, agreed a few months ago, was criticised as too little, too late.

The US is joined by Japan and Australia, which has said it

will not sign up to anything because it is a "special case".

Two weeks ago Japan, a more energy-efficient nation than the US, came up with its proposals for a 5 per cent reduction in emissions by 2012.

A 3,000-strong United Nations panel of scientists and climatologists has insisted that carbon dioxide emissions have to be cut by 60 per cent to prevent "severe damage" to the Earth's environment.

Mr Clinton's retreat from his own rhetoric on the need for action on climate change, at the UN in June, was yesterday being attributed to the lobbying power of the US automobile, oil and coal industries.

6 The new limits are  
so weak that two years  
of hard work are  
now irrelevant. 9

They have invested billions of dollars to undermine the climate talks in the past five years.

It has been clear for some time that the Climate Change Convention signed in Rio was in difficulty. Many countries are increasing carbon dioxide emissions as their economies recover from the recession of the early 1990s. US emissions increased by 3.4 per cent last year.

The main political stumbling block has been a resolution in the US Senate which effectively prevented action by America unless China and other developing countries took action.

In Bonn on Wednesday it was clear this is very unlikely. The outlook for Kyoto looks bleak.

The Guardian

