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## **ASSAULT ON EDEN: DESTRUCTION OF LATIN AMERICA'S RAIN FORESTS**

**Douglas R. Shane<sup>1</sup>**

A day will come when man will discover an  
alphabet in the eyes of the chalcedonies,  
in the markings of the moth, and will learn  
in astonishment that every spotted snail has  
always been a poem.

—Alejo Carpentier in *The Lost Steps*

In the seemingly distant world of Latin America's rain forests, man's greed and desperation have resulted in a fire which threatens to obscure our ability to observe life's poetry. The continuing destruction of the earth's tropical rain forests is one of the most serious environmental problems confronting humanity today. Intact, these vital organisms offer an understanding of the planet's past and a key to our future; destroyed, they threaten catastrophe of global consequence.

### **Nature's Cornucopia**

Tropical forests encircle the earth in the equatorial regions of Central Africa, Southeast Asia, and Central and South America. Comprising some 55% of the world's woodlands, tropical forests yield a cornucopia of natural resources which benefit mankind. Among this bounty are commercial timbers, resins, and gums; important pharmaceuticals derived from both plants and animals; water for drinking, transportation, and hydroelectric power; minerals and petroleum; genetic resources for maintenance and improvement of food crops; habitat for a remarkable variety of indigenous and migratory wildlife; home to sadly threatened aboriginal peoples; and hundreds—if not thousands—of as yet undiscovered biological benefits.

Yet, the planet's tropical forests are not the well-tended repositories of natural treasures that one would assume them to be. Rather, they are being destroyed at an alarming rate. In recent decades, the equatorial jungles have been viewed by government planners and private sector developers as a panacea to such urgent national problems as sluggish economic growth and overpopulation.

Although figures vary depending upon the source, the Food and Agricultural Organization of the United Nations has estimated that globally some 50 acres of tropical forest are being devastated every 60 seconds, totalling 27 million acres annually. It is believed that Latin America has lost some 37% of its original tropical forests—largely within the last 30 years—and that a substantial portion of the remainder may be gone within the next 40 years, if not sooner, due to ever-accelerating development activities.

In size, the tropical forests of Latin America are the largest in the world. Ecologically, they are models of evolutionary precision. Although the lush vegetation of the tropical forest creates the illusion of unbounded fertility, in fact, the underlying soils are impoverished, most of their nutrients leached long ago by torrential rainfalls. Only through some 60 million years of evolution have the plants and animals of the rain forest perfected methods of capturing and storing essential nutrients before they are flushed into the region's ubiquitous river systems, and finally the Atlantic Ocean.

Virtually nothing is wasted in the complex environment of the tropical forest. With most of the nutrients stored in the vegetation, the forest is a closed ecosystem, the dead matter being quickly recycled by bacteria, fungi, insects, and other organisms. The vegetation which forms the canopy about 150 feet above the forest floor cushions the impact of the rain, protecting the thin layer of soil from erosion and solar radiation. Without the protective canopy, the tropical sun would bake the soil to a brick-like crust, incapable of supporting almost any plant or animal life.

### **Tropical Forests Under Siege**

Pursuing a centuries-old tradition, the native peoples of Latin America's rain forests practice slash-and-burn agriculture, in which small areas of jungle are partially cleared and the cut vegetation is burned gradually to release stored nutrients into the poor soil. In this manner the land can be cultivated for several harvests of food crops until the nutrient supply is depleted. When the farmer moves on to clear new forest lands, the exhausted site is left fallow for eight or more years as secondary growth reclaims the area. Thus, people can—in limited numbers—sustain themselves within the environmental limitations of the tropical forest.

While dwindling aboriginal populations and Latin colonists still employ slash-and-burn agriculture, the last several decades have witnessed the advent of ever-accelerating development pressures in the region's tropical forests. National programs of extensive highway construction have opened wilderness areas to large-scale exploitation and destruction. Among the factors contributing to the decimation of Latin America's rain forest are forestry-related industries, spontaneous and government sponsored colonization by the landless poor of the nations involved, exploration and extraction of minerals and petroleum, flooding of large tracts of forest for hydroelectric projects, and efforts to convert forested lands for the production of agricultural crops and beef cattle. Many of these activities represent national development programs



Figure 1. Slash-and-burn agriculture, practiced throughout the humid tropics, is feasible if limited to small areas. (Rondonia, Brazil; photo © Douglas R. Shane)

which are supported with financial and technical assistance from the developed countries, international lending institutions, and transnational corporations.

The reasons for the massive deforestation of the humid tropics are relatively easy to assess but stubbornly difficult to resolve. The governments of Third World tropical countries, in an effort to solve their nation's problems of explosive population growth, high unemployment, and sluggish economies have tended, during the last 30 years, to view their tropical forests as short-term solutions to predicaments that are at once economic, social, and political. Compounding this dilemma is the fact that in virtually all tropical countries, the most productive soils are controlled by a small group of landowners and are utilized for the production of cash crops for export. While these crops—chiefly coffee, bananas, sugar cane, cotton, and beef—are important foreign exchange earners for struggling domestic economies, they also create serious problems for the nations involved. In addition to being subject to the capriciousness of the weather, and to price fluctuations on the world markets, export crops grown on fertile soils mean that these nations must import food items at greater expense for domestic consumption.

This type of agrarian system in which vast tracts of arable land are owned by a small number of individuals creates a dire shortage of land ownership and employment opportunities for the burgeoning populations of each country. Thus, despite accumulating evidence that they are unproductive under "modern" farming practices, many governments continue to consider their tropical forests as essential for the settlement of colonists and as new areas for intensive agricultural projects.

### **Impending Apocalypse?**

Extensive tropical deforestation has already proven to cause serious regional environmental consequences such as the deterioration of watersheds, floods, droughts, soil erosion, and the resultant siltation of rivers and lakes which, in several instances, has already diminished the capacities of hydroelectric facilities in various countries. In recent years, a number of hypothetical—but nevertheless frightening—postulates have been advanced by some scientists in which the widespread felling of the earth's tropical forests is related to the global environment.

Among these warnings is the possible effect that tropical deforestation may have upon the carbon dioxide levels in the earth's atmosphere. While CO<sub>2</sub> levels have been rising rapidly due to carbon released by combustion of fossil fuels, proponents of this postulate maintain that increased levels of CO<sub>2</sub> released from burned forests could further reduce the atmosphere's ability to reflect heat away from the earth's surface. This phenomenon, climatologists warn, could cause a global warming trend, which in turn could lead to a shifting of suitable agricultural areas and a decrease in presently productive lands.

Other "global effect" arguments postulate the following alarming scenarios: if the earth undergoes a warming trend, the polar ice caps would melt, thus raising sea level and inundating coastal cities; the nutrients leached from tropical forest vegetation and conveyed by river systems such as the Amazon to the oceans would seriously affect the productivity of marine ecosystems and impair fishing industries worldwide; and the large scale or total felling of the earth's tropical forests would so drastically lower global precipitation that an irreversible process of desertification would result in the grain belts of North America and other temperate regions.

Whatever the validity of the "worst case" scenarios, the existing knowledge pertaining to the biological importance of tropical rain forests makes their continuing destruction an issue of immediate concern to all of humanity. Among the myriad elements which comprise this global problem, two topics of immediate concern regarding the fate of Central and South America's rain forests are the effects of habitat destruction on indigenous and migratory wildlife and the beef cattle industry of Latin America, or, as it is more popularly known, "The Hamburger Connection."

### **Song of the Earth**

Commuting annually between their North American breeding and nesting territories and their winter feeding grounds in the neotropics, the migratory birds of the Western hemisphere may be winging their way to oblivion. While the destruction of natural habitat threatens both indigenous and migratory wildlife worldwide, scientists warn that if the present rate of tropical deforestation continues, a "silent spring" will be only one of a variety of problems resulting from decimated bird populations.

Of the 650 bird species found in the United States, 332, or 51%, winter in Latin America and the Caribbean. Research has shown that birds migrating from North America return each year to the same habitat: 120 species live in shrub-steppes; 105 species inhabit aquatic environment; and 107 winter in tropical forests (Rappole et al. 1983).

Those birds that winter in tropical forests from Mexico through Central America to South America are considered to be the most threatened. The list, which reads like a bird watcher's dream, includes: the yellow-bellied, Acadian, and western flycatcher; the eastern and western wood peewee; the wood and Swainson's thrush; the veery; the black-billed and yellow-billed cuckoo; the yellow-throated, solitary, red-eyed, and Philadelphia vireo; the blue-gray gnatcatcher; the whip-poor-will and chuckwill's widow; and the broad-winged hawk and osprey. Among the warblers are the prothonotary, black-and-white, golden-winged, worm-eating, black-throated green, black-throated blue, Swainson's, Cape May, Tennessee, Kirtland's, Bachman's, Townsend's, Parula, bay-breasted, black-burnian, cerulean, chestnut-sided, blackpoll, Canada hooded, and Kentucky. Completing the catalogue are: the Mississippi and the swallowtailed kite, the American redstart; the ovenbird; and the scarlet, hepatic, and western tanager (Deis 1981).

Although we in North America have come to think of avian migrants as "ours," ornithologists note that many birds spend up to seven months wintering in the tropics, several weeks traveling north and south, and perhaps only eight to ten weeks breeding and rearing their young in northern climates (Pasquier and Morton 1982). Still, we recognize that "our" nesting birds are threatened due to the continuing destruction of tropical forests. According to Smithsonian Institution scientists, extensive deforestation in the neotropics has already produced observable declines of 1% to 4% annually among migratory bird populations (Myers 1985).

An eight-year study conducted on a 15 acre forest site in Veracruz state, Mexico, revealed that by the time 75% of the area was destroyed or disturbed, the Swainson's thrush, the black-and white warbler, and the worm-eating warbler were among the species that had disappeared. Some species have demonstrated a need for increased territory when an area is degraded. The hooded warbler, for example, apparently requires three times as much altered habitat as undisturbed forest. Since many birds return to the same tropical territory each year, when the habitat is destroyed or altered, they must either become wanderers or they fail to survive (Pasquier and Morton 1982).

Birds travel to the tropics for the winter months because food is scarce during the temperate zone's dormant period. Similarly, by migrating north in the spring, when insects and other sustenance are again readily available, birds alleviate the pressure of large avian populations on food resources in the tropics and increase their chances for successful breeding.

Marvels of adaptation, many migratory birds alter their feeding and social habits according to their environment. Kingbirds, the insect-eating flycatchers of open and semi-open spaces in North America, become fruit eaters when

wintering as far south as the Amazon Basin of Peru and Bolivia. Swainson's and broad-winged hawks, which prey on mammals, reptiles, and other birds in northern climates, subsist on large katydids when soaring through Panama. And the Tennessee warbler, almost entirely an insectivore, includes nectar in its tropical diet.

Many birds that are solitary and aggressively territorial in North America have been observed to become members of mixed-species flocks in the tropics. The autumn molting to less colored plumage allows most wintering birds to gain acceptance to mixed flocks and reduces aggression among members of the same species. Ornithologists maintain that birds changing their diet to fruit become less aggressive and are thereby able to feed in flocks, thus providing a better chance for survival against predators. Some species, like the blue-winged and golden-winged warblers, keep their colored plumage and join mixed-species flocks, which they then regard as their "territory" and deny entry to members of their own kind (Pasquier and Morton 1982).

With deforestation activities consuming Latin America's rain forests by an estimated 4% every year, there is a possibility that by the end of this century there will be little, if any, suitable habitat for forest-seeking migrants. In fact, habitat destruction is "a larger problem with indigenous species than with migratory birds," according to Chandler Robbins of the United States Fish and Wildlife Service. Even if considerably more parks and reserves were established throughout the neotropics, migratory bird populations, already suffering from shrinking habitat, are expected to decline. The "best" that we might expect is that populations of those species preferring open habitat may increase in number.

Migratory bird populations have an important relationship to the ecology as well as to agriculture in North America. Wintering birds return to temperate climates in the spring, at a time when many insects are reappearing. Because returning birds arrive when insects are in the larvae and other vulnerable stages of their life cycles, scientists reflect that insect numbers are naturally kept in check, thus preventing serious insect predation on agricultural crops. However, if migratory bird populations continue to decline, increasing swarms of insects could mean disaster to North American agriculture (Myers 1985). The use of pesticides to control insects has already proven to be detrimental to all members of the food chain, including birds and human beings; thus the answer to this particular problem cannot be seen to lie within the realm of chemical control.

If, as expected, migratory bird populations continue to decline due to the destruction of the rain forests, scientists recognize that life forms other than birds, insects, and man will be affected. Indeed, it would be inconceivable to imagine that the total ecology of the Americas would be unaffected, should the songs of "our" migratory birds be diminished.

### The Cattle Connection

Beef cattle ranching is widely considered to be the major factor in the destruction of Latin America's tropical forests. The problem is most serious throughout Central America—from southern Mexico to Panama—where, with arable lands already producing beef and other, more traditional, export crops, there is a tremendous pressure to develop “new lands”—the rain forests. While precise figures for specific uses of converted tropical forest areas are difficult to ascertain, it is known that among the countries of Central America, cattle ranching is foremost, followed by slash-and-burn agriculture. Conservative estimates reveal that some 37% of Central America's tropical forests have already been destroyed, largely within the last 30 years, and that current rates of deforestation for establishing cattle pastures continues to accelerate in countries like Panama, Costa Rica, Honduras, Guatemala, Belize, and south-eastern Mexico. In South America's Amazon Basin countries—Brazil, Colombia, Peru, Bolivia, Ecuador, Venezuela, Guyana, Surinam, and French Guiana—deforestation for cattle ranching is most predominant in the first three.



Figure 2. Cattle ranching in the humid tropics of Latin America is the prime cause of the destruction of the region's vital tropical forests. (Amazon Basin of Ecuador; photo © Douglas R. Shane)

Since 1960, cattle production in the countries of tropical Latin America has increased by some 69%, while beef exports have risen by 448%. The cause for the dramatic growth of the region's cattle industry has not been due to the phenomenal increase of domestic populations; rather it can be directly attributed to the ever-increasing demand for beef by the United States, Western Europe, and Japan, and the concomitant necessity of earning much-needed foreign exchange. Conversely, the cattle industries in the once-traditional beef producing temperate countries like Argentina and Chile, have grown little or declined.



Despite the growth of the cattle industry throughout tropical Latin America, which often displaces other agricultural products such as cotton and food crops, domestic consumption of beef in the exporting nations has declined on an average of 13.5%. This is largely due to the fact that exporting countries like Costa Rica, Honduras, Guatemala, and, until recently, Nicaragua, have consistently sold 50% or more of their annual beef production to foreign markets. Statistics indicate that some 90% of Central American beef exports go to the United States, while the remaining 10% are shipped to Europe and Japan. The majority of South American beef exports are purchased by European markets. Resulting in domestic scarcity, the cost of beef in the exporting nations has been driven far above what many citizens can afford. In 1969, the United States Department of Agriculture's Foreign Agricultural Service noted that "the considerable growth in meat exports in recent years has been at the expense of domestic beef consumption." Seventeen years later the situation is only aggravated by meteoric population growth, eager export markets, and worsening domestic economies.

Cattle ranching in tropical forest areas is commonly effected by the construction of highways into wilderness areas for the benefit of timber operations and petroleum companies. Because trees of the same species grow widely dispersed in the humid tropics—a natural adaptation to prevent the transmission of numerous diseases—loggers often clear-cut forest tracts rather than take the time and expense to extract only trees of known commercial value. Using the roads as conduits to forest areas are the landless and unemployed, desperate to earn a living from the poor forest soils as subsistence farmers. Employing slash-and-burn agricultural methods, the colonists exhaust their land's potential within a few years and must then move on to a new area, deeper in the forest.

It has become common for cattle interests to buy the depleted land from colonists, even paying them to plant forage grasses, so that cattle pastures can be established. It is also not unusual for ranchers to employ colonists outright to cut down large areas of forest, burn the fallen trees, and plant pasture grasses. And, with the expansive growth of the beef cattle industry in recent years, ranchers have brought heavy equipment into the forest to speed up the destruction. An ominous procedure that is used in some areas is chemical defoliation. Largely banned from use in the United States because of their links to cancer and birth defects, herbicides such as Tordon and 2,4,5-T, commonly known as "Agent Orange," are manufactured in the United States by Dow Chemical, Hercules, Monsanto, Diamond Shamrock, North American Philips, and Thompson-Hayward Chemical. No restrictions on the use of these herbicides or pesticides are employed in tropical Latin America.

Once pastures are established, the cattle are introduced. Although European breeds (*Bos taurus*) were initially used, it was soon recognized that they could not efficiently regulate their body temperatures in the humid tropics, and tended to become feverish and unable to maintain high meat and milk production. More successful have been hybrid stocks that utilize the Zebu

breeds (*Bos indicus*) of India. Also more durable are the Indu-Brasil, a cross of three Zebu breeds developed in Brazil; the Brahman, developed in the United States by mixing Zebu crosses with British stock; the Santa Gertrudis, a cross between Brahman cattle and European Shorthorn stock; and the Charolais, a French breed.

Despite the best efforts of ranchers to develop strong stock, cattle raised in the humid tropics are subject to a multitude of problems. Plagued by numerous parasitic and infectious diseases and nutritional deficiencies, cattle herds in tropical Latin America suffer high mortality rates. Among the most serious health problems are rabies; leptospirosis, which affects the kidneys; gastrointestinal parasitism and viral respiratory infections; polyarthritis, a bacterial infection of the joints; mastitis, a bacterial infection of the mammary gland; and foot rot, a common affliction of cattle in the humid tropics. The neurotoxins found in weeds in tropical pastures are estimated to claim up to 10% of herds raised in former forest areas.

Aftosa, commonly known as hoof-and-mouth disease, is mainly confined to South America and Europe. Occurring only infrequently in Central and North America, aftosa is a virus transmitted by contact or through the semen. Because aftosa is so infectious, South American beef must be cooked before it can be imported into North America. An odd alliance between environmentalists and North American cattlemen seeks to prevent the completion of the Pan-American Highway through the rain forests of Panama's Darien province—a natural barrier—for fear that the inevitable transport of cattle from South America would result in the introduction of hoof-and-mouth disease to Central and North America.

Cattle ranching in areas of tropical forest converted to pasture is both environmentally destructive and short-lived. As the soils lose their nutrients, the food value of forage grasses declines sharply. Overgrazing and compaction accelerate erosion and destroy vital successional vegetation until the pasture must be abandoned, usually within five to ten years. As the ranchers move their herds to new areas, they leave behind a veritable wasteland, unable to regenerate itself and of little value to man or animal.

As with other facets of development in rain forest areas, cattle ranching could not have become so pervasive were it not for the financial and technical assistance offered by the governments of each tropical nation, the international assistance agencies of many beef importing countries, national and international banks, regional development organizations, private sector interests, and transnational businesses.

Principal among the public sector proponents providing funding and scientific assistance to tropical Latin America's beef cattle industry are the World Bank, The Inter-American Development Bank, the United States Agency for International Development, the Organization of American States, and at least five agencies of the United Nations. Underscoring the profitable nature of cattle ranching are the investments made by individuals and companies of numerous non-Latin countries. Directly involved in various aspects of production

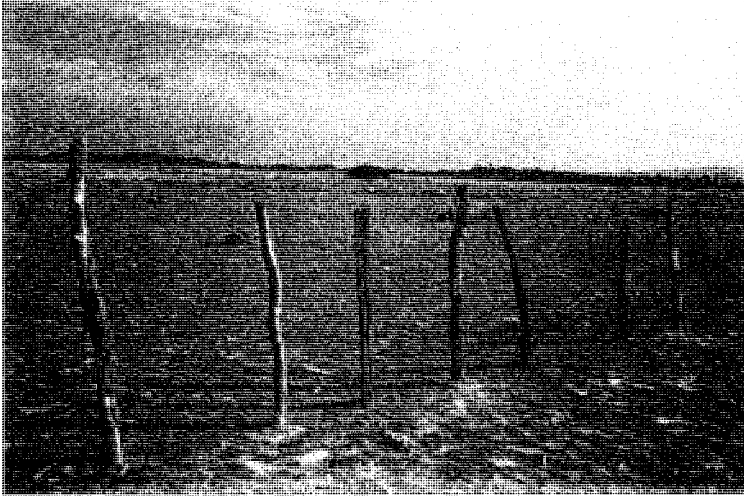


Figure 3. After seventeen years of intensive agriculture followed by cattle ranching, what was once tropical forest is now a "red desert." (Amazonia, Brazil; photo © Douglas R. Shane)

as well as the export and import of beef raised in the humid tropics are nationals and businesses from West Germany, Japan, Great Britain, Belgium, Italy, Austria, Canada, and foremost, the United States. These interests range from the sales of heavy machinery and herbicides to livestock feed and processing plants.

Beef from tropical Latin America is exported to a number of developed nations, including Japan and the countries of Western Europe's Common Market. But the United States is the preeminent importer of the region's beef, purchasing some 90% of Central America's exports. United States beef imports, which come from Australia, New Zealand, Canada, and several Western European countries as well as from Latin America, have increased by some 140% since 1960. By the 1980s, the United States was importing 10% of the beef consumed annually by its citizens with 17% of all imports purchased from tropical Latin American countries. Of all beef imports since the early 1970s, 13.5% was from Central America and about 3% was from Brazil. In total, beef imports from tropical Latin America account for just under 2% of the beef consumed annually in the United States.

Latin American beef enters the United States in basically two forms. If it is from Central America, it may be fresh, chilled, or frozen. South American beef, however, must be cooked prior to its importation as a safeguard against the aftosa virus.

The majority of U. S. beef imports are derived from range-fed cattle whose meat tends to be leaner, less marbled, and generally tougher than beef that

is grain-fed. Because United States consumers prefer “juicy” meat, imported beef is usually mixed with meat and fat trimmings from domestically produced beef, veal, and pork.

Most of the Central American beef imported by the United States is processed as hamburger and ground beef, which accounts for about one-quarter of all beef consumed domestically in recent years. Central American beef is also sold as inexpensive cuts of meat in supermarkets and in family-style steakhouses and is used in numerous processed meat products such as frankfurters, salami, bologna, pepperoni, and other luncheon meats and sausage products. South America’s cooked and canned beef imports are generally sold as corned beef and used in frozen and canned products such as stews, soups, chili, precooked dinners, pot pies, and baby and pet foods.

Although the United States is the world’s largest beef producer, consumer demands continue to exceed domestic supplies. In an effort to satisfy the nation’s craving for red meat while protecting the U. S. cattle industry, the federal government sets annual quotas for meat imports that are linked to U.S. production levels. Nonetheless, on-going disagreements are waged between organizations like the National Cattlemen’s Association, which represents domestic interests, and the Meat Importers Council of America, which represents manufacturers who want to keep beef prices down. The fact is that the remarkable growth of the U.S. fast-food industry and increasing food costs have encouraged consumers to purchase less expensive, lean meats such as chicken, pork, and products using imported beef.

Perhaps the most controversial issue concerning the destruction of Latin America’s rain forests is the link between cattle ranching in the humid tropics and U.S. imports of beef and its domestic use. Some environmentalists and scientists, anxious to stop the dissolution of the remaining rain forests in the Western hemisphere, argue that those U.S. businesses that use tropical beef imports are exacerbating the problem and should be boycotted until they cease using the commodity. Targets of a protest would be known users of imported beef.

The majority of national hamburger chains and manufacturers of products containing beef queried about the sources of their meat responded that they use only U.S. beef. Of those admitting to using “some” imported beef, the majority noted a preference for Australian and New Zealand products. A spokesman for Burger King, which admits to using “a small percentage of frozen beef from Costa Rica,” said that, “any chain saying they don’t use imported beef is handing you a crock.”

Accusations of using imported beef from tropical Latin America have been aimed at many companies. A source of confusion for both users of beef and concerned individuals is the fact that once imported beef is cleared by U.S. customs agents, it is given a grade rating that corresponds to United States meat standards and loses its imported identity. Now officially having U.S. status, the product may go directly to a manufacturer or be held by a meat brokerage which will sell it to a processor. Although beef imports arrive in the United States in sixty-pound cartons marked with the country of origin,

status, the product may go directly to a manufacturer or be held by a meat brokerage which will sell it to a processor. Although beef imports arrive in the United States in sixty-pound cartons marked with the country of origin, it is not unlikely that some buyers—particularly brokerages—repackage the product in order to hide its identity. This repackaging would occur because although Latin American beef is slightly cheaper, there remains a preference for beef from Oceania which has a lower moisture content and therefore does not require the the changing of processing formulas. So it is quite plausible that many manufacturers of hamburger and other meat products are unaware of the precise geographic origin of the beef that they use.

While Latin Americans have a traditional preference for cattle ranching, "The Cult of the Bull" has received substantial encouragement from interests representing the developed Western nations, particularly the United States. Until the factors that have stimulated the growth of the beef industry in tropical Latin America are dealt with, the fires will continue to rage throughout the hemisphere rain forest with a chilling effect (Shane 1986).

### **Saving Eden From Ourselves**

Imagine a planet where the most intelligent inhabitants knowingly pursue a suicidal course of planetary destruction; where demand, greed, and desperation have supplanted the knowledge that extraction of natural resources and environmental management must be conducted with respect for Nature's sustainability.

In recent years, scientists representing a wide variety of disciplines and concerned environmental organizations have called for a more rational approach to utilizing the earth's tropical forests. But still the forests are being felled or flooded. It can no longer be argued that the decision makers are unaware that the poor soils of the humid tropics are unsuitable for large-scale, sustainable development projects; the hundreds of thousands of acres of degraded forest and resultant "red desert" already bear their lifeless testimony. The fate of the rain forests reflect the best and the worst of humanity's ability to grasp a serious problem—and either solve it, or ignore it, until it resolves itself in the form of mass extinctions and, quite possibly, biological failure on a global scale. Solutions are not easy, but they are possible—and essential.

Many of the factors leading to the destruction of rain forests lie with the social and economic problems of the tropical countries themselves. Land reform and the appropriate utilization of productive soils, the increased transfer of technological capability from developed nations in order to expand economic and employment potential, commitment to birth control practices; these and other important issues must be dealt with effectively.

Foreign influences must be tempered by an awareness of global mutuality. There are recent signs that such sentiments can be translated into effective action. In the spring of 1985 a coalition of environmental organizations, Indian rights advocates, and bipartisan members of the United States Congress were able to cause the World Bank to halt funding on a five million dollar development project in northwestern Brazil. The action marked the first time

the bank halted a project for environmental reasons. And, in both the United States Senate and House of Representatives, legislation is pending that deals with the protection of tropical forests, the preservation of biological diversity, and the necessity of limiting foreign assistance to only appropriate and sustainable activities.

But there is more to do. The sale of dangerous herbicides and pesticides—which are banned in the United States—to developing countries must be prohibited. Evidence from the United States Department of Agriculture's Food Safety and Inspection Service and other research institutions have shown that the presence of carcinogenic chemical residues and other adulterates in agricultural products—including beef—imported from Latin America has more than doubled in recent years. Unfortunately, this represents minimal knowledge since agricultural imports are only randomly sampled.

A boycott of one or more companies known to use beef imported from the humid tropics would be of value if it led to educating the public and the companies about the problems of rain forest destruction. The end result of such a boycott, however, should be federal legislation banning imports of beef raised in tropical forests. This action is necessary because even if the hamburger chains ceased using beef imported from the humid tropics, other manufacturers would certainly use it, knowingly or not.

By closing the lucrative U. S. market to beef raised in the humid tropics, the United States could encourage the producing nations to use both their productive lands and tropical forests more rationally. Because the United States has been the major market for the region's beef exports—accounting for just under 2% of the beef consumed domestically each year—it is questionable as to whether the tropical countries would find alternative markets for their beef. Although Japan does import a small amount of tropical Latin American beef, most of its meat imports are obtained from Australia and New Zealand. Western Europe, now a major beef producer itself, imports small quantities of meat from various countries, including the United States, Canada, Australia, New Zealand, and Latin America. (The European Economic Community, among others, is responsible for the escalating destruction of tropical rain forests in Africa done primarily to increase the production of beef for export to Europe.) However, due to the cost of transportation and high tariffs imposed by European nations, tropical Latin American producers would not find as profitable a market as they have with the United States. Latin American economies would not be expected to suffer from a beef ban since other agricultural commodities would retain their importance. It should also be noted that cattle ranching is the least productive form of land use, and it is doubtful that the beef industry, as practiced on the poor soils of converted tropical forests, will ever be anything but an environmentally destructive enterprise.

The United States, with important political and economic interests in Latin America, must accept a role of rational responsibility in the region. Foreign assistance must lead to sustainable activities that first benefit the southern nations. The trade policies of the U. S. government and its private sector

must act with an understanding that the conservation of vital natural resources is essential for the well-being of not just a few nations, but for the entire planet's inhabitants. The earth exists for all—human beings, indigenous and migratory wildlife, forests—and all must share it. We, as the stewards of the planet, have the responsibility of ensuring a healthy biological future for the unborn generations.

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<sup>1</sup> Environmental Consultant, 1805 Shallcross Ave, Wilmington, DE 19806.

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